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TOWN COUNCIL STUDY SESSION AGENDA
September 23, 2019
5:30 PM

I. Town Council Items

II. Study Session Items

1. Pedestrian Crossing Treatment Guidelines - Aden/Guest - 30 minutes
2. Safety Sensitive Zones - Williams/Hudson - 15 minutes
3. Parks Dedication Standards Update - Munekata/Nerger/Trapp - 30 minutes
4. Prairie Dog and Wildlife Management Revisions - Fussa - 20 minutes
5. PACE Lot 2 Resolution - Diak/Rivero - 15 minutes

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MEMORANDUM

TO: Mayor and Town Council

FROM: Dave Aden, Traffic Engineer

DATE: September 23, 2019

SUBJECT: Pedestrian Crossing Treatment Guidelines

ISSUE:

The Public Work/Engineering Department would like to establish a set of guidelines on when to use different types of pedestrian street crossing treatments. Treatments can range from crosswalk bars, to signs, to flashing beacons, all the way up to full pedestrian traffic signals. Current criteria and publications are not sufficient to make determinations in all cases.

FISCAL/BUDGET IMPACT:

None directly. Installations of pedestrian crossing treatments will still fall under normal budget procedures. The new Guidelines will help identify appropriate locations so we don't over-install devices, and prioritize key improvements.

BACKGROUND:

The Traffic Services division of Engineering/Public Works receives numerous requests for new pedestrian safety enhancements throughout Parker. Our current guiding and regulatory documents do not have good criteria for when to use each type of device. The City of Boulder established a guide for when to use treatments in 2011 and this has been a very valuable tool for their staff. Understanding how this was used there led Town staff to identify a need for similar guidance here. Using Boulder and Windsor, Colorado as baseline studies the thresholds were reviewed against Parker specific conditions to arrive at final technical recommendations.

RECOMMENDATION:

If these Guidelines are reasonable to Mayor and Council, provide direction for staff to bring forth a resolution to adopt the attached Guidelines at a future Council meeting.

REQUESTED DIRECTION:

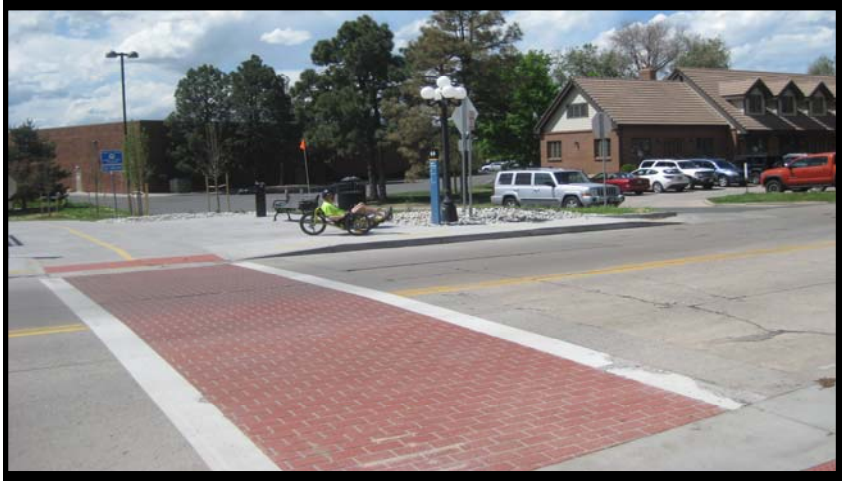
Provide direction regarding moving forward with a resolution to adopt the Pedestrian Crossing Treatment Guidelines.

ATTACHMENT:

1. Parker Ped Crossing Treatment Guidelines_022819

Town of Parker

Pedestrian Crossing Treatment Guidelines



Submittal Date: February 2019

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EXECUTIVE SUMMARY

Providing safe and efficient pedestrian facilities is a long-established goal of the Town of Parker. The decision to travel as a pedestrian is in part subject to the pedestrian's ability and perceived ability to safely and efficiently cross roadways along the travel route. On this basis, the Town of Parker has established this document to provide a set of criteria, procedures, and policies to guide the installation of pedestrian crossing treatments on Parker's roadways.

Specifically, this document summarizes:

- **Criteria** for considering the installation of a pedestrian crossing.
- **Procedures** for evaluating the need for crossing treatments.
- **Types of crossing treatments** that may be applicable for a particular set of pedestrian volumes, pedestrian types, vehicular volumes, vehicular speeds, and roadway geometry.

National standards provide little guidance for the installation of marked crosswalks and treatments, particularly at mid-block locations. Crosswalks and other crossing treatments are typically installed based on engineering judgment. Key issues, such as the circumstances in which a crosswalk should be installed, how much safety benefit crosswalks provide, and the application of various crossing enhancements are still commonly debated topics.

Local communities, such as the City of Boulder, have experimented with different pedestrian crossing treatments, under a variety of crossing situations, to **improve safety for pedestrians by increasing the rate at which motorists yield to crossing pedestrians**. In fact, this document has taken advantage of much of that work and has been patterned after Boulder's Pedestrian Crossing Treatment Installation Guidelines.

These Pedestrian Crossing Guidelines are intended to provide a consistent procedure for considering the installation of crossing treatments where needed on a case-by-case basis in the Town of Parker. Implementation of crossing treatments will require funds that could potentially have been spent on other transportation system improvements, and, therefore, must be considered carefully in the established funding and budget allocation processes.

Information published by the Federal Highways Administration (FHWA) suggests that on two-lane roadways, marked crosswalks alone (without any signs or other treatments) at uncontrolled locations have no effect on pedestrian accident rates. The study suggests that, on higher volume, multi-lane roadways, marked crosswalks alone (without any other treatments) are associated with higher vehicle-pedestrian accidents rates compared to unmarked locations.

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To date, the Town of Parker has been installing pedestrian crossing treatments at locations throughout the Town based on staff's interpretation of national best practices, the recommendations of the *Manual On Uniform Traffic Control Devices (MUTCD)*, and input from the community. These new Pedestrian Crossing Treatment Guidelines are not meant to undermine any of the work that has been done to date. Rather, they are intended to provide a uniform approach to installing pedestrian crossing treatments throughout town in the future. This document is meant primarily to offer guidance on crossing treatments to be applied on existing facilities. The design of new roadway facilities may want to refer to these guidelines during the design process, but this document is not intended as a criteria manual for new construction.

1.0 DEFINITIONS

This section includes the definitions of some of the common technical terms used in this document.

Average Daily Traffic (ADT)

The amount of vehicular traffic that crosses an imaginary line across a roadway in a 24-hour period. ADT information typically includes both directions of vehicle travel (if on a two-way street).

Controlled Pedestrian Crossing

A pedestrian crossing where motorists are required to stop or yield by either a stop sign, yield sign, or traffic signal (including a HAWK beacon).

Crosswalk Lighting

Street lighting applied at a pedestrian crossing to help approaching motorists see a crossing pedestrian. Crosswalk lighting is at a "vehicular scale" like normal street lighting rather than a "pedestrian scale" that is often used along a sidewalk.

Curb Extensions

A roadway edge treatment where a curbline is bulged out toward the middle of the roadway to narrow the width of the street. Curb extensions are sometimes call "neckdowns" or "bulb outs" and are often used at the location of a pedestrian crosswalk to minimize the distance and time that a crossing pedestrian must be in the roadway and may increase the visibility of pedestrians to approaching motorists.

Differential Vehicle Queuing

See also Vehicle Queue. A condition on a roadway with two or more travel lanes in a single direction where the line of stopped traffic in one travel lane is significantly longer than the line of stopped traffic in the adjacent travel lane. Differential vehicle queuing across a pedestrian crosswalk can cause a significant safety concern as it increases the potential for "multiple threat" pedestrian accidents where a pedestrian can step out from behind a stopped vehicle in one lane into the path of a moving vehicle traveling in the same direction in the adjacent lane.

Gap in Traffic

A gap in traffic is the space between vehicles approaching the pedestrian crossing. Gaps are typically measured in seconds, not distance, as it is the length of the gap in time that a pedestrian must be able to cross in. A directional gap is the gap between vehicles approaching in a single direction. A directional gap can be measured between vehicles in

single lane, or between vehicles approaching in the same direction but in different lanes on a multi-lane approach. If there is no median refuge at the crossing, a pedestrian will need to find an acceptable gap in traffic approaching from two directions at once. This is much more challenging than finding a gap in each approach direction separately.

HAWK Beacon

A pedestrian hybrid beacon is a relatively new type of crossing treatment used to both warn and control traffic at a pedestrian crossing. It is actuated by a pedestrian push button and uses a combination of circular yellow and red traffic signal displays to first warn motorists of a pedestrian that is about to cross the street, then require the motorist to stop before the crosswalk, and then release the motorist to proceed once the pedestrian has cleared the travel lane(s). The beacon is a hybrid between a pedestrian traffic signal and a stop sign.

Lane

A portion of the roadway surface designated for vehicular travel, typically in a single direction, that is delineated by pavement marking stripes. Types of lanes include:

- "through lanes" for travel along the length of the roadway, often through intersections;
- "turn lanes" which are typically on intersection approaches and provide space for left or right turning motorists;
- "bike lanes" which are designated for bicycle travel in the same direction as the automobile travel, are narrower than vehicle lanes, and are usually located along the outside edges of the roadway.

Major Trail

An off-street pathway (may be paved or soft surface) that is designated by the community as having increased significance for transportation and connectivity over that of a typical sidewalk or trail, but less than that of a Regional Trail. Major Trails are typically designated on the Town's Parks, Recreation, Open Space, and Trails Master Plan, and are facilities where traveling as a pedestrian or bicyclist is encouraged.

Major Trail Crossing

A location where a sidewalk or trail that has been designated as a Major Trail intersects a roadway at-grade, and the path extends on both sides of the roadway or terminates at a civic facility. Major Trail crossings need only meet ½ of the minimum pedestrian volume thresholds to be considered for enhanced crossing treatments in these Guidelines.

Marked Crosswalk

A pedestrian crossing that is delineated by white crosswalk pavement markings. Marked crosswalks typically may also be delineated by a variety of traffic signs. Marked crosswalks would also have curb ramps if there is curb and gutter in an area. All marked crosswalks should comply with MUTCD requirements with regard to marking sizes, shapes, and color.

Median Refuge

An area in the middle of a roadway where a crossing pedestrian can take shelter from approaching traffic in either direction. In the context of these guidelines, the median refuge must include a raised median of some width (*see **Section 2.2.4*** for a description of types of median refuges). A median refuge allows a pedestrian to cross each direction of approaching traffic in a separate step. By using the refuge, the pedestrian must only find an acceptable gap in traffic for one approach direction at a time.

Minimum Pedestrian Volume Threshold

The minimum amount of pedestrian crossing traffic (typically in a one-hour period) that must be present to "warrant" the installation of a pedestrian crossing treatment. *See **Section 2.2.3.***

Motorist Compliance Data

Observations made and recorded at a pedestrian crossing where it is determined if the approaching motorist complied with their legal requirement to yield to a crossing pedestrian who is in or about to enter the crosswalk.

Multiple Threat Accidents

A type of pedestrian accident that occurs on a roadway with two or more lanes in the same direction. A motorist that stops for a crossing pedestrian can obscure the view of the pedestrian from another motorist approaching in the adjacent travel lane. If the second motorist does not slow down, it creates the potential for a crossing pedestrian to step out in front of a high-speed approach vehicle with potentially dire consequences.

Neckdowns

See Curb Extensions

Pedestrian Traffic Signal

A conventional traffic signal with circular red, yellow, and green displays for motorists and Walk/Don't Walk signals for pedestrians that is applied at a pedestrian crossing. A pedestrian signal would be applied in a mid-block location since it would be considered a normal intersection related traffic signal if it were to be applied at an intersection. Another type of signalized mid-block pedestrian crossing is a Pedestrian Hybrid Beacon (aka HAWK

Beacon) that may be applied to facilitate pedestrian crossings of a roadway in a mid-block location. [Note that there is different criteria in the *MUTCD* for installing mid-block pedestrian signals and pedestrian hybrid beacons.]

Raised Median

An area in the middle of a roadway, commonly separating vehicles traveling in opposite directions, that is surrounded by curb and gutter and is physically raised above the surrounding pavement where vehicles travel. Raised medians often contain landscaped areas. *See also Median Refuge.*

Rectangular Rapid Flash Beacons (RRFBs)

RRFBs are small rectangular yellow flashing lights that are deployed with pedestrian crossing warning signs. They are typically actuated by a pedestrian push button and flash for a predetermined amount of time, to allow a pedestrian to cross the roadway, before going dark. RRFBs are warning devices and do not themselves create a legal requirement for a vehicle to stop when they are flashing.

Regional Trail

A Regional Trail is an off-street pathway (may be paved or soft surface) that is designated by the community as having increased significance for transportation and connectivity over that of a typical sidewalk, trail, or Major Trail. An example in Parker is the Coal Creek Trail that winds through the community. Regional Trails are typically designated on the Town's Parks, Recreation, Open Space, and Trails Master Plan, and are facilities where traveling as a pedestrian or bicyclist is encouraged.

Regional Trail Crossing

A location where a pathway or trail that has been designated as a Regional Trail intersects a roadway at-grade, and the trail extends on both sides of the roadway or terminates at a civic facility. Regional trail crossings do not need to meet the minimum pedestrian volume thresholds to be considered for enhanced crossing treatments in these Guidelines.

School Crossing

A school crossing is defined as a crossing location where ten or more student pedestrians per hour are crossing. A school crossing may or may not be adjacent to a school, and/or be a part of a designated school access route. The key consideration is the volume of student pedestrians using the crossing.

Uncontrolled Pedestrian Crossing

An established pedestrian crossing that does not include a traffic signal, a HAWK beacon, a stop sign, or a yield sign that requires motor vehicles to stop (or yield) before entering the crosswalk. For example, Parker's crosswalks with signs and/or pedestrian actuated flashing yellow lights are considered "uncontrolled".

Vehicle Queue

A line of stopped vehicles in a single travel lane, commonly caused by traffic control at an intersection.

2.0 CROSSING LOCATION EVALUATION

2.1 Evaluation Steps

Evaluation of an individual crossing location for potential crossing treatments in the Town of Parker should include the following four basic steps:

The Crossing Location Evaluation Worksheet, included on following pages, will guide staff through these steps. A detailed discussion of each of these procedures is provided in the following text.

Step 1 Identification and Description of Crossing Location

a) Identify the pedestrian crossing location.

Including the major street and specific location of the crossing (i.e. cross-street, street address, intersection path or trail, trail type etc.)

b) Determine if the crossing location connects both ends of a Major Trail or Regional Trail.

If it is a Regional Trail crossing, the minimum pedestrian volume requirements are not required to be met to apply the treatments prescribed in ***Table 1*** *(see the policy discussion in* **Section 2.4** *for more information).*

If it is a Major Trail crossing, only ½ of the minimum pedestrian volume requirements are required to be met to apply the treatments prescribed in ***Table 1*** *(see the policy discussion in* **Section 2.4** *for more information).*

c) Note the posted speed along the major street at the crossing location.

d) Identify the existing traffic control (if any) and any existing crossing treatments.

Including signs, markings, or physical treatments, street lighting, and curb ramps.

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Step 2 Physical Data Collection

a) Determine the existing roadway configuration.

Including the number of lanes and the presence of painted or raised medians at the crossing location

b) Identify the nearest marked or protected crossing and measure the distance to this crossing.

c) Measure the available stopping sight distance (SSD) in the field on all vehicular approaches to the crossing.

If the available SSD is less than ten times (10x) the higher of the posted speed limit or the measured 85th percentile speed (in feet), determine if improvements, such as removal of sight distance obstructions, are feasible means to mitigate the inadequate available SSD. Available sight distance that is 10 or more times the posted speed limit will ensure that there is adequate distance for motorists to stop before reaching the crosswalk if necessary. In addition, the area behind the curb in the immediate vicinity of the crosswalk should be kept clear of vegetation, landscaping, street furniture, utility cabinets, etc. that will obscure the visibility of pedestrians before they enter the crosswalk. Sight distance obstructions in this area should be noted so they can be mitigated if possible.

Step 3 Traffic Data Collection and Operational Observations

a) Gather or collect pedestrian crossing volumes during the peak hours of use.

Typically, AM, mid-day, and PM peak hours.

Whenever possible, this data should be collected during warm-weather months (May through September) and during fair weather conditions to represent peak crossing activity (i.e.: avoid snow, rain, or high winds).

All pedestrian volumes should include and differentiate between pedestrians and bicyclists and should note separately the number of young, elderly, and/or disabled pedestrians separately from typical adult pedestrians.

Schedule to coincide with times when nearby businesses are open

Near schools may only require two hours of data collection (AM and PM peak hours corresponding to school opening and closing times).

Where school crossing traffic is anticipated, the volume of student pedestrians (school age pedestrians on their way to/from school) should also be separately noted.

If school traffic is an issue, the counts should be scheduled on school days when classes are in session.

Given the potential fluctuation in pedestrian traffic from day to day, it may be necessary to collect up to three days of data (use additional Crossing Location Evaluation Worksheets as needed) to determine if an enhanced pedestrian crossing treatment is warranted as follows:

- *Day 1: If the minimum pedestrian volume threshold (see **Figure 1**) is exceeded, no further pedestrian data collection is needed. If the threshold has not been exceeded, but at least 50% of the minimum pedestrian volume was observed, proceed to a second day of data collection.*
- *Day 2: If the minimum pedestrian volume threshold is exceeded, no further pedestrian data collection is needed. If the threshold has not been met but again the volume is at least 50% of the minimum threshold, proceed to a third day of data collection.*
- *Day 3: If the minimum pedestrian volume still has not been met, then no marked pedestrian crossing treatment is warranted by pedestrian crossing volume.*

b) Gather or collect hourly and average daily traffic (ADT) volumes and speed data for automobile traffic along the major roadway at the crossing location. This daily and hourly traffic data should be collected during the same general timeframe as when pedestrian data is collected at the crossing location.

A one-day sample should be adequate, with hourly volumes collected during the same hour as the pedestrian crossing volumes.

c) Observe vehicular queues extending from downstream signals or intersections that back into the potential crossing location to understand any impacts to safety at the crossings, as well as any "differential" queuing that may occur on a lane to lane basis.

Note the formation of vehicle queues from adjacent intersections.

If one or both directional queues reach back to the crossing location, record the number of times per hour that it reaches the crossing location and note the maximum queue length.

If there is more than one through lane in each direction, it should be noted if the queues reaching back to the crossing are approximately the same length in each lane or is there a significant difference in the length of the queues in each lane.

If the queues are routinely of different length as they extend beyond the crossing location, notes should be made as to the potential cause of the differential queuing.

Step 4 Determine Appropriate Treatments

a) Apply the evaluation with the available data by utilizing:

Figure 1 *– Pedestrian Crossing Treatment Flowchart*

Table 1 *– Criteria for Crossing Treatments at Uncontrolled Locations (if applicable) to determine appropriate treatment(s) for signalized, stop-controlled, or uncontrolled locations.*

b) Consider and incorporate the information in ***Section 2.2*** and in **Figure 2** as appropriate.

