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ROADWAY POLICIES

ROADWAY PRE-APPROVED NOTES & PLANS

ROADWAY - PLAN NOTES

1. A pre-construction conference shall be held prior to the start of construction. The Contractor shall be responsible for securing all necessary permits prior to construction.

2. All roadway work and material shall be in accordance with the current APWA and City of Kirkland standards and specifications.

3. All public roadways shall be constructed of 2" Class "B" AC paving on 4" asphalt-treated base (ATB), unless otherwise approved by the Public Works Department.

4. A copy of the approved roadway plans must be on the job site whenever construction is in progress.

5. Density test reports will be required for all public roadways and all private roadways within plats. All trench backfill shall be compacted to 95 percent density in roadways, roadway shoulders, roadway prism and driveways, and 85 percent density in unpaved areas. All pipe zone compaction shall be 95 percent.

6. All commercial and residential driveways must conform to the City of Kirkland Department of Public Works Driveway Policy.

7. All concrete for sidewalks and curb and gutter must be 4,000 psi minimum. (5-3/4 sack mix.)

8. In the case of new road construction or reconstruction requiring mailboxes to be moved or rearranged, the Developer/Contractor shall coordinate with the U.S. Postal Service for the new location of the mailbox structure.

9. Any roadway signage or striping removed or temporarily moved by the Contractor shall be restored to meet the current City of Kirkland standards.

10. It is the responsibility of the Contractor to provide adequate temporary traffic control to ensure traffic safety during construction activities. Therefore, the Contractor shall submit a traffic control plan to the Public Works Department at least 48 hours prior to starting any work in the right-of-way. All traffic control devices shall conform to the "Manual on Uniform Traffic Control Devices" (MUTCD) or as modified by the Traffic Engineer.

11. Where a sidewalk is to be constructed above a slope or adjacent to a rockery or retaining wall where the lowest finished elevation of the slope, rockery, or retaining wall is to be thirty inches (30") or more below the finished elevation of the sidewalk, a safety railing shall be required when: (a) The plane of the wall face is less than 4' in horizontal distance from the outside edge of the sidewalk; (b) The slopes adjacent to the sidewalk average greater than two to one.

12. The maximum grade for private roadways shall be twenty percent (20%), or fifteen percent (15%) if used for fire access. For public roadways, the maximum grade shall be fifteen percent (15%).

13. Dead-end streets shall be appropriately signed and barricaded. See most current edition of the MUTCD.

14. Sidewalk and curb and gutter cannot be poured monolithically. There must be a cold joint or full-depth expansion joint between them.

15. Measures shall be taken by the developer to provide ground cover in areas within the right-of-way which have been stripped of natural vegetation or have a potential for erosion.

16. The developer shall coordinate with Puget Power for the design and installation of street lights on all newly-created public roadways and existing roadways.

17. When an existing roadway is to receive a half-street overlay, the existing roadway must be cold planed at the edge of the gutter and centerline. When the existing roadway is to receive a full-street overlay, it must be cold planed at the edge of both gutters. See City of Kirkland Standard Detail No. R.13.

18. All new signs required in the public right-of-way must be purchased from, and installed by, the City of Kirkland Public Works Department.

19. When installing new sidewalk, the area behind the sidewalk must be graded so that the yard drainage does not drain over the sidewalk.

20. Any existing public improvements damaged during construction shall be replaced prior to final inspection.

21. The Contractor is responsible for keeping all public streets free from mud and debris at all times. The Contractor shall be prepared to use power sweepers or other pieces of equipment necessary to keep the roadways clean.

22. Backfill in all street cuts on arterials will be control density fill (CDF). Contractor must provide steel plating necessary to allow the CDF to cure.

23. When constructing new curb and gutter which does not align with the existing edge of pavement, the roadway must be tapered from the ends of the new curb and gutter to match the existing pavement. The entry taper into the new improvements shall be 5:1 and leaving the new improvements shall be 10:1.

24. When an existing roadway is to be widened, the existing pavement must be saw cut at least one foot from the edge to provide a proper match between new and existing asphalt. However, when the existing pavement contains alligatored areas, those areas must be removed prior to widening. All saw cuts shall be parallel or perpendicular to the right-of-way centerline.

25. All rockeries must be constructed in accordance with the most current guidelines of the Association.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-1: PRIVATE DRIVEWAY PAVING MATERIAL REQUIREMENTS

PERMITS:

- No Fee Public Works (PUB) Permit – for replacing in-kind or upgrading material within the same limits of the existing driveway. No impacts to public improvements in the ROW, such as curb & gutter, sidewalk, road pavement, or the drainage system.
- Basic PUB Permit – for driveway paving projects with alterations to the driveway ramp and curb only. No impacts to public sidewalk, road pavement, or the drainage system. A ROW Restoration Security is required.
- Standard PUB Permit – for driveway paving projects with significant impacts to public street improvements. Including impacts and restoration of public sidewalk, road pavement, and/or the drainage system (pipe, culverts, ditch, catch basins). A ROW Restoration Security is required. Public Works may require a larger security depending on the estimated ROW restoration needs.

APPROVED PAVEMENT MATERIALS:

- Hot Mixed Asphalt (HMA) pavement (refer to Pre-Approved Plan CK-R.11)
- Porous Asphalt pavement (refer to Pre-Approved Plans CK-L.08 & CK-L.10)
- Concrete pavement (4" thick on private property, 6" thick in ROW, placed on 4" crushed rock base (CSTC); 4,000 psi minimum concrete strength; 5-3/4 sack mix)
- Pervious Concrete pavement (refer to Pre-Approved Plans CK-L.07 & CK-L.10)
- Permeable Paver (refer to Pre-Approved Plans CK-L.09 & CK-L.10)
- Grasscrete materials are only allowed in areas where vehicular access is limited (maintenance access, fire access, etc.)

NOTES AND RESTRICTIONS:

- Concrete pavement, pervious concrete, and permeable paver are not allowed in the ROW, if the street abutting the driveway does not have a concrete curb and gutter.
- Private walkways may use any of the materials listed above, per Pre-Approved Plans.
- Drainage review may be required depending on the amount of new or replaced impervious surface area generated by the project. Refer to Storm Drainage policies D-2 and D-3 for details. Grind and overlay projects (no disturbance of crushed rock base or subgrade) will not trigger drainage review.
- Refer to Policy D-8 for soil requirements applicable to porous, pervious, or permeable pavement materials.
- Refer to Policy R-2 for paving private roads providing access to public utilities.
- Refer to Roadway Pre-Approved Plans for applicable ROW restoration standards.
- Wheel strip driveways are only allowed for single family residential projects with a lengthy driveway access. Wheel strip driveways are not allowed for projects with the potential to serve more than one single family residence (including ADU's and DADU's). If permeable materials are proposed for the wheel strip, the entirety of the driveway (wheel strip and internal pervious area) must be included in the impervious surface calculation.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-2: PAVING OF PRIVATE ROADS PROVIDING ACCESS TO PUBLIC UTILITIES

When designing private roads for access to single family, multi-family or commercial development, where the roads will be utilized by the City of Kirkland for maintenance of City utilities, the road will be designed to the City's Pre-Approved Plan CK-D.37.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-3: GUIDELINES FOR TRAFFIC ISLANDS[1]

Visibility	
Signs	Generally follow section 2B-28 of the MUTCD. Use R4-7 KEEP RIGHT signs near the ends of islands. Where there are groups of islands, a single sign at the end of each end of the group is adequate. Intermediate signs may be necessary if a group is intersected by a collector or arterial. When islands are more isolated, signs are placed in the end of each island. Islands such as pedestrian islands that already have a sign near their ends do not need KEEP RIGHT signs. Signs should be placed upstream of any trees on island that would otherwise block driver's views to the signs.
Paint	Yellow traffic paint is placed on the ends of islands. Glass beads are hand cast on the paint to enhance reflectivity. Painting is currently done annually. Paint for stamped HMA islands to be Siplast, Street Bond 150 (color Terra Cotta).
Reflectors	Reflectors are normally installed on the pavement in front of islands.
Lighting	No special lighting need be provided simply because an island is installed.
Other Elements	
Placement	Islands are placed on Collectors and Arterials wherever possible. Driveways are not generally closed unless there is a crash problem. A minimum storage of 40 feet is provided for private driveways and the amount of storage provided at multifamily, office and commercial driveways may be greater depending on the driveways' expected left turning volumes. At T-Intersections, islands located on arterial streets should be placed at least 50 feet to the left of the intersecting street. This distance is measured from the island nose to center of the intersecting street. Island ends should be shaped with consideration for, among other things, access and to minimize the need to sweep them by hand.
Size	AASHTO "Green Book" policies should be followed in the sizing of islands. Islands should be at least 100 ft^2 in area. A "shy" distance of at least 12 inches should be provided between the island and edge of the traveled way.
Curb Type	Curbs shall be 4,000 PSI concrete curb and gutter (See CK-R.17). 3,000 PSI concrete extruded or mountable curbs are acceptable in special circumstances with approval by engineer.
Sight Distance	Stopping sight distance should be available for drivers approaching the island to see a pedestrian entering the roadway. Provision of sight distance may be the control for the type and amount of landscaping that is provided.
Trees, Sod, & Irrigation	Trees and sod should be in each island where appropriate. Trees should not be installed if their presence reduces the safe and reasonable sight distance. Tree type should be selected from an accepted list based on the location and type of island. Tree canopies should be at least 7' above the pavement and installed following Kirkland Pre-approved Plans. When islands are built on existing pavement, underlying pavement should be removed to provide appropriate drainage based on the soil type, tree type and topography of the island surface. All islands with sod and trees should be provided with irrigation that uses standard parts.

[1] The term island is used to refer to both islands and medians.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-4: Driveway Policy

I. DEFINITIONS AND CLASSIFICATIONS

1. Driveways are vehicle accesses to individual properties, parking spaces, and parking facilities, including garage doors/entrances.

2. Driveway Types

   a. Residential Driveway: One providing access to a single-family residence or a duplex.

   b. Multifamily / Non-Residential Driveway: One providing access to an office, retail, institutional, industrial building, or to residential developments of more than two units.

3. Sight Obstruction: any structure, monument, sign, fence, shrubbery, rockery, parked vehicles, hedge or natural growth located within the driveway / intersection sight area and the height limits defined in Public Works Pre-Approved Plan Policy R-13 that may obstruct the visibility for drivers.

4. Sight Distance Triangle or Driver's Sight Area: the area at an intersection or driveway that must be clear of sight obstructions. Sight distance triangle is shown in Figure 1 of Public Works Pre-Approved Plans Policy R-13.

5. High Accident Location (HAL): An intersection or road segment that has an accident rate that exceeds the average accident rate for similar locations during a given period and/or experiences abnormal accident patterns. For crash data, please contact Transportation Engineering Analyst David Gourlie at 425-587-3867 or dgourlie@kirklandwa.gov.

6. Traveled Way: The portion of the road intended for the movement of vehicles and bicycles, exclusive of parking lanes and shoulders.

II. DRIVEWAY DESIGN, CONSTRUCTION, MAINTENANCE AND OPERATION

1. General Considerations
   a. Driveways shall be designed to allow safe and efficient movement of vehicles to/from the intersecting street.

   b. Construction shall be in accordance with APWA Standards Specifications, Washington State Chapter and City of Kirkland Pre-Approved Plans.

c. Maintenance of driveways including pavement, signing and marking shall be the responsibility of the owner whose property the driveway serves.

d. Whenever practical consolidation of driveways of adjoining properties is encouraged. Therefore, in conjunction with approval of development the City may request developers provide a vehicular access easement to an adjacent owner where joint access is reasonable to serve future development.

e. All abandoned driveways on the street frontage to be improved shall be removed and the curbing and sidewalk to be restored to City standards.

f. The continued use of pre-existing driveways may be prohibited with the redevelopment of a site. Any continued use of a pre-existing driveway with redevelopment of a site shall meet the requirements of this policy.

g. Per KZC 105.100, driveway materials must match or exceed the adjacent road. Pervious surfaces can be used in compliance with the stormwater design manual.

h. Driveways providing access onto arterial streets may be denied if alternate access is available and the City Transportation Engineering Staff identifies potential safety issues.

i. In general, left turn restrictions shall be imposed at driveways when one or more of the following conditions are met:

   1) Located within 150 ft of signalized intersections, within 150 ft of unsignalized intersections located on arterial streets, or within 200 ft of intersections considered High Accident Locations (HAL). (See R-4 II.7 Spacing, Offset and Setback from Intersections section for measurement guidelines.)
   2) Location does not meet spacing, offset, and/or setback requirements (See R-4 II.7 Spacing, Offset and Setback from Intersections section for measurement guidelines and spacing, offset, and/or setback requirements.)
   3) Location experiences safety and operational conflicts.
   4) Where Transportation Division Staff considers it necessary based on an engineering investigation.

j. It is preferred that new driveways be aligned with existing opposing driveways or be offset from the existing opposing driveway in order to minimize left turn conflicts on the streets.

k. Unless it creates significantly more traffic conflicts and impacts to traffic flow, driveway(s) shall be located off the street with the lower functional classification. If multiple driveways are permitted for a site, the driveway(s) with the highest projected volume shall be located off the street with the lower functional classification.

l. For commercial and multi-family developments with more than 4 dwelling units, on-site parking within 25 feet of the driveway or garage entrance, measured from the back of sidewalk or garage entrance/door, is prohibited.

m. Internal parking garage facility ramps shall be 24 feet wide.

n. Approaching vehicles from a parking garage facility ramp must be visible to drivers in the parking aisle approaching the ramp.

2. Access from Alleys

In order for a property to have access from an alley, it must have frontage on another public street, i.e., an alley cannot serve as the sole access (vehicular and pedestrian) to a property.

3. Vehicle Gates
   a. A vehicle gate is defined as a physical barrier that controls access to enter and exit a property. The most common types of gates are swing gates and sliding gates.

   b. Gates shall be installed on private property, unless approved by Kirkland Public Works.

   c. Gates must be located, at a minimum, 25 feet from the back of sidewalk or from the face of curb or edge of traveled way if there is no sidewalk. Additional distance may be required to accommodate vehicle queues for multi-family or non-residential developments. Vehicle queues at each gate shall not obstruct the sidewalk, walkway, bicycle lane, or the traveled way of adjacent streets.

   d. Swing gates must open inward unless the gate itself does not obstruct a public sidewalk, walkway, bicycle lane, or street, AND there is at least a 25-foot queue area in front of an opened gate for vehicles entering to queue without obstructing a public sidewalk, walkway, bicycle lane, or street.

   e. Call box and gate control box must be located so that a vehicle waiting does not obstruct a public sidewalk, walkway, bicycle lane, or street.

4. Number and Locations of Driveways
   a. Single Family Driveways: One driveway.
   Single Family with an Accessory Dwelling Unit: One Driveway

   b. Circular Driveways: The following criteria must be met for a circular driveway to be approved:

      1) The property frontage exceeds 60’ and/or a minimum 15’ inside radius for the circular driveway would exist from the back of sidewalk.
      2) The width of the curb cuts for the proposed circular driveway shall not exceed 10’ each.
      3) Spacing, offset and setback from intersections shall be as recommended for conventional driveways (See R-4 II.7 Spacing, Offset and Setback from Intersections section for measurement guidelines and spacing, offset, and/or setback requirements.)

c. Multifamily / Non-residential: One driveway.

d. Driveways at Corner Lots: Driveways for corner lots shall follow the recommended setback from intersections (See R-4 II.7 Spacing, Offset and Setback from Intersections section for measurement guidelines and spacing, offset, and/or setback requirements.) If this standard cannot be met, the driveway shall be located at the farthest property line. The driveway shall be located off the street with a lower functional classification unless otherwise approved by Kirkland Public Works.

5. Proximity to Mid-Block Crosswalk

Driveways must be located at least 25' from the nearest edge of the crosswalk measured from the curb return or closest tangent of the proposed driveway. In the case where the crosswalk has a protective island and the proposed driveway is to the right of the crosswalk, the proposed driveway shall be located at a minimum of 50' from the nearest edge of the crosswalk measured from the curb return or closest tangent of the proposed driveway.

6. Proximity to Transit Loading Zone

Driveways must be located at least 20 feet from the nearest edge of a transit loading zone measured from the curb return or closest tangent of the proposed driveway.

7. Spacing, Offset and Setback from Intersections

a. Driveway offsets from intersections are measured using the standards outlined in Table 1 and illustrated in Figure 1. Table 2 shows the required and minimum values for driveway setback, spacing, and offset.

1) The intersection measurement point depends on the type of intersection, presence of crosswalks, and street functional classification.
2) The intersection measurement point shall be selected to provide the most conservative driveway setback.
3) All driveways shall be measured from the curb return or closest tangent of the proposed driveway.

Table 1. Intersection offset spacing measurement

Intersection Offset Cases	**Intersection Measurement Point**	**Driveway Measurement Point**
1. Driveway offset from a signalized intersection	Back of the stop bar	Curb return or closest tangent of the proposed driveway
2. Driveway offset from an unsignalized intersection on a collector or arterial street	a. Crosswalk present at intersection: nearest edge of crosswalk b. Curb present on intersecting street: the curb return of the intersection c. Curb not present on intersecting street: edge of roadway	Curb return or closest tangent of the proposed driveway
3. Driveway offset from an unsignalized intersection on a local street	a. Crosswalk present at intersection: nearest edge of crosswalk b. Curb present on intersecting street: the face of curb c. Curb not present on intersecting street: edge of roadway	Curb return or closest tangent of the proposed driveway

b. Driveway offsets from adjacent driveways are measured from the curb return or closest edge of each driveway and illustrated in Figure 1. Table 2 shows the required and minimum values for driveway setback, spacing, and offset.

Figure 1. Example of driveway spacing measurements

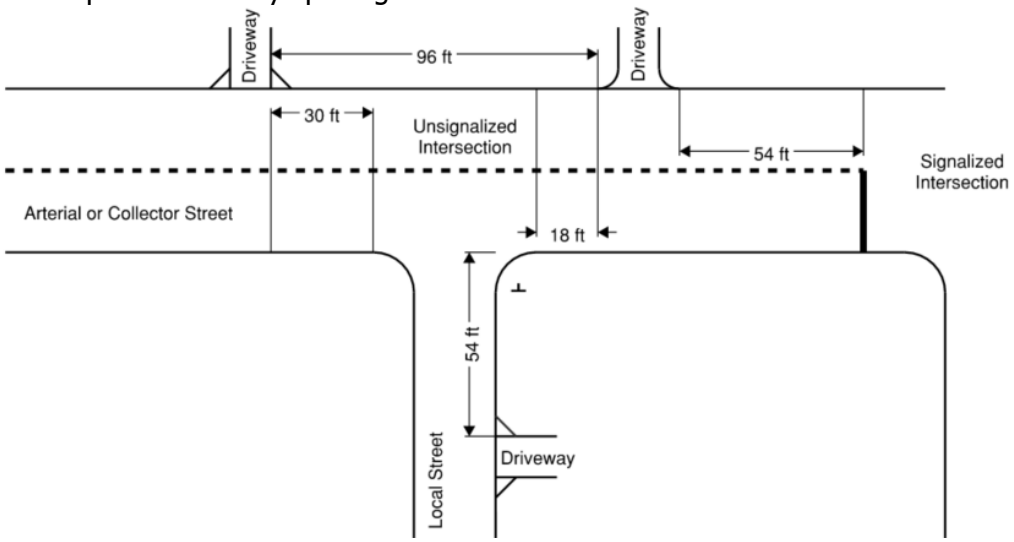


Table 2. Required driveway setback, spacing, and offset

	Street Functional Type where the driveway is located	**Land Use Category**	
		Residential (4 units or less)	**Multi-family / Non-residential**

			Minimum	Required	Minimum[1]
Setback from Intersections	Local		50′	75′	75′
	Collector	Unsignalized	75′	75′	75′
		Signalized	100′	200′	150′
	Arterial	Unsignalized	100′	150′	100′
		Signalized	150′	200′	150′
		HAL	150′	200′	150′
Spacing	Local		10′	50′	50′
	Collector		20′	50′	50′
	Arterial		100′	150′	150′
New driveway offset to the Left of Existing Opposing Driveway	Local		NA	NA	NA
	Collector		NA	NA	NA
	Arterial	25-30 MPH	100′	150′	150′
		35 MPH	150′	200′	150′

[1]Required values shall be provided to the maximum extent feasible. Minimum values are only permitted if the use of required values increase the potential for traffic conflicts at the proposed driveway location and/or results in reduced sight distance that cannot be mitigated, such as the presence of horizontal or vertical curves. Use of the minimum values for multi-family/non-residential driveways shall require a driveway modification (See R-4 III Modifications section for requirements.)

8. Width of Driveway Entrance

Driveway width shall be measured at the throat and shall adhere to the requirements in Table 3:

Table 3. Required driveway widths

Driveway Type	**One Way**	**Two Way**
Single Family (including Detached Dwelling Units, Duplexes, and Two/Three-Unit Homes per KZC 115.115(5))	10′	20′
Single Family Joint-Use	10′	24′ [3]
Multi-Family (4 units or less)	10′	20′ [1]
Multi-Family 5 or more	12-15′	24′ [2,3]
Non-Residential	12-15′	24′ [2,3]

[1]The first 25 feet of the driveway measured from behind the sidewalk must be 24 feet wide. If rolled curb is allowed, the rolled curb may be included in the 20-foot driveway width. However, the first 25 feet of the driveway measured from behind the sidewalk must be 24 feet wide excluding rolled curb.

[2]If medians, traffic islands and turn lanes are used in driveway, greater width shall be considered. Driveways may be wider to provide for truck access when truck load/unload is required on site. A turning path illustration using the AASHTO design vehicle must be provided for Kirkland Public Works review and approval. The appropriate AASHTO design vehicle shall be based on the operational characteristics of the site and approved by Kirkland Public Works prior to completing the analysis. Approval shall be on a case-by-case basis. The goal is to minimize the width of the driveway.

[3] This standard may be reduced to no less than 20 feet if the City's Transportation Engineer determines that there are no conflicts due to sight obstructions, location, traffic volumes, or other circulation factors. The applicant must request a driveway modification and the burden of proof is on the applicant to demonstrate that a narrower driveway is safe (See R-4 III Modifications section for requirements.)If turning path illustrations are used to support the driveway modification, the applicant must demonstrate that the proposed width of the driveway will allow two opposing standard size passenger vehicles passing each other to have at least 2 feet of clearance between the vehicles and 18 inches of clearance between the vehicles and any walls, permanent structures, vertical curbs, or similar obstructions. If the driveway provides access to delivery trucks, then these clearances must be met for the opposing truck and passenger vehicle. The appropriate AASHTO design vehicle shall be based on the operational characteristics of the site and approved by Kirkland Public Works prior to completing the analysis.

9. Grades, Throat Length, Horizontal and Vertical Alignment

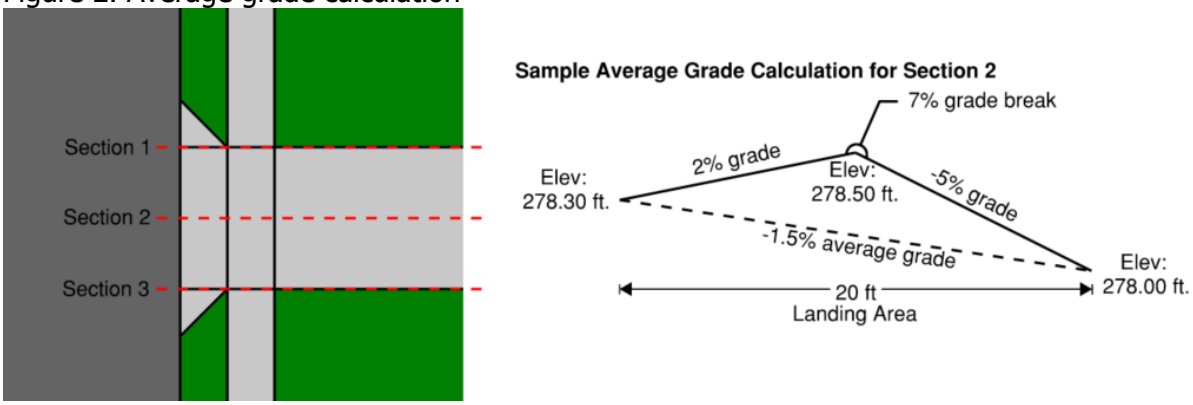
New driveways shall preferably intersect the adjacent street at an 80 to 100 degree angle. For Multifamily /Non-Residential driveways the average grade on the landing, as defined in Table 4, shall not exceed 6%. Average grade on the landing is measured using the following equation for at least three driveway sections, the left side of driveway, center, and right side of driveway. Grade breaks within the landing area are permitted provided that the difference in grade does not exceed 8%, as shown in Figure 2. Grade beyond landing shall not exceed 15%.

Table 4. Required driveway landing area and throat length

Driveway Daily Volumes	**Landing (Relatively Flat Distance Behind Back of Existing or Future Curb line)**	**Throat Length (Distance between face of curb and the parking area served)**
<100	20′	20′
100 - 1500	20′-25′	40′
>1500	30′	60′

$$\text{Average Grade} = \frac{\text{Elevation at existing future curb line-Elevation at back of landing}}{\text{Required landing length}} * 100 \text{ for each section}$$

Figure 2. Average grade calculation



10. Traffic Control at Driveways

    a. Multifamily / Non-residential driveways may be controlled by stop signs, roundabouts or traffic signals.

    b. Traffic signalization may be considered to control driveways projected to exceed 2000 vehicles per day and that are located on arterial streets with ADT in excess of 15,000. Traffic signal warrant analysis shall be performed at driveways considered for signalization.

    c. Signalized driveways shall be designed and built so as to minimize interference with existing traffic signals and shall have a minimum 100 ft storage area between the face of curb and any turning and parking maneuver within the development.

    d. For multi-family and non-residential use, parking shall be located at a minimum of 25 feet behind the back of sidewalk.

    e. For parking garage facilities having 10 or more parking spaces, parking shall be located a minimum of 25 feet beyond the garage entrance.

11. Sight Distance

    Public Works Pre-Approved Plan Policy R-13 specifies sight distance requirements for driveways and various types of intersections.

III. Modifications

A modification shall be required for any new driveway or existing driveway, if use of an existing site's driveway will be continued after redevelopment, that does not comply with the design criteria of this policy (see Section II). The applicant may request a modification to the design criteria of this policy by submitting a written request to City Transportation Engineering Staff. The applicant shall provide an engineering analysis and supporting data prepared by a licensed transportation engineer as part of the request. The engineering analysis shall be coordinated with City Transportation Engineering Staff prior to submission to ensure all required items are addressed. The

request will be supported by policies found in current transportation engineering design materials such as those published by NACTO, AASHTO, ITE or WSDOT and consider the following factors:

- Street functional classification
- Projected daily and peak Driveway Volumes
- Street speed data
- Street traffic volumes
- Intersection geometry (number of lanes, etc.)
- Street and intersection safety characteristics
- Existing driveway safety characteristics, if an existing driveway is present
- Parcel size
- Availability of alternate access
- Other factors as required by the City Transportation Engineer

City Transportation Engineering Staff will make the final decision as to whether or not the modification should be granted.

TEMPLATES FOR REQUIRED VEHICLE TURNAROUND AREA

SUPPLEMENTAL TO PRE-APPROVED POLICY R-4

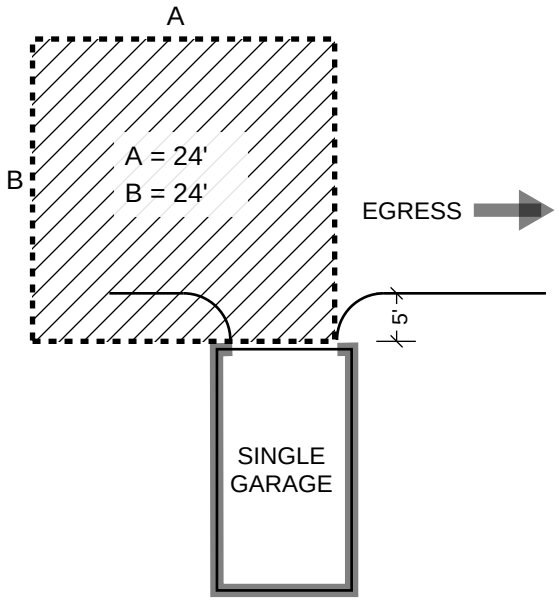
CITY OF KIRKLAND, PUBLIC WORKS DEPARTMENT, REV. 2/01/2023

THE FOLLOWING VEHICLE TURNAROUND AREA TEMPLATES ARE REQUIRED FOR SINGLE-FAMILY RESIDENTIAL DEVELOPMENT PROJECTS WITH MULTIPLE DWELLING UNITS PROPOSED ON A SINGLE LOT (I.E., COTTAGE, CARRIAGE AND TWO/THREE-UNIT HOMES, AND/OR ACCESSORY DWELLINGS UNITS).

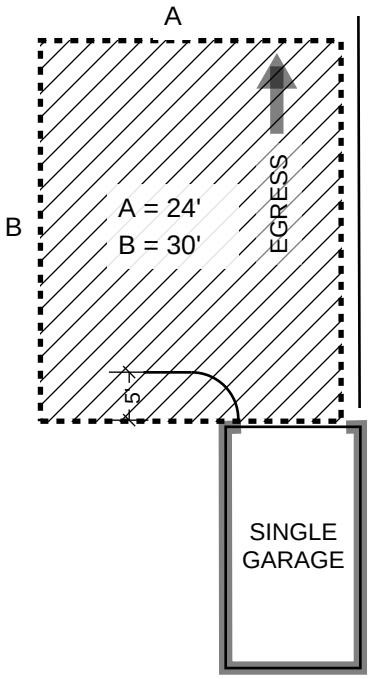
A PARKED VEHICLE MUST BE PROVIDED WITH THE MINIMUM TURNAROUND AREA PRESCRIBED BY THE TEMPLATES. THE VEHICLE MUST BE ABLE TO USE THE TURNAROUND AREA TO BACK OUT IN ONE SINGLE MANEUVER AND DRIVE FORWARD TOWARDS THE EGRESS.

AN AUTOTURN ANALYSIS IS NOT REQUIRED IF THE PRESCRIBED TEMPLATES ARE USED. IF THE APPLICANT ELECTS TO PERFORM AN AUTOTURN ANALYSIS IN-LIEU OF USING THE TEMPLATES, THEN THE INPUT PARAMETERS FOR THE AUTOTURN ANALYSIS MUST BE SUBMITTED FOR REVIEW. AUTOTURN INPUT PARAMETERS SHALL BE SET SUCH THAT THE VEHICLE DIMENSIONS ARE 16 FT LONG BY 6 FT WIDE; THE WHEELBASE IS 9.5 FT; AND TURNING RADIUS IS 20 FT.

GARAGE PARKING SCENARIOS

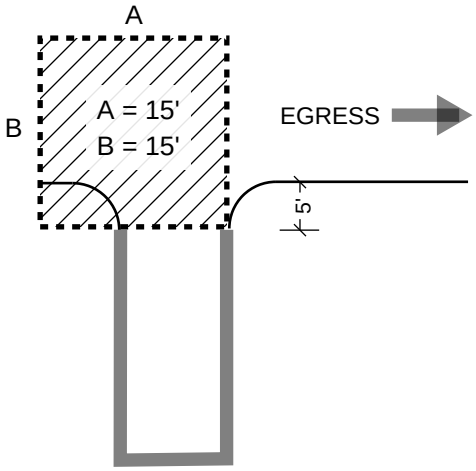


EGRESS DIRECTION IS ADJACENT TO GARAGE

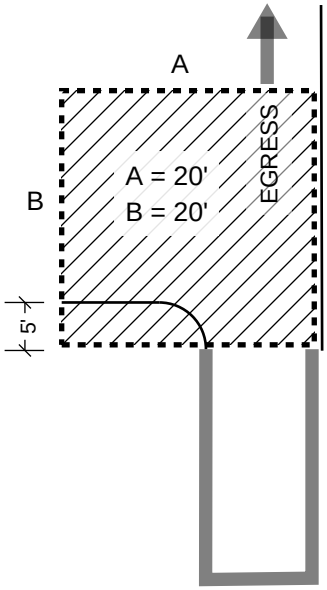


EGRESS DIRECTION IS OPPOSITE TO GARAGE

SURFACE PARKING SCENARIOS



EGRESS DIRECTION IS ADJACENT TO STALL



EGRESS DIRECTION IS OPPOSITE TO STALL

CITY OF KIRKLAND

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DEPARTMENT OF PUBLIC WORKS

PRE-APPROVED PLANS POLICY

Policy R-5: Curb Ramp Installation and Replacement Policy

This policy is intended to provide clear direction on when curb ramps meeting ADA standards must be installed. See the following matrix for more information.

Description of Work	New Construction	Alteration	Maintenance	Comments
Street Paving				
New street paving or overlay through an intersection (Figures 1 & 2)	X			Sidewalk ramps are required on all corners of the intersections where pedestrian crossings/crosswalks are permitted and curbing or sidewalk is present as impacted by paving.
Slurry seal through an intersection			X	No action required.
New street paving or overlay (Figure 3)		X		Sidewalk ramps are required on the leg of the intersections where pedestrian crossings are permitted and curbing or sidewalk is present. Half-street overlays trigger new curb ramp installation.
Private Construction	NC	A	M	
Construction of any new structure, including a new single family residence, and where installation of public improvements has not been deferred	X			Sidewalk ramps are required on all corners of the intersections and at mid-block locations where pedestrian crossings are permitted and curbing or sidewalk is present on project frontage.
Addition or remodel of an existing structure that exceeds the 50% threshold for multi-family or non-residential projects or $200,000 for single family alterations as defined by the Kirkland Zoning Code and the Uniform Building Code as amended by the City of Kirkland		X		Sidewalk ramps are required on all corners of the intersections and at mid-block locations where pedestrian crossings are permitted and curbing or sidewalk is present on project frontage.

Signals and Crosswalks	NC	A	M	
Construct new traffic signal, including installation of accessible pedestrian signal equipment (Figure 4)	X			Sidewalk ramps are required on all corners of the intersections where pedestrian crossings/crosswalks are permitted and curbing or sidewalk is present as impacted by construction. See City of Kirkland Policy R-31 Accessible Pedestrian Signal Policy for detail on APS requirements.
Upgrade the existing traffic signal	X	X		Sidewalk ramps are required on all corners of the intersections where pedestrian crossings/crosswalks are permitted and curbing or sidewalk is present as impacted by construction.
Routine maintenance on a traffic signal where there is no alteration to the sidewalk or street.			X	No action required.
Installation of a new pedestrian crosswalk (Figure 5)	X			Installation of a new crosswalk where curbing is a barrier to the pedestrian walkway requires new curb ramps. Placement of thermoplastic/paint does not trigger an upgrade to existing curb ramps. Curb ramps will be evaluated on a case-by-case basis for raised crosswalks.
Sidewalks and Trails	NC	A	M	
New or reconstructed sidewalk or trail construction up to and/or within a corner's radius midpoint (Figure 6)	X			Sidewalk ramps, including receiving ramps, shall be upgraded/constructed on the leg of the intersection that the new sidewalk or trail approaches where curbing or sidewalk is present. The ramps on the corner's adjacent leg shall be upgraded/constructed if the proposed construction extends beyond the midpoint (>50%) of the corner's radius.
Reconstruct sidewalk midblock (Figure 6)			X	No action required unless a curb ramp is impacted by the replacement.
New or reconstructed sidewalk or trail that abuts or crosses an existing driveway or alley approach	X	X		Replace driveway/alley approach per City standards, or construct and route a 5-foot wide minimum accessible sidewalk at the back of the driveway/alley. Layout shall be as acceptable to the City. Existing single family homes are exempt from improving driveways other than their own, and for constructing alley approach improvements.

Curb and Gutter	NC	A	M	
New or reconstructed curb or curb and gutter up to or within a corner's radius midpoint (Figure 7)	X	X		Sidewalk ramps shall be upgraded/constructed on the leg of the intersection that the new curb impacts and/or touches.
Replacing curb or curb and gutter midblock			X	No action required as long as not in the crosswalk.
Utility Improvements	NC	A	M	
Utility excavations through an intersection		X		For curb ramps that are impacted by trenching or excavation for utility installation, construct new or replace existing sidewalk ramps within the intersection where pedestrian crossings are permitted and where curbing or sidewalk is present.
Utility excavations that impact more than 50% of a block's width (regardless of length) and extend up to or beyond a corner's radius		X		See STREET PAVING category, Figure 3.
Planter strip trenching, regardless of location, that does not impact a curb ramp or curb and gutter.			X	No action required.
On-street Parking	NC	A	M	
Repaint existing on-street parking stalls			X	No action required.
Layout modifications to existing on-street parking stalls (e.g. change parallel parking to angle parking)		X		Stripe new ADA accessible stalls, construct new ramps to provide sidewalk access.
On-Street parking stall striping associated with new construction (e.g. new pavement/overlay, new parking areas within planter strip/ROW, etc.)	X			Improvements to be determined on a case-by-case basis.

On-Street accessible parking stalls requested by citizens or commercial businesses		X		Improvements to be determined on a case-by-case basis.
Miscellaneous Striping	NC	A	M	
Installation of Bike Lanes			X	No action required.
Lane Reconfiguration			X	No action required.
Receiving Ramp Const.	NC	A	M	
If a ramp is upgraded/ constructed and an existing receiving ramp is present, will the existing receiving ramp be upgraded or reconstructed?	X	X		No action required.
If a ramp is upgraded/ constructed and an existing receiving ramp is NOT present, will a new ramp be constructed?	X			If the crosswalk connects to a pedestrian facility (sidewalk), then a curb ramp shall be installed.
Other	NC	A	M	
Tree installation or removal without curb, gutter, or sidewalk impacts	X	X	X	Does not change use, no action required. Maintain clear accessible path in accordance with City requirements.
Speed hump installation without impact to curb, gutter, sidewalk, or pedestrian route.	X	X		Does not change use, no action required.
Traffic Circle	X			Traffic circles will be evaluated on a case-by-case basis.
Roundabout	X			See street paving for standards.
Pedestrian Island	X			Construct new, replace existing or retrofit sidewalk ramps (including receiving ramps) for the crossing that includes the pedestrian island.

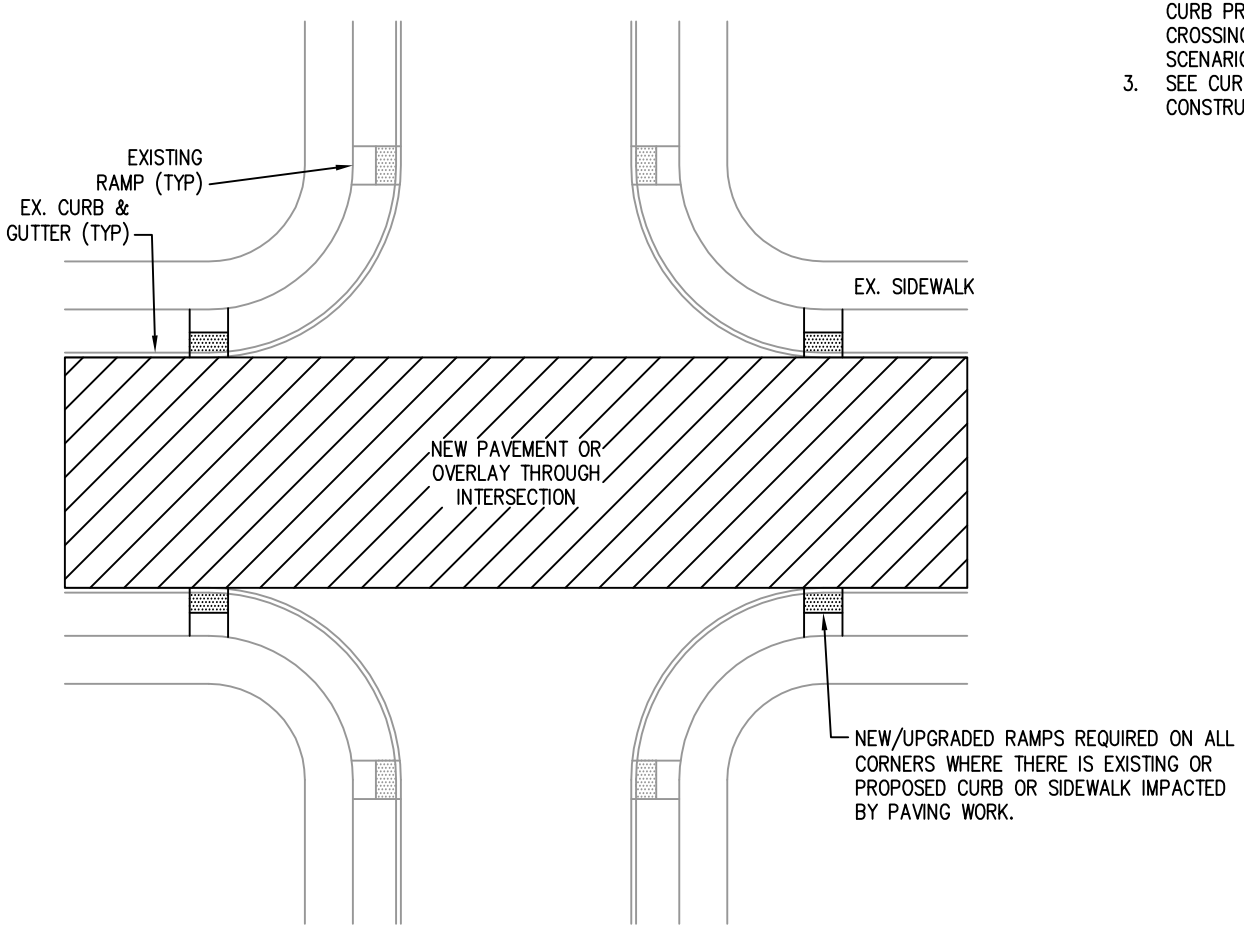
General Notes

- All curb ramp construction/upgrades shall be built concurrent with all other planned work.
- Arterial and mid-block crossings shall be as approved by the City.
- All roadway restoration shall be in accordance with City Pre-Approved Plans and Policies.
- Directional ramps are preferred over 45-degree ramps.
- Forty-Five (45) degree ramps shall be installed only after approval by the City's ADA coordinator and/or the Construction Division Manager.
- All curb ramp designs shall be stamped by a licensed Professional Engineer. If meeting the current design standards is not possible, ramps shall be constructed to the maximum extent feasible as indicated by an Engineer's note on the stamped drawings. Rationale supporting the design variance shall include a description of the scope of work, the site-specific factors affecting compliance, and the measures implemented to improve conditions. A full Maximum Extent Feasible (MEF) form shall be provided to the City by the Project Engineer with the as-builts after construction.
- All curb ramp installation and upgrades must be included in the area of impact for environmental, stormwater, and construction stormwater design and permitting.

LAST REVISED:3/1/2016

NOTES:

1. SEE FIGURES 2 AND 3 FOR ADDITIONAL STREET PAVING REQUIREMENTS.
2. RAMP CONSTRUCTION IS REQUIRED IF THERE IS A SIDEWALK OR CURB PRESENT AT THE AFFECTED END OF THE PEDESTRIAN CROSSING. SEE FIGURE 10 FOR VARIOUS RAMP CONSTRUCTION SCENARIOS.
3. SEE CURB RAMP INSTALLATION MATRIX FOR ADDITIONAL RAMP CONSTRUCTION GUIDELINES.



CITY OF KIRKLAND

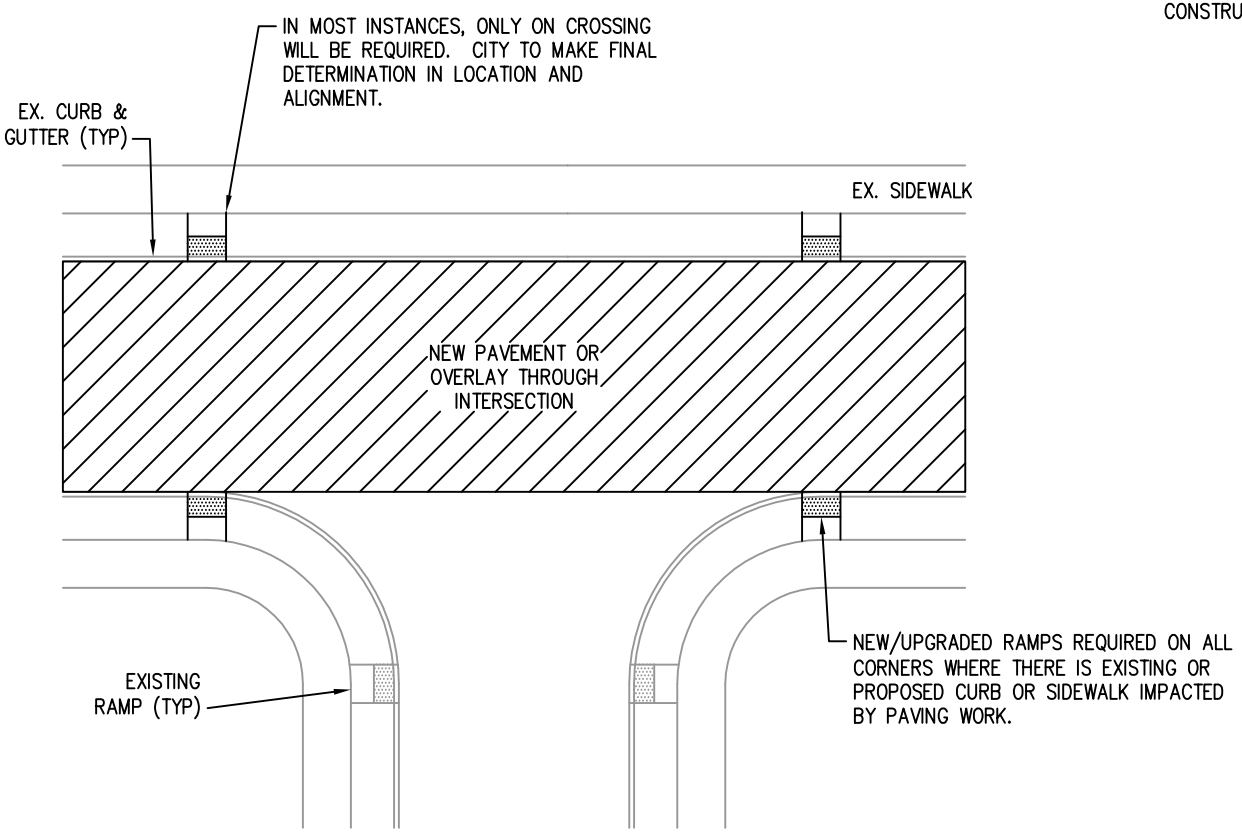
POLICY R-5, FIGURE 1

STREET PAVING IMPROVEMENTS FULL INTERSECTION

LAST REVISED:3/1/2016

NOTES:

1. SEE FIGURES 1 AND 3 FOR ADDITIONAL STREET PAVING REQUIREMENTS.
2. RAMP CONSTRUCTION IS REQUIRED IF THERE IS A SIDEWALK OR CURB PRESENT AT THE AFFECTED END OF THE PEDESTRIAN CROSSING. SEE FIGURE 10 FOR VARIOUS RAMP CONSTRUCTION SCENARIOS.
3. SEE CURB RAMP INSTALLATION MATRIX FOR ADDITIONAL RAMP CONSTRUCTION GUIDELINES.



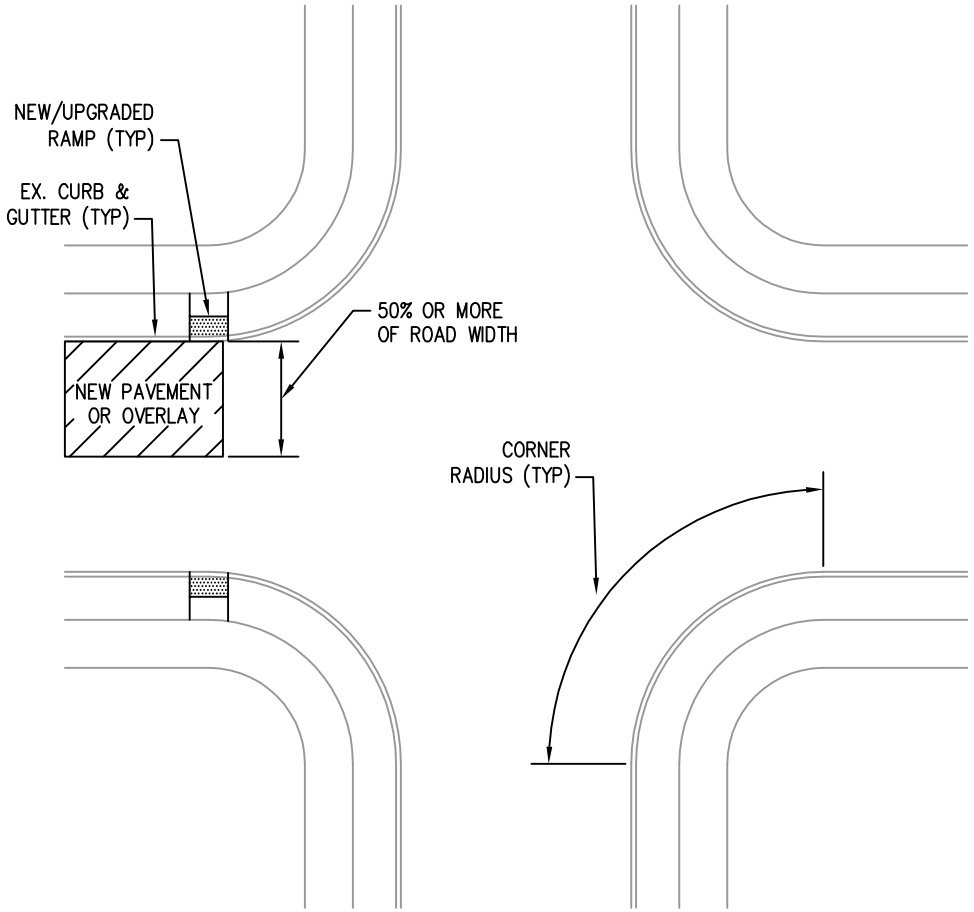
CITY OF KIRKLAND

POLICY R-5, FIGURE 2

CITY OF KIRKLAND WASHINGTON

STREET PAVING IMPROVEMENTS T-INTERSECTION

LAST REVISED:3/1/2016



NOTES:

1. NEW/UPGRADED RAMPS REQUIRED WHEN:
   - PAVEMENT/OVERLAY EXTENDS UP TO OR WITHIN THE CORNER'S RADIUS
   - PAVEMENT OVERLAY TOUCHES A CURB RAMP.
2. FOR RAMP REQUIREMENTS WHEN THE PAVING/OVERLAY EXTENDS INTO THE INTERSECTION, SEE FIGURES 1 AND 2.
3. RAMP CONSTRUCTION IS REQUIRED IF THERE IS A SIDEWALK OR CURB PRESENT AT THE AFFECTED END OF THE PEDESTRIAN CROSSING. SEE FIGURE 10 FOR VARIOUS RAMP CONSTRUCTION SCENARIOS.
4. SEE CURB RAMP INSTALLATION MATRIX FOR ADDITIONAL RAMP CONSTRUCTION GUIDELINES.

CITY OF KIRKLAND

POLICY R-5, FIGURE 3

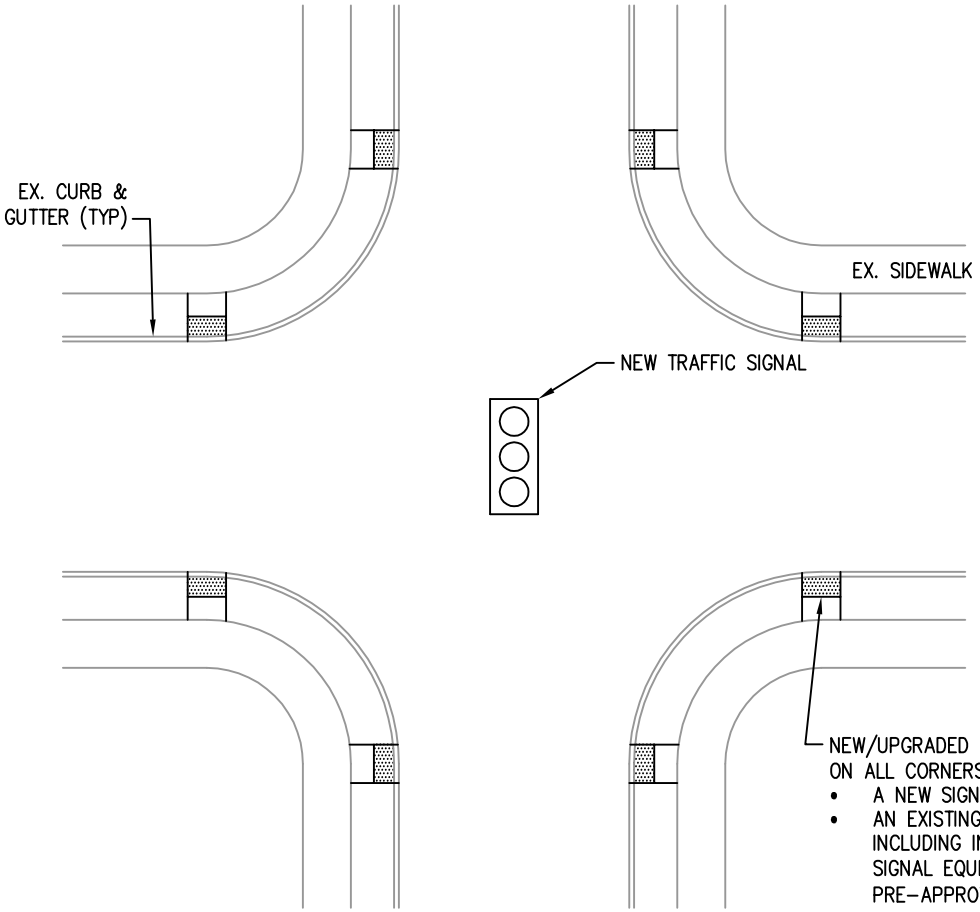
CITY OF KIRKLAND WASHINGTON

STREET PAVING IMPROVEMENTS ABUTTING INTERSECTION

LAST REVISED:3/1/2016

NOTES:

1. RAMP CONSTRUCTION IS REQUIRED IF THERE IS A SIDEWALK PRESENT AT THE AFFECTED END OF THE PEDESTRIAN CROSSING. SEE FIGURE 10 FOR VARIOUS RAMP CONSTRUCTION SCENARIOS.
2. SEE CURB RAMP INSTALLATION MATRIX FOR ADDITIONAL RAMP CONSTRUCTION GUIDELINES.
3. INSTALLATION OF ACCESSIBLE PEDESTRIAN SIGNAL (APS) SYSTEMS SHALL COMPLY WITH CITY OF KIRKLAND POLICIES AND PRE-APPROVED PLANS.
4. CONDUIT FOR APS SHALL BE INSTALLED DURING CURB RAMP CONSTRUCTION AT ALL SIGNALIZED INTERSECTIONS AND AT INTERSECTIONS WHERE SIGNALIZATION IS ANTICIPATED WITHIN THE NEXT 6 YEARS. COORDINATE WITH THE PUBLIC WORKS ENGINEERING TRAFFIC SECTION.



CITY OF KIRKLAND

POLICY R-5, FIGURE 4

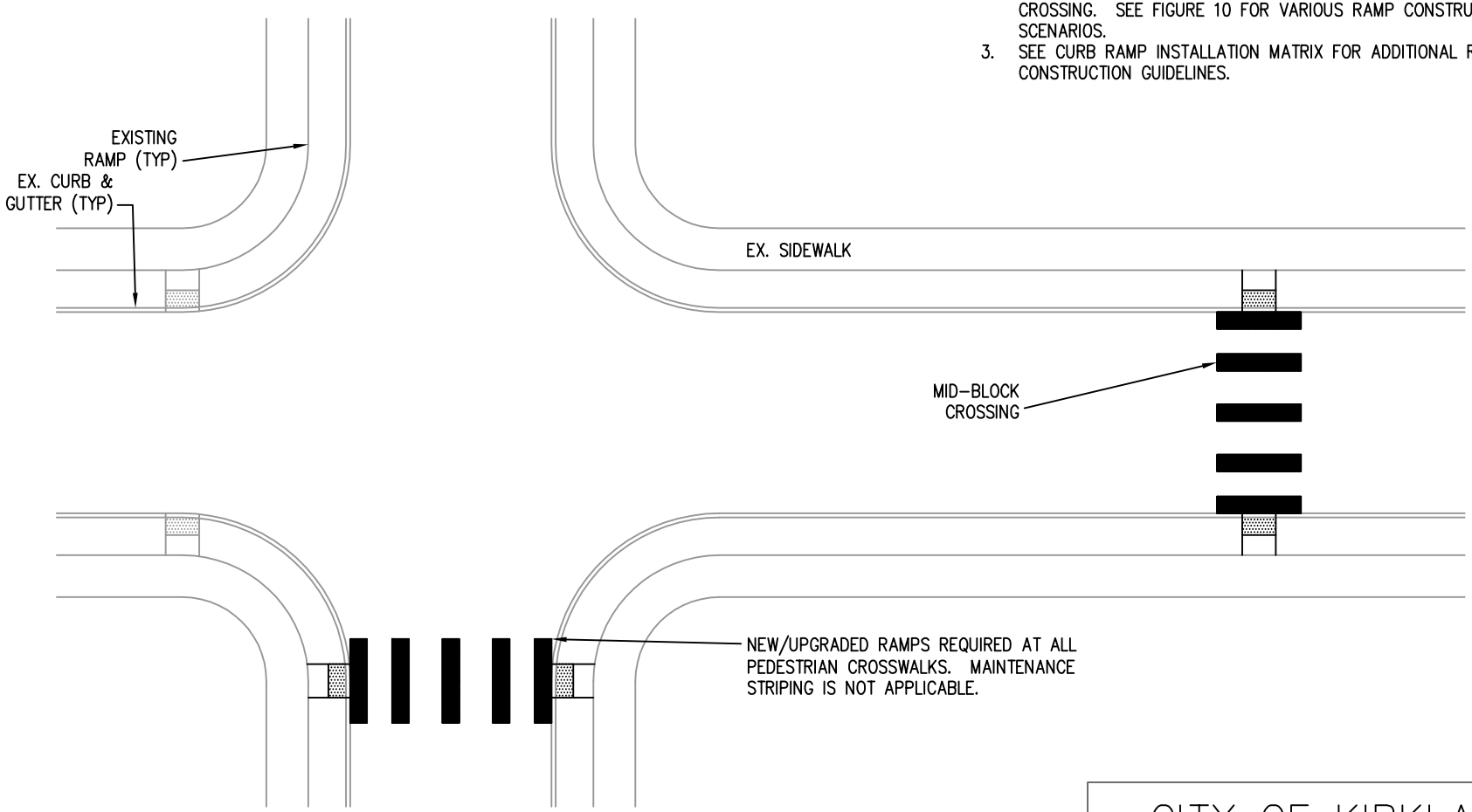
CITY OF KIRKLAND WASHINGTON

TRAFFIC SIGNAL IMPROVEMENTS

LAST REVISED: 3/1/2016

NOTES:

1. THERMOPLASTIC SHALL BE USED FOR ALL PEDESTRIAN STRIPING.
2. RAMP CONSTRUCTION IS REQUIRED IF THERE IS A SIDEWALK OR CURB PRESENT AT THE AFFECTED END OF THE PEDESTRIAN CROSSING. SEE FIGURE 10 FOR VARIOUS RAMP CONSTRUCTION SCENARIOS.
3. SEE CURB RAMP INSTALLATION MATRIX FOR ADDITIONAL RAMP CONSTRUCTION GUIDELINES.



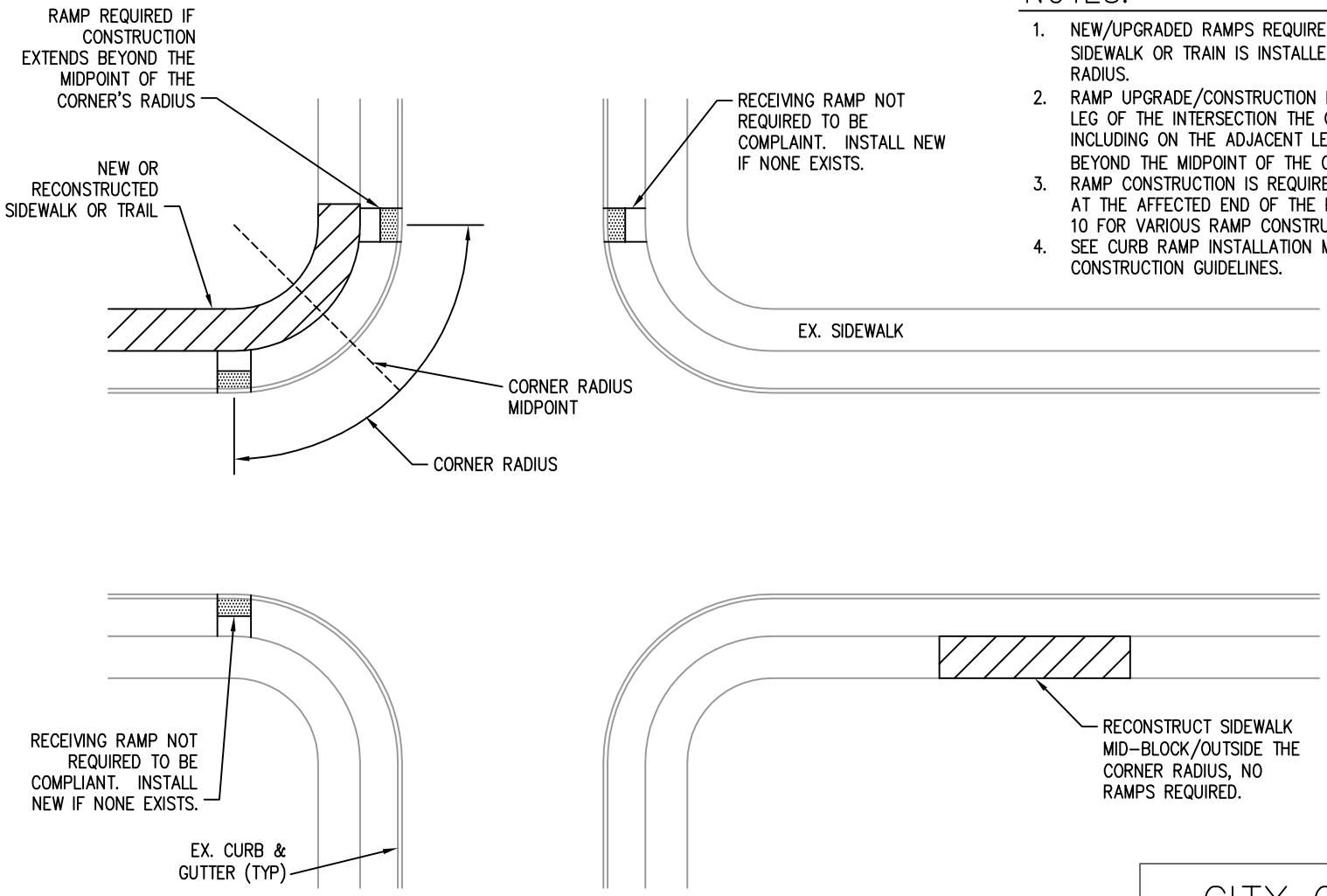
CITY OF KIRKLAND

POLICY R-5, FIGURE 5

CITY OF KIRKLAND WASHINGTON

PEDESTRIAN CROSSWALK IMPROVEMENTS

LAST REVISED: 3/1/2016



NOTES:

1. NEW/UPGRADED RAMPS REQUIRED WHEN NEW OR RECONSTRUCTED SIDEWALK OR TRAIN IS INSTALLED UP TO OR WITHIN THE CORNER'S RADIUS.
2. RAMP UPGRADE/CONSTRUCTION IS REQUIRED ON THE LEG OF THE LEG OF THE INTERSECTION THE CONSTRUCTION APPROACHES, INCLUDING ON THE ADJACENT LEG IF CONSTRUCTION EXTENDS BEYOND THE MIDPOINT OF THE CORNER'S RADIUS.
3. RAMP CONSTRUCTION IS REQUIRED IF THERE IS A SIDEWALK PRESENT AT THE AFFECTED END OF THE PEDESTRIAN CROSSING. SEE FIGURE 10 FOR VARIOUS RAMP CONSTRUCTION SCENARIOS.
4. SEE CURB RAMP INSTALLATION MATRIX FOR ADDITIONAL RAMP CONSTRUCTION GUIDELINES.

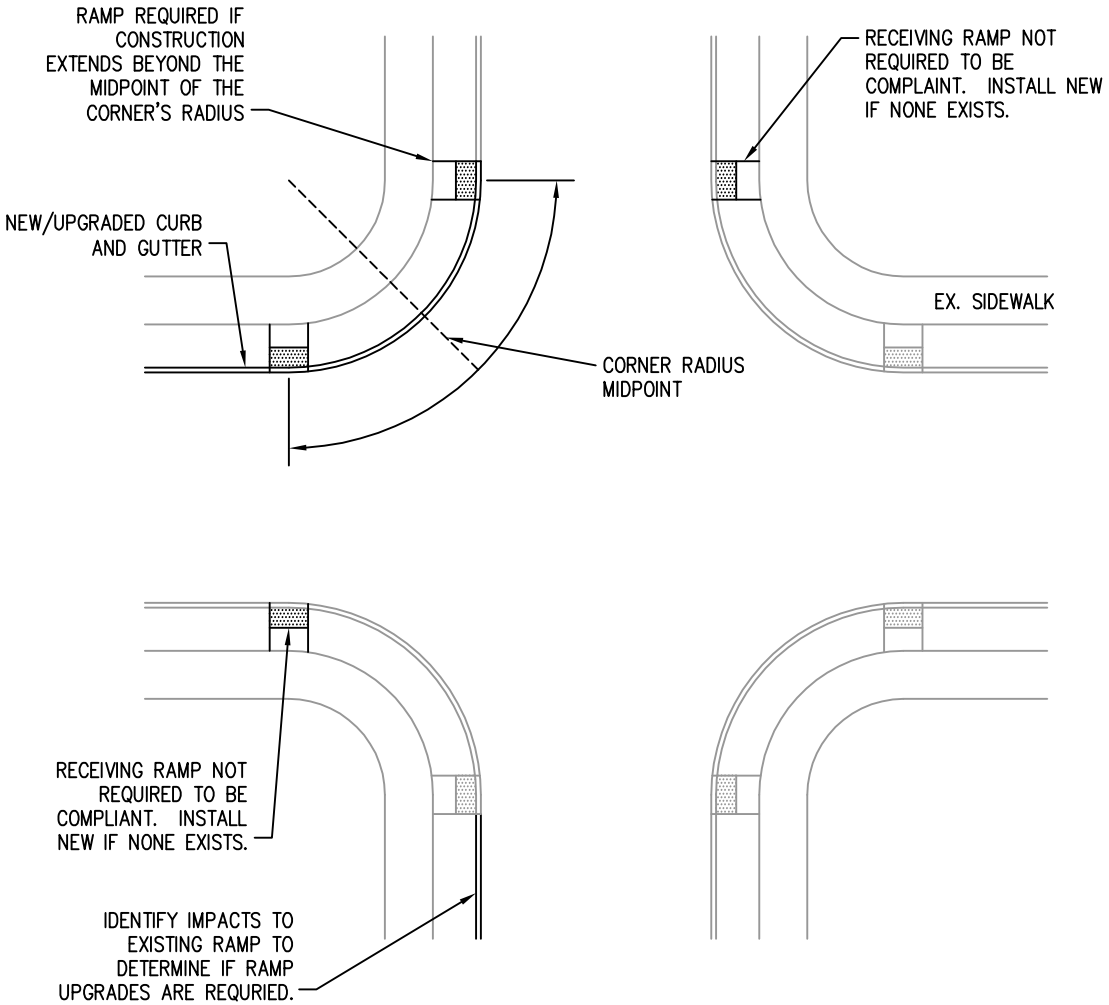
CITY OF KIRKLAND

POLICY R-5, FIGURE 6

CITY OF KIRKLAND WASHINGTON

SIDEWALK AND TRAIL IMPROVEMENTS

LAST REVISED:3/1/2016



NOTES:

1. NEW/UPGRADED RAMPS REQUIRED WHEN NEW/UPGRADED CURB AND/OR GUTTER IMPACTS OR TOUCHES THE CURB RAMP.
2. RAMP UPGRADE/CONSTRUCTION IS REQUIRED ON THE LEG OF THE INTERSECTION THE CONSTRUCTION APPROACHES, INCLUDING ON THE ADJACENT LEG IF CONSTRUCTION EXTENDS BEYOND THE MIDPOINT OF THE CORNER'S RADIUS.
3. IF RAMPS ARE LOCATED OUTSIDE THE CORNER'S RADIUS, BUT IMPACTED BY CURB AND/OR GUTTER IMPROVEMENTS, RAMPS SHALL BE REPLACED OR UPGRADED AS DESCRIBED ABOVE OR AS REQUIRED BY THE CITY.
4. RAMP CONSTRUCTION IS REQUIRED IF THERE IS A SIDEWALK OR CURB PRESENT AT THE AFFECTED END OF THE PEDESTRIAN CROSSING. SEE FIGURE 10 FOR VARIOUS RAMP CONSTRUCTION SCENARIOS.
5. SEE CURB RAMP INSTALLATION MATRIX FOR ADDITIONAL RAMP CONSTRUCTION GUIDELINES.

CITY OF KIRKLAND

POLICY R-5, FIGURE 7

CITY OF KIRKLAND WASHINGTON

CURB AND GUTTER IMPROVEMENTS

CITY OF KIRKLAND

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-6: PARKING RESTRICTIONS IN THE PUBLIC RIGHT-OF-WAY

The Kirkland Municipal Code (KMC) specifies parking restrictions in the public right-of-way in the following sections:

- Chapter 12.40 - Abandoned and Unauthorized Vehicles
- Chapter 12.44 - Stopping, Standing, or Parking Prohibited in Specified Places, Reserving Portion of Highways
- Chapter 12.45 - Parking

The purpose of Policy R-6 is to clarify designation and implementation of the above parking restrictions for new and existing developments and in response to citizen requests. In general drivers should be aware of the parking restrictions without them being designated. However, when drivers park habitually in violation of parking restrictions, formal designation of No Parking reminds drivers of parking restrictions.

In some situations, Public Works will designate No Parking in zones where sight distance, pavement width or other factors indicate parking should be restricted for traffic safety or access. The Fire Department, working in conjunction with Public Works, may similarly designate No Parking zones for emergency service needs.

No Parking restrictions are indicated either by signs or red curb. No Parking signs shall comply with Sections 2B.46 through 2B.49 of the Manual of Uniform Traffic Control Devices (latest edition). Red curb shall conform to City of Kirkland standards and can be implemented by the City or citizens who received written authorization from the City in accordance with Policy R-19. Public Works will review citizen requests for parking restrictions on public right-of-way on a case-by-case basis.

The City shall install No Parking signs or paint curbs red when the following conditions are met:

1. On all new roadways where the pavement width is less than 24 feet, parking shall be prohibited on one side of the roadway.

2. On existing paved streets where new half-street improvements are being installed:
    a. If the new total paved width is less than 24 feet, then parking shall be prohibited along the new frontage improvements.
    b. If the new total paved width is 24 feet or more, then parking will be allowed on both sides of the road, unless other factors indicate otherwise.

3. Public Works determines parking should be restricted based on a site evaluation and/or engineering analysis.

4. On all sides of new hammerheads turn-arounds located within the right-of-way.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-7: STREET ASPHALT OVERLAY POLICY

All public streets shall be overlaid when any of the following conditions apply:

1. When any utility is installed in the roadway and is parallel to the right-of-way centerline, the roadway must be overlaid from the centerline to the curb line for the entire length of the utility extension. If the utility trenching encroaches on both sides of the centerline, a full street overlay will be required.

2. When any utility installed in the roadway consists of three or more perpendicular trenches within 150', the roadway must be overlaid from the curb line to the centerline. If a trench extends beyond the centerline, a full street overlay will be required.

3. When any utility is installed in the roadway and is at an oblique angle to the right-of-way centerline, the roadway must be overlaid from the centerline to the curb line for the entire length of the utility extension. If the utility trenching encroaches on both sides of the centerline, a full street overlay will be required.

4. When the permit conditions require street improvements, where the existing pavement (and abutting paved alley) is alligatored, the existing pavement must be overlaid from the centerline to the new curb line; and, when the abutting alley requires utility patches that would be compromised without an overlay. In the case of alleys, if the alligatoring is severe, an entire overlay from property line to property line may be required.

5. When the asphalt that is to be trenched or potholed is less than five years old, see asphalt overlay for Roadway Trench Repair Standard CK-R.13A.

6. Any street cut within a street that has been Slurry Sealed within the last 3 years shall be patched with a standard tee-cut and then covered with an elastomeric seal coat (Henry 130 or equal).

In all cases where a street overlay is required, both ends of the overlay area must be cold-planed perpendicular to the roadway a minimum length of 50' to provide a flush transition. For half-street or full-street overlays, cold planing (grinding) of the entire paving area is required (centerline to gutter or gutter to gutter). When curb and gutter does not exist, the new overlay surface may, at the Engineer's discretion, be tapered to meet the elevation of adjacent paved surfaces. All asphalt joints and tapered transitions shall be sealed with PG64-22 or equivalent.

See Asphalt Overlay for Roadway Trench Repair Standard CK-R-13A.

Private roads are expected to be restored to equal or better condition after construction. In general, the Public Works Department will enforce the above conditions on private roads.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-8: PLACING CONCRETE OR ASPHALT IN ADVERSE WEATHER CONDITIONS

Once a permit has been issued, the Contractor shall call 24 hours in advance of paving or the placement of concrete to coordinate construction efforts with the inspector. The contractor shall obtain approval from the City's inspector or Development Engineer prior to placing asphalt or concrete. The following criteria is a basis for placing concrete or asphalt:

1. Asphalt

A. Shall not be placed in the rain.
B. All final 2"-lift of Hot Mix Asphalt must be placed when the air temperature is 45 degrees and rising.
C. ATB shall not be placed when the air temperature is below 35 degrees.
D. Shall not be placed on frozen or ice-coated ground or subgrade.

2. Concrete

A. Shall not be placed in the rain.
B. Shall not be placed when the air temperature is above 90 degrees.
C. Shall not be placed on frozen or ice-coated ground or subgrade, against or on ice-coated forms.
D. **IF** freezing conditions result within 72 hours following the pour, all concrete shall be covered with plastic and straw or some other method (i.e. blankets) to keep the concrete from freezing.

WSDOT Standard Specifications shall be recognized and adhered to, specifically sections 5-04.3(16), 6-02.3(14), 5-05.3(14). If a conflict occurs between the above criteria and WSDOT, the stricter of the two shall apply.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-9: NEW PLAT ROAD PAVING POLICY

When constructing new plat roadways in previously unopened rights-of-way or in newly dedicated rights-of-way, the permittee must post a one-year performance security for the final 2" lift of asphalt pavement prior to recording the plat. Within the one-year period following, the Public Works Department will determine when the final lift may be installed. The final lift will not be installed until all ATB and base failures have been removed and restored and until the single-family homes within the plat have been constructed.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-10: STREET TREE SELECTION LIST, AND PLANTING AND PRUNING PROCEDURES

PLANT APPLICATION & PLANTING PROCEDURES:

The City of Kirkland requires the planting and maintenance of trees along public streets. An adjacent property owner or tenant may plant a tree in a street-planting strip or near the road subject to City review and approval of the type of tree and the planting location. Contact the Public Works Department at 425-587-3800 for an application. After you receive approval to plant, you will be responsible for properly planting and maintaining the tree. This includes watering during the drier seasons, mulching, and pruning.

When private contractors, developers, and property owners are required to plant street trees as part of a private development or redevelopment project, standards of tree selection, location, planting, and a two-year maintenance bond are required.

Besides selecting a tree for aesthetics, please consider the following before you choose a tree and plant it:

1. In most cases, the planting of trees is required only when there is a curbed roadway and a minimum 4.5 foot wide planting strip.
2. Trees must be planted to the following standards:
    a. Located a minimum of 30 inches back from the face of the curb.
    b. Located a minimum of 5 feet from underground utility lines if possible.
    c. Located a minimum of 20 feet from street lights, pedestrian lights, or other existing trees. Mature crown spread of the species selection shall not grow into street lights.
    d. Located a minimum of 30 feet from uncontrolled intersections — Measured back from the inside radius of the intersection area on all approaches.
    e. Located a minimum of 50 feet from controlled intersections. Measured back from the stop bar or the inside radius of the intersection area on all approaches.
    f. **Before planting, you MUST call 72 hours in advance for underground utility locations. This is a toll free call @ 1-800-424-5555.** They will mark your planting strip for the location of your water, electric, gas, and power lines. Knowing these locations in advance may save you time and money by preventing an accident.
    g. Unless automatic irrigation is provided, trees must be planted between

October and February.

h. Deciduous trees shall be a minimum 2-inch caliper when planted. Conifer trees shall be a minimum of 6 to 8 feet tall when planted.
i. Conifer trees are approved on a case-by-case basis. Safety and impact on maintenance workload will be primary considerations. Conifer trees are never allowed in center medians.
j. For newly planted street trees there should be no branching from the trunk below 5 feet from the ground or walk provided that the branches do not encroach into the sidewalk or street.
k. Trees that are naturally resistant to pests and produce little fruits are required.

TREE SELECTION:

This document refers to trees on public rights-of-way only.

Refer to the "Recommended Kirkland Street Tree Planting List" below for a listing of trees generally recommended for planting within the planting strip area. This list includes a variety of tree shapes and sizes that can be utilized in a variety of circumstances. Please be aware that this list concentrates on hardy and readily available tree species in the Kirkland area. Also, be aware that current industry belief is that species diversity is a major key to a healthy community/urban forest. It is now recommended that no one species account for more than 8% of the total number of trees in the forest. Therefore, certain trees may not be considered appropriate due to an existing overabundance of that species in a certain part of town. Contact the City of Kirkland Street Department at 425-587-3900 for details. (Specific tree species that are limited in certain neighborhoods include: Norway Maple, Crimson King Maple, Red Maple, Pin Oak, Sweetgum.)

Also please be aware that the list is updated every two years. Tree species may be added or removed from the list as information becomes available. This means that tree species you may see in and around Kirkland are no longer permitted to be planted. Or it may mean that certain species of trees were not readily available at the last review of the list. If there is a particular tree you are interested in that is not on the list, and is also not on the "Trees Not Recommended or Not Permitted along Kirkland Streets" below, you may provide the name of the tree and information for the City to consider with your application. The request and information will be reviewed in relation to the other demands of the right of way. You will then be informed of the decision.

When planting trees under utility lines, choose only small-scale trees that will remain small when mature.

Planting widths: The City Code requires that trees be planted 30 feet on center.

There is no need to meet a City staff representative on site. If you have specific

concerns, you may note them on the planting application. Be specific and the City will address your concerns. If you have any questions you may call 425-587-3225 and talk with the permit technician. Staff will consider alternative species proposed on a case-by-case basis. If you are requesting permission to plant a tree species not on this list please provide information about the tree's growth habit, mature size, disease and insect resistance, and any other pertinent information that supports the inclusion of the tree.

If street trees are required within the Seattle City Light Easement, only Mt. St. Helens Plums are allowed due to a mature height of only 10 feet.

PROHIBITED STREET TREES FOR THE CITY OF KIRKLAND:

City of Kirkland Code allows the City to prohibit the following trees from being planted on public rights-of-way. The trees may not be planted closer than the listed minimum planting distance to streets or sewers:

SPECIES:	MINIMUM PLANTING DISTANCE:
Populus trichocarpa, Black Cottonwood	40′
Populus deltoides, Eastern Cottonwood	40′
Populus nigra 'Italica', Lombardy Poplar	40′
Ailanthus altisima, Tree of Heaven	25′
Salix sp., Willow trees	25′
Ulmus americana, American Elm	40′
Sycamore	40′
London Plane	40′
Prunus sp., Cherry, stone fruits, etc (Malus, Crab Apple, WSU approved for western Washington only)	25′
Alnus rubra, Red Alder	25′
Robinia pseudoacacia, Black Locust	30′
Pinus sp., any Pine trees	30′
Betula jacquemontii or nigra any Birch	Not Allowed

MAINTENANCE RESPONSIBILITY:

Trees planted or growing naturally on City of Kirkland rights-of-way are property of the City and require a permit to prune, cut, or remove. All pruning and trimming is to be done to current standards adopted by the International Society of Arboriculture or the National Arborist Association. Trees are to be pruned 8 feet above sidewalks and 14 feet above roadways. Newly planted street trees may have branching 5 feet from the ground or walk provided that the branches do not encroach into the sidewalk or street. Current City policy is that it is the responsibility of the adjacent property owner to perform maintenance on the trees. Maintenance includes watering, feeding, mulching, and protecting a street tree to help achieve its mature size and full environmental function.

If you have any questions about maintenance or about caring for street trees you can call the Streets Maintenance Division at 425-587-3900.

TREE PRUNING AND REMOVAL:
The pruning and removal of street trees and right-of-way trees is prohibited without a written permit from the City Department of Public Works obtained in advance. To request such a permit, contact Public Works at 425-587-3800 or use the website below:

http://www.ci.kirkland.wa.us

Under the **Most Requested** section, choose **Tree Regulations**.

APPROVED STREET TREE LIST

Please note all trees might not be readily available.
Although the trees listed here have been pre-approved, other species may be considered for approval.

