AGENDA

Traffic Safety Committee	
Date & Time:	Thursday - October 22, 2020 6:00 pm
Location:	Pursuant to House Bill 4212 (2020), this meeting will be conducted electronically and will be live streamed at https://www.youtube.com/user/CityofSherwood.

Attendees

T.S.C. Members:	**City Staff:**
Jason Wuertz-Chair	Jon Carlson-Police Captain
Patti Spreen-Vice Chair	Angie Hass-Executive Assistant
Tony Bevel	Bob Galati-City Engineer
Ruthanne Rusnak	Jeff Groth-Police Chief
Mike Smith	Julia Hajduk-Community Development Director
Chris West	
Tiffany Yandt	

Agenda

1. Call to Order (Chair)
2. Roll Call (Staff)
3. Approval of Minutes (Chair)
4. Business (Chair)
   a. November Meeting on Thanksgiving-Cancel?
   b. Traffic Calming Options-draft council resolution for review and approval
   c. Issues / Complaints
      i. Langer Farms/Century Roundabout-Update (Julia Hajduk)
      ii. Review tracking sheet
      iii. New: 2020-007, parking issues on SW Lavender Place
      iv. New: 2020-008, request for blinking yellow light at crosswalk - Sunset & Woodhaven
5. Citizen Comment (Chair/Staff)

   Pursuant to Executive Order 20-16, citizen comments must be submitted in writing to hassa@Sherwoodoregon.gov. To be included in the record for this meeting, the email must clearly state that it is intended as a citizen comment for this meeting and must be received at least 24 hours in advance of the scheduled meeting time. Per Council Rules Ch. 2 Section (V)(D)(5), Citizen Comments, "Speakers shall identify themselves by their names and by their city of residence." Anonymous comments will not be accepted into the meeting record.
6. Adjourn (Chair)

Meeting Minutes

Traffic Safety Committee	
Date & Time:	October 22, 2020 - 6:00 pm
Location:	Meeting held virtually through Teams.

T.S.C. Members:	**City Staff:**
Jason Wuertz-Chair	Jon Carlson-Police Captain
Patti Spreen-Vice Chair	Angie Hass-Executive Assistant
Tony Bevel	Bob Galati-City Engineer
Ruthanne Rusnak	Julia Hajduk-Community Development Director
Mike Smith	**TVF&R Staff**
Chris West	DFM, Patrick Fuirst
Tiffany Yandt	

This meeting was live-streamed (and recorded) through the City of Sherwood's YouTube channel. The video is available for viewing: https://www.youtube.com/watch?v=G9RvKRgRucQ

1. **Call to Order**
   Chair Wuertz called the meeting to order at 6:05 p.m.

2. **Roll Call**

   Committee Members Present: Chair Jason Wuertz, Vice Chair Patti Spreen, Tony Bevel (joined the meeting at 6:13), Ruthanne Rusnak (joined the meeting at 6:14), Mike Smith and Tiffany Yandt

   Committee Members Absent: Chris West

3. **Approval of Minutes**
   Mr. Smith moved that the September meeting minutes be approved as written and Vice Chair Spreen seconded the motion. All present committee members voted in favor.

4. **Business**
   a. **November Meeting on Thanksgiving, Cancel?**
      Captain Carlson suggested that with the next TSC meeting falling on the Thanksgiving holiday, the November meeting be cancelled or rescheduled for another night in November. As the December meeting also falls on a holiday (Christmas Eve), a decision would need to be made for that meeting as well. After some discussion, it was

decided to cancel the November meeting altogether. Angie will check with City staff to see if there might be an alternative date that would work in December and then check in with the TSC members.

b. Traffic Calming Options-Draft Council Resolution for Review & Approval

See Exhibit "A". Captain Carlson asked the committee if there were any questions on the Resolution that had been drafted for presentation to the City Council. Mr. Smith commented that he thought it looked complete and professional to him. Chair Wuertz made a motion to refer the Resolution as provided in their packet, to the City Council for their consideration. Mr. Smith seconded the motion and all present committee members voted in favor.

c. Issues / Complaints

i. Langer Farms / Century Roundabout Update (Julia Hajduk)

See Exhibit "B" for PowerPoint slides. Ms. Hajduk presented the committee with a PowerPoint to show recommended updates to the existing roundabout. This was put together by consultants that the City hired, DKS Associates. She stated that there has already been direction provided by the City Council and the City will be taking action on some of the recommendations. As the Traffic Safety Committee is now in place, they thought it was important to let the committee know why changes were being made and what those decisions were. When this PowerPoint was first presented to the City Council, the Traffic Safety Committee did not exist yet. ***(Presentation begins at the 10:02 minute mark of the YouTube recording.)***

Mr. Galati commented that it was important to note that the roundabout, by itself, meets the standards that are used, basically, nationwide. That may not mean that it is appropriate for the current situation. He added that the intent of the mound is to focus people's attention on where they're going and what they're doing in the immediate area and not looking far away. He shared why that is important.

After going over the different recommendations made by DKS, Ms. Hajduk stated that the City Council approved the restriping for a single lane roundabout from all entry points. That is the direction that staff is proceeding with. Mr. Galati said that as soon as this is budgeted for, then they can proceed. Ms. Hajduk believed that Public Works has plans to do this in the spring, late March, perhaps. Mr. Galati stated that the plan is to have DKS prepare a modified striping plan so they can bid it in January.

Mr. Bevel asked for confirmation that the restriping cost would be $68,000-$70,000, as he thought that seemed expensive. Ms. Hajduk said that amount

includes fixing the site improvements and improving the lighting. That amount also includes some costs associated with some of the other improvements as well. Mr. Galati added that also includes the design and engineering costs, bidding the project, etc. Vice Chair Spreen asked what fund those costs will be coming from. Ms. Hajduk replied that they are still trying to figure out the specific details. Once they figure out the final costs, they will work with Public Works and Finance to identify what buckets those funds will be coming out of. It will probably be multiple buckets. Ms. Spreen asked what bucket the DKS consultation came out of. Mr. Galati replied that cost came out of the City's On-Call funds. Ms. Hajduk explained that is from the City's General Funds and that Engineering has a certain amount of money budgeted for that type of study.

Ms. Spreen inquired as to how long they anticipate the project to take. Ms. Hajduk commented that they didn't think it would take very long. Possibly two-three months. It isn't going to be a super-involved, long construction project. Mr. Galati said that you have to consider the components of what was recommended and expanded a bit on that. Ms. Hajduk said that the site distance issue should improve because they are making it a single lane roundabout. Mr. Galati wanted to let everyone know that the idea is that, eventually, a decade or two down the road, traffic will be at a level where a two-lane roundabout will be warranted and needed. At that time, this roundabout can be moved back to the two-lane roundabout configuration just by removing striping. They don't want to throw away all of the hard improvements that they've put in place, only to have to redo it again and bring it back to where it was 20 years prior. They don't want to remove the ability to increase the capacity over time at the time when it's needed. He explained that is why they are choosing to go this route.

Chair Wuertz thought it was a great idea and stated that it will remove a lot of confusion that people have out there, while improving the safety. His only concern was that speeding may become an issue. If it is wide open, he sees the possibility of people taking it a lot quicker. He thinks with good design, they can engineer that out. Mr. Galati said that he was sure there were some items that can be applied, such as adhesive rumble strips and things like that. Ms. Rusnak asked if that would add a lot to the cost. Mr. Galati replied that it would not. Chair Wuertz thanked Ms. Hajduk and Mr. Galati for the update and said that it was informative.

ii. Review Tracking Sheet

See Exhibit "C". Captain Carlson stated that request #2020-001 had pretty much been approved. He will be writing the request up the next week and presenting it to the City Manager for his final approval of the stop sign. He anticipated this request will be closed out by the next meeting.

In regards to request #2020-006, Mr. Galati shared that as part of The Springs subdivision, they did put in continental crosswalk striping. However, when Public Works did the recent slurry seal, they basically slurry sealed over the painting of the crosswalks. As a result, Public Works is going to go out and reestablish those striping patterns again. That is going to be adequate for that intersection. He added that the signage is adequate as well. Ms. Rusnak thought it would be important to notify the requestor of the decision that was made. Angie replied that she would notify the citizen who placed the request, of the decisions made. After some more discussion, Ms. Rusnak made a motion to deny the request for additional signage and approve the replacement of the striping for request #2020-006. Mr. Smith seconded the motion and all present committee members approved.

iii. **New: 2020-007, Parking Issues on SW Lavender Place** *(See Exhibit "D". This discussion begins at the 40-minute mark of the YouTube video.)* After an extensive conversation, it was decided to start with enforcement in regards to the illegal parking issues. In addition, the Code Enforcement Officer will be notified of the basketball hoop in the road so that he may follow up with the owner of the hoop. Per municipal code, basketball hoops are not allowed on the streets. Captain Carlson will write up a focused patrol for Officers so that they will know to check that area, daily. Mr. Galati will arrange to get measurements taken of the road in order to determine the configuration of what the road should be, based on the as-built plans. Once this has been completed, he will forward the information on to Angie so that she can then forward on to the committee members to review prior to the next meeting.

Chair Wuertz made a motion to recommend enforcement of the parking laws on that street as well as request additional information from City staff on the widths of the street and driveway access for follow up, the next time they meet. Ms. Rusnak seconded the motion. Mr. Smith asked about amending the motion to include possible costs with the relocation of one of the No Parking signs. It was decided to include the amendment. All committee members voted in favor.

iv. **New: 2020-008, Request for Blinking Yellow Light at Crosswalk-Sunset & Woodhaven** *(See Exhibit "E". This discussion begins at the 1:10 minute mark of the YouTube video.)* Mr. Galati wondered if there had been any police reports registered for this area, as he had not had any complaints from the citizens. There is a Capital Improvement Project planned for that area, but it is a moderate to long-term project as identified in the City's Transportation System Plan. If there have been more complaints registered for it, he'd like to know, rather than just having a system put up because somebody said they think it needs to be done. Captain Carlson reported that the PD hadn't had any other complaints within the last two years. There had been only one other one that he was aware of. After some

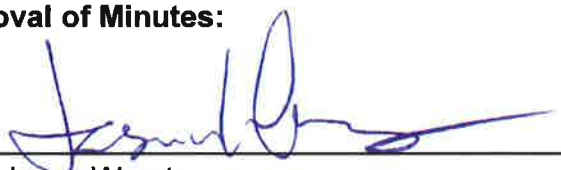
discussion, Chair Wuertz made a motion to ask the City staff to check site distance at the crosswalk and to evaluate the lighting from a judgement perspective. Mr. Smith seconded the motion. All committee members voted in favor.

5. **Citizen Comment**
   N/A

   Captain Carlson notified the group that there are still plenty of yard signs available and asked committee members to feel free to pick some up and to notify their neighbors and friends as well. The PD doors are open M-F from 8 a.m. to noon.

6. **Adjourn**
   With nothing further to discuss, the meeting was adjourned at 7:25 p.m.

Approval of Minutes:



12/30/2020

Chair Jason Wuertz — Date

Attest:

12/30/2020

Angie Hass — Date

Exhibit "A"

City Council Meeting Date: October 20, 2020

Agenda Item: Consent Agenda

TO: Sherwood City Council

FROM: Bob Galati P.E., City Engineer
Through: Jeff Groth, Chief of Police
Julia Hajduk, Community Development Director

SUBJECT: **Resolution 2020-xxx, Establishing Acceptable Traffic Calming Measures**

Issue:

Shall the City Council adopt Resolution 2020-XXX thereby Establishing Acceptable Traffic Calming Measures?

Background:

In order to facilitate the City's response to public concerns, the City Council established the Traffic Safety Committee (Ordinance 2019-015), which is associated with the Police Advisory Board. One goal of the Traffic Safety Committee (TSC) is to improve the City's ability to review and respond to community concerns regarding traffic safety issues.

To support the TSC in meeting its stated goal, it is desirable to have a pre-approved list of acceptable traffic calming measures to select from, in providing solution recommendations in response to community requests.

City Engineering Department staff was tasked with providing a list of typical traffic calming measures. The best source for identifying standard traffic calming measures is the Institute of Transportation Engineers (ITE). ITE is a nationally/internationally recognized source of transportation engineering information and data that identifies necessary research, develops technical resources including standards and recommended practices and policies, and develops public awareness programs.

The ITE website provided Traffic Calming Measure Fact Sheets for the various types of traffic control measures typically used by jurisdictional transportation agencies. City Engineering staff generated a compilation of Traffic Calming Measures fact sheets which have been recommended to the TSC and PAB as acceptable measures to be used within the City. Those fact sheets are attached to this staff report for reference.

The ITE fact sheets provide an existing nationally recognized standard which can be uniformly applied in the City. Each fact sheet provides significant relevant information for the decision making process. This includes:

a) Description - an accurate description of traffic calming measure

b) Applications – lists where the application is most appropriate

c) Design/Installation Issues – lists issues that need to be considered during design and construction

d) Potential Impacts – lists possible positive and negative impacts from the use of the measure

e) Emergency Response Issues – lists specifically whether there is a negative impact to emergency response vehicles

f) Typical Cost (2017 dollars) – provides an estimated range of design and construction cost. The costs are in 2017 dollars, and are based on a national average. Local cost indexing and increase due to annual increases would need to be performed.