2.2 Additional Evaluation Considerations

The following information should be considered by the user of these guidelines when determining the appropriate pedestrian crossing treatment:

2.2.1 Types of Crossing Treatments at Uncontrolled Locations

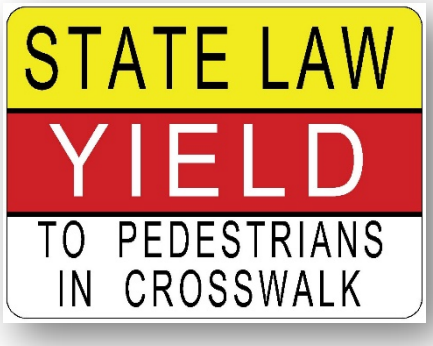
*(Refer to **Table 1**)*

Table 1 identifies six primary types of uncontrolled crossing treatments for consideration depending on the:

- ✧ Physical roadway conditions
- ✧ Vehicle volume and speed
- ✧ Pedestrian volume at the potential crossing location
- ✧ Specific characteristics, behavior, etc.

The crossing types are as follows with typical signs illustrated:

Crossing Type A:



- Marked crosswalk.
- "State Law – Yield – to Pedestrians In Crosswalk" (special) signs mounted on the side of the roadway at the crossing, with diagonal down arrow placards (W16-7P). *[The "State Law – Yield – to Pedestrians In Crosswalk" sign is a special word message sign with three background colors as shown to the right].*
- An alternative to the "State Law – Yield – To Pedestrians In Crosswalk" is the use of a standard pedestrian crossing warning sign (W11-2), but compliance studies have determined that the use of the "State Law…." sign, shown previously, yields higher driver yielding compliance at the crossing.
- Advance pedestrian warning signs (W11-2) mounted upstream from the crossing.
- If a school crossing, then the school crossing (S1-1) sign should be used.

Crossing Type B:

- Same as Type A above, plus
- "State Law – Yield to Pedestrians – Within Crosswalk" signs (R1-6) mounted on flexible bollards on the centerline (if no median present) **OR** the "State Law – Yield – To Pedestrians in Crosswalk" (or W11-2) signs mounted on sign posts in the median, if median is present.

Crossing Type C:

- Same as Type B above, plus
- Add curb extensions or "bulbouts" (as shown to the right) and median refuge island to shorten the pedestrian crossing distance and increase the visibility of pedestrians to approaching motorists.

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Crossing Type D:

- Marked crosswalk.
- Median refuge island. *[Note: If a median refuge cannot be constructed on a 2-way street then go to Crossing Type F]*
- "State Law – Yield - To Pedestrians In Crosswalk" signs (or W11-2 signs) mounted on the side of the roadway and in the median at the crossing, with diagonal down arrow placards (W16-7P).
- Pedestrian actuated Rectangular Rapid Flash Beacons (RRFBs) mounted with the "State Law…." signs as shown on the next page.
- Advance pedestrian warning signs (W11-2) mounted upstream from the crossing if speed limit is > 30 mph.
- If there are two approach lanes in a single direction, then install advance yield lines and "Yield Here To Pedestrians" (R1-5) signs.
- If a school crossing, then the school crossing (S1-1) sign should be used.
- Consider adding curb extensions if on-street parking exists and storm drainage can be accommodated.
- *[Note: If pedestrian volume falls above the RRFB limit line on **Figure 2**, go to Crossing Type F]*

Crossing Type E: [Do not install marked crosswalk at uncontrolled crossing]

- *Use where the speed limit is greater than or equal to 45 miles per hour.*
- Determine if the speed limit and travel speed can be realistically and effectively reduced to 40 mph (through traffic calming measures or consistent speed enforcement - simply changing the speed limit signs is not enough) AND a raised median refuge island can be installed.
    - If yes, go to Crossing Type D, or
    - If not, determine if a controlled or protected crossing can be implemented using a HAWK Beacon, a pedestrian traffic signal, or a grade separated crossing.
    - Must consider corridor signal progression, grades, physical constraints, and other engineering factors.

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Crossing Type F: [Do not install marked crosswalk at uncontrolled crossing]

- ✧ There are three or more lanes in a given direction to cross or is otherwise not suitable for an uncontrolled marked crosswalk.
- ✧ Consider a HAWK beacon, pedestrian traffic signal, or grade-separated pedestrian crossing. Refer to **Figure 2** when considering crossing treatment types.
- ✧ Must consider corridor signal progression, grades, physical constraints, and other engineering factors.

In **Table 1** there are two columns that list:

1) # of lanes crossed to reach a refuge
2) # of "multiple threat" lanes per crossing

This information does not directly play in to the use of **Table 1**, but the information provides important context for the user as they help distinguish the crossing types and support the difference in recommended crossing treatments. These topics are discussed in more detail in the following sections.

Typical Signs That May Be Used at Pedestrian Crossings:

W11-2

S1-1

W16-7P

W16-7P

R1-6

Special "State Law"

R1-5

Note that it is the intent of the Town of Parker that the traffic control devices installed at pedestrian crossings are consistent with the Manual On Uniform Traffic Control Devices[1]

Also Note that school crossing signs should be fluorescent yellow-green in color.

[1] Federal Highway Administration, *Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways*, Washington, D.C., 2009 Edition (plus all appropriate Interim Approvals)

2.2.2 Minimum Vehicle Volume for Treatments

Recognizing the limited availability of resources to implement crossing treatments within the Town of Parker, crossing treatments should generally not be installed at locations where the ADT is lower than 1,500 vehicles per day. Exceptions may be made at school crossing locations or crossings that connect to a Town park where the peak hour vehicle traffic exceeds 10% of the ADT. School crossings are defined as locations where 10 or more student pedestrians are crossing per hour. Park crossings are defined as locations where 20 or more pedestrians total (adults + kids) cross to/from the park. Treatments for roadways with greater than 1,500 vehicles per day should be installed based on the criteria in **Figure 1**, **Table 1**, and the information in **Figure 2** (a or b depending on the speed limit).

2.2.3 Minimum Pedestrian Volume for Treatments at Uncontrolled Crossing Locations

Studies in other communities of crosswalk enhancements at uncontrolled crossing locations have determined there is a clear relationship between driver compliance (yielding) and the pedestrian and/or bicycle crossing volume. Driver compliance typically increases with higher crossing volumes. It is theorized that the primary reason for this relationship is that drivers tend to ignore enhanced crossing treatments over time at locations where they infrequently see pedestrians crossing. Data indicates that below 20 crossing pedestrians per hour, driver compliance decreases significantly. Thus, Parker's base threshold for consideration of an enhanced crossing treatment at an uncontrolled location was set at 20 pedestrians per hour. This threshold is consistent with recent national guidance and policies adopted by other states and cities, as determined through literature research. Pedestrian crossing observations at a number of locations in Parker support the use of this threshold.

With this background, the Town of Parker has adopted consistent pedestrian volume thresholds for considering crossing treatment upgrades:

Town of Parker's Minimum Pedestrian Volume Thresholds are as follows:

- **20 peds per hour* in any one hour, or 10 peds per hour* in any one hour if a Major Trail Crossing**
- **18 peds per hour* in any two hours, or 9 peds per hour* in any two hours if a Major Trail Crossing**
- **15 peds per hour* in any three hours or 7 peds per hour* in any three hours if a Major Trail Crossing**
- **10 school aged pedestrians traveling to/from school in any one hour or 5 school aged pedestrians in any one hour if a Major Trail Crossing**
- **Regional Trail Crossings do not need to meet minimum pedestrian volume thresholds**

* *Young, elderly, and disabled pedestrians count 2x towards volume thresholds*

2.2.4 Pedestrian Median Refuge and Minimum Median Refuge Width

A pedestrian refuge median is a useful tool in increasing the safety and efficiency of a pedestrian crossing, and the presence (or not) of a median refuge will influence the type of pedestrian crossing treatment that can be considered (see **Table 1**).

Definition: A location in the middle of a pedestrian crossing where a pedestrian can take refuge, thereby separating their crossing into two steps, across each direction of approaching traffic. Separating the crossing into two directional crossings greatly increases the number of acceptable gaps for pedestrians to safely cross a roadway.

A pedestrian refuge must include some type of raised median as described below:

- **NO:** A painted center median or a painted turn lane cannot be considered a refuge.
- **SOMETIMES:** A raised median nose at an intersection (next to a left-turn bay for example). This type can only be considered a pedestrian refuge for the adjacent crosswalk if the median is at least 8 feet wide (measured face-of-curb to face-of-curb) AND the left-turn volume is less than 20 vehicles per hour. This low left-turn volume means that during most pedestrian crossings there will not be a vehicle in the left-turn lane and the pedestrian will be "shadowed" by the width of the median and the adjacent turn lane as they cross the street.

- **YES:** A raised median at a mid-block pedestrian crossing can only be considered as a refuge if it is at least 8 feet wide, measured face-of-curb to face-of-curb, and includes curb ramps or a walkway at grade through the median. A median of this width will:
  - allow over two feet on each side for splash protection
  - store a group of pedestrians; and
  - accommodate the storage of a bicycle without it overhanging into the traffic lanes.
- **REGIONAL TRAIL OR MAJOR TRAIL** crossing locations: A 10' median refuge width is desirable to better accommodate bicycles with child trailers, recumbent bicycles, and tandem bicycles.

Pedestrian Refuge, NYC Source: NACTO

2.2.5 Distance to Nearest Marked or Protected Crossing

The Pedestrian Crossing Treatment Flowchart in **Figure 1** includes consideration of spacing criteria for an uncontrolled crossing to the nearest marked or projected crossing. The flowchart requires that a new uncontrolled mid-block crossing be at least 300 feet from the nearest crossing. However, the flowchart allows this spacing criterion to be waived if the proposed crossing serves a multi-use path, or the pedestrian crossing volume exceeds twice the minimum threshold.

As with this entire Pedestrian Crossing Treatment Guidelines (PCTG) document, this criterion is also subject to engineering judgment. In the downtown area for example, where the long axis of typical blocks is between 350 and 450 feet, the engineer may want to consider allowing a minimum spacing of 200 feet, provided that the resultant pedestrian crossing:

- Serves a logical pedestrian crossing where pedestrians are unlikely to divert to another location
- Does not cross any auxiliary lanes (left or right-turn lanes or their transitions) where it is anticipated that vehicles will be changing lanes and may be distracted from observing pedestrians in the crosswalk
- Is not in an intersection influence area where it will create undue restriction to vehicular traffic operations.

2.2.6 Conditions That May Limit the Use of Rectangular Rapid Flash Beacons

Pedestrian actuated rectangular rapid flash beacons (RRFBs) at uncontrolled pedestrian crossings on four lane roadways have the potential to greatly increase motorist yielding to pedestrians at these unsignalized crosswalks (illustrated to the right).

However, in other communities it has been learned that the use of RRFBs may not be appropriate in locations where there is a combination of both high traffic volumes and high pedestrian volumes. In these extreme conditions, there may be an increase in traffic accidents and/or traffic delay that make the use of RRFBs inappropriate. In these cases, the use of conventional pedestrian traffic signals or the HAWK signals (illustrated below) may be more appropriate.

While the decision not to use RRFBs at a pedestrian crossing should be based on engineering judgment, the limit lines in **Figures 2a and 2b** (on Page 27) have been prepared to aid in this determination.

2.2.7 Selecting Between a Pedestrian Traffic Signal, HAWK Beacon, or RRFBs

Pedestrian Traffic Signals may be considered for application at high volume pedestrian crossings based on engineering judgment. The MUTCD contains warranting procedures (Warrant 4) for conventional pedestrian traffic signals based on automobile and vehicle traffic volumes to help determine if a pedestrian signal is appropriate. These signals are typically considered when there are over 90 pedestrians an hour crossing a roadway and the posted speed limit or 85th percentile speed exceeds 35 miles per hour. The MUTCD also includes considerations for installing a traffic signal to facilitate school children crossing a roadway (Warrant 5) where there are at least 20 school children crossing during the peak hour and there is an inadequate number of gaps in automobile traffic during times when the students are crossing the roadway.

Hybrid Beacons (HAWK beacons; illustrated to the right) may also be considered and the MUTCD contains warranting guidelines that utilize automobile traffic, pedestrian traffic, automobile speeds, and pedestrian crossing distance. HAWK beacons may be installed where the crossing volume is as low as 20 pedestrians per hour, depending on the crossing distance, automobile traffic volume, and engineering judgment. HAWK beacons are typically not installed near roadway intersections.

HAWK Signal, Stapleton, CO. Source: Streetsblog Denver

Rectangular Rapid Flashing Beacons (RRFB) has been successful in increasing motorist yielding to pedestrians at unsignalized crossings, typically where there are two travel lanes in each direction as noted in ***Section 2.2.6***. A minimum crossing volume of 15 to 20 pedestrians per hour is typically required, as discussed in *Section 2.2.3*. However, also as noted in *Section 2.2.6*, there may be cases where the combination of high pedestrian and traffic volumes may make application of RRFBs inappropriate.

Figure 2a and Figure 2b illustrate recommendations for the use of RRFBs overlain on the MUTCD HAWK beacon and Pedestrian Traffic Signal warrant guidelines. These recommendations are based on safety and operational evaluations performed over the years at high volume RRFB locations in other communities.

In many cases, either HAWK beacons or RRFBs could be considered for application, and the final decision should be based on engineering judgment. Factors that should be considered include: automobile, bicycle and pedestrian volumes, vehicular speeds, crossing distances, the presence of a median or not, potential impact to corridor signal progression, proximity to intersections (unsignalized and signalized), and vehicle queue formation.

Factors to Consider for Type of Pedestrian Signal

- *Automobile volume*
- *Vehicular speeds*
- *Bicycle and pedestrian volumes*
- *Crossing distance*
- *Presence of a median or not*
- *Potential impact to corridor signal progression*
- *Proximity to a signalized intersection*

2.2.8 Signal Progression and Traffic Operational Considerations

The installation of RRFBs, HAWK beacons, or pedestrian traffic signals can all have a significant impact on the automobile traffic operation in a corridor. When selecting the crossing treatment type and how it will be operated, consider the:

- ✧ Automobile volume
- ✧ Pedestrian crossing volume
- ✧ Spacing to the adjacent signalized intersections
- ✧ Type of pedestrian population (high school students, elementary students, elderly, a mix)

Where practical, HAWK beacons and pedestrian traffic signals should be coordinated with the signal progression in the corridor to minimize the impact of the new traffic signal on corridor traffic flow. However, coordinated signals may be less responsive to pedestrian actuation, and the delay

in pedestrian service may result in some pedestrians crossing against the signal rather than waiting. Not coordinating the pedestrian crossing signals may result in unacceptable increases in automobile congestion and delay.

RRFBs used at high volume pedestrian crossings in congested roadway corridors can also have a significant impact on automobile congestion and compromise effective signal progression. The RRFB limit line in **Figure 2** can help minimize this problem. Once again, engineering judgment will need to be applied to reach the best compromise for all involved.

2.2.9 Differential Vehicle Queue Lengths and Pedestrian Safety

A pedestrian crossing of a roadway with two or more lanes in a single direction has the potential for "multiple threat" type accidents.

> *Definition: A multiple threat accident is when one lane of traffic stops for a pedestrian and obscures the view of the crossing pedestrian to a motorist in the adjacent travel lane.*

The result is that a pedestrian can step in front of a vehicle that is approaching too fast to stop. This condition is exacerbated when there are vehicle queues that back across the pedestrian crossing. If the queue in one lane backs into the crossing and is much longer than the queue in the adjacent lane, a motorist would commonly assume that the stopped traffic in one lane is the result of the queuing (which may usually be the case). Now if a vehicle in one lane stops for a pedestrian, instead of the queue, there is an even greater chance for a multiple threat accident.

> Therefore, it is important for the engineer to be aware of the formation of queues to and across the pedestrian crossing from a downstream intersection. It is even more important for the engineer to be aware of routine occurrence of one queue longer than the other across the pedestrian crossing. The Operational Observations section of the Crossing Location Evaluation Worksheet has a place to note this occurrence.

When deciding to install an uncontrolled crossing treatment (or not), the engineer should consider if differential vehicle queue lengths is an issue. If so, can the queue be mitigated (say by signal timing adjustments at the downstream intersection). If differential queues cannot be minimized, it may be reason to not install an unprotected crossing treatment (such as Crossing Types A, B, or C).

2.2.10 Unmarked Pedestrian Crossing Facilitation

Town of Parker staff is aware of the fact that there are locations where pedestrians regularly cross arterial roadways, yet the crossing does not serve a multi-use path or a school, and the pedestrian volume is below the minimum thresholds in **Figure 1** for installing the types of marked and signed treatments detailed in **Table 1**. These locations typically occur on four-lane roadways and are often identified by "social trails" to and across the roadway.

In some cases, subject to engineering judgment, it may be appropriate to install treatments that facilitate pedestrian or bicycle crossings but stop short of the signed and marked crossing treatments defined in **Table 1**. This type of treatment or pedestrian facilitation may include curb ramps and/or a raised median refuge, but no effort is made to attract pedestrians to this crossing.

The treatments simply acknowledge the low volume, but regular pedestrian crossing that occurs at a location. Installing these treatments does not endorse the use of the crossing nor attempt to attract new users to the crossing. The treatment simply acknowledges that the crossing is occurring, will not likely go away, and some level of facilitation can make it safer for the pedestrians or bicyclists that are using the crossing already.

The only other option would be to ignore the crossing, but staff does not believe this is an appropriate response. These treatments will only be considered if the location is more than 300 feet from the nearest signed and marked pedestrian crossing (whether it is controlled or uncontrolled), and it is believed that there is little potential to redirect pedestrians to a more defined crossing location.

2.2.11 Pedestrian Crossing Treatments on Higher Speed / Rural Roadways

Most of the roadways in the Town of Parker have speed limits of 40 mph or less, but there are some major arterial roadways with 45 mph limits or higher. Locations on the perimeter of the Town that are transitioning from Town of Parker to Douglas County jurisdiction may also have speed limits of 45 miles per hour or higher. In this context there may be situations where a pedestrian crossing is needed but higher speeds warrant special consideration. In Parker, it is the recommendation that uncontrolled pedestrian crossings should not be installed on roadways with measured 85th percentile speeds of 45 miles per hour or higher.

Crossing Location Evaluation Worksheet

STEP 1 - LOCATION DESCRIPTION

Major Street: _____ Crossing Location: _____

Is this a multi-use path crossing? ☐ Yes ☐ No Posted / 85th % Speed: ___ / ___ mph

Existing Traffic Control: ☐ Stop Sign ☐ Traffic Signal ☐ Uncontrolled

Existing Crossing Treatments (if any): _____

_____

Nearby Pedestrian Generators (School, transit stop, commercial, etc.): _____

_____

STEP 2 - PHYSICAL DATA

Roadway Configuration:
☐ 2-Lane
☐ 3-Lane w/Striped Median
☐ 3 Lane w/Raised Median
☐ 4 Lane
☐ 5 Lane w/Striped Median
☐ 5 Lane w/Raised Median
☐ 6 Lane
☐ Other: _____

Crossing Distance By Direction: _____ ft total _____ ft to median *(if applicable + note direction)* _____ ft to median *(if applicable + note direction)*

Nearest Marked or Protected Pedestrian Crossing: _____ Distance to: _____ft

(*For uncontrolled location only*) Stopping Sight Distance (SSD) = _____ ft _____ ft.