SMALL COLUMNAR TREES

Scientific & Common Name	Mature Height	Spread	OK Under Wires?	Min. Strip Width	Drought Tolerant*	Flower Color	Comments
Malus 'Adirondack' Adirondack Crabapple	20	10	Yes	5		white	Fruiting
Malus 'Red Baron' Red Baron Crabapple	20	15	Yes	5		pink	Fruiting
Prunus serrulata 'Royal Burgandy' Amanogawa Flowering Cherry	20	15	Yes	5		dbl pink	Bronze-purple fall color
Prunus serrulata 'Amanogawa' Amanogawa Japanese Flowering Cherry	25	12	Yes	6		white, pink	
Cornus mas 'Saffron Sentinal' Cornelian Cherry	22	12	Yes	4		yellow	Blooms on bare wood, red fruit, crimson fall color. Native, part shade OK
Malus 'Sentinel' *Sentinel Crabapple*	20	12	Yes	4		pink	Fruiting

SMALL TREES

Scientific & Common Name	Mature Height	Spread	OK Under Wires?	Min. Strip Width	Drought Tolerant*	Flower Color	Comments
Acer buegarianum Trident Maple	30	30	Yes	5		N/A	Shrublike, must be trained to single stem
Acer ginnala Flame Maple	25	20	Yes	5		white	
Acer griseum Paperbark Maple	30	20	Yes	5		N/A	Smooth, peeling, cinnamon colored bark
Acer palmatum Japanese Maple	20	25	Yes	5		N/A	Select larger varieties for street tree plantings
Acer triflorum Three-flower Maple	25	20	Yes	5		N/A	Peeling bark
Amelanchier grandflora 'Princess Diana' Princess Diana Serviceberry	20	15	Yes	4		white	
Amelanchier x grandiflora 'Autumn Brilliance' Autumn Brilliance Serviceberry	20	15	Yes	4		white	Edible small fruit

Scientific & Common Name	Mature Height	Spread	OK Under Wires?	Min. Strip Width	Drought Tolerant*	Flower Color	Comments
Arbutus 'Marina' Strawberry Tree	25	20	Yes	5		pink	Broadleaf evergreen, drops leaves year-round
Asiminia triloba Paw Paw	30	20	Yes	5		crimson	Edible 2-4" L fruit can be messy
Carpinus japonica Japanese Hornbeam	20	25	Yes	5		N/A	Wide spreading, slow growing
Cercis canadensis Eastern Redbud	25	30	Yes	5		pink	
Cercis siliquastrum Judas Tree	25	30	Yes	5		pink	Drought resistant
Maakia amurensis Amur Maakia	30	20	Yes	5		white	
Cornus alternifolia Pagoda Dogwood	25	25	Yes	5		white	Varied fall color
Cornus kousa Kousa Dogwood	20	20	Yes	4		white	Disease resistant, does not do well in dry areas
Cotinus obovatus American Smoke Tree	25	25	Yes	4		pink	
Franklinia alatamaha Franklin Tree	20	20	Yes	5		white	Large white flowers with orange centers, orange-red fall color
Lagerstroemia x 'Tuscarora' Tuscarora Hybrid Crape Myrtle	20	20	Yes	4		pink	Drought resistant
Magnolia 'Elizabeth' Elizabeth Magnolia	30	20	Yes	5		yellow	Broadleaf evergreen, drops leaves year- round
Magnolia 'Galaxy' Galaxy Magnolia	30	15	Yes	5		magenta	
Magnolia × loebneri Loebneri Magnolia	20	20	Yes	5		white	
Malus 'Golden Raindrops' Golden Raindrops Crabapple	20	20	Yes	5		white	Disease resistant, fruiting
Malus 'Donald Wyman' Donald Wyman Crabapple	25	25	Yes	5		white	Disease resistant
Malus 'Lanzam' Lancelot Crabapple	15	15	Yes	4		white	Fruiting
Parrotia persica Persian Parrotia	30	20	No	5		red	Drought tolerant, red, orange, yellow fall colors
Prunus 'Frankthrees' Mt. St. Helens Plum	10	20	Yes	5		pink	Burgundy leaves
Prunus 'Newport' Newport Plum	20	20	Yes	5		pink	Burgundy leaves, edible fruit

Scientific & Common Name	Mature Height	Spread	OK Under Wires?	Min. Strip Width	Drought Tolerant*	Flower Color	Comments
Prunus 'Snowgoose' Snow Goose Cherry	20	20	Yes	5		white	Disease resistant
Prunus x yedoensis 'Akebono' Akebono Flowering Cherry	25	25	Yes	6		pink	
Syringa pekinensis and others Tree Lilac	20	20	Yes			lilac, white	
Stewartia monodelpha Orange Bark Stewartia	30	20	Yes	5		white	Brown seed pods
Stewartia psuedocamellia Japanese Stewartia	25	15	Yes	5		white	Avoid hot, dry areas
Styrax obassia Fragrant Styrax	25	20	Yes	5		white	

MEDIUM COLUMNAR TREES

Scientific & Common Name	Mature Height	Spread	Under Wires?	Strip Width	Drought tolerant	Flower color	Comments
Acer rubrum 'Bowhall' Bowhall Maple	40	20	No	6		N/A	
Carpinus betulus 'Fastigiata' Pyramidal European Hornbeam	40	15	No	5		N/A	Broadens when older
Fagus sylvatica 'Dawyck Purple' Dawyck Purple Beech	40	12	No	6		N/A	Purple foliage, seed pods
Gleditsia tricanthus 'Draves' Streetkeeper Honeylocust	45	20	No	6		N/A	Tight, narrow form
Liriodendron tulipfera 'Fastigiatum' Columnar Tulip Tree	40	10	No	6		white	Does well next to buildings
Malus 'Tschonoskii' Tschonoski Crabapple	30	15	Yes	5		white	Pyramidal, sparse fruit
Oxydendron arboreum Sourwood	35	12	No	5		white	Brilliant fall color
Prunus argentii 'Columnaris' Columnar Sargent Cherry	35	15	No	8		pink	Can suffer from brown rot in spring, great fall color
Prunus x hillieri 'Spire' Spire Cherry	30	10	Yes	6		pink	Can suffer from brown rot in spring

MEDIUM TREES

Scientific & Common Name	Mature Height	Spread	Under Wires?	Strip Width	Drought tolerant	Flower color	Comments
Acer grandidentatum 'Schmidt' Rocky Mountain Glow Maple	25	20	Yes	5		N/A	Red colors in fall
Acer rubrum 'Karpick' Karpick Maple	40	20	No	6		N/A	
Acer truncatum x A. platanoides 'Kiethsform' Norwegian Sunset Maple	35	25	No	5		N/A	Red/orange fall color
Acer truncatum x A. platanoides 'Warrenred' Pacific Sunset Maple	30	25	No	5		N/A	
Betula albosinensis var. septentrionalis Chinese Red Birch	40	35	No	5		N/A	White/pink peeling bark
Carpinus caroliniana American Hornbeam	25	20	Yes	5		N/A	Brilliant fall color
Cladrastis kentukea Yellowwood	40	40	No	5		white	flower clusters in spring, bright yellow fall color
Cornus controversa 'June Snow' Giant Dogwood	40	30	No	5		white	
Cornus 'Eddie's White Wonder' Eddie's White Wonder Dogwood	30	20	Yes	5		white	
Thornless Cockspur Hawthorn	25	30	Yes	5		white	Red fruit
Crataegus phaenopyrum Washington Hawthorn	25	20	Yes	5		white	Do not plant in high use areas, large thorns
Crataegus x lavallei Lavalle Hawthorn	25	20	Yes	5		white	Thorns when trees are young, fruit stays on tree
Davidia involucrata Dove Tree	40	30	No	5		white	Large flowers in May
Eucommia ulmoides Hardy Rubber Tree	50	40	No	6		N/A	
Fagus sylvatica 'Rohanii' Purple Oak Leaf Beech	50	30	No	6		N/A	Purple leaves
Halesia monticola Carolina Silverbell	35	30	No	5		white	Fruit/seeds can be messy
Koelreuteria paniculata Goldenrain Tree	30	30	Yes	5		yellow	Slow growing
Magnolia denudata Yulan Magnolia	40	40	No	5		white	Fragrant flowers in spring
Magnolia grandiflora 'Victoria' Victoria Evergreen Magnolia	25	20	Yes	5		white	Evergreen, drops leaves year-round
Magnolia kobus Kobus Magnolia	30	20	Yes	5		white	Flowers don't emerge until tree is mature
Ostrya virginiana Ironwood, American hophornbeam	40	25	No	5		N/A	Slow growing

Scientific & Common Name	Mature Height	Spread	Under Wires?	Strip Width	Drought tolerant	Flower color	Comments
Phellodendron amurense 'Macho' Macho Cork Tree	40	40	No	5		N/A	
Prunus cerasifera 'Krauter Vesuvius' Vesuvius Flowering Plum	30	20	Yes	5		pink	Drought tolerant, fruitless
Pterostyrax hispida Fragrant Epaulette Tree	40	30	No	5		white	
Quercus ilex Holly Oak	40	30	No	5		N/A	Broadleaf evergreen, drops leaves year- round
Styrax japonica Japanese Snowbell	25	25	Yes	5		white	
Tilia cordata Little-leaf Linden	30	20	Yes	5		N/A	
Tilia cordata 'Chancellor' Chancellor Linden	35	20	No	6		N/A	
Ulmus parvifolia 'Emer I' Athena Classic Elm	30	35	No	5		N/A	High resistance to Dutch Elm disease

MEDIUM/LARGE TREES

Scientific & Common Name	Mature Height	Spread	Under Wires?	Strip Width	Drought tolerant	Flower color	Comments
Acer campestre Hedge Maple	50	30	No	5		N/A	Don't let the name fool you, this can get to be a large tree
Acer campestre 'Evelyn' Queen Elizabeth Hedge Maple	40	30	No	5		N/A	Upright branching
Acer freemanii 'Autumn Blaze' Autumn Blaze Maple	50	40	No	6		N/A	Cross between silver and red maple - good fall color
Acer miyabei 'Morton' State Street Maple	40	30	No	6		N/A	
Aesculus x carnea 'Briotii' Red Horsechestnut	30	35	No	6		red	Drought and heat resistant, can be invasive
Gingko biloba 'Autumn Gold' Autumn Gold Gingko	45	35	No	6		N/A	
Liquidambar styraciflua'Morraine' Morraine Sweetgum	40	25	No	8		N/A	More compact sweetgum
Nothofagus antarctica *Southern* Beech	50	35	No	5		N/A	Needs irrigation
Tilia americana'Redmond' Redmond Linden	50	30	No	8		N/A	Pyramidal, needs lots of water when young
Tilia cordata 'Greenspire' Greenspire Linden	40	30	No	6		N/A	Pyramidal, often times has structural issues because of tight branching
Ulmus parvifolia 'Emer ii' Allee Elm	45	35	No	5		N/A	Resistant to Dutch Elm disease, good fall color

LARGE COLUMNAR TREES

Scientific & Common Name	Mature Height	Spread	Under Wires?	Min. Strip Width	Drought tolerant	Flower color	Comments
Acer nigrum 'Green Column' Green Column Black Sugar Maple	50	10	No	6		N/A	Does well close to buildings
Gingko biloba 'Princeton Sentry' Princeton Sentry Gingko	40	15	No	6		N/A	Narrow growth patten
Nyssa sylvatica Tupelo	60	20	No	6		N/A	Scarlet fall color
Quercus x 'Crimschmidt' Crimson Spire Oak	45	15	No	6		N/A	
Quercus frainetto Italian Oak	50	30	No	6	☼	N/A	Drought resistant
Quercus robur 'Fastigiata' Skyrocket Oak	40	15	No	6		N/A	Dead/brown leaves can hang on tree through winter
Taxodium distichum 'Mickelson' Shawnee Brave bald Cypress	55	20	No	6		N/A	Deciduous conifer

LARGE TREES

Scientific & Common Name	Mature Height	Spread	Under Wires?	Strip Width	Drought tolerant	Flower color	Comments
Acer saccharum 'Bonfire' Bonfire Sugar Maple	50	40	No	6		N/A	Fastest growing sugar maple
Acer saccharum 'Commemoration' Commemoration Sugar Maple	50	35	No	6		N/A	
Acer saccharinum 'Green Mountain' Green Mountain Sugar Maple	45	35	No	6		N/A	Reliable fall color
Acer saccharum 'Legacy' Legacy Sugar Maple	50	35	No	6	☼	N/A	
Aesculus flava Yellow Buckeye	60	40	No	6		yellow	
Catalpa speciosa Northern Catalpa	50	35	No			white	Big leaves, big tree. Clusters of flowers speckled yellow/purple up close
Cercidiphyllum japonicum Katsura Tree	40	40	No	6		N/A	Requires lots of water when young
Gingko biloba 'Magyar' Magyar Gingko	50	25	No	6		N/A	More upright and columnar than "Autumn Gold"
Gymnocladus dioicus 'Espresso' Espresso Kentucky Coffee	50	35	No	6		N/A	
Liquidambar styraciflua 'Rotundiloba' Rotundiloba Sweetgum	45	25	No	6		N/A	Fruitless
Liriodendron tulipifera Tulip Tree	60	30	No	6		yellow	Very fast growing, can get large in open areas
Metasequoia glyptostroboides Dawn Redwood	70	25	No	6		N/A	Fast growing, deciduous conifer, golden needles in fall

Scientific & Common Name	Mature Height	Spread	Under Wires?	Strip Width	Drought tolerant	Flower color	Comments
Plantanus x acerifolia London Planetree	75	60	No	6		N/A	More anthracnose resistant, large tree that needs space
Quercus bicolor Swamp White Oak	60	40	No	6		N/A	Shaggy, peeling bark. Heat/drought tolerant, tolerates poorly-draining soil.
Quercus coccinea Scarlet Oak	60	40	No	6		N/A	Brilliant fall color
Quercus garryana Oregon Oak	50	40	No	8		N/A	PNW native
Quercus imbricaria Shingle Oak	60	50	No	6		N/A	
Quercus muehlenbergii Chestnut Oak	60	50	No	6		N/A	
Quercus robur English Oak	60	40	No	8		N/A	Can be invasive due to acorn germination. Dead leaves can be persistent through winter
Quercus rubra Red Oak	60	45	No	8		N/A	Fast growing, large tree that needs space, acorns
Quercus velutina Black Oak	60	50	No	8		N/A	More drought tolerant than Red Oak, acorns
Taxodium distichum Bald Cypress	55	35	No	8		N/A	Deciduous conifer, columnar when young and broadly spreading when mature
Ulmus 'Homestead' or 'Emerald Sunshine' Homestead Elm	60	35	No	6		N/A	Resistant to Dutch Elm disease
Ulmus 'Frontier' Frontier Elm	50	35	No	6		N/A	Resistant to Dutch Elm disease
Zelkova serrata 'Green Vase' Green Vase Zelkova	45	40	No	6		N/A	Dark green leaves turn orange, red and purple in the fall
Zelkova serrata 'Village Green' Village Green Zelkova	40	40	No	6		N/A	

**Drought tolerant once established (water for the first 2 summers).*

CITY OF KIRKLAND
123 FIFTH AVENUE • KIRKLAND, WASHINGTON 98033-6189 • (425) 587-3800

DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-11: REPLACEMENT OF EXISTING CURB AND SIDEWALK

Over time, public improvements such as curb, gutter, sidewalks, and driveways deteriorate by cracking, heaving, spalling, exposing aggregate, joint separation, etc. According to the Kirkland Municipal Code, KMC 19.20.020 & 030, street improvements are to be maintained "in a safe condition, free of any obstructions or defects . . .", and . . . the expense of maintenance and repair are "to borne by the property directly abutting thereon . . . ." When redevelopment of a property occurs, it provides an opportunity to have the property owner repair the deteriorated street improvements. In addition to the general design criteria found in the Public Works Pre-Approved Plans, the conditions under which curb, sidewalk, and driveway remain, or may be replaced are as follows:

1. Each 10 foot section of curb, sidewalk and/or driveway, and curb ramp will be allowed one crack perpendicular to the road. The crack should show no differential settlement, no spalling, and be no greater than 1/32" in width for recently completed construction (within one year of installation).

2. If a sidewalk panel must be replaced, it may be saw cut on the "finish joint" and half of the 10 foot section replaced (curb sections must be a minimum of 5 feet in length).

3. If a curb must be replaced, the entire 10 foot section must be replaced from expansion joint to expansion joint.

4. If the curb, sidewalk, and/or driveway are heaved, spalled, aggregated, and/or have separated joints, they shall be removed and replaced.

5. The City Engineer shall determine which curbs, sidewalks, and driveways shall be removed and replaced.

6. No color or tint shall be added, unless approved by Public Works.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

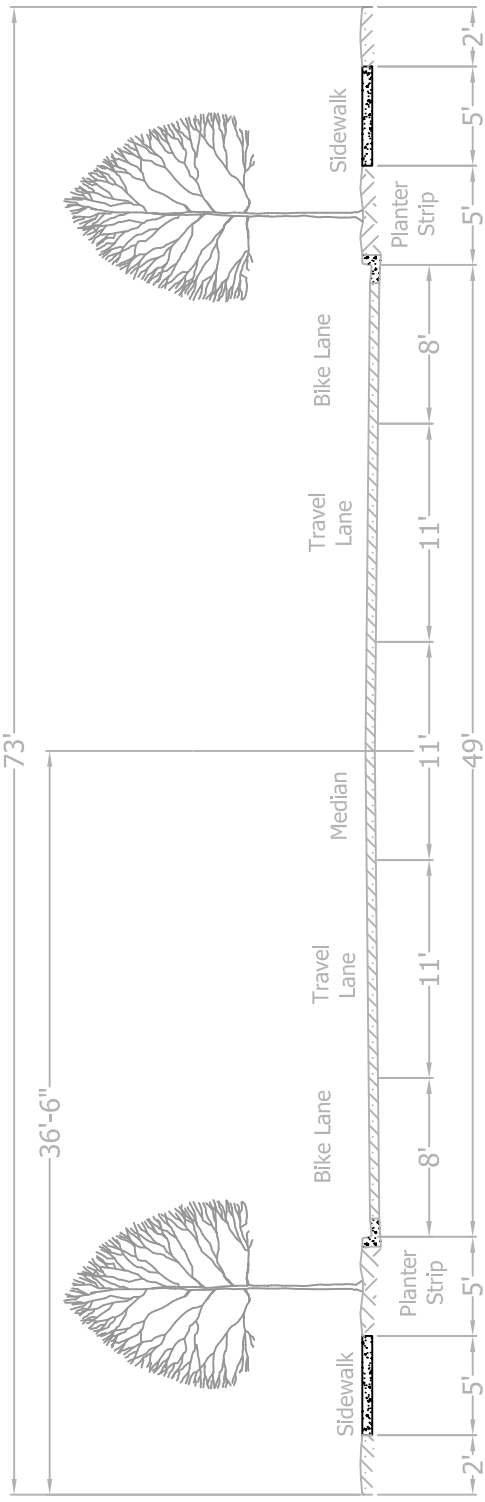
Policy R-12: Required Right of Way Dedications for Principal and Minor Arterials

Per sections 110.45, 110.50 and 110.60 of the Kirkland Zoning Code, the Public Works Director has determined that the following minor and principal arterial streets are to be improved per the table below. To achieve the final build-out of these street projects, a development which abuts one of the described arterials, is required to dedicate Right-of-Way as outlined in the attached pages.

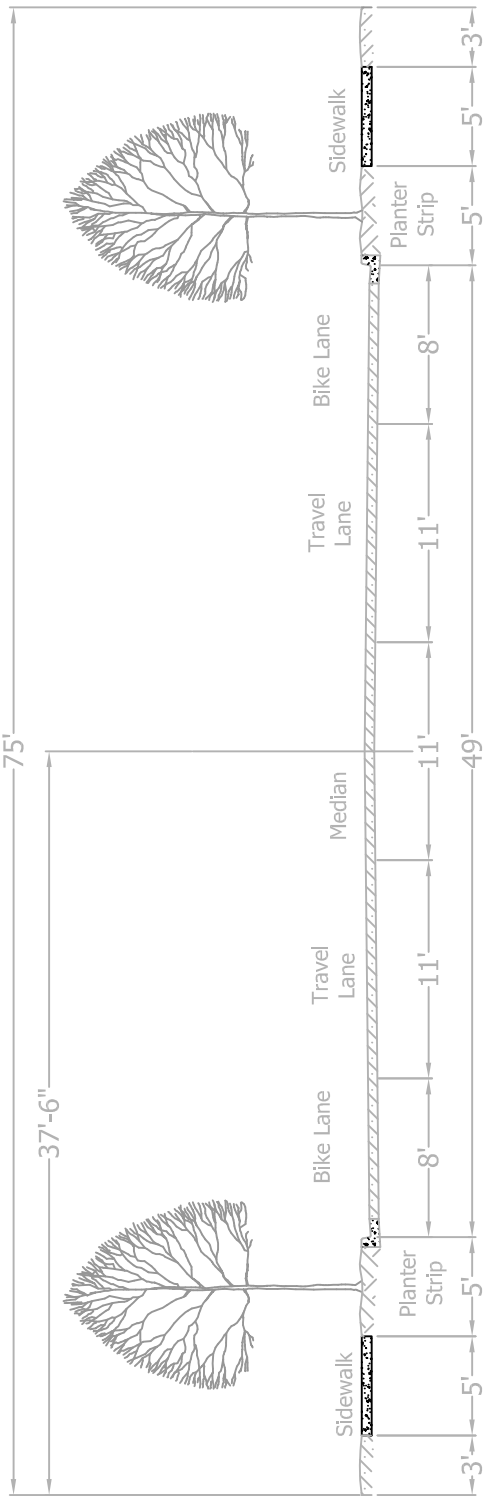
Street	Section	Dedication Required	Build-out Widths
NE 132nd St.	100th Ave. NE to 132nd Ave. NE	7.5' on each side*	See attachment R-12A
132nd Ave NE	NE 85th St. to Slater Ave. NE	7.5' on each side*	See attachment R-12A
120th Ave NE	Totem Lake Blvd. to NE 128th St.	7.5' on each side*	See attachment R-12B
120th Ave. NE	NE 128th St. to NE 132nd St.	17.5' on each side*	See attachment R-12B
124th Ave. NE	NE 116th St. to NE 124th St.	8' on each side**	See attachment R-12C
124th Ave. NE	NE 90th St. to NE 116th St.	11.5' on each side*	See attachment R-12C
NE 85th St	128th Ave NE to 132nd Ave NE	Varies	See attachment R-12D
Totem Lake Blvd	NE 132nd St. to NE 124th St.	Varies	See attachment R-12E

Note:
In some cases, a utilities easement may also be required in addition to the Right-of-Way dedication.
*Assumes an existing 60' right of way.
** Assumes an existing 84' right of way.

LAST REVISED: 1/1/18



NE 132nd St. from 100th Ave. NE to 132th Ave. NE

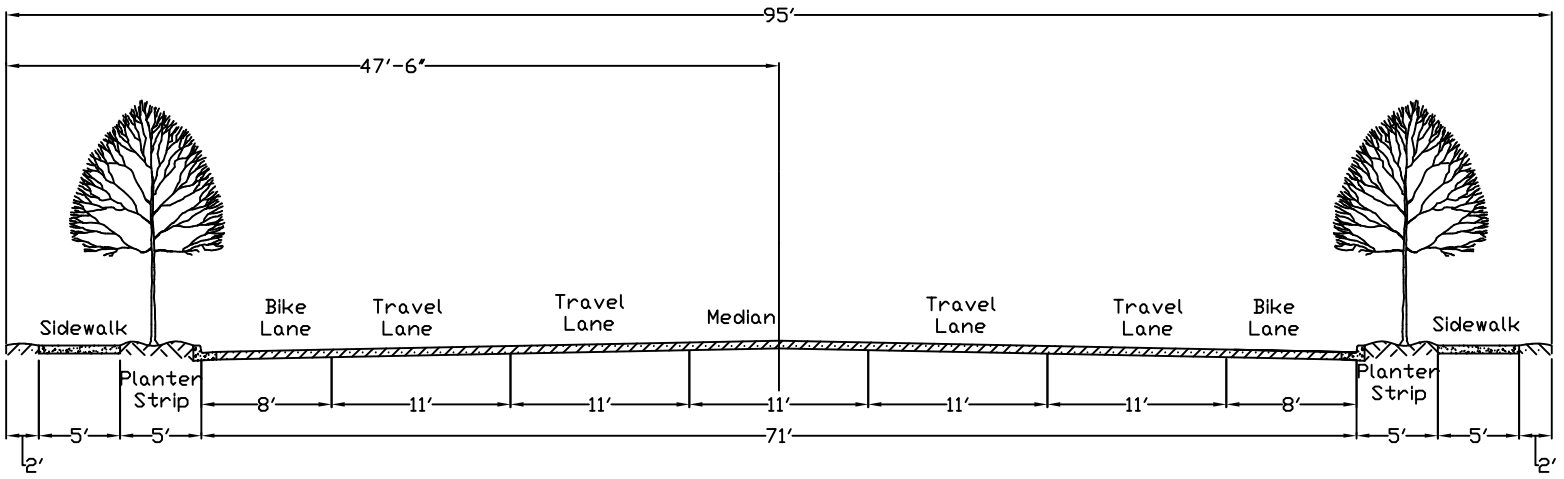


132nd Ave. NE from NE 85th St. to Slater Ave. NE

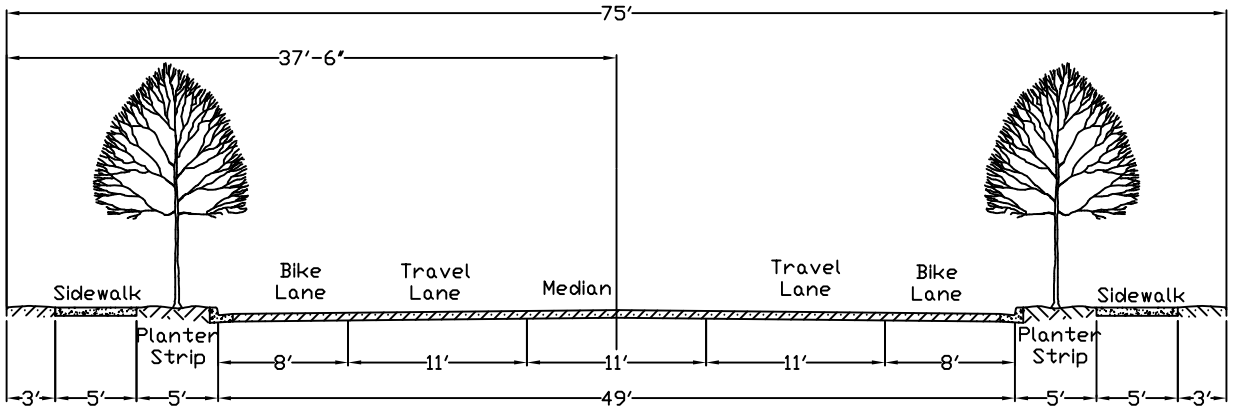
CITY OF KIRKLAND

ATTACHMENT R-12A

BUILD - OUT WIDTHS
FOR 132ND AVE. NE
AND NE 132ND ST.



120th Ave. NE from NE 128th St. to NE 132nd St.



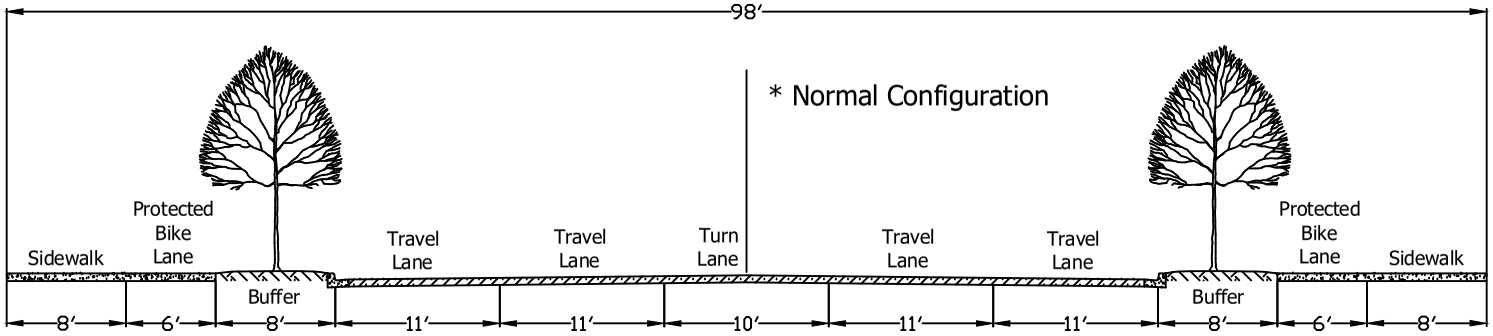
120th Ave. NE from Totem Lake Blvd. to NE 128th St.

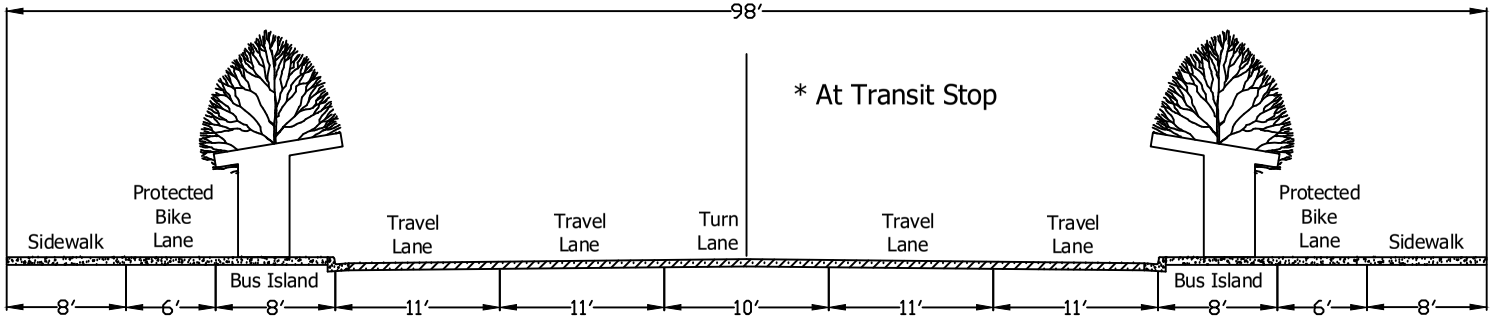
CITY OF KIRKLAND

ATTACHMENT R-12B

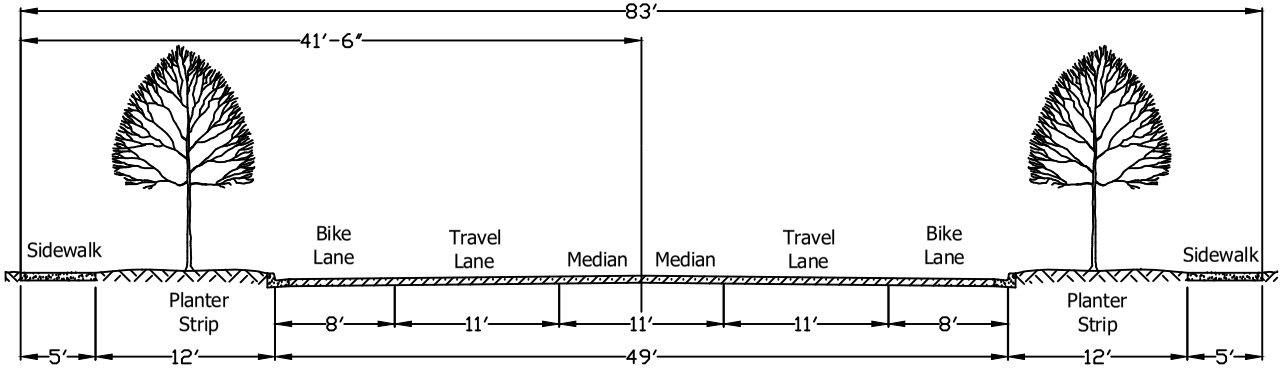
Build - Out Widths for 120th Ave. NE

LAST REVISED: 4/1/16





124th Ave. NE from NE 116th St. to NE 124th St.



124th Ave. NE from NE 90th St. to NE 116th St.

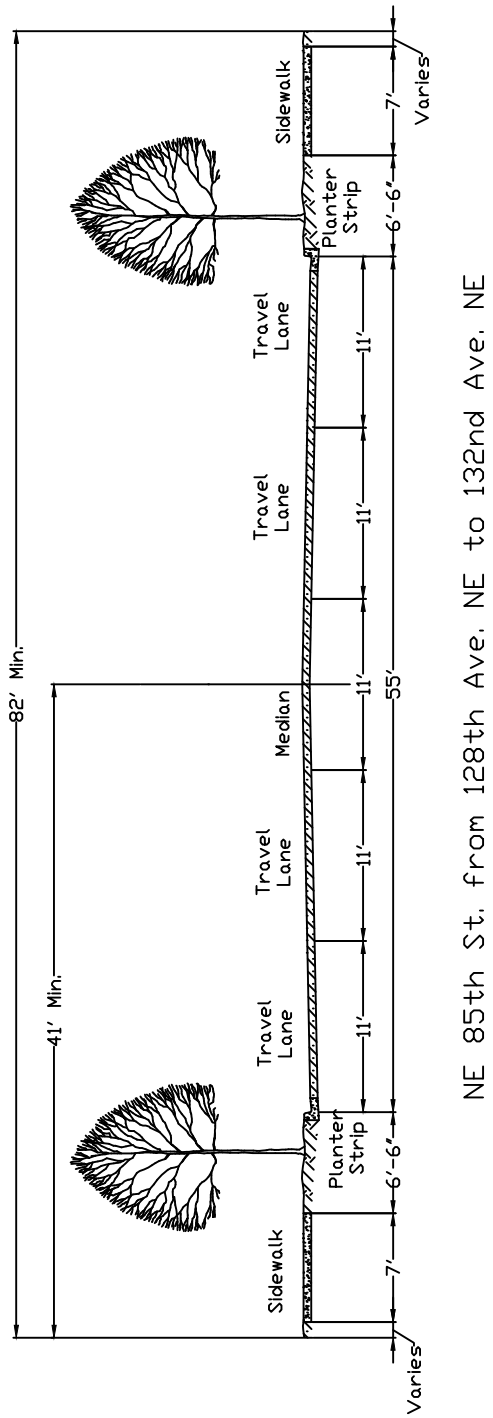
CITY OF KIRKLAND

ATTACHMENT R-12C

Build - Out Widths for 124th Ave. NE

LAST REVISED: 01/2023

LAST REVISED: 01/2023



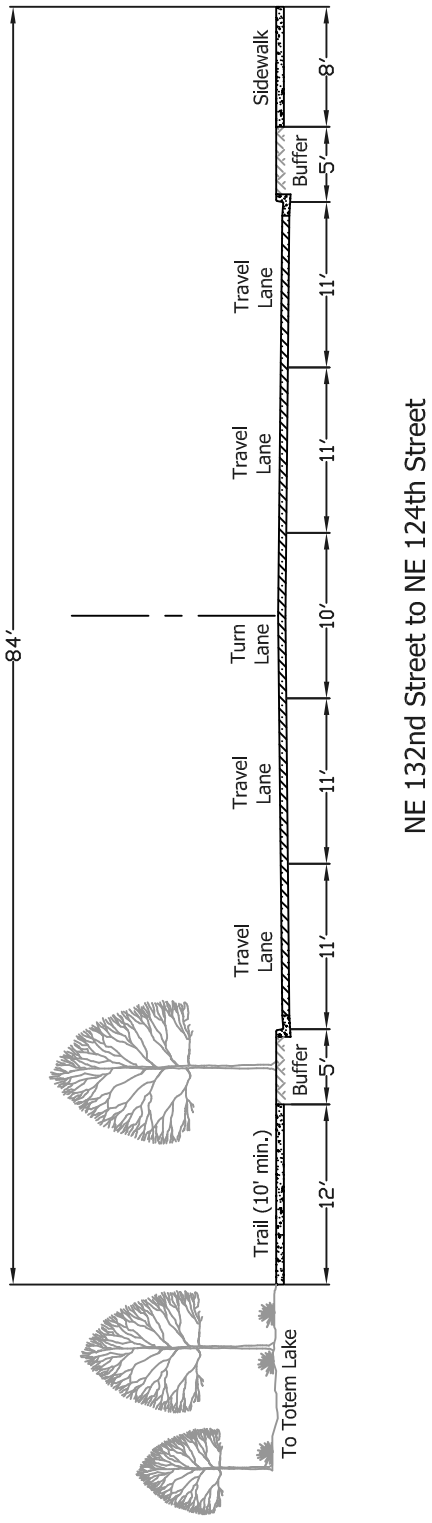
NE 85th St. from 128th Ave. NE to 132nd Ave. NE

CITY OF KIRKLAND

ATTACHMENT R-12D

Build - Out Widths for NE 85th St.

LAST REVISED: 01/2019



CITY OF KIRKLAND

ATTACHMENT R-12E

Totem Lake Blvd.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-13: INTERSECTION SIGHT DISTANCE

Vehicle Sight Distance at Intersections and Driveways

1. General – These guidelines establish the sight distance triangle that must be kept clear of sight obstructions for all intersections and driveways pertaining to new developments. They are also applicable to the investigation of sight-distance complaints at existing intersections and driveways. The sight distance triangle depends primarily on the required visibility for drivers and pedestrians at intersections and driveways. It is primarily determined by the type of intersection control (stop or yield sign, traffic signal or no control) and the speed on the major road or street entered upon. In the following sub-sections, the sight distance requirements used to properly establish sight distances triangles at various types of intersections and driveways are presented. **Table 2** lists required and minimum sight distances values and Figures 1, 2, 3a, 3b, and 4 show corresponding sight distance triangles.

2. Types of Intersections and Driveways. – *Table 1* below summarizes the characteristics of various types of intersections and driveways. **Use this table to determine type (A through G).**

Table 1. Types of Intersections and Driveways.

Intersections		
Type	Control Type	Speed Limit (MPH)
A	No Control	25
B	Stop Control on Minor Street	Any
C1	Yield – Crossing Maneuver from Yield Controlled Approach	25
C2	Yield – Turning Maneuver from Yield Controlled Approach	25
D	Signal	Any
E	All Way Stop	Any
G	Cases not covered by Types A through E	
Driveways		
Type	Driveway PM Peak Volume	Major Street Average Daily Traffic
F1	<10	Any
F2	10 ≥ and < 50	Any
F3	50 ≥ and ≤200	Any
F4	> 200	Any
G	Cases not covered by Types F1 through F4	

3. How to Establish Sight Distance Triangles– Sight distance triangles for various types of intersections and driveways are shown in **Figures 1, 2, 3a and 3b** In these figures, the sight distance triangles are represented by the shaded areas. Point A, or driver's decision point, represents the location of the driver; Point B is located on the major road at a specific distance (to the right and to the left) from the driver. This distance, referred to as the required sight distance, represents how far (on the major road) the driver should be able to see so as to safely exit a minor road or driveway or to make a right turn on red at a signalized intersection. In Figure 4, the driver/pedestrian sight distance triangle also referred to as "pedestrian/driver inter-visibility area" is represented by the shaded area. This is the area that must be kept free of obstructions thus drivers exiting a stop-controlled side street or driveway can see approaching pedestrians on the sidewalk and vice versa. Figure 4 does not apply to entrance to buildings and/or parking lots located inside buildings. **Table 2** shows (in the right most columns) the sight distances values that need to be used to determine the sight distance triangle at various types of intersections and driveways.

   For **uncontrolled intersections** (no traffic light, stop sign or yield sign described in **Type A/Figure 1)** or a **yield-controlled intersection** described in **Type C/Figure 3a**, contact **Jennifer Palmer**, City Transportation Engineer Supervisor, at **425-587-3894** to have the Public Works Department determine the required sight distance triangle.

Table 2. Sight Distance Triangle Requirements.

Type of Intersection or Driveways	Distance from Edge of Traveled Way (ft)	Major Street (Street Entered Upon)				
		Speed Limit or 85th Percentile Speed (MPH)	Sight Distance Value (ft) (a) (B-C1)		Sight Distance Value (ft) (a) (B-C2)	
			Required	Minimum (e)	Required	Minimum (e)
A: Uncontrolled (See Figure 1)	115 (b)	25	115	115	115	115
B: Stop Control on Minor Street (See Figure 2)	14.5 (f)	25	280	155	240	155
		30	335	200	290	200
		35	390	250	335	250
C-1: Yield Control - Crossing Maneuver (See Figure 3.a)	130 (c) (d)	25	240	240	240	240
		30	290	290	290	290
		25	335	335	335	335
C-2: Yield Control - Crossing Turning (See Figure 3.b)	82 (c)	25	240	240	240	240
		30	290	290	290	290
		35	335	335	335	335
D - Signalized Intersection (See Figure 2)	14.5	25	N/A	N/A	240	155
		30	N/A	N/A	290	200
		35	N/A	N/A	335	250

F1 – F4 Driveways (See Figure 2)					
Type	Distance from Edge of Traveled Way (ft)	Average Daily Traffic	Speed Limit or 85th Percentile Speed (MPH)	Required	Minimum (e)
F1 (<10 Peak Hour Trips)	10	Any	25	155	155
			30	200	200
			35	250	250
F2 (10-49 Peak Hour Trips)	14.5	<6000	25	155	155
			30	200	200
			35	250	250
		>6000	25	280	155
			30	335	200
			35	390	250
F3 (50-200 Peak Hour Trips)	14.5	<6000	25	155	155
			30	200	200
	14.5	>6000	25	280	155
			30	335	200
			35	390	250
F4 (>200 Peak Hour Trips)	14.5	<6000	25	280	155
			30	335	200
	14.5	>6000	25	280	155
			30	335	200
			35	390	250

Footnotes:
(a) These values should be adjusted for grades with slopes of a magnitude of grade greater than 3%, number of lanes greater than two, for skewed intersections or for design vehicles other than passenger cars, using the intersection sight distance procedures in Chapter 9 of A Policy on Geometric Design, AASHTO, 7th Edition.
(b) Distance back from center of intersection.
(c) Distance back from point C2 for types C-1 and C-2 intersections.
(d)This setback distance should be adjusted for minor streets with slopes of a magnitude of grade greater than 3% using the procedures in Chapter 9 of A Policy on Geometric Design, AASHTO, 7th Edition.
(e) Minimum (only permitted if Required is not possible (see subsection d below for further explanation).
(f) The 14.5 ft setback may be reduced to 10 ft in some circumstance, see Type B Intersections below.

a. The values in **Table 2**, referred to as **Required** sight distance are based on the intersection sight distance procedures in Chapter 9 of A policy on Geometric Design, AASHTO, 7th Edition.

b. The values on **Table 2**, referred to as **Minimum** sight distance are based on the stopping sight distance values in Chapter 3 of A Policy on Geometric Design, AASHTO, 7th Edition.

c. If speed study data from the last 5 years is available near an intersection, then the 85th percentile speed from that speed study shall be used for the speed of the major street. Use the equations provided in Chapters 3 and 9 of A Policy on Geometric Design, AASHTO, 7th Edition. If no recent or nearby speed data is available, then the posted speed limit of the major street shall be used.

d. The **Required** values are mandatory for construction of new intersections and driveways. If the **Required** values cannot be reasonably obtained at new intersections or driveways due to the presence of fixed structures that cannot be removed or roadway features such as horizontal and vertical curves then the intersection or driveway shall be relocated or designed to maximize sight distance, but in no way can the sight distance be less than the **Minimum** value. If the **Required** values cannot be met at an existing intersection or driveway, then the **Minimum** values may be permitted if the major street is designated as a collector or local street. If the major street is designated as an arterial, then the **Required** values are mandatory.

e. To determine the **Average Daily Traffic for Driveways F1 through F4**, see the City's web site at www.kirklandwa.gov go to City Departments, Public Works, Transportation, Data and Resources.

f. To determine the **number of Peak Hour Trips for Driveways F1 through f4**, contact Jennifer Palmer, Transportation Engineering Supervisor at jpalmer@kirklandwa.gov to have the Public Works Department estimate the number of PM peak hour trips.

4. Permissible Intrusion in the Area To Be Kept Clear of Sight Obstruction

a. General – Except as stated in subsection (4)(b) of this section or unless specifically approved by the Public Works Director, no structure, improvement, vegetation or other objects may be within the area to be kept clear of sight obstructions between three (3) feet and eight (8) feet above finished grade within the sight distance triangle as defined below.

b. Exceptions – The following are permitted to be within the area that must be clear of sight obstructions:

Natural and fabricated objects and natural topography of the ground if the Public Works Director determines that adequate visual access is available. However, to fulfill the intent of this section, the Public Works Director may require land surface modification as part of any development activity on the subject property.

TYPES OF VEHICLE SIGHT DISTANCE AT INTERSECTIONS AND DRIVEWAYS

Type A – Uncontrolled Intersections

Uncontrolled intersections are not controlled by either stop or yield signs. They are usually located on streets that carry very low volumes and have a 25 MPH speed limit. Figure 1 below shows the sight distance triangle for this type of intersection. In this Figure, Point A and point B are each located on the center of the intersecting street approaches, 115 ft from Point C, which is located at the center of the intersection. The sight distance triangle area that must be kept free of sight obstructions is the shaded area limited by segments AC, BC and AB.

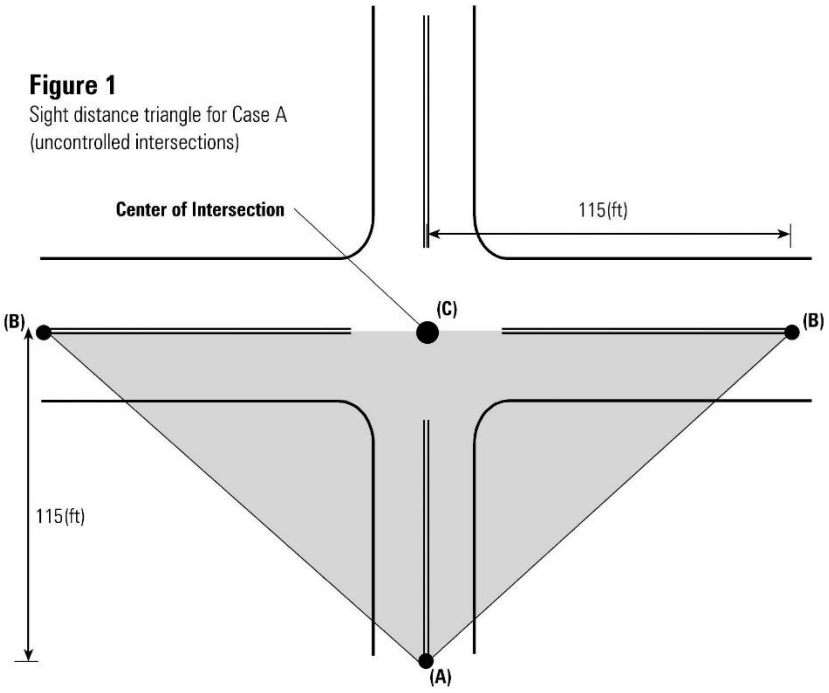


Figure 1
Sight distance triangle for Case A
(uncontrolled intersections)

Type B – Stop Controlled Intersections

Type B intersections are those at which the minor street approaches are controlled by stop signs. Sight distance triangle to the left is the shaded area bounded by segments A-B, B-C2 and A-C2; whereas sight distance triangle to the right is the shaded area bounded by the A-B, B-C1 and A-C1 segments as shown in Figure 2 below. Point A, or decision point, is located in the center of the minor street approach lane, 14.5 ft. from the edge of the major road's traveled way**. The traveled way is the portion of the road intended for the movement of vehicles and bicycles exclusive of shoulders, turning lanes, and parking lanes. The traveled way does not include shoulders, parking lanes, turning lanes, storage for turning lanes, or adjacent pedestrian paths. Sidewalk level bike lanes shall not be considered part of the traveled way.**

At existing intersections, where sight obstructions within the sight triangle cannot be removed or relocated, the setback distance may be reduced as reviewed and approved by the Transportation Division Staff. Drivers who do not have the desired sight distance creep out until the sight distance is available; therefore, **the setback may be reduced to 10 feet. If the setback distance is reduced from 14.5 feet to 10 feet, then the following items should be noted: the available sight distance at 14.5 feet, the obstructions within the sight distance triangle that cannot be moved or relocated, and the crash history of the intersection for the most recent 5 years of data.**

Point B is located on the center of the through lane on the major street (or in the center of the major street approach if more than one lane exists), a specific distance left and right from Points C1 and C2. The distances C1-B and C2 –B are the required sight distances, which can be found in **Table 2**.

If a parking lane exists on the major street, it may be excluded from the traveled way. Usually these are cases where volumes and speeds are low and therefore the overall safety risk at the intersection is considered low. If the on-street parking is allowed on the major street, but the parking lane is not specifically striped, then the edge of the traveled way is assumed to be 7 ft from the face of curb or edge of pavement.

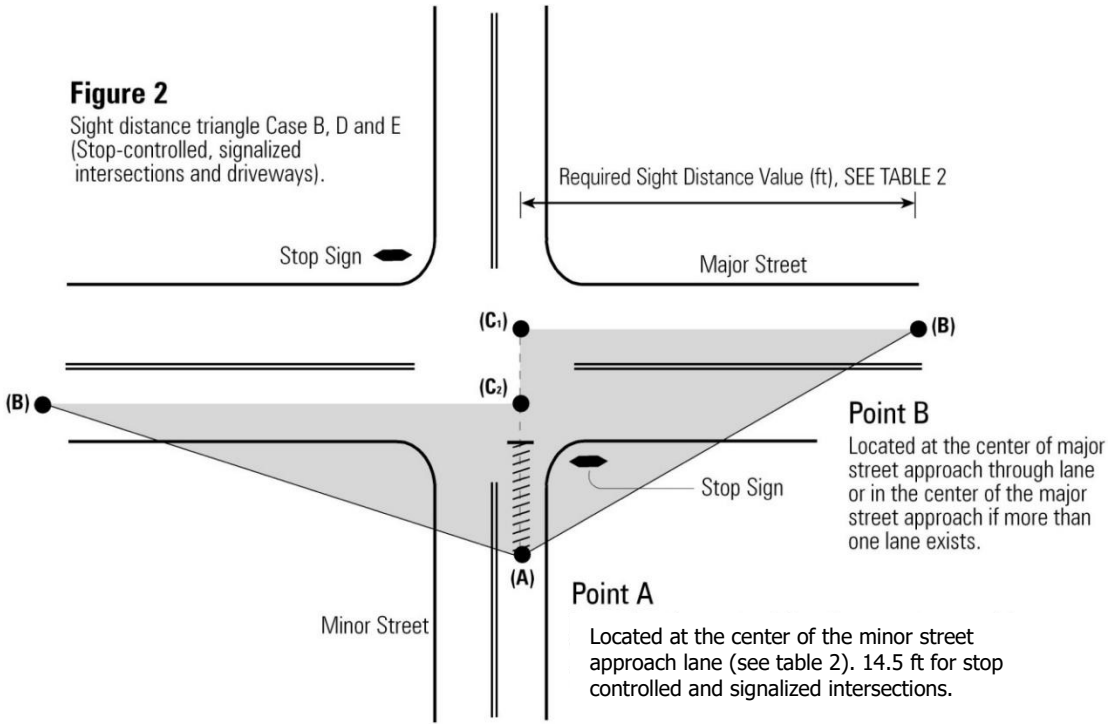


Figure 2
Sight distance triangle Case B, D and E (Stop-controlled, signalized intersections and driveways).

Type C – Yield Controlled Intersections

Yield control at intersections shall only be applied to a local street whose speed limit is 25 MPH or less. Two situations need to be considered for yield-controlled intersections: making a crossing maneuver from the yield-controlled approached and making a turning maneuver from the yield-controlled approach**.** The sight distance triangles for each of these situations are shown in Figures 3a and 3brespectively for Types C-1, crossing maneuver for a yield-controlled approach and C-2, turning maneuver from a yield-controlled approach.

Figure 3a and Figure 3b show the approach sight distance triangles for these two maneuvers. Within the approaching sight distance triangle Point A is located in the center of the minor street approach lane, 130 ft from Point C2 for crossing maneuvers and 82 feet for turning maneuvers. Point C2 is located at the center of the nearest major street approach lane. In both figures, points C1 and C2 are separated by a distance equal to the width of one through lane on the major street.

The departure sight distance triangles similar to the sight distance triangles at stop-controlled intersections (Type B above) should also be provided for yield-controlled intersections. Drivers attempting to make a turning a maneuver at a yield-controlled approach may come to a complete stop at the yield sign. However, it is not necessary to check these departure sight distance triangles since approach sight distance triangles for turning movements at yield-controlled approaches are larger than the sight distance triangles for turning movements from stop-controlled approaches.

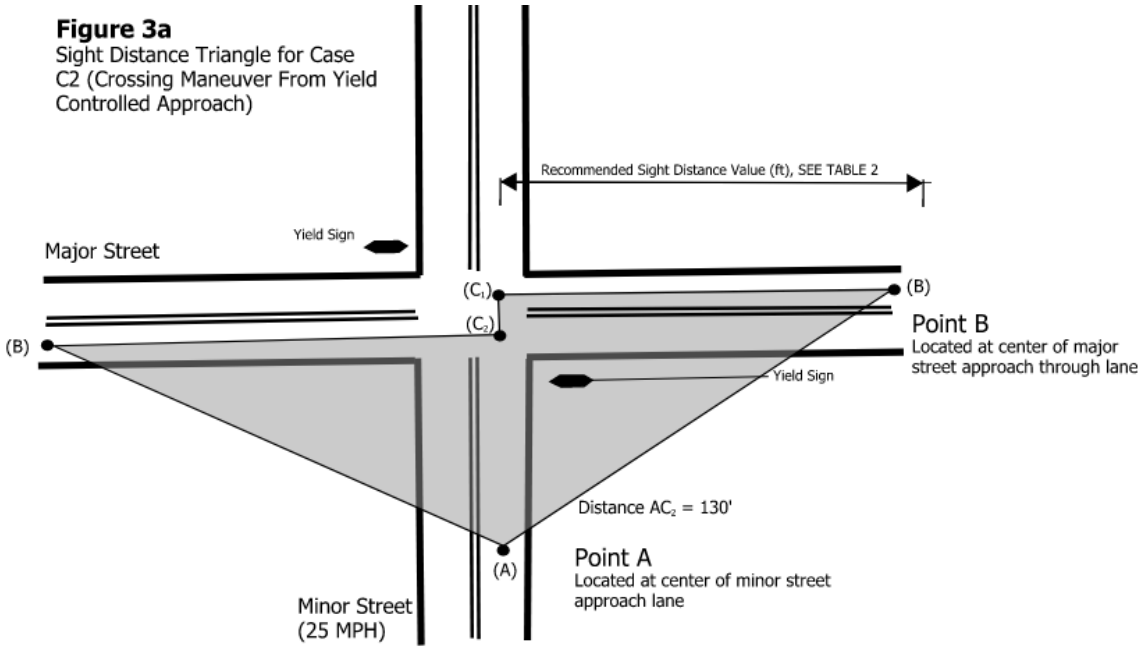
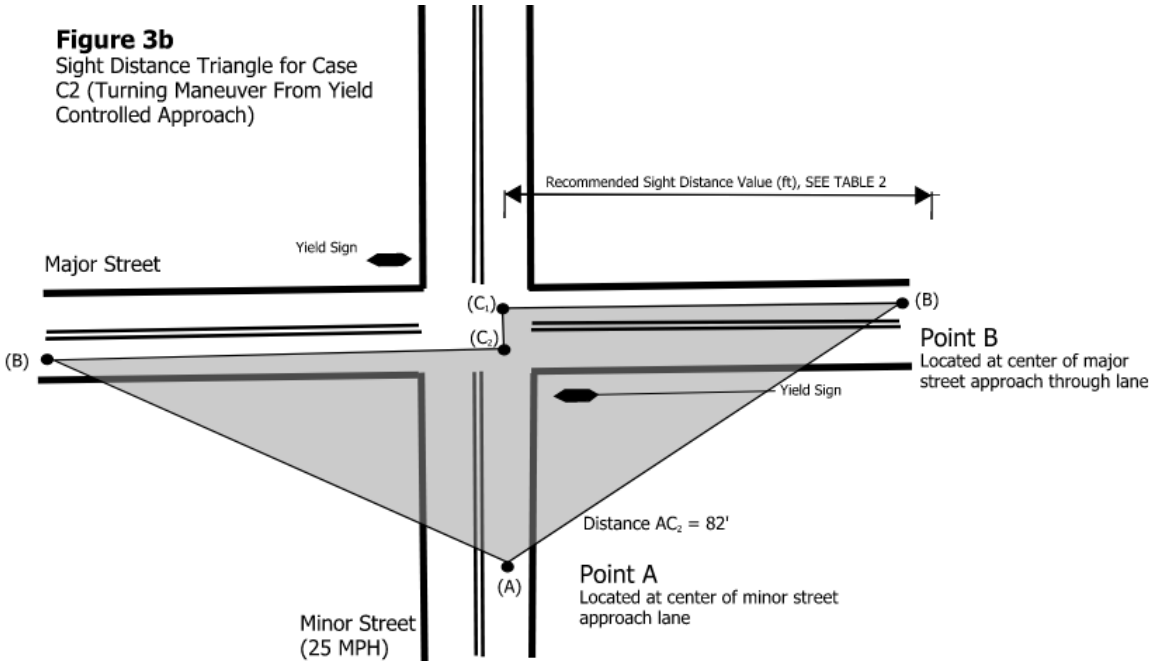


Figure 3a
Sight Distance Triangle for Case C2 (Crossing Maneuver From Yield Controlled Approach)



Type D- Signalized Intersections and Signalized Driveways

At signalized intersections and signalized driveways, in order to turn right on red, drivers should be able to clearly see vehicles approaching from the left; the applicable sight distance triangle is the shaded area bounded by the A-B, B-C2, and A-C2 setback lines shown in Figure 2. Sight distance (B-C2) values are summarized in **Table 2**.

Type E – All Way Stop Controlled Intersections

The only sight distance requirement for all-way stop controlled intersections is that the first stopped vehicle on one approach should be visible to the first stopped vehicle on all other approaches.

Type F1 through F4 – Driveways not Controlled by Traffic Signals

Driveways not controlled by traffic signals operate as Type B, Stop-Controlled Intersections; therefore, the applicable sight distance triangles are shown in Figure 2For driveways Type F1, Point A is located 10 ft from the edge of the major route's traveled way. For driveway Types F2 through F4, Point A is located 14.5 ft from the edge of the major road's traveled way. Similar to stop-controlled intersections, at existing driveways, where sight obstructions within the sight triangle cannot be removed or relocated, the setback distance may be reduced as reviewed and approved by the Transportation Division Staff. Drivers who do not have the desired sight distance creep out until the sight distance is available; therefore, **the setback may be reduced to 10 feet**. Sight distances values (B-C1, B-C2) are summarized in **Table 2** .

Type G- Intersections and Driveways not Covered in Types A-F.

The sight distance triangle for intersections and driveways that do not fit any of the types previously described are to be analyzed on a case-by-case basis with review and approval from Kirkland Public Works.

Pedestrian Sight Distance at Intersections and Driveways

Additionally, drivers emerging from side streets and driveways must be able to see approaching pedestrians on the sidewalk and vice versa. In Figure 4 below, the shaded areas on each side of the driveway show the pedestrian/vehicle sight distance triangle or pedestrian/vehicle inter-visibility area which must be kept free of obstructions per. The driver's point of view (point A) is located at the center of the driveway approach lane measured 14 feet from the back of the sidewalk. The pedestrian/vehicle sight distance triangles must extend to a point 15 feet from the edge of the driveway, on either side of the driveway (Point B).

Drivers exiting parking garages shall have clear sight distance on both sides of the exiting lane, as shown in Figure 4. Sight distance shall be measured 14 feet from the back of sidewalk or alley, if there is no sidewalk.

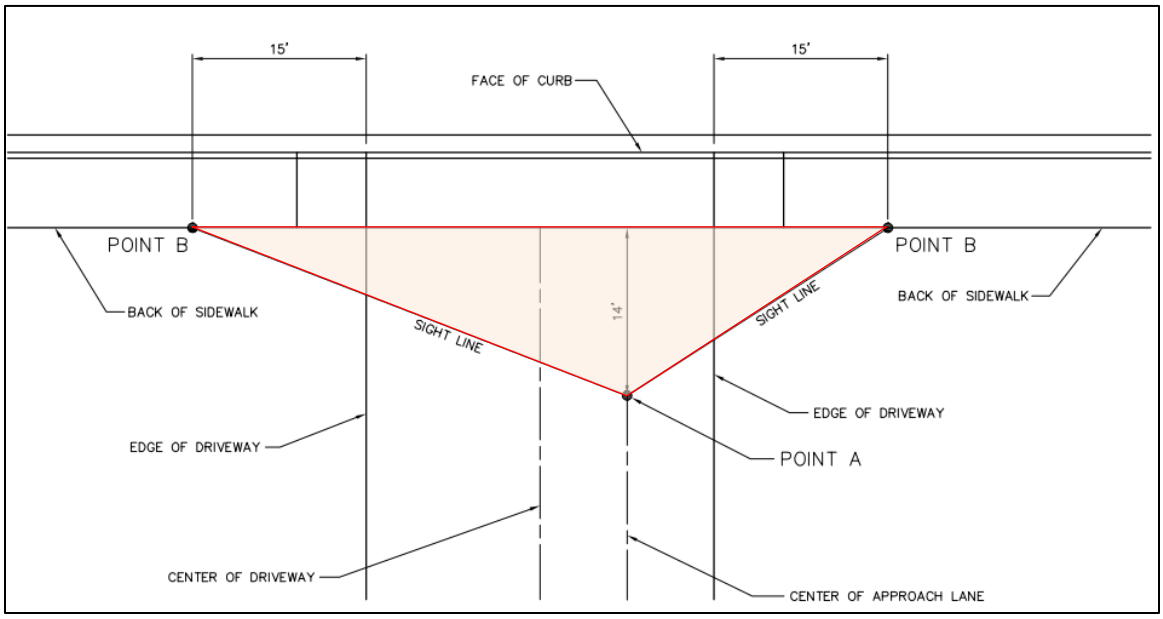


Figure 4. Pedestrian sight distance.

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DEPARTMENT OF PUBLIC WORKS PRE-APPROVED PLANS POLICY

Policy R-14: Neighborhood Access Street Improvement Modification and Waiver Process

The traditional street standard within the City of Kirkland consists of paving, storm drainage, vertical curb and gutter, landscape strip with street trees, and a sidewalk. However, the City also recognizes that the traditional improvements may not be desired by property owners in certain neighborhoods or along certain streets. And, the City encourages the use of Low Impact Development (LID) techniques to reduce the surface water impacts associated with the addition of new impervious surfaces. Given this, the City Council has directed the Public Works Staff to:

- Seek opportunities to use LID techniques when constructing street improvements.
- Work with property owners on a case-by-case basis to determine if the traditional street improvements should be modified with LID improvements, or if all street improvements should be waived to meet the desire of the neighborhood.

When considering the modification or waiver, the following criteria shall be followed or met:

A. Modifications

1. Only Neighborhood Access type streets are eligible for modified street improvements. Collector and Arterial type streets shall have traditional street improvements unless otherwise approved by the Public Works Director.

2. A modified street improvement shall still include sidewalk, street trees, storm drainage collection, but include a concrete edge treatment only (no curb).

3. Generally, the modification area should be at least one block long, and shall not have any existing traditional street improvements. In cases where the property owners desire to have modified street improvements, but there are islands of existing traditional street improvements, the Public Works Department shall review the street and determine if it is feasible and safe to install modified improvements along the remainder of the street.

4. Property owners along dead-end streets 300 to 400 feet in length, or looped streets less than 1000 feet in length, may also propose to modify their street improvements by designating only one side of the street for sidewalk.

B. Waivers

1. Only Neighborhood Access type streets are eligible for a street improvement waiver. In addition, the street is not eligible for a waiver if it has any of the following designations:
   - School walk route.

- Walking routes adopted within a Neighborhood Plan or the City-wide Non-motorized Plan.
- Commercial, multi-family, or medium density residential (RS 5000 or lower) land use designations.
- Streets with greater than 500 total vehicle trips per day (if the City does not have trip data for particular street, it will be assumed that it is less than 500 trips per day)

2. Generally, the street improvement waiver area should be at least one block long and shall not have any existing street improvements. In cases where the property owners desire to have the street improvements waived, but there are islands of existing street improvements, the Public Works Department shall review the street and determine if it is feasible and safe to grant a street improvement waiver along the remainder of the street. Granting of street improvement waivers should be avoided when there are several existing islands of improvements and there is a potential for redevelopment of other adjacent properties.

3. If the City and a Neighborhood approve a street improvement waiver, all future development permits along the subject street, including subdivisions, will receive a street improvement waiver. A waiver of street improvements can be changed by a future vote of the subject neighborhood.

4. If a new public street (typically occurring as a result of a new subdivision) intersects with a street that has received a street improvement waiver, the new public street shall be improved with traditional or modified street improvements unless otherwise approved by the Public Works Director.

C. Neighborhood Voting Process

1. An individual, a group, or the City may initiate the process to determine if there is desire by the respective property owners to have the street improvements modified or waived.

2. Before approving a modification or a waiver, the Public Works Department will send a ballot to the property owners along the subject street.

   - When less than 70 tax parcels are impacted by the street improvements: At least 70% of those property owners that receive a ballot must vote "yes" for the street improvement modification or waiver.

   - Where 70 or more tax parcels are impacted by the street improvements: At least 70% of the property owners that return a ballot must vote "yes" for the improvement modification or waiver. In addition, at least 70% of the ballots must be returned to constitute a valid vote.

3. After the ballots are returned, a letter will be sent to each owner letting them know of the voting results.

D. Appeals - The decision of the Public Works Director regarding street improvement modifications or waivers may be appealed using the appeal provisions, as applicable, of Process I of this code, KZC 145.60 through 145.110.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-15: Permitted Landscaping in Public Right-of-way

Kirkland Municipal Code (KMC) 19.04.050 allows property owners to incorporate unused public right-of-way into the landscaping design of the abutting property. KMC 19.04.010 does not allow a person to place objects within the public right-of-way that obstruct or tend to obstruct vehicles or pedestrians traveling thereon except as provided for in 19.010.40 or without City of Kirkland authorization. The KMC does not define "landscaping" sufficiently to help the property owner choose appropriate landscaping that preserves the right-of-way for public use, now or in the future. To preserve the public right-of-way, the restrictions in 19.04.010 shall take precedence over the exception allowed in 19.04.050.

Landscaping shall be limited in size to not impact or obstruct the installation or maintenance of existing or future utilities. (ex. No trees, arborvitae or large bushes)

In addition, landscaping shall not obstruct sight distance of drivers exiting driveways or at intersections in accordance with Kirkland Zoning Code 115.135 and Policy R-13 – Intersection Sight Distance.

Policy R-15 clarifies acceptable landscaping for the following three situations:

- In the public right-of-way Between the curb and sidewalk and back of sidewalk
- In the public right-of-way between the property line and curb when a sidewalk or other designated path does not exist
- In the public right-of-way between the property line and edge of pavement when a curb does not exist

Public Works will evaluate other situations on a case-by-case basis.

Permit and Hold Harmless Agreement

Depending on the landscaping, the City might require the adjacent property owner to obtain a City Right-of-way Permit, sign a City Hold Harmless Agreement (Agreement) and the Agreement must be recorded. The City can revoke a Right-of-way Permit at any time. The Agreement informs the signatory the City will not be held responsible for any damages resulting from the construction of a fence within a public right-of-way. The property owner should meet with City staff to review the proposed or existing landscaping to determine the need for a permit and Agreement.

In Public Right-of-way Between Curb and Sidewalk and Back of Sidewalk

Plantings selection and installation shall conform to Kirkland Zoning Code Chapter 95. Plant selection should be guided by the Kirkland Plant List referenced in KZC 95.50.5.a and available on the City's website. Between curb and sidewalk, plant height shall be maintained no higher than 12 inches, except for required street trees. Landscaping shall not encroach on or overhang the sidewalk or curb in the public right-of-way.

In Public Right-of-Way between Property Line and Curb without a Sidewalk or Path

Public Works will allow property owners to implement the following ground treatments in the public street right-of-way between the property line and curb.

- Grass
- Gravel
- Mulch
- Low-growth plants no more than 12 inches maximum height, provided the landscaping design leaves a minimum 5-foot wide continuous opening available for pedestrian passage in the right-of-way, and the plants do not encroach on the 5-foot wide opening or overhang the curb.

Landscaping shall not obstruct or tend to obstruct pedestrian passage along the public right-of-way per Kirkland Municipal Code Section 19.04.010. Landscaping shall not block access to curb at intersections. River cobbles, boulders, ground modifications, fencing or other treatments are not allowed if these treatments might impede pedestrian passage.

In Public Right-of-Way without a Curb between Property Line and Edge of Pavement

A property owner can implement the following ground treatments in the public street right-of-way between the property line and edge of pavement.

- Grass
- Gravel
- Mulch

These treatments shall be implemented in a manner that does not remove or otherwise restrict parking. River cobbles, boulders, shrubs, trees or other objects shall not be placed in the road shoulder that would obstruct or tend to obstruct vehicles or persons per Kirkland Municipal Code Section 19.04.010.

If the City's Street Division installs gravel in lieu of landscaping, the City will maintain the graveled portion.

Public Right-of-way Landscaping Maintenance

The owner of the abutting property is responsible for maintaining the landscaping, including watering, trimming, and weeding, unless the property owner obtains a written agreement from the City's Maintenance Center agreeing to perform this work.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-16: FENCES IN OR NEXT TO PUBLIC RIGHT-OF-WAY

Kirkland Zoning Code (KZC) 115.40 and 115.115 establish location and other criteria for fences or fences combined with retaining walls installed on private property or in the public right-of-way. Fences are subject to sight distance requirements in KZC 115.135 and Policy R-13 – Intersection Sight Distance. Kirkland Municipal Code (KMC) 19.04.010 does not allow objects to be placed in public right-of-way that impedes vehicle or pedestrian travel, as applicable. Objects can include fences and/or retaining walls.

The purpose of Policy R-16 is to clarify situations not specifically identified in City Codes, such as where fences might meet criteria, but, because of other factors, create a potential traffic safety issue or unnecessarily restrict the public right-of-way. In other situations, fences might not meet prescriptive criteria and yet are not creating a traffic safety issue because of topography or other existing conditions. Public Works and/or the Planning Department are allowed to consider requests for special fencing situations on a case-by-case basis. Public Works can also take action to mitigate issues existing fences create in the public right-of-way, after considering the circumstances, consequences and benefits.

Permit and Hold Harmless Agreement

For a fence built in the public right-of-way, the fence owner must obtain a City Right-of-way Permit, sign a City Hold Harmless Agreement (Agreement) and the Agreement must be recorded. The City can revoke a Right-of-way Permit at any time. The Agreement informs the signatory the City will not be held responsible for any damages resulting from the construction of a fence within a public right-of-way.

Special Considerations

KZC 115 allows fences to be:

1. 3.5 feet in height within 3 feet of the property line abutting a principal or minor arterial except where the abutting arterial contains an improved landscape strip between the street and sidewalk; or
2. No closer than 15 feet to any street curb or the edge of pavement if no curb exists, unless the location of the property line is closer than 15 feet; or
3. Fences over 3 feet in height are not allowed within the areas of a sight distance triangle on each side of streets or driveways at intersections.

However, Public Works can reduce the fence height to less than 3 feet and/or alter location criteria next to streets or existing driveways when fences in the public right-of-way would obstruct sight

distance in accordance with Policy R-13 - Intersection Sight Distance. If the fence is on private property, the City can enforce KZC 115.135 based on Policy R-13.

The combined height of fences plus retaining walls cannot exceed heights specified in KZC 115.115. In addition, these heights are also subject to KZC 115.135 and R-13.

Gate Requirements on Private Property Fences (for access to publicly maintained systems)

Provide an access gate for the Public Works Department to inspect and maintain publicly maintained utility systems (example: storm drainage or sanitary sewer system) installed in a public utility easement that is located on private property. Gate specifications:

- Install the gate on private property fencing abutting the right-of-way.
- The location of the gate is either specified on the LSM or Building permit plans, and may be augmented by the Public Works construction inspector during construction.
- Gate width shall be a minimum of 12' wide, unless a larger gate is required by Public Works.
- Gate height shall be equal to the property fence (typically 6' tall).
- Gate material shall be equal to construction and appearance to the property fence.
- A Gate Keeper lock will be required to allow access to both the property owner and the City. Contact the Public Works construction inspector for details about the Gate Keeper lock.
- Maintenance of the gate, as with the property fencing, is the responsibility of the homeowner.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

POLICY R-17: SPEED LIMIT SETTING POLICY

INTRODUCTION

A posted speed limit is the maximum speed a driver is legally permitted to travel along a roadway. States establish statutory speed limits for specific types of roads—such as freeways, rural roads, or urban streets—which are enforceable even if the speed limit signs are not posted. In Washington, local agencies such as the City of Kirkland are granted the authority to establish or alter posted speed limits.[1]

This policy outlines the approach and procedure for establishing posted speed limits on public streets within the City of Kirkland's jurisdiction to prioritize consistent, safe, and context-appropriate driving speeds citywide. The methodology outlined in this policy is adapted from the National Cooperative Highway Research (NCHRP) Report 966 Posted Speed Limit Setting Procedure and Tool.

POLICY PRINCIPLES

1. Posted speed limits should be reasonable and safe.
2. Changes in speed limits along a street segment should occur in five mile per hour (mph) increments.
3. The preferred maximum speed limit is 30 mph for collector and arterial streets.
4. Roadways classified as local streets shall have a default regulatory speed of 20 mph, once enacted by Kirkland City Council. Citywide signage changes will follow a phased approach through the budget process as resources allow.
5. Speed limits are enforceable once appropriate signage is installed per RCW 46.61.415.
6. Designated school speed zones and streets designated as Neighborhood Greenways shall have a regulatory speed limit of 20 mph.
7. With the approval of the Public Works Director, Transportation Division staff shall be authorized to implement temporary speed adjustments within construction zones.
8. Arterial and collector roadways do not have a default speed limit. Any proposed revisions to existing speed limits for these roadways should be assessed for appropriate speed limits under this policy.

[1] WA State Legislature RCW 46.61.415 https://app.leg.wa.gov/RCW/default.aspx?cite=46.61.415

9. New collector or arterial roadways without an established speed limit should be assessed for appropriate speed limits under this policy.

POLICY APPLICATION

This policy is a framework and procedure for City Transportation Division staff to evaluate speed limits on arterial and collector roadways. There are no specific thresholds when the speed limit evaluation process should be completed; this policy can be used at any time on any existing or proposed roadway if deemed appropriate by City Transportation Division staff.

City Transportation Division staff should perform a speed limit evaluation during the design process of a roadway project that would substantially change the roadway environment and may affect speed and driving behavior. Project types that are NOT candidates for speed limit evaluations include regular maintenance activities, isolated paving work, utility work, and storm water work. Special projects will be evaluated by City Transportation Division staff on a case-by-case basis.

Some key considerations for when to use the policy in this setting include:

- **Location and length of road segment to be analyzed.** Speed limits should be assessed and applied in a manner that provides a clear, consistent message to motorists. Frequent changes in speed limits should be avoided.
- **Changes to the roadway environment.** In general, any proposed reductions in speed limits should be paired with capital projects that change the road environment to encourage slower, safer speeds.

ROADWAY FUNCTIONAL CLASSIFICATION

The City of Kirkland currently classifies its roadways into Principal Arterials, Minor Arterials, Collector Streets and Local Streets or Neighborhood Access Streets as shown in Table 1 below.[2].

Table 1. Roadway Classifications

CLASSIFICATION	DESCRIPTION/PURPOSE
Principal Arterial	Connect to major commercial areas and other cities.
Minor Arterial	Serve major traffic generators that are not served by principal arterials.
Collector Street	Provide connections between arterials and local streets.
Local Street or Neighborhood Access Street	Provide access to residential areas, businesses, and other local areas.

ROADWAY CONTEXT

Roadway context refers to the surrounding physical, functional, and land use environment in which a roadway operates. This includes the characteristics of adjacent development and intensity (e.g., residential, commercial, mixed-use), access point density, and potential development. These factors shape appropriate operating speeds, access and mobility demands, and the mix of roadway users.

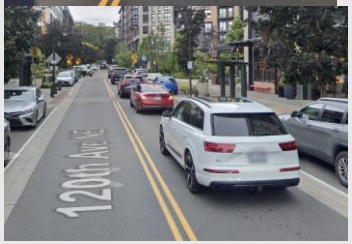
Context definitions may also incorporate roadway characteristics such as traffic volumes, lane widths, and the anticipated level of multimodal activity based upon the presence or absence of sidewalks and bicycle facilities. For roadways with comparable land use patterns, access characteristics, and mobility demands, applying a shared roadway context classification allows setting appropriate posted speed limits. Roadway context provides a framework for aligning appropriate posted speed limits with the surrounding land use and community needs.

The roadway context classifications established in this policy are based on the land use definitions outlined in the Comprehensive Plan Land Use Element.

Table 2 provides descriptions of three different roadway contexts specific to the City of Kirkland.[3]

[2] https://www.kirklandwa.gov/files/sharedassets/public/v/1/public-works/transportation/plans-and-studies/kirkland-tsp-final.pdf
[3] https://www.kirklandwa.gov/files/sharedassets/public/v/1/planning-amp-building/kirkland-2044-comp-plan/k2044-people/land-use/pdfs/k2044_final_land-use-element.pdf

Table 2. Roadway Contexts in Kirkland

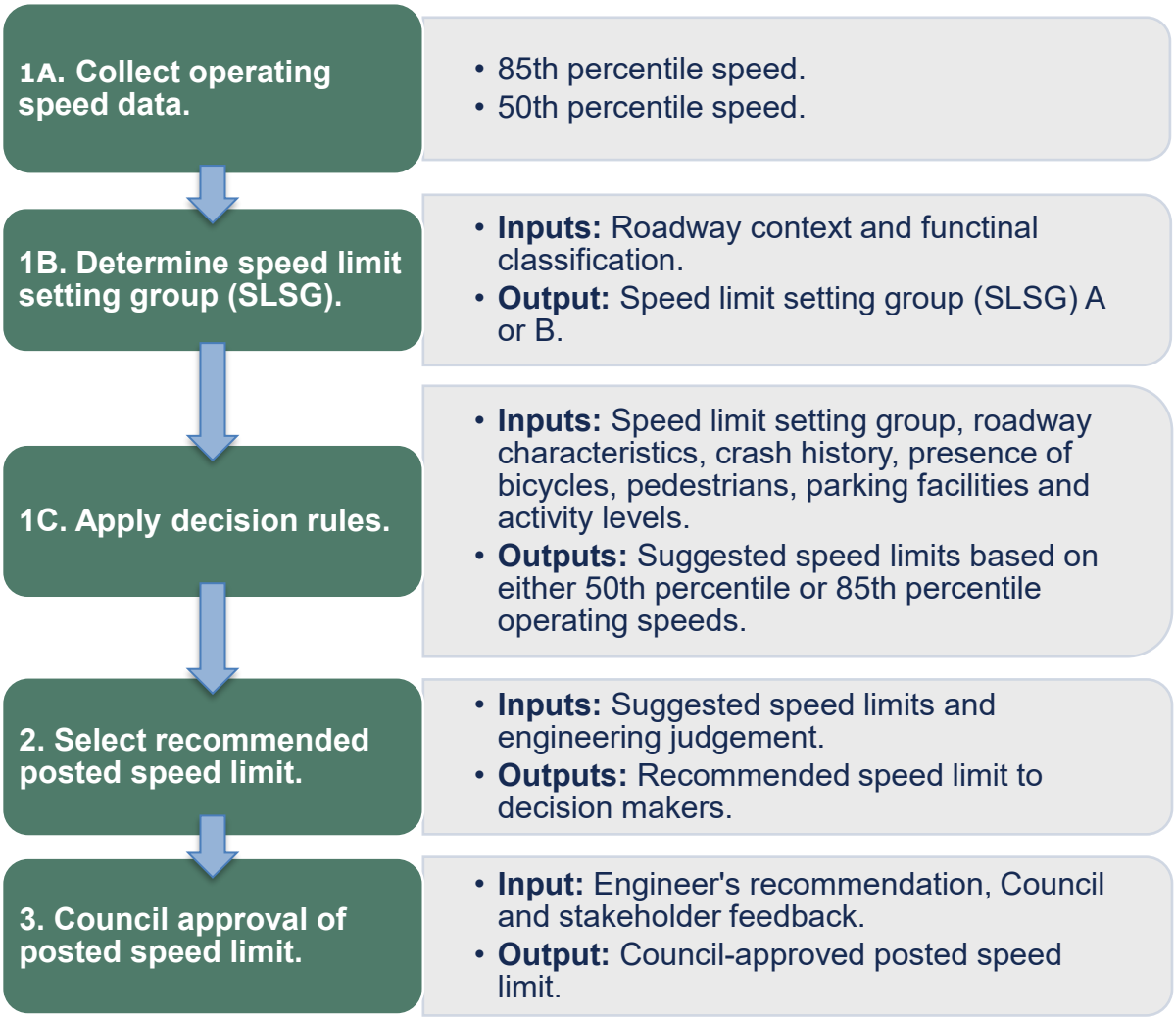
NCHRP 966 Roadway Context	City of Kirkland Land Use Designations	Land Use Description	Photo Description	Examples
Urban Core / Traditional Downtown	**Transit Oriented Development / Center Mixed Use**	Accommodates compact and walkable communities with a land-use mix, intensities, and provides access to residential, commercial, and recreational opportunities around high-capacity and/or frequent transit. Supports both large and small businesses that provide a network and mixture of commercial services and housing that make it possible for people to live near employment and everyday destinations.	 	Downtown Kirkland Totem Lake Urban Center Juanita Village NE 85th St Station Area Lake Street
Urban / Urban Mix	**Community Mixed Use**	Accommodates individual commercial uses and small collections of commercial uses, either with or without residential development, that are located primarily away from major streets and serve residential communities.	 	NE 68th St/108th Ave NE Market Street Snyder's Corner mixed used area at/within the vicinity of NE 70th /132nd Ave NE 124th Ave NE/NE 144th Street

NCHRP 966 Roadway Context	City of Kirkland Land Use Designations	Land Use Description	Photo Description	Examples
				Juanita Drive/ NE 141st Street Juanita mixed use area on 100th Ave NE north of NE 132nd Street
Urban or Suburban / Residential Corridor	**Residential / Industrial**	Accommodates predominantly residential uses with a range of allowed building types, generally ranging from single-unit to middle-housing types. This area may include small-scale commercial uses (e.g., corner stores, daycares, home-based businesses), institutional, and semi-public uses. Or accommodates production and non-production uses, recognizing that while many buildings in these areas are no longer viable for modern production industries, they are increasingly occupied by a wide variety of uses that contribute to the economic health and diversity of the city.	 	Remainder of Kirkland

SPEED LIMIT SETTING PROCESS FOR ARTERIAL AND COLLECTOR STREETS

The speed limit setting process for arterial and collector streets is outlined in Figure 1. This approach considers factors such as collision history, roadway geometrics, pedestrian and bicycle activity, and available facilities including parking, sidewalks, bicycle lanes and the surrounding environment. A thorough understanding of the road environment helps determine the most appropriate speed limit.