City staff presented the Traffic Calming Measure Fact Sheets and list of recommended acceptable traffic calming measures to the TSC and PAB. Both the TSC and the PAB have recommended City Council approval of this list and inclusion of these measures in the City's Engineering Design and Standard Details Manual.

The inclusion of these measures in the transportation section of the City's Engineering Design and Standard Details Manual is appropriate for the following reasons:

1) The Engineering Design and Standard Details Manual (Manual) is a living document which allows for updating and revisions to the technical information based on new/improved materials, techniques, and applications.
2) Updates to the Manual can be made by City staff at the direction of the City Council based on the recommendation of the City Engineer, the Public Works Director, or the Traffic Safety Committee and Police Advisory Board.

Financial Impacts:

There are no additional financial impacts as a result of approval of this resolution.

Recommendation:

Staff respectfully recommends City Council approval of Resolution 2020-xxx, Establishing Acceptable Traffic Calming Measures.

DRAFT

City of Sherwood Oregon

Home of the Tualatin River National Wildlife Refuge

RESOLUTION 2020-XXX

ESTABLISHING ACCEPTABLE TRAFFIC CALMING MEASURES

WHEREAS, the City Council established the Traffic Safety Committee (TSC) by Ordinance 2019-015, which is associated with the Police Advisory Board (PAB); and

WHEREAS, one goal of the TSC is to improve the City's ability to review and respond to community concerns regarding traffic safety issues; and

WHEREAS, to support the TSC in meeting this goal, it is desirable to have a pre-approved list of acceptable traffic calming measures to select from; and

WHEREAS, City engineering staff has generated a list of traffic calming measures which have been recommended to the TSC and PAB as acceptable measures to be used within the City; and

WHEREAS, City staff presented the review findings and recommendations to the TSC and the PAB, with the committee and board approving the findings and recommending that the acceptable traffic calming measures be made part of the City's Engineering Design and Standard Details Manual; and

WHEREAS, the Engineering Design and Standard Details Manual is a living document, where additions and deletions of acceptable traffic control measures may be made by City staff at the direction of the City Council based on the recommendation of the City Engineer, the TSC and PAB; and

WHEREAS, it is understood that while this Resolution establishes acceptable traffic calming measures for consideration in any (re)construction of public infrastructure, the selection of a recommended traffic calming measure will require a determination by City Engineering staff that supports the use and effectiveness of the selected traffic control measure, on a case by case basis.

NOW, THEREFORE, THE CITY OF SHERWOOD RESOLVES AS FOLLOWS:

Section 1. The Traffic Calming Measures listed below shall be added to the City's Engineering Design and Standard Details Manual as acceptable Traffic Calming Measures for use within the City:

a. Chicane	b. Choker	c. Corner Extension/Bulb-Out
d. Diagonal Diverter	e. Lateral Shift	f. Median Barrier/Forced Turn Lane
g. Median Island	h. Mini Roundabout	i. On-Street Parking
j. Raised Intersection	k. Realigned Intersection	l. Roundabout
m. Speed Cushion	n. Speed Hump	o. Speed Table/Raised Crosswalk
p. Traffic Circle		

Section 2. Future additions to or deletions from the list of acceptable Traffic Calming Measures may occur as needed, based on the City Engineer's recommendation, the Traffic Safety Committee and Police Advisory Board recommendations, and City Council approval.

Section 3. This Resolution shall be effective upon its approval and adoption.

Duly passed by the City Council this 20th day of October, 2020.

Keith Mays, Mayor

Attest:

Sylvia Murphy, MMC, City Recorder

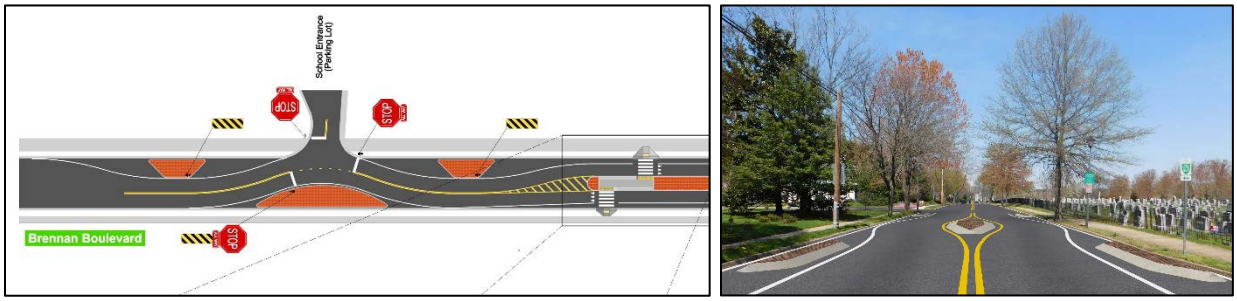
Chicane

Description:

- A series of alternating curves or lane shifts that force a motorist to steer back and forth instead of traveling a straight path
- Also called deviations, serpentines, reversing curves, or twists

Applications:

- Appropriate for mid-block locations but can be an entire block if it is relatively short
- Most effective with equivalent low volumes on both approaches
- Appropriate speed limit is typically 35 mph or less
- Typically, a series of at least three landscaped curb extensions
- Can use alternating on-street parking from one side of a street to the other
- Applicable on one-lane one-way and two-lane two-way roadways
- Can be used with either open or closed (i.e. curb and gutter) cross-section
- Can be used with or without a bicycle facility



(Source: Delaware Department of Transportation)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Chicanes may still permit speeding by drivers cutting straight paths across the center line
- Minimize relocation of drainage features
- May force bicyclists to share travel lanes with motor vehicles
- Maintain sufficient width for ease of emergency vehicles and truck throughput

Potential Impacts:

- No effect on access, although heavy trucks may experience challenges when negotiating
- Limited data available on impacts to speed and crash risk
- Street sweeping may need to be done manually
- Minimal anticipated volume diversion from street
- May require removal of some on-street parking
- Provides opportunity for landscaping
- Unlikely to require utility relocation
- Not a preferred crosswalk location
- Bus passengers may experience discomfort due to quick successive lateral movements

Emergency Response Issues:

- Appropriate along primary emergency vehicle routes

Typical Cost (2017 dollars):

- Reported costs range between $8,000 and $25,000

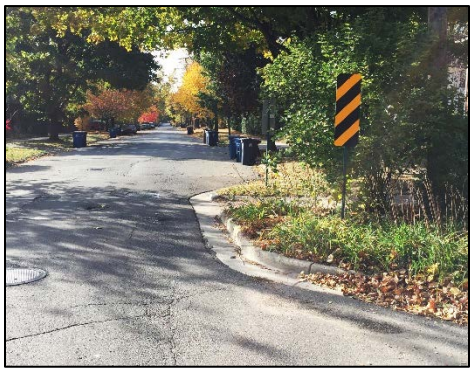
Choker

Description:

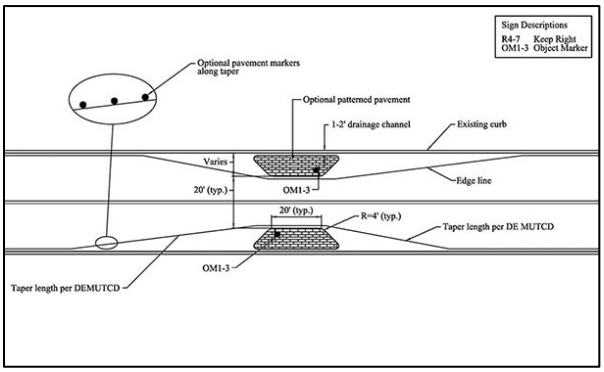
- Curb extension is a lateral horizontal extension of the sidewalk into the street, resulting in a narrower roadway section
- If located at an intersection, it is called a corner extension or a bulb-out
- If located midblock, it is referred to as a choker
- Narrowing of a roadway through the use of curb extensions or roadside islands

Applications:

- Can be created by a pair of curb extensions, often landscaped
- Encourages lower travel speeds by reducing motorist margin of error
- One-lane choker forces two-way traffic to take turns going through the pinch point
- If the pinch point is angled relative to the roadway, it is called an angled choker
- Can be located at any spacing desired
- May be suitable for a mid-block crosswalk
- Appropriate for arterials, collectors, or local streets



(Source: City of An Arbor, Michigan)



(Source: Delaware DOT)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Only applicable for mid-block locations
- Can be used on a one-lane one-way and two-lane two-way street
- Most easily installed on a closed-section road (i.e. curb and gutter)
- Applicable with or without dedicated bicycle facilities
- Applicable on streets with, and can protect, on-street parking
- Appropriate for any speed limit
- Appropriate along bus routes
- Typical width of 6 to 8 feet; offset from through traffic by approximately 1.5 feet
- Locations near streetlights are preferable
- Length of choker island should be at least 20 feet

Potential Impacts:

- Encourages lower speeds by funneling it through the pinch point
- Can result in shorter pedestrian crossing distances if a mid-block crossing is provided
- May force bicyclists and motor vehicles to share the travel lane
- May require some parking removal
- May require relocation of drainage features and utilities

Emergency Response Issues:

- Retains sufficient width for ease of use for emergency vehicles

Typical Cost (2017 dollars):

- Between $1,500 and $20,000, depending on length and width of barriers

Corner Extension/Bulb-Out

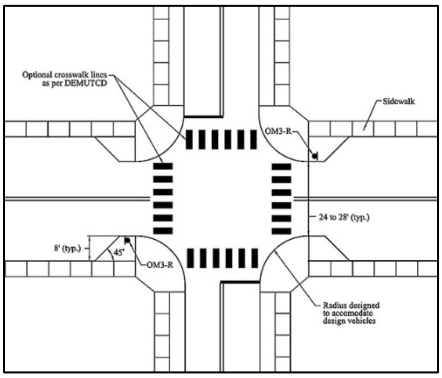
Description:

- Horizontal extension of the sidewalk into the street, resulting in a narrower roadway section
- If located at a mid-block location, it is typically called a choker

Applications:

- When combined with on-street parking, a corner extension can create protected parking bays
- Effective method for narrowing pedestrian crossing distances and increase pedestrian visibility
- Appropriate for arterials, collectors, or local streets
- Can be used on one-way and two-way streets
- Installed only on closed-section roads (i.e. curb and gutter)
- Appropriate for any speed, provided an adequate shy distance is provided between the extension and the travel lane
- Adequate turning radii must be provided to use on bus routes

(Source: James Barrera, Horrocks, New Mexico)



(Source: Delaware DOT)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Effects on vehicle speeds are limited due to lack of deflection
- Must check drainage due to possible gutter realignment
- Major utility relocation may be required, especially drainage inlets
- Typical width between 6 and 8 feet
- Typical offset from travel lane at least 1.5 feet
- Should not extend into bicycle lanes

Potential Impacts:

- Effects on vehicle speeds are limited due to lack of deflection
- Can achieve greater speed reduction if combined with vertical deflection
- Smaller curb radii can slow turning vehicles
- Shorter pedestrian crossing distances can improve pedestrian safety
- More pedestrian waiting areas may become available
- May require some parking removal adjacent to intersections

Emergency Response Issues:

- Retains sufficient width for ease of emergency-vehicle access
- Shortened curb radii may require large turning vehicles to cross centerlines

Typical Cost (2017 dollars):

- Cost between $1,500 and $20,000, depending on length and width of barriers

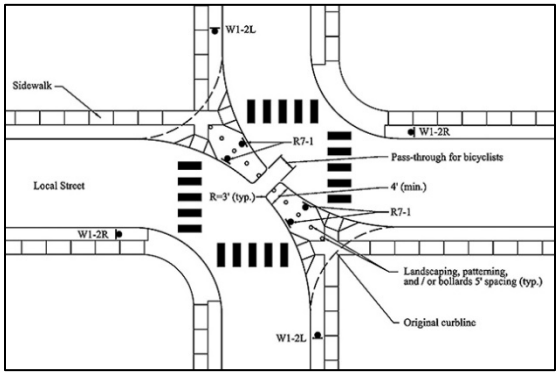
Diagonal Diverter

Description:

- Barriers placed diagonally across four-legged intersections, blocking through movements
- Sometimes called full diverters or diagonal road closures

Applications:

- Typically applied only after other measures are deemed ineffective or inappropriate
- Provisions are available to make diverters passable for pedestrians and bicyclists
- Often used in sets to make travel through neighborhoods more circuitous



(Source: Delaware Department of Transportation)

(Source: PennDOT Local Technical Assistance Program)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Possible legal issues associated with closing public streets (e.g., business and/or emergency access)
- Can only be placed at intersections
- Can be used on both one-way and two-way streets
- Typically found on closed-section roads (i.e. curb and gutter)
- Typical maximum appropriate speed limit is 25 mph
- Maintain drainage as necessary to mitigate potential flooding
- Corner radii should be designed to allow full-lane width for passing motor vehicle traffic
- SU-30 default design vehicle
- Appropriate signing and pavement markings needed on approaches
- Openings for pedestrians and bicyclists should allow movement between all intersection legs
- Barriers may consist of landscaped islands, walls, gates, side-by-side bollards, or any other obstruction that leave an opening smaller than the width of a typical passenger car

Potential Impacts:

- Concern regarding impacts to emergency response, street network connectivity, and capacity
- Should consider traffic diversion patterns and associated impacts
- No significant impacts on vehicle speeds beyond the approach to the diverter
- Not appropriate for bus transit routes
- Improved pedestrian and bicycle safety

Emergency Response Issues:

- Should not be used on roads that provide access to hospitals or primary emergency services
- Restricts emergency vehicle access through intersections
- Can be designed to allow emergency vehicle access with removable, or breakaway delineators or bollards, gates, mountable curbs, etc.