Is SSD ≥ 8x Speed Limit? ☐ Yes ☐ No If No, are improvements to SSD feasible? ☐ Yes ☐ No

STEP 3a - TRAFFIC DATA

Pedestrian Crossing Volumes / Bicycle Crossing Volumes:

	AM	**Mid-Day**	**PM**	**Other**
Time:	to	to	to	to
Date/Day of Week:	/	/	/	/
Major Street Vehicular Volume (**Hourly**):				
# of Transit Boardings (if applicable)				
# of Young Peds / Bicyclists	/	/	/	/
# of Elderly Peds				
# of Disabled Peds				
# of Non-Y/E/D Peds / Bicyclists	/	/	/	/
TOTAL PEDS (Actual) (Include All Bicyclists in Total Sum)				
TOTAL PEDS (**Adjusted** for 2x Y/E/D				

Major Street Vehicular Volume (**Daily**): ADT = _____ veh/day

STEP 3b - OPERATIONAL OBSERVATIONS

Nearest Intersection (Direction #1): Cross Street Name: _____

Located _____ ft to the ☐N ☐S ☐E ☐W of crossing location

Signalized? ☐Y ☐N Distance from Crossing _____ ft

	AM	Mid-Day	PM	Other
How many times per hour did the downstream vehicle queue back up into pedestrian crossing?				
If multiple lanes per direction, are queue lengths approximately equal?	Y N	Y N	Y N	Y N
If NO (above),which lane is longer (inside, outside, middle) and by how much (feet)?				

Nearest Intersection (Direction #2): Cross Street Name: _____

Located _____ ft to the ☐N ☐S ☐E ☐W of crossing location

Signalized? ☐Y ☐N Distance from Crossing _____ ft

	AM	Mid-Day	PM	Other
How many times per hour did the downstream vehicle queue back up into pedestrian crossing?				
If multiple lanes per direction, are queue lengths approximately equal?	Y N	Y N	Y N	Y N
If NO (above),which lane is longer (inside, outside, middle) and by how much (feet)?				

STEP 4 - APPLY DATA TO FIGURE 1 and TABLE 1

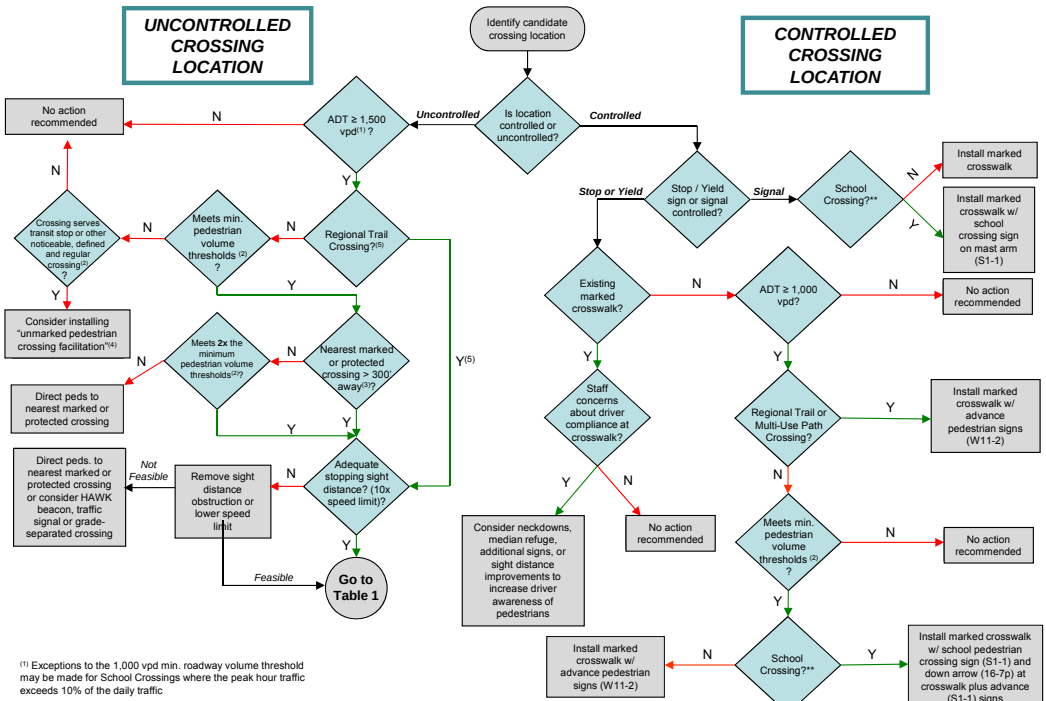
Recommended Treatment(s): _____

_____

_____

Town of Parker Pedestrian Crossing Guidelines

Figure 1 – Pedestrian Crossing Treatment Flowchart



(1) Exceptions to the 1,000 vpd min. roadway volume threshold may be made for School Crossings where the peak hour traffic exceeds 10% of the daily traffic

(2) **Minimum Pedestrian Volume Thresholds*****:

- 20 peds per hour* in any one hour, or
- 18 peds per hour* in any two hours, or
- 15 peds per hour* in any three hours

* Young, elderly, and disabled pedestrians count 2x towards volume thresholds

** School Crossing defined as a crossing location where ten or more student pedestrians per hour are crossing.

*** Major Trail Crossings need only meet ½ of these minimum pedestrian volume thresholds

(3) Distance to nearest marked or protected crossing may be reduced to 200' in urban conditions, subject to engineering judgment, where 1) the crosswalk does cross any auxiliary lanes, and 2) crossing treatments and crossing activity would not constitute undue restriction to vehicular traffic operations.

(4) An "unmarked pedestrian crossing facilitation" is any treatment that improves a pedestrian's ability to cross a roadway, short of the marked, signed and enhanced crossings detailed in Table 1. Installation of this type of pedestrian facilitation is subject to engineering judgment and may include curb ramps and/or a raised median refuge. However, no effort is made to attract pedestrians or recommend that pedestrians cross at this location. The treatments simply provide an improvement for a low volume pedestrian crossing where pedestrians are already crossing and will like continue to cross.

(5) A regional trail crossing of a roadway does not need to meet the minimum pedestrian crossing thresholds. A multi-use path crossing (but not a regional trail crossing), needs to only meet one-half of the minimum pedestrian crossing volume thresholds.

Table 1 - Criteria for Crossing Treatments at Uncontrolled Locations

Roadway Configuration	# of lanes crossed to reach a refuge[1]	# of multiple threat lanes[2] per crossing	Roadway ADT and Posted Speed (or 85% Speed if available)															
			1,500-9,000 vpd				9,000-12,000 vpd				12,000-15,000 vpd				> 15,000 vpd			
			≤ 30 mph	35 mph	40 mph	≥ 45 mph	≤ 30 mph	35 mph	40 mph	≥ 45 mph	≤ 30 mph	35 mph	40 mph	≥ 45 mph	≤ 30 mph	35 mph	40 mph	≥ 45 mph
2 Lanes (one way street)	2	1	A	B	C	E	A	B	C	E	B	B	C	E	B	C	C	E
2 Lanes (two way street with no median)	2	0	A	B	C	E	A	B	C	E	B	B	C	E	B	C	C	E
3 Lanes w/Raised Median	1 or 2	0 or 1	A	B	D	E	A	C	D	E	B	D	D	E	C	D	D	E
3 Lanes w//Striped Median	3	0 or 1	C	C	D	E	C	C	D	E	C	C	D	E	C	D	D	E
4 Lanes (two way street with no median)	4	2	A	D	D	E	B	D	D	E	B	D	D	E	D	D	D	E
4 Lanes w/Raised Median	2 or 3	2	A	B	D	E	B	D	D	E	B	D	D	E	C	D	D	E
4 Lanes w/Striped Median	5	2	D	D	D	E	D	D	D	E	D	D	D	E	D	D	D	E
>4 Through Lanes (two way street with or without median)	3 to 6	4	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F

Notes:

1. Painted medians can never be considered a refuge for a crossing pedestrian. Similarly, a 4 foot wide raised median next to a left turn lane can only be considered a refuge for pedestrians if the left turning volume is less than 20 vehicles per hour (meaning that in most cases the left turn lane is not occupied while the pedestrian is crossing).
2. A multiple threat lane is defined as a through lane where it is possible for a pedestrian to step out from in front of a stopped vehicle in the adjacent travel lane (either through or turn lane).

Treatment Descriptions: See Also Section 2.2.1 for a detailed list of crossing treatments by category

A ***Install marked crosswalk with enhanced road-side signs***

Specific Guidance : Install marked crosswalk with "State Law - Yield - to Pedestrians In Crosswalk" signs with diagonal down arrows (W16-7P) mounted on the side of the roadway; use standard (W11-2) advance pedestrian warning signs; use S1-1 signs for School Crossing locations.

B ***Install marked crosswalk with enhanced road-side and in-roadway (bollard mounted) signs***

Specific Guidance : Install marked crosswalk with "State Law - Yield - to Pedestrians In Crosswalk" signs with diagonal down arrows (W16-7P) mounted on the side of the roadway; add in-roadway bollards (R1-6); use standard (W11-2) advance pedestrian warning signs; use S1-1 signs for School Crossing locations.

C ***Install marked crosswalk with enhanced signs and geometric improvements to increase pedestrian visibility and reduce exposure***

Specific Guidance : For 2 or 3-lane roadways, install marked crosswalk with "State Law - Yield - to Pedestrians in Crosswalk" signs with diagonal down arrows (W16-7P) mounted on the side of the roadway; add in-roadway bollards (R1-6) or median mounted signs; use standard (W11-2) advance pedestrian warning signs; use S1-1 signs for School Crossing locations. Add neckdowns or median refuge islands to shorten the pedestrian crossing distance and increase pedestrian visibility to motorists.

D ***Install marked crosswalk with enhanced signs, pedestrian activated RRFBs, and geometric improvements to increase pedestrian visibility and reduce exposure***

Specific Guidance : Install raised median refuge island (unless it is a one-way street or one already exists) to shorten the pedestrian crossing distance and increase pedestrian visibility to motorists. [If a median refuge can not be constructed on a two-way street, Go To Treatment F]. *Install marked crosswalk with "State Law - Yield - to Pedestrians In Crosswalk" signs WITH pedestrian activated RRFBs and diagonal down arrows (W16-7P) mounted on the side of the roadway and on median mounted signs; use standard (W11-2) advance pedestrian warning signs; use S1-1 signs for School Crossing locations. Consider adding neckdowns at the crossing if on-street parking exists on the roadway and storm drain considerations will allow. [Note: If pedestrian volume falls above the RRFB limit line on Figure 2, consider Hawk beacon, pedestrian traffic signal, or grade-separated crossing.]*

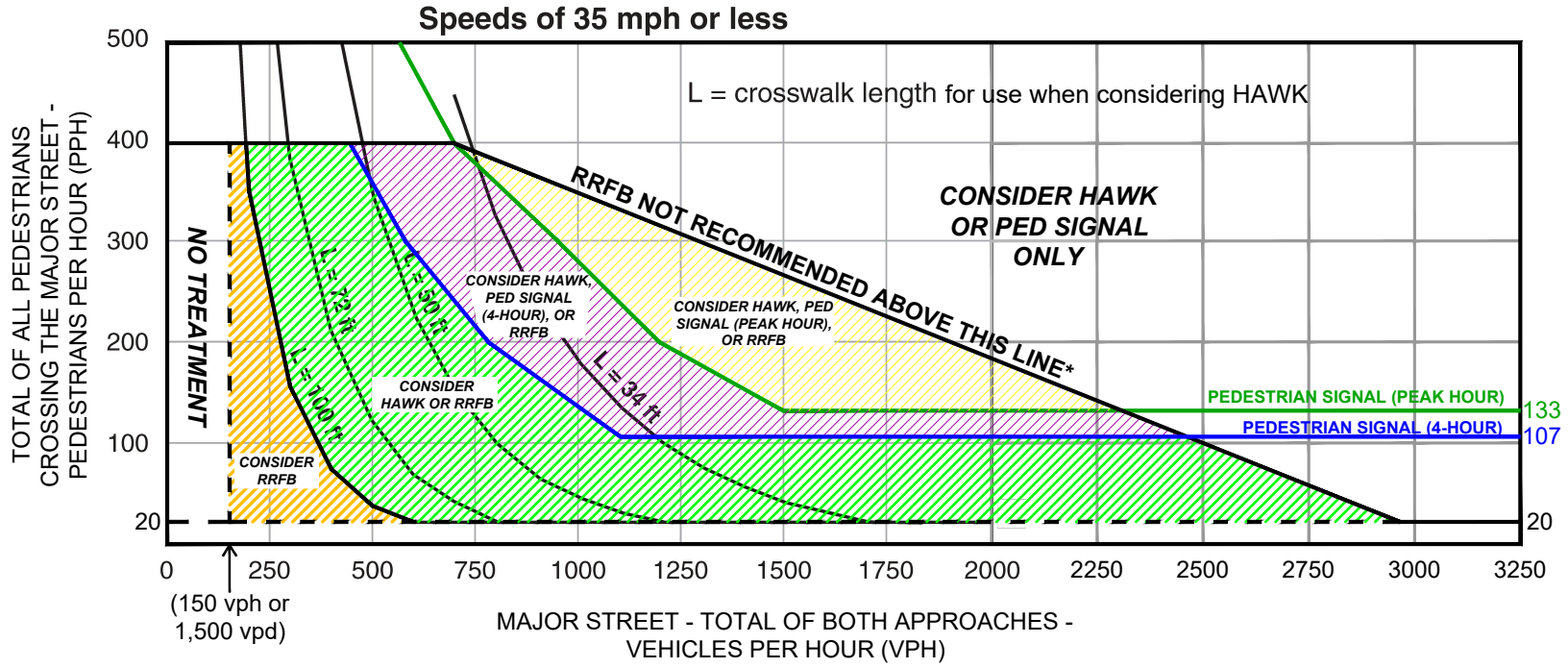
E ***Do not install marked crosswalk at uncontrolled crossing. Determine if the speed limit can be effectively reduced to 40 or 45 mph AND a raised refuge median can be installed. If so, utilize Treatment D criteria above. If this is not possible, or if pedestrian volume falls above the RRFB limit line on Figure 2, consider HAWK beacon, pedestrian traffic signal, or grade-separated crossing.***

Specific Guidance : Consider HAWK beacon, pedestrian traffic signal or grade-separated crossing; application of these treatments should consider corridor signal progression, existing grades, physical constraints, and other engineering factors.

F ***Do not install marked crosswalk at uncontrolled crossing with 3 or more THROUGH lanes per direction or where the speed limit is > 45 mph and/or there is not a median refuge on a 5-lane crossing. Consider HAWK beacon, pedestrian traffic signal, or grade-separated crossing.***

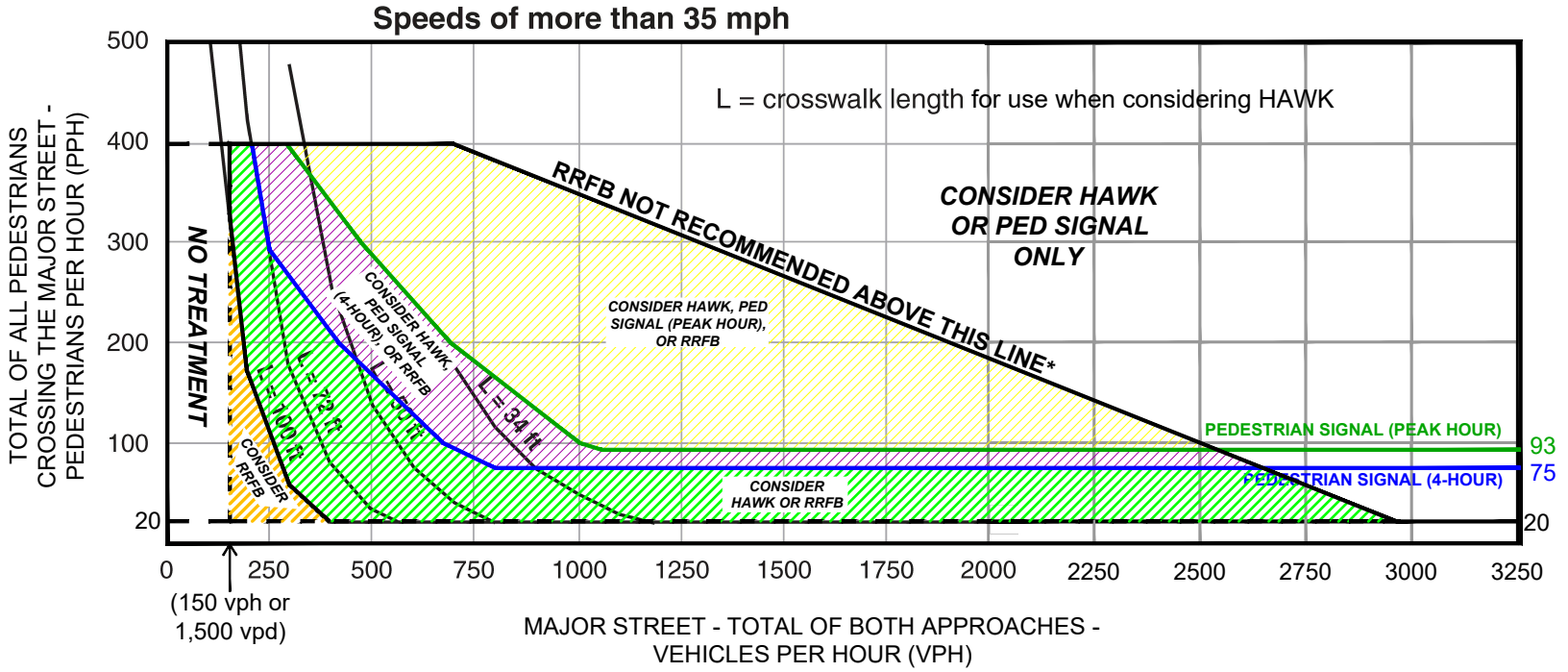
Specific Guidance : Consider HAWK beacon, pedestrian traffic signal or grade-separated crossing; application of these treatments should consider corridor signal progression, existing grades, physical constraints, and other engineering factors.

Figure 2a. Town of Parker Guidelines for the Installation of Pedestrian Hybrid (HAWK) Beacons, Pedestrian Signals, or Rectangular Rapid Flash Beacon (RRFB) Signs on Low-Speed Roadways



* RECOMMENDATION BASED ON SAFETY EVALUATIONS AT EXISTING RRFB SITES IN OTHER COMMUNITIES AND OBSERVED IMPACTS TO VEHICULAR TRAFFIC OPERATIONS

Figure 2b. Town of Parker Guidelines for the Installation of Pedestrian Hybrid (HAWK) Beacons, Pedestrian Signals, or Rectangular Rapid Flash Beacon (RRFB) Signs on High-Speed Roadways



* RECOMMENDATION BASED ON SAFETY EVALUATIONS AT EXISTING RRFB SITES IN OTHER COMMUNITIES AND OBSERVED IMPACTS TO VEHICULAR TRAFFIC OPERATIONS

3.0 SUPPLEMENTAL POLICIES

This section contains discussion of supplemental policies to guide the installation of crossing treatments in the Town of Parker.

3.1 Crosswalk Lighting

Research provided by FHWA recommends that adequate nighttime lighting should be provided at marked crosswalks to enhance the safety of pedestrians crossing at night. Crosswalk lighting will be provided at all crosswalks utilizing traffic signals, HAWK beacons and RRFBs. Crosswalk lighting will be considered at all other marked crosswalks, unless engineering judgement suggests crosswalk lighting is not needed. The placement and level of crosswalk lighting will be determined by engineering judgement at all crossing treatments.