Figure 1. Overview of the speed limit setting procedure



The following steps will guide the determination of a recommended posted regulatory speed limit, using methodologies adapted from the National Cooperative Highway Research Program (NCHRP) Report 966 Posted Speed Limit Setting Procedure and Tool.[4]

[4] https://nap.nationalacademies.org/catalog/26216/posted-speed-limit-setting-procedure-and-tool-user-guide

STEP 1A. COLLECT CURRENT OPERATING SPEEDS

If speed data isn't available within the last three years, collect vehicle operating speeds and determine the average speed, 50th percentile speed (median speed), and 85th percentile speed for the roadway segment under evaluation. Ensure data is collected in locations where operating speeds are accurately represented. Speed data collection points should be set away from driveways, intersections, crosswalks, traffic signals, or traffic calming devices (e.g., speed bumps, humps, or cushions) and special zones (e.g., school zones or work zones). Data collection shall not occur during adverse weather events such as snow, ice, or excessive winds, and should avoid holidays and school breaks. Speed data should be documented for each roadway segment to be evaluated.

STEP 1B. DETERMINE SPEED LIMIT SETTING GROUP (SLSG)

Next, determine a Speed Limit Setting Group (SLSG). Speed Limit Setting Groups are various combinations of Roadway Classification and Land Use Designations depicted in Table 3 below. SLSG A and SLSG B are defined by the characteristics most represented of the study segment. Consult the table below to select the Speed Limit Setting Group that best applies to the roadway segment being evaluated.

Table 3. Speed Limit Setting Groups

	City of Kirkland Land Use Designation		
Roadway Classification	**Transit Oriented Development / Center Mixed Use**	**Community Mixed Use**	**Residential / Industrial**
Principal Arterial	**A**	**B**	**B**
Minor Arterial	**A**	**B**	**B**
Collector Street	**A**	**A**	**B**

SLSG A applies to urban, multimodal streets—such as downtown corridors or main streets—where there's high interaction between vehicles, pedestrians, and bicyclists. It prioritizes multimodal safety and comfort by using lower speed-setting methods:

- Rounded Down 50th percentile (RD50)
- Closest 50th percentile (C50)

SLSG B is suited for higher-speed roadways, typically in less dense or more separated contexts. It balances mobility and safety, offering a broader range of speed-setting methods:

- Closest 50th percentile (C50)
- Rounded Down 85th percentile (RD85)
- Closest 85th percentile (C85)

Both groups use pedestrian environment assessments (via Table 5 and Table 7) but apply them within different threshold contexts. SLSG A is more sensitive to non-motorized user activity and environmental factors, while SLSG B gives more weight to roadway design, traffic operations, and crash history.

STEP 1C. APPLY DECISION RULES

Determine the speed limit setting statistic selections appropriate to the selected speed limit setting group. Speed limit setting statistic selections include:

- **C85:** The 85th percentile, rounded to the nearest 5-mph increment.
- **RD85**: The 85th percentile speed, rounded down to the nearest 5-mph increment.
- **C50:** The 50th percentile speed, rounded to the nearest 5-mph increment.
- **RD50:** The 50th percentile speed, rounded down to the nearest 5-mph increment.

From the operating speed data, or when multiple traffic studies have been conducted, the lower operating speed from both directions on two-way facilities should be used for calculating the speed limit statistics selection. Engineering judgement should be used in cases where multiple traffic studies or two directions of travel are dramatically different.

SPEED LIMIT SETTING GROUP A

Table 4 outlines associated variables applicable to Speed Limit Setting Group A (SLSG A) for selecting an appropriate suggested speed limit for the roadway under evaluation. Review each variable in Table 4 for the segment under consideration to determine whether the suggested speed limit should be set at the Rounded Down 50th percentile (RD50) or the Closest 50th percentile (C50). The presence of any variable in the RD50 column will take precedence and determine the suggested speed limit. For instance, if the Closest 50th (C50) percentile is selected for the first seven variables, but the Crash Rate is categorized as High or Medium, then the recommended speed limit should be the Round Down 50th Percentile Speed (RD50).

Table 4. Speed Limit Setting Group A Decision Matrix

Variable*	Rounded Down 50th (RD50)	Closest 50th (C50)
Signal Density	>8 signals/mile	≤8 signals/ mile
Access Density	>60 driveways and/or unsignalized intersections per mile	≤60 driveways and/or unsignalized intersections per mile
Bicycle Level of Traffic Stress	BLTS 2 or 3 or 4	BLTS 1
Pedestrian Activity (high, some, or negligible), and **Sidewalk Presence / Width** (none, narrow, adequate or wide), sidewalk buffer (present or not present)	See Table 5: Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG A.	See Table 5: Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG A.
On-Street Parking Availability	High	Some or no parking
On-street Parking Type	Angle parking present for 40% or more of segment	No parking present or <40% of the segment
Crash Rate	High or Medium	Low

*See Table 5 through Table 13 for variable definitions and thresholds.

Table 5. Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG A

Pedestrian Activity	Sidewalk Presence/Width	Sidewalk Buffer	Speed Percentage
High	Adequate	Not Present	RD50
High	Adequate	Present	C50
High	Narrow	Not Present	RD50
High	Narrow	Present	RD50
High	None	N/A	RD50
High	Wide	Not Present	C50
High	Wide	Present	C50
Some	Adequate	Not Present	RD50
Some	Adequate	Present	C50
Some	Narrow	Not Present	RD50
Some	Narrow	Present	RD50
Some	None	N/A	RD50
Some	Wide	Not Present	C50
Some	Wide	Present	C50
Negligible	Adequate	Not Present	C50
Negligible	Adequate	Present	C50
Negligible	Narrow	Not Present	C50
Negligible	Narrow	Present	C50
Negligible	None	N/A	C50
Negligible	Wide	Not Present	C50
Negligible	Wide	Present	C50

See next page for variable thresholds and definitions.

Table 6. Pedestrian Activity is determined based on the following criteria

High	Pedestrians are frequently observed on sidewalks or walking in, or adjacent to the roadway. There are multiple locations where pedestrians are observed to be crossing the roadway. Pedestrian generators are located on the roadway, such as transit stops, parks, hotels, recreational facilities and government facilities.
Some	Pedestrians occasionally walk along or cross the roadway. Pedestrian generators are nearby such as transit stops, parks, hotels, recreational facilities and government facilities.
Negligible	It is very uncommon or rare to see pedestrians walk along or cross the roadway.

Table 7. Sidewalk Width is defined by the minimum sidewalk section in the Kirkland Roadway Pre-Approved Plans[5]

Wide	Greater than 5 feet in width.
Adequate	5 feet in width.
Narrow	Less than 5 feet in width.

Bicycle Level of Traffic Stress (BLTS) is defined based on the Washington Department of Transportation's Level of Traffic Stress fact sheet.[6, 7]

Table 8. Bicycle Level of Traffic Stress Definitions

Bicycle Level of Stress 1 (BLTS 1) Definition: Suitable for all ages and abilities; children could walk or bike here independently. Separated and/or barrier protected.
Bicycle Level of Stress 2 (BLTS 2) Definition: Comfortable for most adults, including most adults experiencing disabilities. Some separation, no barrier.
Bicycle Level of Stress 3 (BLTS 3) Definition: Tolerable for enthusiastic and/or confident adults. Little space, no separation.
Bicycle Level of Stress 4 (BLTS 4) Definition: Only used by highly confident people, or those with no alternative. No dedicated space, no separation.

See the following page for BLTS criteria.

[5] https://www.kirklandwa.gov/Government/Departments/Development-Services-Center/Tools-and-Resources/Pre-Approved-Plans/Roadway-Pre-Approved-Plans
[6] https://wsdot.wa.gov/sites/default/files/2024-07/LTS%20Level%20of%20Traffic%20Stress%20Flyer_0.pdf
[7] https://wsdot.wa.gov/sites/default/files/2022-06/DesignBulletin2022-01.pdf

Table 9. Bicycle Level of Traffic Stress Criteria - Bike Lane Without Separation from Traffic

Bike Lane without Separation from Traffic (paint stripe or buffer < 2 feet wide)					
Bike Lanes are greater than or equal to 7 feet (allows for 5 ft lane plus 2 ft buffer)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	2	3
	751 – 1,500	1	1	2	3
	1,501 – 3,000	1	1	2	3
	3,000 +	2	2	2	3
2 thru lanes per direction	0 – 7,000	2	2	2	3
	> 7,000	2	2	3	3
3 + thru lanes per direction	Any ADT	3	3	3	4
Bike Lanes are less than 7 feet (must be 5 ft or greater to be within standard)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	2	2	4
	751 – 1,500	1	2	2	4
	1,501 – 3,000	1	2	2	4
	3,000 +	2	2	2	4
2 thru lanes per direction	0 – 7,000	2	2	3	4
	> 7,000	3	3	3	4
3 + thru lanes per direction	Any ADT	3	3	4	4

Table 10. Bicycle Level of Traffic Stress Bike Lane With Separation From Traffic

Bike Lane with Separation from Traffic (buffer 2 feet wide or greater)					
Protected Bicycle Lane (parking or robust vertical barrier separation)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	1	2
	751 – 1,500	1	1	1	2
	1,501 – 3,000	1	1	1	2
	3,000 +	2	2	2	2
2 thru lanes per direction	0 – 7,000	2	2	2	2
	> 7,000	2	2	2	2
3 + thru lanes per direction	Any ADT	2	2	2	2
Vertically Delineated Bicycle Lane (Buffered bike lane with flexible delineator/candlestick)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	2	2
	751 – 1,500	1	1	2	2
	1,501 – 3,000	1	1	2	2
	3,000 +	2	2	2	3
2 thru lanes per direction	0 – 7,000	2	2	2	3
	> 7,000	2	2	3	3
3 + thru lanes per direction	Any ADT	2	2	3	3

Table 11. Parking Availability is determined based on following criteria

High	Parking exists at least on one side of the road with or without parking time limits.
Not High	Some or no on-street parking activity is present or permitted.

Table 12. Crash Rate Categories

High	Highest 1/3 of all study segments based on crash rate.
Medium	Middle 1/3 of all study segments based on crash rate.
Low	Lowest 1/3 of all study segments based on crash rate.

Crash rate quantifies the frequency of traffic crashes relative to a specific measure of exposure, such as traffic volume or distance traveled. This allows for meaningful comparisons between different roadways or segments, regardless of their size or traffic levels. The crash rate will be calculated as follows:

$$R = \frac{100{,}000{,}000\ x\ C}{365 \text{ x N x V x L}}$$

Table 13. Crash Rate Variable Terms

Variable	Definition
R	Crash rate for the road segment expressed as crashes per 100 million vehicle-miles of travel (VMT)
C	Total number of crashes in the study period
N	Number of years of data
V	Number of vehicles per day (both directions)
L	Length of the roadway segment in miles

SPEED LIMIT SETTING GROUP B

Table 14 outlines associated variables applicable to Speed Limit Setting Group B (SLSG B) for selecting an appropriate suggested speed limit for the roadway segment under evaluation. Review each variable in Table 14 for the segment under consideration to determine whether the suggested speed limit should be set at the Closest 50th percentile (C50), Rounded Down 85th percentile (RD85) or the Closest 85th percentile (C85). The presence of any variable in the C50 column will take precedence and determine the suggested speed limit. For example, if C85 is selected for the first four variables but On-Street Parking is categorized as High, the suggested speed limit should be based on C50.

Table 14. Speed Limit Setting Group B Decision Matrix

Variable	Closest 50th (C50)	Rounded-Down 85th (RD85)	Closest 85th (C85)
Signal Density	>4 signals/mile	>3 signals/ mile	<3 signals/ mile
Access Density	>60 driveways/ unsignalized intersections per mile	>40 and ≤60 driveways/unsignalized intersections per mile	<40 driveways/unsignalized intersections per mile
Number of lanes / Median type (undivided, two-way left-turn lane (TWLTL) or divided)	Not used	Four or more lanes with painted median or no median	Four or more lanes with raised median or TWLTL* Fewer than four lanes regardless of median or no median
Bicycle Level of Traffic Stress	BLTS 3 or 4	BLTS 2	BLTS 1
Pedestrian Activity (high, some, or negligible), and **Sidewalk Presence / Width** (none, narrow, adequate or wide), sidewalk buffer (present or not present)	See Table 15: Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG B.	See Table 15: Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG B.	See Table 15: Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations for SLSG B.
Parking Availability	High	Not used	Not High
On-street parking type	Angle parking present for ≥40%	Parallel Parking present Angle Parking present for <40%	None
Crash Rate	High	Medium	Low

*TWLTL refers to Two-Way Left-Turn Lane

Table 15. Decision Matrix for Sidewalk Presence/Width, Sidewalk Buffer, and Pedestrian Activity combinations SLSG B

Pedestrian Activity	Sidewalk Presence/Width	Sidewalk Buffer	Speed Percentage
High	Adequate	Not Present	RD85
High	Adequate	Present	C85
High	Narrow	Not Present	C50
High	Narrow	Present	RD85
High	None	N/A	C50
High	Wide	Not Present	C85
High	Wide	Present	C85
Some	Adequate	Not Present	RD85
Some	Adequate	Present	C85
Some	Narrow	Not Present	C50
Some	Narrow	Present	RD85
Some	None	N/A	C50
Some	Wide	Not Present	C85
Some	Wide	Present	C85
Negligible	Adequate	Not Present	C85
Negligible	Adequate	Present	C85
Negligible	Narrow	Not Present	C85
Negligible	Narrow	Present	C85
Negligible	None	N/A	RD85
Negligible	Wide	Not Present	C85
Negligible	Wide	Present	C85

Table 16. Pedestrian Activity is based on the following criteria

High	Pedestrians are frequently observed on sidewalks or walking in, or adjacent to the roadway. There are multiple locations where pedestrians are observed to be crossing the roadway. Pedestrian generators are located on the roadway, such as transit stops, parks, hotels, recreational facilities and government facilities.
Some	Pedestrians occasionally walk along or cross the roadway. Pedestrian generators are nearby such as transit stops, parks, hotels, recreational facilities and government facilities.
Negligible	It is very uncommon or rare to see pedestrians walk along or cross the roadway.

Table 17. Sidewalk Width is defined by the minimum sidewalk section in the Kirkland Roadway Pre-Approved Plans[8]

Wide	Greater than 5 feet in width.
Adequate	Approximately 5 feet in width.
Narrow	Less than 5 feet in width.

Bicycle Level of Traffic Stress (BLTS) is defined based on the Washington Department of Transportation's definitions and Level of Traffic Stress fact sheet.[9, 10]

Table 18. Bicycle Level of Traffic Stress Definitions

Bicycle Level of Stress 1 (BLTS 1) Definition: Suitable for all ages and abilities; children could walk or bike here independently. Separated and/or barrier protected.
Bicycle Level of Stress 2 (BLTS 2) Definition: Comfortable for most adults, including most adults experiencing disabilities. Some separation, no barrier.
Bicycle Level of Stress 3 (BLTS 3) Definition: Tolerable for enthusiastic and/or confident adults. Little space, no separation.
Bicycle Level of Stress 4 (BLTS 4) Definition: Only used by highly confident people, or those with no alternative. No dedicated space, no separation.

See the following page for BLTS criteria.

[8] https://www.kirklandwa.gov/Government/Departments/Development-Services-Center/Tools-and-Resources/Pre-Approved-Plans/Roadway-Pre-Approved-Plans
[9] https://wsdot.wa.gov/sites/default/files/2024-07/LTS%20Level%20of%20Traffic%20Stress%20Flyer_0.pdf
[10] https://wsdot.wa.gov/sites/default/files/2022-06/DesignBulletin2022-01.pdf

Table 19. Bicycle Level of Traffic Stress Criteria - Bike Lane Without Separation From Traffic

Bike Lane without Separation from Traffic (paint stripe or buffer < 2 feet wide)					
Bike Lanes are greater than or equal to 7 feet (allows for 5 ft lane plus 2 ft buffer)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	2	3
	751 – 1,500	1	1	2	3
	1,501 – 3,000	1	1	2	3
	3,000 +	2	2	2	3
2 thru lanes per direction	0 – 7,000	2	2	2	3
	> 7,000	2	2	3	3
3 + thru lanes per direction	Any ADT	3	3	3	4
Bike Lanes are less than 7 feet (must be 5 ft or greater to be within standard)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	2	2	4
	751 – 1,500	1	2	2	4
	1,501 – 3,000	1	2	2	4
	3,000 +	2	2	2	4
2 thru lanes per direction	0 – 7,000	2	2	3	4
	> 7,000	3	3	3	4
3 + thru lanes per direction	Any ADT	3	3	4	4

Table 20. Bicycle Level of Traffic Stress Bike Lane With Separation From Traffic

Bike Lane with Separation from Traffic (buffer 2 feet wide or greater)					
Protected Bicycle Lane (parking or robust vertical barrier separation)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	1	2
	751 – 1,500	1	1	1	2
	1,501 – 3,000	1	1	1	2
	3,000 +	2	2	2	2
2 thru lanes per direction	0 – 7,000	2	2	2	2
	> 7,000	2	2	2	2
3 + thru lanes per direction	Any ADT	2	2	2	2
Vertically Delineated Bicycle Lane (Buffered bike lane with flexible delineator/candlestick)					
Lanes	**ADT**	**Existing Posted Speeds**			
		20 mph	25 mph	30 mph	35 mph
1 thru lane per direction or 1 lane one-way street	0 – 750	1	1	2	2
	751 – 1,500	1	1	2	2
	1,501 – 3,000	1	1	2	2
	3,000 +	2	2	2	3
2 thru lanes per direction	0 – 7,000	2	2	2	3
	> 7,000	2	2	3	3
3 + thru lanes per direction	Any ADT	2	2	3	3

Table 21. Parking Availability is determined based on following criteria

High	Parking exists at least on one side of the road with or without parking time limits.
Not High	No on-street parking or no parking activity is present or permitted.

Table 22. Crash Rate Categories

High	Highest 1/3 of all study segments based on crash rate.
Medium	Middle 1/3 of all study segments based on crash rate.
Low	Lowest 1/3 of all study segments based on crash rate.

Crash rate quantifies the frequency of traffic crashes relative to a specific measure of exposure, such as traffic volume or distance traveled. This allows for meaningful comparisons between different roadways or segments, regardless of their size or traffic levels. The crash rate will be calculated as follows:

$$R = \frac{100{,}000{,}000\ x\ C}{365 \text{ x N x V x L}}$$

Table 23. Crash Rate Variable Terms

Variable	Definition
R	Crash rate for the road segment expressed as crashes per 100 million vehicle-miles of travel (VMT)
C	Total number of crashes in the study period
N	Number of years of data
V	Number of vehicles per day (both directions)
L	Length of the roadway segment in miles

STEP 2 ENGINEER'S RECOMMENDED SPEED LIMIT

The Suggested Posted Speed Limit, as determined from the above process, should be compared to the Target Speed ranges shown in Table 24 below. Then, engineering judgement should be applied to ensure proper application given several real-world factors.

TARGET OPERATING SPEEDS

The target speed is the highest speed at which vehicles should operate on a throughfare in a specific context, consistent with the level of multimodal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a desirable environment for pedestrians, bicycles and public transit users.11 NCHRP Research Report 855 provides additional information on target speeds.[12]

Table 24. Target Speeds by Roadway type and context

	Roadway Context		
Roadway Type / Classification	**Transit Oriented Development / Center Mixed Use**	**Community Mixed Use**	**Residential / Industrial**
Principal Arterial	25 – 30	30 – 35	30 – 35
Minor Arterial	25 – 30	25 – 35	30 – 35
Collector Street	25 – 30	25 – 30	25 – 35

If the suggested speed limit does not fit within the suggested target speed ranges, first confirm calculations and then identify potential reasons for the difference. The engineer should identify any unique characteristics along the segment and consult traffic safety and operations resources related to speed limit setting (e.g., NCHRP Report 966, FHWA Office of Safety publications, established industry experts), to determine the Engineer's Recommended Speed Limit.

[11] https://www.wsdot.wa.gov/publications/manuals/fulltext/M22-01/design.pdf
[12] https://nap.nationalacademies.org/catalog/24775/an-expanded-functional-classification-system-for-highways-and-streets

ENGINEERING JUDGEMENT

Following the determination of the recommended speed limit for a given roadway segment, apply engineering judgement considering additional factors such as:

- Continuity of speed limits across adjacent roadway segments along the same corridor
- Coordination with neighboring jurisdictions
- Historical community input, complaints, and requests
- Crash risk or injury minimization

Speed limits should be assigned to roadway segments that are reasonably uniform in roadway characteristics, context, and type. When a change to one of these variables occurs, a new roadway segment should be defined. For example, changes to the number of lanes or roadway context (Transit Oriented Development/Center Mixed Use, Community Mixed Use, and Residential) necessitate a new segment. Keep segment lengths reasonable for driver's expectations and for sign maintenance operations. Changing speed limits too often can be confusing for road users, onerous to maintain records of each change, and burdensome for maintaining the signs themselves.

Regulatory speed limits should not be adjusted due to isolated speed-related concerns, such as horizontal curves; these should be addressed with the use of standard MUTCD approved warning treatments (e.g., a posted advisory speed or curve warning signs). Each case should be reviewed and determined with engineering investigation.

When addressing posted speed limits near city boundaries, coordinate with the neighboring jurisdiction. Engineering staff should contact the appropriate representative to notify them of the study and discuss potential coordination needs on a shared corridor.

SETTING SPEED LIMITS ON NEW ROADWAYS

When looking to establish posted speed limits on new collector or arterial roadways, the Target Speed (Table 24) can be used to determine an initial posted speed limit for newly constructed roadways. In alignment with the City's Vision Zero goals, the lowest speed should be used as a starting point. Higher speeds within the range may be used with justification. Other factors to consider when selecting Target Speeds for a new roadway:

- Pedestrian and Bicycle Facilities (Refer to Table 6 - Table 10)
- Anticipated Pedestrian and Bicycle Activity Levels (Refer to Table 6 - Table 10)
- Presence of On-Street Parking (Refer to Table 11).

STEP 3 SECURE COUNCIL APPROVAL

The final recommendation for a posted speed limit should be based on the procedures established in this document and the application of engineering judgement. At a given location, factors outside the data elements (variables) used in this procedure may be appropriate to include to help establish the most appropriate posted speed limit. Engineering judgement is often required to determine the Recommended Posted Speed Limit. Posted speed limits are approved through City Council adoption of a resolution as the City's legislative body.

Once the speed limit is physically posted on signage, then it becomes enforceable.

GLOSSARY

Below is a list of relevant terms to understand the policy and process for the evaluation of appropriate posted speed limits.

Table 25. List of Relevant Speed-Related Definitions

Term	Definition
50th Percentile Speed	The speed at which 50% of motor vehicle drivers travel at or below. Often referred to as the "Median Speed".
85th Percentile Speed	The speed at which 85% of motor vehicle drivers travel at or below.
Average Speed	The summation of the instantaneous or spot-measured speeds at a specific location of vehicles divided by the number of vehicles observed.[13]
Posted Speed	The maximum speed a driver is legally permitted to travel along a roadway. This numeric speed limit value is displayed on regulatory speed limit signs.
Operating Speed	The speed at which motor vehicles generally travel on that road.
Recommended Speed Limit	Speed limit based on both the Speed Limit Setting Tool and engineering experience and judgment.
Roadway Functional Classification	The categorization of roads is based on the type of service they provide within the overall transportation network. It reflects the balance between mobility (efficient movement of vehicles) and access to land uses (connecting to homes, businesses, and other destinations). For Kirkland's roadway functional classifications, refer to the 2024 Transportation Strategic Plan[14], Figure 3-11.

[13] https://mutcd.fhwa.dot.gov/pdfs/11th_Edition/mutcd11thedition.pdf
[14] https://www.kirklandwa.gov/Government/Departments/Public-Works-Department/Transportation/Plans-and-Studies-Transportation-Division/Transportation-Strategic-Plan

Term	Definition
Roadway Context	The land uses adjacent to a roadway that influences geometric design practices in terms of desired operating speeds, mobility/access demands, and user groups.
Roadway Characteristics	The physical and operational features of a road that influences how it functions and how vehicles and pedestrians interact. Features include, but are not limited to, lane width, shoulder width, number of lanes, median type, horizontal and vertical alignment, traffic volumes, and access points.
Speed Limit Setting Group	Roadway group categorization based upon roadway functional classification (e.g., principal arterial, minor arterial collector streets and local streets) and roadway context (e.g., Transit Oriented Development/Center Mixed Use, Community Mixed Use, Residential), forming the basis for assessing appropriate speeds.
Speed Limit Setting Group reference: Closest 50th Percentile (**C50**)	The 50th percentile speed rounded to the nearest 5-mph increment.
Speed Limit Setting Group reference: Closest 85th Percentile (**C85**)	The 85th percentile speed rounded to the nearest 5-mph increment.
Speed Limit Setting Group reference: Rounded Down 50th Percentile (**RD50**)	The 50th percentile speed rounded down to the nearest 5-mph increment.
Speed Limit Setting Group reference: Rounded Down 85th Percentile (**RD85**)	The 85th percentile speed rounded down to the nearest 5-mph increment.
Target Speed	The target speed is the highest speed at which vehicles should operate on a throughfare in a specific context, consistent with the level of multimodal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a desirable environment for pedestrians, bicycles and public transit users
Tool Output Speed or Suggested Speed	Speed limit determined by the Kirkland Speed Limit Setting Tool's decision matrix (based on data inputs).

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PRE-APPROVED PLANS POLICY

Policy R-18: PERMANENT RADAR SIGNS

BACKGROUND: Reference the Memorandum, "Permanent Radar Sign Policies" dated September 2006 to the Kirkland City Council from the Transportation Commission. This document is available on-line or from the Transportation Division of Public Works.

1. Radar signs are considered as one of the several traffic calming tools available for solving speeding problems in Kirkland.

2. Radar signs can be used on 2 or 3 lane arterials and collector streets, especially where other traffic calming devices may not be appropriate, such as streets with traffic volumes greater than 5,000 vehicles per day and on Primary Emergency Response Routes.

3. Radar signs should not be used use on local streets where other traffic calming measures are applicable.

4. Each application of radar signs needs a "before and after" study with community feedback to build upon our experience of where the signs are most effective.

Power Source Determination

In order to maximize dependability and reduce ongoing maintenance cost the City prefers that permanent radar signs be installed with a direct AC power connection. There are instances where there is a need to install a radar sign but providing an AC power connection would make the location cost-prohibitive. In these cases DC (solar) powered radar signs may be used. The following criteria shall be used when determining if a DC (solar) powered radar sign is acceptable.

Table 1: Power Source Determination

	Solar Exposure	
Access to Power	**Inadequate**	**Adequate**
≤ 50′	AC	AC
> 50′	AC	DC (solar)

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-19: RESIDENTIAL RED CURB PAINTING: AUTHORIZATION FOR PAINTING BY ADJACENT PROPERTY OWNERS

Public Works receives routine requests to have curbs painted red to designate a 'no parking' area. Many of these requests are for non-safety situations. An example is requests for painting 5 feet on each side of a driveway to remind motorists not to park too closely to the driveway. Such parking is already illegal and enforceable, but some residents want the red paint as a reminder.

Note that red curb painting is no longer authorized for mailboxes. Instead, refer to pre-approved plan policy R-37, Mailbox No Parking Signs: Authorization for Property Owners.

The number of painted curbs has grown over the years to the point where City Maintenance Crews are hard-pressed to maintain them. To address the on-going needs for 'no parking' areas that are not safety-related, a procedure was developed whereby the City would give residents or property owners authorization, with specific conditions, to paint the curbs abutting their property.

Attached is a letter that provides the format for the authorization to paint and maintain the curbs.

This service is managed through the Neighborhood Traffic Control Program. Service requests can be made through "Our Kirkland" at this website: https://www.kirklandwa.gov/Government/Departments/Finance-and-Administration/Our-Kirkland

DATE

_____

_____

Kirkland, WA 98033

Subject: Red Curb Painting Authorization, ____LOCATION_____ Kirkland, WA

This letter authorizes you to paint the curb red from the edges of the driveway (defined in Figure 1) for 5 feet on either side of your driveway. Please do not exceed this authorized length; you will be required to remove excess red.

This red curb authorization is in accordance with the attached policy R-19, subject to conditions listed in this authorization and authorized for the above-described segments. Please retain this letter as proof of the City's authorization.

Conditions:

1. Standard, water-based red curb marking paint (called Red Zone Marking Paint) must be used for painting red curb. This is available at Miller Paint Company, 11730 118th Ave NE, Suite A300, Kirkland, WA 98034, (425) 822-6092.

2. The City of Kirkland will not maintain these paint markings. Maintenance of red curb will be solely your responsibility.

3. This authorization does not expire unless the City of Kirkland revokes it. The City reserves the right to revoke the authorization at any time.

4. The City does not warrant that motorists will comply with this red curb, but it is officially approved and as enforceable as if City crews had done the painting. For enforcement, please contact the police at non-emergency 911 number (425) 577-5656 or police@kirklandwa.gov.

Please let me know if you have any questions. Please also let me know when you have painted the red curb for a field check by city staff. If you have any questions regarding this authorization, please contact me at (425) 587-____ or _____.

Sincerely,
PUBLIC WORKS DEPARTMENT

_____

Figure 1 – Example Edge of Driveway Defined

NOTE: If alternate lengths are authorized, include a Figure 2 showing the actual lengths and referencing this in the letter.

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PRE-APPROVED PLANS POLICY

Policy R-20: NEIGHBORHOOD TRAFFIC CONTROL PROGRAM (NTCP) TRAFFIC PLANNING AND COMMUNITY ACCEPTANCE

The Neighborhood Traffic Control Program (NTCP) uses a three-phase approach to calm traffic on neighborhood access roads; i.e., local, residential streets.

The first phase involves low cost, easy to implement tools, such as education, pavement striping and markings, signage, and the portable radar trailer– each as appropriate to address the issue at hand.

The second phase involves more costly devices, such as radar speed signs or low-cost tactical urbanism approaches that do not restrict the travel lanes but encourage drivers to travel at the legal speed limit.

The third phase involves restrictive physical changes to the street, such as speed cushions and traffic circles. Because restrictive measures require driving over or around these devices on a daily basis, the City will not implement them unless these are in a traffic plan that has strong support from the local residents and key stakeholders.

Guidelines for traffic calming, community outreach, acceptance and funding are outlined below. Variances from these guidelines might be allowed, depending on the specific circumstances.

Traffic Calming Guidelines

Traffic studies (speed and volume) and crash history are elements to consider when deciding if traffic calming should be implemented and the types of measure that might be appropriate. In addition, general guidelines for implementing traffic calming measures include:

- The maximum legal speed limit is 25 miles per hour.
- The street in not an arterial or collector.
- The street is not on a primary emergency response route or bus route.
- The street has measured average daily traffic volumes of at least 300 but less than 3,000 vehicles per day.
- At least 15% of the vehicles must be exceeding the posted speed limit by at least 7 miles per hour as determined by traffic studies.
- Traffic calming changes should not adversely affect neighboring streets; i.e., result in significant changes in speed or traffic volume.
- Traffic volumes should include no more than 5 percent long wheel-based vehicles.

Community Engagement

Traffic calming plans that include only Phase One or Phase Two measures require minimal community engagement. If the proposed measures create new noise or visual impacts, the City might notify residents most directly affected. Notifications are typically informational, providing these residents an opportunity to ask questions but are not a voting process.

The process that includes Phase Three restrictive devices requires community engagement, as follows:

1. Public Works will identify the boundaries of the affected neighborhood, which should typically include:
    a. Residents who live on the street.
    b. Residents on local streets that feed into the street in question.
    c. Nearby residents that would likely use the street to reach other destinations because it is the most direct route. The boundary does not usually include residents or businesses from outlying areas that use the street as an alternative to a more direct but more congested route (i.e., "cut-through" traffic).

2. City staff will identify key stakeholders that could be affected and should be included in the traffic planning process. Examples of key stakeholders are homeowner associations (HOAs), neighborhood associations, Kirkland Police, the Kirkland Fire Department, schools with bus routes, transit agencies and businesses within the community boundary, as appropriate.

3. The City will solicit residents from within the community to be part of a neighborhood task force that works with City staff to prepare a traffic calming plan.

4. The City will work with HOAs and the task force to help keep the community at large informed of progress.

5. Once a final draft traffic plan is prepared, the City will mail this to the neighborhood seeking comment and ask HOAs and neighborhood associations (if applicable) to post it to their websites, social media and add to newsletters, if available. The comment period is typically two weeks from the date of mailing.

6. After the comment period, City staff will finalize the traffic plan and present it to the task force. The final plan will be mailed out with ballots, and the results of the balloting will determine community acceptance.

Community Acceptance

Traffic plans that include Phase Three traffic calming tools need strong community support. The community engagement process described above will help prepare the community for voting to approve the final traffic plan. Balloting guidelines for approving a proposed traffic plan are:

- Ballots will be mailed to each household or business with an address that is within the community boundary defined by Public Works.
- Only the City can distribute the ballots.
- Each household or business is allowed one vote.
    - For balloting purposes, each unit in a multi-family complex is a household.
    - Each business is allowed one vote.
- When the community at large is 100 households or less, at least 70% of those who receive a ballot must vote "yes".
- When the community at-large is more than 100 households, at least 70% of those who return a ballot must vote "yes".
- Abstaining votes or undeliverable ballots are subtracted from the total number of ballots when calculating the percentage of "yes" votes.
- Official city-issued ballots signed by the voter can be returned by fax, mail, email, or hand delivered. All responses must include the voter's name, phone number, and address for verification purposes only.

Funding

Phase One measures are usually low cost and can commonly be incorporated into other City-funded programs. Examples include the annual striping program or installation of standard signs by City crews. Phase Two and Phase Three measures are more costly and typically outside the scopes of existing City programs. Other funding opportunities might be possible, depending on the cost and types of measures, such as the annual Neighborhood Safety Program, which awards grants to City neighborhoods, and the Capital Improvement Program. Other City initiatives might apply at the time a traffic plan is developed and approved. Most programs, though, allocate funds based on a prioritization process, so funding might not be immediately available when a traffic plan is approved. Traffic plans cannot be implemented until funding is secured.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-21: ROADSIDE MEMORIAL SIGN PROGRAM

The purpose of the Memorial Sign Program is to:

a. Provide families of persons fatally injured in crashes with a way to sponsor a memorial sign to be erected near the scene of the crash;
b. Ensure that memorial signs are located and installed in a safe and consistent manner; and
c. Increase the public's awareness of the need to drive safely.

The program specifics are detailed on the following pages, along with sign schematics and the sign permit application.

City of Kirkland Public Works Roadway Policy R-21
Roadside Memorial Signs
Approved by City Council 4/2/2013

A. Purpose

1. The purpose of the Memorial Sign Program is to:
   a. Provide families of persons fatally injured in crashes with to sponsor a memorial sign to be erected near the scene of the crash;
   b. Ensure that memorial signs are located and installed in a safe and consistent manner; and
   c. Increase the public's awareness of the need to drive safely.

B. Definitions

1. Deceased: Any person who was fatally injured in a vehicle crash.
2. Immediate family member: A spouse, domestic partner, child, stepchild, brother, stepbrother, sister, stepsister, mother, stepmother, father, stepfather, grandparent, step grandparent or lineal descendent of the deceased.
3. Single crash site: The site of all vehicle crashes that occur within 1,000 feet from each other, regardless of when they occur.
4. Sidewalk: Includes any structure or form of street improvement in the space between the street margin and the roadway, known as the sidewalk area. (KMC 19.20.010).
5. Representative: A person authorized by and acting in the interest of an immediate family member

C. Long-term memorial application procedure

1. An immediate family member or their representative may apply to sponsor a sign memorializing the deceased.
2. The applicant must complete and return a memorial sign application on forms furnished by the City. The documentation provided by applicant must establish that the deceased died as a result of a vehicle crash at a specific location in the City of Kirkland.
3. In the absence of the accident report, the applicant may produce other information or documents that are equally reliable. The City, in its sole discretion, shall determine whether other information or documents provided in lieu of an accident report are sufficiently reliable.
4. Sign applications will not be accepted for private streets.
5. A person may file an application under this policy to memorialize a fatality in a crash that occurred not more than two years prior to the application date.

D. City review of long-term memorial sign application

1. The City shall review all applications to ensure they are complete and accurate. The City may request more information from the applicant if the application is not complete or if the City needs additional information to process the application. The City shall deny any

application that does not meet the criteria set forth in this Policy or does not contain the information required in this Policy or in the application.

2. Within 45 days after the City receives a correctly completed application submitted pursuant to this policy, the City shall complete its review of the application and inspect the proposed site for the memorial sign and shall send a written decision to the applicant indicating why or why not the application is accepted and indicating the proposed location of the sign.

E. Location, placement, and ownership of long-term memorial signs

1. Once an application has been approved, the applicant must pay the fee set forth in the City of Kirkland Public Works fee schedule to cover the cost of administration, fabrication, installation, and maintenance of the memorial sign and any name plaque that may be requested.
2. The City will select, purchase, install, remove, and retain ownership of memorial signs.
3. 24" by 24" signs will be installed in accordance with applicable City policies and standards for signs. This includes posts, hardware, materials, vertical, longitudinal, and lateral positioning. 24" by 12" name plaques shall be installed directly below the sign.
4. Memorial signs shall be placed only in a City right-of-way, on the right side of the roadway, facing oncoming traffic. Signs will not be installed in the median of any City roadway.
5. Memorial signs shall be placed in close proximity to where the accident occurred at a location where the City determines it is safe and practical to do so.
6. Only one sign will be installed per intersection or per 1,000 feet of roadway for each direction of traffic. However, a memorial sign will not be placed in a location where the memorial sign obstructs the visibility of an existing traffic sign, or traffic signal or impairs sight distance below adopted City standards. Signs will not be placed on any bridge over I-405, or where these signs cause any concern or obstruction to any public appurtenance.
7. The City will not replace the sign should it be vandalized, damaged, or found missing; however, the applicant may apply for a new sign, including payment of the fee set forth in the City of Kirkland Public Works fee schedule. Any replacement signs will continue the five year period (section E8) that began timing with the original sign
8. Unless it is determined that public safety requires the sign to be removed, the City of Kirkland will allow the sign to remain in the right-of-way for five years after its placement, or until the City determines that the condition of the sign has deteriorated to a point where it is no long serviceable, whichever occurs first. The City shall remove and retain ownership of the sign after removal. The City may properly dispose of the sign unless applicant has requested, in writing on the application, possession of the sign after its removal. The applicant shall be responsible for promptly obtaining the sign from the City after its removal. Any signs left unclaimed after 45 days will be disposed of. The request to take possession of the sign is incumbent on the applicant.

F. Wording on long-term memorial signs

1. One of the following six messages, related to the cause of the crash, is available for standard memorial sign installation. The City, in its discretion, shall determine whether the requested message is related to the cause of the crash:

a. *Please don't drink and drive.*
b. *Please drive safely.*
c. *Seat belts save lives.*
d. *Watch for pedestrians.*
e. *Watch for bicyclists.*
f. *Watch for motorcyclists.*

2. A secondary plaque displays the message *In Memory Of*, together with the victim's name (See Schematic below). No more than three name plaques may appear below a single memorial sign.

G. Multiple long term memorial sign applications

1. Only one sign will be installed per single crash site. Should a sign already exist, an additional name plaque may be added to an existing sign upon City approval. Multiple deceased names may appear on one sign.
2. The City may approve applications for an additional memorial sign at an existing crash site under the following circumstances:
   a. Additional name plaques can be attached to the existing sign installation; or
   b. A second memorial sign can be installed across the roadway from the first sign installation so that the second sign installation faces the traffic approaching from the opposite direction.

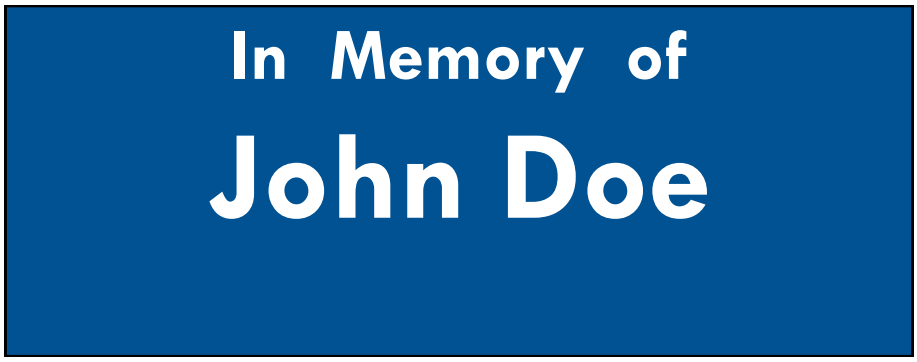
H. Informal short-term memorials and anniversary memorials

1. The placement of informal memorials shall be allowed in the right-of-way for up to 14 days after an accident with the following conditions:
   a. The memorial does not exceed three feet in height (except bicycles) and up to nine square feet in surface area and is contained in the right-of-way.
   b. The memorial does not cause unsafe conditions for passing motorists, pedestrians or bicyclists or for people who are maintaining or visiting the memorial. At the sole discretion of the City, items may be rearranged or removed to improve safety.
   c. Those visiting and/or maintaining the memorial comply with all other applicable laws.
   d. No materials are placed on bridges over I-405.
   e. Public Works Transportation Division is notified prior to installation.
2. At the end of the 14-day period, the City may remove any items from the memorial site.
3. The placement of an anniversary memorial shall be allowed in the right-of-way for up to seven days after each anniversary of the vehicle crash, for up to four years. At the end of the seven-day period, the City may remove any items from the memorial site.
4. Unattended candles shall not be allowed at memorial sites and may be immediately removed by the City.
5. Nothing in items 1 thru 4 shall prevent the City, at its sole discretion, from removing a memorial immediately in response to a threat to public safety.
6. Any durable materials removed by the City will be held for 45 days. At the end of this period if the materials have not been claimed they will be disposed of in accordance with procedures described in the Kirkland Municipal Code.

Schematic of Memorial Signs

24”

24”



12”

24”

Memorial Sign Permit Application

Public Works Department
Kirkland City Hall
123 Fifth Ave, Kirkland WA 98033

Open Monday-Friday, 8am-5pm
publicworks@kirklandwa.gov
Phone: 425.587.3800

Application Date:_____ *Application No.*: _____
(for City use only)

Applicant: _____

Address: _____

Contact Phone: _____

Email *(optional)*: _____

* * * * * * * * * * * * * * *

Name of Deceased: _____
(As it should appear on sign)

Date of Accident: _____

Relationship to Deceased: _____
(Must be immediate family member or representative)

Location of Accident: _____

_____
(Address, intersection, or distance and direction from intersection – must be within Kirkland city limits)

Wording Requested on Sign (Please select one.)

☐Please Don't Drink and Drive. ☐Please Drive safely. ☐Watch for bicyclists.

☐Seat belts save lives. ☐Watch for pedestrians. ☐Watch for motorcyclists.

REQUIRED INFORMATION

- ☐ Documentation establishing death as a result of a vehicle crash in Kirkland jurisdiction . (*The City, in its sole discretion, shall determine whether other information or documents provided in lieu of an accident report are sufficiently reliable.)*
- ☐ Applicant requests to be present at time of sign installation. *(Staff will make an effort to make arrangements with family, but City crew work scheduling may determine schedule if family availability is limited.)*
- ☐ Applicant requests to pick up sign upon its removal from the roadway at the end of 5 years. *(It will be the applicant's responsibility to promptly pick up sign once notified. If unable to contact, City will dispose of sign.)*

***Note**: Once your application has been reviewed, a staff member from Public Works will contact you regarding your request (within 45 days of submittal). A $400 (sign and plaque) or $170 (plaque on existing sign) fee is due upon approval. Please call 425.587.3800 with any questions.*

Requested Sign Location (attach map if available): _____

_____

Signs will be installed in accordance with applicable City policies and standards for signs. This includes posts, hardware, materials, and positioning. Name plaques shall be installed directly below the sign.

Memorial signs shall be placed only in a City right-of-way, on the right side of the roadway, facing oncoming traffic. Signs will not be installed in the median of any City roadway.

See full policy for further details and regulations.

THIS FORM IS A PUBLIC RECORD

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-22: PEDESTRIAN FLAG PROGRAM

- **Purpose of the Program:** Pedestrian flags are intended to assist pedestrians in gaining the attention of motorists approaching certain marked crosswalks. The pedestrian flags are not intended as a substitute for the vigilance and safe crossing techniques that pedestrians must use for crossing any street, whether or not it has enhanced crossing treatments.
- **Installation and Maintenance:** Public Works staff installs the equipment that holds the flags and provides the flags that volunteers use to replace missing and damaged flags. Public Works staff and/or volunteers monitor, replace, and redistribute flags in the Central Business District (CBD), volunteers provide the same services at locations remote from the CBD.
- **New Installations:** Typically, new flag installations are initiated by a request from a citizen who is willing to volunteer to maintain the flags at a particular location. Public Works staff checks the location to ensure that flag installation criteria are met and that flags would be a good application.
- **Flag installation Criteria:**
    1. Flags are only installed at existing marked crosswalks on city-maintained streets in the City of Kirkland.
    2. The crosswalk is not controlled by any traffic control devices, i.e. traffic signal, regulatory signs (Stop/Yield), or pedestrian activated crossing light systems, i.e. RRFBs (Rectangular Rapid Flashing Beacons).
    3. A volunteer is required for each location outside the Central Business District (CBD) to monitor, replace missing flags, and redistribute flags as necessary.
    4. Flags can also be installed temporarily at non-operating crossing light systems until repairs have been made or at other locations on a temporary basis.
- **Flag equipment Removal:** Flag equipment can be removed if it's determined by Public Works staff that the flags are no longer necessary for the crossing, i.e., addition of traffic control devices, a crossing light system; vandalism, or misuse of equipment; or if no volunteer available to maintain the flags (applies to crossings remote from the CBD).

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DEPARTMENT OF PUBLIC WORKS

PRE-APPROVED PLANS POLICY

Policy R-24: Rectangular Rapid Flash Beacon (RRFB) Installation Policy

RRFB Power Source Determination

Installation of an RRFB at a mid-block crossing can improve pedestrian safety and comfort. RRFBs have been proven to significantly increase vehicle yield rates at pedestrian crossings, but they can only do this when they are installed and functioning properly.

In order to maximize dependability and reduce ongoing maintenance cost the City prefers that RRFBs be installed with a direct AC power connection. There are instances where there is a need to install a RRFB but providing an AC power connection would make the location cost-prohibitive. In these cases DC (solar) powered RRFBs may be used. The following criteria shall be used when determining if a DC (solar) powered RRFB is acceptable.

Table 1: RRFB Power Source Determination

	Solar Exposure	
Access to Power	**Inadequate**	**Adequate**
≤ 50′	AC	AC
> 50′	AC	DC (solar)

NOTE:

The location of RRFBs will be determined based on its effectiveness to provide a benefit to pedestrians crossing at the crosswalk. The RRFBs will not be located based solely on optimizing access to power.

RRFB Placement and Installation

All new RRFB units installed within the City shall be double-sided.

Installations for two- or three-lane sections (one lane in each direction plus two-way left-turn lane) shall not include center unit in median island.

Installations on five-lane sections (two lanes in each direction plus two-way left-turn lane) shall require a median island with RRFB unit.

All RRFB posts shall be breakaway.

See City of Kirkland Roadway Pre-Approved Plans and contract special provisions for additional details.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-25: USE OF TEMPORARY SOIL NAILS

The use of temporary soil nails within public rights-of-way or easements is approved only on a case-by-case basis by the Public Works Department through a right-of-way or PUB permit. If approved, the design and installation of soil nails must avoid existing utilities; if utilities are impacted from soil nails or the installation of soil nails, the cost of repairing utilities is the responsibility of the proponent, permittee, or contractor. Any temporary installation of soil nails within a right-of-way or easement shall be de-stressed/de-tensioned, clipped or otherwise removed from being effective after the temporary need is over, or as prescribed by the Public Works Department.

Permanent soil nails within the public right-of-way or within an easement are not permitted.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-26: DEVELOPMENT STREET LIGHTING STANDARDS

The street lighting standards below apply to new development and redevelopment projects:

1. All new development subject to Chapter 110 of the Kirkland Zoning Code shall install new street lights in conjunction with the installation of the required street improvements. The street light design shall be initiated by the developer with Puget Sound Energy and will be reviewed and approved by the Public Works Department.

2. If new street lights are required, they shall be LED fixtures.

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PRE-APPROVED PLANS POLICY

Policy R-27: Long-term Street Improvement Closure Policy

The purpose of this policy is to outline when Street Improvements (sidewalks, bike lanes, and parking lanes) can be closed for construction or maintenance purposes.

1. Street Improvements serve the public. Closure of any street improvement should be minimized whenever possible. Street Improvement closures will be reviewed for new construction or required maintenance on existing buildings.

2. Street Improvements shall not be closed or detoured for the convenience of a development project to have more room to work. Temporary long-term use of the street improvement area to store or stage materials, equipment, job trailers, etc. shall not be allowed.

3. The Public Works Construction Inspector has the authority to require immediate field changes to Street Improvement detours or closures to address pedestrian, bicycle and vehicular safety, or functionality issues.

4. All Street Improvement closures and detour plans must be reviewed and approved by the Public Works Department.

5. A sidewalk detour plan is required for the temporary closure of any street improvement on a Collector or Arterial type street, along any City-adopted School Walk route, or any other street with a high-use of pedestrians as determined by the Public Works Department.

6. All detour plans shall be designed per the standards in the Manual on Uniform Traffic Control Devices (MUTCD). Link to MUTCD: http://mutcd.fhwa.dot.gov/

7. Pedestrian detours should be maintained on the same side of the street whenever possible. As an example, temporary closure of parking and detouring pedestrians into an approved route along the parking lane is preferred to detouring the pedestrians to the opposite side of the street.

8. When it is necessary to detour pedestrians to the opposite side of the street, the detour shall provide the safest and shortest route possible.

9. The Public Works Department may approve daily closures of Street Improvements (with an approved detour route plan) to facilitate construction work in the public right-of-way, but the street improvements shall be reopened at the end of each work day.

10. A long-term closure is any closure exceeding two weeks. The Public Works Department may approve long-term closures of street improvements (with approved detour routes) to facilitate construction or maintenance work in the public right-of-way under the following conditions:

    a. The closure is limited to the shortest time frame possible. The Contractor shall submit a proposed Street Improvement closure schedule describing the type of work causing the closure and the proposed number of days for the closure.

    b. A closure is limited to eight weeks unless approved by the Public Works Director. A request to exceed the 8-week limit will be reviewed on a case by case basis and must be due to extenuating circumstances such as weather delays or unknown construction changes (such as unknown utility relocations). Each extension request will be reviewed and considered in two-week increments.

    c. The Public Works Department will review and may approve multiple closures of up to eight (8) weeks in duration for large complex construction projects.

        Note: Large complex construction projects with small-to-zero required setback from the public right-of-way (as adopted by the Kirkland Zoning Code) will typically require long-term Street Improvement closures in order to allow for parking structure excavation and construction, new street improvement and utility installation, and construction of the building. Many buildings with zero setbacks are required to provide covered pedestrian amenities such as awnings or other features which must be completed before the new sidewalk can be opened to pedestrians.

    d. If a development project has multiple right-of-way frontages, the long-term closure of Street Improvements on each frontage will be reviewed separately.

11. Failure to adhere to this policy will result in an immediate Stop Work Order, fines, or both as outlined in the Section 19.04.010 of the Kirkland Municipal Code.

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PRE-APPROVED PLANS POLICY

POLICY R-28:

Deleted

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PRE-APPROVED PLANS POLICY

Policy R-29: Guidelines for Temporary Traffic Control Plan Preparation

The purpose of these guidelines is to assist in the preparation of Temporary Traffic Control Plans (TTCPs) in the City of Kirkland.

An acceptable TTCP provides the guidance and warning necessary for the orderly and predictable movement of traffic through and around work zones thereby minimizing inconvenience to the public while providing safety and accessibility for all road users and workers.

A Temporary Traffic Control Plan (TTCP) is required for any project that may include work within traffic lanes, shoulders, sidewalks, crosswalks, parking and bicycle facilities:

- Along arterial and collector streets.
- Within 200 feet of signalized intersections.
- Central Business District.

In addition, a TTCP is required for:

- Projects that require full or partial road closures.
- Special Events (public or private) expected to have traffic impacts on City streets.
- Work on any street that Public Works deems necessary.

For projects or work activities that do not require a TTCP, the contractor is responsible for implementing appropriate traffic control per MUTCD (Manual of Uniform Traffic Control Devices) recommendations. TTCPs require a minimum two-week review period for each submittal by Public Works.

TTCP REQUIREMENTS:

This section specifies the content and format that need to be included on a TTCP for approval. Failure to include any of the following elements may require resubmittal of a TTCP:

1. Description of the work, sequence/phasing of work, address/location, work hours, and contact information.
2. Vicinity map showing the location of the project.
3. The TTCP drawings must use legible lettering and clear, contrasting symbols for viewing or printing and must indicate north arrow and scale.
4. Nearby streets with street names to assure proper orientation.
5. Posted speed limit.

6. Existing channelization including travel lanes, left/right turn bays, two-way left turn lanes, curbs and gutter, driveways, sidewalks, shoulders, bike lanes, parking lanes, median islands, traffic control devices including traffic signals and signs within the traffic control zone including areas affected by taper transition.
7. Existing bus stop locations within the extents of the traffic control zone.
8. Dimensions of all the work zone components, including:
    - **Advance Warning Area** - Where traffic first recognizes a work zone is approaching.
    - **Transition Area**- Where traffic is redirected from the normal travel path. Transitions can occur as a lane or shoulder closure, lane shifting, or an entirely new alignment via a crossover or on-site diversion. Use of the proper **Taper Length** (**L**) is recommended (See **Table 1**) to increase the safety performance of the transition area. There are four types of tapers: merging, shifting, shoulder, one-Lane/ two-way and downstream.
    - **Buffer space** - Provides protection for motorists and workers, typical length is 50 to 100 ft. There are two types of buffer spaces: longitudinal, which provides a recovery area for errant vehicles prior to reaching the work area, and lateral buffer or "shy distance, which is developed between the edge of the travel lane and the edge of the work area.
    - **Work Area** - Where work is being conducted.
    - **Termination area** – where traffic resumes normal path, typical length 50-100 ft
9. The TTCP drawings must show the type and size of all the appropriate TTC devices (signs, drums, cones, barricades, arrow panels, etc.) using MUTCD coding designation and sign names on each component of the work zone. The size of advanced warning signs shall be based on the posted speed (See **Table 2**); larger signs may be used if a smaller sign size is not available.
10. The TTCP drawings must show the spacing of signs, barricades, delineators, drum and cones and identify taper length. **Table 3** shows recommended sign spacing and **Table 4** shows recommended channelizing device spacing.
11. TTCP shall show all the traffic control devices required to guide pedestrian through or around the work zone. (See Guidance section below.)

Sample traffic control plans are available from WSDOT[1] and/or the MUTCD[2] to provide general guidance on what traffic control is required depending on the existing roadway geometry and work area. If used, these plans shall be modified by the applicant to ensure the proposed plan is site-specific.

GENERAL GUIDANCE ON TTCP PREPARATION:

1. TTCPs must conform to the most recent edition of the Manual of Uniform Traffic Control Devices (MUTCD) and any supplements.
2. TTCP must be site and project specific; therefore, typical drawings, taper tables and MUTCD illustrations, by themselves, are insufficient. All TTCP shall clearly depict all existing transportation facilities impacted by the work area and its corresponding traffic control setup including roads, bike lanes, sidewalks, transit stops, and driveways.
3. TTCPs must fit field conditions so field check of the project site is recommended prior to and during the preparation of a TTCP.
4. Based upon the complexity of a project, a suitable sequence of construction must be discussed with City Staff prior to fully developing TTCPs. Each construction phase shall be provided with appropriate

[1] https://wsdot.wa.gov/engineering-standards/all-manuals-and-standards/plan-sheet-library/work-zone-typical-traffic-control-plans-tcp
[2] https://mutcd.fhwa.dot.gov/index.htm

work zone traffic control and the impacts of utility relocation, traffic delays, detours and capacity restrictions must be considered and addressed.

5. No more than one TTCP shall be in use at any given time for a single project. If multiple TTCPs are submitted for review and approval at one time, then the TTCPs shall be clearly labelled as separate plans.
6. Previously approved TTCPs cannot be combined into a new TTCP without review and approval by Public Works.
7. Road and/or sidewalk closure must be evaluated by Public Works with respect to both the necessity as well as the impact of the closure to the public. Road closures shall require additional temporary traffic control including advance notification, approach and detour signage. The utilization of Portable Changeable Message Signs (PCMS) is recommended to convey information to the public on the proposed closure at least two weeks in advance.
8. Any work within the public right of way shall be restricted to the hours of 9:00 AM to 3:00 PM, Monday through Friday on arterial streets. Work on Holidays, weekends or at night shall not occur unless an exception is granted by Public Works.
9. Reduced work hours may be required for any project located near a school to minimize traffic impacts during pick-up and drop-off times.
10. Construction activity, loading and unloading of equipment shall not block any traffic lane other than those previously specified on the TTCP.
11. Any construction activity that involves lane closures at or within 150 feet of a signalized intersection will require a Uniformed Police Officer at the intersection, unless otherwise approved by the City of Kirkland Transportation Engineer.
12. Access shall be maintained to all driveways unless permission for closure is granted by the property owner or manager.
13. Accessibility for emergency vehicles shall be maintained at all times.
14. Pavement excavation shall be limited to a maximum of one travel lane at a time unless otherwise specified on the TTCP.
15. Temporary "No Parking" signs shall be placed 24 hours prior to commencing work.
16. All Temporary Traffic Control (TTC) devices shall be removed as soon as practical when they are no longer needed. Similarly, when work is suspended for short periods of time, TTC devices that are no longer necessary shall be removed or covered.
17. Two travel lanes (one for each approach) must be open at all times on arterial streets unless an exception is granted by Public Works.
18. TTCPs that require the presence of UPO (Uniform Police Officer) to manage traffic at signalized intersections need input from Public Works Traffic Group regarding whether or not the traffic signal will be operated in red flashing mode. Public Works Traffic Group must be notified at least one day in advance for any signal that will be placed in red flashing mode.
19. TTC shall be placed in locations that minimize impacts to sidewalk and bike lanes to the extent feasible.
20. Approved night work requires all traffic control devices to be retroreflective.

GUIDANCE ON TTCP PREPARATION FOR PEDESTRIANS AND BICYCLISTS:

21. Closures of pedestrian and bicycle facilities shall be minimized in duration and shall be reopened during non-work hours to the maximum extent feasible. Pedestrian and bicycle facilities include but are not limited to sidewalks, walkways, bicycle lanes (on-street or sidewalk-level), shared-use paths, and the Cross Kirkland Corridor (CKC).

22. Any work impacting sidewalks, pedestrian crossings and bike facilities shall be specified and appropriate traffic control measures, including any pedestrian detour routes, shall be included in the proposed TTCP.
23. Pedestrian detour routes shall only be considered when there is complete sidewalk along the entire detour route and shall utilize existing, marked crosswalks to divert pedestrians. Spotters may be required to assist with temporary pedestrian traffic control.
24. Bicycle detour routes are not acceptable. In the event that a marked bicycle lane must be temporarily closed for construction, both a "BIKE LANE ENDS" and "BIKES MERGE WITH TRAFFIC" sign shall be included in the traffic control sign series immediately after the W20-1 "ROAD WORK AHEAD" sign.
25. Any work requiring the temporary closure of a crosswalk equipped with Pedestrian Flags will require the flags to be removed and the flag holders bagged. Flags will be returned to holders when crosswalk access is restored.

NIGHT WORK:

Public works will require night work for TTCPs that have severe traffic impacts as determined by the Public Works Traffic Group. Typical night work hours are 9PM-5AM although extended hours may be permitted by Public Works. Night work shall always be required if two lanes of traffic (one for each approach) cannot be maintained on an arterial street unless an exception is granted by Public Works. Night work shall also be required if an evaluation of existing traffic volumes and patterns finds that any TTCP will functionally reduce an arterial or high-volume collector street to only one lane of traffic. The following configurations may also require night work:

- Work at signals that requires shifting one direction of traffic into a left turn pocket where a high volume of left turns occur
- Work at signals that requires shifting two directions of traffic into left turn pockets
- Work at signals that requires shifting a high-volume left-turn movement into a through lane on a single approach to the intersection
- Work at signals that requires shifting left-turning traffic into a through lane on multiple approaches to the intersection

If an initial TTCP review finds that night work will be required by Public Works, a pre-construction meeting shall be required to confirm the extents of the work required, the duration of work, anticipated noise levels, and any potential alternatives to mitigate the impact of night work to adjacent residents. If Public Works determines that there is no feasible alternative to night work, then an applicant may apply for a work hours exception and noise variance from the Planning department.

Table 1, Taper Length Criteria and Formula

Type of Taper	Taper Length	Taper Formula: $L=WS^2/60$, W(typical offset =12ft), S(Speed)		
		20 or 25 MPH	30MPH	35MPH
Merging	L	105-125′	150-180′	205-245
Shifting	0.5L	55-65′	75-90′	105-125′
Shoulder/Bike	0.33L	40′	60′	90′
One Lane/two-way Taper	50-100′	50′	60′	80′
Downstream	50-100′	50′	60′	80′

Table 2, Sign Sizing

Posted Speed Limit (MPH)	Sign Size
Not Allowed	24″x24″
20, 25, 30, or 35	36″x36″

Table 3, Sign Spacing

Posted Speed Limit (MPH)	Spacing (ft)
20 or 25	100
30	200
35	350

Table 4, Channelizing Device Spacing

Posted Speed Limit (MPH)	Taper Spacing (ft)	Tangent Spacing (ft)
20 or 25 or 30	20	40
35	30	60

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DEPARTMENT OF PUBLIC WORKS

PRE-APPROVED PLANS POLICY

Policy R-30: Street Light Installation Policy

Street lighting serves a number of purposes including illuminating travel ways for vehicles, pedestrians, and bicyclists. In some situations, street lights have been shown to have an impact on crime reduction or prevention. Conversely, light pollution and/or glare can disrupt natural areas, impact views, and lead to higher energy and maintenance costs. Consideration of various factors will impact the decision of whether or not to install street lights. This policy helps the public and City staff understand the process for installing individual street lights within Kirkland. New street lights will be LEDs, which have lower power consumption and maintenance costs over time than HPS (High Pressure Sodium).

The City also replaces existing sodium vapor street lights with LEDs upon request. This policy assists the public and City staff in understanding the process for replacing HPS with LED street lights.

New Street Lights

Residents, businesses, or groups of individuals may petition the City for installation of street lights on public streets or right of way. Two possible scenarios for requesting new street lights are:

1. Where an existing power pole exists
2. Where a new pole is required

The process for each scenario is outlined below.

1. Utility pole currently exists

The process to have a new street light installed on an existing pole is as follows:

a) Proponent will identify the location of the utility pole to be used for the proposed street light, document the pole ID #(Number(s)), and provide this information to Public Works staff via phone call (425-587-3800), email, or letter. In general, new street lights can be considered if street lights do not already exist within 100 feet of the proposed new street light location.
b) Proponent will contact impacted residents and obtain agreement for installation of the new street light. All impacted residents (those within 100 feet of the new light location) must agree with the installation. Residents whose view will be impacted by the proposed light should be included even if they are beyond the 100-foot buffer.
c) Proponent will submit the signed **Street Light Petition 1** to Public Works staff via fax (425-587- 3807) or email;
d) Public Works Staff will verify the information and contact Puget Sound Energy (PSE) to request the installation of the new street light. PSE will make a field check the power pole and complete an illumination analysis if the pole can support a street light. PSE will submit a cost estimate and design for the City's approval.

e) If a street light can be installed at a reasonable cost on an existing utility pole, the City will pay PSE to install the new street light and also pay ongoing monthly costs.
f) Once the new street light cost is final, the City will approve PSE to install the new street light. Installation can take up to 60 to 90 days depending on PSE's workload.
g) If PSE decides a street light cannot be added to the existing power pole and a new pole is required, the City will refer the proponent to the process described in Scenario 2.

2. Utility pole does not currently exist

For this scenario, proposed street lights need to be installed on new poles and require underground wiring from an existing source that PSE identifies. **The costs involved with pole installation are the responsibility of the proponent(s).** The process to have a new street light and pole installed is:

a) Proponent will identify the proposed location for the new light and provide this information to Public Works staff via phone call (425-587-3800), email, or letter.
b) Proponent will contact impacted residents and obtain agreement for installation of the new pole and street light. All impacted residents (those within 100 feet of the proposed location) must agree with the installation. Residents whose view will be impacted by the proposed light should be included even if they are beyond the 100-foot buffer.
c) Proponent will submit the signed **Street Light Petition 2** to Public Works staff via fax (425-587- 3807) or email, and acknowledge they understand they are responsible for paying for the new street light and pole.
d) Public Works staff will contact PSE to request a cost estimate and will then advise the proponent about the cost of the pole/light installation.
e) If proponent accepts the cost, proponent will make the necessary arrangements directly with PSE for the installation of the new pole and street light within public right of way. Once the light is installed, the City pays the ongoing monthly cost directly to PSE.

3. Upgrade Existing HPS to LED's Street Lights

The City sometimes receives requests to replace existing HPS lights with LEDs. The following describes a process for small upgrade requests of one to three street lights where the proponent resides. The City does not have a dedicated budget for city-wide or even neighborhood-wide upgrades to LED street lights. Large replacement requests shall be considered separately in the context of priority and available budget.

The process to upgrade an HPS street light to a LED is as follows:

a) Proponent will provide the location and identification numbers of the street light pole for upgrading to public works staff via phone call (425-587-3800), email, or letter.
b) Public Works staff will check the proposed location and notify the proponent about the adequacy of the proposed location.
c) Proponent will contact impacted residents and obtain agreement for upgrade of the street light to LED. All impacted residents (those within 100 feet of the proposed location) must agree with the installation. Residents whose view will be impacted by the proposed light should be included even if they are beyond the 100-foot buffer.
d) Proponent will submit the signed **Street Light Petition 3** to Public Works staff via fax (425-587- 3807) or email;
e) Public Works staff will request a cost quote from PSE for upgrading the street light.
f) If PSE's cost quote is reasonable, Public Works staff will inform the proponent and make the necessary arrangements with PSE for the upgrade. Once the light is installed, the City continues to pay the ongoing monthly cost directly to PSE.

g) After installation, if a resident objects to the glare, Public Works will consider requesting PSE install a shield. Please note the City will only agree to installing a back shield for residents behind the street light. The City typically does not allow front shields to be installed because of the potential for these shields to reduce illumination of the street right of way.

City of Kirkland

Department of Public Works

Street Light Petition 1

Street Light on existing PSE Pole

To: Transportation Engineer/Neighborhood Traffic Control Coordinator

We, the undersigned, residing near_____, state that we have no objection to the installation of a street light on _____at/near
(Address/Location)_____

We request the City of Kirkland to install the street light based on its street light installation policy R-30.

Once installed, we understand the City of Kirkland will pay the ongoing monthly cost of the new street light.

We understand that if additional preparation work is required, the City will notify us of the work and cost estimate and confirm that we are willing to pay the extra cost before directing PSE to install the street light.

Name	Address/Phone/e-mail	Signature

City of Kirkland

Department of Public Works

Street Light Petition 2

Street Light on a new PSE Pole

To: Transportation Engineer/Neighborhood Traffic Control Coordinator

We, the undersigned, residing near_____, state that we have no objection to the installation of a street light on _____at/near
(Address/Location)_____

We request the City of Kirkland approve the proposed street light on a new pole based on its street light installation policy R-30. We understand the City will obtain a cost estimate from PSE, notify the proponent of the estimate and confirm the proponent will pay the cost of installation before the City gives final approval for street light and pole installation. The proponent will arrange and pay PSE for the street light installation.

Once installed, we understand the City of Kirkland will pay the ongoing monthly cost of the light.

Name	Address/Phone	Signature

City of Kirkland

Department of Public Works

Street Light Petition 3

Upgrade Existing HPS Street Light to LED

To: Transportation Engineer/Neighborhood Traffic Control Coordinator

We, the undersigned, residing near_____, state that we have no objection to the upgrade of an existing HPS street light to LED on _____at/near (Address/Location)_____

We request the City of Kirkland upgrade the proposed street light to LED based on its street light installation policy R-30.

Once installed, we understand the City of Kirkland will pay the ongoing monthly cost of the light.

Name	Address/Phone	Signature

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DEPARTMENT OF PUBLIC WORKS

PRE-APPROVED PLANS POLICY

Policy R-31: Policy for Installation of Accessible Pedestrian Signals and Pushbuttons

Intent:

It is the City's intention to be consistent with the most current version of the Public Right of Way Access Guidelines (PROWAG) in the provision of and location of accessible pedestrian signals and pushbuttons[1] (APS) at traffic signals. Further guidance is available in 28 CFR Part 36 and MUTCD section 4E.09.

Purpose:

The purpose of this policy is to establish reasonable and consistent policy for installing APS.

Scope (items presented in no particular order):

1. *Requests.* Requests for APS signals from the public will be responded to in a timely manner[2] and the consideration for installation will be done in accordance with applicable sections of the ADA.

2. *New construction:* New construction of traffic signal projects requires installation of APS and associated accessible features when pedestrian signals are installed.

3. *Curb ramp replacement at traffic signals:* Altering or replacing curb ramps does not require installation of APS. The altered or new curb ramps shall install poles at accessible locations using existing pedestrian push buttons.

4. *Minor work and routine maintenance at traffic signals:* Projects, including but not limited to: emergency repairs[3], signal timing adjustments (including signal phasing or coordination changes), vehicular detection installation and repairs, installation and repair of CCTV or other cameras, vehicular signal head upgrades and repairs[4], and repair of pedestrian detection do not require installation of APS and associated accessible features.

   Signal controller software upgrades and repairs and/or cabinet upgrades and repairs that do not alter the operation or display of pedestrian signals do not require installation of APS and associated accessible features.

[1] An **Accessible Pedestrian Signal and pedestrian pushbutton** is an integrated device that communicates information about the WALK and DON'T WALK intervals at signalized intersections in non-visual formats (i.e., audible tones and vibrotactile surfaces) to pedestrians who are blind or have low vision.

[2] Timely manner means, at minimum, discussing the proposed timeframe with the requestor and agreement on a date for installation of APS

[3] Emergency repairs include repairs such as the replacement of a traffic control signal component with a replacement component that is similar in physical appearance and operation

[4] All signals maintained by the City of Kirkland have countdown pedestrian signal heads.

5. *Other traffic signal projects:* For traffic signal improvement projects that are not new construction, minor work and routine maintenance or curb ramp replacement projects:

    A. Where the project scope, includes the alteration, installation or replacement of any pole to which a pedestrian push button is attached, installation of APS on poles in accessible locations is required. Relocation of poles may be required to achieve accessiblity. Construction or alteration of curb ramps is not required.

    B. Where the project scope, does not include the alteration, installation or replacement of any pole to which a pedestrian push button is attached, installation of APS at existing push button locations is required. Relocation of poles, construction or alteration of curb ramps, etc. is not required.

    C. Signal controller software upgrades and repairs and/or cabinet upgrades and repairs that alter the operation or display of pedestrian signals require installation of APS at existing push button locations. Relocation of poles, construction or alteration of curb ramps, etc. is not required.

    D. Adding or revising pedestrian signal heads or pedestrian detectors require installation of APS at existing push button locations. Relocation of poles, construction or alteration of curb ramps, etc. is not required.

    E. In addition to the areas above, APS will be installed through fulfillment of the city's obligations to complete its ADA Transition Plan.

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DEPARTMENT OF PUBLIC WORKS

PRE-APPROVED PLANS POLICY

Policy R-32: Marking of On-Street Bike Lane as Part of a Resurfacing Project Policy

These guidelines are for the striping of non-separated bike lanes for a resurfacing project. The guidelines are intended to allow flexibility in design, since there are often competing interests that will have to be balanced to provide the best design. AASHTO and NACTO Guidelines should be consulted in the design of bike lanes.

1. **Space for Bikes and Pedestrians**
    a. Consider removing and/or narrowing parking and/or car travel lanes.
    b. Install bicycle facilities on both sides of the roadway as long as there is a walkway on one side.
    c. Design decisions based on:
        i. Volumes of various modes
        ii. Improvement of the quality of biking and walking facilities possible with removal
        iii. Any other appropriate considerations.
    d. Outreach/notification is required when parking or car lanes are proposed for removal.
2. **Area for Walking**
    a. If a walkway (sidewalk or paved shoulder) exists along one side of a street segment, there is no need to provide a walkway on the other side of the street segment.
    b. If there is no sidewalk on either side of the street, provide a 5′ wide (min.) walkway on at least one side of the street.
    c. In other areas, usually provide a walkway (as in b. above), but consider the length of missing walkway, continuity of bicycle and pedestrian facilities on adjacent parts of the street, crosswalks that connect to walkways, etc.
    d. Do not place pavement markings in shared bicycle/walkway areas.
    e. If width of shared bicycle/walkway area is 7′ or wider, place "No Parking" signs.
3. **Area for Biking**

Bike Lane Design Guidelines					
Condition	*Minimum Bike Lane Width*	*Available width for Bike Facility*	*Suggested Bike Travel Lane Width*[a]	*Bike Lane/Travel Lane Buffer*[b,c]	*Pre-approved Plan No.*
No curbs or other barriers	4 feet	4′	4′	0′	CK-R.35a
		4′ < w < 6′	4′ to 6′	0′	CK-R.35a
		6′ ≤ w < 7′	4′ to 5′	2′	CK-R.35b
		7′ ≤ w < 8′	5′ to 6.5′	3′	CK-R.35b
		8′ ≤ w < 9.5′	5′ to 6.5′	3′	CK-R.35b
		≥9.5′ w/o Parking	6.5′	3′	CK-R.35b
		≥9.5′ w/ Parking[d]	5′	3′	CK-R.35b
Curb or other barriers	5 feet	5′ ≤ w < 7′	5′ ≤ w < 7′	0′	CK-R.35a
		7′ ≤ w < 8′	5′ ≤ w < 6′	2′	CK-R.35b
		8′ ≤ w < 9.5′	5′ ≤ w < 6.5′	3′	CK-R.35b
		≥9.5′ w/o Parking	6.5′	3′	CK-R.35b
		≥9.5′ w/ Parking[d]	5′	3′	CK-R.35b

a. Bike travel lane width measured from pavement edge, face of curb or face of barrier to the center of bike lane marking.
b. Buffer is measured from the center to center of lane markings.
c. Buffers are cross-hatched. Interior diagonal cross-hatching consists of 4" wide white lines angled at 45 degrees and striped at 20-foot intervals.
d. Use 2' to 3' wide parking buffer.

4. **General Guidelines**
   a. Car lane widths: 10 feet typical, 12 feet maximum
   b. Typical taper rate for bike lane & buffer is 35:1
   c. Car parking lane width with bike lane: 7' minimum, 8' is desirable
   d. 6" white lines delineate bike lanes and buffers
   e. Consistent lane widths and buffers for cars and bikes between both directions of travel, symmetric around the center line of pavement and along roadway segment are desirable.
   f. Maintain consistent travel lane width, then buffer width, and vary bike lane width.
   g. Extruded curb can be used between a walkway and a bike lane. It is not usually used between a car lane and bike lane.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-33 - Crosswalk Location Evaluation Policy

1. Policy Objectives

The City of Kirkland is committed to implementing a safe, efficient, and inclusive multimodal transportation system. This system includes pedestrian facilities such as crosswalks. This policy establishes evaluation procedures, based on objective criteria, to help identify crosswalk locations that meet basic operational and safety requirements. In addition, this policy identifies appropriate safety enhancements at uncontrolled marked crosswalks based upon roadway geometrics, traffic volumes and speeds, traffic operation conditions and pedestrian crossing demand. Lastly, this policy determines striping requirements for controlled crosswalk locations.

The need, location, and safety enhancements for new crosswalks should be evaluated using engineering judgement. Exceptions to specific conditions in this policy may be considered. Requests for exceptions should be provided in writing and include details of an engineering investigation and documentation of justification for review by City of Kirkland Transportation Staff.

The fact that crosswalk evaluation guidance is presented in this policy does not mean that the City of Kirkland is required to modify or upgrade existing locations to meet current criteria. This policy is intended for use with public and private new construction and significant alterations to the City's existing infrastructure, excluding regular maintenance activities.

2. Standard Practice / Technical Sources

The City of Kirkland follows best practice guidelines for the implementation of pedestrian crossings. The technical sources on which this policy is based include:

2.1 Manual of Uniform Traffic Control Devices (MUTCD): The MUTCD is published by the Federal Highway Administration (FHWA). It establishes national standards and guidelines for the implementation of traffic control devices including signs, markings, and traffic signals.

2.2 Chapter 20 in the Highway Capacity Manual (HCM): The HCM is published by the Transportation Research Board (TRB). It establishes methodologies to determine the Capacity and Level of Service (LOS) of various types of transportation facilities.

2.3 National Cooperative Highway Research Program (NCHRP) 562 – Improving Pedestrian Safety at Unsignalized Crossings. The NCHRP 562 provides recommendations for the selection of pedestrian safety enhancements at uncontrolled marked crosswalks based on pedestrian volumes, street geometry, and prevailing traffic operation conditions such as traffic volumes and speed.

2.4 AASHTO (American Association of Highways Transportation Officials) A Policy on Geometric Design for Highways and Streets. This is commonly referred to as AASHTO "Green Book"

and it encompasses the current geometric design and research practice for highways, local streets, and multimodal facilities.

2.5 AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities Second Edition. This guide provides information on the planning, design, and operation of pedestrian facilities along streets and highways.

3. Definitions

3.1 Uncontrolled marked crosswalks: These are marked crosswalks located at midblock locations or at intersections and are not controlled by either traffic signals or stop signs. Drivers are required to stop for pedestrians at these facilities. Depending on pedestrian volumes and prevailing traffic/geometric conditions at the crosswalk location, safety enhancements such as those listed in section 4.3 below may be required.

3.2 Controlled marked crosswalks: these are marked crosswalks controlled by stop signs or traffic signals.

3.3 Controlled unmarked crosswalks: these are crosswalks locations (without crosswalk lines) controlled by stop signs.

3.4 Uncontrolled unmarked crosswalk: this refers to the areas intended for pedestrian circulation located on each leg of an intersection. RCW 46.04.160 defines an unmarked crosswalk as "the portion of the roadway between the intersection area and a prolongation or connection of the farthest sidewalk line or in the event there are no sidewalks then between the intersection area and a line ten feet therefrom, except as modified by a marked crosswalk." RCW 46.61.235 establishes that pedestrians have the right of way whenever crossing at unmarked crosswalks.

3.5 School Crosswalks: These are uncontrolled marked crosswalks typically located on school walk routes and at/within the vicinity of school zones. Some school crosswalks may be controlled by crossing guards during school peak periods.

4. New Uncontrolled Marked Crosswalks

4.1. Evaluation Criteria: The following criteria apply to marking uncontrolled crosswalks at midblock locations and/or intersections.

4.1.1 **Stopping Sight Distance (SSD**). In order to make sure that pedestrians can be seen by oncoming vehicles, uncontrolled crosswalks shall only be marked if available SSD is equal to or greater than the values shown in Table 4.1. These SSD values are from Chapter 3 in AASHTO A Policy Geometric Design of Highways and Streets, 2018 Edition. SSD is based on the posted speed limit or the 85th percentile speed as measured in a recent traffic study, whichever is higher. **Marked crosswalks shall not be installed at locations that do not meet SSD criteria.**

Table 4.1: Stopping Sight Distance Recommended Values

Speed Limit or 85th Percentile Speed (miles per hour)	Stopping Sight Distance (feet)
25	155
30	200
35	250
40	305
45	360

4.1.2 Connectivity to Sidewalks, Trails and/or Paved Shoulders/walkways. **Crosswalks should not be marked unless the crosswalks connect to a designated walkway**.