Typical Cost (2017 dollars):

- Typical cost of $6,000 for diverter with limited drainage modifications

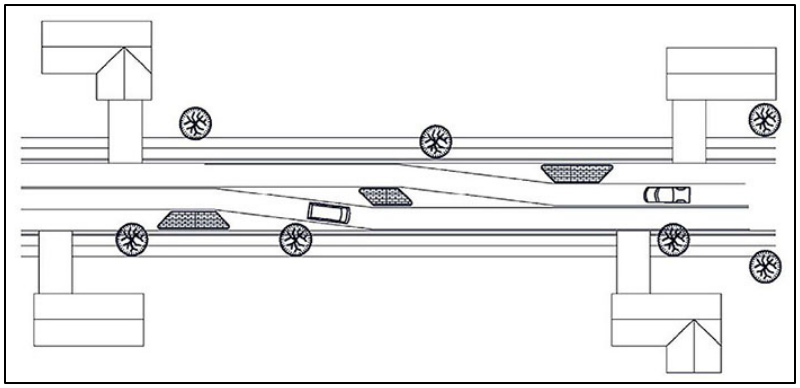
Lateral Shift

Description:

- Realignment of an otherwise straight street that causes travel lanes to shift in at least one direction
- A chicane is a variation of a lateral shift that shifts alignments more than once

Applications:

- Appropriate for local, collector, or arterial roadways
- Appropriate for one-lane one-way and two-lane two-way streets
- Appropriate on roads with or without dedicated bicycle facilities
- Maximum appropriate speed limit is typically 35 mph
- Appropriate along bus transit routes



(Source: Delaware Department of Transportation)

(Source: Google Street View)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Typically separates opposing traffic through the shift with the aid of a raised median
- Applicable only to mid-block locations
- Can be installed on either open- or closed-section (i.e. curb and gutter) roads
- Location near streetlights preferred
- May require drainage feature relocation
- Should not require utility relocation

Potential Impacts:

- Without islands, motorists could cross the centerline to drive the straightest path possible
- No impact on access
- May require removal of some on-street parking
- Limited data available on impacts on speed, volume diversions, and crash risk
- Provides opportunities for landscaping
- Can provide locations for pedestrian crosswalks

Emergency Response Issues:

- Appropriate along primary emergency vehicle routes or on streets with access to hospitals/emergency medical services, provided vehicles can straddle the street centerline

Typical Cost (2017 dollars):

- Reported costs range between $8,000 and $25,000

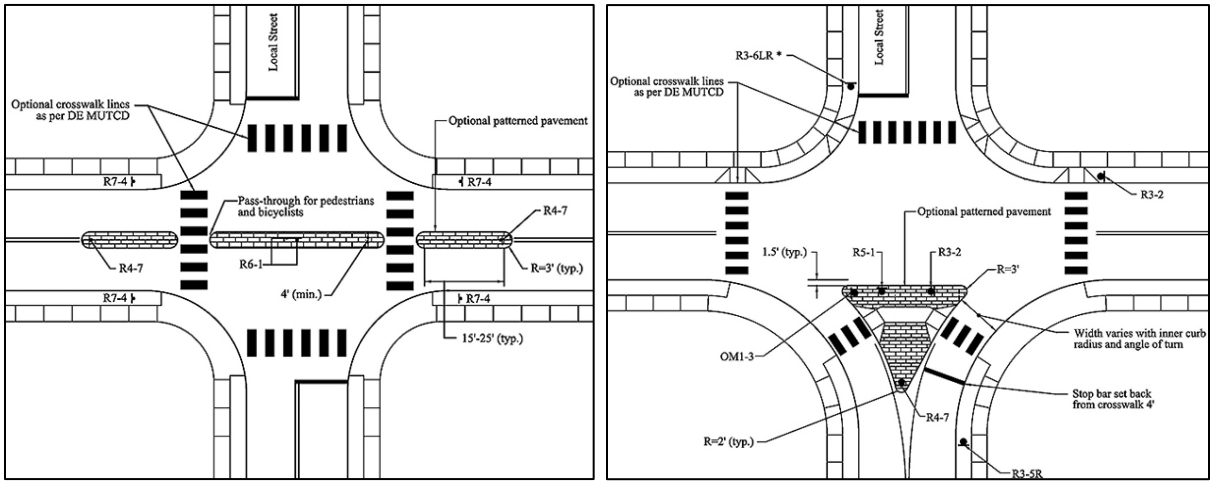
Median Barrier/Forced Turn Island

Description:

- Raised islands along the centerline of a street and continuing through an intersection that block the left-turn movement from all intersection approaches and the through movement from the cross street; also called median diverter, intersection barrier, intersection diverter, and island diverter
- Raised island that forces a right turn is called a forced turn island

Applications:

- For use on arterial or collector roadways to restrict access to minor roads or local streets and/or to narrow lane widths
- Typically applied only after other measures have failed or been deemed inappropriate/ineffective
- Barriers are made passable for pedestrians and bicyclists
- Often used in sets to make travel to/through neighborhoods more circuitous



(Source: Delaware Department of Transportation)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Potential legal issues associated with blocking a public street (e.g., business/emergency access)
- Placed on major roads on approaches to and across intersections with minor roads
- Should extend beyond the intersection to discourage improper/illegal turn movements
- Barriers may consist of landscaped islands, mountable features, walls, gates, side-by-side bollards, or any other obstruction that leave an opening smaller than the width of a passenger car

Potential Impacts:

- May divert traffic volumes to other parallel and/or crossing streets
- May require removal or shortening of on-street parking zones on approaches/departures
- May impact access to properties adjacent to intersection
- No significant impacts on vehicle speeds beyond the approaches to intersection

Emergency Response Issues:

- Restricts emergency vehicle access using minor street
- Can be designed to allow emergency vehicle access

Typical Cost (2017 dollars):

- Cost between $1,500 and $20,000, depending on length and width of barriers

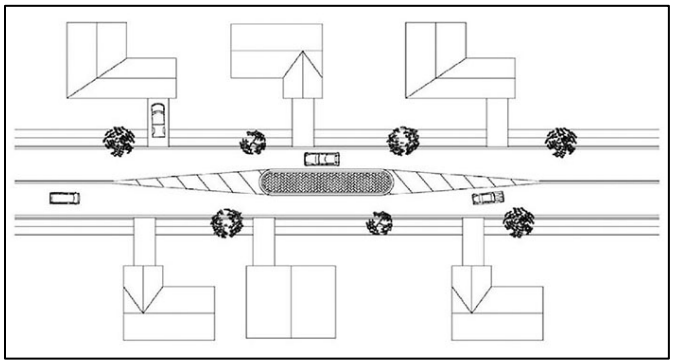
Median Island

Description:

- Raised island located along the street centerline that narrows the travel lanes at that location
- Also called median diverter, intersection barrier, intersection diverter, and island diverter

Applications:

- For use on arterial, collector, or local roads
- Can often double as a pedestrian/bicycle refuge islands if a cut in the island is provided along a marked crosswalk, bike facility, or shared-use trail crossing
- If placed through an intersection, considered a median barrier



(Source: Delaware Department of Transportation)

(Source: James Barrera, Horrocks, New Mexico)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Potential legal issues associated with blocking a public street (e.g., business or emergency access)
- Barriers may consist of landscaped islands, mountable facilities, walls, gates, side-by-side bollards, or any other obstruction that leave an opening smaller than the width of a passenger car
- Can be placed mid-block or on the approach to an intersection
- Typically installed on a closed-section roadway (i.e. curb and gutter)
- Can be applied on roads with or without sidewalks and/or dedicated bicycle facilities
- Maximum appropriate speed limits vary by locale
- Typically not appropriate near sites that attract large combination trucks

Potential Impacts:

- May impact access to properties adjacent to islands
- No significant impact on vehicle speeds beyond the island
- Little impact on traffic volume diversion
- Safety can be improved without substantially increasing delay
- Shortens pedestrian crossing distances
- Bicyclists may have to share vehicular travel lanes near the island
- May require removal of some on-street parking
- May require relocation of drainage features and utilities

Emergency Response Issues:

- Appropriate along primary emergency vehicle roads or street that provides access to hospitals/emergency medical services

Typical Cost (2017 dollars):

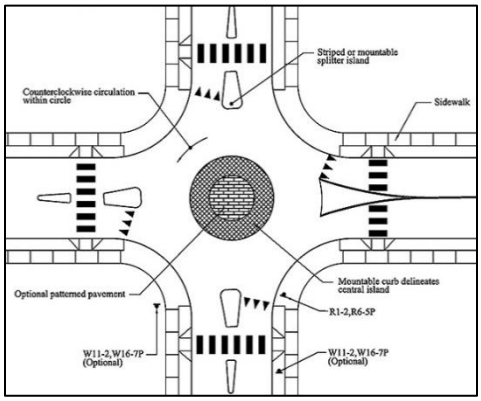
- Cost between $1,500 and $10,000, depending on length and width of island

Traffic Calming Fact Sheets
March 2019 Update

Mini Roundabout

Description:
- Raised islands, placed in unsignalized intersections, around which traffic circulates
- Motorists yield to motorists already in the intersection
- Require drivers to slow to a speed that allows them to comfortably maneuver around them
- Center island of mini roundabout is fully traversable, splitter islands may be fully traversable

Applications:
- Intersections of local and/or collector streets
- One lane each direction entering intersection
- Not typically used at intersections with high volume of large trucks or buses turning left
- Appropriate for low-speed settings



(Source: Delaware DOT)


(Source: Gary Schatz)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation:
- See NCHRP Report 672 for design details
- Typically circular in shape, but may be an oval shape
- Controlled by YIELD signs on all approaches with pedestrian crosswalks, if included, one car-length upstream of YIELD bar
- Preferable for roadway to have urban cross section (i.e., curb and gutter)
- Can be applied to road with on-street parking
- Can be applied to roads both with and without a bicycle facility. Bicycle facilities, if provided, must be separated from the circulatory roadway with physical barriers; cyclists using the circulatory roadway must merge with vehicles. Bicycle facilities are prohibited in the circulatory roadway to prevent right-hook crashes.
- Key design features are the fastest paths and path alignment.

Potential Impacts:
- Slight speed reduction
- Little diversion of traffic
- Bicycle and motorist will share lanes at intersections because of narrowed roadway
- Large vehicles/buses usually drive over the center island for left turns

Emergency Response:
- Emergency vehicles maneuver using the center island at slow speeds

Typical Cost
- Cost is similar to bulb-outs because pedestrian ramps and outside curb lines usually have to be relocated

On-Street Parking

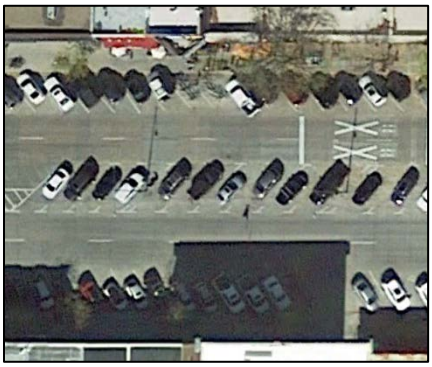
Description:

- Allocation of paved space to parking
- Narrows road travel lanes and increases side friction to traffic flow
- Can apply on one or both sides of roadway
- Can be either parallel or angled, but parallel is generally preferred for maximized speed reduction

Applications:

- High likelihood of acceptability for nearly all roadway functional classifications and street functions
- More appropriate in urban or suburban settings
- Can be combined with other traffic calming measures
- Can apply alternating sides of street for chicane effect
- Can combine with curb extensions for protected parking, including landscaping for beautification
- Can apply using time-of-day restrictions to maximize throughput during peak periods
- Can be used on one-way or two-way streets
- Preferable to have a closed-section road (i.e. curb and gutter)
- Appropriate along bus transit routes

(Source: PennDOT Local Technical Assistance Program)



(Source: Google Earth, Fort Collins, CO)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Appropriate distance needed between travel lane and parking lane
- Impact is directly affected by demand; must have parked vehicles present to be effective
- If used for chicane effect, must verify parking demand to ensure that majority of spaces are occupied when effect is desired most during the day; can use parallel, angled, or combination
- Should not be considered near traffic circles nor roundabouts
- Should not be applied along median island curbs
- For lower-demand locations, can counteract negligible impact with curb extensions or other road-narrowing features

Potential Impacts:

- Can be blocked in by snow during plowing operations; required vehicle removal
- May limit road user visibility and sight distance at driveways/alleys/intersections
- Can put bicyclists at risk of colliding with car doors
- May be impacted if other traffic calming measures are considered or implemented
- Provides buffer between moving vehicles and pedestrian facilities

Emergency Response Issues:

- Preferred by emergency responders to most other traffic calming measures
- Requires consideration of design of parking lanes near hydrants and other emergency features

Typical Cost (2017 dollars):

- Approximately $6000 or less (factor of design specifics and length of application); can be much higher