3.2 Avoiding Overuse of Crossing Treatments

FHWA recommends that overuse of crosswalk markings should be avoided to maximize their effectiveness. Crosswalks and sign treatments (such as the "State Law – Yield - To Pedestrians In Crosswalk" and rectangular rapid flash beacon signs) should be used discriminately within the Town of Parker so that the effectiveness of these treatments is not deteriorated by overuse. Although these treatments may be effective at individual locations, overuse of these treatments town-wide may lead to a decrease in their value as drivers become desensitized to them. Minimum pedestrian and vehicular volume criteria have been established in this document with this in mind.

3.3 Regional Trail and Major Trail Crossings

Crossing locations where a Regional Trail crosses a roadway should include a marked and signed crosswalk at a minimum, regardless of pedestrian crossing volumes, as long as the minimum vehicular volume criteria in ***Section 2.2.2*** is satisfied. Crossing locations where a Major Trail crosses a roadway should include a marked and signed crosswalk at a minimum, so long as ½ of the minimum pedestrian crossing volumes occur. This policy is to promote the use of these trails, recognizing that roadway crossings often create barriers for pedestrians and bicyclists and may contribute to a lack of use.

3.4 Textured and Colored Pavement Treatments

Textured, brick, and/or colored pavement treatments should typically not be used in lieu of a marked crosswalk. When such treatments are used they are often aesthetic and not considered traffic control devices. Retroreflective pavement markings are required at any location serving as

a marked crosswalk. All crosswalk markings should be consistent with the MUTCD and subsequent FHWA interpretations.

3.5 Accessible Crosswalks

It is the goal of the Town of Parker that all crosswalks installed will comply with the Americans with Disabilities Act (ADA) to maximize mobility for all users.

3.6 Raised Crossings at Right-Turn Bypass Islands

Raised pedestrian crossings at right-turn bypass islands meet the goals of these guidelines by improving visibility for pedestrians, improving accessibility, and helping to mitigate the speed of right-turning vehicle traffic. Town staff will review all new or proposed right-turn bypass movements to determine if a raised crossing should be installed.

3.7 Removal of Treatments

Conditions that contribute to the need for a crosswalk or crossing treatments may change over time, and an existing crosswalk or treatment may no longer be needed. When a roadway surface is to be impacted by reconstruction or resurfacing, a review of any unprotected crosswalks should be performed to determine their use and need. The need for an existing unprotected crosswalk should be reevaluated based on the criteria established in these guidelines for a new installation. If the criteria is not met, the crosswalk should not be replaced when the construction or resurfacing is done, and any other supplemental treatments should be removed.

In such cases, notices will be visibly posted at the crossing location to inform the public of the intent to remove them for the 30 days prior to planned removal. Town contact information will be provided on these notices. Should concerns arise from the public as a result of the notification signs at the crosswalk, staff may then begin a more substantial public process with concerned parties.

4.0 NEXT STEPS

The Town of Parker is committed to providing safe and effective pedestrian crossing treatments and will continue to evaluate the criteria and treatments being used to implement safe crossings throughout the Town. Specifically, Town staff will carry out the following "Next Steps" to ensure that the pedestrian crossing program meets the goals defined in this document:

- **Strive to become compliant** with the standards as Federal signing standards continue to become more progressive with respect to enhanced pedestrian signing.
- **Stay current** with the latest pedestrian crossing research being performed at the federal, state, and municipal level. As more communities strive to increase the viability of pedestrian mode use, additional studies and new findings are being made available. The Town of Parker will look to utilize this research to improve its own use of pedestrian crossing treatments.
- **Receive feedback** from Town of Parker citizens with respect to various crossing treatments and the criteria established in this document to implement these treatments.
- **Work with the Town Council to implement policies**, including these guidelines and any future amendments to this document, to promote the use of pedestrian facilities and the safety of people using them.
- **Develop an implementation plan** to upgrade existing, qualifying crossing locations with current treatments as prescribed in this document.
- **Collect data at crossing locations** where treatments have been requested and apply the criteria in this document to create a list of projects for implementation. Staff will then prioritize the list of projects and perform crossing treatment installations based on funding availability.

APPENDIX

A1.0 Background Research

Roadway crossings can be barriers to pedestrian travel. The decision to travel as a pedestrian is in part dependent upon the actual and perceived ability to safely and efficiently cross roadways along the pedestrian's intended travel route. The Town of Parker wants to encourage pedestrian travel by providing safe and efficient roadway crossing opportunities. There are a variety of methods available to help facilitate pedestrian crossings on busy roadways, including marked crosswalks, enhanced crosswalks, and traffic signals. Crosswalk enhancements may include alternative signing, pedestrian-activated warning devices that draw attention to the pedestrian and alert motorists to their presence at a crosswalk, and physical enhancements intended to increase pedestrian visibility and/or reduce exposure such as neckdowns, raised crosswalks, and median refuges.

Signalized traffic control measures to reduce pedestrian-vehicle conflicts typically increase delays for both pedestrian and vehicular traffic. This creates a conflict between providing safety and generating operational efficiency for all modes of travel. These guidelines are tailored to meet the needs of the Town of Parker for optimizing safety and minimizing delay. These Pedestrian Crossing Treatment Guidelines will provide a framework for identifying locations where pedestrian crossing treatments are appropriate and should be implemented by the Town.

Application of these guidelines should accomplish the following project goals:

- Promote pedestrian travel by providing safe, efficient, and effective roadway crossing opportunities
- Reflect the needs of our diverse range of pedestrian age and ability groups
- Provide for a balance between the demand for treatments and resources to implement them
- Achieve a reasonable balance of impacts to all modes of travel

A1.1 Standards and Policies

The Manual on Uniform Traffic Control Devices (MUTCD) is the national standard for establishing traffic control on roadways throughout the United States and has been adopted by the Town of Parker as the town standard. Although the MUTCD does provide pedestrian crossing warrant criteria for the installation of pedestrian traffic signals, these warrants have been controversial in that signals are typically very hard to justify. As part of the development of the original pedestrian crossing guidelines, the City of Boulder conducted research on the state of the practice. According to the Federal Highway Administration's report on pedestrian signalization alternatives (July 1985), "The existing [1978] MUTCD Minimum Pedestrian Volume Warrant is highly impractical for most real-world conditions and is largely ignored by the traffic engineering

community." The MUTCD also offers little guidance with respect to the installation of marked crosswalks, stating that "crosswalks should be marked at all intersections where there is a substantial conflict between vehicular and pedestrian movements" and that an "engineering study should be performed before they are installed at (uncontrolled) locations."

In response to the controversial MUTCD pedestrian volume and school crossing traffic signal warrants, and lack of guidance by the MUTCD with respect to the installation of marked crosswalks, some agencies have developed their own unique policies and procedures. Generally, these documents supplement the basic provisions of the MUTCD with more detailed criteria based on their own research and field studies.

In 1997, the Institute of Transportation Engineers (ITE) adopted the "Design and Safety of Pedestrian Facilities"[2] as a Recommended Practice. This document built on MUTCD policies and guidelines and provided thresholds for the installation of marked crosswalks at uncontrolled locations based on those developed by Steven A Smith and Richard L. Knoblauch[3]. These guidelines provide recommended thresholds for marked crosswalks based on minimum hourly pedestrian volume, average daily traffic volumes, roadway configuration (laneage and presence of median refuges).

In 2002 the FHWA published a report titled, "Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines"[4]. Based on a five-year safety analysis at 1,000 marked crosswalks and 1,000 unmarked crossing locations, this report provides recommendations for installing marked crosswalks and enhancements based on roadway volume, speed, and laneage. The report suggests that on two-lane roadways, marked crosswalks alone at uncontrolled locations have no effect on pedestrian accident rates. The report also suggests that, on multi-lane roadways with a traffic volume greater than 12,000 vehicles per day, marked crosswalks alone (without any other treatments) are associated with higher vehicle-pedestrian accidents rates compared to unmarked locations.

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[2] Institute of Traffic Engineers. *Design and Safety of Pedestrian Facilities*. Washington, D.C. March 1998

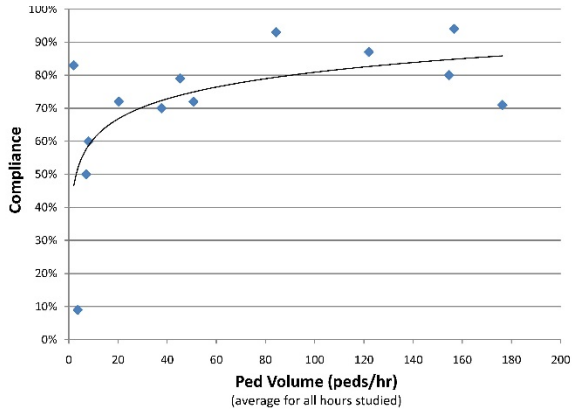
[3] Smith, Steven A., Knoblauch, Richard L. *Guidelines for the Installation of Crosswalk Markings.* Transportation Research Record 1141, Transportation Research Board, National Research Council, Washington, D.C., 1987

[4] Zegeer, C.V. Stewart, R.J. Huang, H.H. Lagerwey, P.A. *Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations*. FHWA RD-01-075. Federal Highway Administration, Washington D.C. February 2002

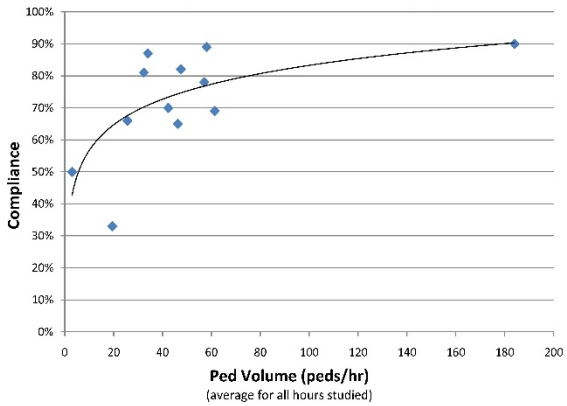
The City of Boulder has evaluated crosswalk enhancements at uncontrolled crossing locations over the years and has determined that there is a clear relationship between driver compliance (yielding) and the pedestrian and/or bicycle crossing volume. Data collected at crosswalks in Boulder with rectangular rapid flash beacon signs (RRFB) or State Law-Yield signs installed shows that driver compliance typically increases with higher crossing volumes. It is theorized that the primary reason for this relationship is that drivers tend to ignore enhanced crossing treatments over time at locations where they infrequently see pedestrians crossing. The following graphs illustrate this relationship:

Ped Volume vs. Compliance (City of Boulder)

Study of 13 Locations with Rapid Flash Beacon Signs



Study of 12 Locations with State Law Yield Signing



The above data also illustrates that, below roughly 20 pedestrians per hour, driver compliance decreases significantly. Thus, Boulder's base threshold for consideration of an enhanced crossing treatment at an uncontrolled location was set at 20 pedestrians per hour. This threshold is consistent with recent national guidance and policies adopted by other states and cities, as determined through literature research.

Several years ago, the Virginia Department of Transportation adopted a set of guidelines[5] for the installation of marked crosswalks that built upon the FHWA recommendations and provided more detailed guidance with respect to what types of crosswalk enhancements may be appropriate for a given set of roadway conditions.

[5] Dougald, Lance E. *Development of Guidelines for the Installation of Marked Crosswalks.* Virginia Transportation Research Council, Charlottesville, Virginia. December 2004.

These guidelines provided five basic levels of devices given the conditions present.

Level 1: standard crosswalk, raised crossing, rumble strips

Level 2: high-visibility crosswalks (retroreflective white markings and textured pavements)

Level 3: refuge islands, split-pedestrian crossover, neckdowns

Level 4: overhead signs and flashing beacons, in-roadway warning lights

Level 5: pedestrian-actuated traffic signals, grade-separated crossings

The Virginia guidelines state a minimum requirement of 20 pedestrians per hour (15 elderly and/or children) or 60 in four hours crossing at the location in question. The City of San Jose, CA[6] has adopted guidelines that require at least 15 pedestrians crossing the street during the highest one-hour period or 25 pedestrians crossing during the highest consecutive two-hour period. This is in comparison to the previously adopted City of Boulder thresholds of 100 pedestrians per hour or 50 pedestrians per hour during the peak four hours. It is believed that this downward trend in pedestrian volume necessary to warrant treatments is both a result of increased efforts by agencies to accommodate pedestrians and provide safer and more efficient pedestrian facilities.

A1.2 Pedestrian Crossing Enhancements

A wide range of crossing enhancements (treatments used to increase the effectiveness of marked crosswalks) are being used in other communities in the United States and elsewhere which have been considered for use locally. The most comprehensive resource for information relative to these devices, including pros and cons, costs, and effectiveness, is the Alternative Treatments for At-Grade Pedestrian Crossings[7]. Enhancements being used elsewhere include:

- Automated detection
- Curb extensions
- In-pavement lighting
- Flags
- Flashing beacons
- In-roadway signs
- Lane reductions
- Rumble strips
- Markings and legends
- Overhead signs
- Pedestrian railings
- Raised markers (with LEDs)
- Refuge islands
- Street lighting
- Raised crossings
- Pavement treatments

[6] City of San Jose, California, Department of Transportation. *Guidelines for the Installation and Removal of Marked Crosswalks.* April 2005.

[7] Lalani, Nazir and the ITE Pedestrian and Bicycle Task Force. *Alternative Treatments for At-Grade Pedestrian Crossings.* Institute of Transportation Engineers. 2001.

Many of these treatments are being used and/or have been tested as “demonstration” devices in the City of Boulder, with varying degrees of success. Devices used in the City of Boulder have included most of the physical devices shown above, in addition to demonstration devices such as in-pavement lighting, rumble strips, flashing signs, in-roadway signs, and alternative signs and markings (such as the “State Law Yield-to-Pedestrians” signs and advance yield markings).

In 2000, the City of Boulder began demonstrating two new enhanced pedestrian crossing treatments. The purpose of these treatments was to draw attention to high volume pedestrian crossing locations and to encourage vehicles to have better compliance with their legal requirement to yield to pedestrians in these locations.

The first demonstration was a new, multi-colored sign which stated “State Law - YIELD to Pedestrians in Crosswalk." The other demonstration was pedestrian actuated flashing lights imbedded in a standard pedestrian warning sign, mounted at the side of the road and on medians in the center of the road. These lights flash when a pedestrian pushes a button. These early devices evolved into what is now known as Rectangular Rapid Flash Beacons (RRFBs) that are used throughout the country currently.

Since the development of the Boulder pedestrian crossing guide, a number of other documents addressing pedestrian mobility and safety have been developed and published by ITE, AASHTO, NACTO, and FHWA.

While many devices have been tested in a number of communities, Parker’s Pedestrian Crossing Treatment Guidelines have been developed to blend the most appropriate current information and devices with the clearest benefit for application in Parker.

MEMORANDUM

TO: Mayor and Town Council

FROM: Chris Hudson, Public Works Manager

DATE: September 23, 2019

SUBJECT: Safety Sensitive Zones

ISSUE:

The Town currently has a safety sensitive zone in place for the downtown area. Town staff would like to discuss potential amendment to this area.

FISCAL/BUDGET IMPACT:

The Engineering/Public Works Department has funding for the additional ground signage needed for the proposed changes.

BACKGROUND:

Town Council established the initial safety sensitive zone on Mainstreet between the Dransfeldt Road and Pine Drive intersections in 1997. Based on meeting notes from 1997 and Town Code, Town Council established the safety sensitive zone (7.01.080) to place special emphasis on areas such as the downtown area that have high amounts of pedestrian traffic. The fines associated with traffic citations in these areas would be doubled to emphasis the importance of speed limits and pedestrian safety. This original area has been amended several times with the most recent amending resolution occurring in 2012 via Resolution 12-009. Since the 2012 resolution was adopted, several roadway network changes have occurred that prompted staff to evaluate the expansion of the downtown safety sensitive zone. The first potential expansion is for Pikes Peak Court/Avenue, which was extended in 2014 to Pine Drive. The other proposed expansion is for PACE Center Drive north of Mainstreet and adjacent to Discovery Park. A map showing the existing safety sensitive zones and the proposed expansion is attached for reference.

RECOMMENDATION:

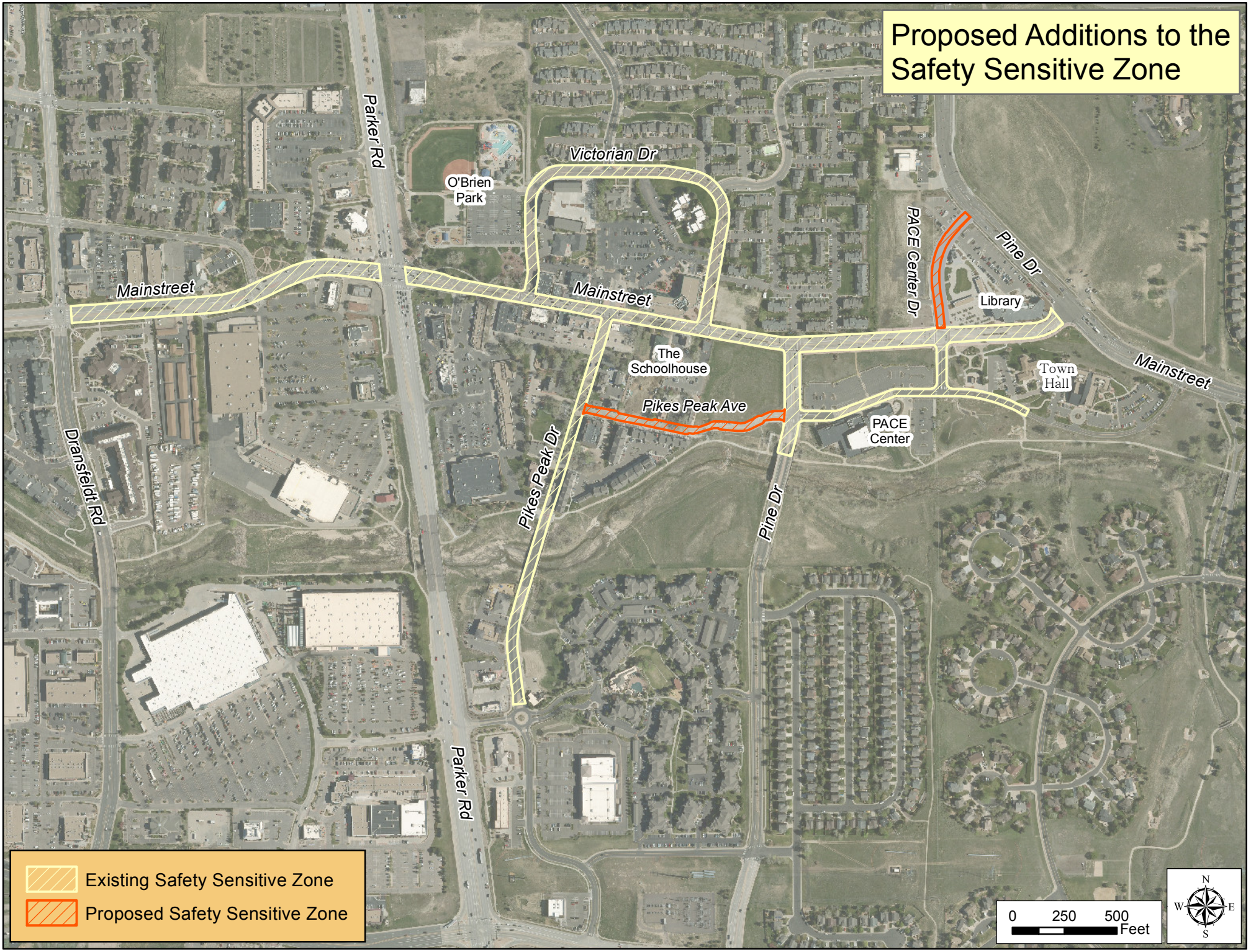
If the additional areas are acceptable, Town staff will move forward with a resolution at a future Town Council meeting in 2019 to include these areas.