4.1.3 Illumination at crosswalks. Lighting analysis is required to identify existing deficiencies and to determine lighting improvements at new crosswalks located at midblock or at intersections. Required lighting level at uncontrolled marked crosswalks is specified in City Policy R-40, Lighting Design Guidelines. **Crosswalks shall not be marked unless lighting requirements are met. Lighting improvements may be required as part of a new marked crosswalk installation.**

4.1.4 ADA Compliance. Before locating new crosswalks, appropriate accommodations for accessibility shall be in place, such as curb ramps with compliant landing depth.

4.1.5 Proximity to bus stops/other pedestrian generators. Crosswalks should be located so that they provide opportunities to minimize out of direction travel and to channel multiple pedestrian desire lines to a single crossing location to reach destinations such as bus stops, schools, parks, multifamily, mixed-use, or commercial developments.

4.1.6 Turning Vehicle Impacts. To reduce the impacts of turning vehicles, new mid-block crosswalks should be located at least 100 ft away from side streets and major (high-volume) driveways. Crosswalks located at or near T-intersections should be offset to the driver's left of the minor street or driveway approach. See Figure A below for clarification.

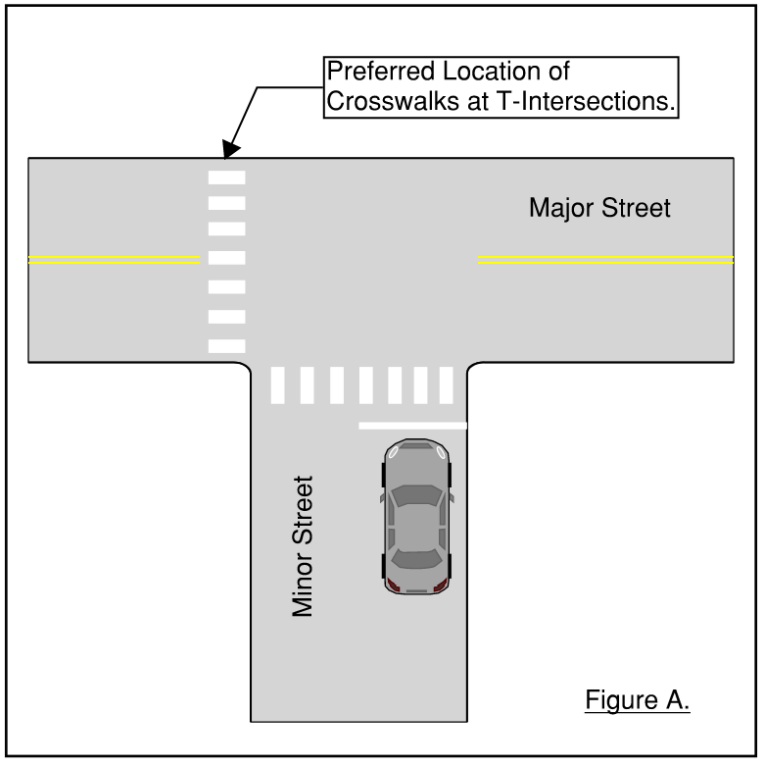

Figure A.

4.1.7 Proximity to signalized intersection: Crosswalks should not be installed within 400 ft of signalized intersections, as measured from the nearest marked crosswalk at the intersection, or less than 200 feet from the opening of a left-turn in advance of a signalized intersection. This is to prevent queue spill-back patterns from blocking the crosswalk or obscuring the view of the crosswalk to oncoming traffic.

4.1.8 Proximity to existing uncontrolled marked crosswalks. **Crosswalks should not be installed within 200 ft of an existing uncontrolled marked crosswalk**.

4.1.9 Minimum AADT (Average Annual Daily Traffic): uncontrolled marked crosswalks should not be installed on streets carrying less than 3,000 AADT unless serving a transit route, greenway, school walk route, or other location with high pedestrian volumes. In some cases, ADT counts can also be used; however, a seasonal factor may need to be applied due to normal variations of traffic volumes. Coordinate use of ADT volumes with City of Kirkland Transportation Division Staff for approval.

4.1.10 Pedestrian volumes. Minimum peak-period pedestrian volume thresholds that need to be met in order to warrant installation of uncontrolled marked crosswalks are depicted in Table 4.2 below. **New crosswalk locations should meet the minimum pedestrian volume thresholds shown in Table 4.2 below.** Pedestrian volumes can be obtained via observed counts or projected pedestrian demand in the case of new developments or induced pedestrian demand.

Table 4.2 Minimum Peak- Period Volumes (*)

Average Pedestrian Hourly Volumes	Period
20 Pedestrian/Hour	One-Hour
18 Pedestrian /Hour	Two-Hour
15 Pedestrian/ Hour	Three-Hour
(*) Minimum Pedestrian Volumes (total of both approaches) Recommended in NCHRP 562	

4.2. Evaluation Procedure

The decision of whether to mark a new crosswalk ultimately lies with City Staff. This evaluation procedure is intended to be used by City staff and design professionals to create a safer crossing environment. The evaluation procedure for new marked crosswalks includes the following steps.

4.2.1 Perform a field investigation to determine available SSD and compare it to the required SSD value shown in Table 4.1.

4.2.2 Perform a field visit to assess existing conditions including road geometrics, presence of sidewalks/paved walkway, street lighting, pedestrian generators, traffic signals, signs, uncontrolled marked crosswalks, and driveways located within the vicinity of the proposed crosswalk. The results of the assessment will determine if criteria 4.1.2 to 4.1.8 are met.

4.2.3 Determine if minimum peak-period pedestrian volume shown in Table 4.2 above is met. Pedestrian counts may need to be performed if recent pedestrian counts are not available (within the last calendar year). Pedestrian counts should be performed in average weather conditions (i.e., no major wind, snow, or ice events).

4.2.4 Determine most recent AADT count at the proposed location. The City's AADT information is publicly available at the links below.

Spreadsheet: https://www.kirklandwa.gov/Government/Departments/Public-Works-Department/Transportation/Data-and-Resources-Transportation-Division/Traffic-Count-and-Crash-Analysis-Summaries

Interactive GIS map:
https://experience.arcgis.com/experience/6107b9c27c1b43718e685a73307281c4

NTCP ADT counts (if approved for use by Transportation Staff):
https://kirklandwa.maps.arcgis.com/apps/instant/sidebar/index.html?appid=6b7da228774248bcaa8179ae5dc83329

4.2.5 Use Form in Appendix A to document evaluation results. Installation of new uncontrolled marked crosswalk should only be considered if all the criteria are met. Should the criteria be met only partially, provisions should be made to achieve compliance with said requirements prior to installation, or a documented engineering investigation and design exception shall be submitted to City Transportation Staff for review and approval.

4.2.6 Identify required pedestrian safety enhancements using Table 4.3 below. The installation of markings and signs at an uncontrolled crossing location does not necessarily result in vehicles stopping for pedestrians; therefore, depending on the specific roadway and traffic conditions prevailing at the location, additional pedestrian safety enhancements may be required, including traffic control devices such as those listed below.

4.3. **Pedestrian Safety Enhancements for Both Existing and New Crosswalks**

New uncontrolled marked crosswalks shall comply with striping and signage requirements per Parts 2 and 3 in the MUTCD. In addition to the basic striping and signage requirements, pedestrian safety enhancements such as those described below may be required to mitigate the risks associated with the specific characteristics of the location. Table 4.3 identifies appropriate pedestrian safety enhancements based upon the street functional classification, posted speed limit or 85th percentile speed, AADT, and street geometrics. In selecting appropriate improvements, the crash history and specific pedestrian safety needs associated with the crosswalk location should also be considered.

① **Basic MUTCD striping and signage per MUTCD Parts 2 and 3**.

② **Pedestrian Crossing Flags**: These are flags, usually orange, that are held by pedestrians crossing or waiting to cross. The flags are typically stored in sign-mounted holders on both sides of the street. City of Kirkland Policy R-22 establishes specific requirements for installation of pedestrian flags at uncontrolled marked crosswalk locations.

③ **Raised Crosswalks (RC):** These are elevated above the surface of the adjacent travel lanes to increase driver's attention of pedestrians at the crosswalk and slow down approaching vehicles. RCs also function as an extension of the sidewalk, allowing pedestrians to cross at a constant grade without the need of curb ramps. Raised crosswalks are appropriate on local and collector streets with an AADT of less than 4,000 vehicles per day. Because they are similar to speed cushions, installation of raised crosswalks should follow the guidance for "Phase Three" high-intervention traffic calming in the City's Neighborhood Traffic Control Program Policy R-20.
More information can be found at this link:
https://www.kirklandwa.gov/Government/Departments/Public-Works-Department/Transportation/Getting-Around-Transportation-Division/Neighborhood-Traffic-Control

④ **Curb Extensions (Bulb-Outs):** Curb extensions provide pedestrian refuge, reduce the

overall street crossing distance, and improve sight distance for both drivers and pedestrians. Only applicable when on-street parking is present. It is preferred that curb extensions be hardscaped concrete curb and sidewalk; however, curb extensions using pavement markings, delineators, and/or other channelization devices may be considered with approval from City Transportation Staff.

⑤ **Advance Stop Bar and Sign**: Advance stop lines are recommended on multi-lane roads to ensure that pedestrians are visible to drivers in all lanes. Per MUTCD, at midblock uncontrolled crossing locations advance stop lines should be placed adjacent to the "Stop Here for Pedestrians" (R1-5b) sign located 20 to 50 ft in advance of the nearest crosswalk edge lines.

⑥ **Pedestrian Median Refuge Islands:** These are treatments that allow pedestrians to cross one direction of travel at a time. They are typically raised above the roadway surface, and in some cases, they are offset so the crossing pedestrians view/face the second direction of street traffic. The AASHTO recommended minimum crossing width is 6 ft, but 8 ft is preferable to accommodate groups of pedestrians and wheeled devices including bicycles.

⑦ **Rectangular Rapid Flashing Beacons (RRFBs**): RRFBs consist of rectangular-shaped yellow indicators with a light- emitting diode (LED) -array-based light source that flashes when activated. They are placed on both side of a crosswalk, under the pedestrian crossing sign and above the diagonal downward arrow plaque pointing at the crossing. Refer to City of Kirkland Policy R-24 for more information.

⑧ **High Intensity Activated Crosswalk (HAWK):** A HAWK, also known as a pedestrian hybrid beacon, is a pedestrian activated traffic control device that functions as a traffic signal providing yellow and red indications. Chapter 4.J in the MUTCD provides guidance for the implementation of HAWKs. The main objective of a HAWK is to stop vehicles to allow pedestrians to cross while also allowing vehicles to proceed as soon as the pedestrians have cleared the roadway. Installation of HAWK signals must be justified based on a traffic engineering study. Pedestrian signals can also be considered in this category for locations with geometric constraints that would render a HAWK signal infeasible based on an engineering study.

	Table 4.3– Safety Enhancements at Uncontrolled Marked Crosswalk Locations (*)									
	AADT ≤ 4,000	**4,000 < AADT < 9,000**			**9,000 ≤ AADT ≤ 15,000**			**AADT > 15,000**		
Street Functional Classification	**Local - Collector**	**Collector – Minor Arterial**			**Minor – Principal Arterial**			**Principal Arterial**		
Posted Speed Limit or 85th Percentile Speed (mph), whichever is higher	25 or below	<30	30 - 35	≥35	<30	30 - 35	≥35	<30	30 - 35	≥35
Two Lanes (One lane on each direction, one way street)	① **②** **③**	① ② ④ **⑦**	① ② ④ **⑦**	① ② ④ ⑦	① ④ **⑦**	① ④ **⑦**	① ④ ⑦	① ④ **⑦**	① ④ ⑦	① ④ ⑦ **⑧**
Three Lanes with Raised Median Island (One lane on each direction plus median in two-way left-turn lane)	NA	① ② ④ ⑤ **⑦**	① ② ④ ⑤ **⑦**	① ② ④ ⑤ ⑦	① ② ④ ⑤ **⑦**	① ② ④ ⑤ **⑦**	① ④ ⑤ ⑦	① ④ ⑤ ⑦	① ④ ⑤ ⑦	① ④ ⑤ ⑦ **⑧**
Three Lanes without Raised Median (One lane on each direction with two-way left turn, no median)	NA	① ② ④ ⑤ **⑦**	① ② ④ ⑤ **⑦**	① ② ④ ⑤ ⑦	① ④ ⑤ ⑥ **⑦**	① ④ ⑤ ⑥ **⑦**	① ④ ⑤ ⑥ ⑦	① ④ ⑤ ⑥ ⑦	① ④ ⑤ ⑥ ⑦	① ④ ⑤ ⑥ ⑦ **⑧**
Four Lanes with Raised Median (Two lanes on each direction with median)	NA	NA	NA	NA	① ④ ⑤ **⑦**	① ④ ⑤ ⑦	① ④ ⑤ ⑦ **⑧**	① ④ ⑤ ⑦	① ④ ⑤ ⑦ **⑧**	① ④ ⑤ **⑧**
Four Lanes without Raised Median (Two lanes on each direction, no median)	NA	NA	NA	NA	① ④ ⑤ ⑥ **⑦**	① ④ ⑤ ⑥ ⑦	① ④ ⑤ ⑦ **⑧**	① ④ ⑤ ⑥ ⑦	① ④ ⑤ ⑦ **⑧**	① ④ ⑤ ⑥ ⑧
(*) Improvements in bold characters and highlighted in yellow are considered optional.										

5. Controlled Crosswalk Striping Requirements

5.1. Signalized Intersections: Pedestrian crosswalk striping and stop bars are required at signalized intersections and must conform with City Pre-Approved Plan CK-R.28.

5.2. All Way Stop: Pedestrian crosswalk striping and stop bars are required at ALL-Way Stop controlled intersections and must conform with City Pre-Approved Plan CK-R.28.

5.3. Stop-controlled intersections:

5.3.1 Crosswalk striping and stop bars are required at the stop-controlled approaches on collector streets intersecting arterials.

5.3.2 Crosswalk striping and stop bars are required at the stop-controlled approaches on local streets intersecting arterials.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-34: ON-STREET PARKING

A. ON STREET PARKING DESIGN

On-Street Parking Stalls				
	Width	**Length**	**Curb Radius**	**Distance from Driveway**
End Stall	7-8 feet	20 feet	15 feet (see CK-R.24)	30 feet
Center Stalls	7-8 feet	22 feet	N/A	N/A

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-34A: ON-STREET PARKING

I. ON STREET PARALLEL PARKING DESIGN

On-Street Parking Stalls				
	Width	**Length**	**Curb Radius**	**Distance from Driveway**
End Stall	7-8 feet	20 feet	15 feet (see CK-R.24)	30 feet
Center Stalls	7-8 feet	22 feet	N/A	N/A

II. ON STREET ADA PARKING REQUIREMENTS

Any modification to on-street parking must align with the City's commitment to provide sufficient on-street accessible (ADA) parking spaces. Federal guidelines require that accessible parking spaces be provided on block perimeters where on-street marked or metered parking is provided (see U.S. Access Board's Proposed Rights-of-Way Guidelines (PROWAG), Section R309 "On-Street Parking Spaces"). On such block perimeters, the number of accessible spaces provided must meet the minimums shown in Table 1 or as required by current federal ADA guidelines, whichever is greater.

Table 1: On-Street Accessible Parking Spaces	
Total Number of Marked or Metered Parking Spaces on the Block Perimeter	**Minimum Required Number of Accessible Parking Spaces**
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 and over	4% of total

If the applicant's development will affect the quantity of marked or metered on-street parking spaces, the applicant may be required to convert existing standard parking spaces to accessible spaces. For example, if the block perimeter has 22 marked or metered spaces, and the development involves adding 6 marked or metered spaces, the new total would be 28 marked or metered spaces. Abiding by the requirements in Table 1, the block perimeter would need 2 accessible on-street parking spaces.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-34B: ON-STREET PARKING IMPACT STUDY

General - The City of Kirkland requires adequate parking to be provided on-site for all land uses. The Kirkland Zoning Code specifies parking requirements for many uses. The Planning Department can help an applicant determine their use(s) and parking requirements. For a modification to a decrease in the required number of spaces may be granted if the number of spaces proposed is documented by an adequate and thorough parking demand and on-street parking impact studies to be sufficient to fully serve the use. The study shall be prepared by a licensed transportation engineer or other qualified professional and shall analyze the operational characteristics of the proposed use which justify a parking reduction. The scope of the study shall be proposed by the applicant's transportation engineer and approved by the City Transportation Engineer. It is recommended that the applicant's engineer contact the City Transportation Engineer to determine the scope of the parking study.

I. Define Study Area

A. Maximum of 800 feet (2-1/2 blocks) walking distance

B. Minimum of 200 feet from the project site (one block distance)

C. Consider the constraints of major arterials and geographic boundaries

II. Map Legal Parking Supply by Block Face

A. Use techniques shown in Sample Data Sheet for measuring legal parking supply.

III. Define Study Time (exclude holiday week)

A. The parking study should occur between 6AM and 6PM or as defined by the City Transportation Engineer. The scope and study period must be approved by the City Transportation Engineer. Typical study scope:

a. 3 consecutive days minimum, 5 days preferred (same week, non-holiday week)

Tues, Wed & Thurs or Mon to Friday

b. Typical times: 6AM, 7AM, 8AM, 9AM, 11AM, 1PM, 4PM, 5PM & 6PM or as required by the City Transportation Engineer (one sweep each hour)

c. For special use with weekend impact, collect parking data for 3 consecutive weekends (Saturday and Sunday)

IV. Document Existing Conditions

A. Record the number of parked vehicles by block face and time

B. Calculate the parking utilization by block face for existing conditions

$$\frac{\text{(\# of vehicles parked)}}{\text{(\# of legal parking supply)}} \times 100 = \text{\% Parking Utilization}$$

V. Document Cumulative Project Impact

A. Estimate the average and peak parking demand of project, using acceptable source (source must be approved by the City Transportation Engineer). The demand should include parking needs of tenants/employees and guests. Empirical parking data should be provided instead of theoretical estimation.

B. Estimate overflow parking for the proposed project (estimated parking demand minus the parking supply).

C. Identify any other proposed developments in the vicinity that would impact the on-street parking supply (the City Transportation Engineer will provide the information).

D. Calculate the future average and peak parking utilization rates for the study area.

VI. Report Preparation

A. Document all assumptions.

B. Provide all backup data including count sheets, maps and any relevant data.

C. Identify the block faces for the on-street parking data on a map showing the number of parking available.

D. Provide the parking supply and utilization for each block face.

E. Summarize the results/impacts.

F. Proposed mitigation if applicable.

VII. Submit one hard copy and an electronic copy of the parking analysis report and all backup data.

VIII. Sample Data Sheet.

On-Street Parking Utilization Study SAMPLE DATA SHEET

Date	Nov. 12, 2008				
Street	10th Avenue				
Segment	Houghton Street to Juanita Lane				
Side	West				
sample measurements					
0 feet	2 start of measurement (back of sidewalk); if no sidewalk, 10 feet behind the edge of pavement.				
			Clearance Area	**# of space**	**Measure Direction**
	S 3	stop sign			1. direction of traffic is always toward the top of page
					2. edge of sidewalk (SW) starts the measurements
					3. Identify presence of stop sign or yield sign with (S)
					4. Measure between of curb radius tangent if no sidewalk
					5. Identify edge of driveway and using (DW)
					6. Measurement to and identify fire hydrant
					7. Identification of special zone: loading zone (LZ), no parking zone (NP), time limit zone (TL), parking meter (PM)
	A	stop sign clearance	70 feet		8. Measurement of edges of special zone
Direction of traffic		sign clearance	-30 feet		9. Note any irregularities
		driveway clearance	-10 feet		
		Clearance	**30 feet**	**1**	
					Distance **Measured From**
					20 feet edge of sidewalk (SW), no sign (NS) (beginning of block on direction of traffic)
					30 feet stop sign or yield sign
					20 feet Crosswalk
70 feet	4				20 feet driveway entrance to any fire station on both side of street unless posted
					30 feet of the nearest rail of a railroad crossing or as posted
	Driveway 5				5 feet each side of driveway
					15 feet fire hydrant, Hyd
80 feet	6				0 feet special zone (loading, no parking…)
			168 feet		0 feet edge of sidewalk (SW) at end of block
			-80 feet		
			88 feet		
	B	driveway clearance	-5 feet		**Distance** **# of spaces**
		hydrant clearance	-15 feet		16-31 feet **1**
		Clearance	**68 feet**	**3**	32-53 feet **2**
168 feet	Hydrant 7				54-69 feet **3**
					70-91 feet **4**
					92-108 feet **5**
			200 feet		108-129 feet **6**
	C		-168 feet		130-145 feet **7**
			32 feet		146-167 feet **8**
		hydrant clearance	-15 feet		168-183 feet **9**
200 feet	8	**Clearance**	15 feet	**0**	184-205 feet **10**
					206-221 feet **11**
					222-243 feet **12**
					244-259 feet **13**
					260-281 feet **14**
					282-297 feet **15**
					298-319 feet **16**
					320-335 feet **17**
	Loading Zone, LZ 9			0	336-357 feet **18**
		No Parking			358-373 feet **19**
					374-395 feet **20**
					A calculate length between 2 and 4
					B calculate length between 6 and 7
					C calculate length betwwen 7 and 8
					D calculate length between 10 and 11
250 feet	10				- feet
			288 feet		
		Loading Zone	-250 feet		
			38 feet	**2**	
	D				
288 feet	SW 11				
			Total	**6 spaces**	

DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-35: Guidelines for Temporary Non-Vehicle use of Parking Stalls

PURPOSE:

The purpose of this policy is to clarify the restrictions and design standards for short-term non-vehicle use of regulated parking stalls in the City of Kirkland. In general, any parking stall occupant should be aware of the parking restrictions and these standards without them being designated or signed at any location. However, if a parking stall user is found in violation of these restrictions or standards, any future proposed uses may be denied and they will be subject to any fine determined by the City.

In most situations, Public Works will approve all temporary non-vehicle uses in regulated parking stalls throughout the City. Public Works staff will work in conjunction with the Police Department and the Fire Department to evaluate for any safety risk posed to the public.

A Site Plan is required for review of all Temporary Non-Vehicle uses proposed. The site Plan must identify the following items:

- Adjacent Land use (both side of the street)
- Sidewalk width
- Bike lane width
- Exact location and distance from nearest driveways, crosswalks, and intersections
- Nearest waste receptacles (depending on the proposed use, the applicant may be required to provide these as part of the permit)
- The profile of the proposed use and the impact on the surrounding area
- All utilities and other city assets (sewer drains, light posts, trees, etc.)

A Temporary is required if the proposed use is expected to overlap with any travel lanes within the right-of-way (shoulders, sidewalks, crosswalks, parking and bicycle facilities), in accordance with Pre-Approved Plans Policy R-29.

GENERAL NOTES:

1. All proposed uses must be equally available for the public for use.
2. No more than two parking stalls may be occupied at one time unless approved by the Public Works Department.
3. No use shall last longer than 24-hours.
4. No devices/signs/equipment which redirect movement in the roadway travel lanes is not allowed without department approval.
5. Any use of heating equipment requires the approval from the fire department
6. Artwork is allowed and encouraged, however, it cannot replicate any traffic control symbols
7. Painting on the pavement surface is not allowed

8. Play equipment is allowed, as long as the use does not overlap and impede movement in the travel lanes.
9. The Public Works Department reserves the right to deny any proposed use for any reason.
10. The Public Works Department issued parking permit must be on display at all times.
11. No Parking restriction signs must be in place no less than 24 hours prior to the proposed use date.
12. All adjacent land uses must be notified of the proposed use date and time at least two (2) business days prior to the prior to the proposed use date.

REQUIREMENTS:

Deck use requirements (Pre-Approve Plans No. E):

1. There must be a minimum gap of 6" between the deck and curb,
2. The top layer of the deck must be no more than ¼" above the top of the sidewalk,
3. The top layer of the deck must be no more than ½" between the top layer and the curb,
4. If a deck is to be used, ADA access must be provided in compliance with Title II of the American Disabilities Act.

Other Required equipment (Figure F)

1. Traffic reflector tubes (a.k.a. plastic bollards) linked with a rope along the outside barrier of the parking stall placed at every corner and every 10' of the parking stall to be used.

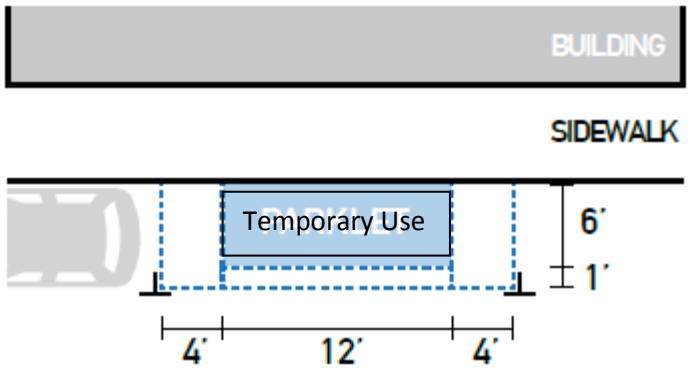
Table 1:

Proposed Use Design Guidelines									
Location	Stall width (ft)	Stall length (ft)	Buffer from travel lane (ft)	Buffer from car use (ft)	Available width for use (ft)	Available length for use (ft)	Min Height for use (ft)	Max Height for use (ft)	Pre-approved Plan No.
Mid-block	7	20	1	4	6	12	30"	8	A
Mid-block	7	40	1	4	6	32	30"	8	B
Corner	7	20	1	4*	6	12	30"	3	C
Corner	7	20	1	4*	6	32	30"	3	D

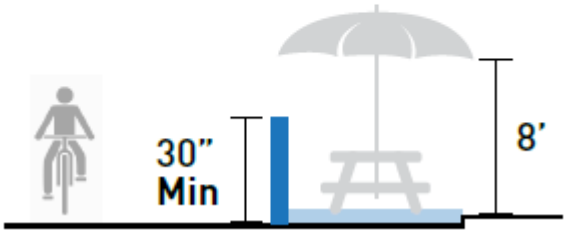
*The 4' buffer only applies on the side adjacent to car parking uses. The corner side does not require a buffer.

Drawing A

MINIMUM DIMENSIONS

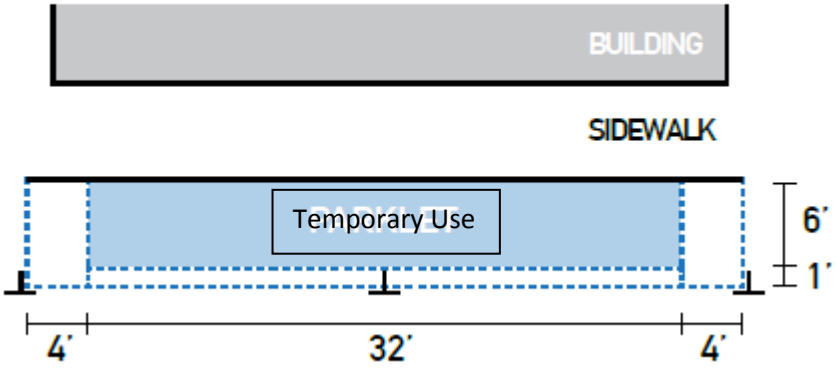


MINIMUM HEIGHT

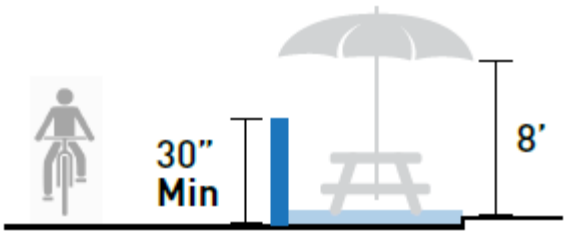


Drawing B

DOUBLE SPACE DIMENSIONS

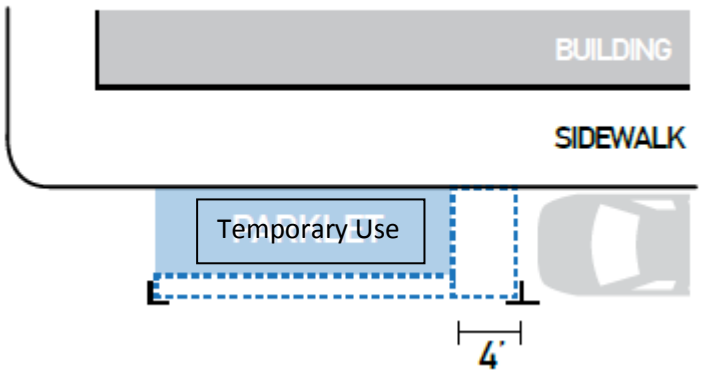


MINIMUM HEIGHT

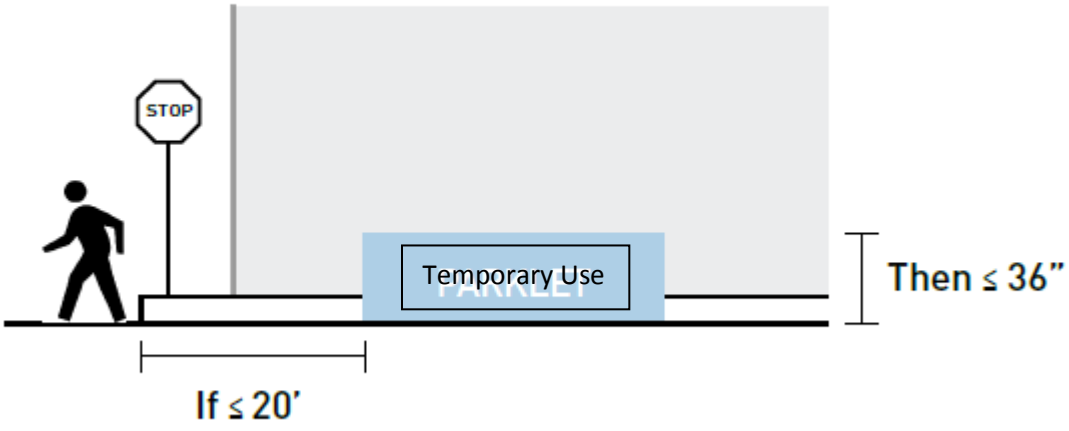


Drawing C

CORNER BUFFER

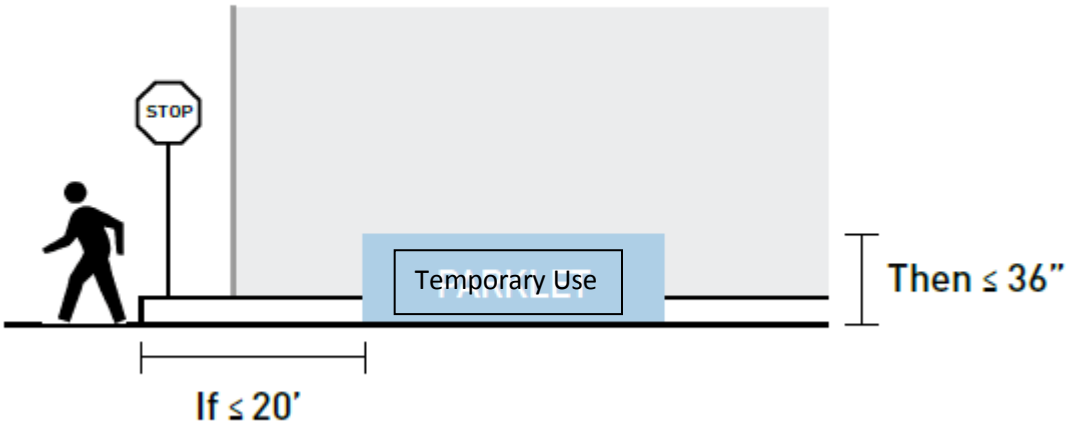


MAXIMUM HEIGHT NEAR CORNERS



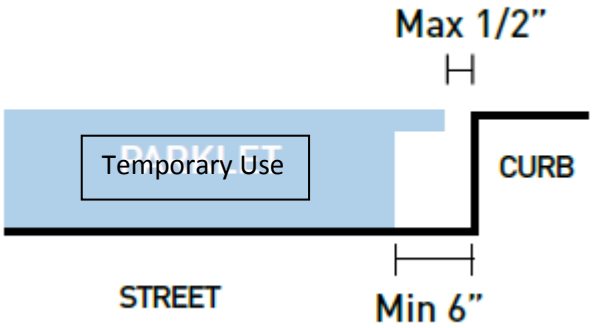
Drawing D

MAXIMUM HEIGHT NEAR CORNERS



Drawing E

GUTTER & DECK GAP



MAXIMUM VERTICAL GAP

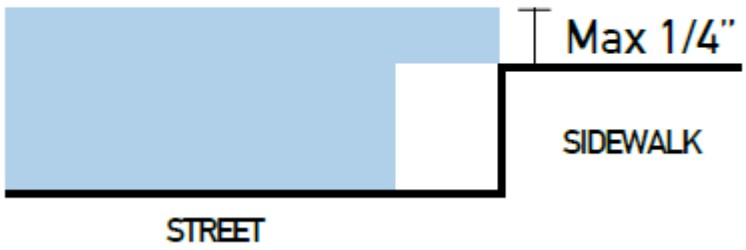
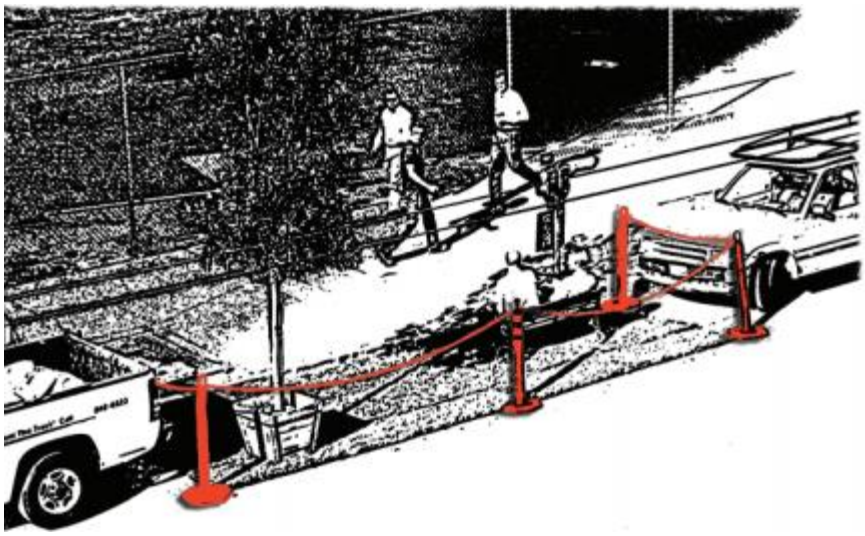


Figure F



CITY OF KIRKLAND
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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-36: Bike Parking Guidelines

1. Introduction/Overview

Bike parking facilities are an essential component of bicycle infrastructure as part of Kirkland's multimodal transportation system. Providing convenient and secure bike parking is critical to support existing cyclists, attract new riders, and reduce the barriers to cycling for all types of trips. Kirkland's Active Transportation Plan recognizes the importance of bike parking in Objective 2-10: Update bicycle parking policy and programs to ensure parking is available at both ends of bike trips. Providing specific design recommendations for bike parking as part of this guide ensures that the constructed bike parking meets the needs of cyclists throughout the city. The Kirkland Zoning Code[1] identifies the number of bike parking spaces that shall be provided with new development throughout the city but offers limited design or performance standards for bike parking. This guide outlines design recommendations for bicycle parking to ensure that new development provides bike parking facilities that align with best practice and provide secure and convenient bike parking options. The content of this guide was developed from best practices contained in the Association of Pedestrian and Bicycle Professionals' Bicycle Parking Guidelines[2,3].

The following design guidelines apply to both bicycle parking provided as part of new development and bicycle parking within the public right-of-way. Acceptable bike parking design varies based on the expected parking duration. Short-term bike parking, typically four hours or less, should provide convenient and highly visible access to destinations while long-term bike parking should emphasize security and weather protection. Table 1 summarizes characteristics of different types of short- and long-term bike parking options that are permitted in the City of Kirkland.

Table 1: Types of Short- and Long-Term Bike Parking

Type of Bike Parking	Permitted Design Option	Characteristics
Short-Term: Bicycle parking designed for visitors to provide convenient options for trips of four hours or less	Sidewalk Bike Racks	• Located within sidewalk furnishing zone • For use by general public • Does not include weather protection
	On-Street Bike Parking Corrals	• Installed by City of Kirkland • Located in the roadway adjacent to the curb in an on-street parking stall or the 30 ft no parking zone approaching a stop sign • For use by general public

Type of Bike Parking	Permitted Design Option	Characteristics
		• Does not include weather protection
	Bike Racks on Private Property	• Installed by developer • Located within private property • For use by visitors to property • Includes weather protection • May include other amenities (see Section 2.4)
	Event Bike Parking	• Provided by event organizers or volunteers • Located within event area • For use by attendees • May include weather protection
Long-Term: Bicycle parking designed for residents or employees to provide secure options for storage or trips longer than four hours	Bike Lockers	• Individual locked spaces to store one bicycle • Installed by developer or transit agency • Located within private property (*e.g.* outside, parking garage) • May include weather protection over locker (e.g. canopy)
	Bike Cages	• Common secure areas to store multiple bicycles • Installed by developer • Located within private property (*e.g.* outside, parking garage) • Includes weather protection
	Bike Rooms	• Common secure areas to store multiple bicycles • Installed by developer • Located within private property (*e.g.* parking garage, inside building) • Includes weather protection • May include additional bike amenities (see Section 3.4)

Bicycles come in many different shapes and sizes, and the provided bicycle parking must be tailored to suit different types of users. In most cases, the provided bicycle parking should be sized to accommodate a standard adult-sized bicycle, typically 6 ft. long by 2 ft. wide by 4 ft. tall. Oversized bicycles (*e.g.* cargo bikes, longtail bikes, recumbents) are becoming increasingly common and require additional design considerations to ensure safe, convenient, and secure bicycle parking that does not impede pedestrian access. These bicycles may be 4 to 6 ft. longer than a standard adult bicycle and up to 2 ft. wider. Electric bicycles also require special design considerations, including access to charging outlets. These bikes also tend to be heavier due to the included battery, making horizontal (*i.e.,*no lifting required) bike parking preferrable for many users.

2. Short Term Bicycle Parking

Short-term bike parking, typically four hours or less, must be designed to provide secure and convenient bicycle storage options for visitors to businesses and residences. The following sections specify the appropriate design elements for sidewalk bike racks, on-street bike parking corrals, and bike racks installed on private property.

2.1 Acceptable Bicycle Racks

Short-term bicycle parking racks shall be Inverted U type racks. Kirkland's standard bicycle rack is detailed in CK-R.40. All bicycle racks installed in public right-of-way or private property shall be cane detectable. Other bicycle racks may be approved by Public Works provided that they meet the following functional criteria:

- Support the frame of the bicycle in two places
- Prevent the bicycle wheels from tipping
- Allow the frame and one wheel of the bike to be locked when both wheels are left on the bike or the frame and both wheels of the bike to be locked when the front wheel is removed
- Allow locking with a U-shaped lock
- Allow parking by a wide variety of bicycle shapes and sizes including, but not limited to, bicycles without a traditional diamond-shaped frame, oversized bicycles, electric bicycles, bicycles with water bottle cages, or bicycles without kickstands
- Allow for secure anchoring to a hard surface
- Utilize an intuitive design

Bicycle racks that do not support a bicycle's frame (*i.e.,* a wheel-bending type rack) will not be approved.

Bicycle racks shall be constructed from either galvanized or stainless steel. Colored thermoplastic coated bicycle racks may be permitted by Public Works provided that an applicant considers longevity and maintenance of the thermoplastic coating. Square tubing is preferred for short-term bicycle racks to resist pipe cutting attacks.

Approved bicycle racks shall be mounted to a hard surface. Concrete is the preferred hard surface for bicycle parking areas although asphalt may be used if a concrete footing is also provided for each anchor point. Bicycle racks shall be anchored using the provided surface flanges with tamper resistant hardware (*e.g.,* security nuts). All bicycle racks shall be installed following the manufacturer's specifications.

On-street bicycle parking corrals may be installed on asphalt surfaces by using a base rail which should be attached to the asphalt pavement per manufacturer specifications.

2.2 Bicycle Parking Location and Design

Bicycle parking shall generally be located to provide adequate clearance from sidewalks, street or property furnishings, buildings, streets, and driveways while still providing convenient access to building entrances. Designated micromobility parking may be located next to bicycle parking to facilitate appropriate parking. Short-term bicycle parking racks installed by the City of Kirkland shall be located in either existing, on-street parking spaces as a bike corral, or within the sidewalk furnishing zone as a sidewalk bike rack and not obstruct the sidewalk or bike lane. Short-term bicycle racks installed as part of a new development shall be located on private property and within 50 feet of each public building entrance. Short-term bicycle racks required for new development may be permitted within the public right-of-way in urban centers (*i.e.,* Totem Lake, Juanita Business District, Central Business District, or NE 85th Street Station Area) provided that the rack is within 50 feet of a public, pedestrian-oriented building entrance and there is adequate space within the right-of-way (see Figure 1 or 2).

The configuration of bike parking and any required clearances depends on the orientation of bike racks within the bike parking area. Parallel bike parking installations (see Figure 1) arrange bike racks end to end and are typically seen in the sidewalk furnishing zone to minimize encroachment into the pedestrian clear zone, the primary, accessible portion of the sidewalk that runs parallel to the street. Perpendicular bike parking installations (see Figure 2) group bike racks side to side and require a greater clear zone on each side of the rack to accommodate bikes of different shapes and sizes. Parallel bike parking installations require a minimum 6 ft. between racks while perpendicular bike parking installations require a minimum 3 ft. between racks. Bike racks shall also be installed at least 2 ft. from building walls, other vertical obstructions, or the face of curb although 3 ft. is preferred where feasible. A 3 ft. clearance from the face of curb is required whenever bike parking is adjacent to a parking lane.

Bike parking should be located outside of the pedestrian clear zone, typically the required sidewalk and/or bike lane width, in line with other street or property furnishings, and should be accessible from the sidewalk. In locations with wide sidewalks or pedestrian plazas, bike parking may be permitted to intrude within the pedestrian zone although a minimum 5 ft. pedestrian clear zone must be maintained. Bike parking within a plaza should be strategically located next to building entrances and away from major pedestrian flows.

Short-term bike parking should also be placed to avoid conflicts with vehicles accessing a site. Bike parking within the street furnishing zone shall be located at least 5 ft. from driveways. Bike parking accessible from a vehicle driveway shall be designed such that parked bicycles do not extend into the minimum required vehicle drive aisle. Bike racks shall be located outside of the sight triangle unless approved by the City transportation engineer.

The arrangement of short-term bicycle parking shall be reviewed and approved by the Public Works department. The following performance criteria shall be used to evaluate the arrangement of short-term bicycle parking:

- Parallel bike racks shall be spaced to provide a minimum 6 ft. between racks
- Perpendicular bike racks shall be spaced to provide a minimum 3 ft. between racks

- The face of the bike rack, where a bike is parked, shall be installed at least 2 ft. from building walls, other vertical obstructions, or the face of curb although bike racks shall be installed at least 3 ft. from trees or the face of curb when adjacent to a parking lane
- The edge of the bike rack, where it is mounted to the ground, shall be installed at least 3 ft. from building walls, other vertical obstructions, or the face of curb. The edge of bike rack may be installed 2 ft. from the face of curb if the bike parking is not adjacent to a parking lane
- Racks shall be installed to provide a minimum 5 ft. pedestrian clear zone
- Racks shall be installed at least 5 ft. from a site driveway

Typical short-term bike parking configurations are seen below:

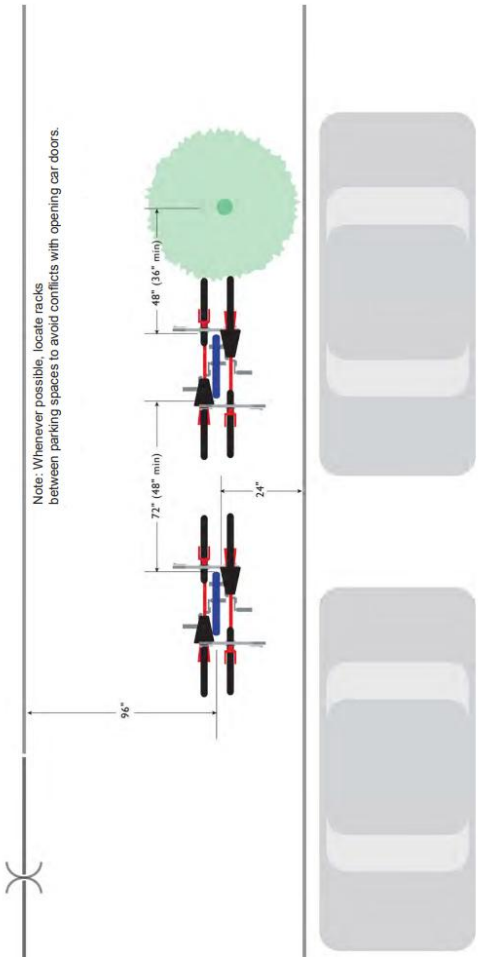

Figure 1: Typical Layout of Parallel Sidewalk Bike Parking Installations (Source: APBP[2])

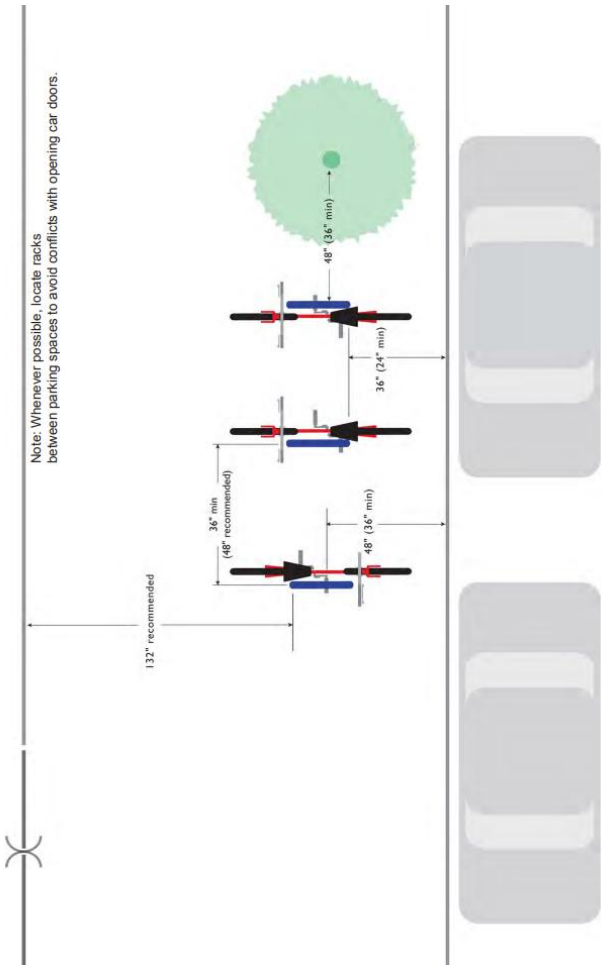

Figure 2: Typical Layout of Perpendicular Sidewalk Bike Parking Installations (Source: APBP[2])

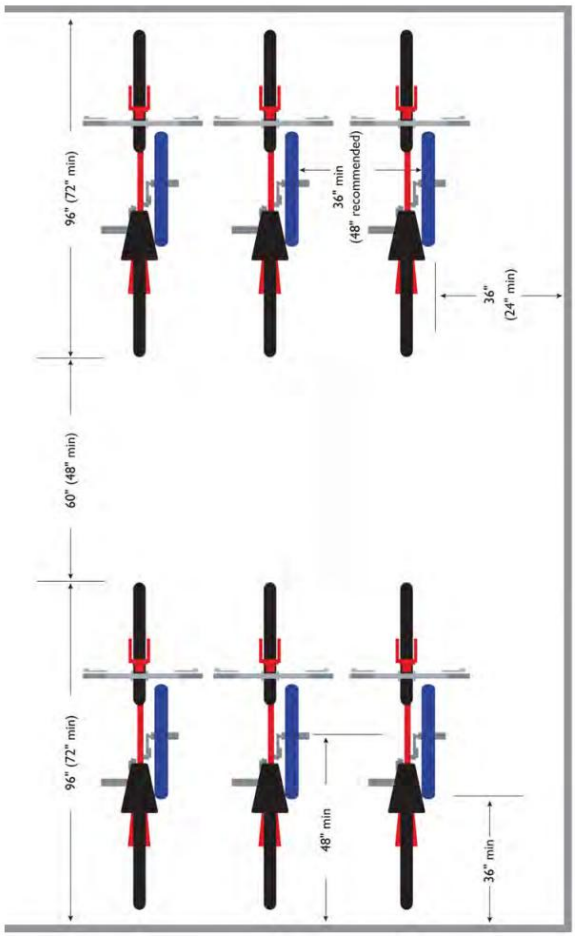

Figure 3: Typical Layout of a Bike Parking Area on Private Property (Source: APBP[2])

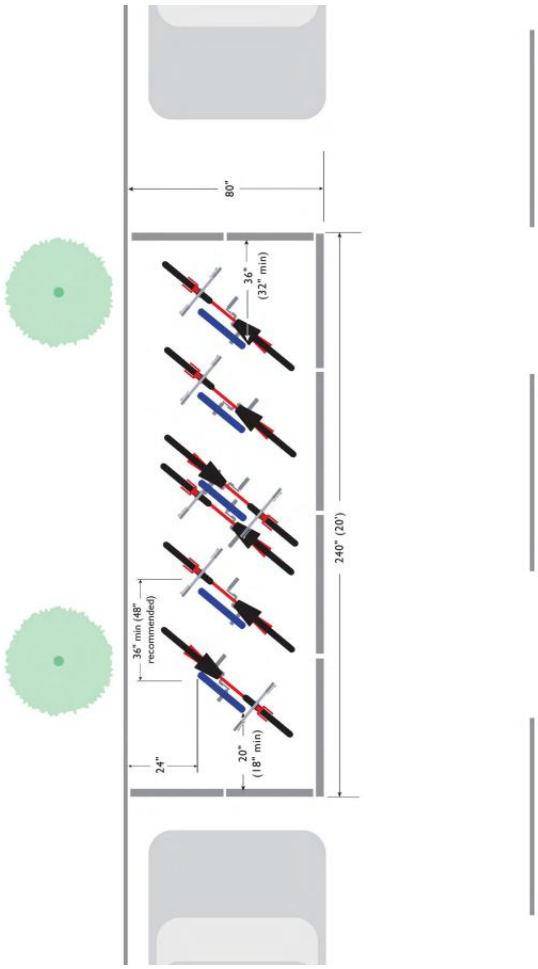

Figure 4: Typical Layout of a Bike Parking Corral (Source: APBP[2])

2.3 Additional Short-Term Bicycle Parking Requirements

Short-term bicycle parking located on private property shall include weather protection. When short-term bike parking is provided within a plaza, it should be strategically located to utilize available weather protection, such as building overhangs, without introducing new structures. Bike parking located in central plaza areas may be exempt from weather protection requirements. The provided weather protection shall cover the required bike parking and circulation area with a minimum 8 ft. clearance between the ground and bottom of weather protection. The weather protection shall include a separate drain which directs water away from the provided bicycle parking area. All weather protection shall be designed to meet applicable structural and building codes.

2.4 Optional Short-Term Bicycle Parking Amenities

Short-term bicycle parking may also include a bike repair station or charging outlets for electric bicycles on private property. Bike repair stations may be used by cyclists to make minor tune ups and can include elements like a stand to hold the bicycle, tire pump, and tools. Repair stations shall be installed according to the manufacturer's specifications, and all individual components (*e.g.,* repair tools) should be attached to the stand body in a secure manner to minimize potential theft. If provided, the repair station should be located underneath the required weather protection. The bike repair station shall be

situated to provide sufficient clearance between the repair station and adjacent racks or walls so that a user may freely work on their bike without reducing the availability of bike parking. The final position of any repair station shall be approved by Public Works as part of the design process.

New developments may also install exterior charging outlets on private property to charge electric bicycle batteries. The design of charging outlets shall consider the security of a users' battery pack, required weather protection, and the universality of the provided charging ports. External charging outlets shall be constructed to meet all applicable codes and house cords internally to minimize potential tripping hazards. Maintenance of the provided charging outlets is the sole responsibility of the property owner.

3. Long Term Bicycle Parking

Long-term bike parking, typically for more than four hours, must be designed to provide secure and convenient bicycle storage options for employees and residents. The following sections specify the appropriate design elements for bike lockers, bike cages, and bike rooms installed on private property.

3.1 Acceptable Bike Parking Types

Long-term bicycle parking includes bike lockers, bike cages, or bike rooms. Bike lockers are small and secure bicycle storage areas that can accommodate up to two bicycles per locker. Individual bike lockers can be arranged in groups or stacked to provide bike parking for multiple users in a smaller footprint. Bike cages or rooms provide a controlled-access bike parking area that contains racks for multiple bicycles. Bike cages typically use metal fencing to create a secure area for bike parking within a parking garage or outdoors and can be easier to expand. Bike rooms are typically incorporated into a building design as a standalone room.

Bike lockers can be made from metal, molded plastic, or plastic or fiberglass on metal frames. Bicycle lockers are generally secure, but they can be cut or pried open if improperly designed or made of soft plastic. Security windows may be included in bike lockers provided that they do not introduce additional security vulnerabilities. Bike lockers shall be securely mounted to a hard surface following the manufacturer's specifications to prevent the lockers from being carried away. Concrete is the preferred hard surface for bicycle parking areas although asphalt may be used if a concrete footing is also provided for each anchor point. Bicycle lockers shall be anchored following manufacturer standards.

Bike cages shall be constructed from wire mesh or perforated steel as recommended by a manufacturer to be theft-resistant and allow for adequate visibility of the interior space. The enclosure shall be securely mounted to a hard, concrete surface and include a roof with a minimum 8 ft. clearance if located outside as a separate structure. Greater vertical clearances may be required if two-tier or hanging racks used. The wire mesh or perforated steel surrounding the bike cage shall be extended from the floor to the roof or ceiling of the bike cage. Since bike rooms are integrated into the building design, these enclosures provide additional security. However, windows should be provided in the door or entry area so users may feel more secure and allow for outside surveillance from building security.

All long-term bicycle parking should also provide adequate security measures to deter bicycle theft. Bike lockers may be secured through private locker keys, individual locks, or smart locks using either a keypad or a key card. An on-demand locker provides the most flexibility to users, secures the lockers while not in use, and allows for access by building personnel as needed. Utilizing individual locks also

provides flexibility to users, but individual locks cannot secure the lockers while not in use. Individual locks may also be vulnerable to theft if the lockers are located in secluded areas. Individual keys provide a guaranteed space for bicycle parking but can pose key management challenges for building personnel and may require lockers to be re-keyed if the keys are lost or not returned. Bike cages or rooms can also be secured through individual keys or smart locks. Individual keys may pose long-term security challenges compared to smart locks if not carefully managed to ensure that only authorized individuals have access to the secure bike parking.

Given the potential security limitations of some long-term bike parking access methods, additional security measures, like monitoring the parking area with active security cameras or an attendant are also recommended. Using security cameras to monitor long-term bike parking areas also provides evidence for police in the event a bicycle is stolen.

3.2 Bicycle Parking Location and Design

Long-term bicycle parking shall be located to provide adequate clearance from sidewalks or designated pedestrian pathways, vehicle circulation, and parking areas and should be located in an area that provides convenient access for travelers arriving by bike. Bicycle parking that requires cyclists to carry their bicycle up or down a set of stairs to access the parking is not acceptable. Long-term bicycle parking may be provided in the parking garage (typically as a bike cage or set of bike lockers), inside the building (as a bike room), or as a separate, stand-alone structure or bike cage. All long-term bicycle parking shall include weather protection.

Bicycle parking located within a parking garage shall be located to ensure that bike parking is as accessible as possible from building entrances and minimizes the distance travelled by cyclists through the parking garage. Bicycle entry to the garage shall not be restricted by the use of gates or other barricades intended to restrict vehicle access, and if used to control vehicle access, a minimum 5 ft. clear pathway must be provided for bicyclists around the gate or barricade. If the bicycle parking location requires cyclists to travel on parking garage ramps that exceed 5% grade, a minimum 5 ft. bike lane shall be provided for cyclists travelling uphill outside of the required vehicle drive aisle and pedestrian clear zone. The ramp shall be designed to ensure that vehicles do not need to encroach into the uphill bike lane as demonstrated by vehicle turning templates, and additional width may be required to ensure a clear vehicle path. If the bicycle parking is located within the building, the parking should be clearly identified and located within 50 ft. of the primary building entry. Otherwise, bicycle wayfinding shall be required. Stand-alone bicycle parking must be accessible from a designated bicycle path or the sidewalk and should be situated to be highly visible to cyclists accessing the site and the primary building entry.

Bike lockers are ordered directly from manufacturers and can be installed on any level surface. Bike lockers should be installed in an area that is large enough to accommodate the locker's footprint and provide adequate clearance around the locker since most lockers can be accessed from both sides, allowing for two bikes to be stored in one locker. The size of a bike locker varies between manufacturers, but is around 40 inches wide, 75 inches long, and 50 inches tall. The arrangement of bike lockers shall be reviewed and approved by the Public Works department. The following performance criteria shall be used to evaluate the arrangement of bike lockers:

- All bike lockers shall be placed to provide sufficient clearance from walls and other bike lockers to allow the door to fully open. If the bike lockers are arranged in parallel rows, bike lockers

located on a center aisle shall be placed to provide sufficient clearance for doors on each side to fully open.

- Bike lockers that open towards a wall, vehicle parking space, or other obstruction (*e.g.* a column) shall be located at least 6 ft. from the obstruction
- Bike lockers that open towards other bike lockers shall provide a minimum 7 ft. access aisle between the bike lockers
- Bike lockers that open towards pedestrian or vehicle circulation areas shall provide a minimum 8 ft. between the bike locker and the pedestrian clear zone or vehicle travelled way
- Bike lockers shall be located to provide a minimum 5 ft. clear aisle to access the bike parking
- At least 10% of the bike lockers shall be sized to accommodate oversized bicycles
- At least 50% of the bike lockers shall include power outlets for electric bike charging

A sample bike locker layout is provided below in Figure 5:

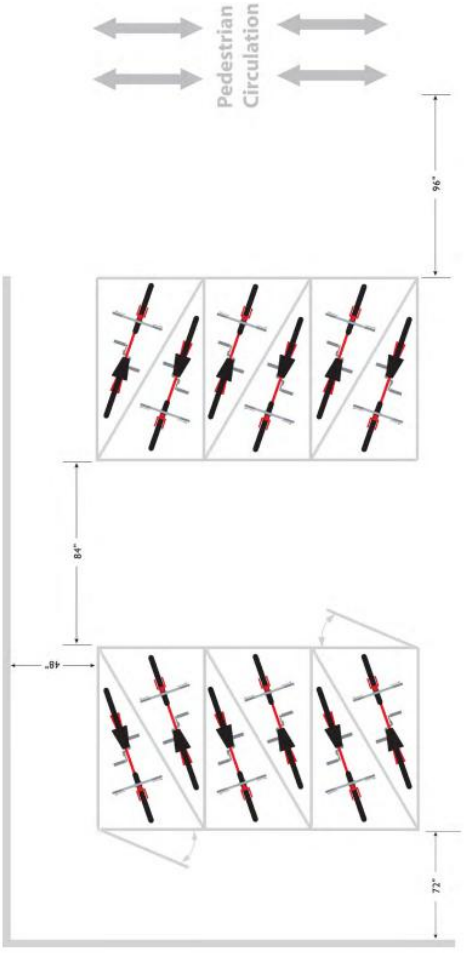

Figure 5: Typical Layout of a Bike Locker Bank (Source: APBP[2])

Bike cages or rooms provide bicycle racks within a secure space to organize bicycle storage and provide additional security. Inverted U type bike racks are the preferred choice for long-term bike parking in bike cages or rooms. Other bicycle racks may be approved by Public Works provided that they meet the functional criteria for bike racks in Section 2.1 of this guide although vertical/hanging bike racks are not

acceptable to accommodate oversized or electric bicycles. All bicycle racks used in bike cages or rooms shall be installed with tamper resistant hardware following the manufacturer's specifications. The arrangement of bicycle racks within a bike cage or room shall be reviewed and approved by the Public Works department. The following performance criteria shall be used to evaluate the arrangement of bicycle parking within bike cages or rooms:

- Horizontal bike racks shall be spaced to provide a minimum 3 ft. between racks
- Vertical/hanging bike racks shall be spaced to provide a minimum 3 ft. between racks if racks are mounted at the same height and a minimum 2 ft. between racks if racks are staggered vertically
- The face of horizontal bike racks, where a bike is parked, shall be installed at least 2 ft. from room or cage walls although 3 ft. is preferred where feasible. The edge of horizontal bike racks, where the rack is mounted, shall be installed at least 3 ft. from room or cage walls
- Vertical/hanging bike racks shall be installed at least 1.5 ft. from room walls or other obstructions (*e.g.,* pipes)
- Vertical/hanging bike racks shall be installed at a height to meet the recommended floor and ceiling clearances as specified by the rack manufacturer
- Vertical/hanging bike racks shall meet all ADA requirements for protruding objects
- Racks shall be installed to provide a minimum 5 ft. clear aisle to access the bike parking
- At least 10% of the bike racks shall be placed with greater clearances to accommodate oversized bicycles. Oversized bike parking shall be spaced to provide at least 4 ft. between racks, at least 3 ft. between the face of rack and room or cage walls, and at least 3 ft. between the edge of rack and room or cage walls
- At least 50% of the bike racks shall have access to electric outlets (*i.e.,* an electric outlet shall be located within 3 ft. of the rack
- No more than 50% of the bike racks shall requiring lifting (*e.g.,* vertical or hanging racks)

A sample bike room layout is provided below in Figure 6:

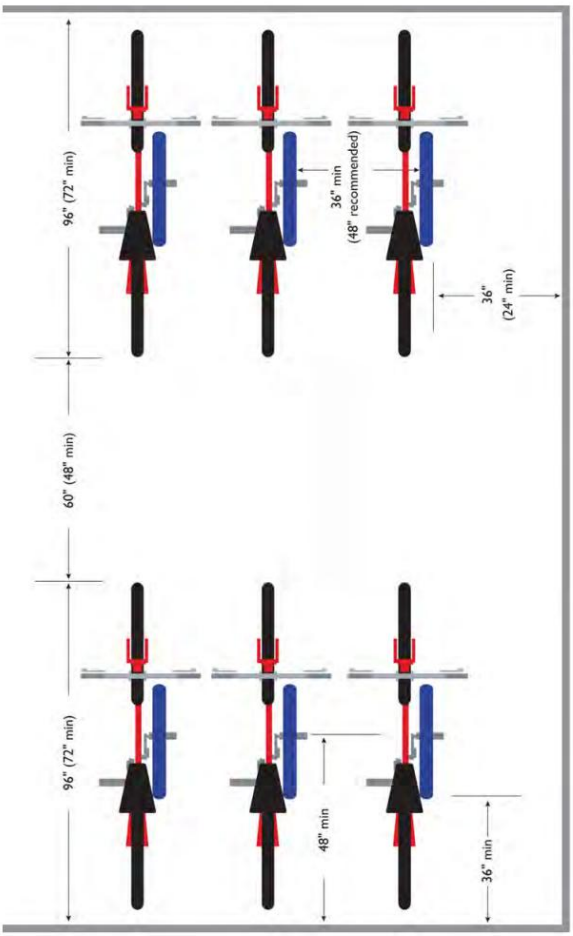

Figure 6: Typical Layout of a Bike Parking Room (Source: APBP[2])

Up to 50% of the required long-term residential bike parking may be provided in unit provided that the following performance standards are met:

- The bicycle parking area is located within 15 ft. of the entrance to the dwelling unit and accessible from a minimum 5 ft. clear pathway that does not include stairs
- The bicycle parking area for one bicycle is a minimum 3 ft. by 6 ft.

3.3 Additional Long-Term Bicycle Parking Requirements

Since long-term bike parking is intended to primarily serve employees and residents, this parking may be located more than 50 ft. away from building entrances. Bike parking signage and wayfinding is required for any long-term bike parking that is not visible from a public building entrance. The design of the signage and wayfinding shall be coordinated with the Public Works department but should include the following elements at minimum:

- Signage that directs bicyclists from primary site access point(s) for bicyclists to the bike parking
- Building maps that identify the bicycle parking location
- New employee and resident information that identifies the bicycle parking location

3.4 Optional Additional Amenities

Long-term bicycle parking may also include a bike repair station. Bike repair stations may be used by cyclists to make minor tune ups and can include elements like a stand to hold the bicycle, tire pump, and tools. Repair stations shall be installed according to the manufacturer's specifications, and all individual components (*e.g.* repair tools) should be attached to the stand body in a secure manner to minimize potential theft. The bike repair station shall be situated to provide sufficient clearance between the repair station and adjacent racks or walls so that a user may freely work on their bike without reducing the availability of bike parking. The final position of any repair station shall be approved by Public Works as part of the design process.

Providing shower or changing facilities may make bicycle commuting more appealing for workers, beyond having a secure bike storage option, and may be required for commercial or institutional developments of a certain size. Showers or changing facilities could be installed as part of the bike parking room or utilize other shower or changing facilities already provided on-site. Where feasible, these facilities should be co-located with the bike parking to enhance the visibility of these options for cyclists. If the provided shower or changing facilities are not located within 50 ft. of the provided bicycle parking, additional wayfinding should be provided. Showers or changing facilities shall be designed to meet all relevant building codes.

4. Temporary (Event)

Additional temporary bicycle parking may be required for special events within the City of Kirkland. Temporary event parking requirements shall be coordinated directly with the Department of Public Works and the Special Events Team.

5. References

1. Kirkland Zoning Code. https://www.codepublishing.com/WA/Kirkland/?html/KirklandZNT.html
2. Association of Pedestrian and Bicycle Professionals. *Bicycle Parking Guidelines, 2nd Ed.* 2010.
3. Association of Pedestrian and Bicycle Professionals. *Essentials of Bike Parking.* 2015. https://www.apbp.org/assets/docs/EssentialsofBikeParking_FINA.pdf

Policy R-37 Mailbox No Parking Signs: Authorization for Property Owners

Background Public Works receives routine requests for No Parking signs in front of mailboxes to discourage drivers from blocking mailboxes when mail is being delivered. The City of Kirkland passed an ordinance in 2016 that addresses this issue, but many drivers do not know of the ordnance or ignore it. The ordnance is incorporated into the Kirkland Municipals Code as Section 12.45.280 and states:

> *Except when necessary to avoid conflict with other traffic, or in compliance with law or the directions of a police officer or official traffic control device, or momentarily to pick up or discharge a passenger or passengers, no person shall park a vehicle, whether occupied or not, within seven feet and six inches on either side of a public or private curbside mailbox between the hours of eight a.m. and five p.m. (Ord. 4510 § 5, 2016)*

Before the ordinance, the City authorized some residents to paint curbs red in front of mailboxes, which designated No Parking Anytime zones to help make sure mail could be delivered. The new parking code restriction, KMC 12.45.280, allows parking between 5 pm and 8 am. To help ensure parking supply is not unnecessarily restricted, red curb is no longer appropriate.

The number of No Parking in front of mailbox sign requests has grown over the years and the City does not have the resources to fabricate, install and maintain these signs.

To address the growing demand for No Parking in front of mailbox signs, the City developed a program authorizing residents to fabricate and install City-specified signs on their mailboxes. This authorization program would be managed and tracked the Neighborhood Traffic Control Coordinator or the City's Traffic Engineer. Authorization location and address shall be recorded in the City's GIS.

Attached is a form letter that authorizes residents to fabricate and install City-specified signs on their mailboxes. The City-specifications for the signs are shown in Attachment 1 of the letter.

August 2, 2019

Date

Address

Subject: Mailbox No Parking Sign Authorization, Address

This letter authorizes you to install a City-specified No Parking sign at your mailbox. This sign authorization is in accordance with attached policy R-37, subject to conditions listed in this authorization. Please retain this letter as proof of the City's authorization. If you move sometime in the future, please leave this letter with the new occupants. This authorization is not transferable to another address.

Conditions of Authorization:

1. The sign must replicate the sign shown in Attachment 1 consistent with No Parking signs with time restrictions as specified in *Manual of Uniform Traffic Control*. Any other sign is illegal and subject to removal or code enforcement action. Fast Sign, 13279 NE 20th St., Bellevue, WA 98005, 425-746-4151, https://www.fastsigns.com/106-bellevue-wa, can fabricate the sign for you.

2. Signs should be mounted on the mailbox stand in a way that does not interfere with mail delivery, block parking, reduce the width of sidewalks, are not at a height that interferes with walking or cycling, do not impede visibility of oncoming traffic, pedestrians or cyclists, do not create any other interference or hazard and must face the street or direction of traffic.

3. The City of Kirkland will not maintain this sign. Maintenance of the sign is solely your responsibility.

4. This authorization does not expire unless the City of Kirkland revokes it. The City reserves the right to revoke the authorization at any time.

5. The City does not warrant that drivers will comply with the sign, but it is official and as enforceable as if the City installed the sign. For enforcement, please contact the police at non-emergency 911 number (425) 577-5656 or police@kirklandwa.gov.

Please let me know if you have any questions. Please also let me know when you have the sign installed, and I will field check and sign off. If you have any questions regarding this authorization, please contact me at (425) 587-phone number or email address.

Sincerely,
PUBLIC WORKS DEPARTMENT

"NAME"
Neighborhood Traffic Control Coordinator

Attachment 1 – City of Kirkland Mailbox No Parking Sign

CITY OF KIRKLAND
123 FIFTH AVENUE • KIRKLAND, WASHINGTON 98033-6189 • (425) 587-3800

DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-38 Transportation Impact Analysis Review (TIAR)

This policy establishes the requirements for a transportation impact analysis study and policies for mitigations to mitigate the transportation impacts of new developments. New development includes properties that are redeveloped or existing property with a new tenant that generates additional traffic. A transportation impact analysis (TIA) is a specialized study that focuses on the transportation impacts that a development will have on the surrounding transportation system. The TIA is an integral part of the development impact review process.

The purpose of a TIA study is to assess the impact that a development will have on the City's transportation system, including but not limited to peak periods of vehicle traffic conditions, transit users, pedestrians, bicyclists, safety, parking, driveway access and neighborhood livability. The TIA ensures that the traffic and transportation impacts of the proposed development are identified, evaluated, and mitigated as set forth in section G and H of this guideline. Furthermore, the requirements within this policy establish the transportation impact review to satisfy the requirements of the State Environmental Policy Act (SEPA), Chapter 43.21C RCW. The requirements within this policy further the City's Transportation Strategic Plan Policy T-9.5 that require new development to mitigate site specific and system wide transportation impacts.

To assist applicants in the preparation of the information needed for the TIA study, the City has established the following guidelines:

GENERAL REQUIREMENTS

If transportation concurrency review is required, the development must pass the transportation concurrency test prior to the scoping of the transportation impact analysis.

The TIA study must be conducted by a professional engineer registered in Washington, with expertise in transportation engineering, or a recognized transportation planning firm having experience in the preparation of transportation impact analysis and routine transportation engineering studies. The final report shall be stamped by the professional engineer responsible for conducting the TIA study.

The professional engineer performing the analysis should request approval of a scope of analysis from City Transportation Division Staff prior to commencement of the analysis. The intent is to reach agreement on the following:

- Roadways and intersections to be studied
- Information to be provided
- Analysis time periods, methods, and software to be used

- Technical parameters (saturation flow rates, peak hour factor, etc.) necessary to complete the analysis.

City Transportation Division Staff will respond in a timely fashion to this request.

The applicant must submit one electronic and one hard copy of the TIA report. If the development requires a SEPA review, the TIA report must be submitted through the Planning and Building Department. If SEPA review is not required, the TIA report can be submitted directly to City Transportation Division Staff or with the building or land surface permit. The review fee must be paid before the review process can begin.

A. Levels of Analysis

There are two levels of transportation impact analysis. The level of transportation impact analysis required is determined by the number of gross peak hour trips generated and SEPA regulations. Gross peak hour trips are the number of peak hour trips the proposed development will generate, excluding internal trips. Each development proposal that exceeds either of the analysis thresholds identified below shall include the appropriate transportation impact analysis with its the land use application for land use or design review approval.

Level One Transportation Impact Analysis Threshold:

A Level One Transportation Impact Analysis is required when the proposed land use change or development proposals will not trigger a SEPA review and generates more than five gross peak hour vehicle trips and less than 50 gross peak hour vehicle trips.

Level Two Transportation Impact Analysis Threshold:

A level two transportation impact analysis is required when the proposed land use change or development generates more than 50 gross peak hour vehicle trips or the development meets the threshold that requires State Environmental Policy Act (SEPA) review; some elements of an off-site transportation impact analysis may be required when the development does not generate more than 50 peak hour vehicle trips, but City Transportation Division Staff finds that the transportation impacts attributable to the development have the potential to significantly impact the safe and efficient operation of the existing transportation system.

The threshold for SEPA review includes but is not limited to (for more information, please contact the Planning and Building Department):

- Residential projects of 21 units or more;
- Farming structures of more than 30,000 square feet;
- Non-residential buildings of more than 12,000 square feet with associated parking of more than 40 stalls;
- Parking lots with more than 40 stalls; or
- Additions or modifications to, or replacement of, any building or facility if the proposal changes the character of the building or facility and/or the cumulative impacts make the total development no longer exempt.

Table 1. TIA Thresholds

TIA Thresholds	No analysis	Level 1 Analysis	Level 2 Analysis
SEPA Review Requires			Yes
Gross Peak Hour Trips[1]			
5 > trips	X		
5 < trips < 50		X	
50 or More			X

[1]Gross peak hour trips are the number of peak hour trips the proposed development will generate, excluding pass-by, diverted linked and internal trips.

B. Transportation Impact Analysis Study Requirements

Regardless of the level of transportation impact analysis, all TIA study reports must be submitted in electronic form with at least one hard copy along with the review fee. The site plan must be drawn to engineering scale. The transportation impact analysis study must be stamped by a professional engineer licensed in the State of Washington and be based on a scope previously approved by City Transportation Division Staff. The TIA study review process will not begin until the review fee is paid in full.

All new developments that require concurrency testing must pass the concurrency test before submitting the transportation impact analysis report or any other transportation review.

General Scope of Transportation Impact Analyses

Level One Transportation Impact Analysis:
At the minimum, Level One transportation impact studies must include the following information:

1. A description of existing and proposed land uses and development intensities, driveway locations, existing access easements, parking, loading area, trash collection location, and the site parcel number(s).
2. Daily, AM, (midday if applicable), and PM peak hour trip generations. If the development is phased, a phased trip generation summary is also required.
3. Anticipated build-out year for the proposed development.
4. Document any roadway and other transportation improvements that are within 300 feet of the development site that are under construction, programmed, or planned.
5. A description of the existing street system adjacent to the proposed development, including functional classification, number of traveled lanes, lane width, shoulder treatment, transit facilities, pedestrian facilities, bicycle path corridors, and traffic control at study intersections. A figure may be used to illustrate existing transportation facilities.
6. A vicinity map of the project area showing the public and private streets that will be impacted by the development.
7. A site plan illustrating the placement and design of internal (on site) features such as parking layout, access to public streets, site circulation, pedestrian circulation, delivery

and loading areas and internal public street layout. Hard copies of the site plan must be at 1:20 or 1:30 engineering scale.

8. The applicant provides a site plan showing all non-project driveways within 150 feet of the project's driveways for arterial streets and within 100 feet of the project site for non-arterial streets. Analyze the development's driveway access. Analyze the safe sight distance for the development driveways in accordance to the current Policy R-13 of the Public Works Pre-Approved Plans.
9. Some development may be unique and may require additional analysis, City Transportation Division Staff has the discretion to require additional analysis to ensure the safe and efficient operation of the existing transportation system.

Level Two Transportation Impact Analysis:

At the minimum, Level Two TIA studies must include the following information:

1. Level One transportation impact analysis and the information required in the Level One analysis.
2. Calculate the proportional share impact to determine the significantly impacted intersections required to be analyzed. This analysis will establish the minimum study area. A proportional share impact calculation worksheet is available at https://www.kirklandwa.gov/Government/Departments/Development-Services-Center/Tools-and-Resources/Transportation/Transportation-Impact-Analysis-Guidelines or from City Transportation Division Staff.
3. Provide a description of other developments in the study area that are under construction, approved, or pending approval, as well as roadway and other transportation improvements in the study area that are under construction, programmed, or planned.
4. Calculate the level of service for all significant intersections as determined by the proportional share impact calculations, and any other intersections that City Transportation Division Staff believe to be significant. The following intersections are deemed to be significant intersections:
    - All signalized intersections impacted by more than 1% proportional impact
    - Significant unsignalized intersections impacted by more than 1% proportional impact
    - All development driveways
    - Other intersections identified by City Transportation Division Staff.
5. Analyze the impact of the development traffic within the study area, including but not limited to, the level of impact to significant intersections, adjoining developments, driveways within 150 feet of the development's driveway(s), pedestrians, bicycle, public transit facilities, existing or potential high collision areas (as determined by City Transportation Division Staff) and any other public facilities identified by City Transportation Division Staff.
6. Analyze existing conditions. The applicant analyzes the existing a.m., midday, and/or p.m. peak hour LOS using the operational method in the most recent Highway Capacity Manual or other methodologies as specified by City Transportation Division Staff. City Transportation Division Staff provides turning movement counts where current traffic counts are available; otherwise, the applicant collects the appropriate traffic counts. The existing traffic counts other than the City's annual traffic counts must not be older than 12 months from the time of the analysis.

7. Analyze the future conditions **without** the development traffic. The applicant calculates the LOS for the significant intersections for the year the project is anticipated to be fully developed.
    a. City Transportation Division Staff supplies information on the appropriate level of background traffic, including traffic from pipeline projects that have received a passing Concurrency Test Notice, and are planned to be built within the build-out year of the proposed development. If the development is phased, a LOS analysis for each phase may be required.
    b. Unless directed otherwise by City Transportation Division Staff, the pipeline projects traffic volumes and a 2% per year compounded growth factor shall be added to the existing traffic volumes to forecast future traffic condition. The City will provide the future traffic volumes at signalized intersections unless existing traffic is not available for the study intersections.
    c. Only the six-year capital improvement projects that are fully funded and scheduled to be completed by the time the proposed development is anticipated to be built may be considered in the level of service calculation for future conditions.
8. Analyze the future conditions **with** the development traffic but **without** mitigation. The applicant calculates the LOS for the significant intersections for the year the project is fully developed. If the development is phased, a LOS analysis for each phase may be required.
9. If mitigation is required, analyze the future conditions with the development traffic **and** proposed mitigation. The applicant calculates the LOS for the significant intersections that did not meet the LOS standards contained in Table 2 in section G. If the development is phased, a LOS analysis for each phase may be required.
10. Analyze transportation safety impacts. At the minimum, crash analysis shall be done for all significant intersections, roadway segments that surround the site, and any other intersections that City Transportation Division Staff believes to be significant. Crash data may be requested from the City by contacting David Gourlie, Transportation Engineering Analyst (DGourlie@kirklandwa.gov or 425-587-3867). The applicant shall supplement the crash data from the City with crash data from the Washington State Patrol. The crash analysis shall analyze crash frequency, types, and patterns. It will also identify appropriate mitigating measures. Subsequently, the applicant analyzes and comments upon the impact of the project given the safety history of surrounding transportation network.
11. The applicant analyzes and comment on the project access and its impacts to pedestrians, cyclists, transit, on-site circulation, adjacent driveways and/or intersections.
12. The TIA report must include figures showing the future Daily, AM, (midday if applicable), and PM peak turning volumes at all studied intersections for all three conditions - existing, future without the development and future with the development. If the development is phased and a LOS analysis for each phase is required, then a map of traffic volumes for each phase is also required.
13. In addition to the intersection analysis for the AM and PM peak periods, other intersection analyses such as, but not limited to pedestrian, bicycle and site circulation; delivery and loading areas; parking demand and utilization; traffic queuing and gap analysis; nonmotorized transit operations and rider access; or traffic signal system operations and coordination may be needed depending on the project. In addition to intersection analysis, a corridor and peak direction analyses such as, but not limited to

travel time or origin/destination analyses may be required. Additionally, analysis of midday impacts may be required. The required analysis will be determined in coordination with the City traffic engineer during the TIA scoping process.

14. Document all assumptions and provide the data sources used in TIA report.
15. Details on the trip generation, crash data, traffic volumes, parking data, other data and references, LOS calculations and other calculations should be provided in the appendix of the TIA report.

C. Development Trip Generation

1. If available, the calculation of trip generation shall be based on the current edition of the ITE Trip Generation Report. When both are available, the use of the fitted curve equation or the average rates will be determined based on the methodology described the ITE Trip Generation Handbook or as required by City Transportation Division Staff.
2. The applicant's transportation engineer may propose an alternate trip generation rate to the ITE rates for staff review and approval. If the proposed project does not fit the land use within the ITE Trip Generation Report or City Transportation Division Staff deems the ITE trip generation data insufficient or not reliable, the applicant shall perform an independent trip generation study approved by City Transportation Division Staff. The professional engineer performing the analysis shall request approval of the trip generation study methodology from City Transportation Division Staff prior to commencement of the study.