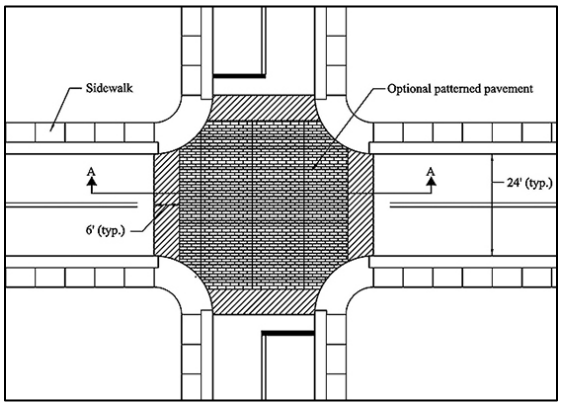
Raised Intersection

Description:

- Flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section and ramps
- Sometimes referred to as raised junctions, intersection humps, or plateaus

Applications:

- Intersections of collector, local, and residential streets
- Typically installed at signalized or all-way stop controlled intersections with high pedestrian crossing demand
- Works well with curb extensions and textured crosswalks
- Often part of an area-wide traffic calming scheme involving both intersecting streets in densely-developed urban areas



(Source: Delaware Department of Transportation)


(Source: Chuck Huffine, Phoenix AZ)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Used at intersections with a maximum speed limit of 35 mph
- Typically rise to sidewalk level; appropriate if crosswalks exist on all four legs
- Appropriate if a dedicated bicycle facility passes through the intersection
- Detectable warnings and/or color contrasts must be incorporated to differentiate the roadway and the sidewalk
- May require bollards to define edge of roadway
- Storm drainage/underground utility modifications are likely necessary
- Minimum pavement slope of 1 percent to facilitate drainage

Potential Impacts:

- Reduction in through movement speeds likely at intersection
- Reduction in mid-block speeds typically less than 10 percent
- No impact on access
- Can make entire intersections more pedestrian-friendly
- No data available on volume diversion or safety impacts

Emergency Response Issues:

- Slows emergency vehicles
- Appropriate for primary emergency vehicle routes and streets with access to a hospital or emergency medical services

Typical Cost (2017 dollars):

- Costs range between $15,000 and $60,000

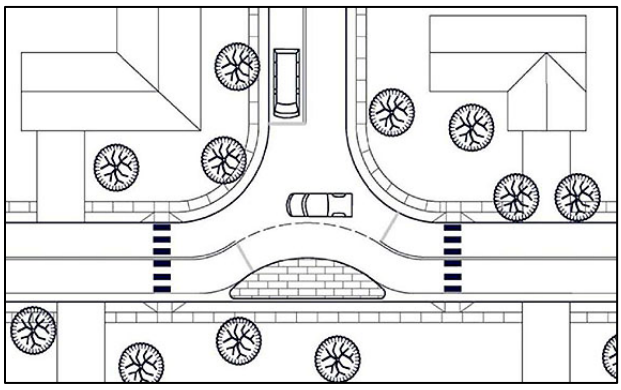
Realigned Intersection

Description:

- Reconfiguration of an intersection with perpendicular angles to have skewed approaches or travel paths through the intersection
- Also called modified intersection

Applications:

- Appropriate for collector or local streets
- Most applicable at T-intersections
- Can be used where on-street parking exists
- Applicable on one-way and two-way roadways
- Most commonly installed on closed-section roads (i.e. curb and gutter)
- Can be applied with and without a dedicated bicycle facility
- Can be applied with or without on-street parking



(Source: Delaware Department of Transportation)

(Source: Delaware DOT)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Need to avoid relocating drainage features such as catch basins, concrete channels, valley gutters, inlets, and trench drains
- Bicyclists and motorists may have separate lanes or may share lanes at intersections
- Be cognizant of pedestrian crossing needs (e.g., ADA, wheelchair ramps at T-intersections)
- Default design vehicle SU-30
- Typical maximum speed limit of 25 mph
- May be appropriate for buses if adequate turning radii can be provided

Potential Impacts:

- Limited-to-no impact on access
- Minimal anticipated diversion of traffic
- Can result in speed reductions between 5 and 13 mph within intersection limits
- Provides opportunity for landscaping
- Can improve pedestrian safety
- Consider additional intersection lighting

Emergency Response Issues:

- Appropriate along an emergency vehicle route or on a street with access to hospital/emergency medical services
- Little impact on response time

Typical Cost (2017 dollars):

- Costs range between $15,000 and $60,000

Traffic Calming Fact Sheets
March 2019 Update

Roundabout

Description:
- Raised islands placed in unsignalized intersections around which traffic circulates
- Approaching motorists yield to motorists already in the intersection
- Requires drivers to slow to a speed that allows them to comfortably maneuver around them
- Different from traffic circles or mini-roundabouts; possible substitute for traffic signal control

Applications:
- Intersections of arterial and/or collector streets
- One or more entering lanes
- Can be used at intersections with high volumes of large trucks and buses, depending on design


(Source: Grant Kaye)


(Source: PennDOT Local Technical Assistance Program)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation:
- See NCHRP Report 672 for design details
- Design vehicle is determined specifically for each site ranging from emergency vehicles to over size/overweight vehicles
- Typically circular in shape but may be an oval shape
- Key physical elements are center islands, truck aprons, and splitter islands
- Controlled by YIELD signs on all approaches with pedestrian crosswalks, if included, one car-length upstream of YIELD bar
- Key design features include: fastest paths, swept paths, and path alignment
- Large vehicles circulating around the center island for all movements may traverse the apron
- Landscaping needs to be designed to allow adequate sight distance per NCHRP 672
- Preferable to have a closed-section road (i.e. curb and gutter)
- Bicycle facilities, if provided, must be separate from the circulatory roadway with physical barriers; cyclists using the circulatory roadway must merge with vehicles. Bicycle facilities are prohibited in the circulatory roadway to prevent right-hook crashes.

Potential Impacts:
- Limited impact on access, except for access points immediately adjacent to intersection
- Limited impact on roadways with on-street parking
- May draw additional traffic but with reduced delays and queues

Emergency Response:
- Appropriate for emergency vehicle routes or streets that provide access to hospitals
- Emergency vehicles may traverse the apron

Typical Cost
- Cost varies widely by site, but is usually comparable to a traffic signal

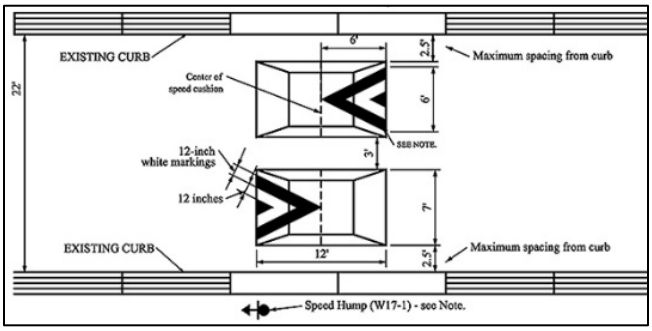
Traffic Calming Fact Sheets
May 2018 Update

Speed Cushion

Description:
- Two or more raised areas placed laterally across a roadway with gaps between raised areas
- Height and length similar to a speed hump; spacing of gaps allow emergency vehicles to pass through at higher speeds
- Often placed in a series (typically spaced 260 to 500 feet apart)
- Sometimes called speed lump, speed slot, and speed pillow

Applications:
- Appropriate on local and collector streets
- Appropriate at mid-block locations only
- Not appropriate on grades greater than 8 percent

(Source: James Barrera, Horrocks, New Mexico)



(Source: Delaware Department of Transportation)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:
- Two or more cushions at each location
- Typically 12 to 14 feet in length and 7 feet in width
- Cushion heights range between 3 and 4 inches, with trend toward 3 - 3 ½ inches maximum
- Speed cushion shapes include parabolic, circular, and sinusoidal
- Material can be asphalt or rubber
- Often have associated signing (advance-warning sign before first cushion at each cushion)
- Typically have pavement markings (zigzag, shark's tooth, chevron, zebra)
- Some have speed advisories

Potential Impacts:
- Limited-to-no impact on non-emergency access
- Speeds determined by height and spacing; speed reductions between cushions have been observed averaging 20 and 25 percent
- Speeds typically increase by 0.5 mph midway between cushions for each 100 feet of separation
- Studies indicate that average traffic volumes have reduced by 20 percent depending on alternative routes available
- Average collision rates have been reduced by 13 percent on treated streets

Emergency Response Issues:
- Speed cushions have minimal impact on emergency response times, with less than a 1 second delay experienced by most emergency vehicles

Typical Cost (2017 dollars):
- Cost ranges between $3,000 and $4,000 for a set of rubber cushions

Traffic Calming Fact Sheets

May 2018 Update

Speed Hump

Description:

- Rounded (vertically along travel path) raised areas of pavement typically 12 to 14 feet in length
- Often placed in a series (typically spaced 260 to 500 feet apart)
- Sometimes called road humps or undulations

Applications:

- Appropriate for residential local streets and residential/neighborhood collectors
- Not typically used on major roads, bus routes, or primary emergency response routes
- Not appropriate for roads with 85th-percentile speeds of 45 mph or more
- Appropriate for mid-block placement, not at intersections
- Not recommended on grades greater than 8 percent
- Work well in combination with curb extensions
- Can be used on a one-lane one-way or two-lane two-way street

(Source: City of Boulder, Colorado)

(Source: PennDOT Local Technical Assistance Program)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- ITE recommended practice - "Guidelines for the Design and Application of Speed Humps"
- Typically 12 to 14 feet in length; other lengths (10, 22, and 30 feet) reported in practice in U.S.
- Speed hump shapes include parabolic, circular, and sinusoidal
- Typically spaced no more than 500 feet apart to achieve an 85th percentile speed between 25 and 35 mph
- Hump heights range between 3 and 4 inches, with trend toward 3 - 3 ½ inches maximum
- Often have associated signing (advance warning sign before first hump in series at each hump)
- Typically have pavement markings (zigzag, shark's tooth, chevron, zebra)
- Taper edge near curb to allow gap for drainage
- Some have speed advisories
- Need to design for drainage, without encouraging means for motorists to go around a hump

Potential Impacts:

- No impact on non-emergency access
- Average speeds between humps reduced between 20 and 25 percent
- Speeds typically increase approximately 0.5 to 1 mph midway between humps for each 100 feet Beyond the 200-foot approach and exit of consecutive humps
- Traffic volumes diversion estimated around 20 percent; average crash rates reduced by 13 percent

Emergency Response Issues:

- Impacts to ease of emergency-vehicle throughput
- Approximate delay between 3 and 5 seconds per hump for fire trucks and up to 10 seconds for ambulances with patients

Typical Cost (2017 dollars):

- Cost ranges between $2,000 and $4,000

Speed Table/Raised Crosswalks

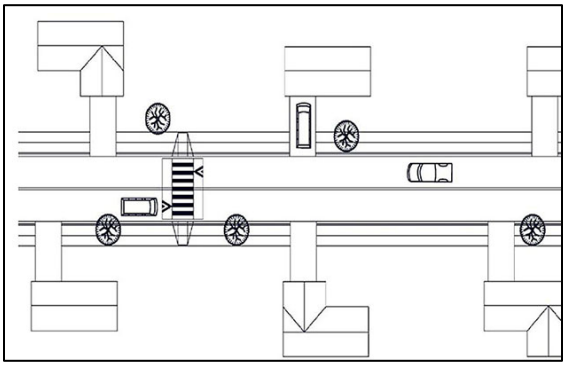
Description:

- Long, raised speed humps with a flat section in the middle and ramps on the ends; sometimes constructed with brick or other textured materials on the flat section
- If placed at a pedestrian crossing, it is referred to as a raised crosswalk
- If placed only in one direction on a road, it is called an offset speed table

Applications:

- Appropriate for local and collector streets; mid-block or at intersections, with/without crosswalks
- Can be used on a one-lane one-way or two-lane two-way street
- Not appropriate for roads with 85th percentile speeds of 45 mph or more
- Typically long enough for the entire wheelbase of a passenger car to rest on top or within limits of ramps
- Work well in combination with textured crosswalks, curb extensions, and curb radius reductions
- Can be applied both with and without sidewalks or dedicated bicycle facilities
- Typically installed along closed-section roads (i.e. curb and gutter) but feasible on open section

(Source: Google Maps, Boulder, Colorado)



(Source: Delaware Department of Transportation)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- ITE recommended practice – "Guidelines for the Design and Application of Speed Humps"
- Most common height is between 3 and 4 inches (reported as high as 6 inches)
- Ramps are typically 6 feet long (reported up to 10 feet long) and are either parabolic or linear
- Careful design is needed for drainage
- Posted speed typically 30 mph or less

Potential Impacts:

- No impact on non-emergency access
- Speeds reductions typically less than for speed humps (typical traversing speeds between 25 and 27 miles per hour)
- Speeds typically decline approximately 0.5 to 1 mph midway between tables for each 100 feet beyond the 200-foot approach and exit points of consecutive speed tables
- Average traffic volumes diversions of 20 percent when a series of speed tables are implemented
- Average crash rate reduction of 45 percent on treated streets
- Increase pedestrian visibility and likelihood of driver yield compliance
- Generally not appropriate for BRT bus routes

Emergency Response Issues:

- Typically preferred by fire departments over speed humps, but not appropriate for primary emergency vehicle routes; typically less than 3 seconds of delay per table for fire trucks

Typical Cost (2017 dollars):