REQUESTED DIRECTION:

Provide direction regarding moving forward with a resolution to amend the downtown area safety sensitive zone.

ATTACHMENT:

1. Proposed_Safety_Sensitive_Zone_Additions_2019


Proposed Additions to the Safety Sensitive Zone
Parker Rd
Victorian Dr
O'Brien Park
Mainstreet
Mainstreet
PACE Center Dr
Pine Dr
Library
Mainstreet
The Schoolhouse
Town Hall
Pikes Peak Ave
PACE Center
Dransfeldt Rd
Pikes Peak Dr
Pine Dr
Parker Rd
Existing Safety Sensitive Zone
Proposed Safety Sensitive Zone
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MEMORANDUM

TO:	Mayor and Members of Town Council
FROM:	Mary Munekata, Associate Planner Stacey Nerger, Associate Planner Dennis Trapp, Projects Administrator John Fussa, Community Development Director
DATE:	September 23, 2019
SUBJECT:	Parks Dedication Standards Update - Recommendations Report

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ISSUE:

The Community Development and Parks and Recreation Departments coordinate the planning and design of parks with new residential development. The Town's parks standards in section **13.07.140 – Dedications for parks, trails, open space and schools** of the Land Development Ordinance (LDO) govern the creation of parklands for new residential development. This includes the amount of required parks and open space dedication and the conveyance of the dedicated land. The current standards were established in 2001 and last updated in 2005.

The amount of land for parks and open space is currently addressed at time of annexation. The planning and design of parks including amenities is negotiated at the time of sketch/preliminary plan or site plan in the case of multi-family residential use. In this process, staff has identified issues with park and open space design and inconsistent park quality outcomes.

Staff has subsequently reviewed the Town's park and open space standards and determined they lack important requirements to address the issue cited above. There is a need to update them in order for Parker to continue providing high quality parks and open space with private residential development and keep current with best practices for parks planning and design.

FISCAL/BUDGET IMPACT:

None

BACKGROUND:

Parker is currently preparing a comprehensive update of zoning through the Land Development Ordinance (LDO) Modernization project. As part of this project, the Town is updating its parks dedication standards to better align with the community's vision and values in the 2018 *Parks,*

Recreation, and Open Space Master Plan (Parks Master Plan). The project will also address amenities/improvements, parks needs and current best practices. These LDO standards support the Parks Master Plan and the Town Strategic Plan including the goal of *Supporting an Active Community* so they must remain current and promote high quality outcomes.

The Community Development and Parks and Recreation Departments have collaborated in this effort and retained MIG as a consultant to assist with technical expertise. They have provided analysis and recommendations of the existing parks dedication standards that will be presented at Study Session. Subject to Town Council direction, the goal is to update the parks dedication standards in Section 13.07.140 of the Municipal Code through the LDO Modernization project.

With the evolution of the parks and recreation industry in recent years, the current Town parks dedication standards should be updated to:

1. Create a stronger baseline for review and negotiations
2. Provide clearer expectations for high quality outcomes
3. Allow for reasonable flexibility and creativity

The proposed update to the parks dedication standards will also support and implement the new Parks Master Plan goals and the Parker 2035 Master Plan.

The attached report includes four (4) components:

1. An assessment of existing conditions
2. Benchmark comparison to peers
3. Adequacy assessment of existing parks using the Parks Master Plan
4. Recommendations for updates to the parks dedication standards

RECOMMENDATION:

Staff recommends Town Council consider the attached study and proposed recommendations contained therein.

REQUESTED DIRECTION:

Staff seeks Town Council direction regarding the attached report as follows:

1. For staff to move forward with the report recommendations and have the Town's consultant for the LDO Modernization project, Clarion Associates, prepare updated parks standards

2. To prepare a resolution accepting or endorsing the recommendations of the report and supporting its implementation with future residential development

ATTACHMENT:

1. Parks Standards Update - Recommendations Report

Park Dedication Standards Update
Recommendations Report

Prepared for Town of Parker, Colorado

by MIG, Inc. | June 2019

Contents

Introduction

In tandem with the Parker Land Development Ordinance (LDO) Modernization project, Parker is updating its Park and Open Space - dedication standards to better align with the community's vision and values in the *2018 Parks, Recreation, and Open Space Master Plan* (PROS Master Plan), park needs, and current best practices. The Town of Parker hired MIG as a consultant to provide recommendations and guidance for the Town to update the parks dedication standards in Section 13.07.140 of the Parker LDO. This report includes an assessment of existing conditions, benchmark comparison to peers, adequacy assessment of existing parks (LDO Section 13.07.145) and open space (LDO Section 13.07.145) standards compared to the Master Plan, and recommendations for updates to the parks dedication standards.

Existing Conditions Assessment

This section of the report documents the existing conditions of the parks and open space dedications in Parker. For the existing conditions assessment, MIG and Town staff toured a representative sample of Town-built and developer-built parks. These included both neighborhood and community parks, as well as examples of high-quality park development and parks with outcomes the Town would not want to replicate further. For context prior to the tour, MIG reviewed several documents that summarized existing policies and relevant information, including but not limited to the 2018 PROS Master Plan, the Park Amenities Inventory, and several development plans.

Previously in this project, MIG conducted a benchmark analysis of Parker standards to peer communities. Future tasks in this project will compare the Parker LDO dedication standards to the policy guidance in the Master Plan, assess the adequacy of existing standards to achieve the desired results, and research best practices in parks quality standards that could be applicable to advance the Master Plan vision.

Key Findings

The existing conditions assessment resulted in Key Findings in four groupings.

Parker Has a High-Quality Park System

- Parker has a well-regarded park and open space system with many quality parks.
- Parker has been very successful in achieving neighborhood parks within walkable distance to most homes (¼ to ½ mile).
- Parker has abundant open space.
- Town-built community parks and recreation facilities are high quality and offer distinctive amenities and social gathering spaces.
- Many neighborhoods include recreation facilities for residents beyond playgrounds, such as pools, sports courts, and picnic shelters.

Negotiated Developments Have Yielded Some Strong, Creative Outcomes

- Parker has successfully negotiated with developers in most cases to provide developed parks rather than simply land dedications and fees.
- The Town has achieved much more with a negotiated approach than is required in the code in many cases.
- Staff leverages developers' motivation to creating appealing parks as a means to increase value and accelerate home sales.
- By offering credit for public parks and partial credit for private spaces, many neighborhoods offer more parks and facilities than required.
- Public and private parks and recreation facilities owned and managed by Homeowners Associations (HOA's) greatly increase the facilities for residents while reducing the burden on Town resources.
- Some developments include new and creative amenities to attract target residents, such as dog agility areas or small water spray pad areas at apartments.
- The Town has leveraged its offer to take over and maintain community park sites effectively to get larger (10+ acres) parks with more amenities and facilities. However, it also has successfully avoided taking over the maintenance of smaller neighborhood parks, even when requested by HOA's to do so.

There is Inconsistency in Quality and Outcomes

- Parker has many uncodified expectations for parks that require negotiation and leverage to achieve.
- Town-built facilities are, in general, higher quality than developer-built parks.
- Negotiated double crediting of detention areas, open spaces, trails and parkland yields inconsistent results such as the Stroh ranch detention pond.
- There are missed opportunities to support recreation in open space in places where passive recreation activities are compatible with the goals of protecting natural resources.

Some Parks Size, Type, or Purpose Needs Not Fully Met

- Larger parks with specialized facilities and large group gathering places are lacking. According to the 2018 PROS Master Plan assessment, the Town exceeds the recommended level of service for neighborhood parks but has insufficient acreage to provide the recommended level of service for larger community parks.
- Some neighborhood parks are too small or lack the amenities to provide as much benefit as desired. In some cases, this may be a result of requiring developers to achieve the Town's current preference of ¼-mile walking distance, which requires more parks dividing the total acreage into smaller parcels.

- Public gathering and respite spaces in commercial development are rare and entirely market driven.
- Some creative amenity ideas fail, such as a community garden that is not being used, because developers do not have standards for the types of facilities and support amenities provided.

The remainder of this section of the report provides narrative support for the key findings, above.

Parker Has a High-Quality System

The most significant finding of the existing conditions assessment, which should be held as the overarching context for the rest of the findings and the project, is that the Town of Parker has achieved an excellent quality and quantity of parks and recreation facilities. Several of the Town-built parks, including the award-winning Railbender skateboard park and tennis complex, the Salisbury Sports and Equestrian Park, the greenway trail along Cherry Creek and both well-loved and intensely used downtown parks -- O'Brien Park, H2O'Brien Pool and Discovery Park -- are examples of excellence. Open space is abundant, with strong components of sensitive riparian and wildlife habitat.

Including the private parks and recreation facilities that Homeowners Associations (HOAs) manage for their residents – the vast majority of which were required by the Town, Parker exceeds its recommended level of service for neighborhood parks. In several parts of Town, parks and recreation are available within a walking distance of a quarter mile of all residences. This walking distance is closer to homes than the ½-mile industry standard advocated for by the National Recreation and Parks Association (NRPA), Trust for Public Land (TPL) and the Urban Land Institute (ULI). Many Parker neighborhoods have private facilities that offer more than passive park land and playgrounds, such as swimming pools, ball parks, picnic shelters, and gathering spaces that foster not just opportunities for an active lifestyle, but also social cohesion and neighborhood identity. In sum, there is a great deal that Parker is accomplishing in terms of quantity and quality of parks, recreation, and open space in the Town.

Negotiated Developments Have Yielded Some Strong, Creative Outcomes

One of the key tools that Parker has used to achieve strong PROS outcomes has been negotiated development approvals. In Parker, most development occurs by Planned Development (PD) zoning. Many aspects of the development design and layout are negotiated, rather than strictly following the base standards of the Land Development Ordinance (LDO). PROS is regularly a significant component of the negotiation.

This negotiated development has yielded some strong and creative outcomes. A major result is that while the ordinance requires land dedications and development fees, the Town has regularly negotiated for fully developed parks, built and delivered by the developer. Town

staff have actively collaborated with the developers and park designers to suggest locations, amenities, and upgrades that have improved the quality of the resulting parks for residents and better connected these with other Town PROS assets.

During the site conditions tour, some of the stops highlighted examples of higher-than-required park quality outcomes. At Cottonwood Highlands HOA-maintained Community Park, the Town collaborated with the developer to maximize the quality and amenities in a small area. By adding negotiated amenities, the developer was allowed to count a portion of the detention area as open space with their addition of a trail on the north side of the detention pond. The Town also worked with the developer to meet all of the parkland dedications requirements on site for residents resulting in two on-site, developed parks. More than what was required was developed in this neighborhood.

An older example is the Challenger Park Estates Neighborhood Park. This HOA owned and maintained park is centrally located in the neighborhood and developed with amenities to serve a variety of age groups, including swing sets and half-court basketball, along with a large open field that hosts community gatherings and informal sports. It is a beloved neighborhood asset and also open to the public. A third example in Anthology is also a HOA-maintained, centrally located neighborhood park that is open to the public. It contains both unprogrammed space as well as play equipment, primarily a large wooden fort-style play climbing structure.

Another, recent strong outcome is at Tallman Meadow Park. This park exceeds the Town's minimum size requirements and was fully developed with sports fields and premium-grade playground, picnic shelter, and other amenities that coordinate with the overall historic theme/character of the development. The developer agreed on the condition that the Town would accept the fully developed park as a dedication, thereby removing it from the HOA responsibilities and dues structure for the long-term.

An example from a multi-family development is the Watermark I development, which contains intense, high quality amenities such as a tot lot, half-court basketball, and dog agility training in the interior of the development, where the buildings create a sense of oversight and as well as a gazebo and seating for more passive enjoyment.

Overall, negotiated development approvals have yielded creative strategies that have addressed site constraints and created many high quality, well-loved parks in Parkers neighborhoods. The park design and amenities are often tailored to site conditions, neighborhood character, and even the Town's current needs for the type of park experiences that are in demand.

There is Inconsistency in Quality and Outcomes

Parker has many uncodified expectations for parks that require negotiation and leverage to achieve. However, the 2018 PROS Master Plan provides policy guidance for parks, trails, open space and recreation facility decision making. Also, the Land Development Ordinance

Modernization project that the Town is currently undertaking - will provide the needed updated regulations and standards to support and implement the goals and policies of the master plan and improve PROS outcome.

Although some negotiated approvals have yielded excellent results, others have not. Negotiated developments have many considerations, and at times Parker has had to prioritize other needs of the Town and use its leverage on aspects of the agreement besides amplifying PROS outcomes. Many of the developer-installed park amenities are standard, "off-the-shelf" styles that are similar and offer little distinctive appeal; the Town would like to see more modern, innovative solutions and premium equipment but getting down to the specific equipment selections is often too detailed for the development approval.

While the Town allows limited double-crediting of parks, open space and detention areas, it is considered on a case-by-case basis. While this has resulted in some creative solutions, there is also a sense of inconsistent application and uncertainty. Related is the either-or designation of parkland and open space, which concentrates amenities in parkland and leaves no incentive to add amenities to open space. Open space is often abundant, and the Town desires to see some of the open space areas augmented with potential passive amenities such as walking and nature trails, benches, and similar.

In some cases, HOAs appear to be concerned about either the quality of their parks or their long-term ability to maintain and renovate them. As the demographics of neighborhoods change over time and residents age, features such as playing fields and tot lots may not see as much use by local neighborhood residents, for example. Maintenance and irrigation is expensive, and subsequently, HOAs regularly approach the Town to request that the Town take over ownership and maintenance of their HOA parks. While the Town Council considers each request on a case-by-case basis, the Town has not agreed to take over maintenance from HOAs. In the new Idyllwilde development, a separate issue has been noted between the developer and the Homeowners Association. Here, due to maintenance concerns, the HOA is refusing to accept ownership and maintain a small developer-built park with access on a steep incline.

In sum, while the developer-led strategy has delivered significant success and is an important part of keeping control of Town expenses in the long-term, it is not without challenges. In some cases, the quality of park development and maintenance are not at the level of service desired.

Some Parks Size, Type, or Purpose Needs Not Fully Met

Despite the overall quality and success of parks outcomes in Parker, there are notable gaps and insufficiencies in some aspects of what exists in Parker today. One such deficiency is that although the Town is very rich in neighborhood parks, there are few larger community parks. Parker is not meeting its own level-of-service goals as identified in the 2018 PROS Master Plan. For this reason, in recent negotiations for several large-scale site development plans such as the Trails at Crowfoot, the Town has ensured that each of these will add larger community parks. Once

built, these will make a significant improvement in meeting the level-of service goal for community parks. It will not, however, close the gap for the level-of-service goal for community parks in previously developed areas.

Another concern is that some neighborhood parks are too small, poorly located, or lack the amenities to provide as much benefit as desired. In some cases, these parks have been developed on small "remnant" parcels that were not feasible for development. An example would be an unnamed, "postage-stamp" park in the Stroh Ranch development. This park holds the mailboxes for the surrounding street; otherwise the amenities are limited to one bench and Mutt Mitt dispenser. The size of the park is too small to use for almost any sort of activity or gathering.

There are few public gathering and respite spaces in commercial development in the Town. Without any PROS requirements for commercial development, what exists has been provided by the Town, negotiated, or is entirely market driven. Another consideration is that some creative amenity ideas fail, such as a community garden that is not being used at the Watermark I multifamily development. The garden was negotiated and based on its installation the land was credited toward the parkland requirement. Residents have not cultivated the garden. Since the area is maintained by a property management company, the Town has little ability to influence the owner or management company to upgrade the space to a more usable type of park experience.

Conclusions

This Existing Conditions Assessment is an important step in the update the Parker LDO parks and open space dedication standards. Conclusions are that existing conditions and outcomes in Parker are very positive and have yielded many high-quality PROS assets for Parker residents, delivered by both the Town and private development. Still, there are opportunities to enhance the quality and consistency of parks and open space facilities for Parker and better meet the full range of Town goals.

Comparison to Peer Communities' Dedication Standards

This section shows how Parker parks standards compare to standards in several other Colorado Front Range Communities with some similar characteristics such as development character, size, quality of existing parks, and growth drivers. Selected peers are Castle Rock, Longmont, and Brighton.

Key take-aways from the comparison:

- Standards vary significantly from community to community in form and amount, making apples-to-apples comparisons difficult.
- Parker's fees are the only one of the four peers that are expressed as the overall acreage dedicated rather than the amount of land per number of units to be developed.
- Only Castle Rock and Parker allow credits for private parks.
- Only Longmont has minimum size standards for neighborhood-serving parks (termed, "pocket parks").
- Only Longmont requires remnant parcels open space dedications for greenway connections.
- Longmont appears to have more parkland design and development guidance than Parker and other peers.

Aspects of the park standards that were compared across the peer communities are park development fees, dedication requirements, dedication credits, and other information. Table 1 below summarizes key aspects of Parker's Park standards and those of the three peers.