   At the minimum, three days of traffic count data are required for the trip generation study. The traffic count data collection must be done for three consecutive typical days (Tuesday, Wednesday, and Thursday) unless the land use has a peak trip generation outside of the typical weekdays. Consideration of transportation demand management (TDM) to reduce the trip generation forecast will be evaluated on a case-by-case basis. When possible, independent trip generation data shall be developed by measurement rather than estimation.
3. Consistency in trip generation shall be maintained between the transportation concurrency submittal, the TIA report and independent transportation impact fee calculation. This means that if a non-ITE rate is developed for concurrency testing and the TIA report, the same rate shall be used for an independent transportation impact fee calculation, if an independent impact fee calculation is requested by the applicant (see the Kirkland Municipal Code, Chapter 27.04.040).
4. The number of trips generated by the existing land use may be deducted from the number of trips generated by the proposed land use. Trips that would have been generated by buildings that have been vacant for more than 12 months may not be deducted unless they were captured in the City's most current annual traffic count data.
5. Rates may be adjusted to account for pass-by, diverted, and internal trips; the use of such adjustments will be considered on a case-by-case basis. Net new trips will include diverted linked trips. The summary trip generation table shall be accompanied by a detailed table showing all the trip generation components.
6. The trip generation should also include a discussion of trip types and any trip credits for existing uses on the project site. The trip rate credit discussion should be supported by actual data and/or published reports in transportation and traffic engineering journals.

D. Traffic Distribution and Assignment

For developments generating more than 50 peak hour trips, the Public Works Department will provide to the applicant information concerning how PM peak project traffic travels on the roadway network in the form of a distribution analysis or PM peak link volumes, depending on the project. The manner in which project traffic uses the network is estimated using the Bellevue-Kirkland-Redmond Transportation Model (BKR Model). The location of project driveways and any new streets, as well as local traffic characteristics may result in needing to modify the project traffic circulation pattern within the vicinity of the project site forecasted by the BKR Model. The applicant may suggest a manual adjusted trip assignment to the City by providing traffic distribution and assignment data for City staff review and approval.

Within two weeks upon receiving the trip distribution percentage from City Transportation Division Staff, the engineering consultant shall provide to City Transportation Division Staff the AM and PM peak hour traffic assignment at the project driveways and all signalized intersections that are impacted by more than 10 peak hour trips.

E. Proportional Share Impact Calculation

A proportional share impact calculation is required as part of the Level Two transportation impact analysis. Signalized intersections that are impacted by the proposed development by 1% or more are considered to be "significant intersections"; thus, are required, at the minimum, to be analyzed for level of service and crash analysis. In addition, other unsignalized and signalized intersections may be required by City Transportation Division Staff as deemed necessary to evaluate the project's impacts. Intersections adjacent to the project's frontage are significant intersections.

F. Level of Service Analysis

The level of service analysis shall be done in accordance with the latest version of the Highway Capacity Manual using Highway Capacity Software (HCS), Synchro software or other software approved by City Transportation Division Staff.

The level of service calculation for signalized intersections for existing, future with development and future without development conditions shall be based on the City's signal phasing and operational parameters. The signal parameters may be requested from Thang Nguyen (tnguyen@kirklandwa.gov or 425-587-3869) or Rochelle Starrett (rstarrett@kirklandwa.gov or 425-587-3870). For the mitigated future with project condition, the applicant may propose an optimized signal phasing/setting, but it must comply with the City's signal parameters and be approved by City Transportation Division Staff.

G. Adopted Levels of Service (LOS)

The City of Kirkland adopts the SEPA "significant adverse environmental impacts" standard and the Highway Capacity Method of level of service. Table 2 identifies the City's transportation level of service standards.

Table 2. Intersection LOS Standards

Peak Hour Intersection LOS with project traffic Signalized intersection- use intersection average, unsignalized intersection- use minor approach impacted by project.	Mitigation Required?
A thru D	**No.**
E	**Yes**, If intersection proportional share ≥ 15%
F	**Yes**, If intersection proportional share ≥ 5%

H. Installation of Mitigation and Improvements.

Table 2 is used to determine when the level of service mitigation is required. The intention of the intersection mitigation is to reduce a project's impact on a given intersection or provide the necessary transportation mitigation to attain the next better LOS grade as follows:

- If the level of service at a "significant intersection" is forecasted to operate at LOS-E and the proposed development impacts that intersection by 15% or more, then transportation mitigation is required to address the impact by maintaining the intersection current LOS-E.
- If the level of service at a "significant intersection" is forecasted to operate at LOS-F and the proposed development impacts that intersection by 5% or more, then transportation mitigation is required to address the impact by not increasing the delay[1] from the future condition without the project traffic. If the intersection delay[1] cannot be improved because the right-of-way is not available to improve the delay[1], then the applicant must maintain the letter grade level of service for the future condition without the development's traffic, reduce the delay[1] for the intersection, and proposed other alternative mitigation(s) to improve the traffic flow near and/or through the intersection such as but not limited to corridor improvements, transit improvements, and/or nonmotorized improvements. The alternative mitigation shall be reviewed and approved on a case-by-case basis by the City Transportation Division Staff.

Table 3. Mitigation Requirements

Peak Hour Intersection LOS with Project Traffic	Mitigation Required	Mitigation LOS Target	Alternative Targets
LOS E	Yes, If intersection proportional share ≥ 15%	LOS E	
LOS F	Yes, If intersection proportional share ≥ 5%	Maintain vehicle delay from Future without Project Traffic condition	• Maintain the letter grade level of service for the Future without Project Traffic • Reduce the delay[1] for the intersection • Propose other alternative mitigation(s) to improve the traffic flow near and/or through the intersection

1. Intersection delay means intersection signal delay for signalized intersections and approach vehicle delay for unsignalized intersections.

In addition, installation of site-specific improvements may be required, or done voluntarily, to mitigate the development's transportation impacts on nonmotorized modes and transportation safety. The type of the required improvements is determined on a case-by-case basis and depend upon the significance of the development impacts to roadway and intersection performance, safety, specific access, and circulation needs, neighborhood impacts, and impacts on pedestrian and transit facilities. Required improvement shall be constructed or implemented prior to the occupancy of the development. Examples of transportation improvements include, but are not limited to the following:

- Construction of new pedestrian or multi-use paths or trails, access leading to the development
- Construction of acceleration and deceleration lanes, or turn lanes at intersections
- Installation of traffic control devices for driveways, paths, trails, and roads, such as traffic signals, warning beacons, signs, lane marking, etc.
- Installation of pedestrian improvements such as crosswalks, rectangular rapid flashing beacons (RRFBs), etc.
- Installation of transit improvements such as pedestrian connection to a transit facility, bus shelter, etc.
- Installation of neighborhood traffic calming devices
- Funding of a neighborhood traffic calming improvement project
- Contribution to a transportation corridor improvement
- Contribution to the City's transportation demand management program

Additional voluntary transportation improvements proposed must be completed within 6 years from the issuance of the development's final building permit

Developments are exempt from constructing any identified transportation improvements that are a part of a city's planned transportation project noted as "used to determine Impact Fee rate" in the Transportation Capital Facilities Plan if the identified transportation improvements are fully funded within the current 6-year CIP plan. However, additional mitigation necessary to

meet the LOS standards that are not part of the current 6-year CIP scope must be constructed concurrent with the development and the cost for the mitigation will be entirely borne by the new development and the additional mitigation may not be credited against the transportation impact fee that the development has to pay.

If the transportation improvements necessary to mitigate the development's impact are identified in the 6-year CIP, Transportation Strategic Plan, or other approved planning document, then the development is required to construct the improvement consistent with the plan. The development may not make partial improvement, except in cases where the partial improvement fully mitigates the development's impact, and it is possible to phase implementation of the planned project. Reasons the planned project could not be phased include, but are not limited to, the phased project creates an unsafe condition, the phased project would not meet city engineering standards, or the phased project creates an undue burden on the community. Phasing a planned project must be approved by City Transportation Division Staff.

For example, if Project A included a northbound right-turn lane and a southbound left-turn lane, and it is not possible to separate the improvement into two separate projects because constructing only one of the two turn lanes would create an unsafe condition, then the development must construct the entire improvement. However, if those two improvements are identified as separate projects, then the developer may construct the project(s) that mitigate the development's impact.

If Project B included only a northbound right-turn lane that is already funded by transportation impact fee and does not mitigate the development impact, but an additional southbound left-turn lane is required to mitigate the development impact and is feasible to construct as a separate project, then the applicant is responsible to construct the southbound left-turn lane prior to building occupancy. Otherwise, the applicant may elect to reduce the size of development to meet the level of service or postpone the development until the necessary improvement is constructed. The example below describes when mitigation is exempt if the required mitigation project is a 6-year CIP project.

Example:

Improvements required to meet LOS standard at impacted intersections	Is it an impact fee funded improvement?	Is it fully[1] funded in the 6-year CIP?	Required to be mitigated by the development?
NE 116th Street/124th Avenue NE	No	No	Yes
Juanita Drive/NE 122nd Place	No	Yes	No
Market Street/13th Avenue West	Yes	Yes	No
Central Way/4th Avenue	Yes	No	Yes

1. Fully funded means the improvement project has 100% secured funding.

TDM Mitigation

A Transportation Demand Management (TDM) program can only be used as mitigation when a traffic signal is required to improve the LOS, the forecasted intersection traffic volumes do not meet signal warrant(s) and the TDM measures approved by City Transportation Division Staff can reduce the proposed development's proportional share impact so that it will no longer trigger the LOS mitigation. The effectiveness of the TDM program must be verified with traffic counts when the development is built and at 90% occupancy to ensure that its trip generation

is reduced to the level that it no longer triggers the 15% proportional share for LOS-E and 5% proportional share for LOS-F.

I. Signal Warrants

If an impacted intersection or driveway will operate at LOS-E or F and the proposed development triggers the criteria for mitigation as described in section **G. Adopted Levels of Service (LOS)** and the traffic volumes at the impacted intersection meets the MUTCD signal warrant 1 *Eight-Hour Vehicular Volume*, warrant 2 *Four-Hour Vehicle Volume*, and warrant 3 *Peak Hour Volume*, then the applicant shall install a traffic signal.

J. Internal Road

Internal roads, driveways, and drive aisles, whether public or private, should be analyzed for safe and efficient internal traffic circulation and shall be designed to meet the Public Works Pre-Approved Plans standards.

K. Level II Transportation Impact Analysis Report Format

The scope of analysis must be pre-approved by City Transportation Division Staff. The transportation impact analysis report shall include the following:

Cover Page

Title, date, development permit number, name of the development, professional license engineer stamp.

Table of Content

Project Description
Executive Summary
Existing Conditions
Future Conditions without Project Conditions
Future conditions with Project Conditions
Conclusion, Mitigations and Recommendations
List of Figures
List of Tables
List of Appendices

Project Description:

A. A description of ***existing*** and ***proposed*** land uses and development intensities. This section should include (but not be limited to):
    a. Project name, location, size of project (including building sizes and their land uses), total development area (total acreage of the subject property if the project trip generation is based on acreage.)
    b. The site parcel number(s).
    c. Number of parking stalls if applicable (standard, compact and handicap).
    d. Type and number of access points
    e. The number and location of bicycle parking (racks and lockers).
    f. Location of loading zone(s), if applicable.
    g. Location(s) of trash collection, if applicable.
    h. Proposed on-street parking, if applicable.

i. Existing access easements.
j. and any other proposed transportation related elements or voluntary transportation mitigation.

B. Daily, AM, mid-day if applicable, and PM peak hour trip generations.
C. Anticipated build-out year for the proposed development and anticipated construction phasing if it is a phased development.
D. A site plan that shows proposed building locations, property line and road setbacks, existing and proposed parking lot layouts, and if applicable, driveways and intersections within 150 feet of the project site. The site plan shall be consistent with any associated land use planning actions and/or development permits.
E. List of intersections to be analyzed in the report.

Existing Condition:

A description of the existing street system within the study area including:

a. An existing site plan or illustration of the current use, including driveways and nonmotorized connection to the project site.
b. If applicable, a description of the existing site required transportation and parking management plans and any other conditions of approval for the project site.
c. Street functional classification, number of traveled lanes, lane width, shoulder treatment, median types, sidewalk width, bicycle path corridors, transit facilities and services and traffic control at the intersections analyzed in the report. A figure may be used to illustrate existing transportation facilities.
d. Pedestrian crossing within 300 feet of the project site.
e. Transit routes and headways within the study area.
f. On-street parking inventory along the project frontage and within 200 feet of the project site.
g. On-street parking restrictions.
h. A figure illustrating the existing daily and peak hours traffic volumes on the street or streets fronting the project site and at the intersections analyzed in the report. Existing traffic volumes may be available from the City. If not, the applicant is required to collect traffic volume data. Traffic volume data collection must be made at least one week from a holiday week.
i. The AM, midday if required by City Transportation Division Staff, and PM peak hour level of service for the intersections analyzed in the report.
j. A table summarizing the proportional share impact calculation results for the intersections analyzed in the report.
k. At the minimum, the most recent 5-year historical crash data for the streets fronting the project site and at the intersections analyzed in the report. Provide details crash analysis such as crash types, frequency, patterns at the analyzed intersections that have an MEV (million entering vehicle) rate of one or more and at high accident locations.
b. When applicable, provide a critical gap analysis at the site driveways and/or at the impacted intersections for peak periods. The critical gap analysis shall be based on measurements.

Future Conditions:

A. Future without Project conditions

Provide a description of:

a. Any transportation improvement projects in the City of Kirkland current 6-year Capital Improvement Plan at the analyzed intersections and those that are within 800 feet of the project site.
b. Any transit improvement projects within the next 6 years that are within 800 feet of the project site.
c. If different from the existing condition, transit routes and headways within the study area.
d. If different from the existing condition, nonmotorized facilities connecting to the site.
e. If different from the existing condition, Pedestrian crossings within 300 feet of the project site.
f. If different from existing condition, on-street parking inventory.
g. Any pipeline developments to be constructed within the proposed project's build-out year.
h. Figures showing the daily and peak hours traffic volumes on the street or streets fronting the project site and at the intersections analyzed in the report.
i. Description of the forecasted traffic volumes for the build-out year without the proposed project.
j. The future without project conditions level of service for the intersections analyzed in the report.

B. Future with Project conditions

Provide a description of:

a. The proposed development daily, AM and PM peak hour trip generations. The trip generation calculations shall be based on the latest ITE Trip Generation Manual unless the data are unreliable or if there is more reliable local data available. A trip generation study may be proposed by the applicant but must be approved by City Transportation Division Staff. If the ITE trip generation data is unreliable, the applicant is required to complete a trip generation study approved by City Transportation Division Staff.
b. If the project is to be developed in phases, the trip generation table should reflect the phased development.
c. The development trip distribution based on the BKR transportation forecast model shall be presented as a figure.
d. The development trip assignment shall be presented as a figure. Show the daily, PM peak and AM peak hour traffic assignment for gross project trips and net new project trips.
e. A table summarizing the proportional share impact calculation results for the intersections analyzed in the report within the future LOS summary table.
f. Figures showing the cumulative daily and peak hours traffic volumes with the proposed development traffic assignment on the street or streets fronting the project site and at the intersections analyzed in the report.
g. The future with project conditions without mitigation and, where applicable, with mitigation level of service for the intersections analyzed in the report.

h. The level of service and queuing analysis for the project driveways.
i. A table summarizing the level of service results with the proportional share calculation result.
j. Queuing analysis for any intersections within 150 feet of the site driveways.
k. Sight distance analysis for the site driveways.
l. When applicable, provide a critical gap analysis at the site driveways and/or at the impacted intersections for the peak periods.
m. When applicable, provide an on-street parking demand and utilization study.
n. When applicable, a traffic signal warrants based on the Manual on Uniform Traffic Control Devices (MUTCD).

C. Conclusion, Mitigations and Recommendations

a. Summarize the conclusion of the development impacts, all proposed traffic mitigation measures, and recommendations.

D. Appendices

a. Traffic count data
b. Trip Generation data and calculations
c. Level of Service calculation results
d. Parking data
e. Queue data
f. Gap analysis data
g. Signal warrant results and calculations
h. Crash data
i. Supporting references used in the TIA analysis

Tables and figures must be numbered, and data must be provided in appendices for easy reference. All pages of the TIA report must be numbered. Any changes to the proposed development or responses to staff's comments must be updated within a revised TIA report.

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-39 Short-Term Parking Design, Use, and Location

Short-term parking spaces include designated commercial loading zones and passenger loading spaces that typically restrict parking to 30 minutes or less depending on the type of space. Due to the higher turnover of these spaces, special design considerations are needed to ensure their safe and efficient operations. This policy specifically applies to the engineering decisions that govern the design of these spaces assuming that a short-term parking space has already been approved by the City.

1. General Design Parameters: all short-term parking shall be designed to meet on-street parking design standards contained in Policy R-34A: On-Street Parking
2. Signage: Short-term parking zones shall be clearly signed to indicate the intended use of the space. The message and design of the sign shall be approved by Public Works.
3. Accessibility: Short-term parking shall be designed to provide direct access to the curb and sidewalk.
4. Bike Lanes: Where on-street bike lanes currently exist or are planned, the design of short-term parking shall be coordinated with Public Works. High turnover short-term parking zones should include a buffer between the bike lane and parking lane to minimize potential conflicts between cyclists and the loading area.
5. Passenger Loading Zone Design Regulations
    a) Location on block: Passenger loading zones may be permitted at any location on the block. Locating passenger loading zones adjacent to driveways is desirable to provide additional maneuvering space. In the event that both a passenger loading zone and a commercial loading zone is permitted within a block, the location of the commercial loading zone shall have priority.
    b) Distance from intersections or driveways:
        - Within existing on-street parking: if on-street parking currently exists on a collector or arterial street, passenger loading zones may be signed within any legal parking space. Passenger loading zones shall be located at least 30 ft. from adjacent intersections.
        - Within newly created on-street parking: passenger loading zones may be striped as part of frontage improvements that create new on-street parking provided that they comply with the recommended spacing in Table 1. Meeting the preferred values in Table 1 is required in most cases unless otherwise recommended by Public Works. Minimum values may be permitted by Public Works in Kirkland's urban centers (*i.e.,* the Central Business District, Juanita Business District, Totem Lake, or NE 85th Street Station Area), lower-volume arterial or collector streets, or when an operational analysis of the passenger loading zone demonstrates that signal operations will not be impacted due to anticipated traffic.
        - The required distance from intersections is measured from the stop bar to the start of the on-street parking space (see Figure 1).

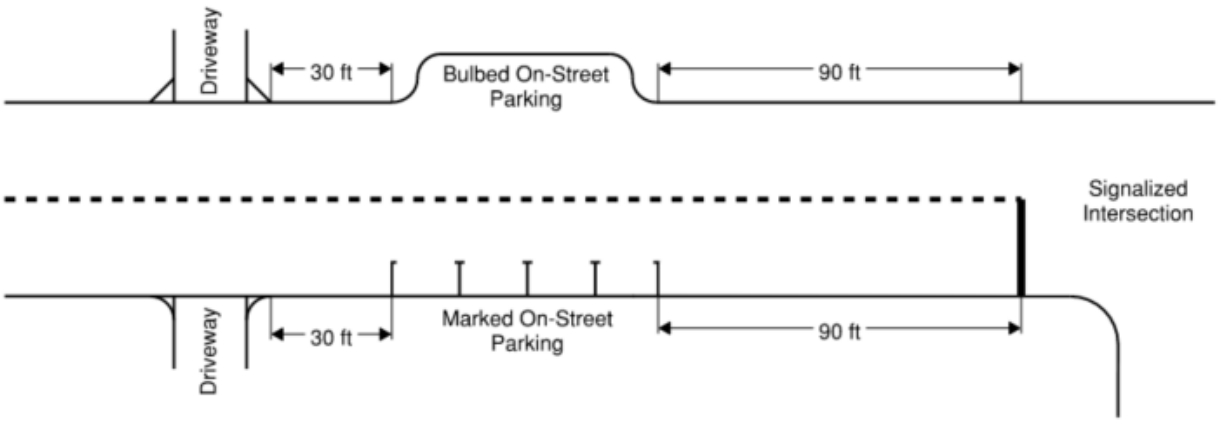
- The required distance from driveways is measured from the driveway apron or curb return to the start of the on-street parking space (see Figure 1).

Table 1: Required Passenger Loading Offsets for Newly Created On-Street Parking

Functional Classification	Signalized Intersection or Roundabout (Exiting Approach) – Preferred	Signalized Intersection or Roundabout (Exiting Approach) – Minimum	All Other Cases
Arterial Outside Urban Center	150 ft.	30 ft.	30 ft.
Arterial Inside Urban Center	75 ft.	30 ft.	30 ft.
Collector	50 ft.	30 ft.	30 ft.

6. Commercial Loading Zone Design Regulations
    a) Location on block: Commercial loading zones are only permitted at either the beginning or end of on-street parking pull outs or adjacent to driveways since these locations provide additional maneuvering space for larger vehicles.
    b) Distance from intersections or driveways: Commercial loading zones shall be located at least 30 ft. from adjacent intersections or driveways. The required distance from intersections is measured from the stop bar to the start of the on-street parking space (see Figure 1). The required distance from driveways is measured from the driveway apron or curb return to the start of the on-street parking space (see Figure 1).
    c) Length: Commercial loading zone length shall typically be 30 ft. unless otherwise approved by Public Works based on anticipated vehicle size.
    d) Additional design criteria:
        - Part time commercial loading zones may be permitted based on the operational criteria of new development provided that provision of part time loading zones will not unduly restrict parking for existing residents and businesses
        - Commercial loading zones shall not be signed for use exclusively by specific businesses
        - Commercial loading zones shall only be located within parallel on-street parking
        - The length of a commercial loading zone shall be indicated with a yellow painted curb.

Figure 1: Measurement of Required Offset for On-Street Parking from Intersections or Driveways



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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-40: Street Lighting Design Guidelines

III APPENDIXES

APPENDIX A

APPENDIX B

I INTRODUCTION

1 PURPOSE

Street lighting refers to illumination that is provided for arterial, collector, and residential streets where vehicles, pedestrians, and bicyclists may be present during hours of darkness. Diminished visibility is a significant contributing factor to nighttime crashes. Therefore, the primary purpose of street lighting is to provide a visual environment that allows comfortable visibility and accurate identification of hazards at night, both on and adjacent to the street, so drivers, pedestrians and cyclists can appropriately take action ahead of time thereby reducing the incidence of nighttime crashes.

An enhanced visual environment affects safety-related driver behavior, adds a sense of personal security and increases the visibility of businesses, which may lead to an increase in commercial activity.

These guidelines establish procedures for the preparation and review of street lighting design pertaining to private and public development projects located at/within the vicinity of Kirkland's arterial, collector, and residential streets. These guidelines also apply to the design of lighting improvements at walkways, pedestrian crosswalks, associated bikeways, intersections, and roundabouts.

Additionally, this document provides the Design Engineer with sufficient information to prepare the plans for City review and approval.

The requirements of this document pertain to street lighting systems in the public right-of-way within the City of Kirkland including those owned and maintained by Puget Sound Energy (PSE). The requirements of this document do not apply to lighting systems located within transportation facilities under WSDOT's or other agencies' jurisdiction.

2 DESIGN GOALS

Street lighting design should strive to achieve the following goals:

- Improve visual quality for all users including drivers, pedestrians, and cyclists.
- Provide quality light and increased contrast for detecting hazards.
- Illuminate high conflict areas such as intersections, roundabouts, midblock crosswalks, and driveways.
- Minimize the environmental impacts of lights during nighttime.
- Minimize impacts such as light trespass and excessive glare to adjacent areas.
- Implement lighting systems that optimize energy usage and are easy to maintain.

3 STANDARD PRACTICE

The Design Engineer shall be a registered Civil or Electrical Professional Engineer. Plans and special provisions shall be sealed and signed by the Design Engineer.

The Design Engineer preparing plans for a roadway lighting system shall comply with the requirements of these guidelines as well as the following publications:

- City of Kirkland Pre-Approved Plans (Standard Details and Policies).
- Current edition of the *Standard Specifications for Road, Bridge, and Municipal Construction* published by the Washington State Department of Transportation (WSDOT), including all Amendments.
- Current edition of the Standard Plans for Road, Bridge, and Municipal Construction published by WSDOT.
- Applicable requirements of the State of Washington Department of Labor and Industries (L&I).
- NFPA 70, the National Electric Code, as adopted and modified by the State of Washington.
- Design of Roadway Facility Lighting ANSI/IES RP-8-22.
- *The Lighting Handbook* published by the Illuminating Engineering Society.
- AASHTO Roadside Barriers Design Guidelines.

II DESIGN GUIDELINES

4 DESIGN AND REVIEW PROCESS

All street lighting systems installed in the City of Kirkland shall meet the requirements established in these guidelines.

The project owner (development applicant, City Capital project, etc.) or PSE shall be responsible for submitting materials to the City for review and approval of the proposed lighting system. If PSE will own and maintain the lighting system upon project completion, the project owner shall work in coordination with PSE to receive approval from the City for the design and installation of the system.

The following steps describe the typical process for the design review of street lighting systems. For questions on the City of Kirkland's street lighting review process or technical requirements, please contact Rochelle Starrett, rstarrett@kirklandwa.gov.

- The Design Engineer shall identify applicable City of Kirkland's lighting system and lighting level requirements (based on street functional classification and pedestrian activity) and standards. These are included in Appendixes A and B.
- If a new service is required, the Design Engineer shall work with PSE to identify the 120/240 single phase service power location and specific connection requirements.
- The Design Engineer shall confirm with the City if a street lighting design analysis report is required as part of the project submittals. Projects requiring a street lighting design analysis report typically include large capital transportation projects involving significant street reconfiguration (widening, etc.), construction or reconstruction of arterial and collector streets, construction of new shared pedestrian/bicyclist pathways; and private development projects with significant frontage along arterial or collector streets. In addition to the submittal requirements described in this section, the street lighting design analysis report shall include narrative to document the design methodology, design alternatives evaluated, recommendations, and the results of photometric and electrical design analyses.
- Lighting analysis and evaluation must be performed using AGi32 Software for all projects that meet the requirements described in Section 5A(2) below.
- Submittals: At least two submittals, the Preliminary and the Final may be required by the City. Each submittal shall include one (1) copy of the drawings, an AGi summary report, and other required data. Plan sheets shall be submitted as part of the complete civil design package for the project. The civil design package intake may not be accepted for review unless a complete submittal, as detailed below, is included. Failure to provide a complete civil design package may require additional submittals for review.
- **Preliminary submittal for review.** The Design Engineer shall provide the following:
    - Project description
    - Site plan (streets and project address labeled)

  - Vicinity map
  - Existing and proposed roadway and sidewalk geometry for reference
  - Information on existing and/or future illumination system ownership
  - Proposed illumination system layout including luminaire locations with labels for: luminaire model number, wattage, color temperature, mounting height, pole material, and mast arm length. This information may be included in table format for clarity.
  - Lighting level summary table comparing proposed average maintained illuminance (footcandles) and uniformity ratio (avg/min) to target levels.
  - Supporting calculations document with AGi32 analysis outputs, including luminaire definitions, calculation summary, and Figure showing calculation area limits and individual calculation points.
  - Identification of potential conflicts with utilities or other features and specific areas that may require potholing.
- **Final submittal after review.** Final Submittal shall include all of the above and responses to initial review comments. In addition, a temporary illumination design submittal as part of the submittal package is required if existing illumination cannot be maintained or is to be removed.

Resubmittal and Approval: If outstanding design issues still exist, the City will require the Design Engineer to submit a new set of Plans for further review and comment prior to approval.

5 STREET LIGHTING DESIGN REQUIREMENTS

A. Lighting Analysis and Evaluation

(1) Objectives

The main objective of street lighting analysis and evaluation is to identify the lighting improvements required to meet Kirkland's recommended lighting levels and standards. Recommended lighting improvements may include any of the following:

i. Installation of new or upgrade to existing street and pedestrian lighting systems located within the vicinity of private developments, or on streets included within the limits of CIP (Capital Improvement Program) projects.
ii. Installation of continuous street and pedestrian lighting systems on new and widened public streets, or on City-owned street frontage of private developments.
iii. Installation of street lighting system at new signalized intersections.
iv. Installation of street lighting at existing signalized and un-signalized intersections.
v. Installation of street lighting at new uncontrolled marked midblock crosswalks.
vi. Installation of street lighting at existing uncontrolled marked midblock crosswalks.

vii. One on one luminaire / pole replacement at a single location.
viii. Upgrade existing luminaire to LED, add new LED luminaire on an existing PSE pole.

(2) Lighting Analysis and Evaluation Tools/AGi32 Software Use

The City of Kirkland has identified AGi32 (Lighting Analysts, LLC c/o Revalize Software) as the industry standard software tool for the calculation of accurate photometric predictions. AGi32 Software must be used to perform the lighting analysis and evaluation for projects of **any size** that meet the following criteria:

a. The project has frontage on or at an intersection located on a street designated as arterial or collector as defined in Figure 1 on Appendix A.
b. The project is located on a local street along a school walk route as depicted in the Kirkland School Walk Routes Map on Transportation Strategic Plan, formerly known as the Transportation Master Plan (TMP). See Map on Page 29 of 2015 TMP (https://www.kirklandwa.gov/files/sharedassets/public/v/2/public-works/city-of-kirkland-transportation-master-plan.pdf)
c. The project has frontage on or is within 50 feet of any street intersection with a marked crosswalk. Lighting analysis shall be required at the intersection as defined by the calculation area identified in these guidelines in addition to the subject project frontage.
d. The project has frontage on or is within 50 feet of any street with a marked midblock crosswalk. Lighting analysis shall be required on the midblock crosswalk as defined by the calculation area identified in these guidelines in addition to the subject project frontage.
e. The project is located on an area of major pedestrian sidewalks, pedestrian oriented streets, or through-block pathways as defined in Kirkland Zoning Code, Chapter 180, Plate 34 Series. (https://www.codepublishing.com/WA/Kirkland/html/KirklandZ180/KirklandZ180.html#Plate34A)

Use of AGi32 Software for lighting analysis is not required for residential developments of fewer than four units if **all** of the following conditions apply:

i. Located on a local street; and,
ii. Not in area that has experienced one or more of fatal, severe injury, fixed object, or pedestrian- or cyclist-involved crashes during the past five years; and,
iii. Not defined as part of a school walk route as defined above; and,
iv. Not defined as a Kirkland Neighborhood Greenways as defined above; and,
v. No other public street exists within the development other than the frontage; and,
vi. Not within 50 feet of an intersection with another public or private street.

If all the above conditions are met and use of AGi32 software for lighting analysis is not required, the proposed lighting improvements shall be limited to the following, as directed by Public Works:

1. One-to-one luminaire and/or pole replacement
2. Upgrading an existing luminaire to a comparable new LED luminaire fixture
3. Adding a new LED luminaire on an existing PSE pole

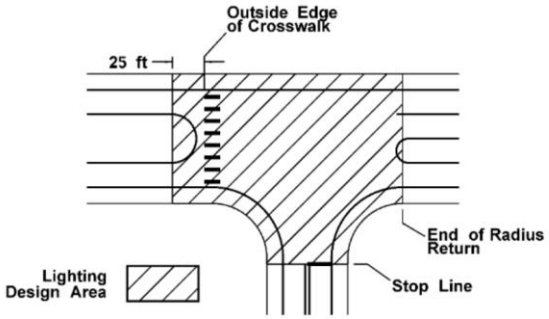
(3) Additional Considerations

a. Facility Evaluation Extent: Where a half-street improvement is required in conjunction with a development, the roadway width to be used in the lighting analysis for illumination design purposes will be the actual full width of the roadway at the time of design and not half of the ultimate width. Lighting levels shall be brought up to current standards for the whole width of the roadway adjacent to a new development. This may include installation of new streetlights on the opposite side of the street from the development to bring lighting levels to current standards. Existing light levels shall be evaluated for the length of the project frontage unless a modified evaluation extent is permitted in coordination with City staff.

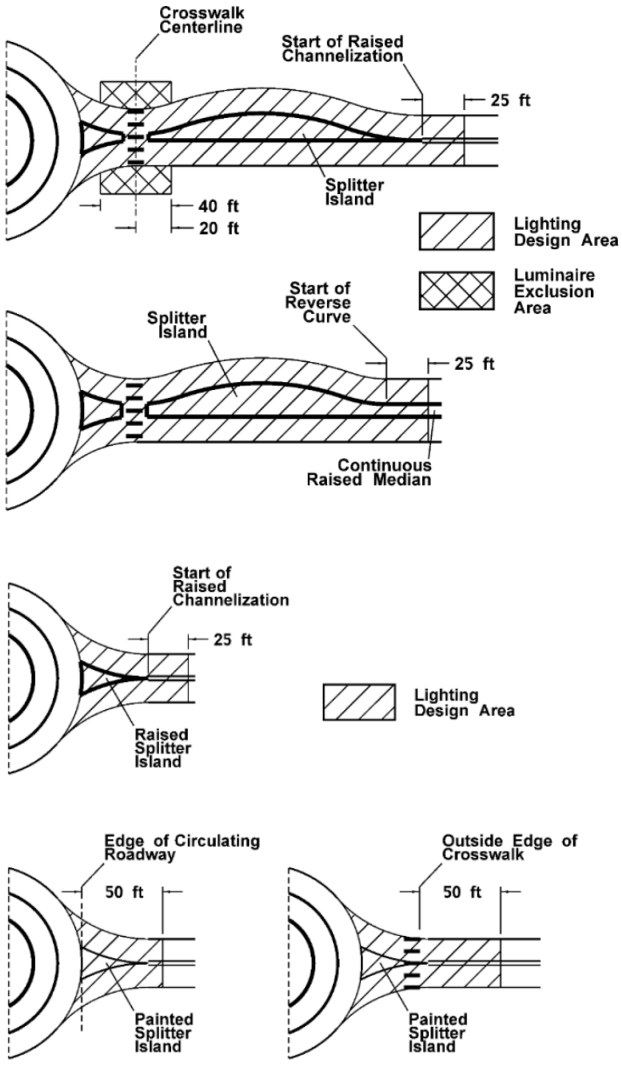
b. System Evaluation: When using AGi32 software in the analysis and evaluation of lighting improvements the following calculation criteria must be input into the program.
   i. Light Loss Factor (LLF): 0.85 is to be used for LED luminaire fixtures. Existing High Pressure Sodium (HPS) luminaire fixtures shall use a LLF of 0.62.
   ii. Initial Lumens Values: Typically included in the IES file provided by the manufacturer. For the latest IES file of the identified fixture, visit the manufacturer website or contact the manufacturer.
   iii. Analysis Method: Luminance and/or Illuminance method can be used. Horizontal illuminance method is required for intersections and curved section of streets.
   iv. Default Drive Current: 530mA. Confirm with City.
   v. Color Temperature: Warmer/softer light is preferred. 2700k is required on residential local and collector streets. On arterial streets 3000k is preferred, but 4000k may be considered on a case-by-case base.
   vi. Calculation areas shall be laid out on a 5-foot by 5-foot grid as follows:

- **Intersections**: The intersection and roundabout calculation area is required for the entirety of the intersection area, extends to face-of-curb or edge of pavement, and includes marked crosswalk areas.

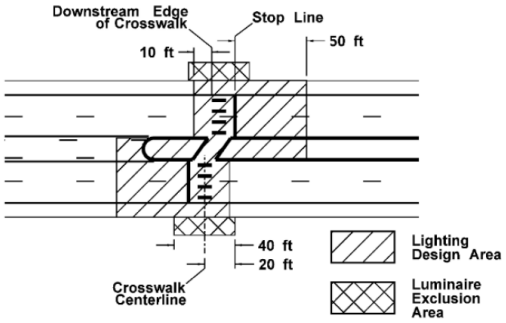
The calculation area for a typical non-roundabout intersection shall extend to the stop line or yield line, or to 25 feet beyond the outside edge of the marked crosswalk, whichever is furthest from the center of the intersection. If no stop or yield line exist and there is no marked crosswalk, the intersection area shall extend to the end of the radius return.



The calculation area for a roundabout may exclude the central island and truck apron. For safety and visibility, luminaire poles should not be placed within 20 feet of the centerline of any crosswalk. The calculation area shall extend to 25 feet before the start of either the raised channelization or the start of the reverse curve approach, 50 feet before the outside edge of the crosswalk, or 50 feet from the edge of the circulating roadway, whichever is furthest from the center of the intersection.



- **Roadway segments**: The roadway area extends to the face-of-curb or edge of pavement, and includes raised median islands, bicycle lanes, bicycle lane buffer areas, on-street bicycle/pedestrian shared paths and related buffer areas.
- **Midblock marked crosswalks**: regardless of control type, the analysis area extends 50 feet in advance of the stop line for the crosswalk, if present, and 10 feet beyond the downstream edge of the crosswalk for each approach direction. The analysis area also includes the curb ramps. If pedestrian refuge islands are present, they should be included in the analysis area. For safety and visibility, luminaire poles should not be placed within 20 feet of the centerline of any crosswalk. Luminaire poles should be installed upstream of the crossing on each side of the roadway, such that there is positive lighting of any pedestrian in the crosswalk, to the maximum extent possible.



- **Sidewalks:** When required, the calculation area extends from face of curb to back of sidewalk, including any planting strip or furnishing zone, and is evaluated for the entire length of the project A project requires a sidewalk lighting evaluation when pedestrian scale lighting is required as part of the project.

B. Design Inputs

The list below includes the factors that must be considered for street lighting design**:**

(1) Road Geometrics

This refers to the number and width of travel lanes, size and location of medians, islands, bridge structures, culverts, utilities, location of driveways, crosswalks and intersections, presence of parking lanes, sidewalks, and bicycle lanes. This information may be obtained upon request from Kirkland's internal GIS browser via the project's Public Works contact.

(2) Street Functional Classification

Streets are classified as principal and minor arterial, collector and local streets. Figure 1 in Appendix A depicts Kirkland's Street Functional Classification Map. This figure corresponds to Figure 3-11, Existing Roadway Network, in Kirkland's 2024 Transportation Strategic Plan.

(3) Adjacent Area Land Use

This refers to specifically designated pedestrian circulation areas within the vicinity of the project where both pedestrian and street lighting are required. These are shown in Kirkland Zoning Code Chapter 180 and include the CBD (Central Business District) in Downtown Kirkland, Totem Lake Business District, NE 85th Street Station Area, Juanita Business District, and North Rose Hill Business District, among other areas.

The area of the Finn Hill Neighborhood within the boundaries of Juanita Drive and Holmes Point Drive may require installation of pedestrian lighting in lieu of street lighting on streets designated as local.

(4) Nighttime Pedestrian Activity

The level of nighttime pedestrian activity is a key element in the design of street lighting systems. Areas with high nighttime pedestrian activity require street lighting systems that increase the visibility of pedestrians. Figure 2 in Appendix A depicts areas with high, medium and low nighttime pedestrian activity in Kirkland. However, the presence of schools and parks in some areas require consideration of higher pedestrian activity than those shown in Figure 2.

Areas with medium to high nighttime pedestrian activity are typically located in designated pedestrian circulation areas which may require both street and pedestrian scale luminaires/poles to meet lighting level requirements.

(5) Pavement Classification Type

Most common pavements are grouped according to their light reflectance characteristics (which vary from mostly specular to mostly diffuse) and this information is used in the calculation of pavement luminance (amount of light reflected from it) and Small Target Visibility (STV).

(6) Other Design Inputs

a. Light Output: This refers to the quality and total quantity of light emanating from a light source in all directions, and it is measured in Lumens.
b. Light Loss Factor: A Light loss factor should be applied to any luminaire considered to ensure that the maintained light levels will meet the target criteria.
c. BUG Ratings: The luminaire BUG (Backlight-Uplight -Glare) rating system provides a numerical rating of the luminaire light distribution as it applies to light trespass, uplight, and glare.

(7) Lighting Level Requirements

a. General: Lighting level requirements, in general, depend upon the type of roadway facility under consideration (street segment, intersection, midblock crosswalk, roundabout, pedestrian walkways, shared use path), street functional classification and nighttime pedestrian activity. Tables A.1, A.2, A.3, and A.4 in Appendix A summarize recommended lighting levels based on the illuminance and luminance lighting design methods.
b. The Illuminance method determines the amount of light incident upon the road surface or a vertical surface from the roadway lighting system. Horizontal and vertical illuminance criteria are recommended for pedestrian facilities and horizontal illuminance for intersections and curved segments of roads and streets.
c. The luminance method approximates the brightness of road surface as perceived by the driver. It is the recommended method for straight road/street segments.
d. Design criteria include:

i. Average Illuminance: It is the average of the roadway surface illuminance at all grid points. It is measured in foot candles.
ii. Average Luminance (AL): It is the average of the roadway surface luminance at all grid points. It is measured in candelas per square meter.
iii. Veiling Luminance (Lv): It is used to evaluate disability glare as experienced by the driver.
iv. Veiling Luminance Ratio: It is the veiling luminance maximum divided by the average luminance of the road.
v. Average Uniformity Ratio: it is the ratio of the average value of either Luminance or Illuminance to the minimum value.

e. Lighting level for intersection, sidewalks and marked crosswalks shall be as follow:
   i. Intersections: Intersections shall have a minimum average light level equal to 1.5 times the average light level requirement of the intersecting street with the highest functional classification. Average maintained light levels at intersections shall be no less than those shown in Tables A.3 and A.4 in Appendix A. Intersection uniformity shall be less than or equal to the uniformity ratio of the intersecting street with the highest functional classification.
   ii. Sidewalks and Pedestrian Crossings: Recommended lighting level within pedestrian facilities is shown on Table A.5 in Appendix A

C. Street Lighting Design Elements

This section provides recommendations for street lighting design elements including pole spacing and placement, pole mounting height, arm length and pole offset, pole materials and pole foundation; luminaire design elements include type and wattage, light output, light distribution type, and color temperature.

Specific street lighting design requirements are listed below:

(1) Pole Spacing and Placement, Pole Foundation and Materials

a. Recommended pole material type for various street functional classifications and designated land use areas are included in Tables B.2a, B.2b and B.2c in Appendix B.
b. Pole Spacing/Placement: The Design Engineer shall determine the optimum pole spacing to achieve required illumination levels. Poles should be carefully placed to support a lighting system that provides the required level of illumination and uniformity for the facility under design. Pole placement issues that need to be addressed during the design process include presence of trees, driveways and clear zone requirements. Once optimum pole spacing is established, it shall be adjusted so that:

i. No pole should be placed closer than 10 feet to a driveway measure from the outside wing. Poles should ideally be placed such that driveways are not located at the darkest point between luminaires.
ii. At least one pole should be placed at the approximate Point of Curvature/Point of Tangency (PC/PT) at a corner at unsignalized intersections.
iii. One pole should be placed at each corner of a signalized intersection. New luminaires shall be provided on signal poles.
iv. At midblock marked crosswalks located on arterials with three or more travel lanes, there should be at least two luminaires, each one located at least 20 feet in advance of the crosswalk for positive contrast. This helps avoid a silhouetting effect that reduces drivers' ability to perceive pedestrians in the crosswalk during hours of darkness.
v. To the maximum extent feasible, a luminaire pole should be located such that the centerline to centerline spacing between any adjacent existing or proposed trees and the light pole shall be greater than or equal to the mounting height of the light pole. The minimum spacing of any street light or pedestrian light pole to the center of an adjacent tree is 20 feet.
vi. Pole locations shall be adjusted between these control points to provide uniform spacing.

c. Pole lateral placement: Where sidewalk is present, luminaire poles shall be located at the back of sidewalk wherever practical. A minimum distance of 3 feet shall be maintained from the face of pole to the face-of-curb. In some cases, sidewalk widening may be required to provide required clearance along the pedestrian access route around the pole per PROWAG standards. If no curb is present, the face of the pole shall be located at least 10 feet from the edge of traveled way. Breakaway or slip bases should be considered anytime a pole is placed closer than 10 feet from either the edge of traveled way or face-of-curb.
d. Pole mounting height: The selection of pole mounting height shall be based on roadway width, adjacent area type and type of pole placement (staggered, single sided, or opposite). The selection of pole mounting height for residential areas needs to consider the impacts of spill over light and glare impacts resulting from taller poles. The values depicted in Tables B2.a, B2.b and B2.c in Appendix B are intended as general guidelines for the selection of mounting heights.
e. Pole foundations shall follow City of Kirkland pre-approved plans and shall be confirmed by the City. Soils analysis may be required in some cases. Should unsuitable soils be encountered, the Design Engineer shall provide an

alternate design based on a soils analysis. WSDOT Standard Plans and Specifications shall be followed if over-excavation becomes necessary.

f. Mast arm length recommended values range from 6 to 12 feet. In all cases with luminaire mast arms, the mast arm should provide a minimum luminaire overhang of approximately 2 feet from face of curb, unless a lighting analysis can show light level requirements are being met regardless of surrounding trees and other infrastructure.

(2) Luminaire Type and Materials

The luminaires' main function is to position and control, both electrically and optically, a light producing source such as LED (Light Emitting Diodes).

The two agencies who own and maintain street and pedestrian lighting systems in Kirkland are the City of Kirkland and PSE. As of the publishing date of this document, the current preferred LED luminaires are:

- City of Kirkland owned and maintained
  - Roadway luminaires: Leotek GreenCobra Series LED
  - Pedestrian luminaires: pole and luminaire styles vary depending upon the specific land use designation of the area under consideration.
  - Tables B2.a, B2.b and B2.c in Appendix B depict recommended pole/luminaire styles for various areas in Kirkland.
- PSE owned and maintained
  - Roadway luminaires: GE Evolve LED (Types II and III distribution only) – ***Design Engineer is responsible for requesting latest list of allowable luminaire fixture models from PSE at time of design.*** Projects shall only propose luminaire fixtures that PSE stocks for replacement.
  - Pedestrian luminaires: Cooper Traditionaire LED post-top

(3) Type of System/System Layout -Configuration

Kirkland is transitioning to all Light-Emitting Diode (LED) street lighting systems; therefore, LED systems shall be installed for all new and retrofit designs. Even if the photometric values are met, LED replacement is still required for each light that contributes to light levels along the frontage.

a. The preferred system layout/configuration shall be staggered. However, single-sided systems may be used if poles cannot be installed on the opposite side of the roadway due to overhead or underground utility conflicts or other obstructions.

b. Opposite system layout may be specified on wider roadways or to match existing facilities.

(4) Temporary Illumination (More than 48 Hours)

a. Temporary Illumination may be required for construction projects in the following cases:

   - Replacement of existing illumination systems
   - Complex roadway realignment or channelization
   - Multi-lane split around obstructions
   - Temporary traffic signals
   - All intersections with low lighting level as determined by the City with traffic control in place

b. Existing illumination shall not be removed until a temporary system has been approved by the City and is fully operational
c. All components of a temporary illumination system shall be crashworthy with breakaway features, outside the clear zone, or protected from traffic.
d. The temporary lighting shall satisfy the greater of the "construction lanes and detours" light level and uniformity ratios in accordance with WSDOT *Design Manual* Chapter 1040 or the specific intersection light level and uniformity ratios, as defined in this chapter under Calculation Areas.
e. All temporary lighting shall be connected to grid power.

(5) Transit Stops

The Design Engineer shall coordinate with transit agencies when any bus stops, park & ride facilities, or light rail stations are to be illuminated as part of any proposed system. Refer to King County Metro Transportation Facility Design Guidelines and Sound Transit Design Standards and Guidelines for Sound Transit Projects: Sounder & ST Express Passenger Facilities, Chapter 12 to obtain information on specific design requirements.

(6) Installation and Material Requirements

The information included in these guidelines is intended to provide guidance as to the type of materials and installation procedures to be used. Appendix B includes information on material and installation requirements for conduit, wiring, junction boxes and service cabinets.

Following the complete installation of public street lights, it is the responsibility of the Owner and/or Permit Holder to contact PSE to initiate the billing account transfer process. After the request has been initiated by the Owner and/or Permit Holder, PSE will reach out to Public Works for verification and complete account transfer process.

APPENDIX A

MAP AND FIGURES
Figure 1: Functional Classification Map
Figure 2: Pedestrian Activity Map

LIGHTING LEVEL REQUIREMENTS
Table A.1 Street Lighting- Luminance Criteria
Table A.2 Street Lighting- Illuminance Criteria
Table A.3 Full Intersection and Roundabout - Illuminance Criteria
Table A.4 Pedestrian Facilities- Illuminance Criteria

Table A.1 Street Lighting – Luminance Criteria

Street Classification	Pedestrian Activity Classification	Average Luminance **L**avg (cd/m^2)	Average Uniformity Ratio **L**avg/**L**min	Maximum Uniformity Ratio **L**max/**L**min	Maximum Veiling Luminance Ratio **L**vmax/**L**avg
Arterial	High	1.2	3.0	5.0	0.3
	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
Collector	High	0.8	3.0	5.0	0.4
	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
Local	High	0.6	6.0	10.0	0.4
	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Table A.2 Street Lighting –Illuminance Criteria

Street Classification	Pedestrian Activity Classification	Average Illuminance (Footcandles)	Average Uniformity Ratio Eavg/Emin	Maximum Uniformity Ratio Emax/Emin	Maximum Veiling Luminance Ratio Evmax/Eavg
Arterial	High	1.7	3.0	5.0	0.3
	Medium	1.3	3.0	5.0	0.3
	Low	0.9	3.0	6.0	0.3
Collector	High	1.2	4.0	5.0	0.4
	Medium	0.9	4.0	6.0	0.4
	Low	0.6	4.0	8.0	0.4
Local	High	0.9	6.0	10.0	0.4
	Medium	0.7	6.0	10.0	0.4
	Low	0.4	6.0	10.0	0.4

Table A.3 - Full Intersection and Roundabout- Illuminance Criteria (lux/fc)

Functional Classification	Pedestrian Activity Level			Uniformity Ratio Eavg/Emin
	High	Medium	Low	
Principal/Principal (*)	34/3.2	26/2.4	18/1.7	3.0
Principal/Collector	29/2.7	22/2.2	15/1.4	3.0
Principal/Residential	26/2.4	20/1.9	13/1.2	3.0
Collector/Collector	24/2.2	18/1.7	12/1.1	4.0
Collector/Residential	21/2.0	16/1.5	10/0.9	4.0
Residential/Residential	18/1.7	14/1.3	8/0.7	6.0

(*) Also referred to as Major

Table A.4 Pedestrian Facilities – Illuminance Criteria

Pedestrian Facility	**Target Maintained Average. (fc)**	**Uniformity Ratio (Avg/Min)**
Marked Mid-block Crossing including curb ramps	1.5x adjacent intersection/corridor	3:1
Marked or Unmarked Crosswalk at Intersection	Same as adjacent Intersection	
Sidewalk (*): *All other sidewalk areas* *Residential*	0.7x adjacent roadway	4:1 6:1
Trails and multiuse paths other than sidewalks	0.7x adjacent roadway	4:1

(*) A project requires a sidewalk lighting analysis when pedestrian lighting is required

APPENDIX B
Applicable City Policies and Standards

MATERIALS AND INSTALLATION REQUIREMENTS

Design Engineer shall refer to the City of Kirkland Pre-Approved Plans and Policies, Sections 8-20 and 9-29 of the WSDOT Standard Specifications, and the WSDOT Standard Plans for complete material and installation requirements.

1. Pole Foundations:

Pole foundations shall follow City of Kirkland Standard Plan CK-R47 and shall be confirmed by the City. Where unsuitable soils are encountered, as determined by the City of Kirkland, the Design Engineer shall provide an alternate design based on a soils analysis. Foundations shall be placed against undisturbed earth. WSDOT Standard Plans and Specifications shall be followed if over-excavation becomes necessary.

2. Conduit:

a. Conduit placed above ground or between the service point (power pole or vault) and the service cabinet shall be hot dip galvanized, rigid steel.
b. Conduit beneath the roadway or shoulder area shall be Schedule 80 rigid Polyvinyl Chloride (PVC). Conduit placed elsewhere shall be Schedule 40 rigid PVC.
c. A minimum of two conduits shall be installed along frontage improvements and roadway crossings. Conduit shall be extended from property line to property line and terminate in a junction box. If property line ends in a driveway or other obstruction, the conduit must be further extended to clear the obstruction or driveway.
d. Minimum size conduit shall be 2 inches for power and 3 inches for communication. No half sizes shall be used.
e. Illumination wires shall not be placed in the same conduit as signal, detection, or communication wires.
f. Maximum conduit fill shall be 26 percent for new installations and 40 percent for retrofit installations. See Table III-2 for conduit fill requirements for various trade sizes. Conduit fill shall be based on the total area of the circuit wires within the conduit. Wire size to calculate conduit fill shall be as follows:
    - No. 8 Wire: 0.056 sq. in.
    - No. 6 Wire: 0.073 sq. in.
    - No. 4 Wire: 0.097 sq. in.
    - No. 2 Wire: 0.133 sq. in.

Table B.1. CONDUIT FILL

Trade Size	Schedule 40		Schedule 80	
	26 Percent Fill	40 Percent Fill	26 Percent Fill	40 Percent Fill
2″	0.856 sq. in.	1.316 sq. in.	0.747sq. in.	1.150sq. in.
3″	1.890 sq. in.	2.907 sq. in.	1.675 sq. in.	2.577 sq. in.
4″	3.264 sq. in.	5.022 sq. in.	2.927 sq. in.	4.503 sq. in.

3. Junction Boxes:

a. Junction box installation shall conform to the City of Kirkland Standard Plans and WSDOT Standard Plans.
b. A junction box shall be placed within 10 feet of each luminaire pole as well as adjacent to the service cabinet.
c. Junction boxes shall be placed so that no conduit run is greater than 500 linear feet.
d. Junction boxes shall be placed at all locations where the conduit turns 90 degrees or more horizontally.
e. All large junction boxes shall be Type 8, dual lid units.
f. Junction boxes shall not be located within the traveled way, pedestrian ramps, or driveways. Junction boxes located in sidewalk or any other Pedestrian Accessible Route shall have non-slip frames and lids.
g. The size of the junction box shall be determined by the total of the conduit diameters entering the box as follows:
    - Type 1 Junction Box: Maximum of 6 inches
    - Type 2 Junction Box: Maximum of 12 inches
    - Type 8 Junction Box: Maximum of 24 inches
h. Conduit containing illumination circuits shall not be routed through junction boxes containing conduit for signal, detection, and/or communication conduits, except where junction box serves type 3 signal pole.
i. Traceable mule tape must be installed in all empty conduit

4. Wiring:

a. Main circuit wires shall be sized to provide a maximum of 4 percent voltage drop at the end of each branch circuit.
b. Minimum wire size shall be No. 8.
c. A ground wire shall be included in all illumination runs and shall be equal in size to the largest conductor.
d. Circuits from different services shall not enter the same junction box.
e. Main and branch circuit wire shall be USE rated. Wire beyond fusing shall be NEC wet rated and sized accordingly to fixture and fuse ampacity.

f. Splices and Disconnect Kits: Splices in the junction box to connect the individual luminaires to the main circuit shall be made with a mechanical C-Tap with 3M 2200 Mastic and 3m 88 Tape. A fused quick disconnect kit shall be provided in each pole base, and shall be made with a SEC Connector Company model 1791-SF.
g. Fuse kits shall be in the j-box for pedestrian luminaries.
h. All fixtures shall have a shunt in place of the photoelectric control.

5. Service Cabinets:

a. Service cabinets shall conform to City of Kirkland Standard Plan CK.TS.05A, B and C. Where a signalized intersection is being constructed in conjunction with the illumination system, the illumination system may be energized from the service cabinet at the signal.
b. Where the service cabinet is installed to service only an illumination system, it shall be located near the midpoint of the system to minimize voltage drops.
c. Service cabinets shall power illumination, ITS Devices and traffic signals only.
d. All services shall be metered.
e. Services shall be 120/240 volt single phase and have a twist lock photoelectric control inside a 6”X6” wire mesh guard, mounted on top of the cabinet.
f. Minimum (1) spare 2” conduit shall be placed between the j-boxes
g. Photoelectric Control

6. Luminaires:

Approved City of Kirkland standards luminaires are Light-Emitting Diode (LED), cobra-head type with IESNA Type II (local and collector streets) and Type III (on arterial streets) distribution patterns. Recommended Nominal Color Temperature ranges from 2700K for local street and collectors and 3000 to 4000K for Arterial Streets. Recommended luminaires standards are summarized in Tables B2.a, B2.b and B2.c.

Tables B2.a, B2.b and B2.c (attached)

Appendix B

Table B2.a Recommended Street and Pedestrian Lighting Standards for Arterial Streets

Street Classification	Designated Land Use (LU) Areas	Land Use Pre-Approved Plan	Max Pole Spacing (*) (Ft)		Mounting Height (*) (Ft)		Arm Length (*) (Ft)	Max. Wattage(*)		Pre-Approved Luminaire and Pole Standards			
			Street Light	Pedestrian Light	Street Light	Pedestrian Light	Street Light	Street Light	Pedestrian Light	Street Light		Pedestrian Light	
ARTERIAL	Central Business District	CK-R.47D	200	60	30-35	12	8-12	112	90	LED Cobra Head	CK -TS.08, J- Series Round Steel Fiber Glass Octagonal Concrete Tapered	Candela Series Cand1-1A, Aluminum Straight / Round Pole	CK-R47 CK-R.47A, CK-R. 47B CK-R.47C
	Totem Lake Center Neighborhood	CK-R.47F	200	60	30-40	12	8-12	112	65	LED Cobra Head	CK -TS.08 J -Series Round Steel Fiber Glass Octagonal Concrete Tapered	Candela Series Cand 2, Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R.47E CK-R.47M
	Juanita Business District	CK-R.47H	200	60	30-40	10	8-12	112	90	LED Cobra Head	CK -TS.08 J -Series Round Steel Fiber Glass Octagonal Concrete Tapered	Lumec Ancestra Series, Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R.47G CK-R.47I
	NE 85th Planned Area	Pending	200	60	30-40	12	8-12	112	90	LED Cobra Head	CK -TS.08 J -Series Round Steel Fiber Glass Octagonal Concrete Tapered	Domus Small Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R.47K CK-R.47L
	North Rose Hill	CK-R.47J	200	60	30-40	12	8-12	112	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	Candela Series Cand 2, Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R.47E CK-R.47M
	Rest of Kirkland		200	60-80	30-40	12-15	8-12	112	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	TBD	TBD

(*) These values may be modified depending on the specific design requirements of each project.

Table B.2b Recommended Street and Pedestrian Lighting Standards for Collector Streets

Street Classification			Max Pole Spacing (*) (Ft)		Mounting Height (*) (Ft)		Arm Length (*) (Ft)	Max. Wattage (*)		Pre-Approved Luminaire and Pole Standards			
	Designated Land Use (LU) Area	Land Use Pre-Approved Plan	Street	Pedestrian	Street	Pedestrian	Street	Street	Pedestrian	Street Light		Pedestrian Light	
COLLECTOR	Central Business District	CK-R.47D	200	60-80	25 - 30	12	8-10	84	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Concrete Octagonal Tapered	Candela Series Cand1-1A, Aluminum Straight / Round Pole	CK-R47 CK-R.47A, CK-R. 47B CK-R.47C
	Totem Lake Center/ Neighborhood	CK-R.47F	200	60-80	25 - 30	12	8-10	84	65	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	Candela Series Cand 2, Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R.47E CK-R.47M
	Juanita Business District	CK-R.47H	200	60-80	25 - 30	10	8-10	84	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	Lumec Ancestra Series, Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R. 47G CK-R.47I
	NE 85th Street Planned Area	Pending	200	60-80	25 - 30	12	8-10	84	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	Domus Small Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R. 47K CK-R.47L
	North Rose Hill District	CK-R.47J	200	60-80	25 - 30	12	8-10	84	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	Candela Series Cand 2, Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R.47E CK-R.47M
	Rest of Kirkland		150-200	60-80	25-30	NA	8-10	84	NA	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	NA	NA

(*) These values may be modified depending on the specific design requirements of each project.

Appendix B

Table B2.c Recommended Street and Pedestrian Lighting Standards for Local Streets

Street Classification	Designated Land Use (LU) Areas	Land Use Pre-Approved Plan	Max Pole Spacing (*) (Ft)		Mounting Height (*) (Ft)		Arm Length (*) (Ft)	Max. Wattage(*)		Pre-Approved Luminaire and Pole Standards			
			Street Light	Pedestrian Light	Street Light	Pedestrian Light	Street Light	Street Light	Pedestrian Light	Street Light		Pedestrian Light	
LOCAL	Central Business District	CK-R.47D	250	60-80	25	12	6-10	39	90-R	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	Candela Series Cand1-1A, Aluminum Straight / Round Pole	CK-R47 CK-R.47A, CK-R. 47B CK-R.47C
	Totem Lake Center Neighborhood	CK-R.47F	250	60-80	25	12	6-10	39	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	Candela Series Cand 2, Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R.47E CK-R.47M
	Juanita Business District	CK-R.47H	250	60-80	25	10	6-10	39	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	Lumec Ancestra Series, Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R. 47G CK-R.47I
	Ne 85th Street Planned Area	Pending	250	60-80	25	12	6-10	39	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Concrete Octagonal Tapered	Domus Small, Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R. 47K CK-R.47L
	North Rose Hill District	CK-R.47J	250	60-80	25	12	6-10	39	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	Candela Series Cand 2 Aluminum Straight / Round Pole	CK-R.47A CK-R.47B CK-R.47E CK-R.47M
	Rest of Kirkland (**)		250	60-80	25	12-15	6-10	39	90	LED Cobra Head	CK -TS.08 J-Series Round Steel Fiber Glass Octagonal Concrete Tapered	TBD	TBD

(*) These values may be modified depending on the specific design requirements of each project.

(**) The area of the Finn Hill Neighborhood west of Juanita Drive may install pedestrian lighting per PSE's recommended pedestrian pole/luminaires standards.

CITY OF KIRKLAND
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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-41 Parking Sensor Replacement

The goal of this policy is to establish the procedure for replacement of any parking sensor used by the City that is removed, damaged, or otherwise rendered inoperable through construction activities.

Sensors that are removed, damaged, or otherwise rendered inoperable due to work in the public right-of-way or listed parking lots by a Project (private development, utility work, CIP project, or similar), the replacement cost will be covered by the Project. **Replacement cost includes new sensor equipment, installation, and other appurtenances required for a full installation.** Installation is performed by a sensor vendor who is contracted with the City of Kirkland. Once parking sensors are removed from the pavement, they cannot be reused.

To coordinate parking sensor replacement, please contact the project inspector or the Public Works Department at (425) 587-3800.

Locations

Parking sensors are installed in on-street parking stalls, on-street loading zones, within the two City of Kirkland paid public parking lots located in the Central Business District, and two Parks Department parking lots. The locations of these facilities are listed below.

Paid Public Parking Lots:

- Lakeshore Plaza & adjacent Auxiliary lot
- Lake & Central lot

Parks Department lots:

- Houghton Beach Park lot
- Marsh Park lot

Approximate locations of on-street and loading zone parking sensors (as of October 2024) are shown in Figure 1.

It is possible at the time of construction that parking sensors have been added or removed from the on-street parking and loading zone areas. It is the Project's responsibility to verify current location information prior to pavement-disturbing work.

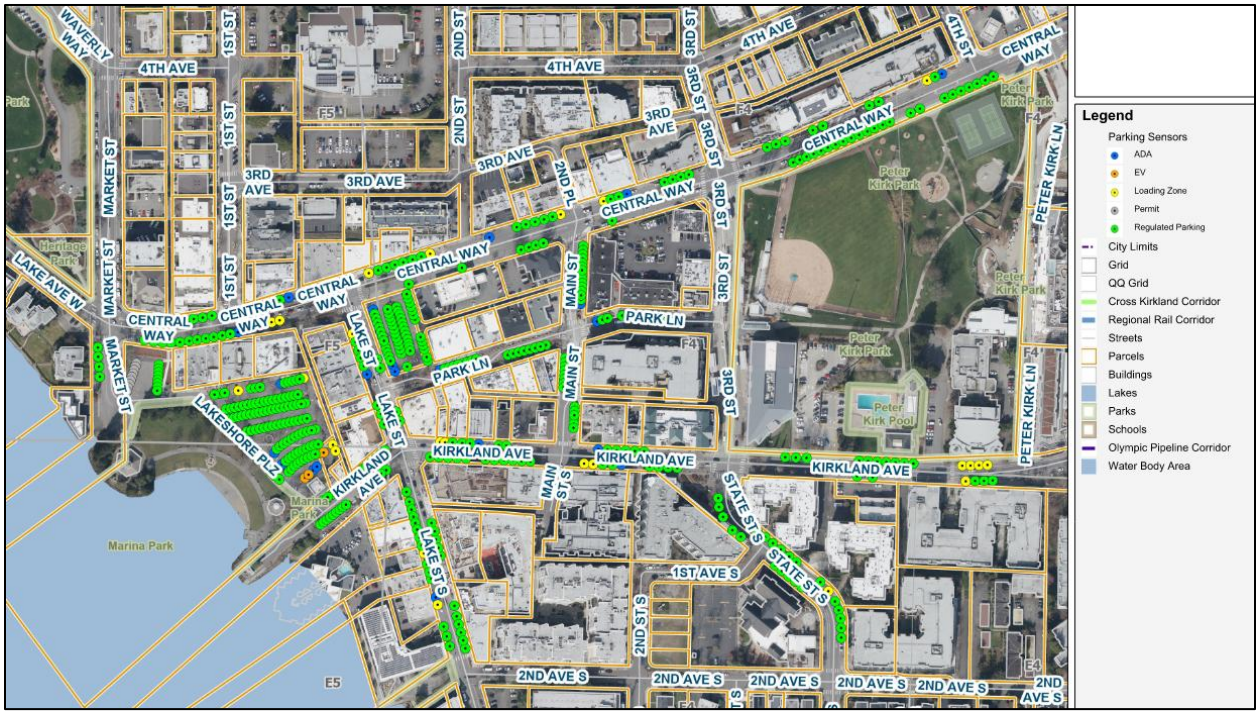

Figure 1 - Approximate locations of parking sensors in the CBD.

LAST REVISED: 01/2020

HISTORICAL SIGN BACKGROUND:

GREEN AND BROWN REFLECTIVE SHEETING
WITH 3/8" WHITE BORDER.
SHEETING SHALL MEET MUTCD
REQUIREMENTS FOR REFLECTIVITY.

SIGN:
24"x8" SHEET ALUMINUM 0.080" THICK

FONT: 4", FHWA SERIES "B" OR "C",
EXCEPT SUFFIXES AND PREFIXES 3" UC SERIES "B" OR "C"

FONT: 0.625" RALEIGH (YEAR @45°)
FONT: 1.5" RALEIGH EXTRA BOLD BT (STREET NAME)

PRIVATE ROAD BACKGROUND:

BLUE AND GREEN REFLECTIVE SHEETING
WITH 3/8" WHITE BORDER.
SHEETING SHALL MEET MUTCD
REQUIREMENTS FOR REFLECTIVITY.

SIGN:
24"x8" SHEET ALUMINUM 0.080" THICK

FONT: 4", FHWA SERIES "B" OR "C",
EXCEPT SUFFIXES AND PREFIXES 3" UC SERIES "B" OR "C"

FONT: 1", FHWA UC SERIES "F"

STANDARD STREET SIGN BACKGROUND:

GREEN REFLECTIVE SHEETING
WITH 3/8" WHITE BORDER.
SHEETING SHALL MEET MUTCD REQUIREMENTS
FOR REFLECTIVITY.

SIGN:
24"x6" SHEET ALUMINUM 0.080" THICK

FONT: 4", FHWA SERIES "B" OR "C",
EXCEPT SUFFIXES AND PREFIXES 3" UC SERIES "B" OR "C"

CITY OF KIRKLAND

PLAN NO. CK–R.01

CITY OF KIRKLAND WASHINGTON

STREET SIGN DESIGNATIONS

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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-42 Clear Zone and Horizontal Clearance

Section 1. Objective

The objective of this policy is to establish clear zone and horizontal clearance requirements within the public right-of-way for the safety of the traveling public in alignment with Kirkland's Vision Zero goal and the Federal Highway Administration's (FHWA) Safe System Approach.

The fact that clear zone requirements and mitigation guidance is presented in this policy does not mean that the City of Kirkland is required to modify or upgrade existing locations to meet current criteria. This policy is intended for use with public and private new construction and alterations to the City's existing infrastructure, excluding regular maintenance activities.

It is incumbent on the design engineer to study this policy, perform the required analyses and provide calculations and construction plans that comply with this policy. City staff will provide review comments during the course of permitting / plan review; however, it is not incumbent on City staff to ensure the design is completely free of errors and omissions as it relates to this or any other policies, or in any way provide quality assurance for the design engineer's work product.

Section 2. Definition of Terms

Term	Definition
Clear zone	The total roadside border area, available for use by errant vehicles, starting at the edge of the traveled way (defined below) and oriented from the outside or inside shoulder (in median applications) as applicable. This area may consist of a shoulder, a recoverable slope, a nonrecoverable slope, and/or a clear run-out area. The clear zone cannot contain a critical fill slope (steeper than 3H:1V), fixed objects, or water deeper than 2 feet. (See **Figure 1** below.)
Breakaway object	Objects that are generally the same size as or smaller than a 4-inch by 4-inch wood post. Additionally, certain objects have specific breakaway design features to lessen the likelihood of injury during a crash with an errant vehicle. Example of breakaway objects include sign posts, mailboxes, fire hydrants, and pedestrian pushbutton posts.
Edge of Traveled Way	The edge of traveled way is defined by the edge stripe adjacent to the vehicle through lane, or by the face of curb if no stripe is present. The traveled way is the portion of the roadway intended for the movement

Term	Definition
	of vehicles and does not include shoulders, parking lanes, turning lanes, storage for turning lanes, or bike lanes.
Fixed object	Objects that are generally larger than a 4-inch by 4-inch wood post. Fixed objects do not have the ability to break apart or otherwise absorb the energy of a crash with an errant vehicle. Some examples of fixed objects include large timber utility poles, large trees, large traffic signal poles, and stormwater drainage elements such as culvert and pipe ends.
Horizontal clearance or operational offset	Used in lower speed urban environments. Horizontal clearance is the distance measured from the face of the curb to the face of an object. The minimum horizontal clearance to objects behind curbs specified in the AASHTO Green Book is a minimum standard offset that allows for normal traffic operations, including mirror clearance for larger vehicles. Because curbs do not contain or deter errant vehicles from leaving the traveled way, the minimum horizontal clearance does not provide a clear zone sufficient to accommodate errant vehicles. The recommended clear zones in the AASHTO Roadside Design Guide (RDG) are based on the design speed of the facility and the slope of the roadside and are not affected by the presence of curbs. It is recognized that providing a clear zone as recommended in the RDG may not be practical in low-speed curbed facilities because of right-of-way constraints and other realities of the built environment.
Operating speed	The speed at which drivers are observed operating their vehicles during free flow conditions. The 85^{th} percentile speed, or the speed at which 85 percent of drivers are documented as traveling at or below, is commonly used as the operating speed.
Posted Speed	The maximum legal speed as posted on a section of roadway using regulatory signs.
Roadside hazard	A fixed object, sideslope, or water more than 2 feet deep that, when struck, can result in impact forces on a vehicle's occupants that may result in injury or place the occupants in a situation that has a high likelihood of injury. A roadside hazard can be either constructed or natural.

Section 3. Where Requirements Apply

The clear zone requirements listed in Section 4 and horizontal clearance requirements shown in Section 5 shall apply to all transportation projects on arterial street facilities within the public right-of-way. Clear zone and horizontal clearance requirements apply to both public and private projects that construct new infrastructure or alter existing infrastructure, excluding regular maintenance activities.

Clear zone requirements apply to arterial roadways and do not apply to streets functionally classified as neighborhood access streets, local streets, or collector streets since those facilities typically have lower operating speeds. Functional classifications are defined in Kirkland's Transportation Strategic Plan.

Clear zone requirements apply to both new construction and alteration of existing transportation infrastructure, including but not limited to roadway widening, realignment of a roadway (vertical or horizontal), realignment of a roadway curb, sidewalk improvements, traffic signal installation or retrofit, bridge replacement, or raised channelization.

The following situations are typically authorized exceptions to clear zone requirements, which must be reviewed and approved by Public Works Transportation or Development Engineering staff. Staff are not obligated to grant exceptions; however, exceptions may be granted based on the following project conditions:

A. Maintenance projects (e.g., spot pavement repair, slurry sealing, grind and overlay paving projects that do not move the curb line or otherwise require additional frontage improvements, utility work, lane restriping, etc.)
B. Where the cost of the mitigation exceeds 50% of the overall project or frontage improvement within the right-of-way
C. Where landmark trees as defined by Kirkland Zoning Code (KZC) Chapter 95 meet the following conditions:
    a. The trees would otherwise not be removed by the project's construction activities
    b. There is no history of fixed object vehicle crashes along the subject road facility involving fixed objects in the last five years within 1,000 feet of the tree
D. Where breakaway objects comply with federal, state, or local requirements.
E. Where mitigation requires modifying or relocating transmission utility poles that otherwise would not be impacted by the underlying project and/or frontage improvements; and any situation that may contradict with the Director's ability to enter into a "Local Improvement District - No Protest Agreement" with a private developer per KZC 110.60.7.

Section 4. Clear Zone Requirements

New or existing roadside hazards intended to remain in place after project completion along a roadside or median that **do not** have Type A curb (City of Kirkland Pre-Approved Plan No. CK-R.17), concrete vertical curb (City of Kirkland Pre-Approved Plan No. CK-R.17C), or median curb (for median applications only, City of Kirkland Pre-Approved Plan No. CK-R.19A) shall meet the requirements below.

A. Locate new fixed objects or roadside hazards as close to the right-of-way line as practical, within the right-of-way.

B. The minimum clear zone distance from the face of the roadside hazard to the edge of the vehicle traveled way shall be **10 feet**, as shown in Error! Reference source not f ound..

C. New or existing roadside hazards shall not be located or allowed to remain closer than **10 feet** to the edge of a residential or commercial driveway. New or existing roadside hazards shall not be located or allowed to remain if in violation of the vehicle and pedestrian sight distance requirements in City of Kirkland Policy R-13.

D. Existing fixed objects or roadside hazards within project construction limits should follow the guidance of this section to the maximum extent possible. The most common examples of existing roadside hazards in Kirkland are timber utility poles, critical sideslopes (3H:1V or steeper), and large trees.

E. Construction projects shall not allow roadside hazards to remain in locations that violate the clear zone requirements above without mitigating the potential safety impacts as approved by City staff. It is understood that existing fixed objects or roadside hazards cannot always be relocated outside of the clear zone area. For those circumstances, refer to the Mitigation Guidance in Section 6.

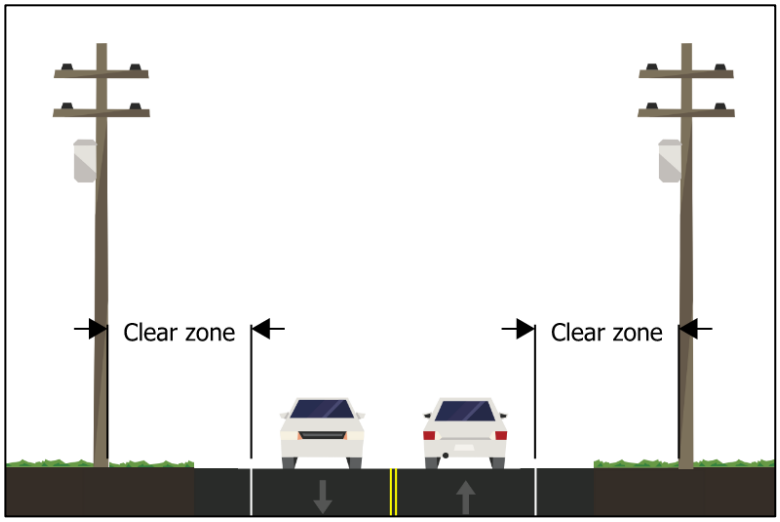

Figure 1. Standard Clear Zone

Section 5. Horizontal Clearance Requirements

To the maximum extent feasible, all new or substantial rehabilitation projects should provide clear zone as stated in the requirements in Section 4 of this policy; however, it is recognized that this is not always practical in urban environments with curbs, constrained right-of-way, and the built environment. When placing new roadside hazards along a roadside or median with a traffic curb, the designer must attempt to select locations with the least likelihood of an impact by an errant vehicle and shall always meet the minimum horizontal clearance defined below.

New or existing roadside hazards and breakaway objects intended to remain in place after project completion along a roadside with Type A curb (City of Kirkland Pre-Approved Plan No. CK-R.17), concrete vertical curb (City of Kirkland Pre-Approved Plan No. CK-R.17C), or median curb (for median applications only, City of Kirkland Pre-Approved Plan No. CK-R.19A) shall meet the requirements below. Horizontal Clearance is indicated in **Figure 2**.

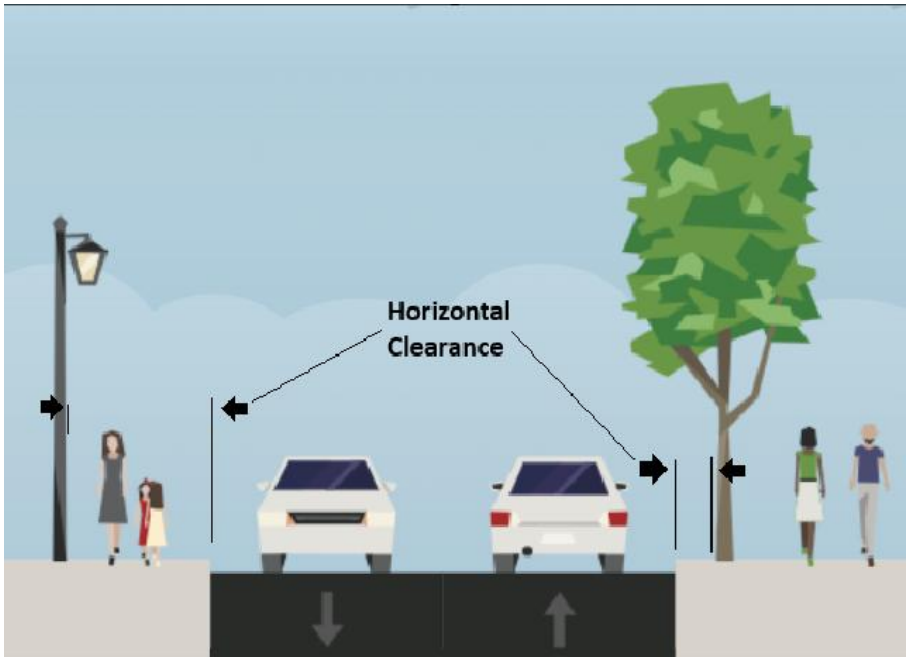

Figure 2. Horizontal clearance.

1. Locate new fixed objects or roadside hazards as close to the right-of-way line as practical, within the right-of-way.

2. The minimum horizontal clearance for **fixed objects** from the face of curb to the face of the object shall be **3 feet**, *except* where the clear zone requirement from the edge of traveled way to the face of the object have been met. If the clear zone requirement has been met, the minimum horizontal clearance for fixed objects from the face of curb to the face of the object may be reduced to 1.5 feet. This clearance is indicated in **Figure 2**.

   (Example: if a bike lane and parking lane are present adjacent to the vehicle through lane on a 30-mph roadway, and a fixed object is more than 10 feet from edge of traveled way, then the minimum horizontal clearance for fixed objects may be reduced to 1.5 feet.)

3. The minimum horizontal clearance for **breakaway objects** from the face of curb to the face of the object shall be **1.5 feet**, unless otherwise noted.

4. The minimum horizontal clearance from the face of the curb to the face of any **traffic signal equipment or street/pedestrian light poles** shall be **3 feet**.

Section 6. Mitigation Guidance

The goal of this policy is to increase the safety of the traveling public. It is acknowledged that sometimes it is not feasible to follow each requirement in a constrained design environment. When it is not possible to achieve the minimum values in Section 4 and Section 5 for new or existing (to remain) roadside hazards, the following mitigation measures may be considered:

i. Remove the fixed objects or roadside hazard from the clear zone;
ii. Relocate the fixed objects or roadside hazard outside of the clear zone;
iii. Redesign a fixed object using breakaway features, or otherwise make the fixed object traversable;
iv. Shield the roadside hazard with crashworthy traffic barrier, such as those identified in subsection C; or
v. Delineate the roadside hazard appropriately with signing and markings as approved by Public Works Transportation staff.

Special consideration should be given to breakaway objects that may pose a safety risk to people walking, rolling, and bicycling. The designer should consider tradeoffs, risks, and benefits to breakaway objects. As an example, if a breakaway pedestrian light pole would fall onto a highly used shared-use path or sidewalk area, the designer may decide to instead relocate the pole.

A. Engineering judgement should be used for each object to be mitigated. The following conditions shall be considered:
   - Crash history
   - Frequency of use by people walking, rolling, and bicycling
   - 85th percentile vehicle operating speeds
   - Areas around playgrounds, schools, parks, transit centers, community centers, or other similar locations

B. Factors for selecting a mitigation method include, but are not limited to:
   - Crash severity potential
   - Maintenance needs
   - Lifecycle cost

C. Examples of crashworthy traffic barrier include, but are not limited to, beam guardrail, cable barrier, and concrete barrier. Refer to WSDOT Design Manual Chapter 1600 Roadside Safety, Chapter 1610 Traffic Barriers, and Chapter 1620 Impact Attenuator Systems for additional considerations and design guidance.

D. Curbs are now generally recognized as having no significant containment or redirection capability for errant vehicles. Therefore, extruded curb (City of Kirkland Pre-Approved

Plan No. CK-R.19) shall **not** be used to mitigate clear zone requirements to protect a fixed object or roadside hazard where curb otherwise is not present.