- Cost ranges between $2,500 and $8,000 for asphalt tables; higher for brickwork, stamped asphalt, concrete ramps, and other enhancements sometimes used at pedestrian crossings

Exhibit "B"

CENTURY DRIVE & LANGER FARMS PARKWAY ROUNDABOUT

Traffic Safety Committee

October 22, 2020

City of Sherwood Oregon

Home of the Tualatin River National Wildlife Refuge

DKS

PROJECT BACKGROUND

- Multi-lane roundabout constructed in 2011
- Community concerns about safety performance
  - > Several crashes at/near the roundabout
  - > Pedestrian crash in October 2019
- Hired DKS Associates to identify opportunities to improve safety at the Century Dr. & Langer Farms Pkwy. roundabout
- Reported Finding to Council April 2020

PROJECT FINDINGS

CRASH ANALYSIS

- ODOT Crash Database (2013-2017)
- Safety Priority Index System (SPIS)
- Predictive Methodology
- **Key Finding: Fewer crashes than expected for similar roundabouts**

FIELD OBSERVATIONS

- December 3, 2019 from 7:00 a.m. to 6:00 p.m.
- Assessed all modes of travel
- **Key Findings: Minimal delay, some driver confusion on WB approach, limited sight distance on EB and NB approaches**

ROUNDABOUT DESIGN ASSESSMENT

- Roadway Geometric Design
- Central Island Design
- Signing and Striping
- Pedestrian Crossing Control
- Pedestrian Accessibility
- Roundabout Intersection Operations
- **Key Findings: Roundabout generally designed in alignment with best practices (very minor deficiencies), operates with excess capacity**

ROADWAY GEOMETRIC DESIGN

The table below compares the geometric characteristics of the existing roundabout verses the recommended design outline in the NCHRP 672.[1]

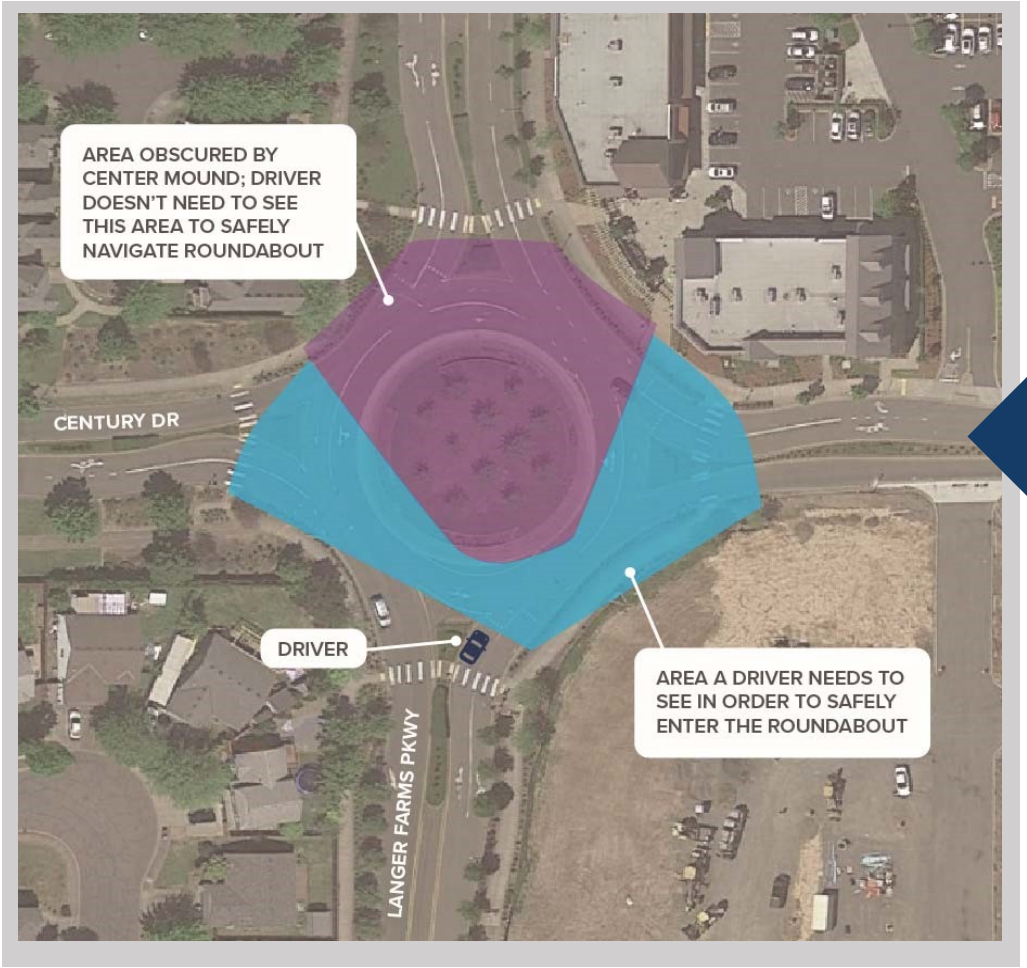
GEOMETRIC DESIGN OF MULTI/SINGLE LANE ROUNDABOUTS

	MULTILANE (2-LANE) ROUNDABOUT BEST PRACTICES[A]	CENTURY DR./LANGER FARMS PKWY. 2-LANE ROUNABOUT
COMMON INSCRIBED CIRCLE DIAMETER	WB-50: 150-220 ft. WB-67: 165-220 ft.	200 ft.
CIRCULATORY LANE WIDTHS	14-16 ft. (28-32 ft. Total)	14.5 ft.
ENTRY LANE WIDTHS	12-15 ft. (24-30 ft. Total)	13-15 ft.
ENTRY CURVE RADII	65-120 ft. entry curve	70 ft. at all approaches
EXIT CURVE RADII	> entry curve	80 ft. – 220 ft.
PEDESTRIAN CROSSING PLACEMENT	Minimum 20 ft. separation from roundabout	> 20 ft. at all crossings

[a]All dimensions gathered from NCHRP Report 672, Roundabouts: An Informational Guide

SOURCE: [1] NCHRP REPORT 672: ROUNDABOUTS: AN INFORMATIONAL GUIDE, SECOND EDITION, TRANSPORTATION RESEARCH BOARD, 2010.

CENTRAL ISLAND DESIGN



- Community members expressed concerns about design
- National Guidance recommends mounding the central island to improve visibility[1]
- Figure to the right depicts the visible portions of the roundabout with and without the central island mound.

SOURCE: [1] NCHRP REPORT 672

STRIPING

- Overall, the type and placement of pavement markings follow best practices
- Lane assignment for westbound approach and circulation are inconsistent, resulting in driver confusion.

SOURCE: GOOGLE MAPS, 2019.

SIGNING

The table below compares existing roundabout to signing requirements and recommendations.

SIGNING REQUIREMENTS AND RECOMMENDATIONS EVALUATION

SIGNING REQUIREMENTS	EXISTING ROUNDABOUT CONDITIONS
Yield Signs: A yield sign is required on both sides of each roundabout approach.	All approaches have a yield sign on both sides.
Roundabout Regulatory Signage: A white and black roundabout directional arrow sign should be placed on the central island opposite of each roundabout entrance.	All approaches have a white and black directional arrow sign on the central island.
Keep Right Sign: Keep Right signs are recommended at the nose of each splitter island.	All four splitter islands include a Keep Right sign.
Lane-Control Signs: Roundabouts with multiple entry lanes should include intersection lane-control signs.	Three of the four approaches include intersection lane-control signs; the westbound approach does not.

GREEN ALIGNS WITH CURRENT BEST PRACTICES
RED DOES NOT ALIGN WITH CURRENT BEST PRACTICES

PEDESTRIAN CROSSING CONTROL & ACCESSIBILITY

- **Pedestrian Accessibility:**
  - > NCHRP Report 834 provides guidance on designing roundabouts for pedestrian accessibility
    - **The roundabout is in alignment with current best practices with the exception of curb ramp widths**
      - Curb ramps are 5 feet wide and crosswalks are 10 feet wide
- **Pedestrian Crossing Control:**
  - > All four pedestrian crossings are uncontrolled and there are two RRFB crossing in close proximity
  - > **Based on both existing and future volumes, there is no need for active control or additional enhancements**

OPERATIONS ANALYSIS

- 2007 traffic study forecasted high volumes for 2030 that are overly-conservative compared to actual growth
  - > Led to recommendation for multi-lane roundabout
- Roundabout currently operates at LOS A with minimal delay during peak hours
- **Multi-lane roundabout is not needed for current traffic demand**

EVALUATION SUMMARY

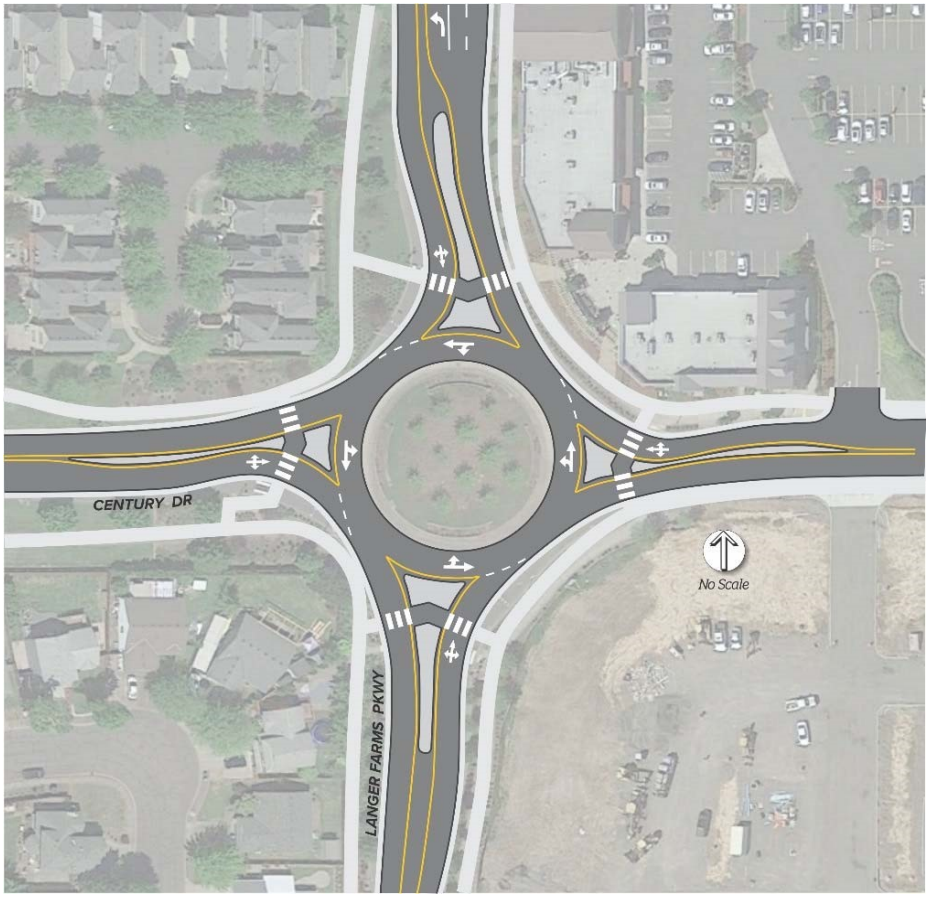
The table below summarizes the evaluation of the existing roundabout. Overall, the roundabout is performing as expected, but could benefit from being downsized to a single-lane roundabout.

CATERGORY	COMMENTS
Field Observations	Operates well, minimal delay; some driver confusion and sight distance limitations observed.
Crash History	Fewer crashes than expected for this type of roundabout.
Roadway Geometric Design	All roundabout dimensions are in line with best practices.
Central Island Design	The design of the central island is in line with best practices.
Signing and Striping Design	WB approach missing lane control sign; confusing lane assignment
Pedestrian Accessibility	Only deficiency is ramp width less than crosswalk width
Pedestrian Crossing Facilities	Pedestrian crossings are in line with best practices.
Roundabout Intersection Operations	Roundabout operates with excess capacity

FINDING – EXCESS CAPACITY (SHORT-TERM SOLUTION)

- **Solution:** Restripe to allow for only single lane entry on eastbound and westbound approaches.
- **Benefits:** reduced conflicts, eliminates observed driver confusion, improves sight distance
- **Cost Estimate:** $45,000
- **Timeline:** 3-6 months

FINDING – EXCESS CAPACITY (LONG-TERM SOLUTION)