Table 1: Park standards benchmarking comparison to peers

City	Park Development Fees	Land Dedication Requirements	Dedication Credits	Other Information
Parker, CO	Fee is based on estimated park construction costs: - $255,400 per acre - Includes basic infrastructure and associated irrigation tap fees for typical one acre	Provide land for park, trail and open space: - 7.5 acres of developed park land per 1,000 population - Open space goal of 20% - Additional Open Space dedication may be required by Council if criteria in Open Space, Trails and Greenways Master Plan is not met	Credit for alternative provision for park and recreational facilities Credit for private parks – up to 50% of total required, owned and maintained in perpetuity by HOA	Sales tax funding for Parks Selection/Design Criteria outlines for Open Space, Private Pocket Parks, Parks, and Trails: - Location, connectivity, accessibility to residents focus of

City	Park Development Fees	Land Dedication Requirements	Dedication Credits	Other Information
	- Plus appraised value of undeveloped acreage - Does not include amenities and improvements	Amount of park land dedication based on the project population created by a development (existing dwelling units are excluded): - 3.19 persons per single-family detached dwelling unit - 1.85 persons per multi-family dwelling unit Cash payment in-lieu of dedicating land - Options for residential land development: Fee in lieu only if land is not available - Min. fee is $500.00 per each additional residential lot created for residential minor developments - Appraised value of land plus fees Recommended guidelines in Open Space, Trails, and Greenways Master Plan - Selection criteria location of public trail and safe usage and sufficient right-of-way. Easement or right-of-way width typically ranges from 25 to 50 feet - Exclusive utility easement, public right-of-way, or topographical obstructions not permitted land Trails: No cash-in-lieu accepted in subdivisions where proposed regional trails are located unless there is acceptable	Credit for dedications of land for public park space exceeding 7.5 acres per 1,000 residents only if additional public park land meets Town selection and design criteria for parks, trails and open space	selection/design criteria Only requirement for recreational facilities is to comply with Town Construction Standards and Specifications Town policies, not codified: - Annexation agreements target goals is 20% open space dedication. - Expect neighborhood parkland to include amenities - Preference for developer-built parks rather than collect development fees - “Community Parks” are >10 acres. - Town only considers accepting dedication of fully-built, 10+ acre - Town considers accepting dedications

City	Park Development Fees	Land Dedication Requirements	Dedication Credits	Other Information
		alternate route in Open Space, Trails, and Greenways Master Plan		of open space on a case-by-case basis 2018 PROS Master Plan recommended LOS: - Parkland of various types = 8.7 acres/1,000 total - Open space = 18 acres/1,000
Castle Rock, CO	**Single Family Detached and Attached Per Unit Impact fee:** - Less than 2,000 sqft: $2,757 - 2,000 to 2,499 sqft: $3,406 - 2,500 to 2,999 sqft: $3,720 - 3,000 to 3,499 sqft: $3,936 - 3,500 to 3,999 sqft: $4,384 - 4,000 to 4,499 sqft: $4,772 - 4,500 to 4,999 sqft: $5,114 - Over 5,000 sqft: $5,420	**Formula based on 8 acres/1,000 population: 2 acres/1,000 population for neighborhood parks and 6 acres/1,000 population for community parks.** **Neighborhood Park** - Dedication or cash-in-lieu: 0.002 acres/person or 0.006 acres/dwelling unit (based on 3.0 persons/household) -Minimum on-site dedication: 8-acre site up to 25-acre site (if combined with elementary school, 10 to 12-acre site is optimum. **Community Park** – Dedication or cash-in-lieu requirement: 0.006 acres/person or 0.018 acres/dwelling unit (based on 3.0 persons/household) - Minimum on-site dedication: 25-acre site up to 100-acre site (if combined with secondary school) 60 to 80-acre site is optimum.	Up to 33% of private open space for park and recreational purposes in a proposed subdivision that is privately owned and maintained by future residents may be credited against requirements if following are met: - That the private ownership and maintenance of the land is adequately provided for by written agreement;	New residents fund future parks and indoor recreation facilities through fees charged to new home construction. Funding for parks – 24% General Fund (Sales Tax), 16% Community Center Fund (sales tax), 2% Conservation Trust fund (Douglas County Shareback), 1% conservation trust fund (lottery), 14% parking and capital recreation fund (fees), 17% golf fund (fees), 1% general long-term planning fund,

City	Park Development Fees	Land Dedication Requirements	Dedication Credits	Other Information
		Total = dedication or cash-in-lieu requirement: 0.008 acres/person or 0.024 acres/dwelling unit Dedicated lands must be suitable for neighborhood and/or community parks and typical facilities in terms of topography, size and location. Fee in lieu or off-site land dedication is required when minimum acreage does not enable full dedication. All land and cash fees dedicated or credited for public purpose (e.g., parks, school, water, fire, policy, or administrative facilities) shall be used to the mutual benefit of the residents of the subdivision. Such lands may be restricted to area residents only as provided in the credit requirements. The town may exchange land previously acquired under this provision for cash if the Town Council determines the public need for that specific public use would better be served at a different site. Cash fee-in-lieu of land dedication may be permitted after review of the following criteria: size of development and its adequacy to accommodate suitable public use site, the Town and School District's master plans for	- That the proposed land area is reasonably adaptable for the use for park and recreation purposes; - That the facilities proposed for the land area are in substantial accordance with the provisions of this regulation; - That the facilities proposed conform to and/or complement the Town's Parks Recreation, Trail and Open Space Plan and Comprehensive Master Plan; - That any land dedicated under the provisions of this Section shall not be used to also	community center fund fees and interest (fees)

City	Park Development Fees	Land Dedication Requirements	Dedication Credits	Other Information
		future development, existing parks and other public facilities in the area, topography/elevation/geology/location of the land in subdivision, and needs of people in the area. The fee is based on administrative evaluation.	satisfy the open space requirement of the PD zoning district - That the private facilities be credited only against the neighborhood park component of the park land dedication requirement.	
Longmont, CO	Park Improvement: Fee based on current costs of acquiring, designing, and building parks and greenways for 2014 and beyond: 2016 – fee for single-family detached residential: $5,333.00; fee for other residential: $2,616.00 (fee from years on out will be adjusted based on Engineering News Record Construction Costs Index	All subdivisions must reserve land for public parks according to the comprehensive plan, or dedicate land, or pay fees in-lieu, for the purpose of providing a proportionate share of public parks, greenways, and open space. New development must provide landscaping for landscape buffers; pocket parks, plazas and courtyards; … greenways; … stormwater areas; and residential, mixed-use and nonresidential lots not covered by structures, parking areas, drives and other hardscape areas		Park Design Specifications: Playground design requirements; design for restrooms; lighting criteria Railing, fencing, and gates; site furnishings; sports equipment; irrigation; landscape; signage; turn over items; approve materials list. Identified future district, neighborhood, or community park

City	Park Development Fees	Land Dedication Requirements	Dedication Credits	Other Information
	Fee is also based on target level of service methodology	Pocket park required for single-family detached and attached residential developments with 25 or more dwelling units – pocket park is not required when at least 50% of the dwelling units are within ¼ mile walking distance of an existing or planned and fully funded public neighborhood park. - 1 acre per 100 single-family dwelling units. - 1 acre for every 200 multifamily dwelling units. - Minimum size of 0.5 acres for developments of 100+ single-family units and developments of 200+ multifamily dwelling units. - For developments with fewer units, the size may be reduced proportionally (minimum one-quarter acre size for developments of 100 multifamily dwelling units). Location: Shall be centrally located within the development with pedestrian access to the lots and dwellings they are intended to serve. Shall have frontage on at least one local or collector street. Dedication of greenways: the city requires dedication of adequate lands or easements for outlots for the development of primary or		Criteria for funding allocations to new and existing parks: Safety and regulatory projects, develop new projects while concurrently repairs and renewing parks, systematically address the sites in most need of reinvestment while also including expansion projects to serve a growing population; rebalance the investment the community makes in the system and focus on spreading the benefits

City	Park Development Fees	Land Dedication Requirements	Dedication Credits	Other Information
		secondary greenways. An "outlot" is defined as a remaining parcel platted in a subdivision but set aside for a specific purpose other than development. Fee in lieu allowed for dedication of public park, greenway, or open space.		
Brighton, CO	Community Park fee: - Pay $400/unit with land dedication - Pay $720/unit without land dedication Local and community parks and open space shall require a park development fee based upon number of lots proposed within the development. The fee is due at the issuance of building permits.	Public park land and open space shall be dedicated at a rate of 3 acres per 1,000 for local neighborhood parks and open space, exclusive of school sites. Total dwelling units proposed (or lots for single-family housing units) within the development x 2.96 persons per household Location – must provide focus for residential development and cannot contain natural hazards. When project exceeds 8 dwelling units per acre, development must provide 25% of development site for common outdoor recreation and open space. Fee in lieu of land dedication equal to rate of 3 acres per 1,000 population based upon fair market value of unimprovement land as zone	Infill exemption: Infill development serviced by existing local parks and lying within infill development boundary are exempt from park land dedication requirement but are required to pay applicable park development fees if platted after 1986.	Should the size of the community park located within the development exceed the dedication requirements for community parks, the developer shall reserve remaining land for City acquisition based on fair market value of unimproved land zoned urban development. All new residential land development projects must dedicate or convey land for a public school or pay cash in-lieu of dedication

City	Park Development Fees	Land Dedication Requirements	Dedication Credits	Other Information
		urban development required if project location is not within the vicinity of a community park. Fair market value shall be established by City appointed appraiser. Fee paid during final plat approval and will be placed into community park development fund.		Design of subdivision must make use of natural contours and protect the view, as well as provide protection from adverse noise and vehicular traffic.

Dedication Standards Adequacy and Master Plan Alignment

This section of the report assesses the adequacy of the existing Park Dedication Standards, as measured against the policy recommendations of the 2018 PROS Master Plan, peer communities, and MIG's national knowledge and experience in other communities. It also presents some preliminary findings with regards to development fees and park in-lieu fees.

Key Findings

The standards adequacy assessment resulted in the following findings:

Consolidation of Parks and Open Space Standards is Needed

- Section 13.07.140 of Parker Municipal Code addresses dedication requirements for parks, trails, open space and schools. The organization of the section makes it difficult to immediately discern whether school grounds could be considered with other open space requirements in some way.
- Standards and key requirements are not all consolidated in this section. Section 13.07.140 makes reference to a variety of other resources that must be consulted to know what standards apply. These include:
    - Section 13.07.080 provides requirements for site master plan approval, including costs and construction documents.
    - Section 13.07.145 includes selection criteria for open space, standards applicable to a percentage of each development, design criteria, as well as requirements for land set aside as Common Open Space.
    - Section 13.06.070 addresses requirements for Landscaped Areas, which may count in some cases as private park land.
    - Construction Specifications & Design Considerations for Parks, Trails and Streetscapes present design guidelines that affect park development requirements.
    - Open Space, Trails and Greenways Master Plan identifies trail development criteria, criteria for the protection of open space, and regional trail requirements that affect cash-in-lieu fees.
    - The Park Fee Schedule spells out cash-in-lieu of land dedication and development. It defines assumptions about the cost of park development based on what park development must include.

2018 PROS Master Plan Findings Suggest LDO Changes Are Needed

- Section 13.07.140 is intended to be updated based on the recommendations in the 2018 Parks, Recreation and Open Space Master Plan. For open space, the Master Plan introduces a different format for level of service (LOS) based on the number of residents served

(acres/1,000 residents), rather than the size of the development (current goal of 20% open space). Open space dedication is typically based more on environmental and geographic factors than population.

- Parker's existing park land dedication requirement for developers (7.5 acres/1,000) is greater than the Town's current level of service (LOS) -- 6.77 acres/1,000 residents-- as calculated in the Master Plan for Town and HOA parks combined. It should be noted, however, that many parks were developed under the old requirement of 6.50 acres/1,000 residents.
- The Master Plan proposes increasing the LOS to 8.7 acres/1,000 residents, largely by increasing acreage for community parks and special use sites while decreasing acreage for neighborhood parks. This distinction between neighborhood and community-serving parks is critical.
- The Master Plan also proposes reducing the level of service for open space, and it does not note any assumptions for the LOS of trail corridors. It is not clear how these Master Plan recommendations compare to current open space and trail dedication requirements.
- The Master Plan defines neighborhood parks as typically ranging from 5-25 acres in size, and community parks from 20-100 acres in size. These definitions are clearly not applicable in Parker and should not guide the LDO required size for parks.
- The Master Plan provides guidance on the numbers and types of facilities needed in several different places in the document.
    - The Master Plan set numerical standards for facility LOS. Of note, HOA neighborhood parks significantly contribute to Parker's park system with a LOS of 2.65 acres per 1000 residents. This has resulted in a LOS that significantly exceeds the National Recreation and Park Association (NRPA) standard of 1-2 acres per 1000 residents.
    - The Inclusive Programming strategies note that in the next 10 years, the Town should ensure that 25% of all playgrounds are universally inclusive playgrounds. Achieving this likely may require a code/construction update to provide universally accessible and inclusive play elements at all new parks.
    - The Connect People and Places strategies identify potential new guidelines for trail development, including the provision of parallel soft- and hard-surfaced trails and trail amenities. It also advises: "Update the Land Development Ordinance to ensure that private parks and recreation facilities are integrated and well connected to adjacent neighborhoods."
- Master Plan outreach found that "79% of survey respondents use a park managed by a Homeowners Association (HOA). For those respondents who did not use an HOA park, it was because 1) there was no HOA park near them or 2) the HOA park did not have the facilities/amenities that interested them." This confirms a need to provide better guidance to developers on the provision of unique and interesting recreation facilities, as well as landscaping and elements to enhance park character and the park experience. These are typically done through design and development guidelines.
- Master Plan outreach findings also indicate that Parker needs "to better balance the development of new facilities and maintenance of existing facilities." While maintenance and asset management are not applicable to dedication standards, there is an issue the Town

needs to address regarding the replacement and refreshing of amenities, facilities and landscaping as dedicated parks age. It is unclear if there are any expectations established for the renovation of HOA public parks and private parks for which the developer received credit.

Existing Acreage Dedication Quantity Is Adequate; Standards Need Differentiation

- Parker's land dedication standard of 7.5 acres of parkland per 1,000 residents is in line with peers and appears to be adequate in obtaining most needed park land.
- Parker should codify the level-of-service guidance for neighborhood-serving and community-serving parks. Note: Many communities set these standards based on neighborhood park and community park requirements alone. In Parker, special use parks also serve community-wide and in some cases regional needs. Consequently, the desired split may be 2.5 acres/1,000 for neighborhood parks and 5.0 acres/1,000 for larger community-serving parks, including community parks and special use parks. This change will help the Town negotiate to obtain larger sites for community parks.
- The code standard allowing credit for private parks up to 50% of the total parkland requirements is working to balance desires for publicly accessible spaces, for high-quality neighborhood amenities, and for long-term cost containment. However, since these private facilities are only intended to serve one neighborhood, it may be more appropriate to credit private park acreage toward required acreage for neighborhood parks only
- Parker's open space dedication standards express a goal of protecting 20% open space—although developers often set aside more than that. It is unclear how this compares to the 2018 Parks, Recreation and Open Space Master Plan LOS recommendation of 18 acres/1,000, since the former is based on area and the latter on population.
- A question should be raised regarding the format of level-of-service (LOS) recommendations noted in the 2018 Parks, Recreation and Open Space Master Plan versus open space and trails requirements in the Open Space, Trails and Greenways Master Plan. These could be aligned and codified in the same format to apply to all types of parkland, open space and trails.
- If the Town must weigh the costs of land dedication against park development to stay within market rates, Parker should continue to emphasize the 7.5 acres per 1,000 residents park land requirements over higher development fees. It is easier for the Town to fund and add amenities to dedicated park land than to try to obtain more land later.
- Parker may want to consider more strongly and/or approve fee-in-lieu in smaller (re)developments and refine criteria accordingly, as well as develop policies guiding the use of funds received. This will help avoid the provision of parks smaller than the Town's minimum standard size.

Development Requirements and Fees Need Clarification

- There is a great difference in between expectations for full park development and the park development requirements and fees associated with in-lieu-fees noted in the Park Fee Schedule.
- Parker's fee structure is expressed differently from peers (cost per acre rather than per residential unit). If calculated based on development unit, Parker would require $6,110 per single family dwelling unit or $3,542 for multi-family unit. (This is based on the current park development cost per acre, the average number of people served by one acre as per land dedication standards, and the Town's assumptions of population per dwelling unit.) If accurate, this is already higher than the range charged by peers in the benchmark analysis. This suggests that the benchmark communities are not expecting full park development.
- Parker's current development fees are based primarily on irrigation tap fees, groundwork, landscaping, and minor amenities, resulting in fees that are inadequate for high quality above-ground park improvements and full park development.
- The current development cost noted for play equipment and installation ($15,000) is well below current norms for average play areas in neighborhood parks; it is wholly insufficient for high-quality play areas as may be expected in Gold Medal communities.
- In many communities, full park development for quality parks averages $500,000 - $850,000 per acre, instead of the Parker's current fee which is based on $255,400 per acre.
- If Town development fees are increased to cover full park development, they will be above market norms.
- To encourage development where appropriate in open space, Parker should consider adding criteria for allowing credits for improved open space to count toward a percentage of park land requirements (at a reduced ratio).

Expectations, Standards and Guidelines Need to be Aligned and Clarified

- Given staff role in negotiating for final park approval, inconsistent expectations and standards have guided developers—particularly in credits given for linear strips adjacent to houses, detention basins, trails/linear corridors, and other open space. To allow flexibility but ensure more consistency, decision-making criteria and/or general policies are needed to guide negotiations.
- The Town needs a more comprehensive and consolidated and detailed set of standards and guidelines that may include all of the following, some of which currently exist in Parker:
    - Land dedication standards (acres/1,000 residents)
    - Park site selection/land dedication criteria
    - Open space dedication requirements
    - Open space site selection criteria
    - Park service areas (travel distance to parks)

  - Numerical facility level of service guidelines for key types of facilities (e.g., playgrounds, sports courts, sport fields, dog parks, outdoor pools, picnic shelters)
  - Design, development and construction guidelines for parks, trails, and open space
  - Criteria for the Town's acceptance of community parks to be maintained and programmed by the Town.
- Parker may want to codify the requirement of providing neighborhood parks within a ½-mile walking distance (10-minute walk) and remove the expectation of providing parks within a ¼-mile walk, which is driving the development of undersized neighborhood parks. (The ½-mile service distance is consistent with what is in the Master Plan.)
- The park tour suggests that consistent site selection/dedication requirements are needed in addition to numerical LOS standards (acres per 1,000 residents) and access requirements (travel distance to parks) to guide site selection. In addition to other factors note in LDO Section 13.07.140, criteria could include:
  - Minimum park size
  - Site size needed for various recreation uses, including sports and fitness opportunities
  - The shape, configuration, slope and amount of developable space of parks
  - Usable amount of the site without barriers (drainage, topography, overhead utilities, easement and ROW restrictions, etc.)
  - Street frontage; access from arterial, collector and local streets; buffer between streets and play areas
  - Location; centralized to neighborhood served
  - Property adjacencies; adjoining uses; co-location of parks with schools, detention basins, open space and trails
  - Natural areas and natural features that add to site character and recreation value
  - Access paths and entries
  - Connectivity to local and regional trail system
  - Visibility for public safety
  - Multi-use spaces, "string of pearls" parks, and temporary "pop-up" park spaces
  - Partial credits for private parks/facilities, detention basins, open space and trails

Additional Guidance for Non-Residential Areas

- All of Parker's current standards and guidelines apply to new residential development. Current trends in parks and recreation, as well as the increasing interest in augmenting the customers' experience environment in commercial and business areas, are leading to the increasing integration of urban plazas, art, social gathering opportunities, respite spaces, event spaces, and play spaces into non-residential areas. The Town may want to revisit and broaden guidelines and/or requirements for Landscape Areas in large-scale commercial development or office complexes, to encourage these uses.

Guidance for Quality Outside the LDO Is Needed

- Parker should consider the example of many Gold Medal parks communities and develop a comprehensive set of Design and Development guidelines for parks, trails and open space in a manual that stands outside the LDO. A manual provides the developer substantial guidance at the outset, eliminating time and rounds of review. This can result in cost savings for both the Town and the Developer, as well as better outcomes. The manual can be updated regularly in response to changing industry practices, market conditions, and Town needs, without the need for code updates. (Note: Some aspects may be similar to the Town's Construction Specifications & Design Considerations for Parks, Trails and Streetscapes, but better guidance is needed to ensure the quality of development and landscaping desired.)
- Design and development guidelines for parks, trails and open space should be provided in addition to in addition to numerical standards and define:
    - Required types of facilities
    - Required types of support amenities (benches, bike racks, restrooms, drinking fountains, barbecues)
    - Compatible facility alternatives to add recreation variety
    - Access requirements (if exceed requirements as per Americans with Disabilities Act (ADA)
    - Amount of parking needed and type (on-street, on-street diagonal, off-street)
    - Amount of developed park area versus undeveloped (including natural areas and turf/lawns)
    - Maintenance and irrigation requirements
    - Mix of active and passive elements
    - Size and types of picnic shelters
    - Requirements for shade (shelter, sails, shade trees, etc.)
    - Plant palate for landscaping and native plantings
    - Seating, including arranged and movable
    - Activity space and program space
    - Art and interpretive elements in parks/placemaking characteristics
    - Crime Prevention Through Environmental Design (CPTED) requirements
- Facility definitions, including notes about required support systems, should be defined for specific types of amenities. (Note: These may be in the Construction Specifications & Design Considerations for Parks, Trails and Streetscapes):
    - Community gardens (plots, water, mulch pile, raised bed, permaculture, etc.)
    - Regulation sports fields, youth fields, sports practice space, and micro-fields
    - Play areas (including thematic play, water play, nature play, universal play, challenge elements)

- Activity hubs (such as skate spots, game centers, little free library, etc.)
- Trails (soft and hard surfaced)

Guidance for Renovation Outside the LDO Is Needed

- Parker has a developer driven park system, with many parks still under HOA management. As parks continue to age, the Town should give attention to requirements for asset management, replacement and the refreshing of facilities and amenities. HOA's frequently struggle with long-term repair, facility replacement and refreshing of parks—particularly as neighborhood needs change.
- Replacement with similar elements should be required for some standard amenities and facilities, applying new best practices. For example, in restroom renovation, facilities should require water-conservation fixtures and family (gender neutral) restrooms.
- To respond to emerging trends and changing demographics, HOA's should be encouraged to avoid "like for like replacements." For example, a tot lot with play equipment for ages 2-5 may be replaced with nature play elements and climbing rocks/challenge elements to serve ages 2-5, 5-12, and 13-18 in a neighborhood where youth are aging. These changes create more interesting recreation opportunities, serve broader ages and ensure the recreation opportunities change with changing neighborhood demographics.
- Landscape refreshing should consider newer plant palettes, with guidelines to avoid pollinators near play areas.