E. Mitigation measures for new and existing roadside hazards will be reviewed on a case-by-case basis by Public Works Transportation Staff. Concurrence and approval are required from all involved Divisions of Public Works (Development, CIP, etc.) before mitigation measures can be deemed appropriate for use.

Section 7. Exceptions

It is incumbent on the design engineer to justify exceptions to the clear zone and horizontal clearance requirements *without* any further mitigation. Design exceptions to the requirements of this policy require written justification stamped and signed by a licensed Professional Engineer in the State of Washington with experience in civil, roadway, or transportation design. Requests for design exceptions to clear zone requirements shall include the following:

1. Description of the physical characteristics of the roadway
2. Description of the operational characteristics of the roadway (i.e., functional classification, surrounding land-use context, vehicle volumes, etc.)
3. Description of circumstances and why the roadside hazard cannot be mitigated to the satisfaction of the requirements of this policy
4. Comparison of the posted speed limit of the roadway with 85th percentile vehicle operating speeds
5. Five-year crash history along roadway segment location (minimum 1,000 feet of roadway segment length centered on roadside hazard required)
6. Discussion of risk of future crashes
7. Formal recommendation from the project's Engineer of Record (EOR) that the design exception is justified and in the best public interest

Design exceptions to the requirements of this policy shall be reviewed on a case-by-case basis by City of Kirkland Transportation Staff. Approval is required before the project can proceed with a design exception.

Section 8. References

1. American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets (aka the "Green Book"), 7th Edition (2018). https://store.transportation.org/item/collectiondetail/180
2. AASHTO Roadside Design Guide, 4th Edition (2011). https://store.transportation.org/Item/CollectionDetail?ID=105
3. Washington State Department of Transportation (WSDOT), Design Manual M 22-01 (2023). https://wsdot.wa.gov/engineering-standards/all-manuals-and-standards/manuals/design-manual
4. City of Kirkland Public Works Pre-Approved Plans (2025). https://www.kirklandwa.gov/Government/Departments/Development-Services-Center/Tools-and-Resources/Pre-Approved-Plans

Policy R-43 Active Transporation Guide

Updated: Jan 2026

Active Transportation Design Guide

City of Kirkland
2025

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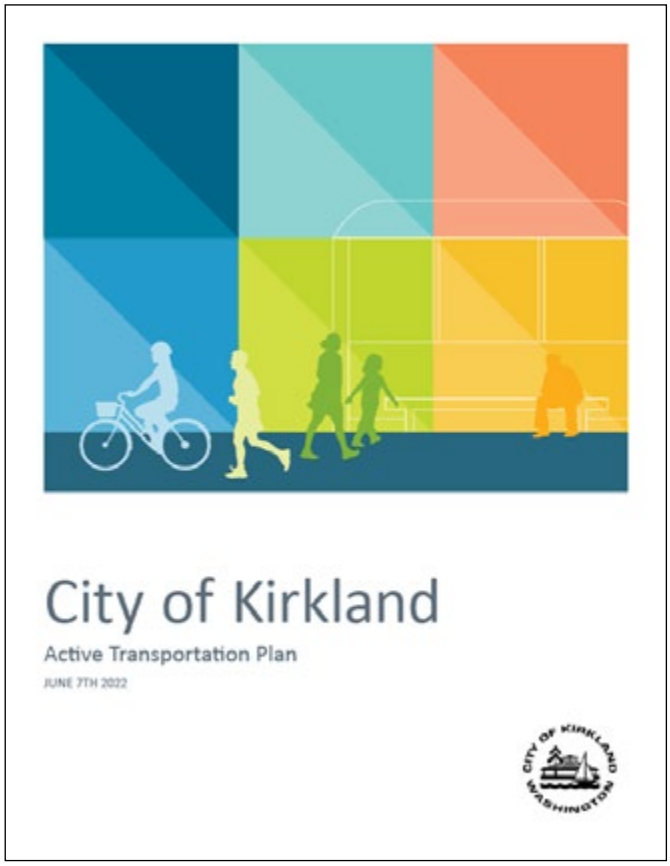
Acknowledgements

Special thanks to Toole Design for their time
and expertise contributed to this design guide.

Table of Contents

Document Purpose

The Active Transportation Plan reaffirms Kirkland's commitment to a multi-modal system of transportation choices by providing network and infrastructure recommendations to enable people of all ages and abilities to safely walk, bike, and roll in Kirkland. To implement these recommendations, this Active Transportation Design Guide provides a standardized approach to walkway and bikeway facility planning and design. The purpose of this document is to define the roadway context evaluation criteria to determine which pedestrian and bicycle facility treatments to apply on a given street or corridor, and the general design of these treatments. Engineering level detail drawings are found in the City of Kirkland Roadway Pre-Approved Plans.



(This Document)

Active Transportation Plan

- Citywide Goals and Objectives
- Network priorities
- Corridor Recommendations

Active Transportation Design Guide

- Facility selection guidance
- Design guidance for facility types

Roadway Pre-Approved Plans

- Engineering standards
- Design details for construction

1.

PEDESTRIAN FACILITIES

PEDESTRIAN NETWORK RECOMMENDATIONS

PRIORITIZING GAPS

The first goal in Kirkland's Active Transportation Plan (ATP) is to create a safe, connected pedestrian network where walking is a comfortable and intuitive option as the first choice for many trips. Accordingly, the pedestrian network recommendations in the ATP prioritize completion of sidewalk gaps to improve access to destinations and achieve sidewalk continuity along arterials. The map on the following page illustrates the priority gaps in Kirkland's pedestrian network based on safety, equity, and access to destinations including activity centers, schools, parks, the Cross Kirkland Corridor, and transit.

PEDESTRIAN FACILITY TYPES

Sidewalks are the fundamental facility type for pedestrian networks, providing safe connections accessible to everyone to reach destinations, gathering spaces for public life, and opportunities for street trees, lighting, and other amenities.

On-street interim walkways can provide an interim connection to close network gaps while funding or other mechanisms are arranged for permanent sidewalks or shared-use paths. Shared use paths as a facility type are discussed under Bicycle Facilities.

Figure 1. Sidewalk on Lake St S in Downtown Kirkland

PRIORITIZED PEDESTRIAN NETWORK - FINAL SCORE AND DRAFT PROJECTS

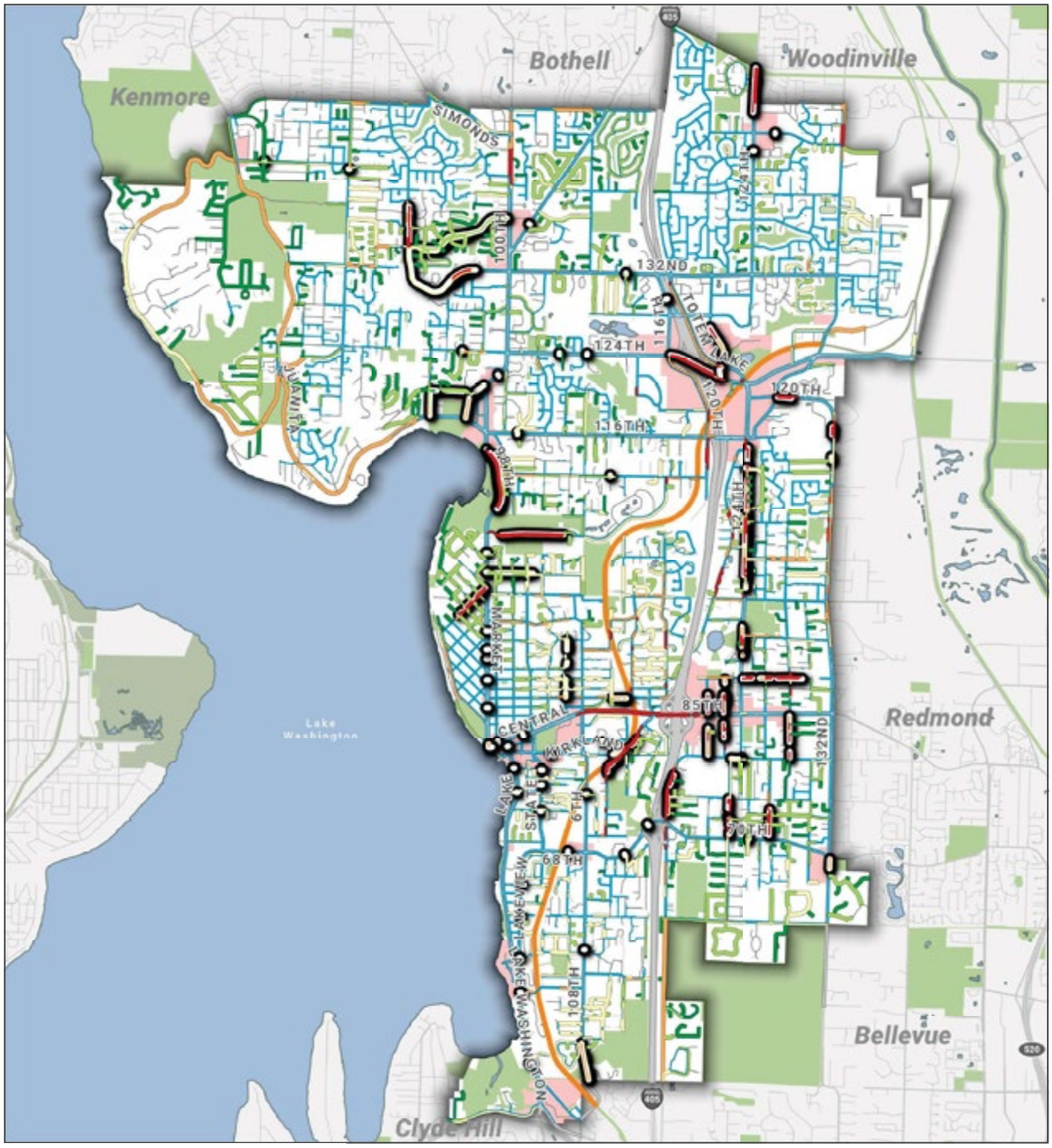


Figure 2. Prioritized Sidewalk Gaps

Figure 3. Sidewalk on Market Street

Sidewalks

Sidewalks are paved surfaces raised from the roadway by a concrete curb and may be horizontally buffered from the roadway by a landscape zone.

SIDEWALKS

Sidewalks are paved surfaces raised and separated from the roadway by a concrete curb, which may also be horizontally buffered from the roadway by a landscape zone. Sidewalks are typically constructed of concrete but may also be constructed of pavers or asphalt; any material surface must be firm, stable, and slip resistant, and comply with ADA accessibility standards.

CONTEXT

Sidewalks should ultimately be provided on all Kirkland public rights-of-way except those where pedestrian access is explicitly restricted, such as a controlled-access freeway.

Figure 4. Sidewalks are fundamental to the City's Safer Routes to School network

Figure 5. Railings or other protruding objects should be located outside of the clear width of the sidewalk

DESIGN GUIDANCE

- A sidewalk has three distinct functional zones: building frontage, pedestrian access route, and landscape zone. Building frontage is private property or setback requirements per the zoning code. See Figure 6 for pedestrian clear zone and landscape zone widths within the public right-of-way.
- Pedestrian clear zone should be clear of any light poles, sign poles, utility boxes, bus shelters or any other fixed objects. Fixed objects should be located in the landscape zone, and shall conform with ADA protruding objects requirements.
- Where right-of-way is limited, sidewalks directly adjacent to roadways (i.e. behind curb with no buffer) should be a minimum 8' wide.
- Concrete preferred material, refer to CK-R.23. Refer to CK-L.06 for pervious concrete sidewalks.
- At driveway crossings, sidewalks must still meet ADA/PROWAG grading requirements and ideally avoid any changes in slope. Instead, vehicle access can be ramped up to sidewalk level. Refer to CK-R.21.
- Provide consistent lighting, refer to Kirkland Street Lighting Guidelines.

MORE INFORMATION

- KZC 110.52 Sidewalks and Other Public Improvements in Design Districts
  - » Pedestrian-Oriented Street: 10' min width
  - » Major Pedestrian Sidewalk: 8' min width
- City of Kirkland Roadway Policy R-12
- Design Guidelines for Totem Lake Business District (2020)
- Holmes Point Street Design Standards (2022)

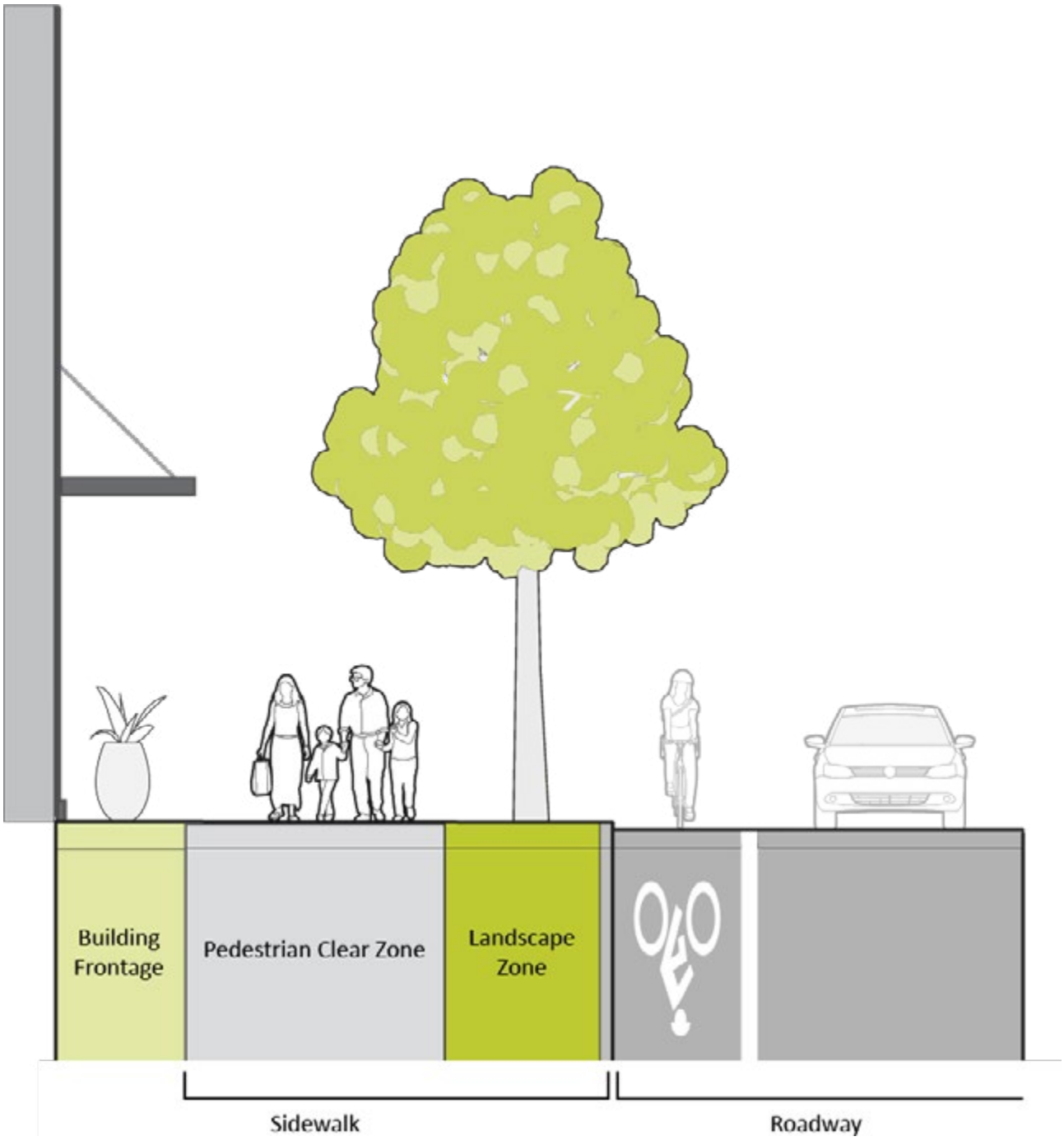


Figure 6. Sidewalk Functional Zones and Widths

Street Functional Class	Pedestrian Clear Zone Width*	Landscape Zone Width
Neighborhood Access	5’ - 6’	5’ - 6’
Collector	6’ - 8’	6’ - 8’
Minor Arterial	8’ - 10’	8’ - 10’
Principal Arterial	8’ - 10’	8’ - 10’

* Where right of way is limited, sidewalks should be minimum 8’ wide with no landscape zone required

Figure 7. On-street temporary walkway on 112th Ave NE

On-Street Interim Walkways

Profiled edge lines, pavement markings, and extruded curbs can be used to define walkways on roadway shoulders as a low-cost interim treatment where no sidewalk currently exists.

ON-STREET INTERIM WALKWAYS

Profiled edge lines, pavement markings, and extruded curbs have been used to define walkways on roadway shoulders as a low-cost interim treatment where no sidewalk currently exists.

CONTEXT

Interim walkways can generally be considered on any road with sufficient roadway space and no other barriers to delineate the pedestrian right-of-way from the vehicle right-of-way. However, they should be considered on a case-by-case basis and evaluated for safety concerns by the Transportation Engineering Group.

DESIGN GUIDANCE

A. Walkway should be a minimum 6’ wide. If intended to also share this space with bicycle use, see On-Street Shared Bicycle and Pedestrian Paths section for guidance.

B. Provide a 2’ wide painted buffer adjacent to the travel lane. At a minimum, stripe the outer lines of the buffer, preferably also stripe interior diagonal cross-hatch markings.

C. Provide pedestrian lane markings at regular intervals per CK-R.35B.

D. Provide extruded curb per CK-R.19, concrete preferable for visibility and contrast from the roadway.

E. Gaps in extruded curb for drainage should only be 2’-3’ long to maintain a continuous detectable edge for low-vision pedestrians.

MORE INFORMATION

- On-street walkways are enforceable for no-parking as any street right of way dedicated for pedestrian use per KMC 12.45.320:

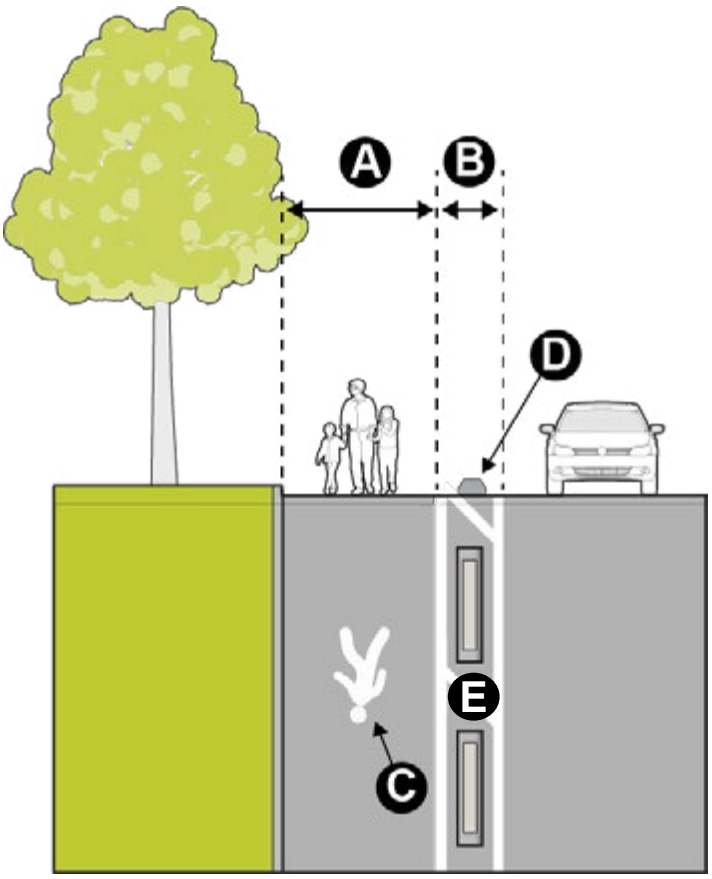


Figure 8. On-street temporary walkway cross section

Figure 9. Walkway with Extruded Curbs on 90th Ave NE

2.

BICYCLE FACILITIES

BICYCLE NETWORK RECOMMENDATIONS

DESIGNING FOR ALL AGES AND ABILITIES

The Active Transportation Plan established a goal of creating a connected bicycle network that accommodates people of all ages and abilities to get to destinations such as activity centers, parks and transit. To meet this goal, this guide provides design recommendations for comfortable bicycle facilities to suit varying conditions in the roadway network for bicyclists of all skill levels and all trip purposes. Many residential streets in Kirkland already provide low-stress bicycling connections due to low volume motor vehicle traffic and low speed limits. However, to create a complete and comfortable citywide bicycling network it is also critical to provide bicycling connections across, and in some cases along, arterial streets. The map on the following page illustrates the priority network of bicycle investments in Kirkland based on connectivity, safety, comfort, and equity.

As traffic volumes and speeds increase, most people prefer physical separation from motor vehicles while bicycling. Additionally, motor vehicle drivers also feel more comfortable driving on streets with bicyclists when physical separation between modes is provided.[1]

In general, the comfort of a bikeway increases with greater space allocation. Wider bikeways allow for separation from motorized traffic with buffers and protective barriers, and they provide increased maneuvering space for cyclists within the bikeway. If the available space of a bikeway is limited, there will be trade-offs in the functionality and appeal of the bikeway. For example, if a lower protection facility such as conventional bike lanes or shared lanes is selected in higher speed or volume contexts, it will feel uncomfortable for less confident riders, and is perceived as a safety risk and barrier to mobility for a cyclist.

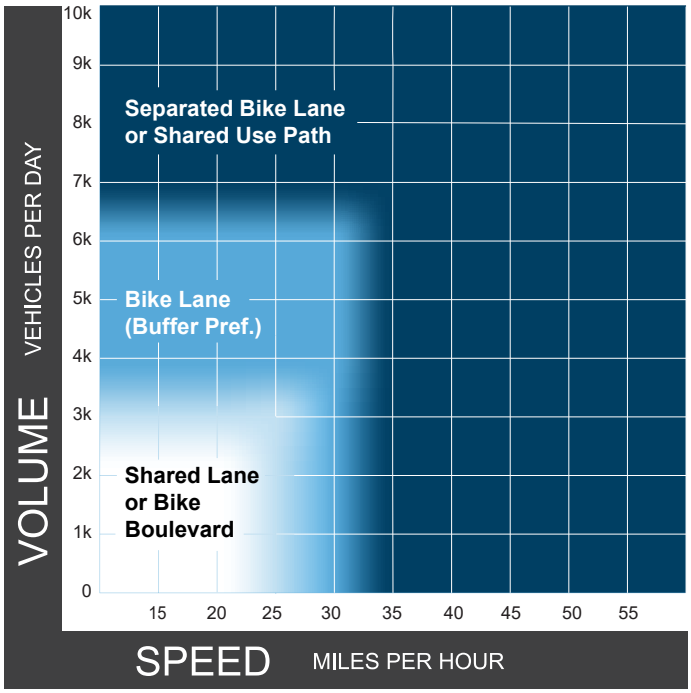


Figure 10. Bicycle Facility Selection Chart[2]

The bicycle facility selection chart shown in Figure 1010 identifies approrpiate bicycle facility types at different roadway speeds and traffic volumes in urban and suburban settings to suit the needs of bicycle riders of all ages and abilities, and to increase bicycling in Kirkland. The types of bicycle facilities are illustrated in Figure 11.

1 Sanders, R. L. We Can All Get Along: The Alignment of Driver and Bicyclist Roadway Design Preferences in the San Francisco Bay Area. Transportation Research Part A: Policy and Practice, Vol. 91, 2016.

2 Bikeway Selection Guide (2019) US Department of Transportation Federal Highway Administration

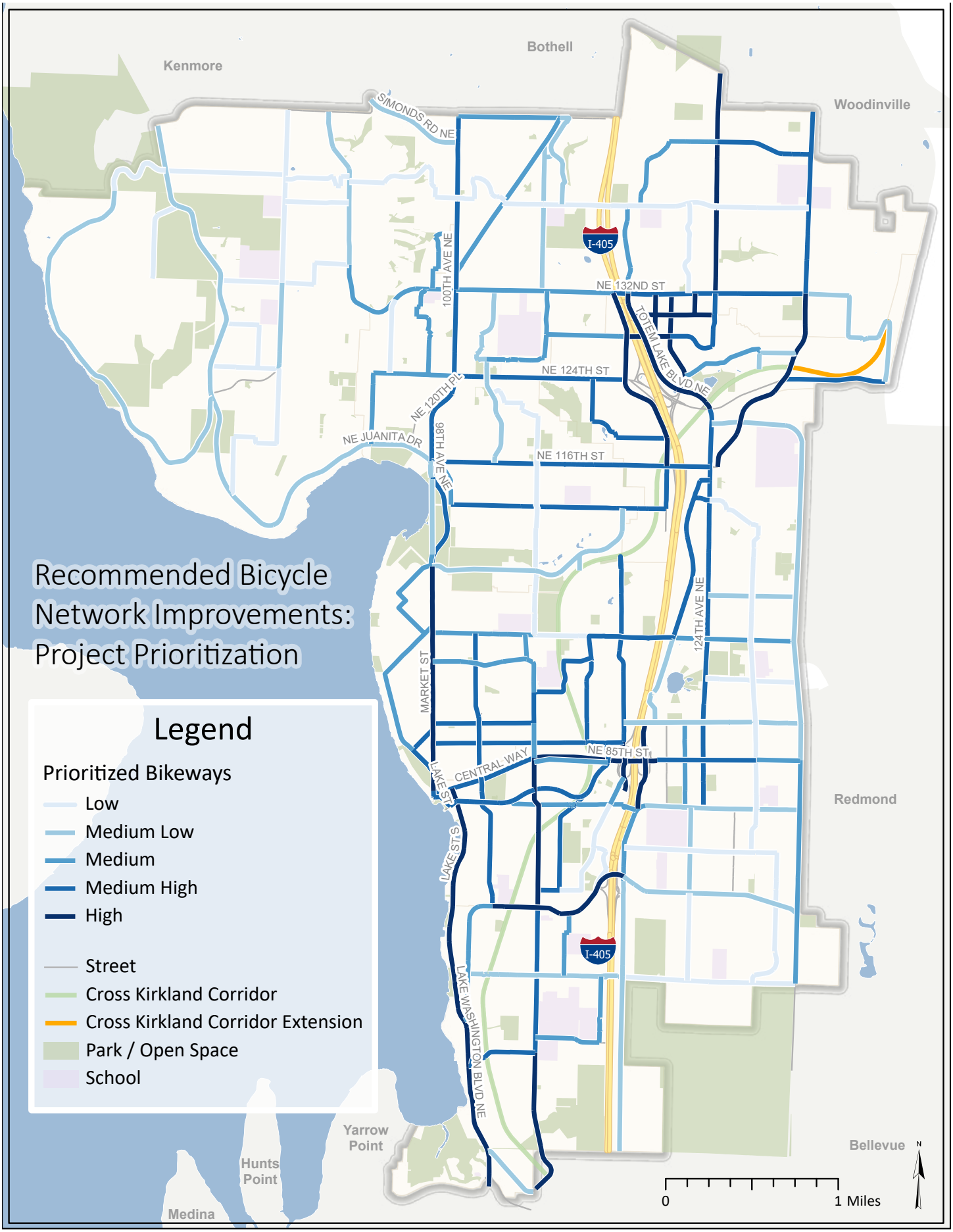


Figure 11. Recommended Bicycle Network Improvements

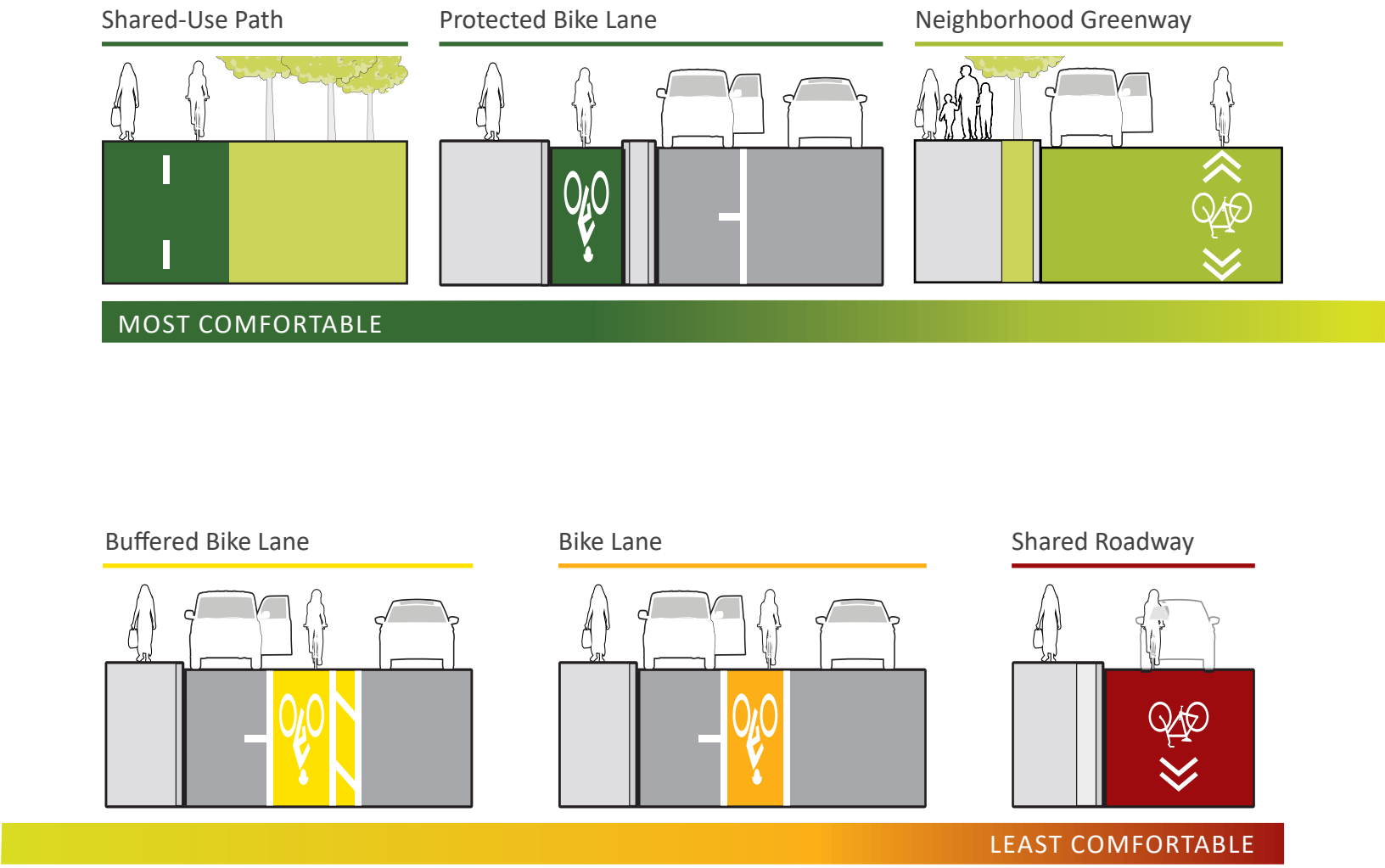


Figure 12. Level of stress of different bicycle facility types.

BICYCLE FACILITY TYPES

- **Shared Lanes** (Sharrows) are pavement markings that indicate the presence of bicyclists on the roadway.
- **Bike Lanes** provide delineated space for bicycle travel on the roadway
- **Buffered Bike Lanes** add additional painted buffer space between a bike lane and the travel lane of a roadway
- **Protected Bike Lanes** are distinct travel ways for the exclusive use of bicyclists that is protected from vehicle travel lanes by a physical barrier
- **Neighborhood Greenways** are low-speed, low-volume residential streets that prioritize walking and bicycling as preferred transportation modes
- **Shared-Use Paths** are two-way facilities for shared walking, bicycling, and rolling use that may be adjacent to a roadway as a side path, or located in a separate right-of-way as a trail

ON-STREET PARKING AND BICYCLE FACILITY SELECTION

On-street parking and bikeways routinely compete for the same space within what is often a fixed and constrained public right-of-way. While parking supports end-of-trip needs for people that drive, parking on one or both sides of the street may occupy between 8 to 20 feet or more of lateral space that could otherwise be used for travel lanes, bike lanes, buffer space, wider sidewalks, street trees, or access to adjacent properties via passenger loading zones or commercial delivery zones.

While parking is generally permissible on roadways wider than 24' per KZC 110, It is critical to evaluate the parking usage along a corridor when designing new roadways or revising existing roadways. A parking demand analysis may indicate opportunities to consolidate parking areas and create more space for walking and bicycling infrastructure and more predictable parking and bicycling interactions. Refer to the ATP "Quick Wins" strategies for corridors where parking demand analysis is needed to reallocate roadway space for bicycle facilities on the interactive web map.

Efforts should also be made to determine the utilization of existing parking by individuals with disabilities so the agency can work with the community to ensure that sufficient accessible parking is available. Refer to Roadway Policy R-34A for on-street parking dimensions and minimum number of on-street ADA parking spaces.

OPTIONS FOR REALLOCATING SPACE FROM ON-STREET PARKING:

- Intermittent reductions in select numbers of parking spaces.
- Converting angled parking to parallel parking.
- Removing parking on one or both sides of a roadway by accommodating parking demand on adjacent streets, surface lots, or structured parking.
- Implementing parking management strategies such as time limits or paid parking zones to more effectively match parking demand to parking availability.

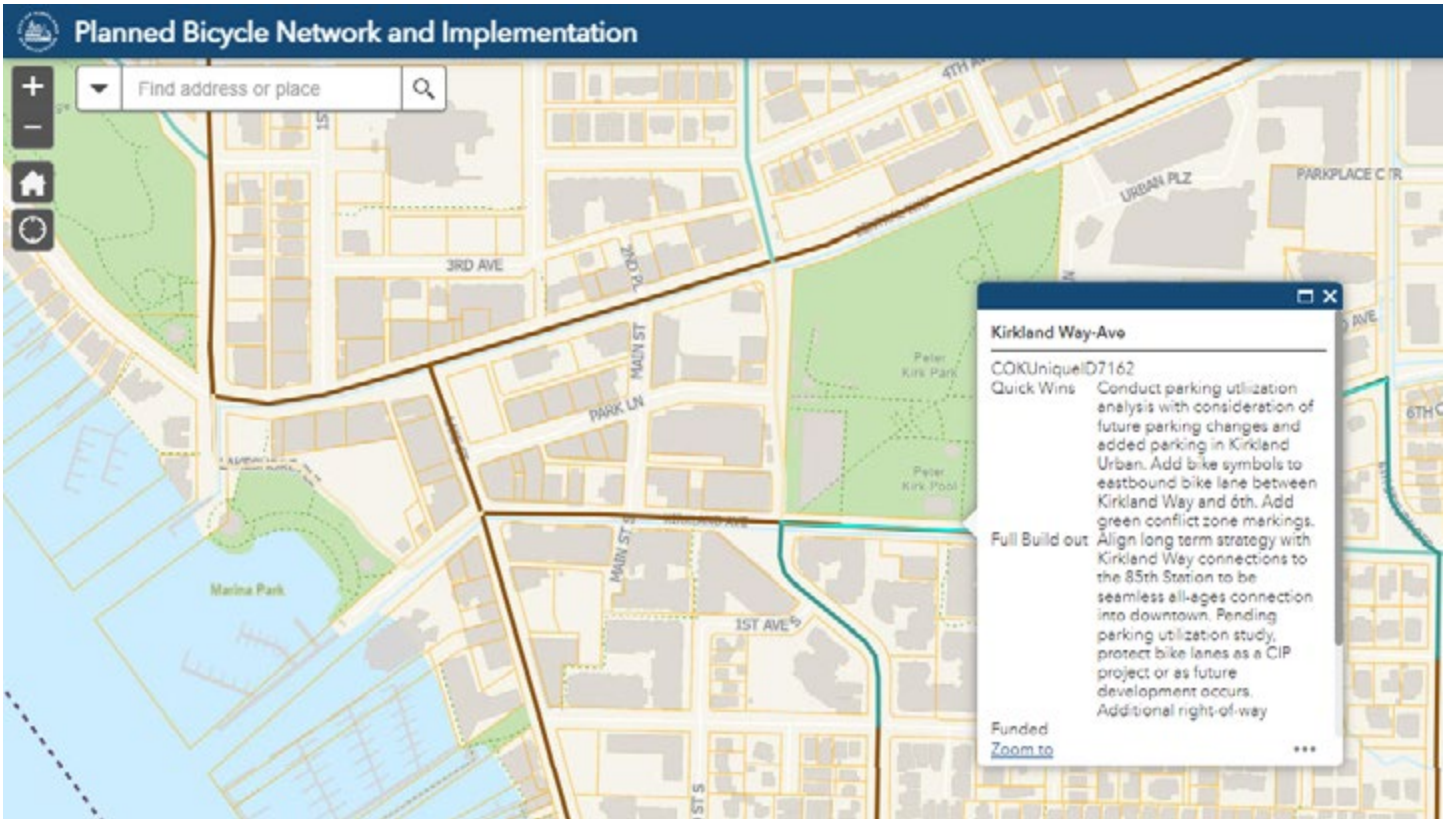


Figure 13. Kirkland's Planned Bicycle Network and Implementation interactive web map.

Figure 14. Shared lane marking on 98th Ave NE in Kirkland, WA

Shared Lanes (Sharrows)

Shared Lane Markings, also called sharrows, are pavement markings used for bicycle wayfinding, cyclist lane positioning, and to increase driver awareness of bicycle riders on the roadway.

SHARED LANES

Shared Lane Markings, also called sharrows, are pavement markings used for bicycle wayfinding, cyclist lane positioning, and to increase driver awareness of bicycle riders on the roadway. Sharrows may be installed as part of Neighborhood Greenways with accompanying traffic calming and volume reduction measures; however, on their own, sharrows are not a suitable facility design for cyclists of all ages and abilities. When not used on Neighborhood Greenways, sharrows should be used in very limited circumstances given they do not dedicate roadway space for bicycle travel and can create a false sense of security.[1]

CONTEXT

Sharrows in absence of other traffic calming measures should only be considered in extremely limited rights of way, such as streets constrained by steep side slopes or hills, or where a bicycle lane is ending and guidance is needed to direct bicycle riders to merge with general purpose traffic.

Shared Lane Roadway Context	
Number of Travel Lanes	2 lanes or fewer.
Posted Speed	30 mph or lower.
Volume	ADT: 4,000 vehicles or fewer

DESIGN GUIDANCE

A. Apply shared lane markings per CK-R.46 in the center of the travel lane to indicate bicyclist positioning and discourage vehicles from unsafe passing maneuvers.

B. Where there is room for a bike lane in only one direction, apply shared lane markings in the downhill direction where bicycle speeds are greater.

C. Apply shared lane markings at regular 250 ft intervals.

D. Use in conjunction with “Bicycles May Use Full Lane” R4-11 sign.

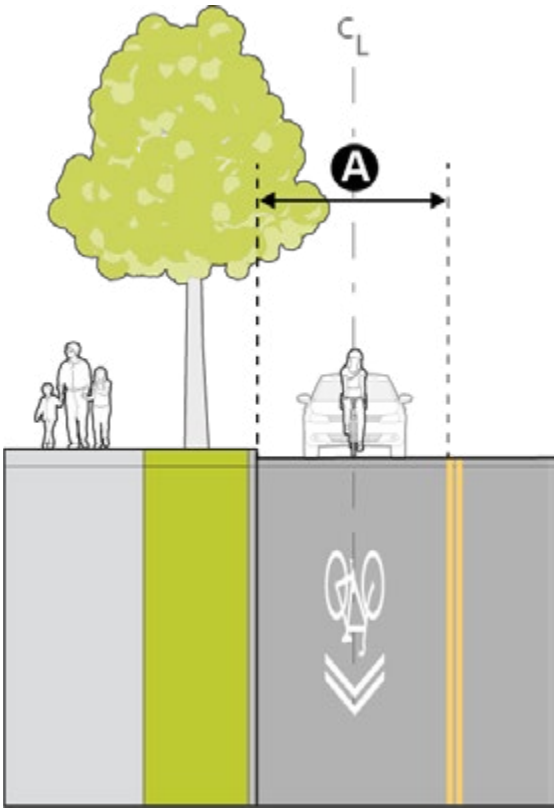


Figure 15. Shared Lane Marking on roadway with no parking lane

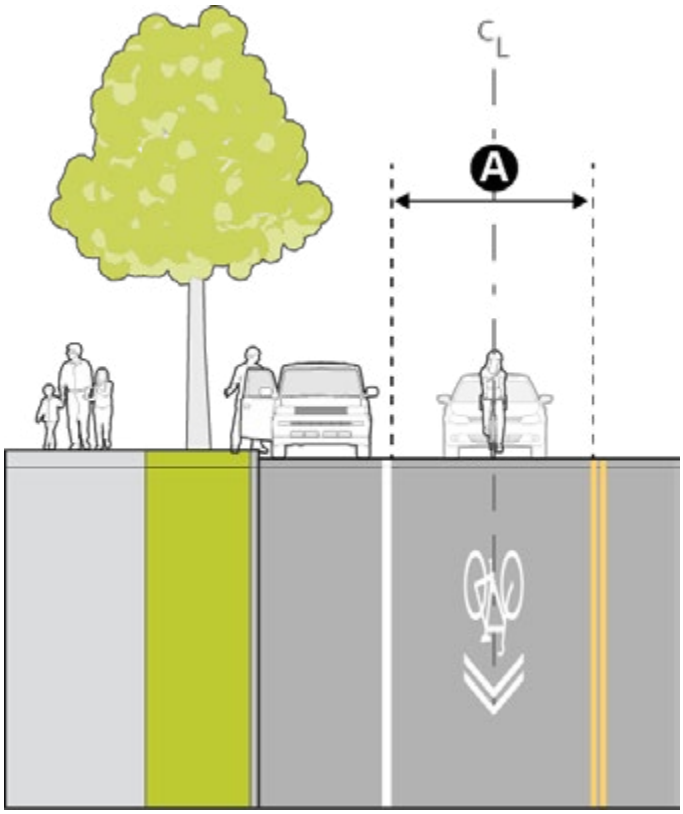


Figure 16. Shared Lane Marking adjacent to parking lane

1 Nicholas N. Ferenchak, Wesley E. Marshall, Advancing healthy cities through safer cycling: An examination of shared lane markings, International Journal of Transportation Science and Technology, Volume 8, Issue 2, 2019,Pages 136-145, ISSN 2046-0430,https://doi.org/10.1016/j.ijtst.2018.12.003.

Figure 17. Bicycle lane on Lake Washington Blvd NE

Bicycle Lanes

Bicycle lanes provide a delineated space for bicyclists using signage and pavement markings.

BICYCLE LANES

Bicycle lanes provide a delineated space for bicyclists on the roadway using signage and pavement markings. Bicycle lanes are one-way facilities.

CONTEXT

Bicycle lanes can generally be considered on any road with one or more of the following characteristics:

Bicycle Lane Roadway Context	
Number of Travel Lanes	3 lanes or fewer.
Posted Speed	30 mph or lower.
Volume	ADT: 7,000 vehicles or fewer
Parking	Turnover infrequent.[1] [2]
Bicycle lane obstruction	Likely infrequent. [3]

DESIGN GUIDANCE

A. The preferred width of a bicycle lane adjacent to a curb is 6’ exclusive of a gutter. A typical width is 5’, and a minimum of 4’ wide should only be used in highly constrained locations or where there is no curb. See CK-R.35.

B. The preferred width of a bicycle lane adjacent to parallel parking is 6’; 5’ is the minimum width. Parking lanes are 7-8’ wide, see roadway policy R-34A.

C. Use a 6” edge line and bicycle symbol lane markings per pre-approved plan CK-R.35. Bicycle symbol markings should be installed at the beginning and end of each public street intersection and upstream of every major driveway or alleyway (those that provide access to more than 100 parking spaces). Where a bike lane does not have any intersection crossings, bicycle symbol lane markings should be installed at least every 350’.

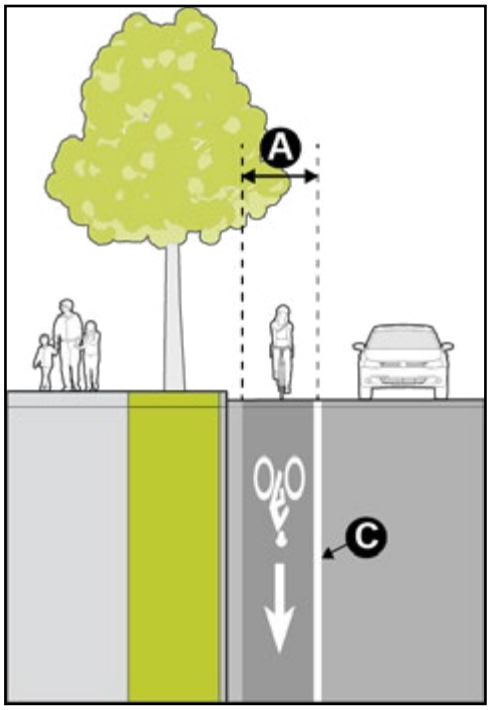


Figure 18. Bicycle Lane Adjacent to Curb

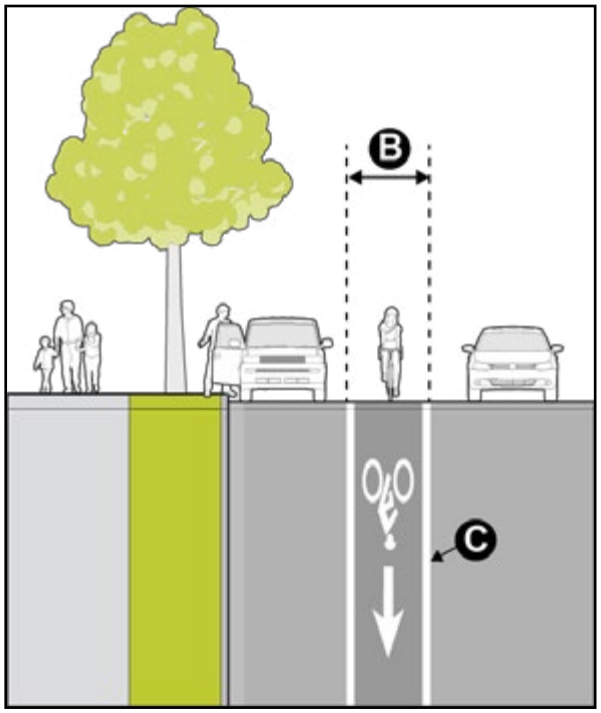


Figure 19. Bicycle Lane Adjacent to Parking

1 Wider bike lanes or buffered bike lanes are preferable at locations with high parking turnover.
2 Infrequent parking turnover is typically found in residential zones or other areas that don’t attract short duration parking demand. Commercial areas typically have more frequent parking turnover.
3 Stopping, standing and parking in bike lanes may be problematic in areas of high parking demand and deliveries, especially in commercial areas without designated loading zones.

Figure 20. Buffered bicycle lane on NE 141st St

Buffered Bicycle Lanes

Buffered bicycle lanes enhance conventional bicycle lanes by providing a delineated buffer zone between the bicycle lane and the adjacent travel lane.

BUFFERED BICYCLE LANES

Buffered bicycle lanes enhance conventional bicycle lanes by providing a delineated buffer zone between the bicycle lane and the adjacent travel lane. When the space available for a bicycle lane is greater than 6.5 feet, a buffer should be used as it will reduce confusion by motorists who might otherwise mistake a wide bicycle lane as a parking or travel lane.

CONTEXT

Buffered bicycle lanes can generally be considered on any road that would also be considered for a conventional bicycle lane, with the following additional characteristics:

Buffered Bicycle Lanes Roadway Context	
Number of Travel Lanes	3 lanes or fewer
Posted Speed	30 mph or lower preferred for less confident bicyclists.
Volume	ADT: 7,000 vehicles or fewer
Parking	Buffer where frequent turnover

DESIGN GUIDANCE

A. The minimum width of a bicycle lane is 5 feet exclusive of gutter pan; a desirable width is 6 feet. See CK-R.35A.

B. The minimum buffer width is 2ft. There is no maximum width. Diagonal cross hatching should be used for buffers less than 3’ wide. Chevron cross hatching should be used for buffers larger than 3’ wide.

C. Buffers may be provided between bicycle lanes and parking lanes in locations with high parking turnover (e.g. commercial areas with metered parking) to provide space for opening vehicle doors and discourage bicyclists from riding too close to parked vehicles. See Figure 21.

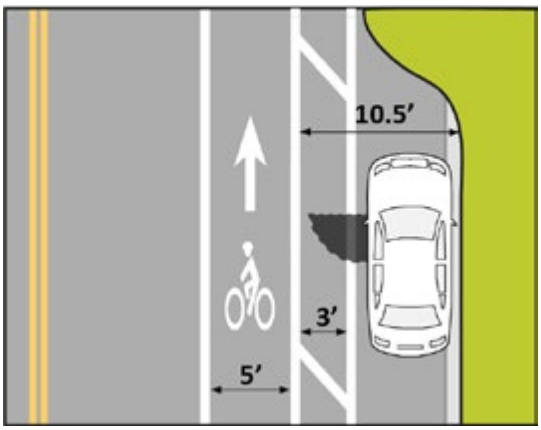


Figure 21. Buffered Bicycle Lane adjacent to travel lane with a parking side buffer

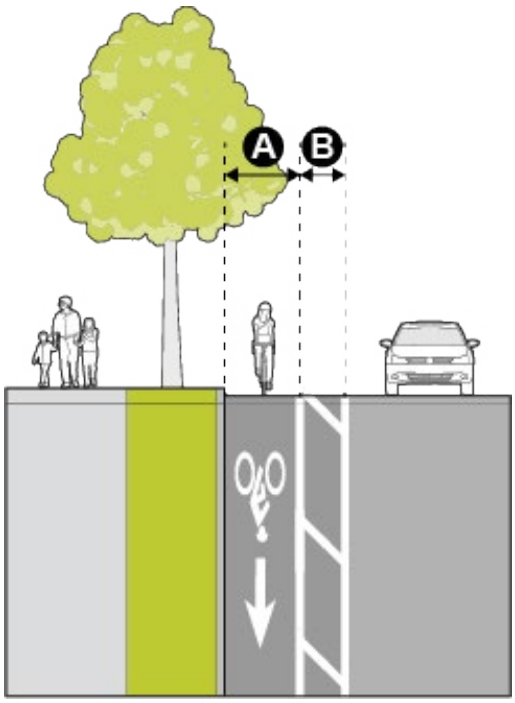


Figure 22. Buffered Bicycle Lane Adjacent to a Curb

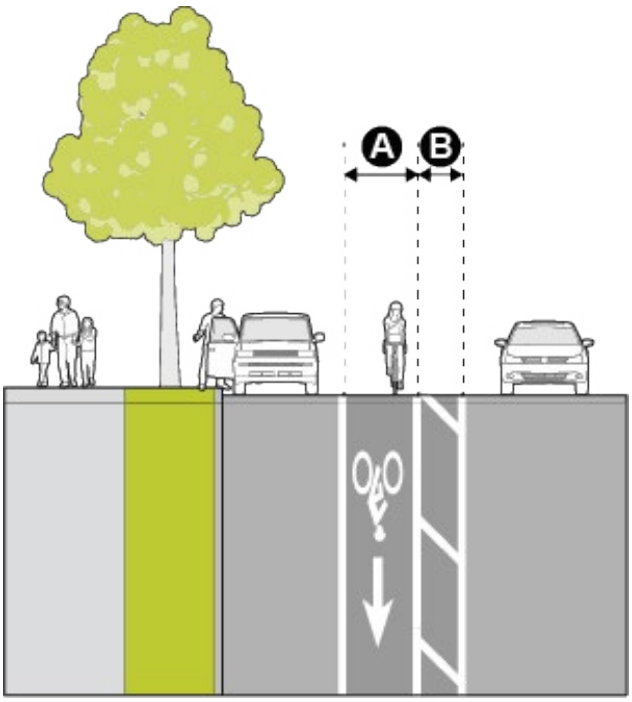


Figure 23. Buffered Bicycle Lane Adjacent to Parking

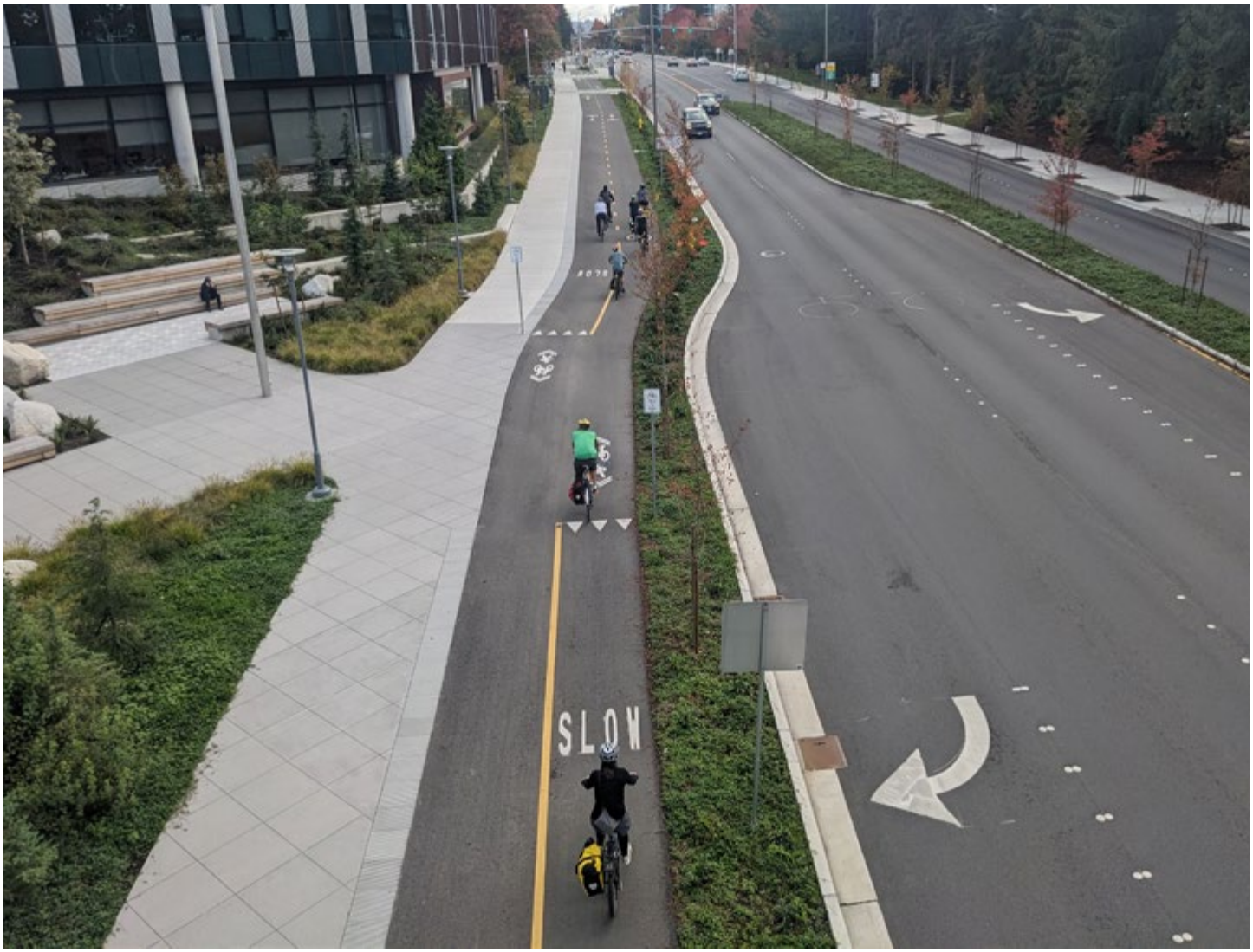


Figure 24. Two-way protected bike lane on 156th Ave NE in Redmond, WA

Protected Bicycle Lanes

Protected bicycle lanes (also known as separated bicycle lanes or cycletracks) are an exclusive bicycle facility physically separated from motor vehicle traffic by some sort of barrier.

PROTECTED BICYCLE LANES

Protected bicycle lanes (also known as separated bicycle lanes or cycletracks) are bikeways physically separated from motor vehicle traffic by a vertical element. Protected bicycle lanes may be at roadway grade, raised to sidewalk elevation, or at an intermediate height, and may be designed as one-way or two-way facilities. Protected bike lanes can be configured and protected in the following ways:

- Raised (i.e. at or near sidewalk-level) and buffered from the roadway to provide the greatest level of separation from vehicle traffic and highest degree of user comfort. This configuration will often be installed as part of major roadway reconstruction.
- At roadway grade and protected from travel lanes by parallel parking lane, striped buffer, and low curb, flex posts, or similar barrier to delineate the edge of the parking lane. This configuration offers a high degree of separation from vehicle traffic but may introduce parking/bike lane conflicts.
- At roadway grade and protected from travel lanes by concrete planter boxes or concrete medians. This configuration provides a high degree of separation from vehicle traffic and user comfort.
- At roadway grade separated from travel lanes with striping and vertical delineators (e.g. flexible delineator posts, bollards, etc.) Provide visual delineation but less robust physical protection and result in additional maintenance needs relative to other options depending on the type of separator installed. These designs do not require road reconstruction and can generally be implemented faster than some of the other options.

The following pages illustrate these various configurations and buffer width considerations. The clear traveled width of a protected bicycle lane varies based on one-way or two-way travel, and the anticipated level of demand. See tables 1 and 2 for minimum and recommended widths of the bike lane.

CONTEXT

Protected bicycle lanes can generally be considered on any road with one or more of the following characteristics:

Protected Bicycle Lanes Roadway Context	
Number of Travel Lanes	2 lanes or more.
Posted Speed	30 mph or higher.
Volume	7,000 vehicles or more.
Parking	Turnover is frequent.[1]
Other	Streets that are designated as truck or transit routes.

Table 1. One-way protected bicycle lane width recommendations

Same Direction	*Bicycle Lane Width (ft.)*	
Bicyclists / Peak Hour	Pref.	Min.[3]
<150	6.5	5.0
150–750	8.0	6.5
>750	10.0	8.0

Table 2. Two-way sidewalk-level protected bicycle lane width recommendations[2]

Same Direction	*Bicycle Lane Width (ft.)*	
Bicyclists / Peak Hour	Pref.	Min.
<150	10–12	8.0
150–*350*	12.0	10.0
>350	16.0	12.0

1 Frequent parking turnover is typically found in areas with commercial uses or other attractors that encourage shorter parking dwell times.
2 Widths are for the travel path only, not inclusive of buffer, excluding sidewalks and tree grates.
3 A constrained one-way protected bicycle lane width of 4 feet may be used for short distances to navigate around transit stops or accessible parking spaces.

SIDEWALK-LEVEL PROTECTED BICYCLE LANES

Sidewalk-level protected bicycle lanes are composed of a bicycle lane that is at the same elevation as the sidewalk and separated from the roadway by standard vertical curb and landscape buffer.

DESIGN GUIDANCE

A. The minimum and preferred bicycle lane widths are detailed in Table 1 and Table 2 in the above Guidance section.

B. The minimum and preferred widths of a roadway buffer adjacent to sidewalk-level bicycle lane is:

- No adjacent curb use, at mid-block location: 5 feet preferred, 2 feet minimum.
- Adjacent parking: 5 feet preferred, 3 feet minimum.
- Adjacent valet, bicycle parking, or commercial vehicle loading: 5 feet preferred, 4 feet minimum.
- Approaching driveways and intersections: 6 feet preferred, 2 feet minimum.
- Landscaped buffer with street trees: 8 feet preferred, 5 feet minimum (including curbs on either side).

C. The minimum and preferred widths of a sidewalk buffer adjacent to sidewalk-level bicycle lane is:

- No amenity zone: 2 feet preferred, 1 foot minimum.
- Signs, utility poles, signal cabinets present: 2.5 feet required.
- Street furniture present: 4 feet required.
- Landscaped buffer with street trees: 6 feet preferred, 5 feet minimum (including curbs on either side).
- Bicycle parking present: 6 feet minimum, 6.5 feet preferred (assuming racks at 45 degree angle) At locations where an adult bicycle with trailers is used as a design vehicle, increase the buffer to 10 feet.

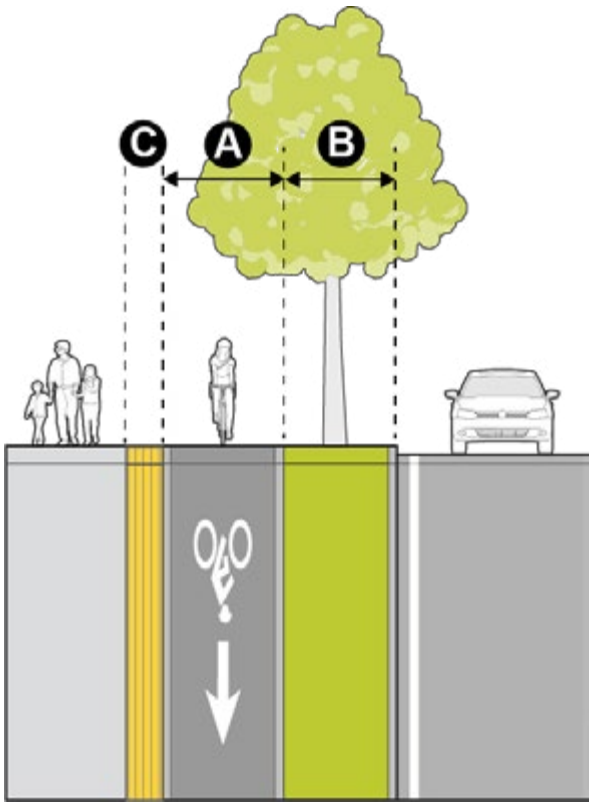


Figure 25. One-way Sidewalk-level Separated Bicycle Lane

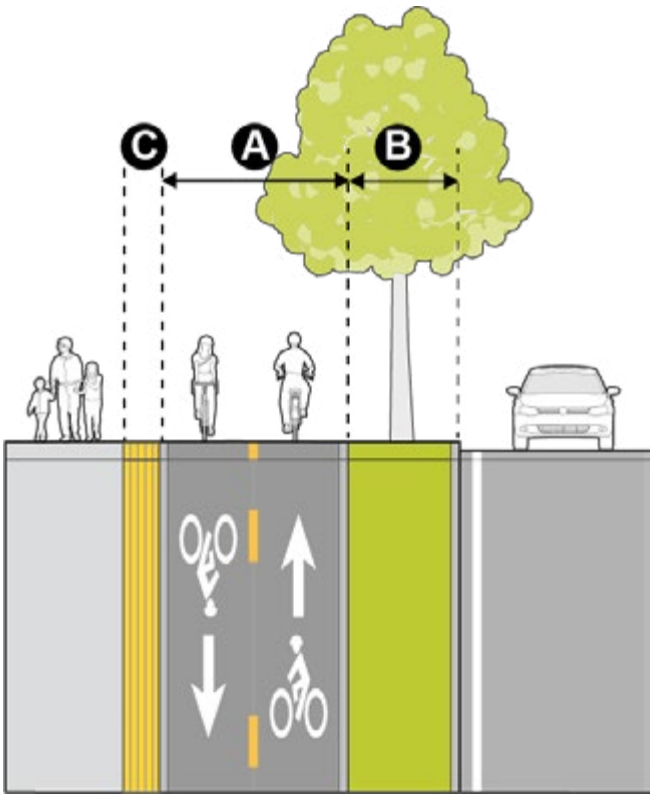


Figure 26. Two-way Sidewalk-level Separated Bicycle Lane

SIDEWALK BUFFER ZONE

Sidewalk-level protected bicycle lanes are separated from the adjacent sidewalk via a sidewalk buffer. The sidewalk buffer zone provides a physical separation between the bicycle lane and the sidewalk, communicating each as distinct spaces. By separating people walking and bicycling, encroachment into these spaces is minimized and the safety and comfort is enhanced for both users.

The sidewalk buffer zone ideally consists of landscaping, a barrier curb, raised planters, or a hardscaped area with closely spaced street furniture to provide a clearly delineated edge that is detectable for someone with a vision disability. In constrained locations, a minimum 1 foot wide high-contrast tactile direction indicator installed in the sidewalk.
All sidewalk buffers should be reliably detectable with a long white cane and/or underfoot to delineate the sidewalk from the bicycle lane.

Figure 27. Example of sidewalk buffer zones in Bellevue, WA

Figure 28. Sidewalk-level bike lanes on NE 132nd St

STREET-LEVEL PROTECTED BICYCLE LANES

Street-level protected bicycle lanes are physically separated from motor vehicles by vertical elements and a buffer zone for lateral separation between the bicycle lane and a parking or travel lane.

DESIGN GUIDANCE

A. The minimum and preferred bicycle lane widths are detailed in Table 1 and Table 2 in the above Guidance section.

B. The minimum and preferred widths (including the curb) of a street buffer adjacent to street-level bicycle lane is:

- Immediately adjacent to travel lane, at mid-block location: 4 feet preferred, 1.5ft minimum.
- Adjacent parking: 4 feet preferred, 3 feet minimum.
- Adjacent valet, bicycle parking, or commercial vehicle loading: 5 feet preferred, 4 feet minimum.
- At driveways and intersections: 6 feet preferred, 2 feet minimum.
- Landscaped buffer (assumes curbs as a median island) with street trees: 8 feet preferred, 6 feet minimum.

C. The minimum and preferred widths of a sidewalk buffer adjacent to street-level bicycle lane is:

- No amenity zone: 6” minimum.
- Signs, utility poles, signal cabinets present: 3 feet required.
- Street furniture present: 4 feet required.
- Landscaped buffer with street trees: 6.5 feet preferred, 5.5 feet minimum.
- Bicycle parking present: 8 feet preferred, 6 feet minimum.

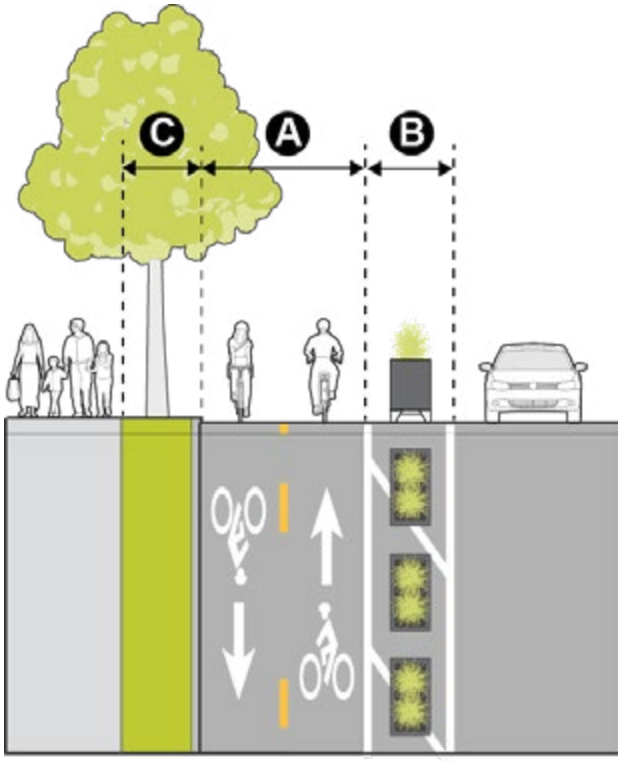


Figure 29. One-way Street-level Protected Bicycle Lane

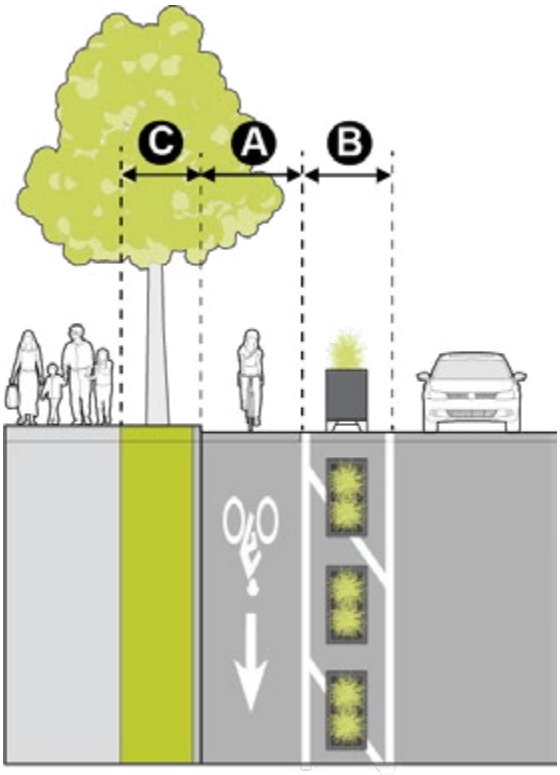


Figure 30. Two-way Street-level Protected Bicycle Lane

ROADWAY BUFFER

Street-level protected bicycle lanes are separated from the roadway with a physical barrier. Physical separation can either take the form of more temporary, quick-build materials such as flexible delineator posts (“flex post”) to more permanent interventions like concrete medians. Paint and flex posts or extruded curb provide a low-cost option for rapid implementation and can be quickly installed and easily modified, however they require extensive maintenance including regular inspection and frequent replacement to ensure any damaged or missing posts are not a safety risk to the roadway or bikeway. As such, these materials are best suited to short term implementation projects, such as demonstrating a proof of concept. A permanent concrete curb provides a greater degree of safety and comfort for cyclists. Temporary materials can be upgraded to permanent in conjunction with other roadway improvements or resurfacing.

Figure 31. Quick build street-level protected bicycle lanes with extruded curb and flex posts in Bellevue, WA

Figure 32. Permanent street-level protected bicycle lane with concrete median islands and planter boxes in Bellevue, WA

Figure 33. South Rose Hill Neighborhood Greenway on 127th Pl NE

Neighborhood Greenways

Neighborhood greenways (also called bicycle boulevards) are a select network of low speed, low volume residential streets prioritized for walking and bicycling through the use of signage, pavement markings, and traffic calming and control measures.

NEIGHBORHOOD GREENWAYS

Neighborhood greenways (also called bicycle boulevards) are a select network of low speed, low volume residential streets prioritized for walking and bicycling through the use of signage, pavement markings, and traffic calming and control measures. Greenways are typically routed on residential streets, but may also include trails and paths that are off the street network such as pedestrian and bicycle only connections between cul-de-sacs or extending drom street ends. Traffic calming treatments vary depending on roadway context, but typically include speed reduction treatments, volume management devices, pavement markings, pedestrian crossing improvements, and signs.

CONTEXT

For detailed guidance on neighborhood greenways in Kirkland, refer to the Kirkland Neighborhood Greenways Guidelines. Neighborhood greenways can generally be considered on any road with one or more of the following characteristics:

Neighborhood Greenways Roadway Context	
Number of Travel Lanes	2 lanes or fewer.
Posted Speed	20 mph.
Volume	Up to 1,000 vehicles (preferred) up to 2,000 vehicles ADT (acceptable).
Parking	Turnover infrequent. [1]

1 Infrequent parking turnover is typically found in areas with limited commercial uses or other uses that don't attract short duration parking demand such as residential land uses.

DESIGN GUIDANCE

Neighborhood greenways may have the following design elements:

- 20 mph speed limit signs and branded Kirkland Neighborhood Greenway signs.
- Traffic calming measures such as traffic circles, chicanes, and speed cushions.
- Traffic management devices such as diverters or semi-diverters to redirect cut-through vehicle traffic and reduce traffic volume while still enabling local access to the street.
- Additional treatments for major street crossings, such as median refuge islands, rapid flash beacons, bicycle signals, HAWK, or half signals. The level of treatment will depend on roadway speed, volume, and lane count.

Figure 34. Diverter on 128th Ave NE Neighborhood Greenway

Figure 35. Painted traffic circle on 165th Ave NE in Bellevue, WA

Figure 36. On-street shared path on 116th Ave NE

On-Street Shared Bicycle and Pedestrian Paths

On-street shared bicycle and pedestrian paths (on-street paths) provide a shared space for bicyclists and pedestrians on roadways that is otherwise too narrow to provide a conventional shared-use path or sidewalk.

ON-STREET SHARED BICYCLE AND PEDESTRIAN PATHS

On-street shared bicycle and pedestrian paths (on-street paths) may be considered in settings with low pedestrian and cycling volumes to provide a shared space for bicyclists and pedestrians on roadways that are constrained by steep slopes, right of way, or are otherwise too narrow to provide a conventional shared-use path. On-street paths are delineated by pavement markings, and may be physically separated from vehicle traffic with an extruded curb or other barrier.

CONTEXT

On-Street Paths Roadway Context	
Number of Travel Lanes	2
Posted Speed	30mph or lower
Volume	ADT: 7000 vehicles or fewer
Parking	Buffer where frequent turnover

Figure 37. On-Street Shared Bicycle and Pedestrian Path on Waverly Way

DESIGN GUIDANCE

A. The preferred width of a one-way on-street path is 6.5 feet exclusive of a gutter; a minimum width is 6 feet. The preferred width of an two-way on-street path is 10 feet exclusive of a gutter; a minimum width is 8 feet.

B. The preferred width for the street buffer zone with extruded curb or flexible delineator posts is 3 feet; a minimum width is 1.5ft.

C. A continuous vertical barrier should be provided along the on-street path using high contrast extruded curbs or flexible delineator posts when the adjacent roadway's posted speed limit is 30 mph or higher. A jersey barrier, or similar, should be provided when the adjacent roadway's posted speed limit is 35 mph or higher.

D. Pavement markings should be provided to indicate bicycle and pedestrian shared use on the path. See Pre-Approved Plan CK-R.35B.

E. Centerlines may be provided for on-street paths meant to support two-way travel. The use of a center line stripe can be applied to the entire length of a facility, or only at specific locations. The use of a center line stripe may be particularly beneficial on paths with higher user volumes (continuous stripe) or on curves with restricted sight distance, approaching intersections, or approaching obstructions (localized stripe).

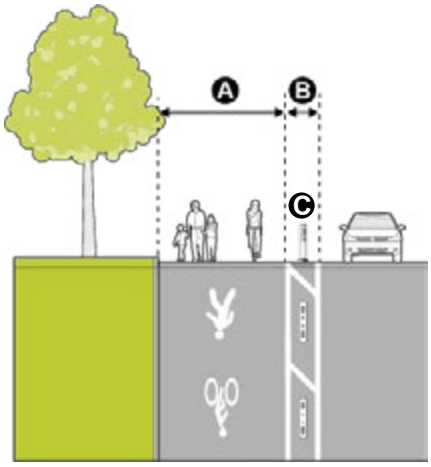


Figure 38. Alternative Design: On-Street Bicycle and Pedestrian Path with Flexible Delineator

F. Signage may be provided at the ends of the on-street path to indicate bicycle and pedestrian use.

G. Provide detectable warning surfaces at crosswalk locations which connect to these pathways.

H. Gaps in extruded curb for drainage should only be 2'-3' long to maintain a continuous detectable edge for low-vision pedestrians.

I. The preferred width for the street buffer zone with extruded curb or flexible delineator posts is 4 feet; a minimum width is 2 feet.

Figure 39. Willows Road NE shared-use side path

Shared-Use Paths

Shared-use paths are designated walking, bicycling, and rolling spaces physically separated from vehicle traffic. Shared-use paths may be configured adjacent to a roadway by a landscape buffer or barrier (sometimes called a side path), or may follow an independent public right-of-way (typically referred to as a trail), such as the Cross Kirkland Corridor.

SHARED-USE PATHS

Shared-use paths are two-way transportation facilities used by pedestrians and bicyclists adjacent to a roadway, see Pre-Approved Plan CK-R.70, or in independent rights-of-way. In some cases, shared-use paths also accommodate equestrian use, typically by providing a second natural surface path that parallels the main pathway; see Pre-Approved Plan CK-R.68 for equestrian soft trail.

DESIGN GUIDANCE

- Provide a minimum paved area width of 10 feet with 2 feet shoulders on either side. To determine the appropriate width of the facility beyond the minimum, refer to the table below:

Shared Use Path Operating Widths	
Preferred (ft)	**Peak Hour Path User Volumes**
11	150 - 300
12 - 15	300 - 500
16 - ≥ 20	500 - ≥00

- 2’ graded shoulders with a maximum cross-slope of 1V:6H should be provided on both sides of all shared use paths. The shoulder should be maintained and recoverable in all weather conditions and be clear of all lateral obstructions such as trees, bushes, large rocks, bridge piers, abutments, and poles.
- Centerlines should be considered on shared use paths with higher volume of users and can be used to guide wheeled users around corners to discourage them from cutting the corner where sight distance is restricted.
- If the expected volume of pedestrians and bicyclists along a shared-use path may exceed the capacity shown in the table above; higher volumes of children, seniors, or individuals with disabilities are anticipated; or faster bicycle speeds are anticipated, consider separate facilities for pedestrians and bicyclists instead of a shared-use path. Separate facilities are feasible on paths that are at least 15 feet wide in order to meet the combined minimum width requirements for sidewalks (5 feet) and two-way bike lanes (typically 10 feet). Note, minimum widths may be higher depending on expected user volumes.
- Consider delineating separate space using physical separation such as a curb or landscaping, or linear tactile warning delineation strips. Pavement markings may also be used to help delineate space for most users, but this does not provide adequate edge delineation for users with vision disabilities and, as a result, the facility would still be considered a shared-use path.
- Design shared-use paths without obstructions in the path of travel (e.g., bollards, fences, z-gates) to ensure a wide range of mobility devices can safely access the facility. Refer to the AASHTO Guide for the Development of Bicycle Facilities for design treatments to discourage vehicle intrusion. For pavement structural section, design speeds, cross slopes, running slopes, and stopping sight distance, refer to the AASHTO Guide for the Development of Bicycle Facilities.
- When the shared-use path crosses a roadway, mark intersection crossings with a high-visibility crosswalk. Determine whether trail users or those using the roadway will have the right of way and provide traffic control devices as appropriate. At uncontrolled crossings, consider the use of other crossing improvements such as an RRFB, PHB, a raised crosswalk, a median refuge island, and/or curb extensions.

MORE INFORMATION

- AASHTO Guide for the Development of Bicycle Facilities (2024)
- WSDOT Active Transportation Design Guide (2024) Plan Sheet Details
- WSDOT Design Manual (2024) Chapter 1515 Shared-Use Paths
- Accessibility Guidelines for the Public Right-of-Way
- City of Kirkland Pre-Approved Plan CK-R.70

Figure 40. Bicycle wayfinding on 166th Ave SE on the East Bellevue Greenway in Bellevue, WA

Bicycle Wayfinding

Wayfinding systems designed for bicyclists can enhance the value of a bicycle network by helping people identify and navigate desirable routes between destinations.

BICYCLE WAYFINDING

Wayfinding systems designed for bicyclists can enhance the value of a bicycle network by helping people identify and navigate desirable routes between destinations. The MUTCD provides standards and guidelines for the design and placement of bicycle guide signs.

Two guiding principles are important for an effective bicycle wayfinding system:

- **Simplicity:** Easy-to-use and intuitive wayfinding helps bicyclists navigate and understand where they are in relation to nearby landmarks and destinations. Information should be clear, legible, and simple enough to be understood by a wide audience. In addition, bicycle wayfinding must provide concise messages, revealing enough information without overwhelming the user. Information on each sign should be kept to a minimum to avoid confusion and facilitate quick comprehension. Wayfinding should also be placed efficiently to minimize sign clutter.
- **Consistency:** Wayfinding systems should have common styles, fonts, colors, materials, and placement throughout a community to promote continuity and help users quickly understand and interpret messages without having to stop their bicycle. Sign frequency and placement should be consistent, so users know what to expect.

DESTINATION SELECTION AND HIERARCHY

The first step in the process of developing a wayfinding signage is to select which destinations will be referenced on wayfinding signs and determining the routes. This includes agreeing on landmarks/ orientation cues, abbreviations for the longer destination names, and which destinations will be "primary" destinations—appearing on almost all signs—and which ones will be less important destinations.

Once the initial list of potential destinations has been developed, they will need to be "weeded" by removing destinations that should not be included on wayfinding signs. Consider the following:

- Individual businesses should usually not be listed as destinations because they can move, change names, or go out of business. If there is a need to point to an important destination that happens to be a single business, it can be referred to generically, such as "Food". Another approach is to use symbols for food or services instead of words.
- If there are several destinations that are close together, choose one destination that will serve as a "proxy" for all others.

WAYFINDING SIGN TYPES

Three basic signs types are the foundation of a wayfinding system to guide bicyclists and pedestrians to their destinations while traveling along designated facilities. These sign types, shown in Figure 42, include:

- **Decision signs** clarify route options at a junction or decision point. They include distances in miles for bicyclists and time for pedestrians and may include the route name. Decisions signs may include up to three destinations per sign assembly, to avoid overwhelming users with information.
- **Confirmation signs** are placed after a turn or intersection, or at regular intervals if there are no turns. They reassure bicyclists and pedestrians that they are on the correct route and may include a system brand marking or route name.
- **Turn signs** are placed after a turn or intersection, or at regular intervals if there are no turns. They reassure bicyclists and pedestrians that they are on the correct route and may include a system brand marking or route name.