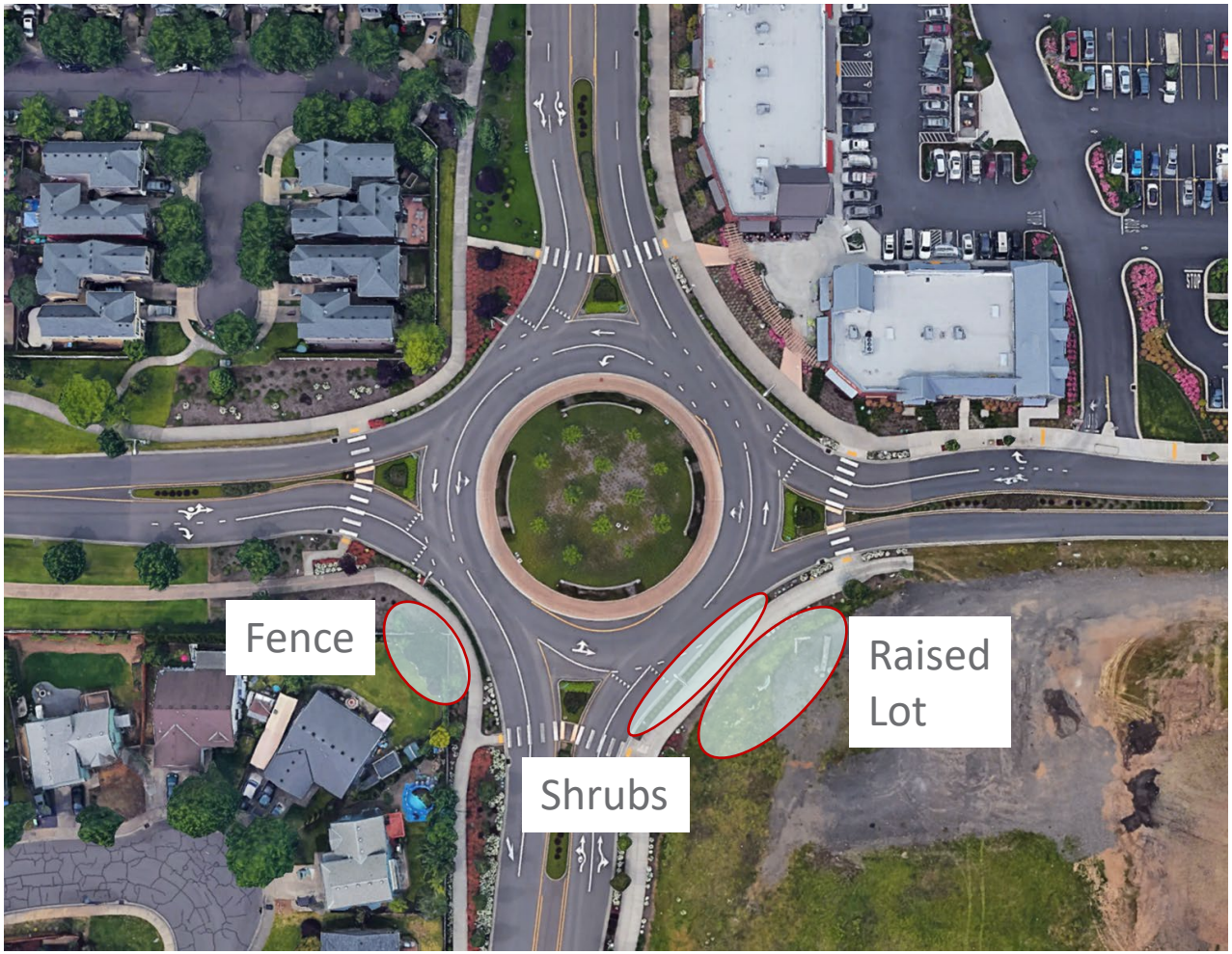


- **Solution:** If a multi-lane roundabout is found to not be needed (once new forecasts are developed), the roundabout could be permanently converted to a single-lane roundabout.
- **Benefits:** additional reduction in conflicts, reduced pedestrian crossing distances, improves sight distance
- **Cost Estimate:** $250,000 - $400,000
- **Timeline:** 1-2 Years

FINDING – SIGHT DISTANCE LIMITATIONS

- Limited sight distance of the crosswalks was observed for the eastbound and northbound right-turn vehicle movements.
  - > Residential fence, vegetation, and elevation changes
- **Solution:** ROW should be acquired in the SW corner to push back the existing fence line. The vegetation should be trimmed, and trees could be removed. Finally, a portion of the SE lot could be excavated.
  - > **Benefits**: increased driver visibility of pedestrians and increased available sight distance for drivers.
  - > **Cost Estimate:** $50,000
  - > **Timeline:** 3-12 months

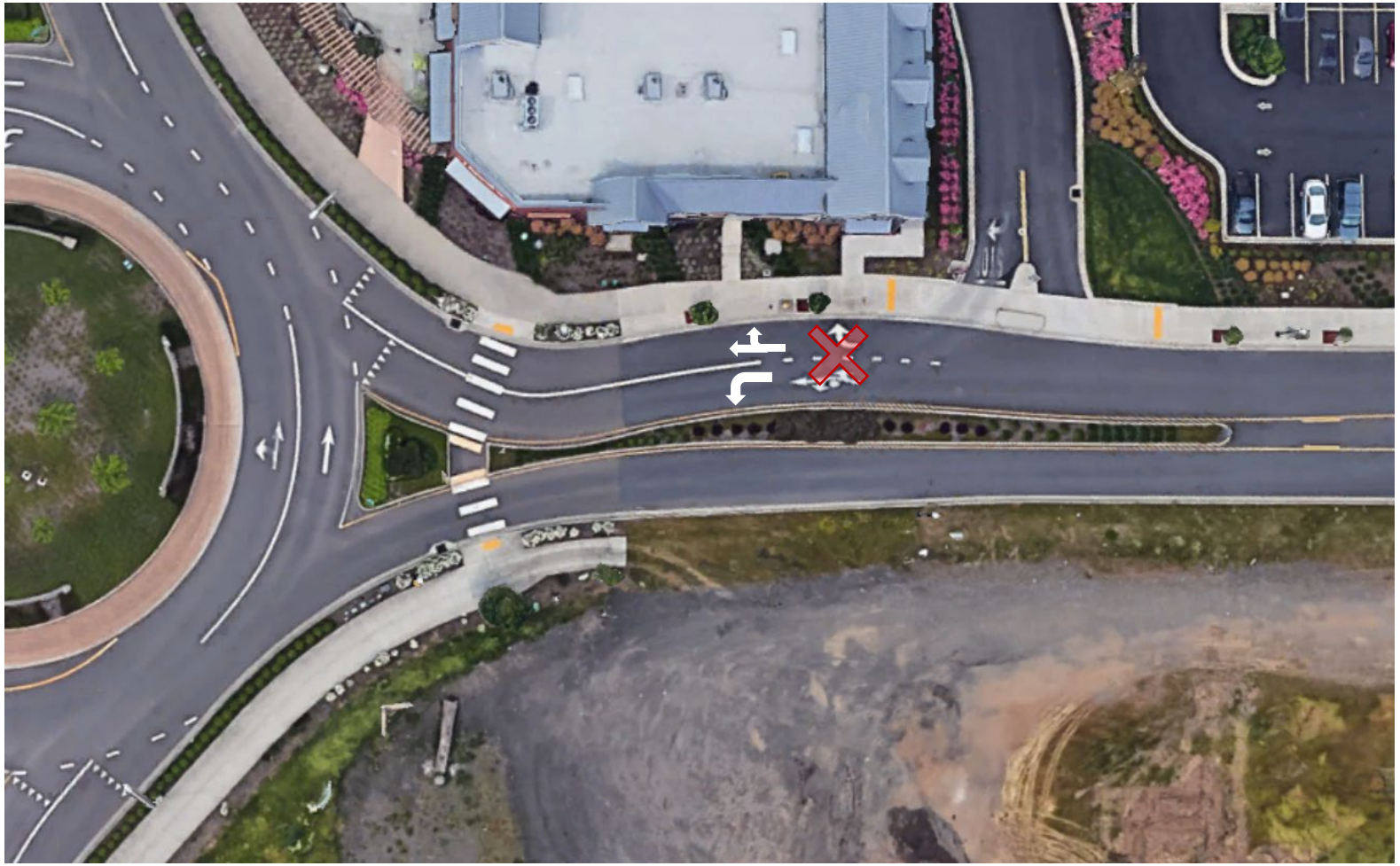
FINDING – SIGHT DISTANCE LIMITATIONS



FINDING – INAPPROPRIATE LANE ASSIGNMENT

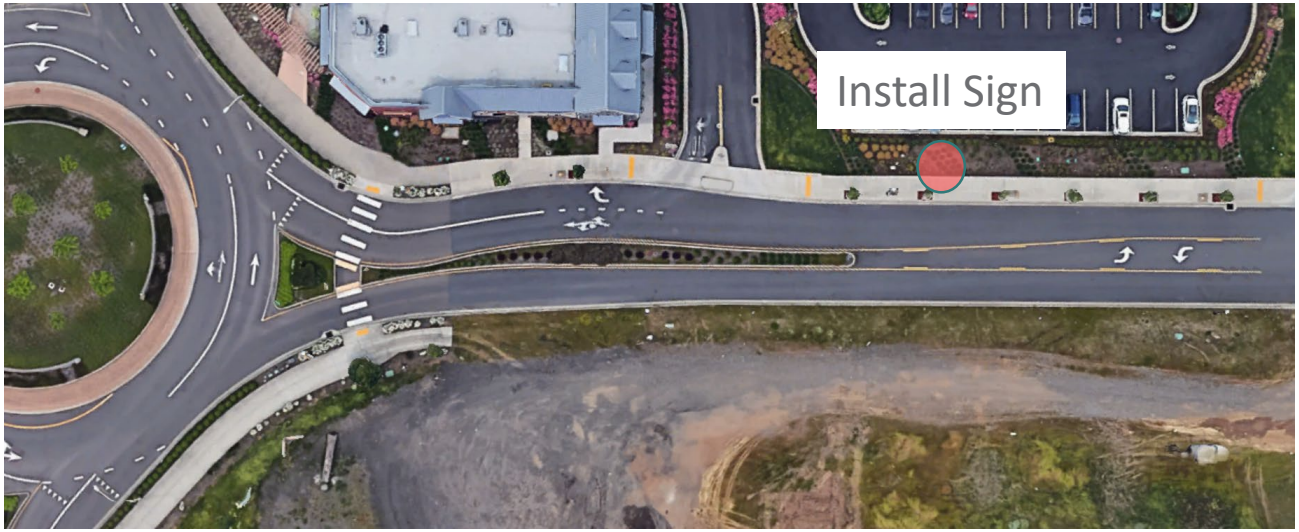
- WB approach is striped with a right-turn only lane and a shared through/left-turn/right-turn lane. Right-turn volume is not high enough to warrant this, and it creates confusion.
- **Solution:** Reconfigure WB approach to include left-only and shared through-right lane
  - > Not needed if roundabout converted to single lane
  - > **Benefits:** better utilization of approach lane capacity and more intuitive lane assignment (decreased driver confusion)
  - > **Cost Estimate:** $3,000-$5,000
  - > **Timeline:** 1 month

FINDING – INAPPROPRIATE LANE ASSIGNMENT



FINDING – MISSING LANE CONTROL SIGN

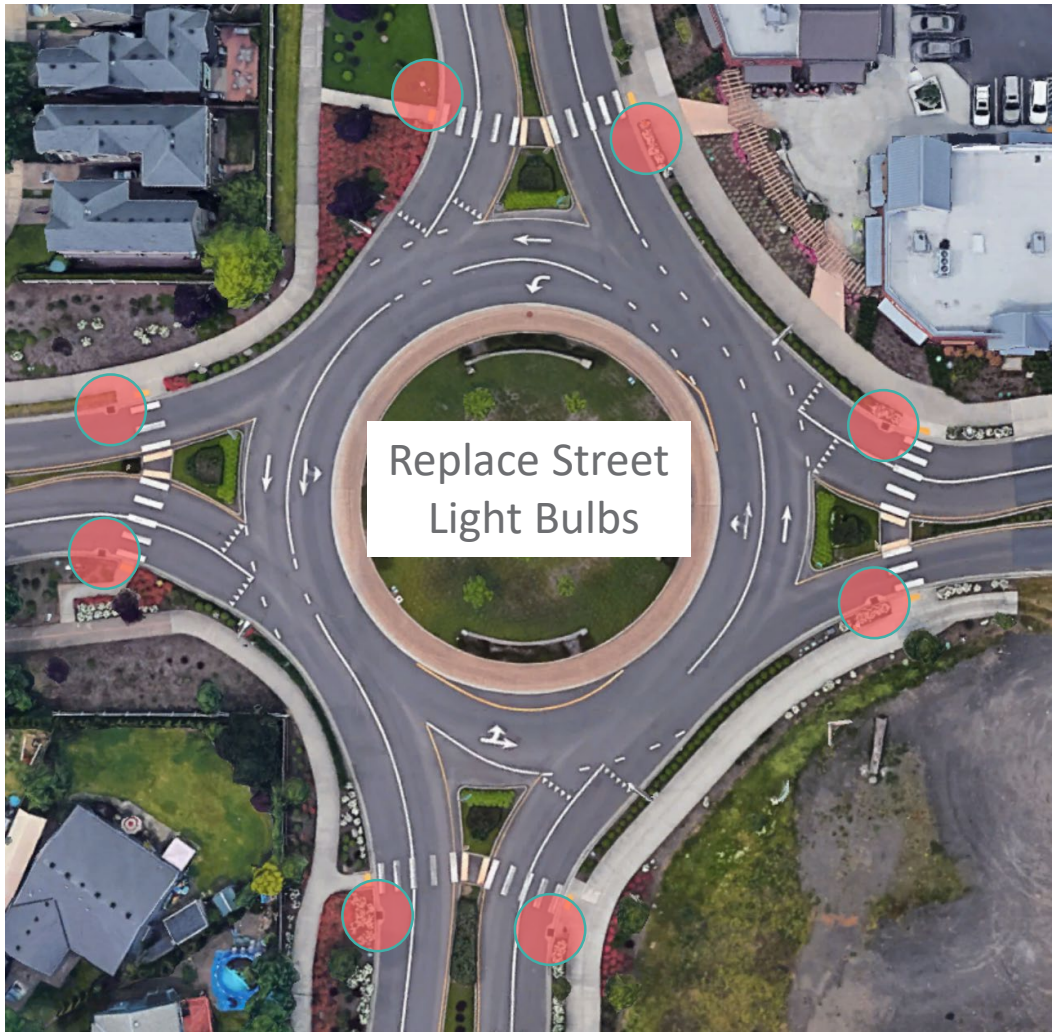
- No lane control sign on WB approach
- **Solution:** Install missing lane control sign.
  - > **Benefit:** Provides advanced information for drivers and reduces weaving while in the circulating lanes.
  - > **Cost Estimate:** $500
  - > **Timeline:** 1 month



FINDING – POTENTIAL FOR IMPROVED LIGHTING

- Lighting levels are adequate but could be improved for pedestrian visibility.
- **Solution:** Upgrade the ornamental acorn light HPS bulbs with LED bulbs.
  - > **Benefit:** Increased visibility of vehicles, pedestrians, and bicyclists
  - > **Cost Estimate:** $8,000-$10,000
  - > **Timeline:** 3-6 months

FINDING – POTENTIAL FOR IMPROVED LIGHTING



RECOMMENDATIONS SUMMARY

PACKAGE	CONFIGURATION	ADDITIONAL SOLUTIONS NEEDED	TOTAL COST OF IMPROVEMENTS[1]
A	Single Lane (Restriping Only)	Sight Distance Improvements (NB RT), Improve Lighting	$68K – $70K
B	Single Lane (Permanent Reconfiguration)	Sight Distance Improvements (NB RT), Improve Lighting	$283K-$435K
C	Multi Lane (No Change)	Sight Distance Improvements (EB RT & NB RT), WB Approach Signing & Striping, Improve Lighting	$62K-$66K

Council provided direction to proceed with "A" with addition of single lane entering from all sides.