Additional Information on Master Plan Policies Compared to LDO Dedication Standards

Section 13.07.140 is intended to be updated based on the recommendations in the 2018 Parks, Recreation and Open Space Master Plan. The Master Plan's implication for LDO Standards are noted in key findings. However, a few points warranted additional documentation.

Park Land Level of Service (LOS)

In Section 2.3, the Master Plan summarizes the existing level of service provided by Parker's parks and open space by type (Table 2, next page). It also recommends a service level.

Table 2: Parker Parks, Recreation and Open Space Master Plan LOS Standards

Park Type	Current LOS (acres/ 1,000 residents)*	Current Service Distance (miles)**	Recommended LOS (acres/1,000 residents)***
Urban/ Mini	0.14	0.25	0.2
Neighborhood (Town and HOA)	2.95	0.5	2.5
Community	0.41	2.0	2.0
Special Use	3.27	4.0	4.0
Subtotal	*6.77*		*8.7*
Multi-use Trails		0.5	
Open Space	20.65	0.5	18.0
Subtotal	*20.65*		*18.0*
Total	**27.42**		**26.7**

Source of Data: Parker 2018 Parks, Recreation and Open Space Master Plan

**Current LOS is based on a 2016 population of 48,422*

***Service distance is the recommended maximum distance that residents should have to travel to get to this type of park.*

****Recommended LOS is customized based on a projected population of 2022 (63,809 people) and NRPA Level of Service Guidelines originally developed in 1996. Since then, NRPA has advocated for the development of more customized standards for agencies.*

Parker's current land dedication standard requires 7.5 acres of parkland per 1,000 residents. This yields the majority of the composite 8.7 acres per 1,000 residents LOS recommended in the Master Plan. It is appropriate for the Town to contribute some of the overall LOS acreage outside of private development, particularly for special use sites for large facilities. As such, the standard of 7.5 acres per thousand as a requirement of development is considered adequate compared to the PROS Master Plan policies.

The PROS Master Plan recommended LOS for open space is 18 acres per 1,000 residents. Parker's land dedication requirement is based on the goal of protecting 20% of the development for open space. While on one hand it makes sense to express these standards in the same format--namely, in acres per 1,000 residents—there may be another approach to consider. Open space provides many benefits, one of which is the connection of people to nearby nature. However, the provision of open space is more typically tied to benefits such as the protection of natural and cultural areas, the provision of wildlife corridors, water quality protection in riparian corridors and wetlands, and ecological functions such as stormwater filtration and purification. That means the open space acquisition is driven by geographic and ecological site selection

requirements—not population standards—as noted in the Open Space, Trails and Greenways Master Plan. The Town should determine if a population-based LOS standard of 18 acres should be combined with stronger site selection/dedication criteria. In making that decision, the Town should run calculations by area to determine how the 18 aces/1,000 residents compares to the current goal of protecting 20% of a development as open space. It is unclear how comparable these metrics are.

It's also interesting that no LOS assumptions or recommendations are made for trail corridors, even though these lands can be counted in special cases as park land.

Park and Open Space Service Distance

In Section 2.3, the Master Plan level also defines a service distance for each park type. The service distance proposed and mapped is "as the crow flies" and represented by circular bubbles around parks (Figure 1). This approach exaggerates the area served by existing parks. It also requires residents to travel farther than the 10-minute walking distance (1/2 mile), which is the industry standard.

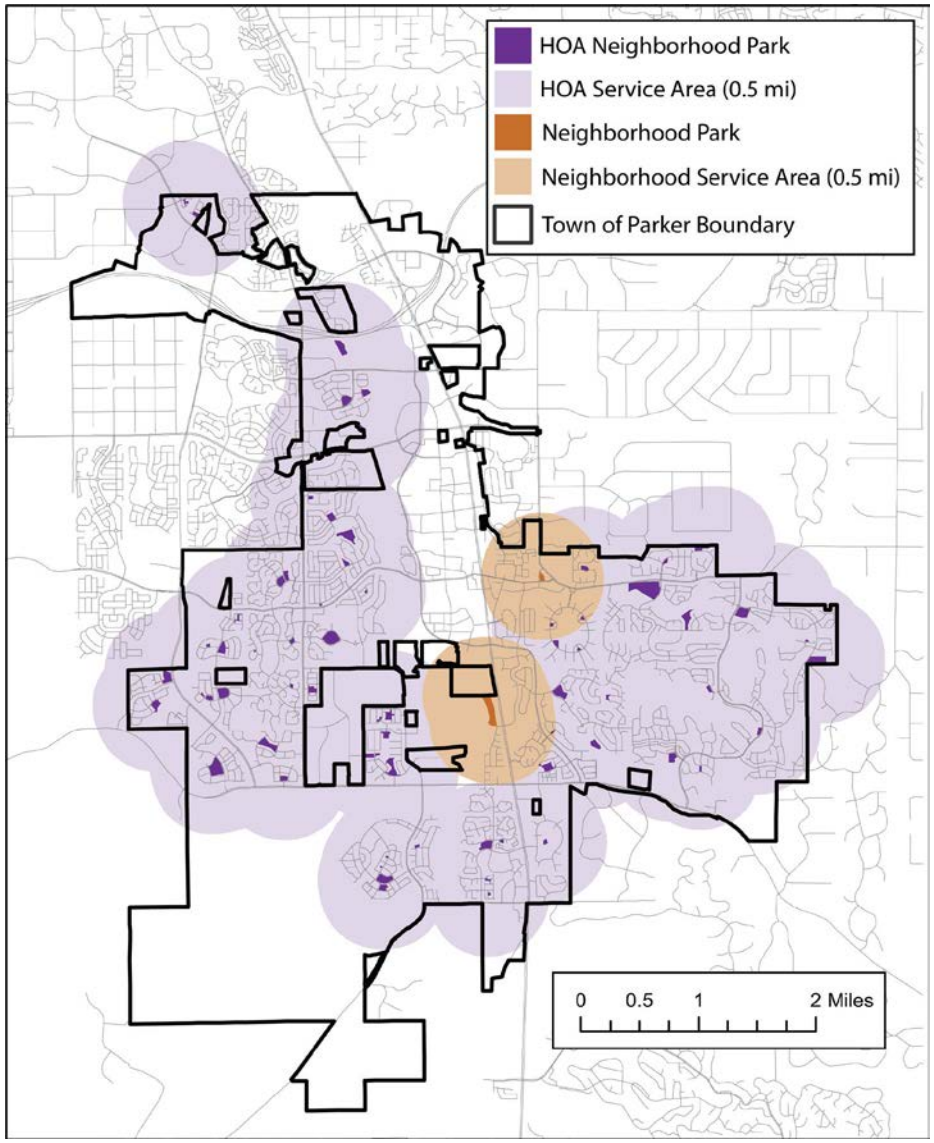

Figure 1: Town of Parker Neighborhood & HOA Park Service Area (PROS Master Plan, p. 54)

ADA Accessibility

The PROS Master Plan places a great deal of emphasis on ADA accessibility. It notes:

> *It's critical to note that private entities, such as HOA-managed parks, are held to different standards of accessibility under ADA regulations. In order for the HOA*

neighborhood parks to be considered as part of the Town's LOS, it is highly recommended that standards be implemented for new construction and alterations of existing HOA-managed parks (through the Town LDO) to meet public accommodation regulations, under title II of the ADA." (Master Plan, p. 63).

The Town may want to evaluate this statement further. It is MIG's understanding that public parks that are managed by private entities still have to meet all ADA requirements. The same requirements as for other Town parks apply, and HOA's will need to ensure that any new ADA requirements are met upon renovation.

Assessment Conclusions

This Assessment of adequacy begins to frame the structure for needed updates to the Parker LDO Parks, Recreation and Open Space Standards. The conclusions of this assessment are reflected in the final section of this report, the Recommendations. Conclusions of the assessment are:

(1) The park acreage dedication requirement of 7.5 acres is adequate in total but needs more specificity by park type

(2) Development fees are similar to peers, but are inadequate to cover the cost of expected park improvements

(3) Open space dedications and development requirements need further discussion, as do potential requirements for public spaces

(4) Codifying expectations and criteria for decision-making can provide better transparency and consistency.

(5) Parker needs more qualitative standards and guidance about site selection, design, development and construction to achieve its quality expectations.

(6) The Town needs to determine how much specificity it wants in future standards, at the risk of losing flexibility for unique situations and context-sensitive solutions.

Recommended Standards and Fees

Introduction

This section of the document summarizes recommendations for updates to the Town of Parker Park Dedication Standards. It proposes new park dedication and development standards and in-lieu fees for residential areas, which are anticipated to be integrated into the Parker LDO modernization project. Requirements for non-residential areas would be addressed separately in LDO Landscape section.

This memo distinguishes requirements for Neighborhood Parks, Community-Serving Parks and Open Space in an easy-to-read matrix by park type. It calculates fees in lieu of park land based on the required elements for Neighborhood Parks and Community-Serving Parks. It defines these park types in comparison to the 2018 PROS Master Plan level of service (LOS) recommendations below.

Parks, Recreation and Open Space Master Plan Compatibility

The adopted 2018 Master Plan recommended LOS standards for park land by type, in terms of acreage per 1,000 residents. These recommendations were used to guide proposed LDO standards. However, the Master Plan distinguishes standards for seven different types of parks, open space and landscaped areas. These are simplified in the LDO standards as noted in Table 3, next page. Note: Table 3 is intended for guidance only to illustrate the compatibility between Master Plan and LDO standards. It should not be adopted as part of Parker's Municipal Code. The term "Community-Serving Parks" (CSP) is used in LDO standards to reference community parks, special use sites, and urban parks/plazas that have a community-wide service area.

Table 3: Comparison of 2018 PROS Master Plan Standards to LDO Requirements for Residential Areas

Master Plan Park Category	Master Plan Recommended LOS (acres/1,000)	LDO Park Category	Recommended Dedication Standard (acres/1,000)	Responsibility for Maintenance, Asset Management and Operations	
				Town	**Private, HOA, or District**
Neighborhood Parks	2.5	Neighborhood Parks	2.5 [2]		✓
Community Parks	2.0	Community-Serving Parks (CSP)	5.0 [2]	✓[3]	✓
Special Use Parks	4.0			✓[3]	✓
Urban Parks/Mini Parks[1]	0.2			✓[3]	✓
Open Space	18.0	Open Space	20%	✓	✓
Multi-Use Trails	-	Open Space; portion of CSP		✓[3]	✓
Landscaped Areas	-	Landscaped Areas	Required in separate section of code for residential and non-residential areas		✓

1 Mini Parks are not allowable per LDO requirements. Urban Parks that function as civic space are allowed under CSP requirements.

2 The dedication standard remains at 7.5 acres per 1,000 residents for park land, with a recommended split as noted in Table 1. See dedication standards for more details. A minimum is set for Neighborhood Parks only.

3 Additional requirements must be met by developers before the Town will agree to assume responsibility for long-term site maintenance.

Note: This table is not intended to be adopted with LDO standards. It is intended to guide Master Plan implementation.

Proposed Park Dedication Standards

Table 4 presents proposed park dedication standards and guidelines in the following categories: land dedication, site selection, site development, and credits. This information will be considered in the update of the Land Development Ordinance (LDO) – Chapter 13 of Parker's Municipal Code.

Table 4: Proposed Standards Matrix for Parks and Open Space in Residential Areas

	Neighborhood Park (NP)	Community-Serving Park (CSP)	Open Space (OS)
LAND DEDICATION			
Purpose	Provides essential recreation opportunities, play space and small group gathering space to nearby neighbors.	Supports a variety of recreation opportunities and specialized uses for several neighborhoods or the entire community. These sites may support organized sports, large-group gatherings, active and passive uses, and trails, while also providing access to unique landscapes and natural areas.	Preserves and/or protects open space and greenways that may include natural resources, cultural resources, visual resources, community buffers and environmental hazards (floodplain and steep slopes) as defined in the OSTG MP.
Intended Function	• Provides a place to play and access to the outdoors. • Provides green space within neighborhoods. • Provides space for family and small group gatherings. • Contributes to neighborhood identity and character.	• Provides specialized community uses and/or variety of recreation experiences for all age groups and diverse interests. • Provides space for recreation programming. • Provide opportunities for large-group gatherings. • Provides opportunities for small and large-scale social and cultural activities and events. • Supports competitive and drop-in sports.	• Preserves and protects land from development as noted in OSTG MP. • Contributes to community greenspace, aesthetics, identity and character. • May preserve valuable natural and cultural resources and wildlife habitat. • May preserve and protect sensitive resources from access and use.

	Neighborhood Park (NP)	Community-Serving Park (CSP)	Open Space (OS)
		• Provides for active recreation and fitness opportunities. • Provides passive recreation and places for respite. • May support environmental education and nature interpretation. • Contributes to community identity and character.	• May support trail use compatible with natural resources. • May provide low-impact, nature-based outdoor recreation. • May provide low-impact opportunities for environmental education, nature interpretation and nature experiences.
Land Dedication Standard	**Required: 7.5 acres per 1,000 residents combined.** • NP Standard: 2.5 acres per 1,000 residents minimum. • CSP Standard: No minimum; goal is 5.0 acres per 1,000 residents. Provide as determined through approved Sketch and Preliminary Plan.		Recommended 20% of development.
Type of Parks Included as per PROS Master Plan	Neighborhood Park	Community Park, Special Use Park, Urban Park, Multi-Use Trail	Open Space
Service Area	Surrounding neighborhood	Several neighborhoods or the entire community	Several neighborhoods or the entire community
Service Distance	½ mile maximum	2 mile maximum	See OSTG MP
Preferred Size	1.5 – 5 acres	10-25 acres	See OSTG MP
Minimum Size	1 acre	8 acres	See OSTG MP (Strategies 1.1 and 1.2). Larger sites are preferred and have higher

	Neighborhood Park (NP)	Community-Serving Park (CSP)	Open Space (OS)
			natural resource and habitat values.
SITE SELECTION			
Selection Criteria	• Minimum 90% of land is developable for park uses • Preferred 50% of land is level and sufficient for active recreation uses • Preferred minimum width 100 feet, shaped & designed to ensure accommodation of required uses. • Not within any easement or utility corridor	• Minimum 75% of land is developable for park uses • Preferred 50% of land is level and sufficient for active recreation uses and sports fields a. Include a balance of both active and passive uses considering topography, drainageways, sensitive habitats or other natural features. b. Active areas will have sufficient land area suitable for sports fields and multi-use fields activities. c. The Town may allow a reduction in level land area if active recreation uses are developed on compatible non-level topography. • Minimum width 300 feet • Not within any easement or utility corridor • Creeks and floodplains considered for up to 25% of dedication requirement	See OSTG MP

	Neighborhood Park (NP)	Community-Serving Park (CSP)	Open Space (OS)
Location Criteria	Centralized and reasonably multi-modal accessible to neighborhood	Reasonably multi-modal accessible to area intended to serve	See OSTG MP
Co-Location Opportunities (Park may be situated adjacent to these for synergies)	• Elementary or middle school • Open space • Detention ponds	• Elementary, middle or high school • Open space • Detention ponds	Parks of other types
Access/Entry	From local or collector street	From collector or arterial	Determined at Sketch, Preliminary Plan or Site Plan
Street Frontage	Required on one side by local/collector street only; allowable on 2-4 sides	Required on two sides by collector/arterial street; allowable on 2-4 sides	None required
Adjacencies	To extent feasible, private lots should not back on to park	To extent feasible, private lots should not back on to park	N/A
Connections to Trails and Sidewalks for Bike and Pedestrian Access	• Connection to sidewalks for bike and pedestrian access is required. • Local trail access is desired.	• Connection to sidewalks for bike and pedestrian access is required. • Access by local, regional or multi-use trails is required to provide bike and pedestrian access from neighborhoods served and the surrounding community.	Depends on site
Trail Corridor as Park or Open Space	• Neighborhood Parks may be accessible by sidewalks and trail corridors; these corridors do not count toward the neighborhood park dedication requirement. • Neighborhood parks should have internal access paths to	• Accepted up to 25% of CSP dedication requirements as determined in Sketch, Preliminary or Site Plan, at locations deemed appropriate by the Town for recreation and non-motorized transportation - per the OSTG Master Plan.	• Greenways and trail corridors are acceptable as OS as noted in the OSTG Master Plan. • May include local, regional, multi-use, equestrian and nature trails.