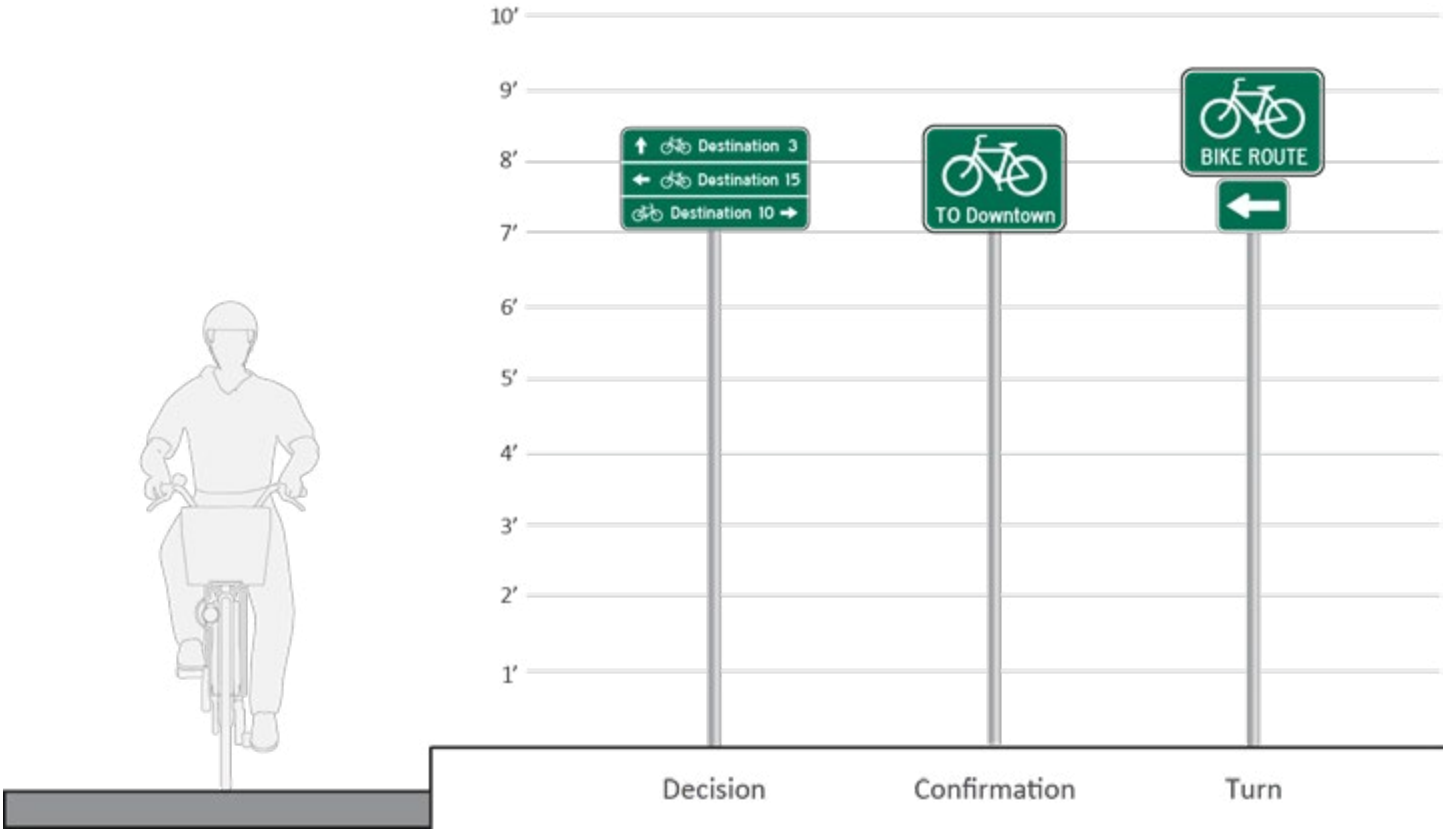


Figure 41. Three Basic MUTCD Bicycle Wayfinding Sign Types

Wayfinding systems may also include other types of signs and pavement markings:

- **Modified street name signs** identify and brand the route without requiring additional signage.
- **Pavement markings** help to identify the route and guide users through jogs. The are particularly useful for confusing transitions such as a shift from street to trail.
- **Mile markers** help trail users mark their progression along a trail.

Figure 42. Other special route signs exist such as the above neighborhood greenway and Lake Washington Boulevard wayfinding signs.

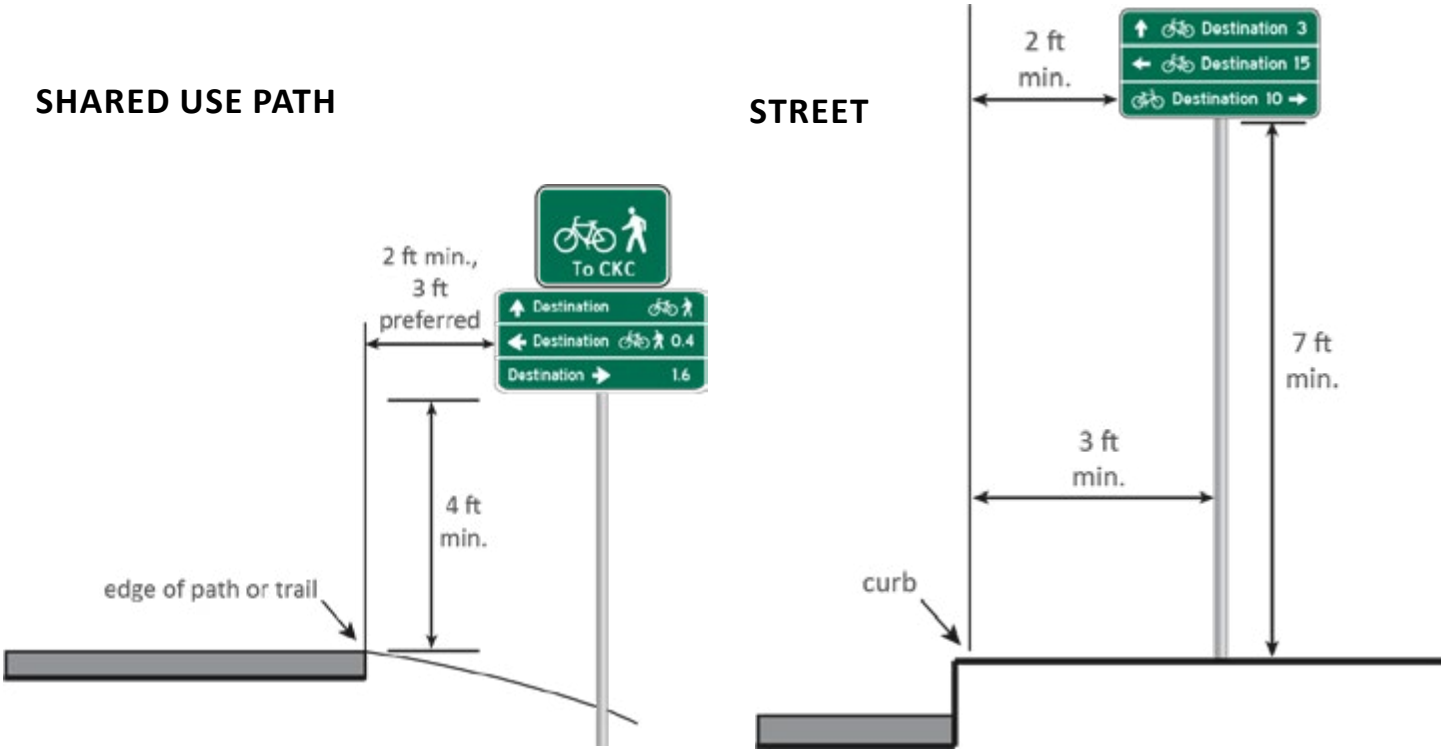


Figure 43. Wayfinding sign placement and clearances per MUTCD standards (Part 9, Section 9B)

SIGN PLACEMENT

Consistent and appropriate placement of wayfinding elements helps to provide a legible wayfinding system while ensuring the signage elements do not create safety hazards. General guidance by the American Association of State Highway Transportation Officials (AASHTO) regarding sign placement includes:

- Guide signs may be used to designate continuous routes that may be composed of a variety of facility types and settings.
- Wayfinding guidance may be used to provide connectivity between two or more major facilities, such as a street with bike lanes and/or sidewalks and a shared-use path.
- Wayfinding may be used to provide guidance and continuity in a gap between existing sections of a facility, such as a bike lane or shared-use path.
- Road/path name signs should be placed at all path-roadway crossings to help users track their locations.

Figure 44. Wayfinding sign on the Redmond Connector trail in Redmond, WA

3.

INTERSECTIONS & CONFLICT POINTS

Figure 45. Ribbon cutting of a new crosswalk on 6th St S

Crosswalks

Crosswalks are pedestrian crossings at intersections or designated midblock locations. They may be marked with high visibility pavement markings, or unmarked in lower speed, lower volume contexts.

CROSSWALKS

By default, unmarked crosswalks exist on all legs of all intersections as defined by Washington state code. If unmarked, the crosswalk extents are defined by the extension of sidewalk edges across the roadway or an edge 10 feet back from the edge of pavement or curbs where no sidewalk exists (see RCW 47.04.010 for more detail). Mid-block crosswalks must be marked to establish their location and be enforceable. At all crosswalks, motorists are required to stop for pedestrians when the pedestrian is within one lane of the half of the roadway upon which the vehicle is traveling (see RCW 46.61.235 for more detail), or when the pedestrian is approaching so closely from the opposite half of the roadway as to be in danger.

DESIGN GUIDANCE

- Crosswalks are marked with high visibility thermoplastic pavement markings. Refer to CK-R.28 for marking details at intersection locations, and CK-R.28A for midblock crossing locations. Note midblock crossings require raised pavement markers (RPMS) on the outside edges of the crosswalk.
- Locate pedestrian warning crossing signs W11-2, with the downward pointing arrow plaque W16-7P, at the crossing point of the crosswalk. School crosswalks use S1-1 signs.
- For shared bicycle and pedestrian crossings such as the Cross Kirkland Corridor, use the trail crossing warning signs with bicycle and pedestrian symbols W11-15.
- Pedestrian flags may be added to crosswalks without RRFBs or other traffic control devices. Flags require a resident volunteer to maintain the flags. See Pedestrian Flag Program Policy R-22.
- Install appropriate lighting to ensure visibility of the crosswalk. See Policy R-40.

MORE INFORMATION

- City of Kirkland Roadway Policy R-33
- City of Kirkalnd Roadway Policy R-22
- City of Kirkland Roadway Policy R-40
- City of Kirkland Pre-Approved Plan CK-R.28
- City of Kirkland Pre-Approved Plan CK-R.28A
- FHWA Guide for Improving Pedestrian Safety and Uncontrolled Crossing Locations (2018)

Figure 46. Crosswalk on NE 116th St at 110th Ave NE

Figure 47. Raised crossing on 6th St at Peter Kirk Elementary

Raised Crossings

A raised crossing is a ramped speed table spanning the entire width of the street which also includes a marked pedestrian crosswalk, bicycle lane crossing, or shared use path crossing.

RAISED CROSSINGS

A raised crossing is a ramped speed table spanning the entire width of the street which includes a marked pedestrian crosswalk, bicycle lane crossing, or shared use path crossing. Raised crossings are a traffic calming measure that slows vehicle traffic, allows level crossing for pedestrians to improve accessibility, and improves driver yielding behavior.

CONTEXT

Raised crossings can be considered at locations with the following criteria:

- Non-arterial streets.
- Locations with high volumes of pedestrian crossings, such as schools and parks.
- Maximum speed limit of 25 mph.
- If along priority emergency services route or transit route, coordinate with emergency services or the local transit agency.
- Maximum roadway grade of 8 percent.

DESIGN GUIDANCE

- Raised crossing height may be at the sidewalk level or an interim height, dependent on roadway context such as truck or transit routes. The use of raised crossing with elevations below 3 in and/or flatter approach ramps may reduce traffic calming benefits and require ADA compliant pedestrian ramps and landing space at the sidewalk.
- The grade breaks achieved by the ramps in the roadway should be appropriate for the design speed of the raised crossing. Ramps that are too abrupt may cause rear-end crashes or cause bicyclists or motorcyclists to lose control. Conversely, a raised crossing that is too low may fail to reduce motorists' operating speeds.
- A width of 10 ft to 12 ft for the flat portion of the crossing is preferred. At a minimum, the width of raised crossings should be as wide as the connecting sidewalk. See CK-R.69.
- Traffic signal timing and posted speeds may need to be reassessed at locations where the installation of a raised crossing results in slower operating speeds.
- Raised crossings can be implemented in conjunction with curb extensions to minimize crossing distances and improve pedestrian visibility to drivers.
- This treatment may also require drainage modifications.
- Install appropriate lighting to ensure visibility of the crosswalk as well as the ramps to approaching drivers and cyclists. See Policy R-40.

Figure 48. Raised crosswalk warning signage

MORE INFORMATION

- FHWA Safe Transportation for Every Pedestrian (2021)
- FHWA Traffic Calming ePrimer
- MUTCD (2023) Section 3B.26
- ITE Guide to Vertical Deflection Speed Reduction Techniques (2022)
- WSDOT Active Transportation Design Guide (2024)
- National Academies of Sciences, Engineering, and Medicine Guidance to Improve Pedestrian and Bicyclist Safety at Intersections (2020) NCHRP 926
- City of Kirkland Pre-Approved Plan CK-R.69
- City of Kirkland Roadway Policy R-40

Figure 49. Raised intersection on NE 75th St

Raised Intersections

Raised intersections are raised areas covering intersections with ramps for drivers on all legs. This treatment improves intersections for pedestrian and bicyclist use by slowing driver operating speeds.

RAISED INTERSECTIONS

A raised intersection involves raising the roadway and crosswalks within an intersection to roughly the same elevation as the sidewalks, or in some cases raising only to an intermediate height. This results in a vertical ramp for drivers on all approaches which helps to reduce vehicle speeds within the intersection and can also eliminate the need for curb ramps for crossing pedestrians, although detectable warning surfaces must still be installed.

CONTEXT

Raised intersections can be considered at intersections with the following criteria:

- Typically installed at all-way stop controlled intersections with three or more legs, but can also work at signalized or two-way stop-controlled intersections.
- Generally at intersections that warrant crosswalks on all legs.
- Maximum speed limit of 25 mph.
- Traffic volume on each approach 10,000 vpd or less.
- If along priority emergency services route or transit route, coordinate with emergency services or the local transit agency.
- Maximum roadway grade of 8 percent.
- Intersections with high pedestrian volumes such as commercial areas or schools.
- Intersections with a history of motorists failing to stop for crossing pedestrians.

DESIGN GUIDANCE

- Raised intersections may be at the sidewalk level or an interim height, dependent on roadway context such as truck or transit routes. The use of raised intersections with elevations below 3 in and/or flatter approach ramps may reduce traffic calming benefits and require ADA compliant pedestrian ramps and landing space at the sidewalk.
- The grade breaks achieved by the ramps in the roadway should be appropriate for the design speed of the raised intersection. Ramps that are too abrupt may cause rear-end crashes or cause bicyclists or motorcyclists to lose control. Conversely, a raised crossing that is too low may fail to reduce motorists' operating speeds.
- Provide tactile warning for pedestrians with visual disabilities at the edge of the sidewalk before entering the intersection.
- Consider constructing raised intersections with patterned pavement, pavers, or other material that meets ADA requirements to notify all roadway users of the raised intersection.
- This treatment may also require drainage modifications.
- Install appropriate lighting and markings to ensure visibility of the crosswalk as well as the ramps to approaching drivers and cyclists.

MORE INFORMATION

- WSDOT Active Transportation Design Guide (2024) Plan Sheet Details
- FHWA Traffic Calming ePrimer
- National Academies of Sciences, Engineering, and Medicine Guidance to Improve Pedestrian and Bicyclist Safety at Intersections (2020) NCHRP 926

Figure 50. Raised intersection on NE 75th St

Figure 51. Curb extension on Kirkland Way

Curb Extensions

Curb extensions (also called curb bulbs or bulb outs) are an extension of a section of sidewalk out into the parking lane to reduce pedestrian crossing distance of a roadway.

CURB EXTENSIONS

Curb extensions (also known as “bumpouts,” or “bulbouts”) involve narrowing the roadway at spot locations. Typically this is done by realigning curb and/or extending the sidewalk into the roadway either at intersections or mid-block. Curb extensions reduce the pedestrian crossing distance, improve visibility between motorists and pedestrians, and provide more space for improved curb ramp design and for pedestrians waiting to cross. Curb extensions may create space for landscaping or green stormwater management. At intersections, they can also slow the speed of right-turning vehicles by reducing the effective corner radius.

CONTEXT

Curb extensions can be considered at locations with the following criteria:

- Intersections and midblock crosswalks.
- Most appropriate along roadways with on-street parking.
- If installing a curb extension into a paved shoulder, take into consideration that there is a high likelihood that some cyclists are using that shoulder and we want to avoid forcing them to merge into the travel lane if possible. This could be done by transitioning the shoulder to a segment of shared-use path at the curb extension in a manner that ensures ADA / PROWAG compliance.

DESIGN GUIDANCE

- Depth: extend approximately the width of a parked car (typically about 7’ from the curb face, 5’ minimum where no parking is present). Extend the curb no farther than the edge of the travel lane. Design the curb extension to provide sufficient space for directional curb ramps.
- Length: The length of a curb extension can vary depending on the intended use (i.e., stormwater management, transit stop waiting areas, parking restrictions). For curb extensions at crosswalks, the minimum length should include the crosswalk width as well as an additional 20’ from the edge of the crosswalk per Washington State code parking restrictions to ensure parked cars do not obstruct sightlines at crosswalks.
- The curb radius of the extension shall be a minimum of 15 feet for sweeping efficiency. See Pre-Approved Plan CK-R.24.
- Ensure necessary design and control vehicles are adequately accommodated to avoid larger vehicles (e.g. buses or delivery trucks) from encroaching into the sidewalk.
- Maintain direct routes across intersections by aligning pedestrian desire lines on either side of the crosswalk as much as feasible.
- Place site features such as landscaping, cabinets, poles, benches, planters, bollards, etc. so they don’t obstruct sightlines between pedestrians and drivers within curb extension areas.
- If a bike lane is present, continue the bike lane in front of the curb extension.
- Design the curb extension to extend the face of the curb no further than the edge of the existing or planned bike lane. Do not reduce the bicycle lane or travel lane widths.

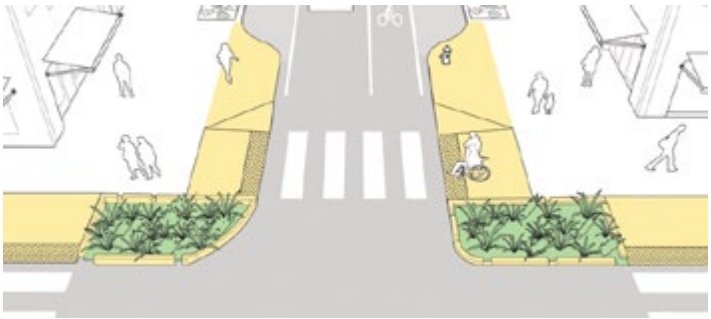


Figure 52. Curb Extensions

MORE INFORMATION

- WSDOT Active Transportation Design Guide (2024) Plan Sheet Details
- FHWA Traffic Calming ePrimer
- National Academies of Sciences, Engineering, and Medicine Guidance to Improve Pedestrian and Bicyclist Safety at Intersections (2020) NCHRP 926
- FHWA Guide for Improving Pedestrian Safety and Uncontrolled Crossing Locations (2018)

INTERIM CURB EXTENSIONS

Interim curb extensions may be appropriate in locations where a curb extension is appropriate to improve safety but a permanent concrete curb installation is not feasible for reasons such as budget constraints or upcoming roadway work. Interim low cost “quick build” solutions are possible that avoid storm water drainage impacts by using existing drainage structures and involve installing surface-mounted elements directly on the roadway, such as planters or flex posts, until a more permanent solution may be implemented. Note these require extensive maintenance including regular inspection and replacement of any damanged or missing flex posts. As such, these are best suited to short term demonstration projects.

DESIGN GUIDANCE

- The temporary curb extension should be outlined with a white edge line.
- Solid or patterned pavement marking should be distinct from the adjacent street, using a color that is not associated with standard traffic control (e.g., yellow).
- 36” high flexible delineator posts should be spaced no greater than 10’ apart on-center. Within the “no parking” areas on intersection approach and departure and near crosswalks tighter spacing is recommended.
- Rubber wheel stops, planters, or other objects may be used in concert with posts to more effectively deter vehicle encroachment into the curb extension area.
- Vertical elements shall not conflict with the marked crosswalk.

MORE INFORMATION

- MUTCD (2023) Section 3H and 3J

Figure 53. Paint and Post Curb Extension on NE 87th St and 114th Ave NE

Figure 54. Paint and Post Curb Extension with Planters in Seattle, WA

Figure 55. Median island on 124th Ave NE near the Kingsgate Library

Median Crossing Islands

Crossing islands provide a pedestrian refuge and allow multi-stage crossings of wide streets.

MEDIAN CROSSING ISLANDS

Crossing islands provide a pedestrian refuge and allow multi-stage crossings of wide streets. They can be located mid-block or at intersections and along the centerline of a street, as roundabout splitter islands, or as “pork chop” islands where right-turn slip lanes are present.

The crossing island should be large enough to accommodate various groups of users, including groups of pedestrians and/or bicyclists, tandem bicycles (which are considerably longer than standard bicycles), wheelchairs, people with baby strollers, and equestrians (if this is a permitted path use). The area may be designed with the storage aligned perpendicularly across the island or via a diagonal or offset storage bay. The minimum length of the storage area should be at least 6 feet. However, 10 foot or larger is preferred to accommodate equestrian use, a bicycle with a trailer, cargo bicycles, or higher volumes of bicycles so riders can wait comfortably without encroaching into adjacent travel lanes.

DESIGN GUIDANCE

A. Preferred depth: 10 feet (to accommodate bicyclists with trailers and multiple users), minimum depth: 6 feet.

B. The width of the refuge should equal the width of the crosswalk. Pedestrian refuges may be wider in order to allow the clearing of debris and snow,but narrow enough to discourage drivers from using the space for U-turns.

C. A “nose” that extends past the crosswalk is required to protect people waiting on the crossing island and to slow turning drivers. Vegetation and other aesthetic treatments may be incorporated, but must not obscure visibility.

MORE INFORMATION

- WSDOT Active Transportation Design Guide (2024) Plan Sheet Details
- FHWA Safe Transportation for Every Pedestrian (2021)
- National Academies of Sciences, Engineering, and Medicine - Guidance to Improve Pedestrian and Bicyclist Safety at Intersections (2020) NCHRP 926

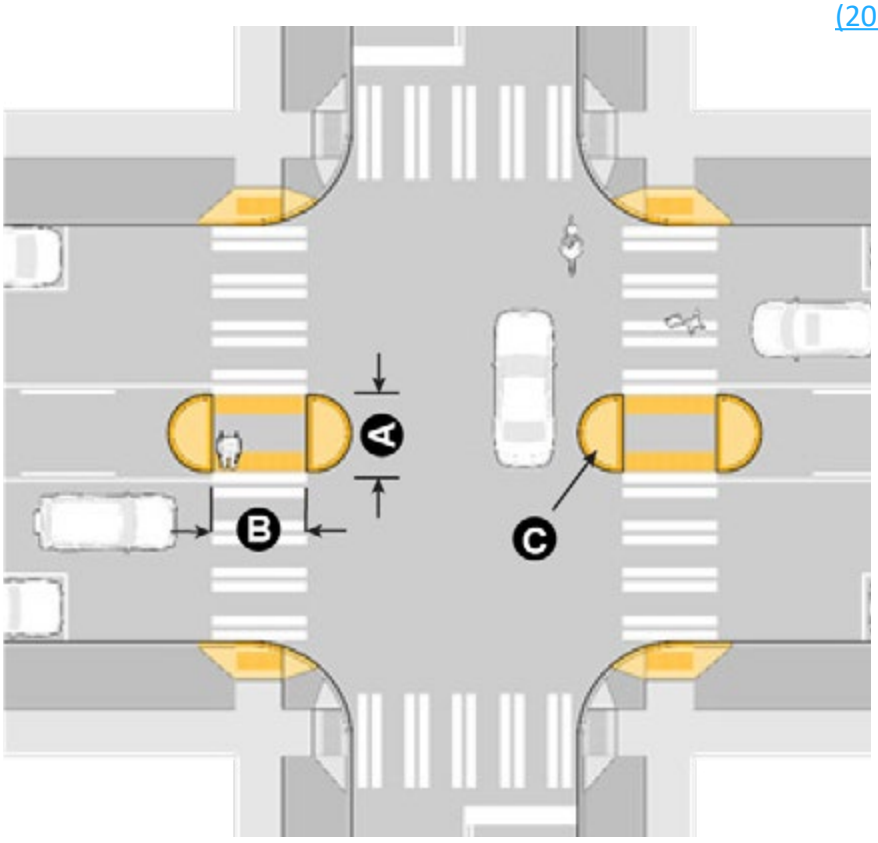


Figure 56. Crossing Islands

Figure 57. RRFB crossing of the Cross-Kirkland Corridor and 6th St S

Rectangular Rapid Flashing Beacons

Rectangular Rapid Flashing Beacons can be used at uncontrolled crossings in addition to warning signs to create a safer crossing that effectively highlights the need for motorists to stop for crossing pedestrians or cyclists.

RECTANGULAR RAPID FLASHING BEACONS

For some uncontrolled crosswalk locations it may be important to provide a warning beacon in addition to warning signs to create a safe and comfortable crossing that effectively reinforces the need for motorists to stop for pedestrians and bicyclists. The rectangular rapid flashing beacon (RRFB) warning device has been shown to significantly improve driver compliance in stopping for crossing pedestrians.[1]Furthermore, these devices provide immediate service to pedestrians and bicyclists with little or no wait times. WSDOT has received statewide interim approval (FHWA's IA-21) for use of RRFBs on all local jurisdiction roadways and state highways.

CONTEXT

RRFBs are potentially an appropriate mid-block or intersection (including roundabout) crosswalk treatment under the following conditions:

- Uncontrolled crosswalks across roadways with moderate to high vehicle volumes.
- Uncontrolled crosswalks across roadways with a posted speed of 35 mph or less.
- Uncontrolled high-volume pedestrian crossings, crossings near schools, priority bicycle route crossings, or locations where bicycle facilities / trails cross streets at mid-block locations.
- Uncontrolled crosswalks with a history of low driver compliance.
- Where there is a multiple threat condition with two or more travel lanes approaching a crosswalk in the same direction, RRFBs should be carefully considered relative to PHBs or traffic signals.

For more information on the applicability of RRFBs, see Crosswalk Location Evaluation Policy R-33.

Figure 58. RRFB crossing of Central Way at Market Street

1 Fitzpatrick et al. "Will You Stop for Me? Roadway Design and Traffic Control Device Influences on Drivers Yielding to Pedestrians in a Crosswalk with a Rectangular Rapid-Flashing Beacon." Report No. TTI-CTS-0010. Texas A&M Transportation Institute, (2016).

DESIGN GUIDANCE

- Use standard crosswalk signage on both sides of the crosswalk facing all vehicle approaches, with the double-sided RRFB unit mounted below or above the associated signage. Consider placement of the beacons based on maintenance considerations, site context, and pedestrian (and bicyclist) desire lines.
- Where there is a multilane approach, the stop line and associated signage should be placed in advance of the marked crossing by 20’ to 50’, but the RRFB equipment should only installed at the crosswalk itself (see MUTCD sections 2B.19, 3B.19, and 4L for more details).
- Installations for three lane crossings should not include a center RRFB unit in the median island, an overhead mast arm may be optionally considered. For five lane crossings, a center RRFB unit in the median island or as an overhead mast arm is required.
- When installed at intersections, consider installing RRFBs at both crosswalks where actuating the RRFB at either crosswalk also activates the RRFB equipment at the other crosswalk.
- At some locations, consider the following in place of a standard pedestrian crossing sign (W11-2):
    - » Pedestrian and bicyclist crossing sign (W11-15) at locations serving both crossing pedestrians and bicyclists, such as a shared-use path or sidewalk with adjacent bike lane.
    - » School sign (S1-1) at locations near schools.
- To ensure compliance with PROWAG, a pedestrian pushbutton or passive detection device shall be used with RRFBs that emits a spoken “warning lights are flashing” audible message when activated, in lieu of an audible walk indication. If a pushbutton is used, it shall emit a locator tone when not activated and should not include vibrotactile feedback since an RRFB crossing does not include a walk indication.
- At intersections where a bicyclist could also benefit from using an RRFB, ensure a pushbutton is accessible to bicyclists as passive detection would likely result in vehicle actuation.
- Ensure adequate pedestrian and bicyclist illumination at crosswalks with RRFBs to improve visibility of pedestrians and bicyclists using the crosswalk.

MORE INFORMATION

- WSDOT Active Transportation Design Guide (2024) Plan Sheet Details
- FHWA Proven Safety Countermeasures - Rectangular Rapid Flashing Beacons
- FHWA Interim Approval - Rectangular Rapid-Flashing Beacons at Crosswalks
- WSDOT Traffic Manual (2021)
- Accessibility Guidelines for the Public Right-of-Way
- MUTCD Section 7C.02
- City of Kirkland Roadway Policy R-33
- City of Kirkland Rectangular Rapid Flashing Beacon (RRFB) Installation Policy R-24

Figure 59. Pedestrian Hybrid Beacon in Woodinville, WA

Pedestrian Hybrid Beacons (HAWK Signal)

Pedestrian Hybrid Beacons can help pedestrians safely cross higher-speed roadways at uncontrolled intersections by directing motorists to slow and come to a stop, providing the right-of-way to the pedestrian.

PEDESTRIAN HYBRID BEACONS

Pedestrian hybrid beacons (PHB) (also known as HAWK signals) are a form of traffic control used at pedestrian and bicyclist crossings. The beacon lights are dark until a pedestrian or bicyclist activates the signal. The cycle includes a warning phase for drivers, then a stop phase when pedestrians and bicyclists receive a "walk" indication to cross the street. PHBs provide a controlled crossing for pedestrians, while creating less delay for drivers than a traffic signal. For pedestrians with vision disabilities, the accessible pedestrian signal equipment provided and red light facing drivers when they must stop creates conditions that will be more comfortable and reassuring than at an uncontrolled crossing. PHBs help address conflicts at crossing locations with excessive driving speed, inadequate visibility, and a history of drivers not stopping for pedestrians in crosswalks. Studies have shown that PHBs typically can reduce pedestrian crashes by 55 percent and serious injury and fatal crashes by 15 percent.[1]

CONTEXT

- Crosswalks across multilane and / or higher-speed roadway approaches, particularly those at or above 30 mph.
- Crosswalks with high volumes of pedestrians and vehicles (AADT above 9,000).
- Where side-street vehicle volumes do not warrant a conventional traffic signal.
- Near high-priority locations such as schools, parks, senior centers.
- Where there are concerns that a conventional signal may encourage additional motor vehicle traffic on the minor street.
- Uncontrolled crossing locations with a history of safety concerns and/or high frequency of pedestrian crashes.
- Crosswalks with long pedestrian delays due to infrequent gaps in traffic.

At locations also intended to serve bicyclists crossing, consider a half signal or full traffic signal in lieu of a PHB due to a phasing nuance inherent to PHBs. During the flashing alternating red phase of a PHB drivers can proceed through the crossing if it is clear after first stopping and while pedestrians receive a flashing DON'T WALK phase. Bicyclists are not supposed to enter the crossing during this phase, but as the phase is timed for pedestrian crossing speeds, bicyclists may proceed if they perceive they can clear the crossing within the remaining time. However, given the potentially higher speed of an approaching bicyclist relative to pedestrians, a motorist may not anticipate an approaching bicyclist entering the crossing during this flashing alternating red phase.

Where a PHB is used to support people crossing by bicycle, traffic control for bicyclists shall be determined by the pedestrian signal head (i.e. bicyclists directed to cross with pedestrian walk indication) by installing a BIKE USE PED SIGNAL sign (R9-5) along with either pushbutton or passive bicycle detection. Care should be taken to ensure a pedestrian signal head is clearly visible from the location of waiting bicyclists.

DESIGN GUIDANCE

- Place at least two pedestrian hybrid beacon faces for each approach. For streets with operating speeds over 35 mph, mount all PHB faces over the roadway.
- Install with a high-visibility crosswalk and advance-stop lines, assuming installation on a multi-lane approaches.
- Prohibit parking at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk.
- Provide pedestrian countdown signals and accessible pedestrian signal pushbuttons.
- Where supporting bicycle crossing, clearly indicate to bicyclists how to activate the beacon.

MORE INFORMATION

- WSDOT Active Transportation Design Guide (2024) Plan Sheet Details
- MUTCD (2023) Section 4J

1 Fitzpatrick, K and Eun Sug Park 2010 "Safety Effectiveness of the HAWK Pedestrian Crossing Treatment" FHWA-HRT-10-042 FHWA 130 F

Figure 60. Leading pedestrian interval at the intersection of NE Juanita Dr and 97th Ave NE

Intersection Signal Treatments

Bicycle and pedestrian movements through an intersection can be given advance or dedicated phases in a signal cycle for enhanced user safety and comfort.

INTERSECTION SIGNAL TREATMENTS

Bicycle and pedestrian movements at an intersection can be given advance or dedicated phases in a signal cycle for enhanced user safety and comfort.

GENERAL CONSIDERATIONS

Locate signal poles, service cabinets, or other equipment necessary for the signal operations outside pedestrian paths of travel on the sidewalk. Any signs or signal heads attached to signal poles shall meet ADA protruding object clearances, and pedestrian push buttons should be appropriately spaced and configured to meet MUTCD and ADA standards.

PEDESTRIAN SIGNALS

PEDESTRIAN DETECTION

Pedestrian signals are generally activated by a push button. Refer to Policy TS-1 for guidance on when to apply automatic pedestrian recall (i.e. automatic activation of a WALK phase) at an intersection.

CONTEXT

Pedestrian push buttons should be provided at all legal pedestrian crossings of an intersection.

DESIGN GUIDANCE

- Pedestrian push buttons shall be located in accordance with MUTCD standards.
- APS systems should be used at all locations.
- Extended walk time may be considered around schools or other appropriate locations with high pedestrian volumes.

MORE INFORMATION

- Traffic Signals Pre-Approved Plan CK-TS.12

Figure 61. APS Push Button on NE 132nd St

PEDESTRIAN SIGNAL HEADS

Pedestrian countdown signals provide pedestrians with information about how much time they have remaining to cross the street. The countdown helps clarify any confusion behind the meaning of the flashing “don’t walk” hand.

LEADING PEDESTRIAN INTERVALS

Leading pedestrian intervals (LPIs) provide a WALK symbol for several seconds before the parallel vehicle signal turns green. This advance walk time improves pedestrian crossing visibility and driver yielding behavior for overall improved safety and reduced crash risk. Refer to Figure 602.

CONTEXT

LPIs should be considered at intersections with high pedestrian volumes and conflicting vehicle turns across crosswalks such as permissive lefts, or intersecting cross streets with permissive right turns. Intersections with exclusive right turn lanes should be evaluated for LPIs to reduce conflicts with pedestrian crossings.

DESIGN GUIDANCE

- Leading interval length should be a minimum of three seconds, or timed to allow pedestrians to cross at least one lane of traffic.
- Refer to MUTCD Chapter 4E Pedestrian Control Features.
- Prevent vehicle turns across the crosswalk during the LPI phase.

Figure 62. Leading Pedestrian Interval

SCRAMBLE AND ALL-WALK SIGNAL PHASING

Scrambles and All Walks provide a dedicated cycle in a signal phase for pedestrian-only movements while all vehicle movements are restricted. Scrambles allow enough time in the cycle for diagonal movements across an intersection, while All Walks are strictly perpendicular movements across intersection legs.

CONTEXT

Scrambles or All Walks can be considered in intersections with very high pedestrian volumes on all crossings of an intersection.

DESIGN GUIDANCE

- Each intersection will need to be evaluated for capactiy and operations.
- No turn on red restriction for vehicle movements required.
- For scrambles, each corner should have three pedestrian signal heads for perpendicular as well as diagonal pedestrian movements.
- Utilize “Diagonal Crossing OK” signs for scrambles. Locate these signs at pedestrian height rather than overhead on a signal post mast arm.
- Pavement markings may be considered to emphasize diagonal crossing movements.

Figure 63. Diagonal Crossing OK sign. Pg 93 of Pedestrian Facilities Users Guide: Providing Safety and Mobility, USDOT Federal Highway Administration Research and Development, Publication number FHWA-RD-01-102, March 2002

Figure 64. Pedestrian Scramble at Kirkland Ave and Lake Street

BICYCLE SIGNALS

BICYCLE DETECTION

All active warning devices, pedestrian hybrid beacons, and traffic signals that can be legally used by someone bicycling should passively detect bicycles or allow bicyclists to manually activate with a pushbutton. This is especially important at signalized crossings on designated bicycle routes such as greenways, or streets with dedicated bicycle facilities.

CONTEXT

Passive bicycle detection systems such as video cameras or induction loops are preferred on bike lanes, buffered bike lanes, and protected bike lanes. Push buttons should be used on greenways or other intersection scenarios where bicycles should actuate a signal but not vehicles, such as a half signal. Push buttons may also be appropriate in conditions such as pedestrian mixing zones where the exact location of a bicyclist is less predicable and placement of an induction loop or camera may not reliably detect the presence of a cyclist.

DESIGN GUIDANCE

INDUCTION LOOPS

- Locate bicycle detection pavement markings in best possible location for induction loop detection, refer to CK-R.34A.

CAMERA DETECTION

- Locate bicycle detection pavement markings in best possible location for camera “zone” detection.

PUSH BUTTONS

- Locate bicycle push buttons 1.5’ behind the curb face to ensure adequate horizontal vehicle clearances. The push button should be oriented perpendicular to the bicyclists’ direction of travel, similar to pedestrian push buttons, and so that it can be easily reached by a bicyclist. The push button should be located at the intersection stop bar.
- Use sign R10-4 in conjunction with the push button.

DETECTION INDICATORS

- Consider blue light indicators as part of all passive detection methods to assure cyclists they have been detected at an intersection.
- Other types of bicyclist detection confirmation (such as countdown timers) may alternatively be considered.

Figure 65. Bicycle Push Button 128th Ave NE

Figure 66. Blue Bike Detection Confirmation Light in Seattle, WA

BICYCLE SIGNAL HEADS

For layout of bicycle signal heads, refer to the MUTCD 11th Edition Chapter 4H Bicycle Signals in addition to the following supplemental guidance:

- Consider optically programmed or shielded bicycle signal displays if MUTCD requirements for lateral position cannot be met or if signal face visibility cannot be optimized. Use of bicycle symbol stencils for bicycle signal heads is recommended.
- A supplemental 4 inch nearside bicycle signal display should be used if the intersection is more than 120 feet wide. A nearside bicycle signal display shall be mounted such that the bottom of the signal housing is no less than 4 feet above the ground and no more than 8 feet above the ground or sidewalk in locations not over a roadway.
- 12 inch farside bicycle signal heads shall be mounted such that the bottom of the signal housing is no less than 7 feet above the ground or sidewalk in locations not over a roadway. In locations where far-side bicycle signals are mounted to the same pole as a pedestrian signal, the bicycle signal should be located above the pedestrian signal.

LEADING BICYCLE INTERVALS

Similar to leading pedestrian intervals, leading bicycle intervals provide a green bicycle phase for 3-8 seconds before the parallel vehicle signal turns green.

CONTEXT

Leading bike intervals should be considered at intersections with high bicycle volumes and conflicting permissive vehicle turns across the bikeway.

DESIGN GUIDANCE

- Run a bicycle leading interval concurrently with the parallel WALK phase so there is also a leading pedestrian interval.

Figure 67. Bicycle Signal Head in Redmond, WA

PROTECTED BICYCLE PHASE

CONTEXT

A protected bicycle phase runs concurrent to parallel through vehicle signal phases, but conflicting permissive vehicle turns across the bikeway are prohibited as well as right-turns on red across the bikeway. Protected bicycle phases should be used in the following situations:

- High turning vehicle volumes across bike lane.
- Where left-turning bicyclists are making difficult movements due to factors such as multiple lane changes with a high speed differential.

DESIGN GUIDANCE

- Time-separated movements typically require dedicated turn lanes and separate signal heads for bicycle and vehicle movements that indicate turning vehicles must wait while through vehicles and bicyclists have a green phase. Bicycle signal faces with protected-only phases are permitted for use in the MUTCD 11th Edition.
- The use of bicycle signal faces where permissive turn phases across a bikeway are allowed requires a request to experiment from FHWA.

Figure 68. Green Conflict Markings through the intersection of NE 124th St and Slater Ave NE

Bicycle Lane Conflict Treatments

Green conflict area markings are pavement markings used at intersections and driveways to improve visibility, alert all roadway users of expected behaviors, and to reduce conflicts with turning vehicles.

BICYCLE LANE CONFLICT TREATMENTS

GREEN CONFLICT AREA MARKINGS

Green conflict area markings (also called cross-bikes) are pavement markings used at intersections and driveways to improve visibility, alert all roadway users of expected behaviors, and to reduce conflicts with turning vehicles. Green conflict area markings may only be used where a receiving (downstream) bicycle facility is present. In some cases, the receiving bicycle facility may only be a two-stage turn bike box. Shared lane markings do not qualify as a receiving bicycle facility.

Figure 69. Dashed Green Conflict Area Markings in Redmond, WA

CONTEXT

Dashed green conflict area markings, see CK-R.36A, can generally be considered in the following locations:

- At any intersection along a roadway where a bicycle lane is present.
- At merge areas where drivers must make a lane change across a bike lane approach to enter a dedicated turn lane.
- At neighborhood greenway arterial crossings.

Solid green markings, see CK-R.36D, are used at driveways with high traffic volumes such as commercial driveways or waterfront parks.

DESIGN GUIDANCE

- Green conflict area markings should be as wide as the bicycle lanes on either side of the intersection.

MORE INFORMATION

- City of Kirkland Pre-Approved Plan CK-R.36A
- City of Kirkland Pre-Approved Plan CK-R.36D

BIKE BOXES

A bike box provides dedicated space between the crosswalk and vehicle stop line where bicyclists can wait during the red light at signalized intersections. The bike box allows a bicyclist to take a position in front of motor vehicles at the intersection, which improves visibility and motorist awareness, and allows bicyclists to “claim the lane” if desired. Bike boxes aid bicyclists in making turning maneuvers at the intersection, and provide more queuing space for multiple bicyclists than that provided by a typical bicycle lane.

Figure 70. Bike Box on 152nd Ave NE in Redmond, WA

DESIGN GUIDANCE

- Bike boxes are painted green, are typically a minimum of 10’ deep, and extend across the adjacent general purpose lane.
- Bike boxes should only be used on two or three lane roadways. For roads with additional lanes, two-stage bike boxes should be used.
- Bike boxes should not extend over multiple through lanes.
- Bike box design should be supplemented with appropriate signage according to the latest version of the MUTCD.
- Bike box design should include appropriate signalization adjustment in determining the minimum green time.
- Bike boxes should be accompanied by a NO TURN ON RED restriction.
- If a right turn lane is provided on the street the bike box is installed in front of, consider only installing the bike box in front of the through lane to allow motorists to make right turns on red.

MORE INFORMATION

- WSDOT Active Transportation Design Guide Plan Sheet Details
- FHWA Interim Approval for Optional Use of an Intersection Bicycle Box (IA-18)
- City of Kirkland Pre Approved Plan CK-R.36E

TWO-STAGE TURN BOX

A two-stage turn box designates a space for bicyclists to wait outside the path of traffic while performing a two-stage turn through a signalized intersection. Two-stage turn boxes are generally a more comfortable method for executing a left-turn as opposed to a bicycle lane situated between a vehicle through lane and left-turn lane or shared lane.

DESIGN GUIDANCE

- A minimum width of 10 feet is recommended.
- A minimum depth of 6.5 feet is recommended.
- Dashed bicycle lane extension markings may be used to indicate the path of travel across the intersection.
- NO TURN ON RED (R10-11) restrictions should be used to prevent vehicles from entering the queuing area.
- The use of a sign instructing bicyclists how to use the box is optional.
- The box should consist of a green box outlined with solid white lines supplemented with a bicycle symbol and a turn arrow to emphasize the crossing direction.

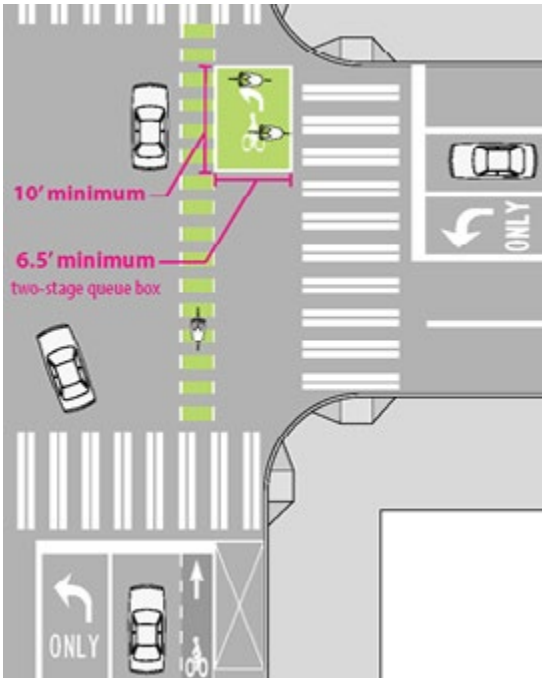


Figure 71. Two-Stage Turn Box Placement

MORE INFORMATION

- WSDOT ATDG
- FHWA Interim Approval - Optional Use of Two-Stage Bicycle Turn Boxes
- City of Kirkland Pre-Approved Plan CK-R.36F

Figure 72. Two-Stage Turn Box on NE 116th St

Figure 73. Two-Stage Turn Box on Market St

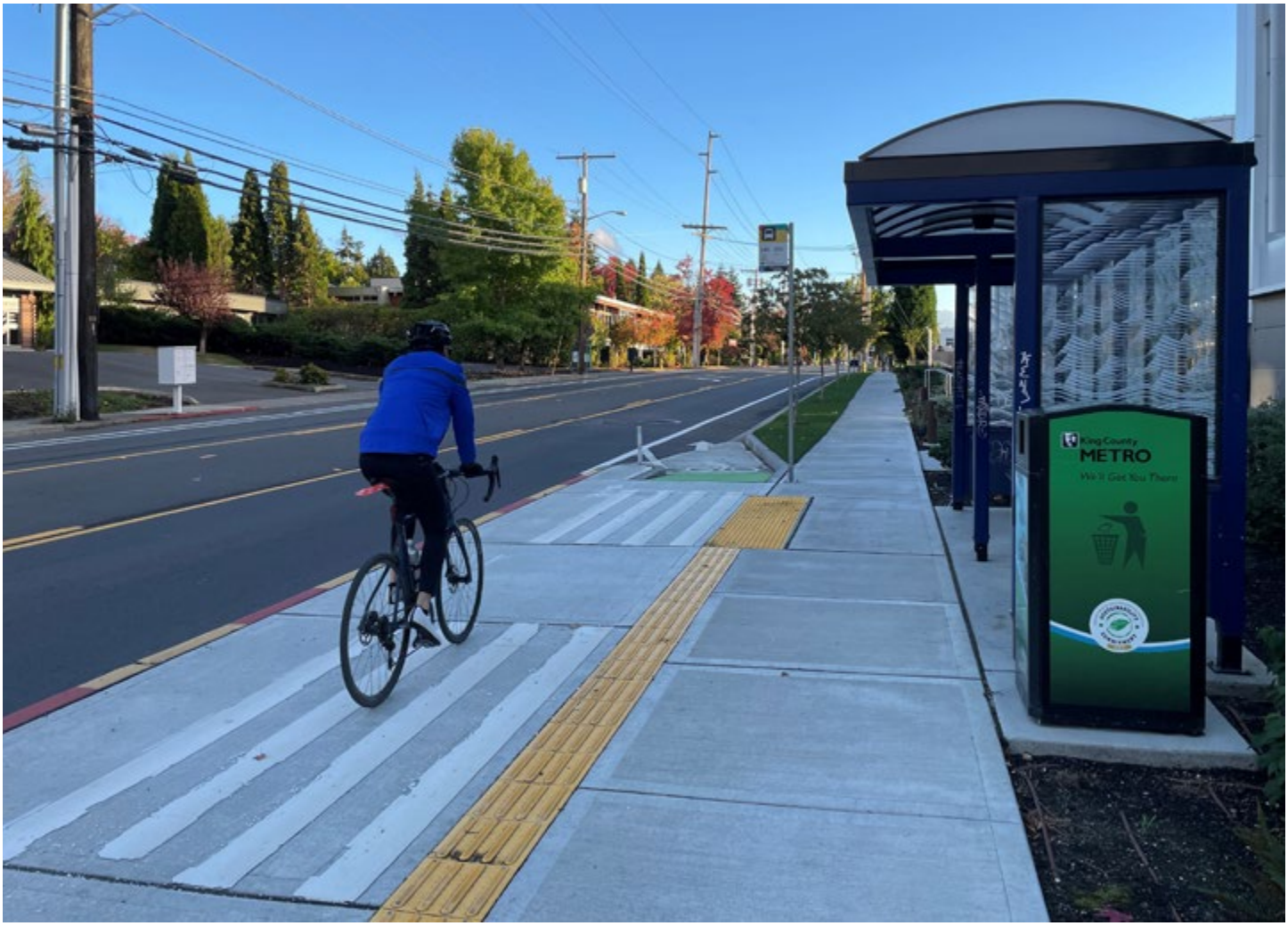


Figure 74. Bus stop with raised bike lane on 6th St S at the Google campus

Bicycle Lanes at Bus Stops

Bicycle lanes can be integrated with a variety of bus stop designs. They are compatible with mid-block, near-side, and far-side bus stop locations.

BICYCLE LANES AT BUS STOPS

Bicycle lanes can be integrated with a variety of bus stop designs. They are compatible with mid-block, near-side, and far-side bus stop locations. Where feasible, bicycle lanes should be routed behind bus stops to eliminate conflicts between bicyclists and buses pulling in and out, as well as between vehicles and bicyclists traveling around a stopped bus. The bicycle lane may be located at the street or sidewalk level; for either configuration consideration must be given to curb ramps and pedestrian accessibility to the bus stop.

DESIGN GUIDANCE

- Where feasible, bicycle lanes should be routed behind bus stops to eliminate conflicts between buses and bicyclists. In constrained conditions, the bike lane itself may become the boarding area.
- Preserve a clear boarding and alighting area that connects to a pedestrian access route. Advanced lateral deflection of the bicycle lane, as shown in the graphic to the right, may be necessary to accommodate the boarding and alighting area. Minimum taper length should be calculated to accommodate an inside radius of 15’ minimum.
- Maintain a pedestrian access route between the sidewalk and the boarding and alighting area. Pedestrian crossings should include crosswalk markings across the bicycle lane. Two pedestrian crossings are recommended, but not required.
- Fencing on the bus island between pedestrian crossings can help discourage pedestrians from crossing the bike lane outside of the designated locations, creating more predictability for all users.
- Include a rear door clear zone connected to a pedestrian access route. It is preferable to have a continuous clear zone to connect the boarding and alighting area and the rear door clear zone.
- Transition the bicycle lane to sidewalk level in constrained situations or to provide level pedestrian crossings. Locate bicycle transition ramps near crosswalks and outside of any lateral shift of the bicycle lane. Ensure there is a detectable edge between the sidewalk and raised bike lane (see Sidewalk-Level Protected Bicycle Lanes section).

MORE CONSTRAINED ← → LESS CONSTRAINED

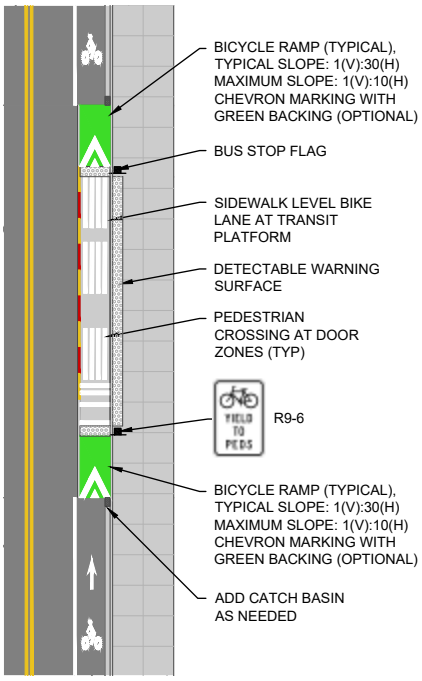


Figure 75. Raised Bike Lane in Front of Bus Stop

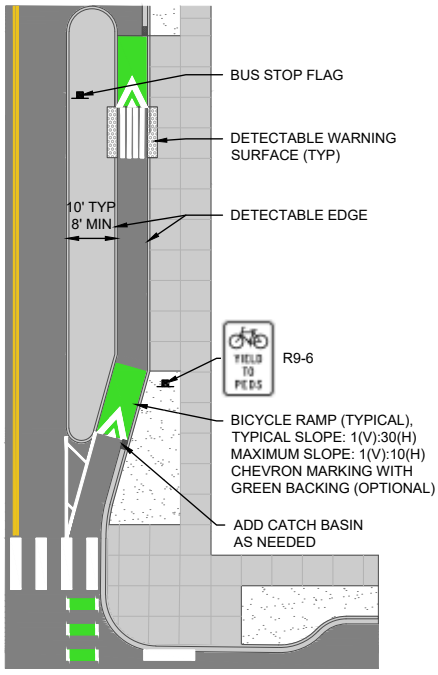


Figure 76. Raised Bike Lane Behind Bus Stop

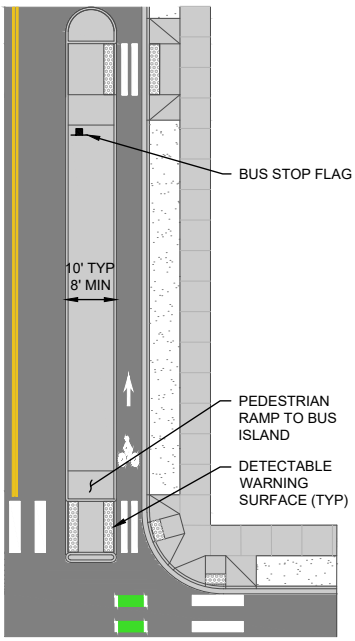


Figure 77. Floating Bus Island with Bike Lane

Figure 78. Protected intersection at 152nd Ave NE and NE 24th St in Redmond, WA

Protected Intersections

Protected intersections manage conflicts with turning vehicles, clarify bicycle movements, and increase visibility for all users.

PROTECTED INTERSECTIONS

CONTEXT

Protected bicycle intersections manage conflicts with turning vehicles and increase visibility for all users by providing clear right-of-way assignment, promoting predictability of movement, and allowing eye contact between motorists, bicyclists, and pedestrians. The corner island allows the bike lane and side path to be physically separated up to the intersection crossing point where potential conflicts with turning motorists can be controlled more easily. It serves an important purpose in protecting the bicyclist from right-turning motor vehicle traffic. Protected intersections provide clear messages regarding right-of-way to all users moving through the intersection in conjunction with geometric features that result in higher compliance where users are expected to yield. Protected intersection designs should also incorporate bicycle signal heads to separate conflicts at intersections with protected phasing. Bicycle and pedestrian movements can be combined or separated in a protected intersection design based on walking and bicycling volumes and facility type (trail, sidewalk, etc.) See figures below for these configurations.

DESIGN GUIDANCE

- The corner island should be constructed with a standard vertical curb to discourage or prevent motor vehicle encroachment. In retrofit projects, corner islands may be constructed with flexible delineators posts. Where the design vehicle exceeds an SU-30, a mountable truck apron can be considered to supplement the corner island; however, the corner island should not be eliminated, as it serves an important function to protect crossing bicyclists and pedestrians and control motorist speeds.
- For separated bike lanes, the bicycle and pedestrian crossings should be separate but parallel and in close proximity to one another to consolidate conflicts for motorists. For side paths, the bicycle and pedestrian crossings will be served by a single crosswalk.
- The pedestrian refuge median is a space within the street buffer where pedestrians may wait between the street and the separated bike lane. It should be a minimum width of 6 ft and should include detectable warning surfaces.
- The pedestrian crossing should be separated from the bicycle crossing by a detectable surface or transition, such as a curb, a concrete median, or in constrained conditions, a directional indicator.
- Where pedestrians are expected to cross separated bike lanes, pedestrian crossings are appropriate to indicate a preferred crossing location and to communicate a clear message to bicyclists where pedestrians have the right-of-way. Yield lines in the bike lane in advance of the pedestrian crosswalk, supplemented with a YIELD HERE FOR PEDESTRIANS sign, can be used to emphasize pedestrian priority.
- A 15 ft minimum corner radius within the bikeway is recommended to provide space for bicyclists making turning or lateral movements. The radius may be reduced to a practical lower limit of 5 ft in constrained conditions; however, the designer should recognize that if both the radius and bikeway width are small it may require bicyclists with longer bicycle types (e.g., bicycle with trailer, adult box bicycle) to slow significantly to facilitate the turn or dismount in some situations.

MORE INFORMATION

- AASHTO Guide for the Development of Bicycle Facilities (2024)

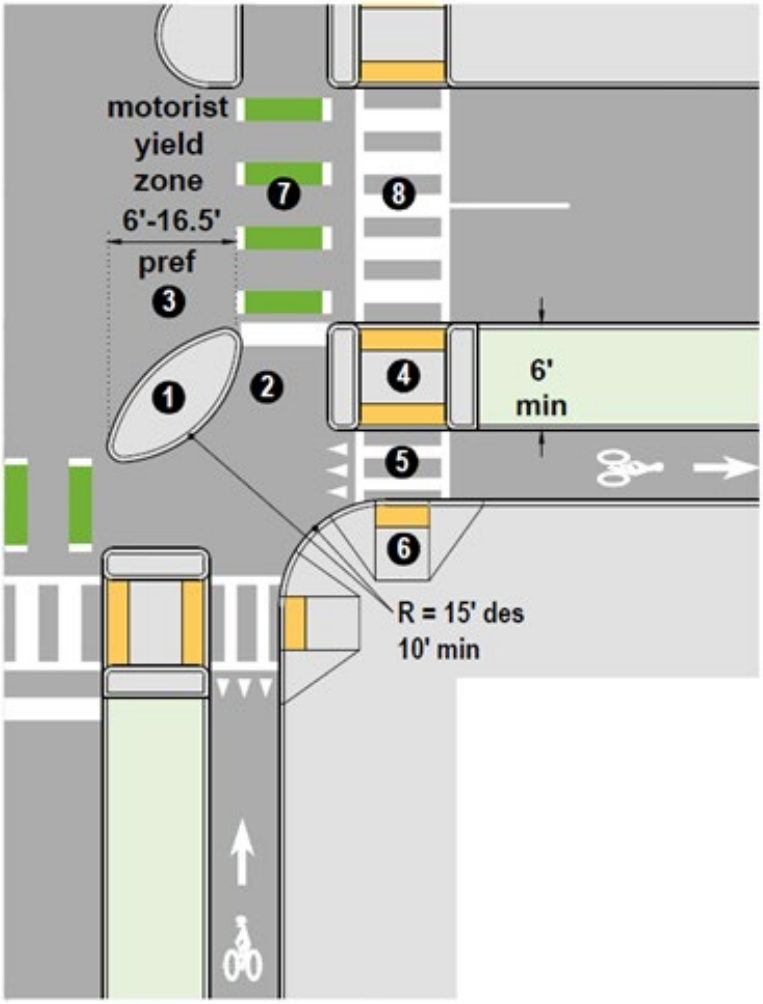


Figure 79. Separated bicycle and pedestrian crossings

1. Corner Island
2. Forward bicycle queuing area
3. Motorist yield zone
4. Pedestrian refuge median

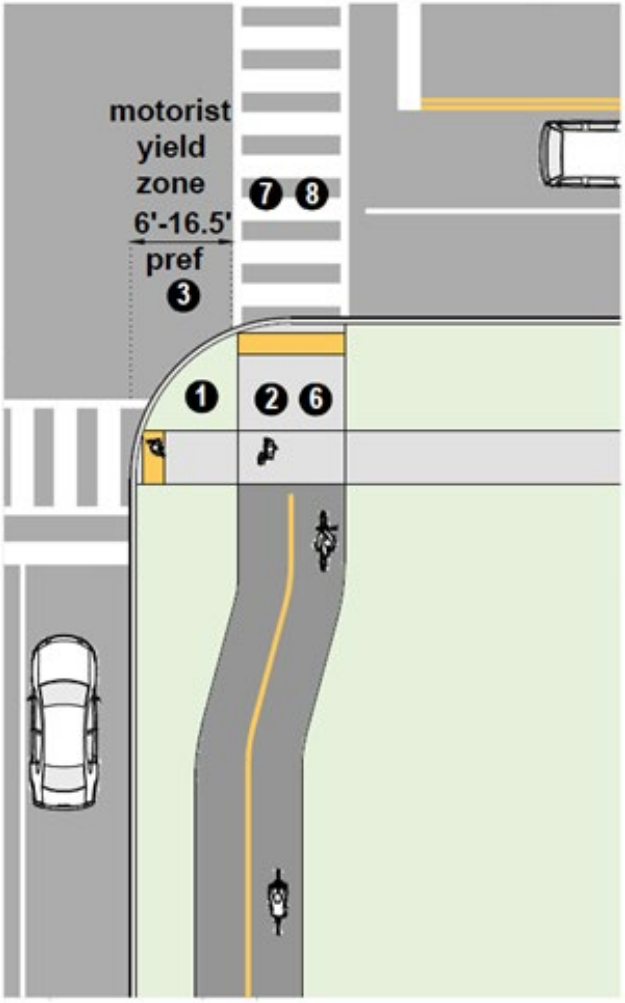


Figure 80. “Mixing Zone” configuration

5. Pedestrian crossing of the protected bicycle lane
6. Pedestrian curb ramp
7. Bicycle crossing of travel lanes
8. Pedestrian crossing of travel lanes

Figure 81. Bike lane at added right turn lane transition on Lake Washington Blvd NE

Transitions Between Bicycle Facilities

Safe and intuitive transitions between different bicycle facility types will be needed for most projects as they are being designed and installed.

TRANSITIONS BETWEEN BICYCLE FACILITIES

CONTEXT

Safe and intuitive transitions between different bicycle facility types will be needed for most projects as they are being designed and installed. Transitions will primarily be needed for two reasons:

1. To connect from one facility type to another due to a change in roadway conditions which prohibit the continuation of a particular facility type; or,
2. To transition from an end of a project to an existing condition, which may or may not have a bicycle facility.

Additionally, facility types may vary along a roadway corridor based on land use, parking needs, right-of-way constraints and other characteristics. It is important to provide transitions between different types of facilities (e.g. wayfinding signage, pavement markings, turn-queue boxes). Preferred bicycle facility transitions locations include:

- Low-stress environments.
- Controlled intersections.
- Long, straight sections of bicycle facilities.
- When a bicycle facility approaches a primary destination.

Figure 82. Bike Lane Transition to Shared Lane on 98th Ave NE

DESIGN GUIDANCE

- Always carry bicycle facilities to a logical terminus. Avoid abruptly ending facilities without considering transitions and interactions with vehicles.
- At locations where bicycle lanes transition to shared lanes, provide a dashed lane line transition to a short segment of shared lane markings, even if the shared lane markings will not continue. The dashed lane line shall occur where the bike lane is of full width and end prior to the merge point.
- Many transitions require changing the horizontal alignment of bicycle facilities. In these instances, the minimum taper length should be calculated using the standard Shifting Taper Equation from the AASHTO Bike Guide:

Shifting Taper Equation	
$L=WS^2/60$	
L	$WS^2/60$
L	Longitudinal lane shift (ft), minimum 20 ft
W	Lateral width of offset (ft)
S	Target bicyclist operating speed (mph)

- Signage should be provided per recommendations in the latest editions of the MUTCD and AASHTO Bike Guide.
- At the end of a bicycle lane, the bikes merging warning sign (W9-5a) should be provided.

BICYCLE LANE TO A SHARED RIGHT TURN LANE

Bicyclists may prefer to operate within the right turn lane if the lane has a lower traffic volume, less queuing, and lower operating speeds than the adjacent through lanes. In these locations the adjacent through travel lanes should be narrowed to maximize the width of the turn lane for shared operation between motorists and bicyclists.

DESIGN GUIDANCE

- Provide a typical 100ft long turn lane and a 90ft merge lane with green conflict markings. See pre approved plan CK.R-36B Bike Lane Treatment at Drop Lane Right Turn.
- Where there is inadequate lane width for a turn lane and bike lane, shared lane markings can be used. Shared lane markings positions:
  - » Center or left-most portion of the turn lane: right turn lane is 14 ft wide or less and has operating speeds below 35 MPH.
  - » Right-most portion of the through lane: The right turn lane experiences extensive or frequent queuing, and has operating speeds below 35 MPH.
- At locations with higher roadway operational speeds ≥35 MPH or high turning vehicle volumes ≥150/hr, provide a bike ramp transitions to an off-street bikeway or sidewalk.

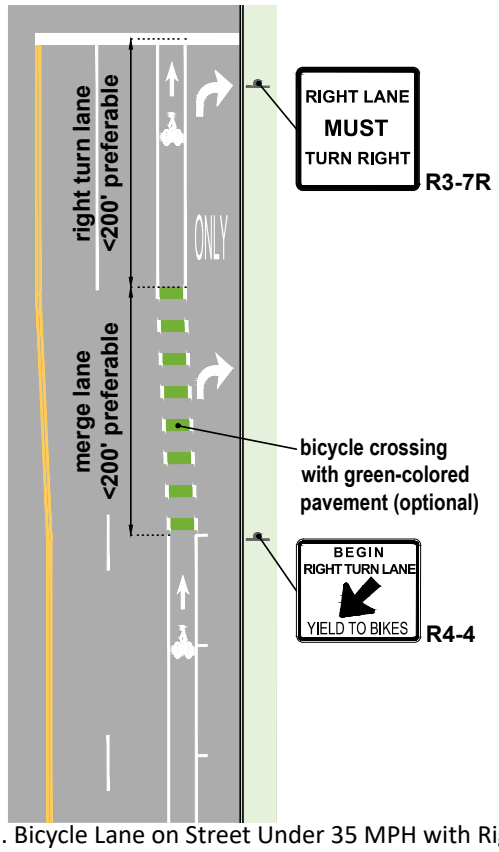


Figure 83. Bicycle Lane on Street Under 35 MPH with Right-Turn Only Lane

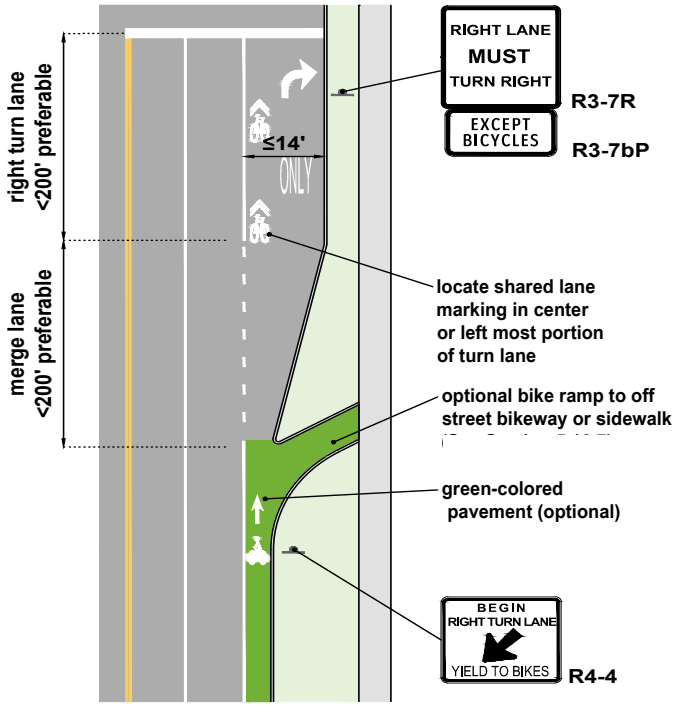


Figure 84. Right-Turn Only Lane with Shared Lane Markings

ONE-WAY PROTECTED BIKE LANE TRANSITION TO AN ON-STREET BIKE LANE

Where a protected bicycle lane transitions to a conventional bicycle lane, it is helpful to maintain many of the design features of a protected intersection. In the figures below are preferred designs for these transitions, both on a facility that changes from a separated to a conventional bike lane, and where a separated facility intersects a conventional bike lane.

DESIGN GUIDANCE

- Place transition on the far side of intersections to reduce conflicts with turning vehicles within the intersection.
- Clearly communicate with signage and/or pavement markings how bicyclists should enter and exit the protected bicycle lane minimizing conflicts with other users.
- Lateral taper should follow the equation $L = WS^2/60$ and have a minimum 15' inside radius.
- A protecting island should be provided to shadow the bicycle lane on the far side and to create protection for queueing left turn bicyclists waiting in the turn box.
- Provide a two-stage turn queue box at intersections with cross streets that have bicycle lanes or shared lanes.
- See Protected Intersection section for additional design guidance.

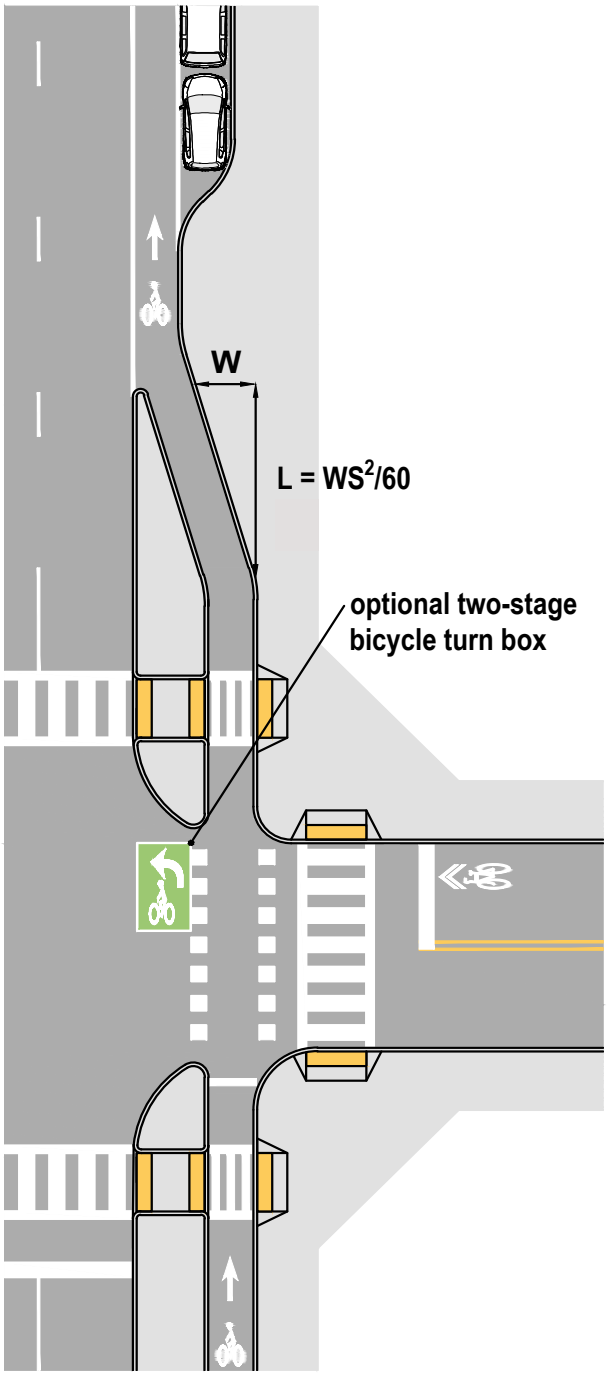


Figure 85. Protected Bicycle Lane to On-Street Bicycle Lane

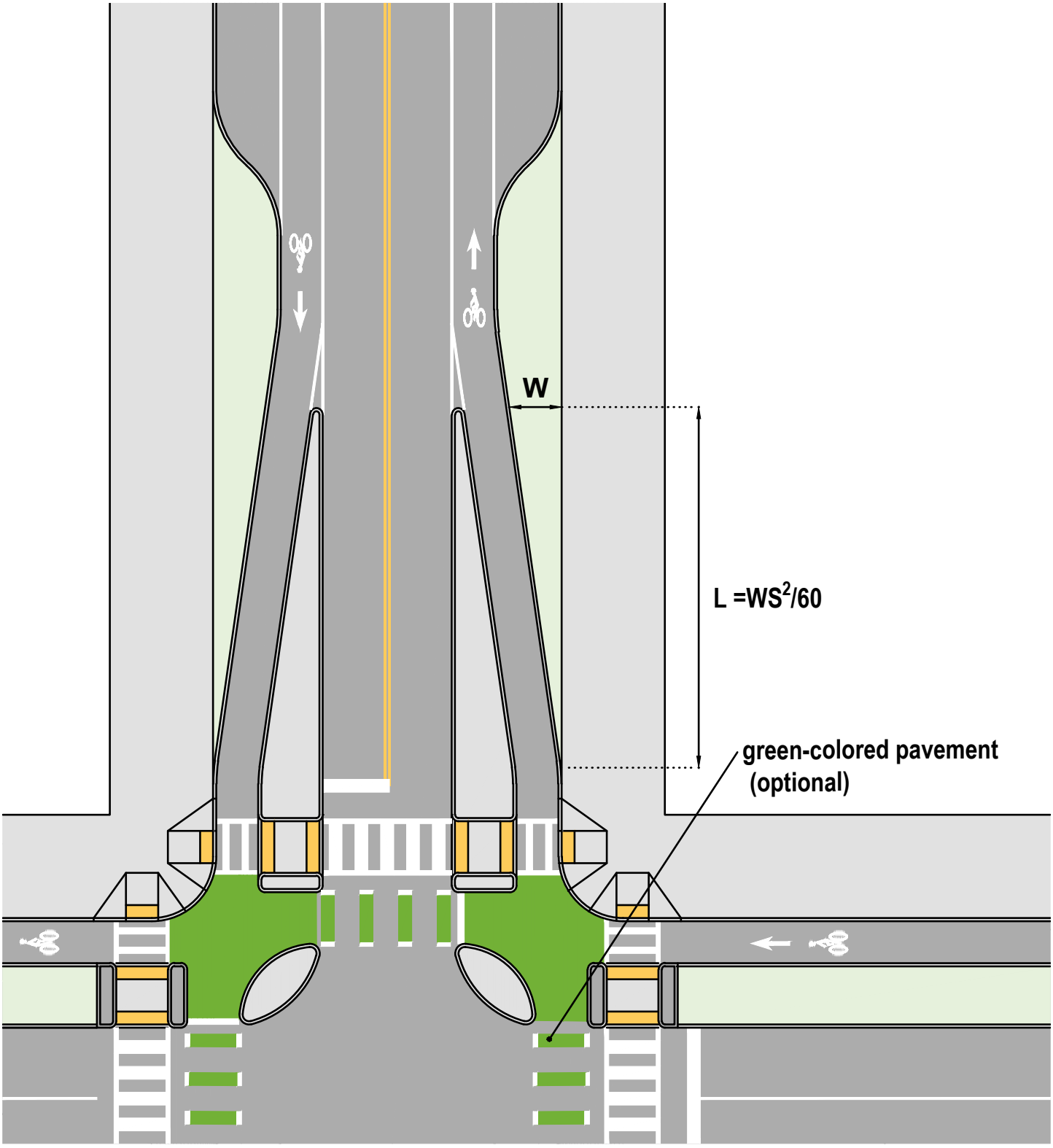


Figure 86. One-Way Protected Bicycle Lane to Conventional Bicycle Lane on Intersecting Streets

TWO-WAY PROTECTED BICYCLE LANE TO ONE-WAY PROTECTED BICYCLE LANES

Transitions of two-way separated bike lanes to bikeways or shared lanes that require one-way bicycle operation require particular attention. Bicyclists operating counterflow to traffic will be required to cross two roadways. Failure to provide a clear transition to the desired one-way operation may result in wrong way bicycle riding. The use of directional, tapered islands can provide positive direction for bicyclists to follow the desired transition route. Green-colored pavement within crossings and two-stage bicycle turn boxes also improve legibility and provide strong visual guidance of the intended path across the intersection to all users. The crossing may warrant bicycle signals at signalized crossings. The signal should be coordinated with the intersecting street signal phase. In the figures below are two examples of preferred designs of a two-way separated bicycle lane on one side of the roadway transition to two one-way separated bicycle lanes on both sides of the roadway. The two examples include a transition that uses two-stageturn queue boxes and a transition that uses a protected intersection.

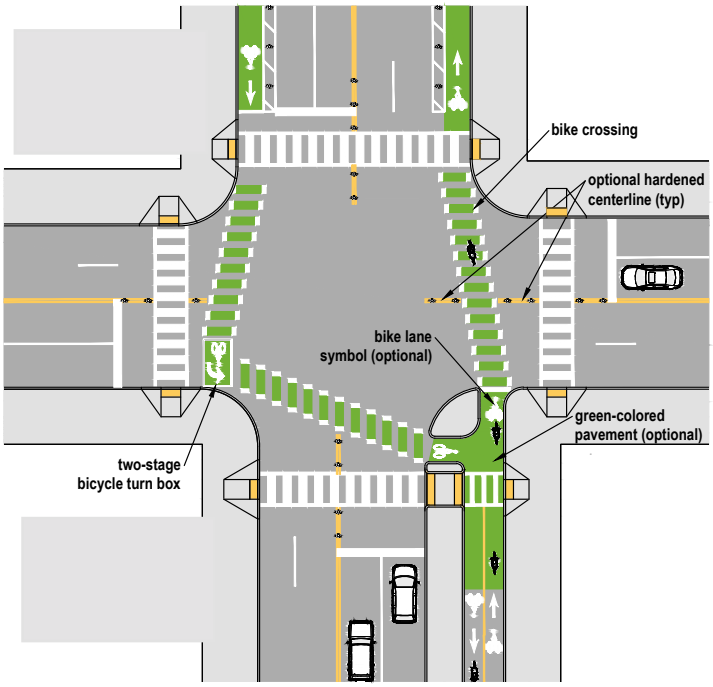


Figure 87. Two-Way to One-Way Separated Bicycle Lanes with Two-Stage Turn Queue Boxes

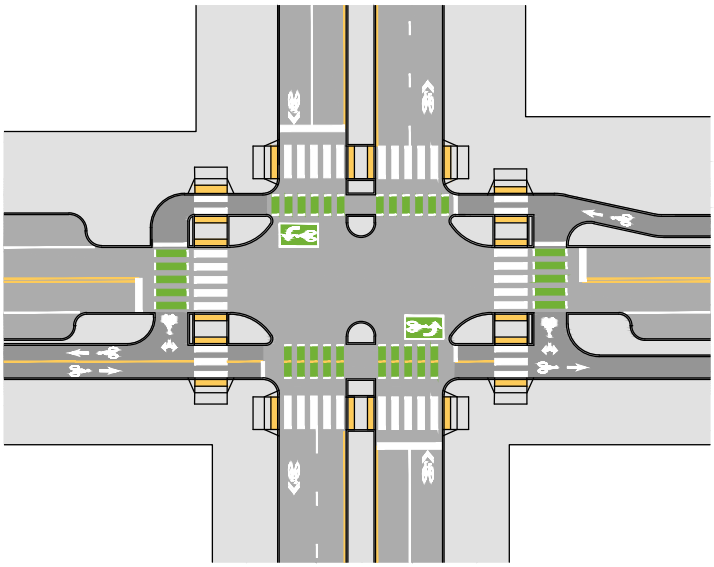


Figure 88. Two-Way to One-Way Separated Bicycle Lanes at a Protected Intersection

BICYCLE TRANSITION RAMPS

Bicycle ramps can be used in locations where it may improve bicyclist safety or comfort to shift the elevation of a bicycle facility (e.g. from street-level to sidewalk-level), transition to a different bicycle facility type (e.g. from conventional bicycle lane to side path) or to the sidewalk (e.g., at a constrained intersection or roundabout). Bicycle ramps are intended for the exclusive use of bicyclists and therefore need not comply with pedestrian accessibility guidelines but more gradually sloped ramps (such as 1:30) are easier for cyclists to use.

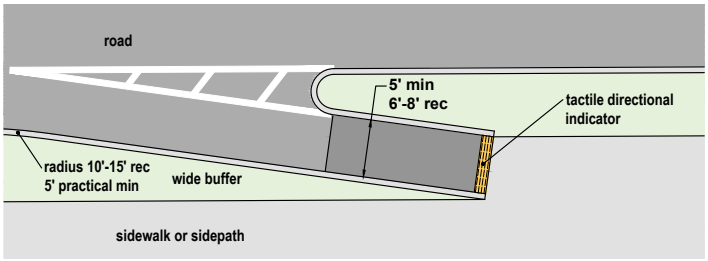


Figure 89. Bicycle Transition Ramp

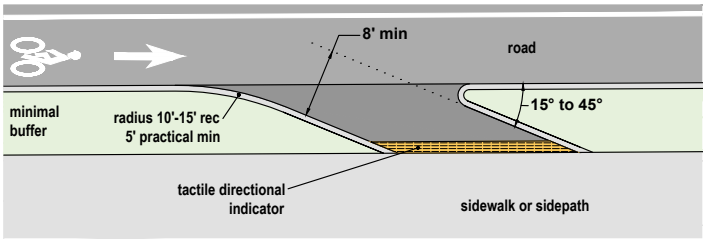


Figure 90. Constrained Bicycle Transition Ramp

DESIGN GUIDANCE

- It is preferable to align bicycle ramps to the existing bicycle lane, though conditions may require a more abrupt lateral shift. In constrained conditions, the more abrupt shift may be accommodated with a wider ramp.
- Where the bicycle ramp connects directly to a sidewalk or shared use path, a yellow tactile directional indicator strip should be used to guide pedestrians away from the ramp.