NOTE: [1] *IMPROVEMENT COSTS SHOWN INCLUDE A PLANNING-LEVEL CONTINGENCY FACTOR BUT DO NOT DIRECTLY INCLUDE THE CITY'S "SOFT COSTS", INCLUDING STAFF TIME AND OVERHEAD COSTS.*

TRAFFIC SAFETY COMPLAINTS / REQUESTS

TRAFFIC SAFETY COMMITTEE

CITY OF SHERWOOD

Exhibit "C"

Project #	Brief Description of Request	*Status	Date Rec'd	Notes
20-001	Sherwood View Estates / Stop &/or Speed Limit Signs	P	1/1/2020	Sign approved by committee, 9/24/2020. Ready for City Manager approval.
20-002	SW Sunset & SW Cinnamon Hill Pl-Drivers not stopping for pedestrians. Drivers go too fast through area.	C	2/4/2020	Crosswalk currently going in at nearby location (Sunset & Pine). Request denied, 8/27/2020.
20-003	Flashing crosswalk sign at Sunset and Timbrel	P	4/22/2020	Additional data to be collected. Asking the Woodhaven HOA if issue exists even when school is not in session, 8/27/2020.
20-004	Request for two additional stop signs at Villa, Wildlife Haven & Railroad	P	8/20/2020	Recommendation for this to be added to the CIP list. The City Council will need to first approve. (9/24/20)
20-005	Requesting No Parking signs on both sides of Haide Rd (new high school)	C	8/25/2020	Issue does not exist at this time. Will revisit if it becomes an issue. (8/27/2020)
20-006	Crosswalk @ 1st & Ash by traffic circle needs signage & appropriate paint on roadway.	P	9/2/2020	Mr. Galati will gather more information re: what is still to be done and when and will let committee members know at the 10/22/2020 meeting.
20-007	Driveway obstruction on Lavender Pl/Request curb to be marked as "No Parking Zone" and painted red.	N	9/24/2020	*New! To be reviewed at October meeting.*
20-008	Request blinking yellow LED light for pedestrians to activate when crossing Sunset @ Woodhaven.	N	10/1/2020	*New! To be reviewed at October meeting.*

O=Open/C=Closed/P=Pending/N=New

[redacted] 20-007

Sherwood Police Department
20495 SW Borchers Drive
Sherwood, OR 97140
Ph: 503-625-5523 ♦ Fax: 503-925-7159

Exhibit "D"

Traffic Safety Complaint/Request Form

In accordance with the City of Sherwood's Municipal Code, citizens interested in requesting any action regarding traffic safety shall complete and submit this form to the Sherwood Traffic Safety Committee for review and consideration. Upon receipt of a completed form, city staff will review the proposed request and forward it to the committee for formal review. Contact with the applicants regarding the request will be included in the review process.

RECEIVED
SEP 24 2020
SHERWOOD PD

Completed forms shall be submitted to:

Sherwood Traffic Safety Committee
c/o Sherwood Police Department
20495 SW Borchers Drive ■ Sherwood, OR 97140
policeinformation@sherwoodoregon.gov

Feel free to attach additional sheets containing pictures, maps, or additional text if the space provided is insufficient.

1. Requestor's Contact Information:
   Name: [redacted]
   Address: [redacted]
   Phone Number: [redacted]
   Email: [redacted]
   Date form submitted: 09/23/2020

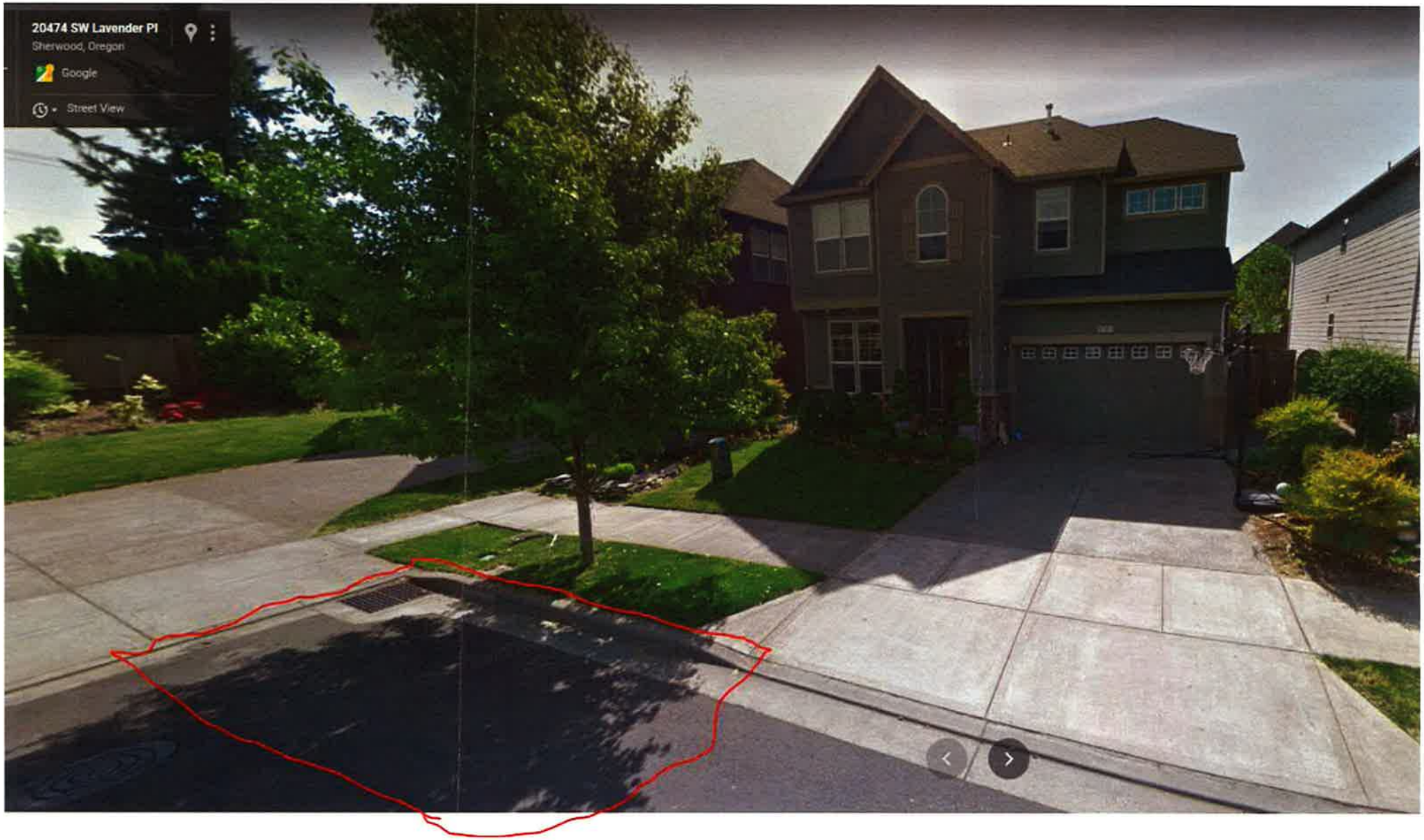
2. Please identify the specific location/intersection of concern:
   Driveway Entrance Obstruction

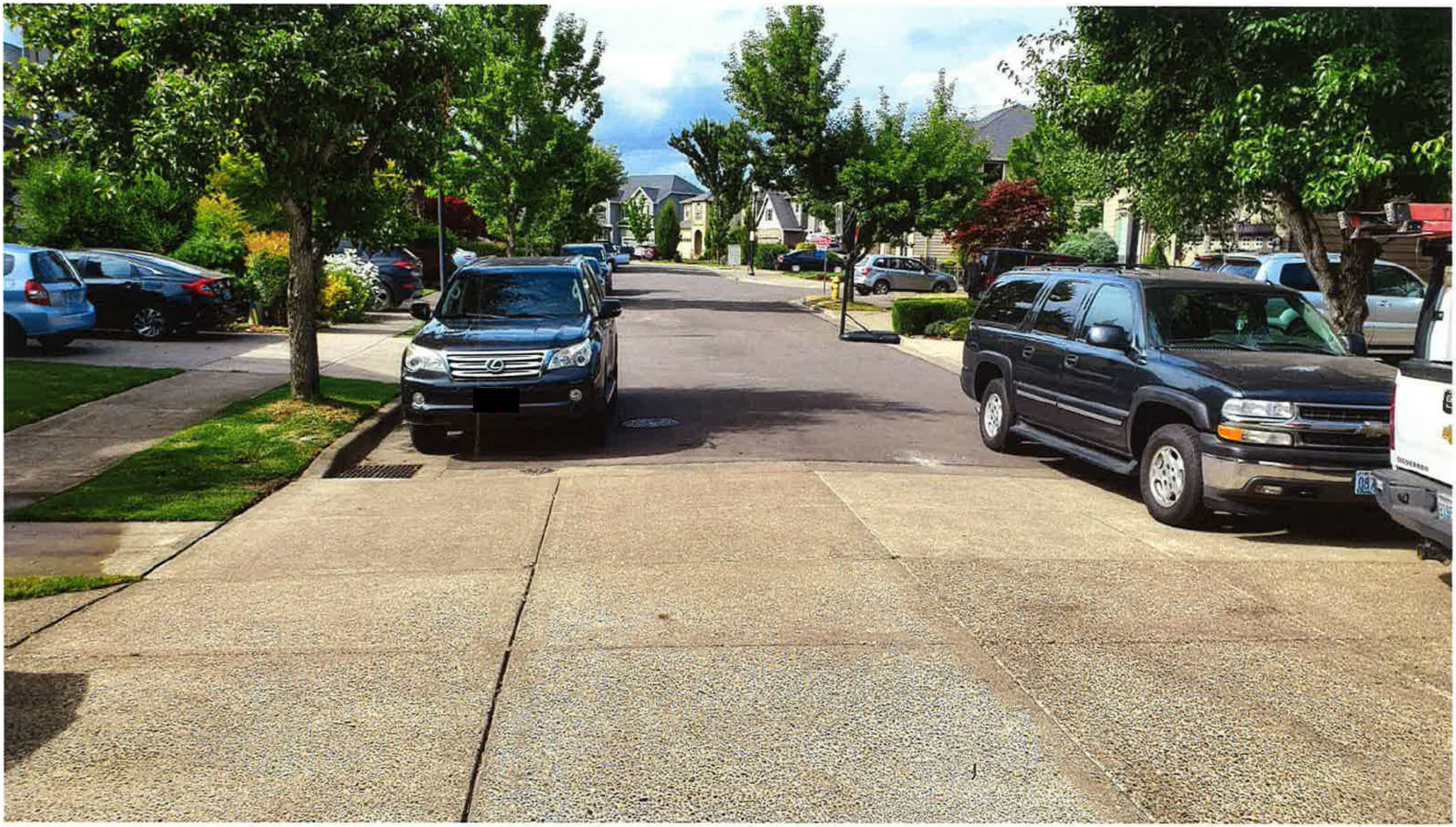
3. Please describe the nature of the traffic problem which concerns you:
   Since my property is on the dead end, every day my driveway is obstructed. People that live next to me (20465 SW Lavender Pl) constantly have Large SUV parked there, even when their driveway is completely empty. Sometimes it's even on my driveway In addition, vehicle is not parked next to curb but couple feet away so its very difficult to enter the driveway. Please see attached images!