	Neighborhood Park (NP)	Community-Serving Park (CSP)	Open Space (OS)
	facilities per ADA requirements and may have loop trails within the park.	• May include local, regional, multi-use, equestrian and nature trails. • Not considered if land is within any easement or utility corridor that restricts development. • Must be minimum of 25-50 feet wide as determined by Town to accommodate parallel hard- and soft-surfaced trails.	• Not considered if land is within any easement or utility corridor. • Must be minimum of 25-50 feet wide as determined by Town to potentially accommodate parallel hard- and soft-surfaced trails.
Not Allowable as Parks	As noted in current code	As noted in current code	As noted in current code
SITE DEVELOPMENT			
Intended Use	Mix of active and passive as determined in Sketch, Preliminary or Site Plan	Mix of active and passive	Primarily passive
Intended Development Character	Developed	Developed, thematic, natural	Rustic and natural
% of Site to be Developed or Landscaped	Recommended minimum 90% as determined in Sketch, Preliminary Plan or Site Plan	Recommended minimum 75% as determined in Sketch, Preliminary or Site Plan	Maximum 20%
Design Requirements and Facility Specifications	As determined through Sketch, Preliminary Plan or Site Plan	As determined through Sketch, Preliminary Plan or Site Plan	As determined through Sketch, Preliminary Plan or Site Plan
Play Space and Equipment			
Open turf play area	R (minimum 25 feet wide)	R (minimum 25 feet wide)	-
Small-scale playground	R (or other play features)	C	-
Universal & inclusive play elements	R	R	-
Nature play features	C	C	C

	Neighborhood Park (NP)	Community-Serving Park (CSP)	Open Space (OS)
Water play features	MC	C	-
Thematic play features	C	C	-
Large/destination play area	-	R	-
Zip line	-	C	-
Climbing structure or boulders	C	C	-
Sports and Fitness			
Ball field (diamond, rectangular)	C	R	-
Field and/or sports courts with lighting	-	C	-
Multi-purpose, artificial turf field	-	C	-
Specialty sport field or stadium	-	C	-
Sports complexes (3+ fields)	-	C	-
Sport court (e.g., basketball, pickleball, tennis, volleyball, badminton, shuffleboard, futsal)	R (may substitute another active use feature as determined at Sketch, Preliminary Plan or Site Plan)	R-2 or more courts	-
Tournament -style sports court or multi-court complex	-	C	-
Outdoor fitness equipment	C	C	-
Gathering/Social Spaces			
Small shelter (5-10 users & 2 Tables)	R	C	MC
Medium shelter (10-20 users & 4 Tables)	C	C	-
Large shelter (30-100 users & 6+ tables)	-	R with electrical outlets	-
Pavilion (100 + users)	-	C	-

	Neighborhood Park (NP)	Community-Serving Park (CSP)	Open Space (OS)
Program space	C	R	C (consistent w/ site character)
Festival/event space	-	C	-
Seating (e.g., benches, chairs,	R	R	MC
Tables (e.g., picnic, ADA accessible, other style)	R	R	MC
Outdoor performance space / stage	MC	C	-
Amphitheater	-	C	-
Outdoor nature classroom	-	C	C
Paths, Trails and Trailheads			
Internal access pathway	R	R	C (if facilities present)
Loop path (with mileage markers)	C	R	C
Hard-surfaced trail (multi-use)	C	C	C
Soft-surfaced trail (jogging/hiking)	MC	C	C
Soft-surfaced trail (equestrian or mountain biking)	-	C	C
Greenway connection or trailhead	C	C	C
Gardens and Landscaping			
Arboreta/decorative garden	C	C	MC
Community garden/raised garden	C	C	MC
Landscaping	R	R	MC (See OSGT MP)
Natural areas/native plantings	C	C	C
Irrigation	R	R	C (in Landscaped Areas)
Outdoor Specialized Facilities			
Activity hubs (outdoor ping pong, foosball, chess/checkers game table, cornhole, skate spot, etc.)	C	C	-

	Neighborhood Park (NP)	Community-Serving Park (CSP)	Open Space (OS)
Wheel park (skate, bike, etc.)	-	C	-
Dog off-leash area (fenced)	C	C	MC
Climbing spire or wall	-	C	-
Bike park, skills area or pump track	MC	C	-
Disc golf course	MC	C	-
Horseshoe pit	C	C	-
Aquatics and Water Access			
Swimming pool	C (Private only)	C	-
Splash pad	C (Private only)	C	-
Indoor Facilities			
Recreation center or fieldhouse	-	C	-
Environmental education center	-	C	MC
Activity building/clubhouse	C	MC	-
Interpretive / Placemaking Elements			
Interactive, functional, or visual art	C	C	-
Interpretive signage or elements	C	C	C
Site design theme	C	R	-
Support Amenities			
Shade (e.g., shelter, sails, canopy, umbrellas, trellis, pergola)	R	R	MC
Bike rack & fix it stations	C	R	MC
Barbecues single or dual (with ash disposal)	C	C	-
Drinking fountain	C	R	-
Fencing	C	C	C
Restroom permanent (full or vault)	C	R	MC

	Neighborhood Park (NP)	Community-Serving Park (CSP)	Open Space (OS)
Restroom potable (screened)	MC	C	MC
Signage (identification)*	R	R	MC
Trash receptacles	R	R	MC
Dog waste stations	R	R	MC
On-street parking	C	C	C
Off-street parking	MC (for larger parks)	C	MC
Other Elements			
One added recreation element to be determined through Sketch, Preliminary Plan or Site Plan	R	R	MC
Other amenities and facilities to add recreation variety	MC	MC	MC
CREDITS			
Trail Corridor or Sidewalks	No credits	• No credit for sidewalks. • Credit for local trails, regional trails, multi-use trails, equestrian trails and nature trails for up to 25% of CSP dedication requirements. • See Trail Corridor as Park or Open Space in Land Dedication section.	• No credit for sidewalks. • Credit for local trails, regional trails, multi-use trails, equestrian trails and nature trails towards OS requirements. • See Trail Corridor as Park or Open Space in Land Dedication section.
Shared School Facilities	No credit	No credit	No credit
Specialized Recreation Facilities	No credit	As determined at Sketch, Preliminary Plan or Site Plan	No credit
Off-Site Lands	No credit	As determined at Sketch, Preliminary Plan or Site Plan	As determined at Sketch, Preliminary Plan or Site Plan

	Neighborhood Park (NP)	Community-Serving Park (CSP)	Open Space (OS)
Alternate Provision of Parks and Facilities	As determined at Sketch, Preliminary Plan or Site Plan	As determined at Sketch, Preliminary Plan or Site Plan	As determined at Sketch, Preliminary Plan or Site Plan
Private Park Areas - member only	Up to 50% of NP dedication if relieves burden on other parks and is open to neighborhood residents free of charge	No credit	No credit
Detention Ponds*	No credit	Up to 25% credit if graded, landscaped and improved so usable when dry – not including below the Excess Urban Runoff Volume (EURV water surface area.*	Up to 50% credit if enhanced, graded and landscaped per current code. Design required to look natural.
OTHER			
Responsibility for Maintenance, Repair and Asset Replacement	HOA or Metro District	HOA, Metro District or Town (if additional criteria are met)	As determined at Sketch, Preliminary Plan or Site Plan

R = Required for site C= Compatible (appropriate for site) - = Not Compatible (not suitable and should not be considered)

MC = May be compatible (suitability determined/approved through Sketch, Preliminary Plan or Site Plan)

*Reference Town's *Storm Drainage and Environmental Manual*

Definitions

Many terms used in the code related to parks are not defined in the code. The Town should define terms such as "active recreation", "passive recreation", "specialized recreation facility", and "nature play."

Neighborhood and Community-Serving Park In-lieu Fees

Section 13.07.140 (c) (5) in Parker's Municipal Code shall be amended as "Cash-in-lieu-of-land dedication and development." Formulas and requirements will remain the same. The Park Fee Schedule should be updated to amend calculations for park construction costs.

New development costs per acre are proposed based on general cost allowances to develop all required amenities, facilities and infrastructure in parks as noted in Table 2 above. The purpose is to illustrate typical costs of construction based on an example of elements that meet the minimum requirement. Costs are allowances and may not reflect actual construction costs depending on the types, styles and numbers of amenities and facilities provided. The number and types of amenities will be influenced by park size, topography, character, etc. The percentages for Design, Contingency and Future Construction Increases are consistent with percentages currently applied in Parker's Park Fee Schedule.

The tables do not reflect the exact amenities, facilities or elements that may be developed in actual parks. Additional elements may be added or substituted as determined through the approved Sketch, Preliminary Plan or Site Plan.

Tables 5 (next page) and 6 identify the following development costs[1]:

Neighborhood Park Development	673,000 per acre
Community-Serving Park Development	912,000 per acre
Average Cost per Acre for Development	***$792,500 per acre***
Current Park Construction Costs	***$255,400 per acre***

[1] All cost assumptions in tables 5 and 6 should be vetted by Town staff. Given minimum park sizes, the Town should have a landscape architect confirm that these required elements will fit into a park of the minimum sizes noted.

Table 5: Minimum Development and Cost Assumptions for 1.5 acre (preferred size) Neighborhood Park (NP)

Neighborhood Park Required Elements	Allowance	Notes
Site Infrastructure and Irrigation	$ 202,200	Parker 2017 General Park Construction Estimate
Site Amenities/Furnishings/Signage	$ 35,000	Benches, trash receptacles, park rule sign, entry sign, bike racks, dog waste station
Children's Play Area (Small)	$ 150,000	Small-scale playground (ages 2-5 and 5-12) or other play features; universal or inclusive play elements; non-synthetic surfacing
Open Turf Play Area	$ 25,000	Graded, planted grass area
Sports Court	$ 100,000	Single court or other active use feature
Small Shelter	$ 120,000	5-10 users, shelter, concrete pad
Seating and Tables	$ 25,000	
Access paths	$ 25,000	
Shade	$ 50,000	Sails, umbrellas, canopies, etc.
Additional recreation element	$ 75,000	Additional element TBD
Site Development Subtotal	$ 807,200	
Design	$ 80,720	10 % of total development cost
Contingency	$ 80,720	10% of total development cost
Future Construction Increases	$ 40,360	5% of total development cost
TOTAL	**$ 1,009,000**	
NEIGHBORHOOD PARK	**COST PER ACRE**	
Site Acquisition	**market**	
Site Development	**673,000**	

Note: The cost per 1.0 acre (minimum NP size) is based on providing the following required elements in a 1.5-acre park. Costs are allowances and may not reflect actual construction costs depending on the types, styles and numbers of amenities and facilities provided. The number and types of amenities will be influenced by park size, topography, character, etc.

Table 6: Development and Cost Assumptions for 10-25 acres (preferred size) Community-Serving Park (CSP)

CSP Required Elements	Allowance	Notes
Site Infrastructure and Irrigation	$ 2,022,000	Parker 2017 General Park Construction Estimate
Site Amenities/ Furnishings/Signage	$ 100,000	Benches, trash receptacles, park signage, bike racks, dog waste station
Restroom(s) Permanent	$ 850,000	Multi-unit single occupancy restroom, plumbing chase and storage
Large or Destination Play Area	$ 750,000	Large play area with universal and inclusive elements
Open Turf Play Area	$ 100,000	Graded, planted grass area
Ball field (diamond/rectangular)	$ 650,000	Lighted, sand base turf field including drainage and irrigation; amenities such as backstop, dugout, bleachers, goal posts, etc.
Sports Court	$ 250,000	Paired courts, lighted
Large Shelter	$ 650,000	30-100 users, shelter, concrete pad, electrical outlets, food prep area with sink, security lighting
Seating and Tables	$ 100,000	Allowance
Shade	$ 150,000	Sails, umbrellas, canopies, etc.
Access Paths	$ 150,000	Allowance
Loop Path	$ 300,000	Allowance
Program Space	$ 500,000	Allowance for hardscape/softscape for organized programs and events
Additional Recreation Element	$ 150,000	Additional element TBD
Natural Area	$ 70,000	Restoration costs @ $35,000 per acre for 2 acres
Site Design Theme	$ 500,000	Allowance park character
Site Development Subtotal	$ 7,292,000	
Design	$ 729,200	10 % of total development cost
Contingency	$ 729,200	10% of total development cost
Future Construction Increases	$ 364,600	5% of total development cost
TOTAL	**$ 9,115,000**	
COMMUNITY SERVING PARK	**COST PER ACRE**	
Site Acquisition	**market**	
Site Development	**912,000**	

Note: The cost per 1.0 acre is based on providing the following required elements in a 10-acre park. Minimum CSP acreage is 8 acres. Costs are allowances and may not reflect actual construction costs depending on the types, styles and numbers of amenities and facilities provided. The number and types of amenities and facilities will be influenced by park size, topography, character, etc.

Notes on Design and Development Guidelines

Many communities that provide quality parks have, in addition to the codified standards, a manual of design and development guidelines for parks. Because codification is by nature rigorous, and the Town desires to keep some flexibility, in order for the Town of Parker is to achieve all the aspirations related to parks quality that staff expressed in the course of this project, the Town will need to consider developing such a manual. Such a manual would supplement and illustrate code (Land Development Ordinance - LDO) language and help park developers better understand and envision a range of options for meeting the code. Because the manual would sit outside the code, it can provide strong guidance while still allowing for significant flexibility. It can also be more readily updated without a full code text amendment process, allowing staff to update and revise the guidelines as community recreation needs, trends, and costs shift over time. While design and development guidelines fall outside of the scope of this project, MIG has provided staff with several examples of similar products adopted in other communities.

Examples of guidance that typically stands outside the code include:

- Local, regional & multi-use trail definitions and their widths
- Examples of universal/inclusive & natural play features
- Lists of sample 'Additional Recreational Elements' by park type for developers for to pick from

Next Steps

The recommendations of this report will be shared with public officials in the Town of Parker for direction on which recommendations to incorporate into the current LDO Modernization project. From there, recommendations will be integrated as the draft LDO is developed, and further vetted and/or refined through the review and adoption process for the LDO Modernization project.

MEMORANDUM

TO:	Mayor and Members of Town Council
FROM:	John Fussa, Community Development Director Community Development Department
DATE:	September 23, 2019
SUBJECT:	Prairie Dog and Wildlife Management Revisions

ISSUE:

The Town has experienced substantial growth and development during the past five to ten years like many communities in the Denver Metro region since the end of the Great Recession. This growth and development has the potential to impact wildlife and wildlife habitat as development proposals are approved and land is disturbed by construction activities. This issue is of concern to a segment of Parker and Douglas County residents who have commented upon it at Town Council meetings earlier this year in connection with public hearings for development projects.

In response, the Town Council directed the Community Development Department to research potential options for how to mitigate the impact of development upon prairie dogs and other wildlife as well as wildlife habitat. Community Development staff presented several options at the July 22, 2019 Town Council Study Session (copy attached). Council directed the following:

1. Prepare a concept(s) with language to address the management of prairie dogs in connection with development proposals.
2. Prepare a concept(s) with language for an Environmental Assessment requirement as part of the land use process that would provide applicants and the Town with a tool to evaluate the impact of development upon certain wildlife and wildlife habitat.

Staff has attached a draft of the concept for prairie dog management for Town Council review. Staff will provide a draft of the concept for an Environmental Assessment at the Study Session because we are still awaiting information requested from other agencies as of the writing of this memo.

FISCAL/BUDGET IMPACT:

None

BACKGROUND:

See Details tab

RECOMMENDATION:

Staff request Town Council direction

REQUESTED DIRECTION:

Staff requests Town Council input regarding the concepts to be presented at Study Session and direction about how to proceed.

ATTACHMENT:

1. Draft_Presentation_Wildlife_TC SS_7-22-19
2. Draft_CD_Prarie Dog Mgmt_Concepts_TC SS 9-23-19

Town Council
Study Session
July 22, 2019

Discussion of Wildlife Management

COMMUNITY DEVELOPMENT DEPARTMENT

PARKER
COLORADO

Prairie Dog Management

- **Issue:** Growth and development is impacting existing prairie dog colonies and habitat. How to effectively and humanely manage the impacts?
- **Option 1:** Status quo
- **Option 2:** Encourage relocation
- **Option 3:** Encourage relocation, require humane mitigation ***Staff recommendation***
- **Option 4:** Require relocation, require humane mitigation

Prairie Dog Management

- **Option 3:** Encourage relocation, require humane mitigation
- **Issue 1:** How to encourage relocation? Incentives?
- **Issue 2:** Humane mitigation options?
- **Issue 3:** Require approval, permit?
- **Issue 4:** Require public notice?
- **Issue 5:** Demonstration or pilot project?

Wildlife Management

- **Issue:** Growth and development is impacting existing wildlife, wildlife habitat and natural ecosystems. How to protect animals, preserve habitat and provide opportunity for wildlife to re-establish?
- **Option 1:** Status quo
- **Option 2:** Status quo but seek greater review by C.P.W., U.S.F.W. and other relevant entities
- **Option 3:** Create Environmental Assessment Requirement **Staff recommendation**
- **Option 4:** Create Environmental Impact Statement Requirement

Wildlife Management

- **Option 3:** Create Environmental Assessment Requirement
- **Issue 1:** Best practices?
- **Issue 2:** What are the triggers?
- **Issue 3:** Establish model format and standards?
- **Issue 4:** How apply results to development proposals?
- **Issue 5:** What are Priorities? Corridors, Linkages, Mitigating Conflict, Open Space, Wildlife, etc…

Wildlife Management

Next Steps if Town Council directs action:

Prairie Dog Management

- Complete research and identification of best practices
- Determine public outreach
- Finalize policy and draft ordinance(s)
- Consult w/Council
- Public hearing on proposed ordinance(s)

Wildlife Management

- Complete research and identification of best practices
- Determine public outreach
- Finalize policy and draft ordinance(s)
- Consult w/Council
- Public hearing on proposed ordinance(s)

Proposed Completion

- Q4 2019

DRAFT

Prairie Dog and Wildlife Management Concepts

Prairie Dogs

Prairie Dog Management

A. Intent: The purpose of this regulation is to provide criteria and standards for the preservation of prairie dogs where appropriate and the effective management of prairie dogs and other rodents in connection with development and to encourage humane management. It is the intent of the Town of Parker that prairie dogs and other rodents shall be managed humanely with preference given to preservation on-site if feasible; relocation or partial relocation off-site if feasible; and if necessary lethal extermination using approved, non-toxic or least toxic means.

B. Applicability: The standards contained in this section are in addition to, and do not supersede, any state or federal standards on the management of prairie dogs. An applicant for development shall submit a Management Plan with an application or permit for development when 30 or more prairie dogs are located on the subject property at the time of application and in connection with the following application types:

1. Demolition Permit
2. Grading Plan
3. Sketch/Preliminary Plan
4. Minor Development Plat
5. Replat
6. Site Plan or Preliminary Site Plan

C. Management Plan - Procedures and Requirements: In order to effectively and humanely manage prairie dogs, an applicant shall submit a Management Plan to including the following:

1. Management Approach: statement describing how management will be accomplished in order of priority: preservation, relocation, partial relocation, extermination.
2. Management Schedule: summary of project schedule including the anticipated dates and time frame in which the proposed management approach will be accomplished.
3. Management Activities: summary of the activities, methods and means that are proposed to accomplish the proposed management approach.
4. Management Plan/Map: a plan that illustrates how the proposed management approach will be conducted on-site and if relocation or partial relocation a map showing the location(s) of the receiving site(s) with information about the address, property owner, property owner consent and transport.

D. Relocation: Applicants are encouraged to relocate or partially relocate existing prairie dogs where a development proposal results in conflicts with human activity and land uses. Applicants must demonstrate a good faith effort to relocate or partially relocate prairie dogs from the subject property before a management plan for lethal extermination is approved. The applicant, in the Management Plan, shall document the activity, steps and tasks undertaken to provide for relocation or partial relocation. Information to be provided in connection with relocation or partial relocation shall include:

1. Means and methods of relocation
2. Collection method such number of traps, days of pre-baiting, trap monitoring, days of trapping

3. Method of transportation to receiving site
4. Certification that relocation or partial relocation has been completed

E. Restrictions and Prohibitions: No relocation or lethal extermination of prairie dogs shall occur between April 1 and June 1, more commonly known as the Birthing Period.

F. Lethal Extermination Alternative: Applicant shall provide a statement describing good faith efforts of not less than 90 days to identify alternatives to the lethal extermination of prairie dogs, which may include but not be limited to donation to s facility which uses them to rehabilitate other wildlife.

G. Use of Lethal Extermination: If none of the preference option described herein is feasible, as a last resort, the applicant may seek approval for lethal extermination using a licensed professional exterminator to eradicate all or part of a prairie dog colony. The applicant shall provide in the Management Plan the proposed non-toxic or least toxic rodenticide approved for use by the by the State of Colorado and U.S. Environmental Protection Agency (EPA).

H. Public Notice: Public notice of a Management Plan application shall be provided in accordance with Section 13.08, Public Notice Requirements, of the Parker Municipal Code.

I. Fees: To be determined. Propose fee waiver if the Management Plan proposes relocation or partial relocation.

Wildlife Management

To be provided at Study Session