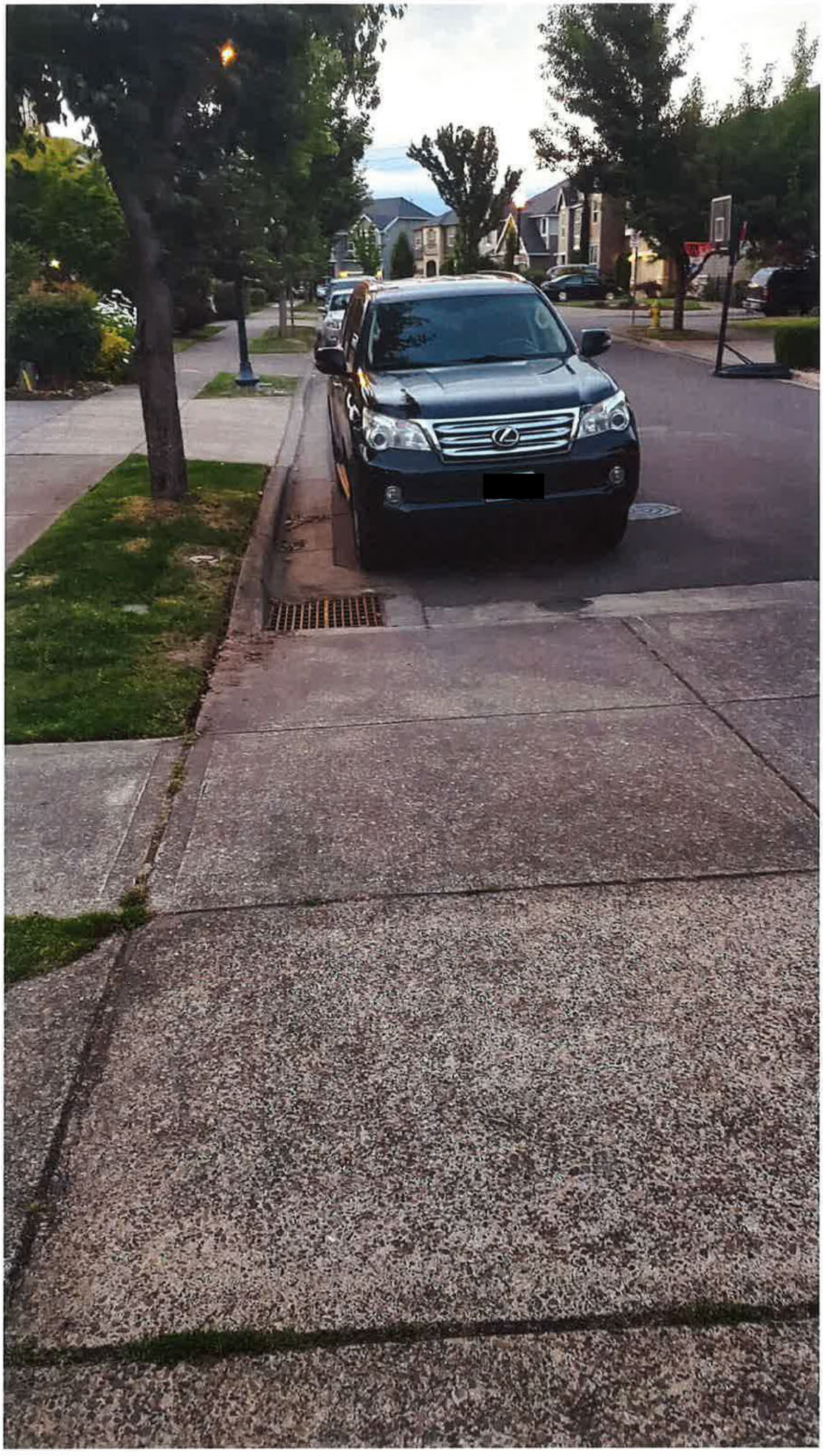
4. Please describe what actions (if any) you feel would reduce your traffic concerns:
   In my humble opinion it would be the best if that area is marked red as NO parking zone. Please see from Attached images clear driveway obstruction.
   In case of Emergency, no Emergency vehicle will be able to enter the property.

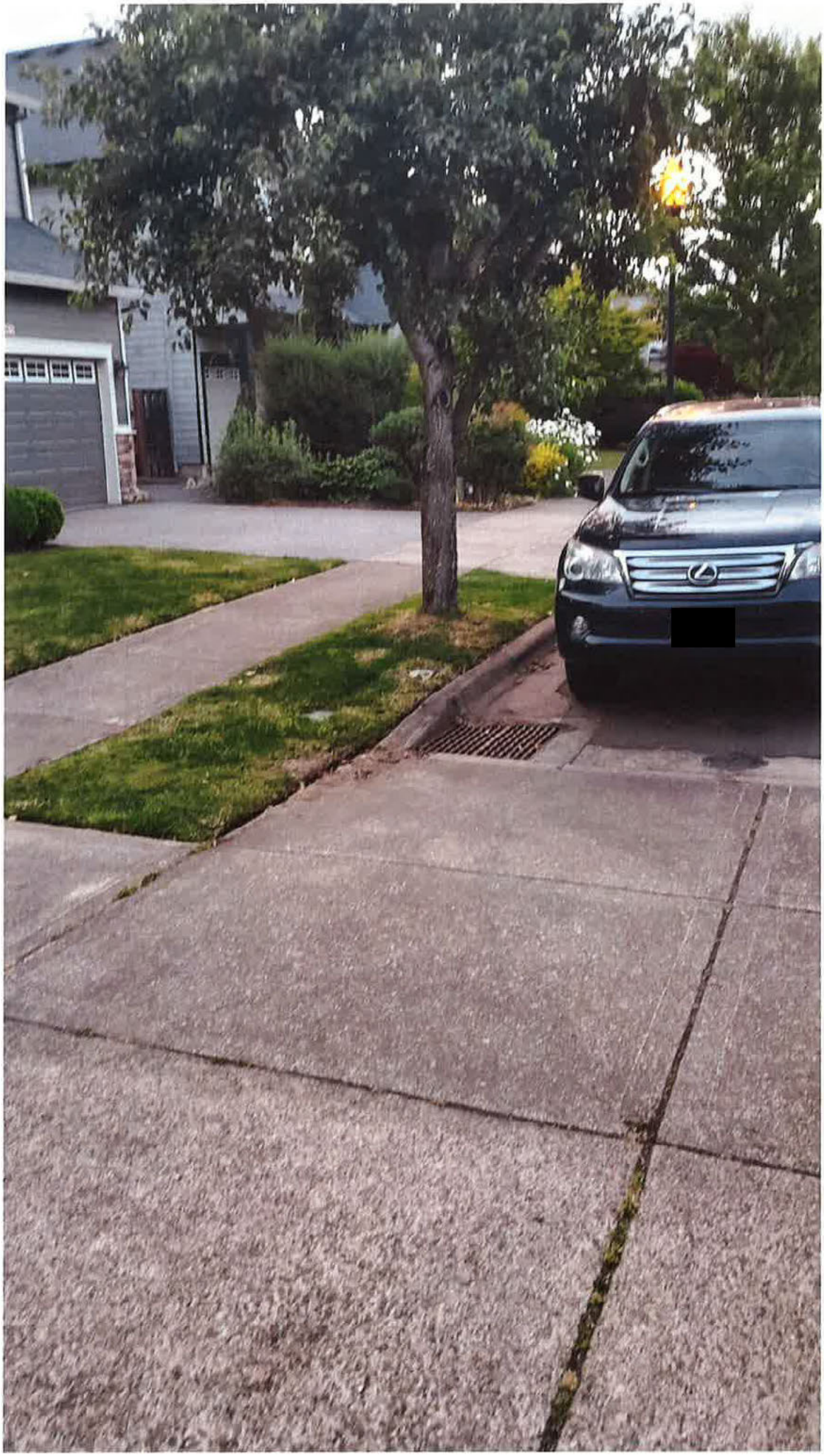
   Looking forward to your response and help with this issue. Thank you for the review!!

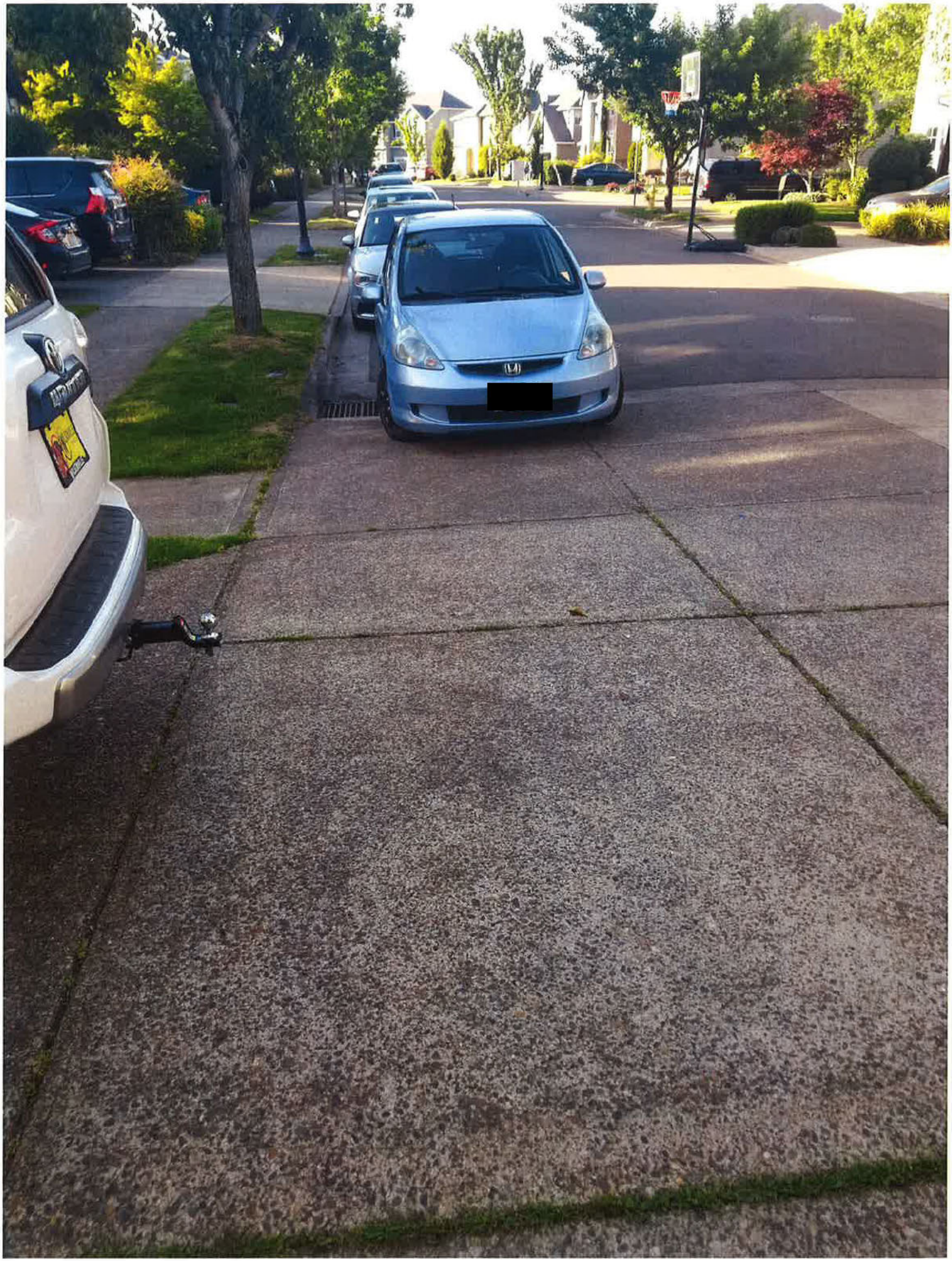
Please attach any photographs and/or diagrams that document the problem.


20474 SW Lavender Pl
Sherwood, Oregon
Google
Street View









20-008

Sherwood Police Department
20495 SW Borchers Drive
Sherwood, OR 97140
Ph: 503-625-5523 • Fax: 503-925-7159

Exhibit "E"

Traffic Safety Complaint/Request Form

In accordance with the City of Sherwood's Municipal Code, citizens interested in requesting any action regarding traffic safety shall complete and submit this form to the Sherwood Traffic Safety Committee for review and consideration. Upon receipt of a completed form, city staff will review the proposed request and forward it to the committee for formal review. Contact with the applicants regarding the request will be included in the review process.

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Sherwood Traffic Safety Committee
c/o Sherwood Police Department
20495 SW Borchers Drive ■ Sherwood, OR 97140
policeinformation@sherwoodoregon.gov

Feel free to attach additional sheets containing pictures, maps, or additional text if the space provided is insufficient.

1. Requestor's Contact Information:
   Name: [redacted]
   Address: [redacted]
   Phone Number: [redacted]
   Email: [redacted]
   Date form submitted: oct 1 2020

2. Please identify the specific location/intersection of concern:
   Cross walk at Sunset and wood haven

3. Please describe the nature of the traffic problem which concerns you:
   Trees and at night makes it hard for the Drivers to see the People that want to cross Sunset . could you look in to putting a blinking yellow led light that they could activate to make there presences known, Just like you have in old town

4. Please describe what actions (if any) you feel would reduce your traffic concerns:
   read above on 3

Please attach any photographs and/or diagrams that document the problem.