Figure 91. Bicycle Ramp on Central Way

Figure 92. Roundabout with multi-use and bicycle facilities on NE 132nd St at I-405

Bicycle Treatments through Roundabouts

Roundabouts can provide safety benefits for pedestrians and bicyclists compared to signalized intersections to reduce pedestrian and bicyclist exposure and inscrease the visibility of pedestrians and bicycle riders at crossings.

BICYCLE TREATMENTS THROUGH ROUNDABOUTS

Modern roundabouts have fewer conflict points and lower vehicle operating speeds than conventional signalized intersections. Roundabout accommodate vehicles efficiently but can be barriers for pedestrians and bicyclists if not designed well. Key design components to reduce pedestrian and bicyclist stress through a roundabout include reducing vehicle speeds, shortening crossing distances, and improving driver visibility of people walking and bicycling. People with vision disabilities rely on hearing to detect gaps in traffic and also may not hear bicyclists or electric vehicles approaching an uncontrolled roundabout crossing; to address this, RRFBs with auditory messaging should be considered.

Single-lane roundabouts perform best in providing safe and comfortable crossings for pedestrians and bicyclists. Whether single or multilane, slip lanes should be avoided to minimize crossing exposure for pedestrians and bicyclists and reduce vehicle speeds.

Accommodate pedestrians and bicyclists through a roundabout with a either a continuous, shared-use facility (at least 10-feet wide) or with separate sidewalks and protected bike lanes. For separate sidewalks and protected bike lanes, provide a buffer with physical separation between the circulating roadway and the bikeway around the roundabout, as well as an edge between the sidewalk and bike lane to delineate the pedestrian space for pedestrians with vision disabilities, similar to general PROWAG (2023) requirements between the pedestrian circulation path and general purpose lanes.

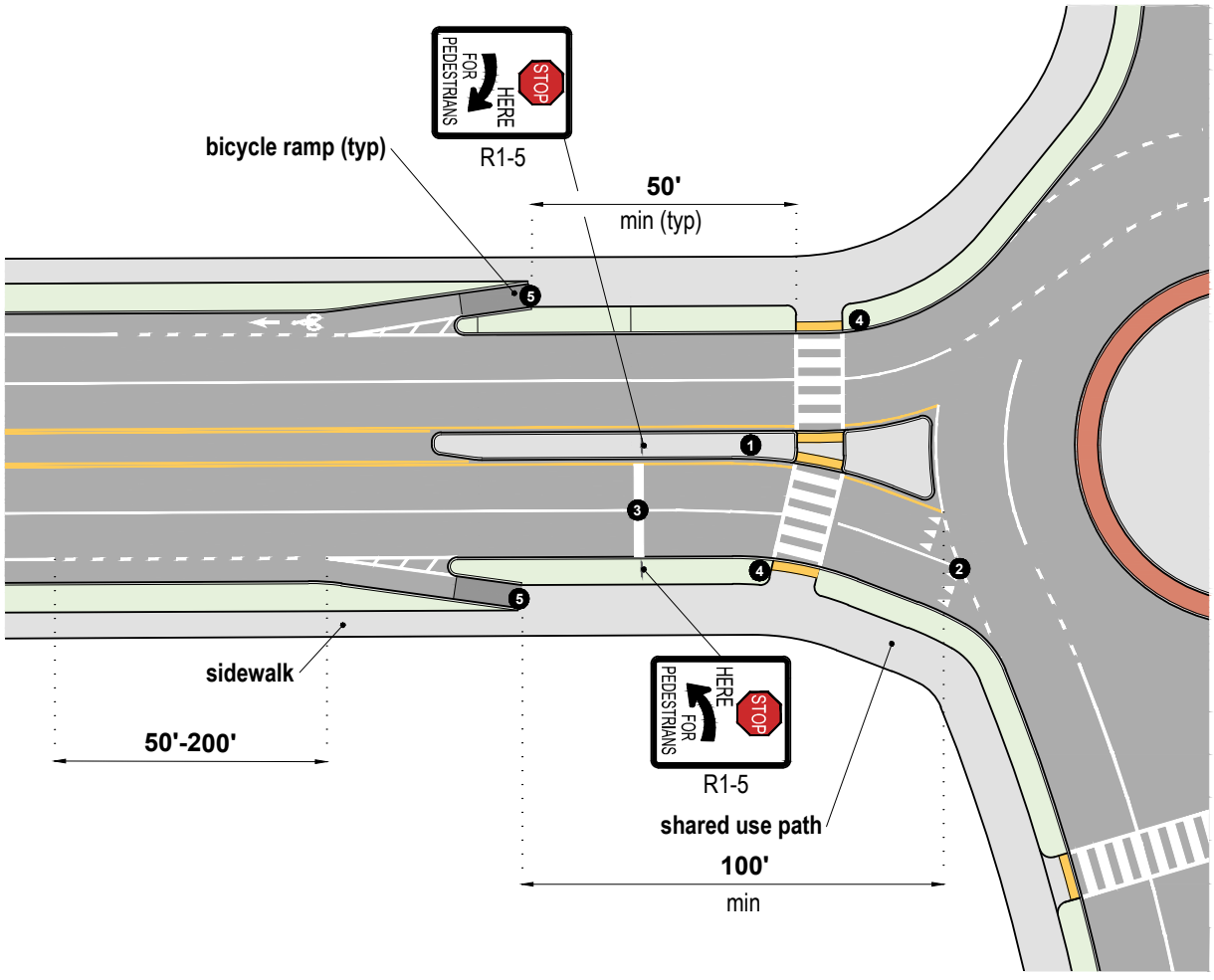


Figure 93. Roundabout with multi-use and bicycle facilities

DESIGN GUIDANCE

- For pedestrian and bicyclist crossings at roundabouts consider user convenience based on desired routes. Especially for pedestrians, consider the distance to cross the street. Roundabouts may result in longer crossing distances when compared to a signalized intersection. Place high-visibility crosswalks approximately one car length from the circulating roadway edge (20 feet) with "bicycle/pedestrian warning" signs (W11-15) and a diagonal downward pointing arrow W16-7P) plaque at the advance stop line. Provide splitter islands for the crossings to allow pedestrians and bicyclists to cross one vehicle direction at a time, keeping in mind that the length of the refuge will need to be at least 8' to accommodate conventional bicycles, but ideally at least 10' to accommodate cargo bicycles and bicycle trailers. In constrained compact roundabouts, prioritize placement of the crosswalk near the roundabout entry in favor of maintaining the splitter islands. If constraints require, the length of the pedestrian refuge island can be reduced below 6' as this still provides safety benefits, however, this would mean it is no longer considered a refuge island and it should be designed to be continuous single-stage crosswalk across both directions of vehicle travel.
- Align crossings to be perpendicular to the centerline of the approach roadway to create the shortest overall travel distance for pedestrians and bicyclists.
- Consider additional crossing enhancements such as raised crosswalks and/or rectangular rapid flashing beacons to increase motorist awareness of a pedestrian or bicyclist who wants to cross the roadway.
- To align with Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way, at each multi-lane segment of the roundabout, provide one or more of the following: a traffic signal with a pedestrian countdown signal head, an uncontrolled crosswalk with rectangular rapid flashing beacons, and/or a raised crosswalk.
- Conventional painted bike lanes cannot proceed through the circulatory roadway of a roundabout, per MUTCD, 2024. If there are conventional bike lanes on an approach to a roundabout, they must be terminated in advance of the roundabout and can provide bicycle access outside the circulatory roadway by either transitioning 100' upstream of the circulatory roadway to protected bike lanes or ramping up to a shared-use path followed by ramps down at the crosswalk and in the exit leg of the same roundabout corner (see Bicycle Transition Ramps section for details on accessible design considerations). Where accommodating bicyclists at crossings, STOP HERE FOR signage (R1-5e) should be included to reinforce driver stopping requirements. Where motorists are not yielding to crossing pedestrians or bicyclists, geometric changes may be warranted or adding actuated RRFB or PHB to the crossing.
- If planning a roundabout for an intersection, determine all potential pedestrian and bicyclist routes through the intersection. Accommodate both modes at all roundabouts unless explicitly disallowed due to a limited access designation.

MORE INFORMATION

- WSDOT Active Transportation Design Guide (2024) Plan Sheet Details
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities (2014)
- National Academies of Sciences, Engineering, and Medicine – Guide for Roundabouts (2023) NCHRP 1043
- Accessibility Guidelines for the Public Right-of-Way

RESOURCES

CITY OF KIRKLAND

Roadway Pre-Approved Plans and Policies

- https://www.kirklandwa.gov/Government/Departments/Development-Services-Center/Tools-and-Resources/Pre-Approved-Plans/Roadway-Pre-Approved-Plans

Traffic Signals Pre-Approved Plans and Policies

- https://www.kirklandwa.gov/Government/Departments/Development-Services-Center/Tools-and-Resources/Pre-Approved-Plans/Traffic-Signals-Pre-Approved-Plans

FEDERAL GUIDANCE

American Association of State Highway and Transportation Officials (AASHTO)

- Guide for the Development of Bicycle Facilities (2024)
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities (2014)

Federal Highway Administration (FHWA)

- Manual on Uniform Traffic Control Devices (2023)
- MUTCD Interim Approvals
- Bicycle Facilities and the Manual on Uniform Traffic Control Devices Website (2016)
- Separated Bike Lane Planning and Design Guide (2015)
- Small Town and Rural Multimodal Networks Guide (2016)
- FHWA Guide for Improving Pedestrian Safety and Uncontrolled Crossing Locations (2018)
- FHWA Safe Transportation for Every Pedestrian (2021)
- FHWA Traffic Calming ePrimer
- FHWA Proven Safety Countermeasures

U.S. Access Board

- Accessibility Guidelines for the Public Right-of-Way

STATE AND LOCAL AGENCIES

Washington State Department of Transportation (WSDOT)

- WSDOT Design Manual (2024)
- WSDOT Active Transportation Design Guide (2024)

NON-PROFIT ORGANIZATIONS

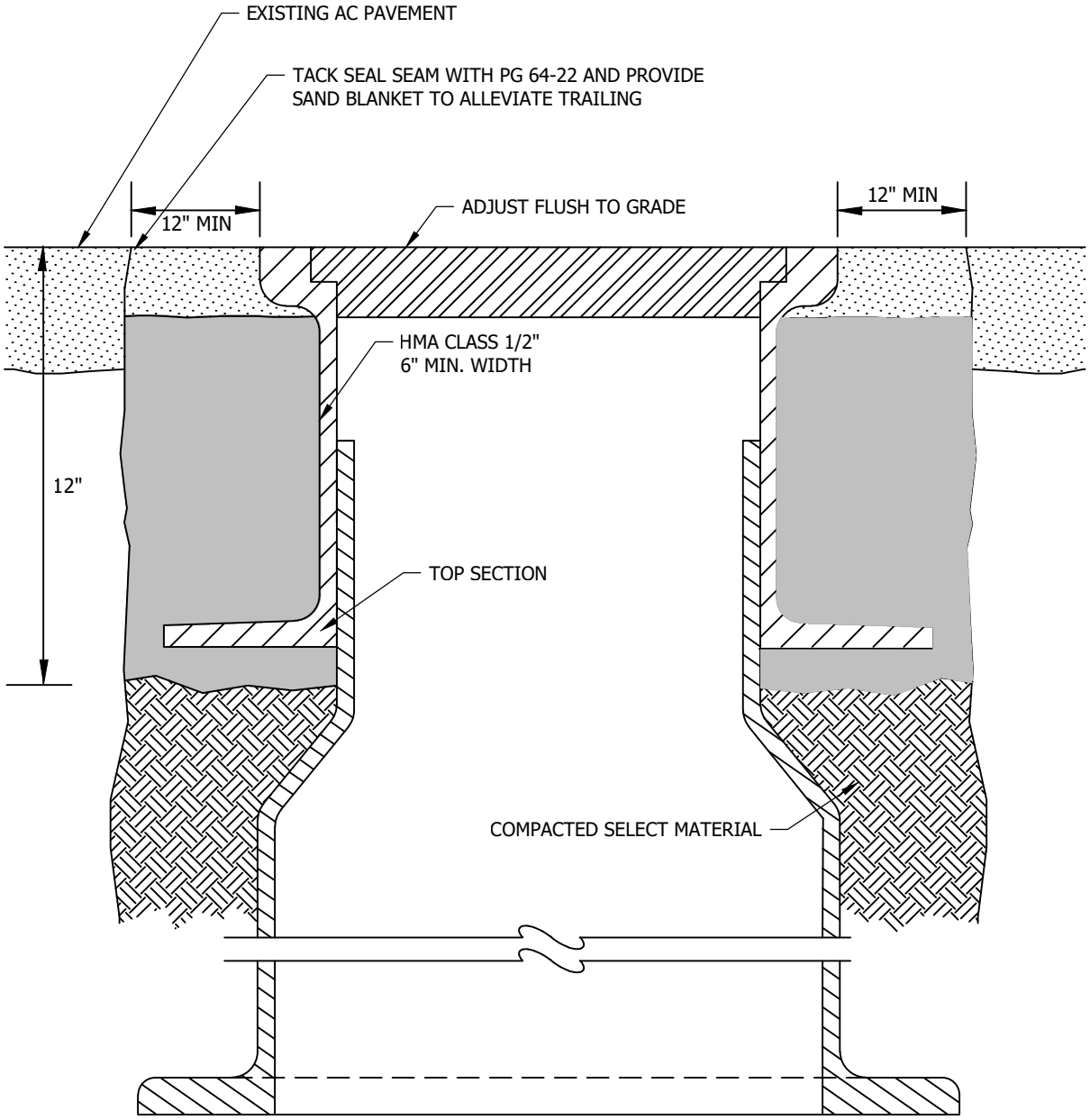
National Association of City Transportation Officials (NACTO)

- Transit Streets Design Guide (2016)
- Urban Bikeway Design Guide (2014)
- Urban Streets Design Guide (2012)

The Streets Plan Collaborative

- Tactical Urbanist's Guide to Materials and Design Version 1.0 (2016)
- Tactical Urbanism Volume 2 (2012)

LAST REVISED: 01/2022



NOTES:

1. HMA MUST BE COMPACTED WITH PROCTOR HAMMER (PNEUMATIC BACKFILL COMPACTION TAMPER) IN 3" LIFTS.
2. LOCKING MH LIDS SHALL BE POSITIONED WITH ONE LUG CENTERED OVER STEPS.
3. SEE CK-D.18A FOR DIRECTION OF HINGED LIDS INSTALLATION.
4. WATER VALVE BOX EARS MUST POINT IN THE DIRECTION OF FLOW. CONTRACT CITY INSPECTOR IF FLOW DIRECTION CANNOT BE DETERMINED.
5. APPLY A TACK COAT TO ALL EDGES OF EXISTING ASPHALT PRIOR TO PLACEMENT OF NEW HMA. SEAL ALL JOINTS WHEN COMPLETE.

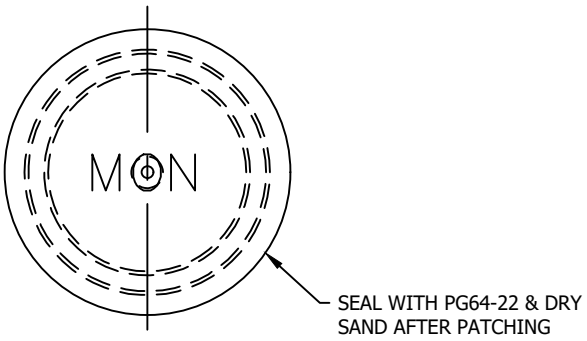
CITY OF KIRKLAND

PLAN NO. CK- R.02

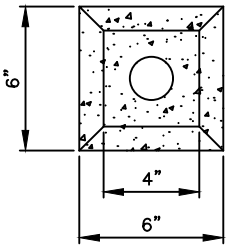
CITY OF KIRKLAND WASHINGTON

GENERAL UTILITY ADJUSTMENT H.M.A. PAVEMENT

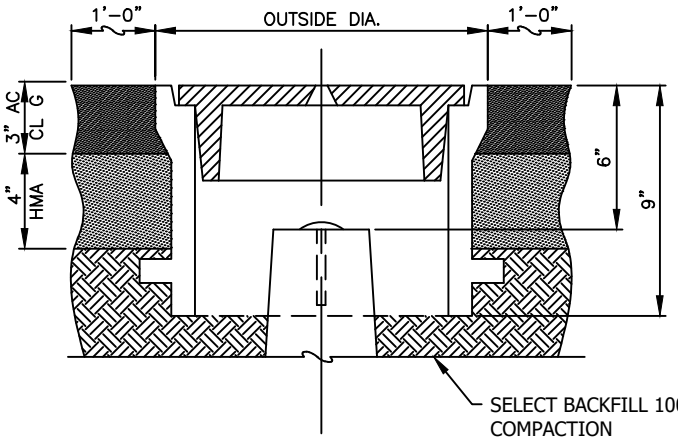
LAST REVISED:01/2023



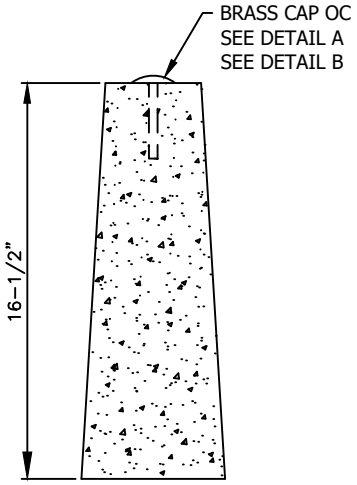
PLAN



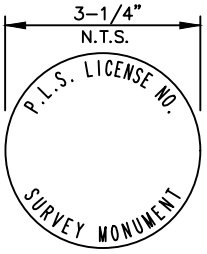
PLAN



ELEVATION



ELEVATION



CAP DETAIL

CAP LAYOUT FOR
ALL PROJECTS

NOTES:

1. ALL JOINTS BETWEEN ASPHALT PATCH AND EXISTING PAVEMENT SHALL BE SEALED.
2. THE CASTINGS SHALL BE GREY-IRON CASTINGS, ASTM DESIGNATION A-48, CLASS 30B. THE COVER AND SEAT SHALL BE MACHINED SO AS TO HAVE PERFECT CONTACT AROUND THE ENTIRE CIRCUMFERENCE AND FULL WIDTH OF BEARING SURFACE.
3. CONCRETE COLLAR REQUIRED IF OUTSIDE OF ASPHALT AREA.
4. HMA MUST BE COMPACTED WITH PROCTOR HAMMER (PNEUMATIC BACKFILL COMPACTION TAMPER) IN 3" LIFTS

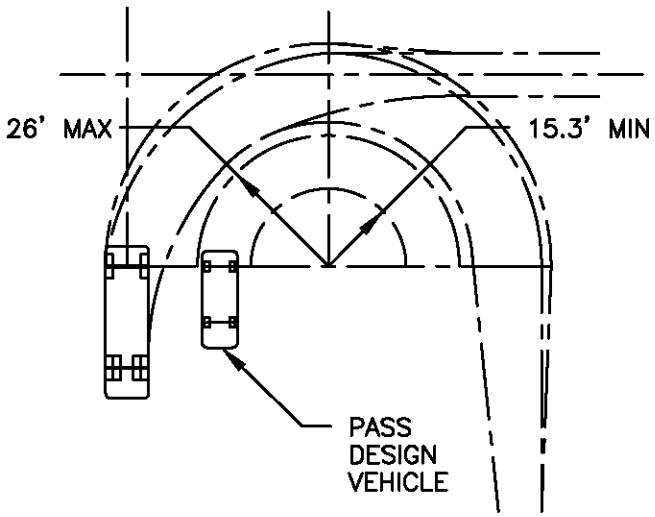
CITY OF KIRKLAND

PLAN NO. CK–R.03

CITY OF KIRKLAND WASHINGTON

MONUMENT CASE AND COVER

LAST REVISED:11/30/99



NOTE:

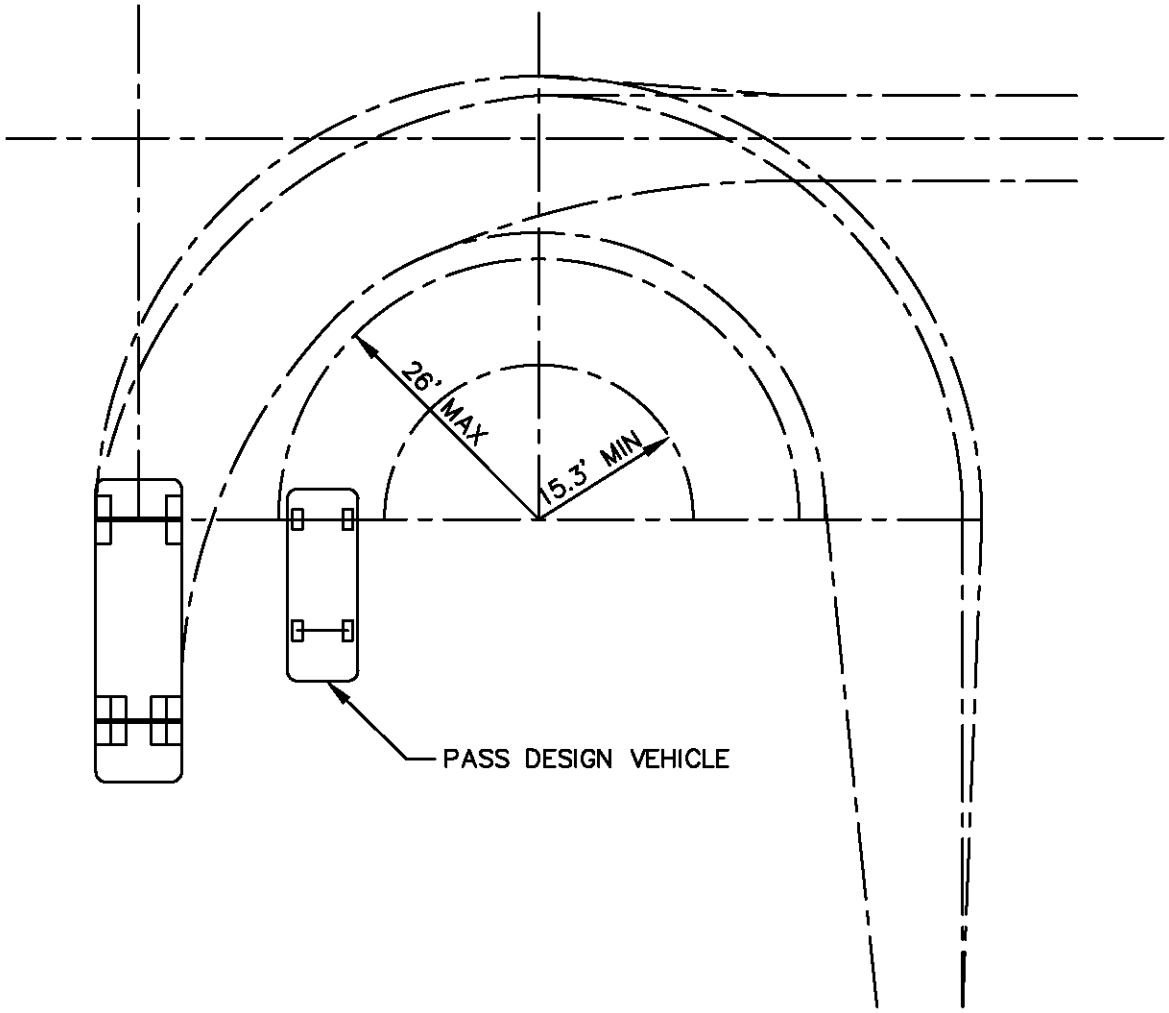
1. FROM PAGE 24 GEOMETRIC DESIGN OF RURAL HIGHWAYS BY AASHTO (GREEN BOOK).

CITY OF KIRKLAND

PLAN NO. CK-R.04

AASHTO SU
DESIGN VEHICLE
1" = 40'

LAST REVISED: 11/30/99



NOTE:

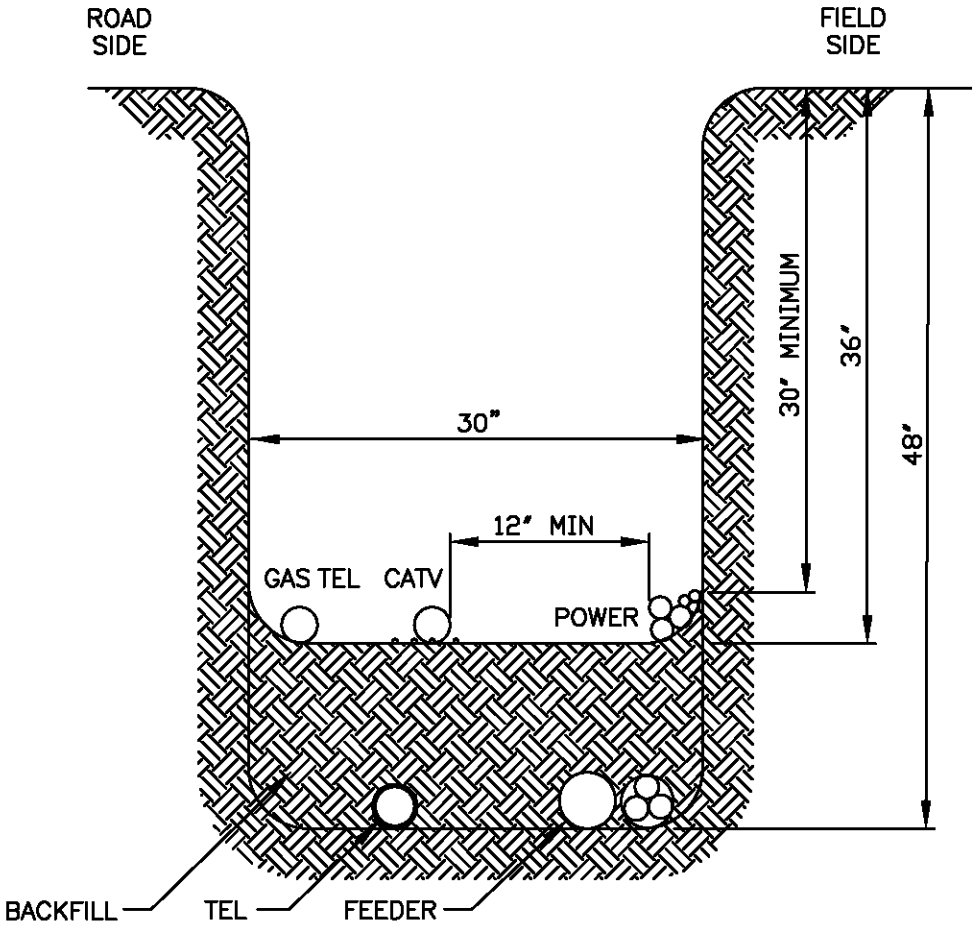
1. FROM PAGE 24 GEOMETRIC DESIGN OF RURAL HIGHWAYS BY AASHTO (GREEN BOOK).

CITY OF KIRKLAND

PLAN NO. CK–R.05

AASHTO SU
DESIGN VEHICLE
1" = 20'

LAST REVISED:11/30/99



TYPICAL JOINT TRENCH CROSS SECTION

NOTES

1. IF THE 12 INCH SEPARATION REQUIREMENT CANNOT BE MET DUE TO SOIL, OR OTHER RESTRICTIONS, THE PRIME CONTRACTOR IS RESPONSIBLE FOR COORDINATING DEVIATIONS FROM STANDARD PROCEDURE. RANDOM SEPARATION REQUIRES THE INSTALLATION OF A SEPARATE COPPER OR BARE GROUND WIRE ACCORDING TO WAC 296-44-42559. IN ALL CASES, EXCAVATION MUST MEET REQUIREMENTS OF APPLICABLE CODES AND STANDARDS, INCLUDING WAC 296-44-42533 AND THE NATIONAL ELECTRIC SAFETY CODE. IF PUGET POWER IS THE PRIME CONTRACTOR, DEVIATIONS MUST BE APPROVED BY LOCAL SUPERVISION AND THE CUSTOMER SERVICE ENGINEER.

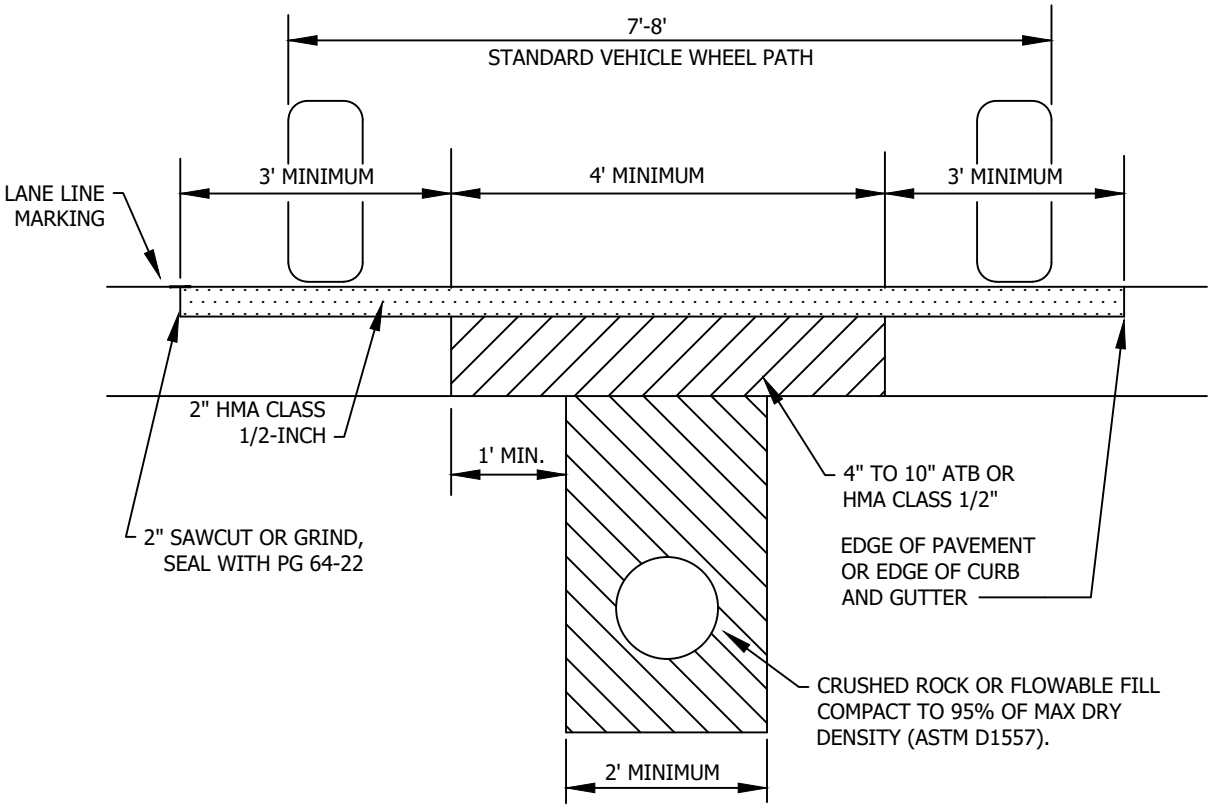
2. ALL OTHER FACILITIES, INCLUDING PRIMARY AND SECONDARY CONDUCTORS SHALL BE INSTALLED 36 INCHES DEEP. POWER 1/0 PRIMARIES AND SECONDARIES SHALL BE DIRECT BURIED.

3. POWER CABLES SHALL BE INSTALLED ON THE PROPERTY SIDE OF THE TRENCH AND GAS ON THE STREET SIDE, WITH TELEPHONE AND CATV IN THE MIDDLE.

4. FOR GENERAL INFORMATION ONLY. NOT CITY OF KIRKLAND STANDARDS.

CITY OF KIRKLAND	
PLAN NO. CK-R.06	
CITY OF KIRKLAND WASHINGTON	JOINT OCCUPANCY TRENCHES IN RESIDENTIAL PLATS

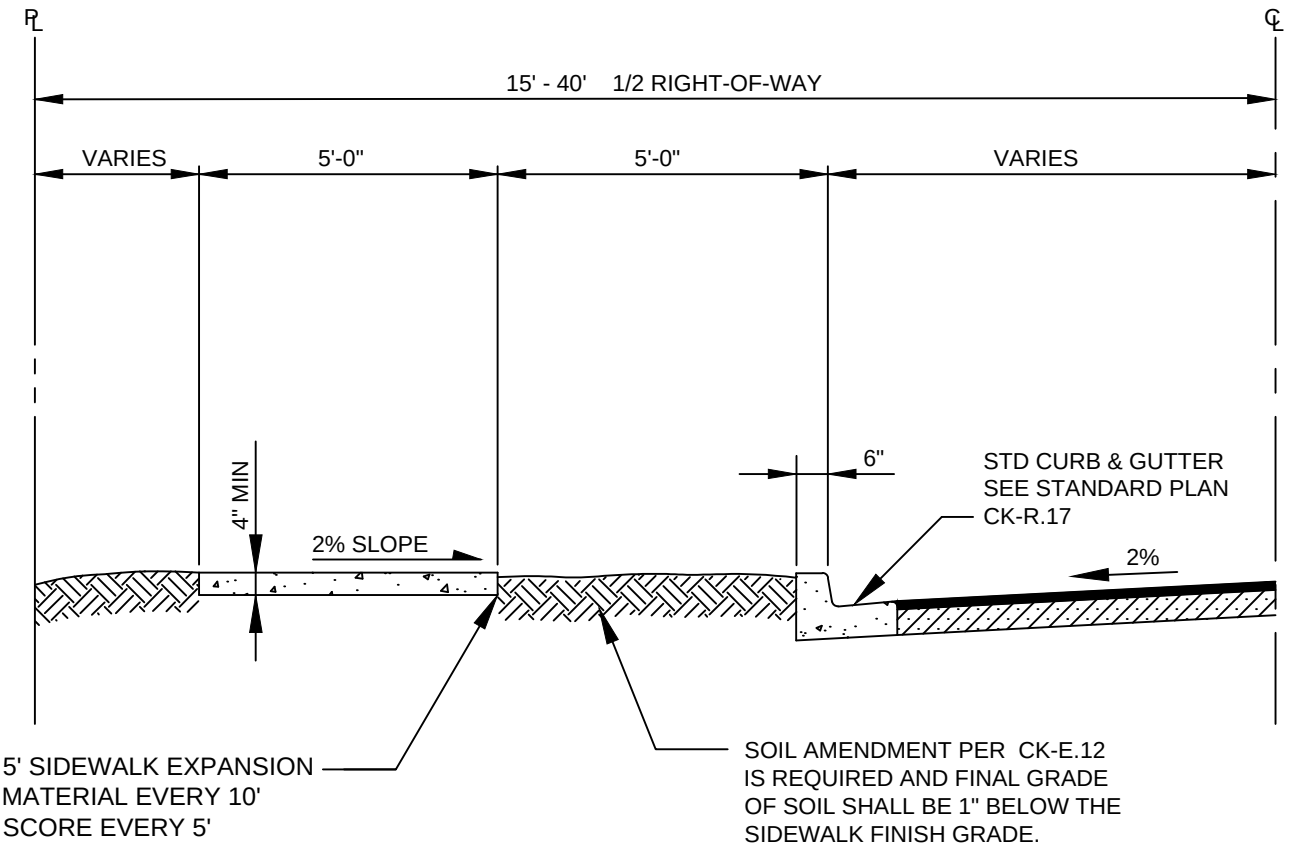
LAST REVISED: 01/2020



LESS THAN FULL WIDTH OVERLAY

CITY OF KIRKLAND	
PLAN NO. CK- R.07	
CITY OF KIRKLAND WASHINGTON	SECTION OF LONGITUDINAL OR TRANSVERSE CUT

LAST REVISED: 7/1/2017



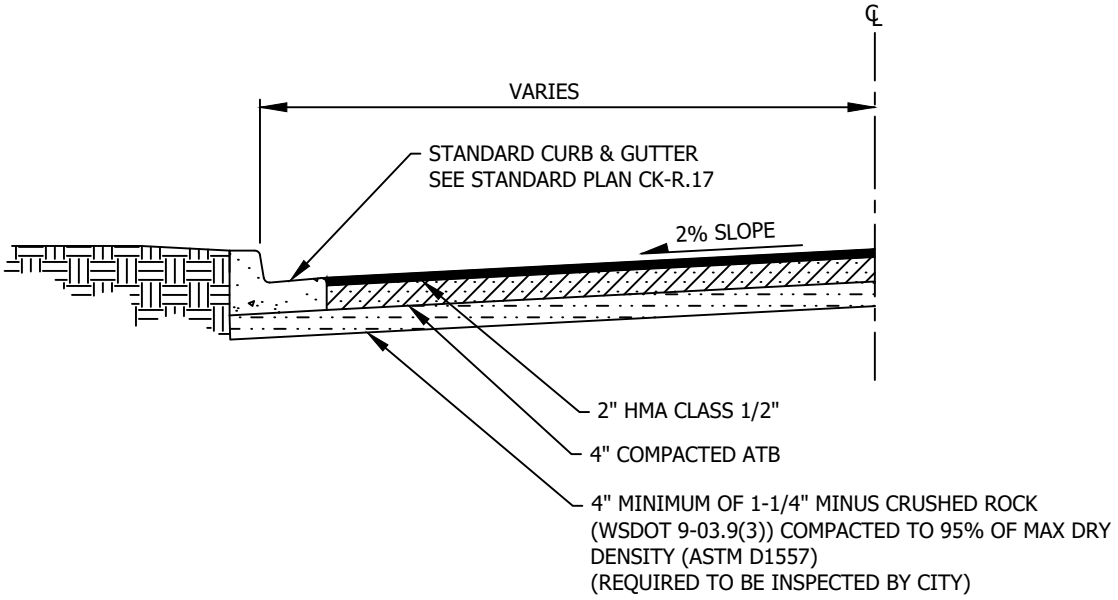
STANDARD HALF-STREET IMPROVEMENT SECTION

NOTE:
ABOVE DIMENSIONS MINIMUM, SEE PUBLIC WORKS AND/OR PLANNING FOR INFORMATION ON SPECIFIC STREETS

STREET TREES ARE REQUIRED EVERY 30' O.C. PER POLICY R-10.

CITY OF KIRKLAND	
PLAN NO. CK–R.08	
CITY OF KIRKLAND WASHINGTON	HALF–STREET SECTION

LAST REVISED:01/2020

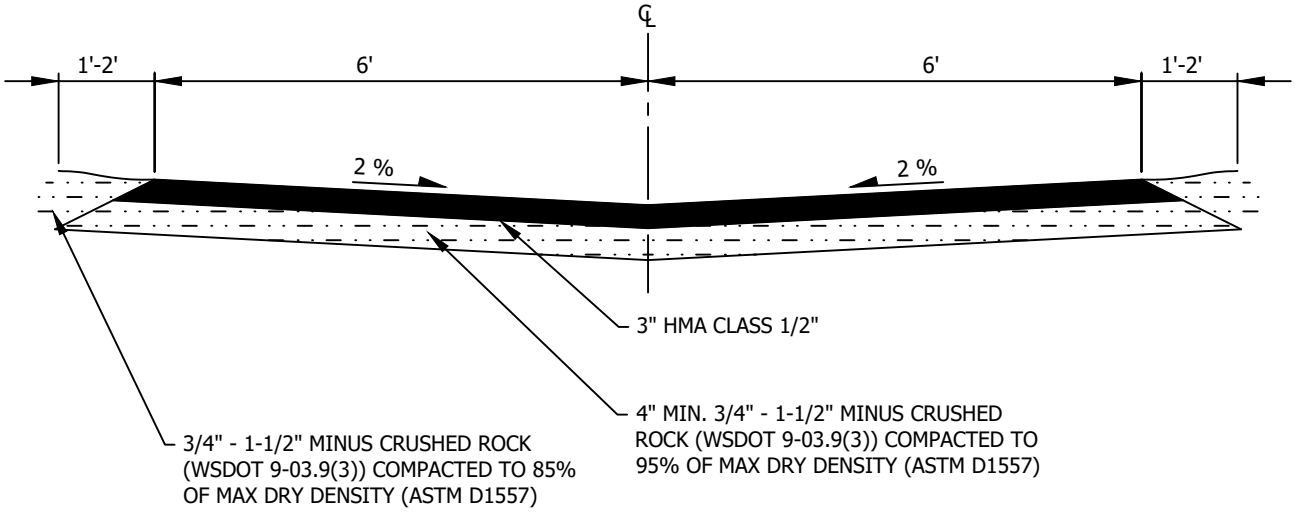


NOTES:

1. HOT MIX ASPHALT CLASS 1/2" MAY BE USED IN LIEU OF ATB.
2. MAXIMUM ALLOWABLE GRADE OF A STREET IS 15% UNLESS DIRECTED BY ENGINEER.
3. SIDE SLOPES SHALL BE 2:1 MAXIMUM.
4. WHEN PLACING NEW CURB AND GUTTER ALONG AN EXISTING ROADWAY, THE ASPHALT SHOULD BE SAWCUT AT A WIDTH TO ALLOW FOR A 20" TO 24" ASPHALT PATCH AS MEASURED FROM THE OUTER EDGE OF THE GUTTER.

CITY OF KIRKLAND	
PLAN NO. CK–R.09	
CITY OF KIRKLAND WASHINGTON	STANDARD ROAD CROSS SECTION

LAST REVISED: 01/2020



NOTES:

1. ALL ALLEYS SHALL HAVE A MINIMUM PAVEMENT WIDTH OF 12 FEET UNLESS APPROVED BY THE PUBLIC WORKS DEPARTMENT.

2. INVERT DRAINAGE TO BE COLLECTED AT LOW END OF IMPROVED SECTION WITH CATCH BASIN INSTALLATION AND TIGHTLINED TO STORM DRAIN SYSTEM.

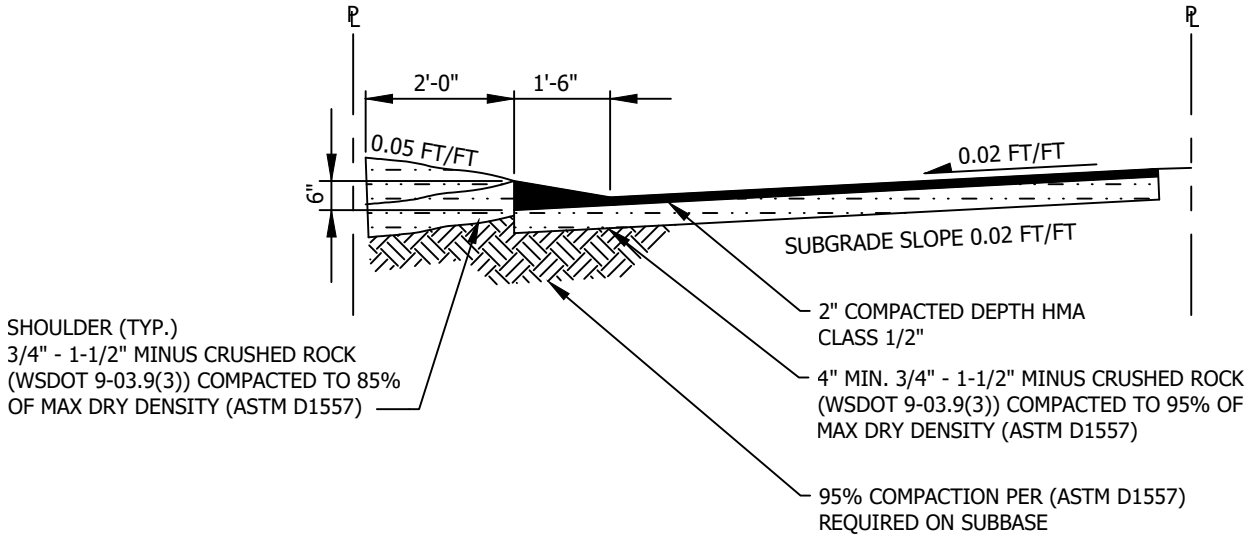
3. COMPACTION TESTS ON SUBGRADE AND ROCK GRADE SHALL BE REQUIRED. THE NUMBER OF TESTS SHALL BE AT THE DISCRETION OF THE CITY INSPECTOR. ALL TESTS, AS REQUIRED, SHALL BE AT THE EXPENSE OF THE CONTRACTOR OR DEVELOPER THROUGH ANY LICENSED TESTING LAB OF THEIR CHOICE. THE MINIMUM COMPACTION SHALL BE 95 % OF MAXIMUM DRY DENSITY (PER ASTM D1557) ON BOTH SUBGRADE AND ROCK SURFACES.

4. ADJUSTMENT OF CATCH BASIN LIDS OR GRATES, MANHOLE LIDS, MONUMENT CASES, VALVE BOXES, ETC., SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR OR DEVELOPER AS REQUIRED AND SHALL BE ADJUSTED AFTER THE FINAL LIFT OF ASPHALT HAS BEEN PLACED.

5. PRIOR TO INSTALLING 3" ASPHALT OVERLAY, PRE-EMERGENCE HERBICIDE MUST BE APPLIED OVER THE COMPACTED BASE COURSE MATERIAL AND BELOW SHOULDER.

CITY OF KIRKLAND	
PLAN NO. CK- R.10	
CITY OF KIRKLAND WASHINGTON	STANDARD ALLEY CROSS-SECTION

LAST REVISED:01/2022



NOTES:

1. MAY BE USED FOR SPECIAL APPLICATIONS IN ALLEYS AS DETERMINED BY THE PUBLIC WORKS INSPECTOR OR ENGINEER.

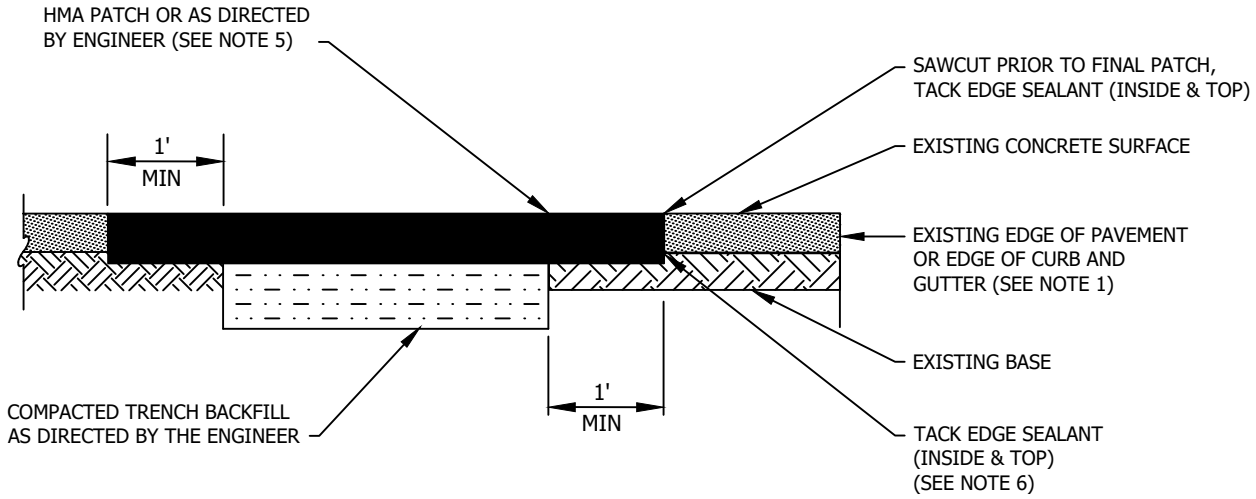
2. REFER TO CK-R.09 FOR STANDARD ROAD CROSS SECTION AND CK-R.10 FOR STANDARD ALLEY SECTION

CITY OF KIRKLAND

PLAN NO. CK–R.11

THICKENED EDGE ROADWAY

LAST REVISED: 01/2020

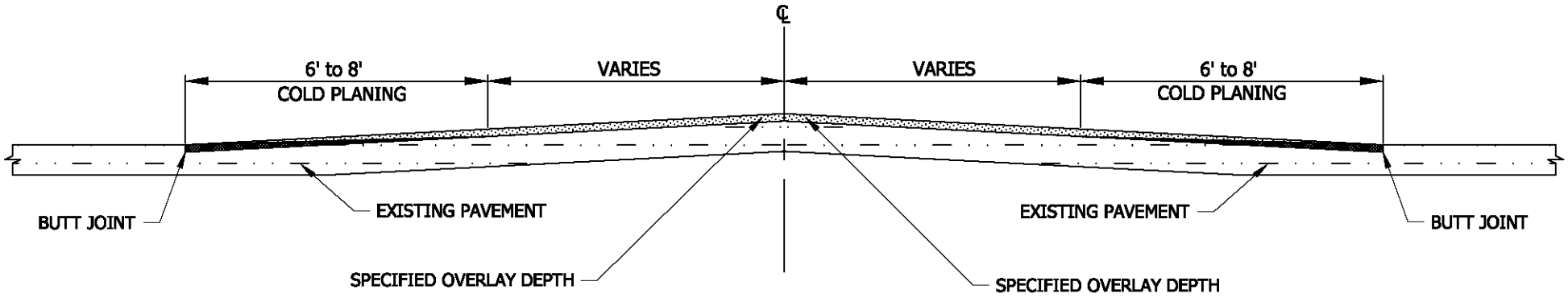


TYPICAL PATCH FOR PAVEMENT

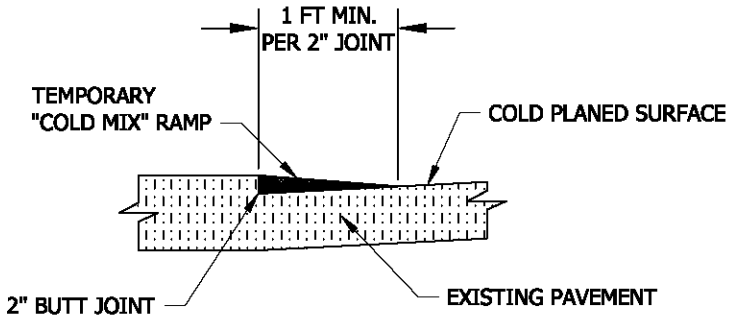
NOTES:

1. IF THE DISTANCE FROM THE EDGE OF PATCH TO THE EDGE OF PAVEMENT OR CURB AND GUTTER IS LESS THAN 3', THE PATCH MUST CONTINUE TO THE EXISTING EDGE; UNLESS ROADWAY IS OVERLAID WITHIN 60 DAYS.
2. HOT MIX ASPHALT SHALL BE CLASS 1/2".
3. ALL TRENCH BACKFILL SHALL BE CRUSHED SURFACING TOP COURSE MATERIAL FOR PERPENDICULAR TRENCHES, OR AS DIRECTED BY ENGINEER.
4. HMA CLASS 1/2" MAY BE USED IN LIEU OF ATB.
5. PATCH MUST ALWAYS BE 1" DEEPER THAN EXISTING ASPHALT; MAX 6" DEEP, OR AS DIRECTED BY ENGINEER.
6. TOP SEAL-USE PG 64-22 AND PROVIDE A SAND BLANKET TO ALLEVIATE TRAILING.
7. REFER TO COK STD. PLAN NO. CK-R.13C FOR REQUIREMENTS FOR GEOTECH BORING ASPHALT PATCHES.

CITY OF KIRKLAND	
PLAN NO. CK- R.12	
CITY OF KIRKLAND WASHINGTON	RESTORATION DETAIL AND PAVEMENT PATCHING



BUTT JOINT COLD PLANING



"COLD MIX" RAMP

NOTES:

1. ALL JOINTS PLANED PERPENDICULAR TO TRAVEL LANES SHALL BE IMMEDIATELY PAPER JOINTED, COLD MIXED, AS PER THIS DETAIL, AND MAINTAINED UNTIL NEW HMA LAYER IS INSTALLED. PAPER JOINTS WILL BE REMOVED JUST PRIOR TO PLACEMENT OF WEARING COURSE.

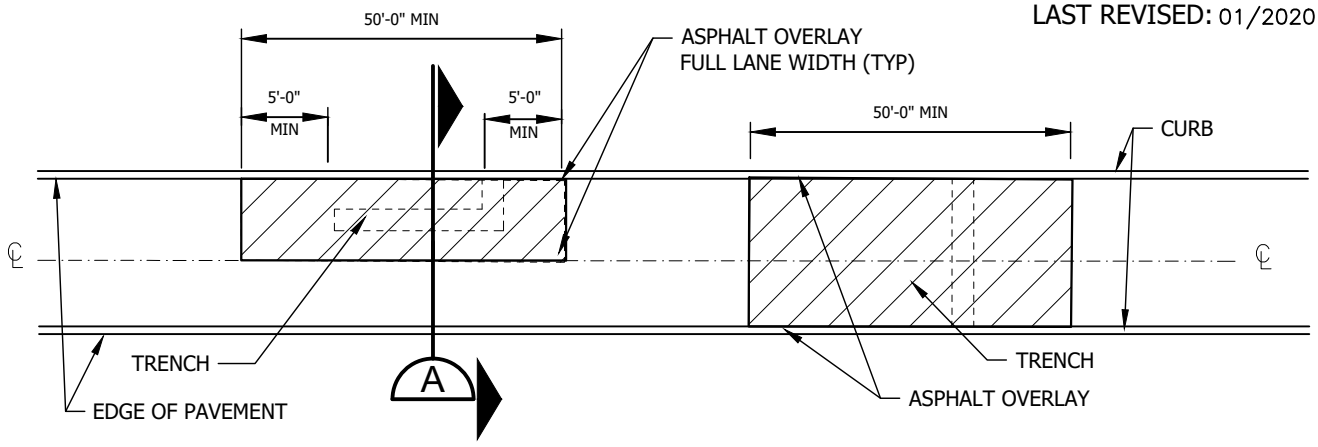
CITY OF KIRKLAND

PLAN NO. CK-R.13

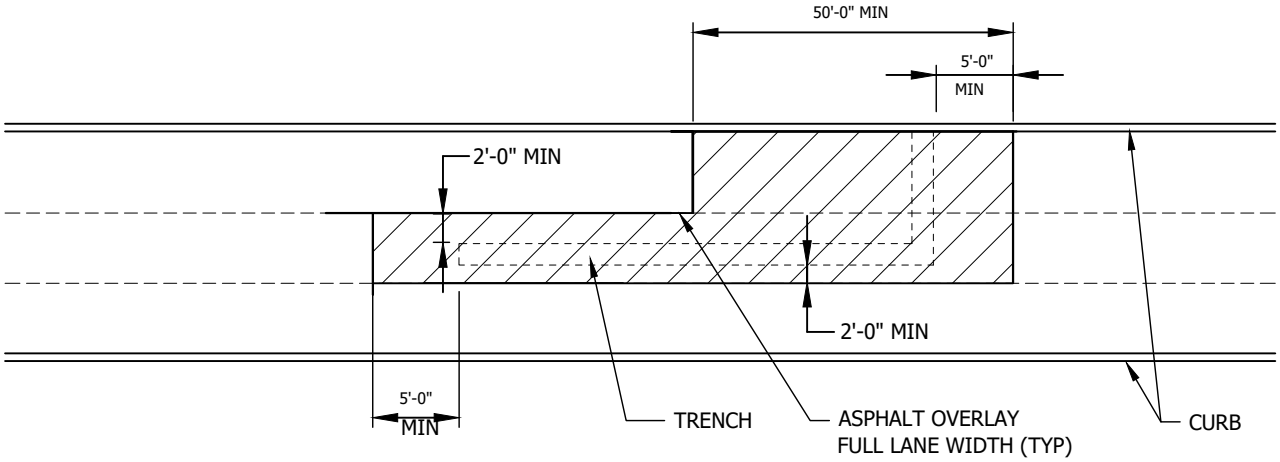
BUTT JOINT, COLD PLANING AND COLD MIX RAMP

LAST REVISED:1/2019

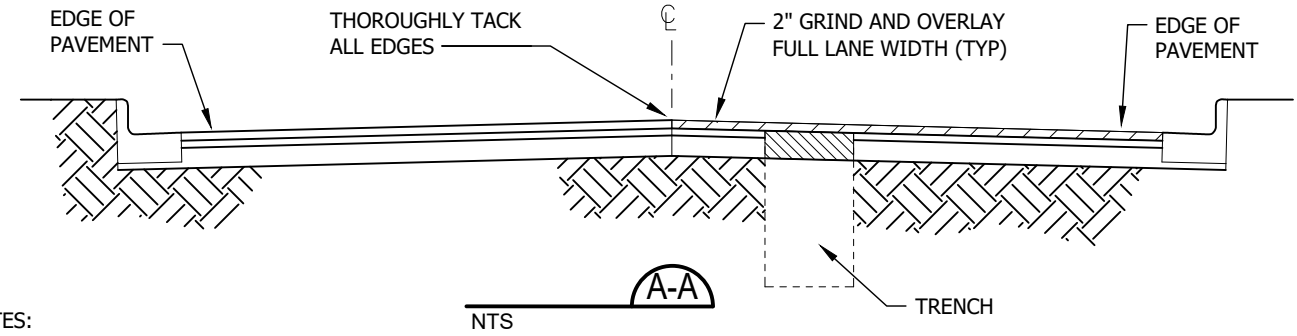
LAST REVISED: 01/2020



PLAN VIEW
NTS



PLAN VIEW
NTS



NTS

NOTES:

1. THIS STANDARD APPLIES TO ALL CUTS AND ARTERIAL STREETS AND ALL PAVEMENT LESS THAN 5 YEARS OLD.

2. OVERLAY AREA MAY BE MODIFIED BY CITY ON OLDER PAVEMENT DEPENDING ON CONDITIONS OR SCHEDULED CONSTRUCTION/MAINTENANCE.

3. ADJUST ALL UTILITY CASTING TO FINISH GRADE AND RESTORE CHANNELIZATION AND LOOP DETECTORS.

4. POTHOLES TO BE RESTORED WITH A 1' T-CUT. IF AFTER THE 1' T-CUT THE PATCH IS MORE THAN 4'x4', A GRIND AND OVERLAY IS REQUIRED UNLESS OTHERWISE APPROVED BY PUBLIC WORKS. IF THE PATCH IS WITHIN 2 LANES OF TRAVEL, THE GRIND AND OVERLAY WILL BE REQUIRED ON BOTH LANES. 50' MIN. LENGTH.

5. REFER TO COK STD. PLAN NO. CK-R.13C FOR REQUIREMENTS FOR GEOTECH BORING ASPHALT PATCHES.

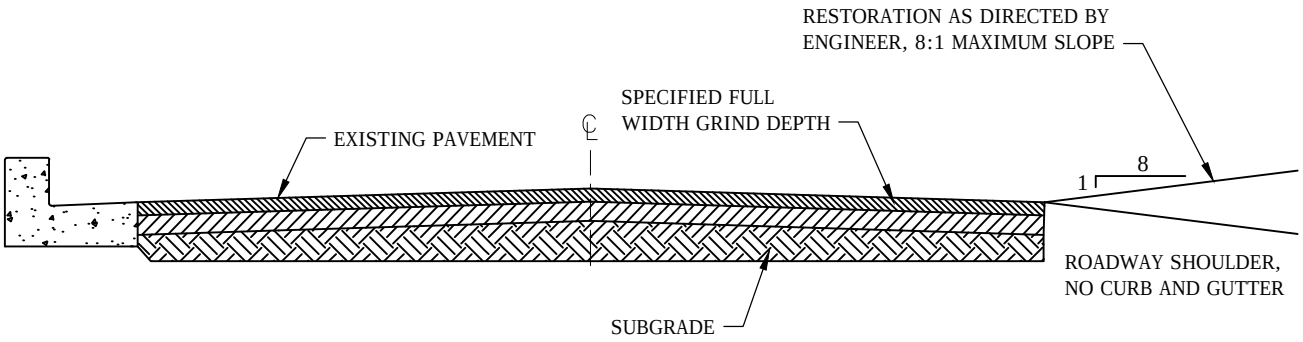
CITY OF KIRKLAND

PLAN NO. CK- R.13A

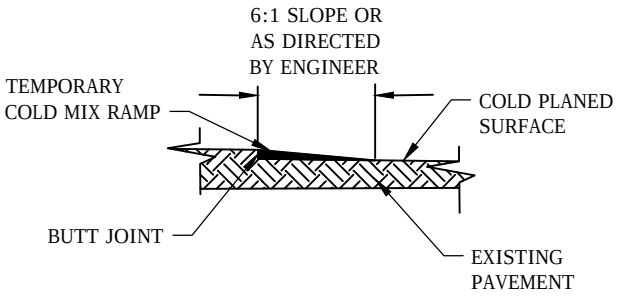
CITY OF KIRKLAND WASHINGTON

ASPHALT OVERLAY FOR ROADWAY TRENCH REPAIR

LAST REVISED:01/2019



FULL WIDTH COLD PLANING DETAIL



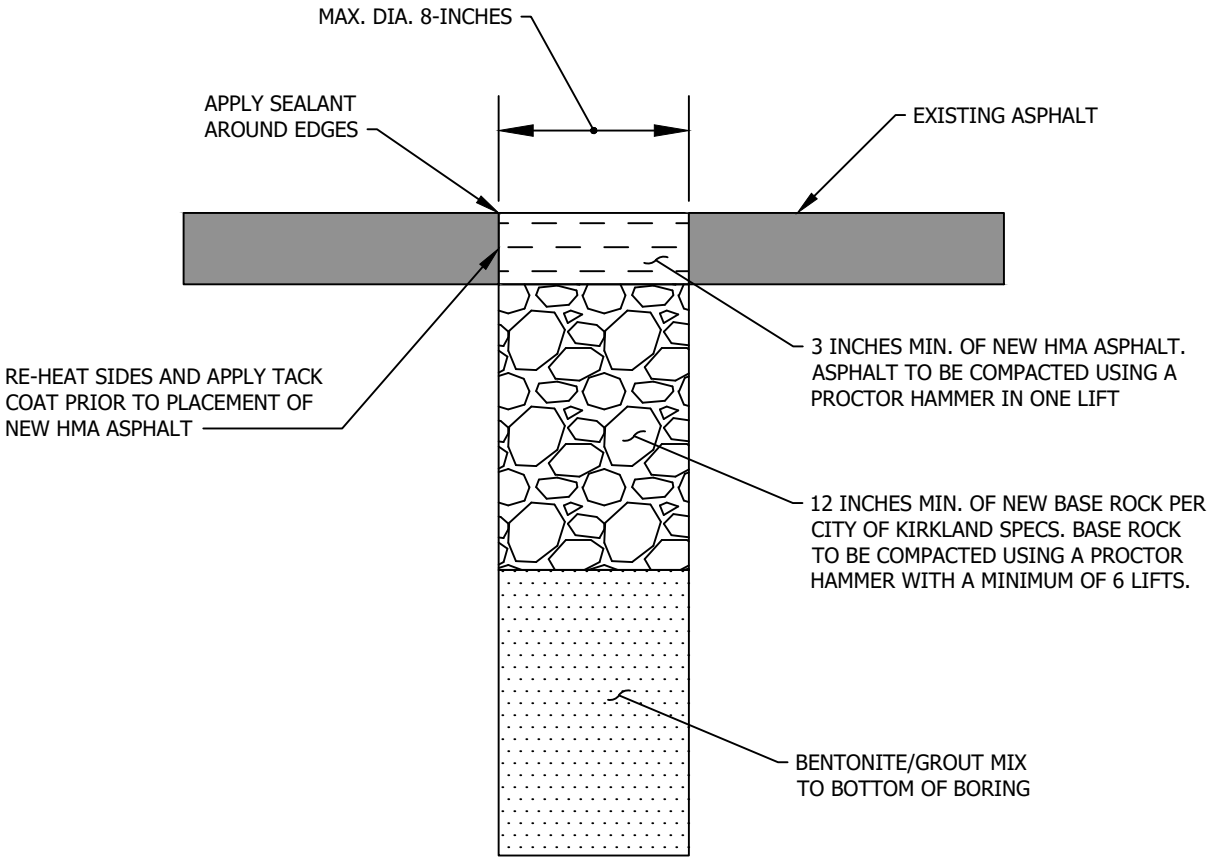
COLD MIX RAMP

NOTES:

ALL JOINTS PLANED PERPENDICULAR TO TRAVEL LANES SHALL BE IMMEDIATELY PAPER JOINTED, COLD MIXED, AS PER THIS DETAIL, AND MAINTAINED UNTIL HMA LAYER IS INSTALLED. PAPER JOINTS WILL BE REMOVED JUST PRIOR TO PLACEMENT OF WEARING COURSES.

CITY OF KIRKLAND	
PLAN NO. CK- R.13B	
CITY OF KIRKLAND WASHINGTON	FULL WIDTH COLD PLANING DETAIL

LAST REVISED:01/2020

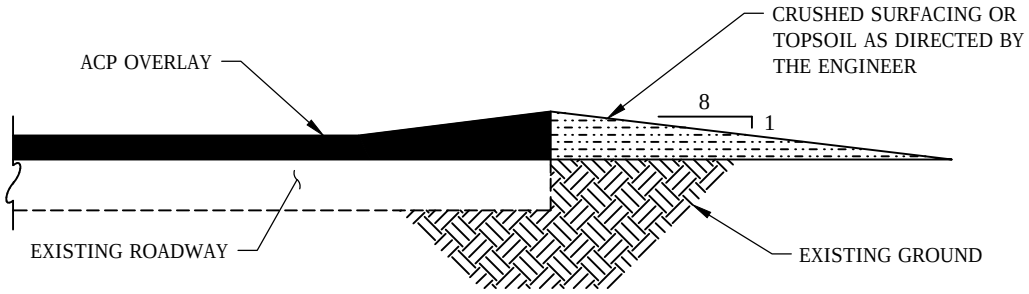


CITY OF KIRKLAND

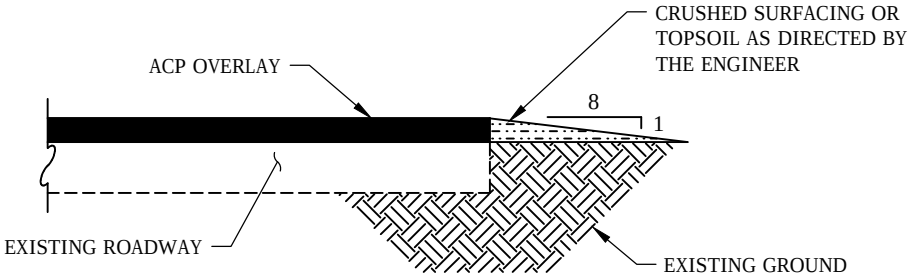
PLAN NO. CK–R.13C

GEOTECH BORING ASPHALT PATCH

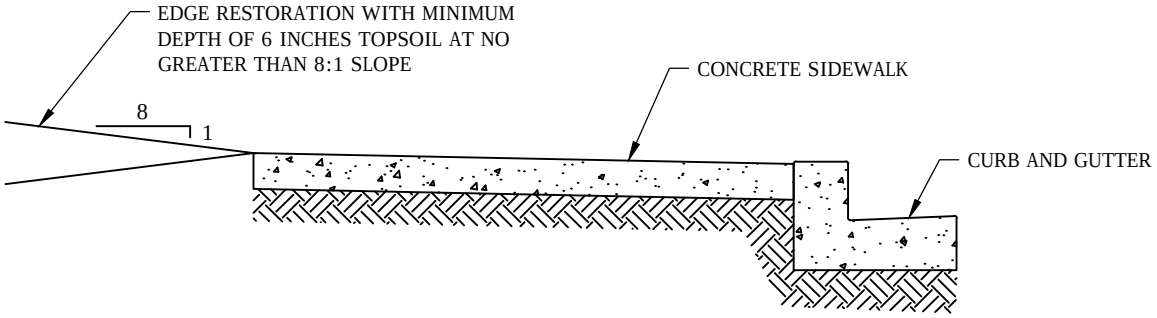
LAST REVISED:01/2019



WITH THICKENED EDGE



WITHOUT THICKENED EDGE



EDGE RESTORATION BEHIND CONCRETE SIDEWALK

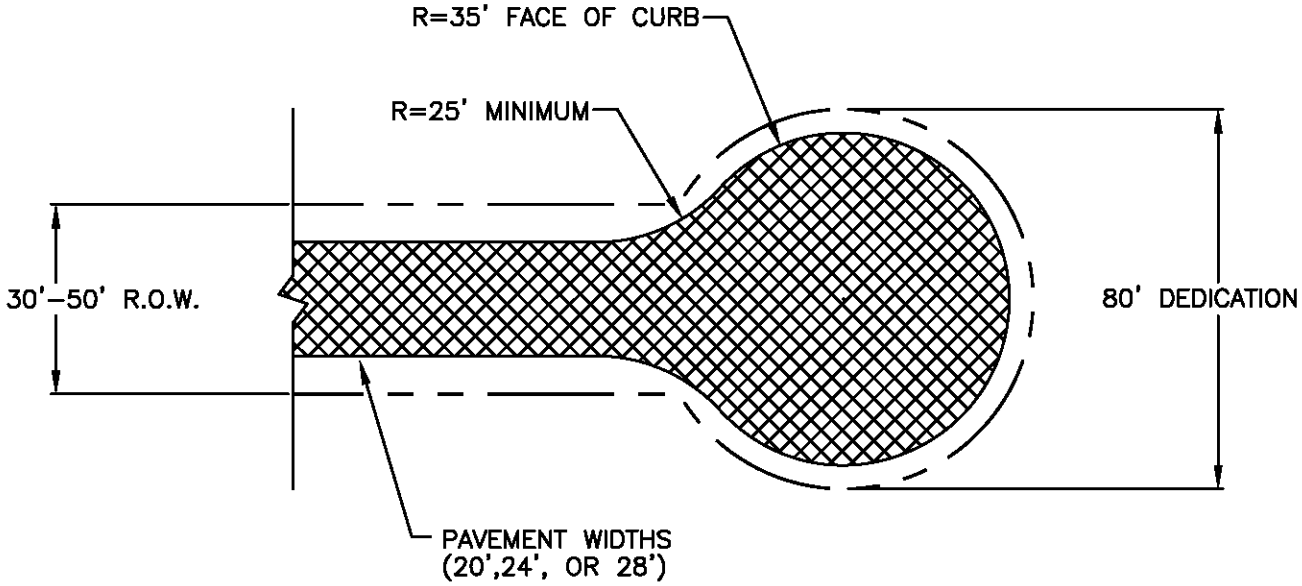
CITY OF KIRKLAND

PLAN NO. CK–R.14

CITY OF KIRKLAND WASHINGTON

EDGE RESTORATION DETAILS

LAST REVISED: 11/30/99



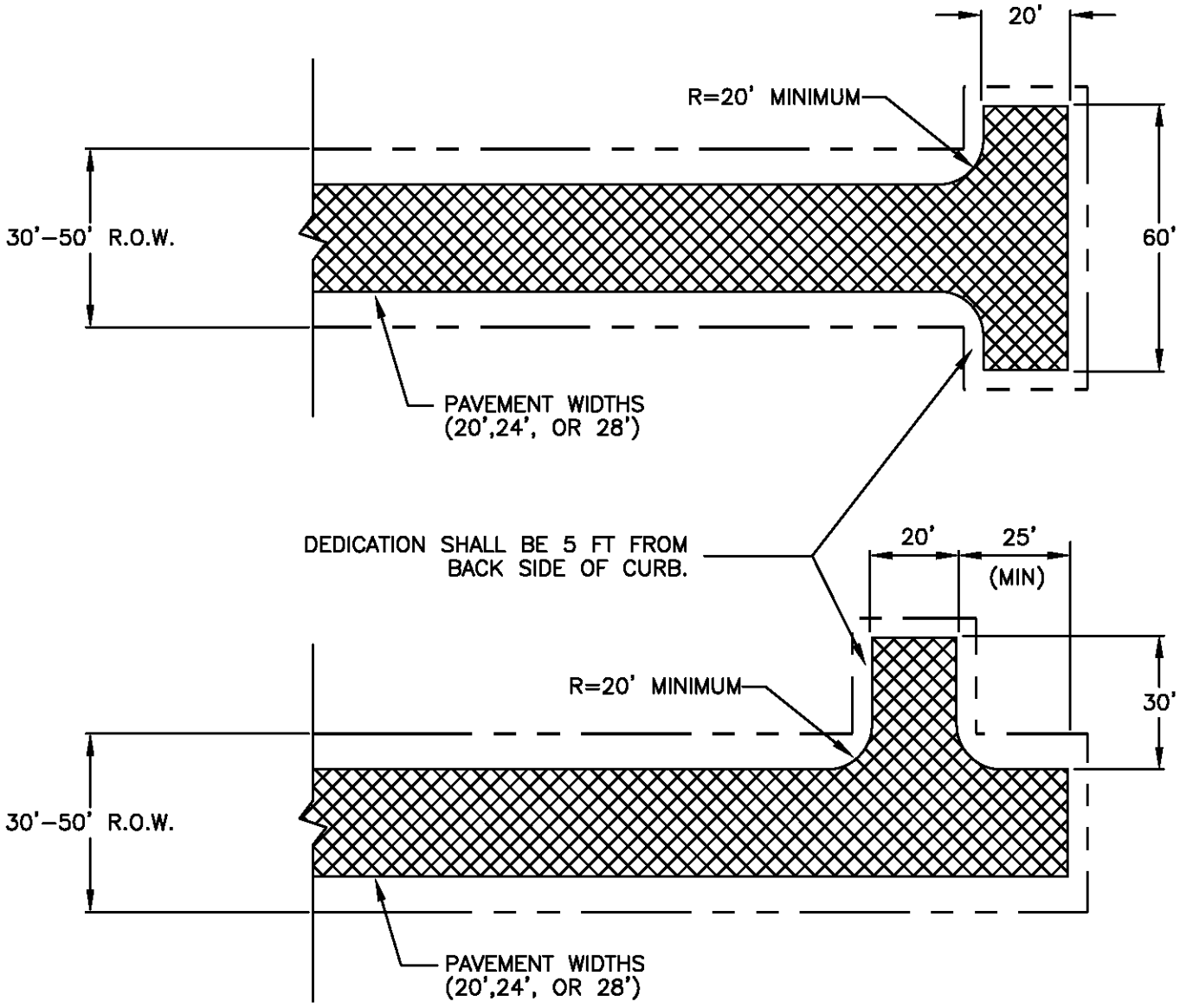
NOTES:

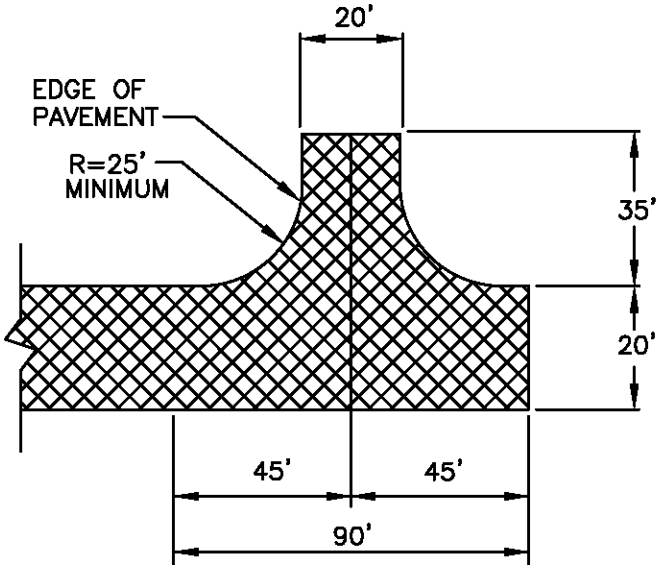
1. UTILITY EASEMENT AROUND THE PERIMETER OF THE CUL–DE–SAC MAY BE REQUIRED.

2. CUL–DE–SAC APPLIES TO PERMANENT AND TEMPORARY ROADWAY IMPROVEMENTS. ROADWAY IMPROVEMENTS.

CITY OF KIRKLAND	
PLAN NO. CK–R.15	
CITY OF KIRKLAND WASHINGTON	TYPICAL VEHICLE CUL–DE–SAC STREET GREATER THAN 200'

LAST REVISED: 11/30/99





FIRE DEPARTMENT
TURN AROUND REQUIREMENTS

NOTES:

1. UTILITY EASEMENTS AROUND THE PERIMETER OF THE TURN–AROUND MAY BE REQUIRED.
2. TURN–AROUNDS APPLY TO PERMANENT AND TEMPORARY ROADWAY IMPROVEMENTS.

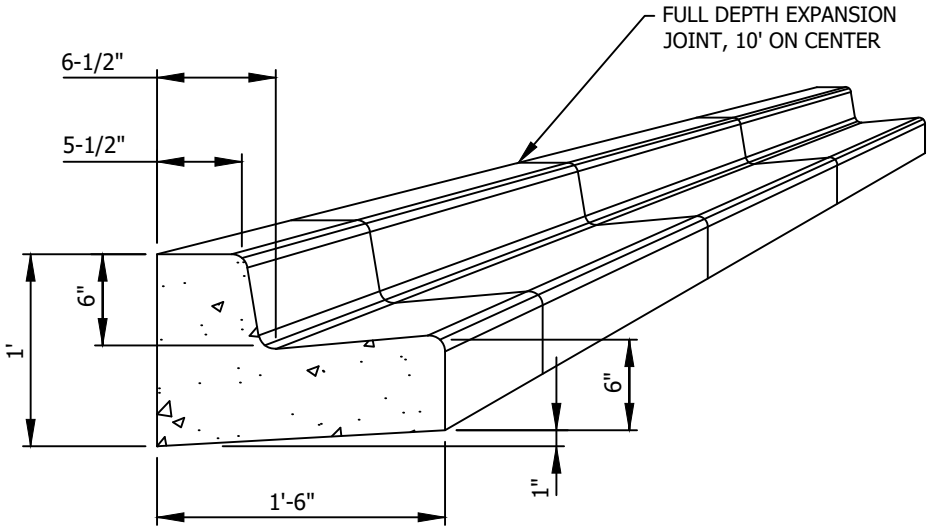
CITY OF KIRKLAND

PLAN NO. CK–R.16

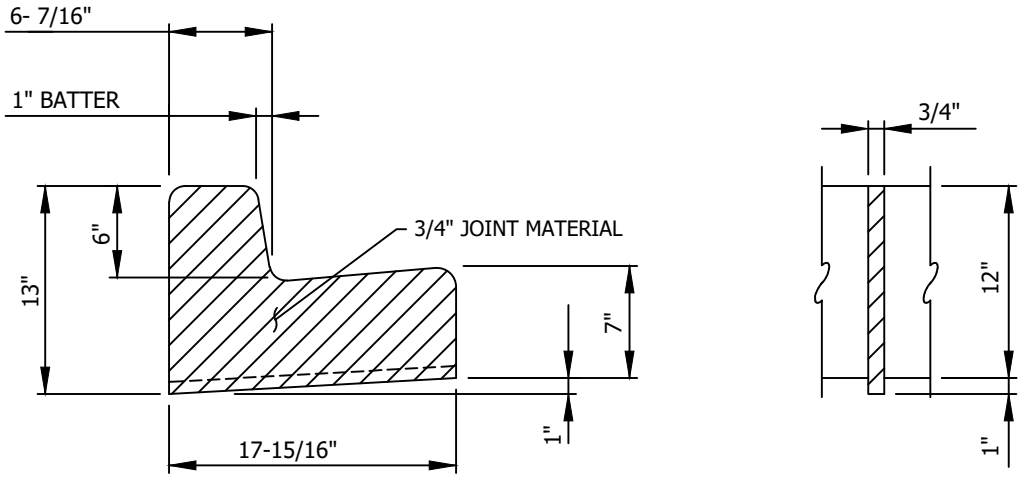
CITY OF KIRKLAND WASHINGTON

TYPICAL VEHICLE TURN–AROUND STREET LESS THAN 200'

LAST REVISED:01/2023



TYPICAL SECTION FOR CURB & GUTTER, TYPE A



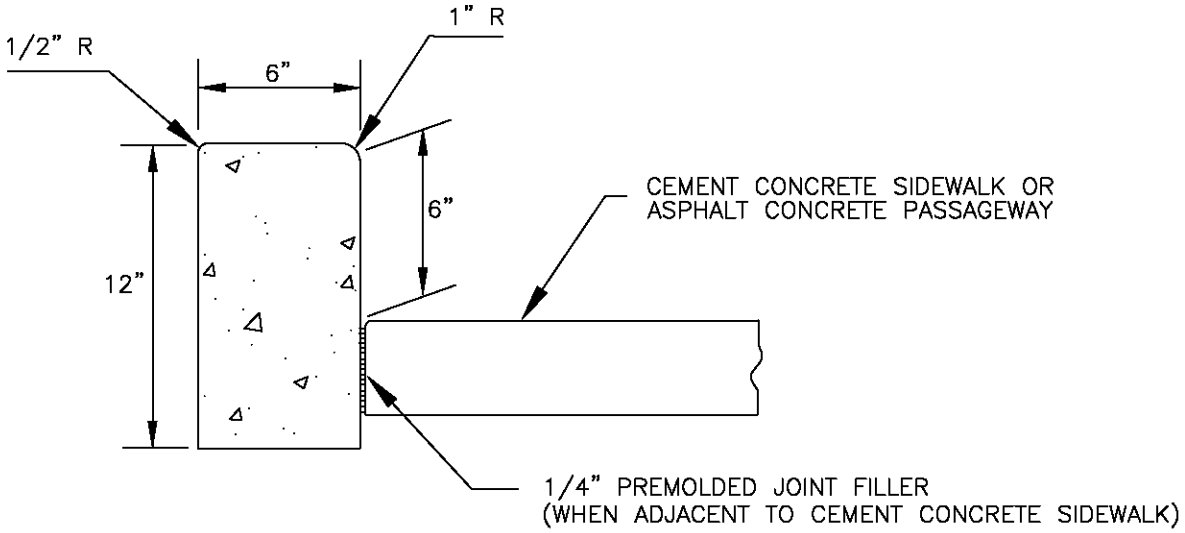
JOINT DETAIL

NOTES:

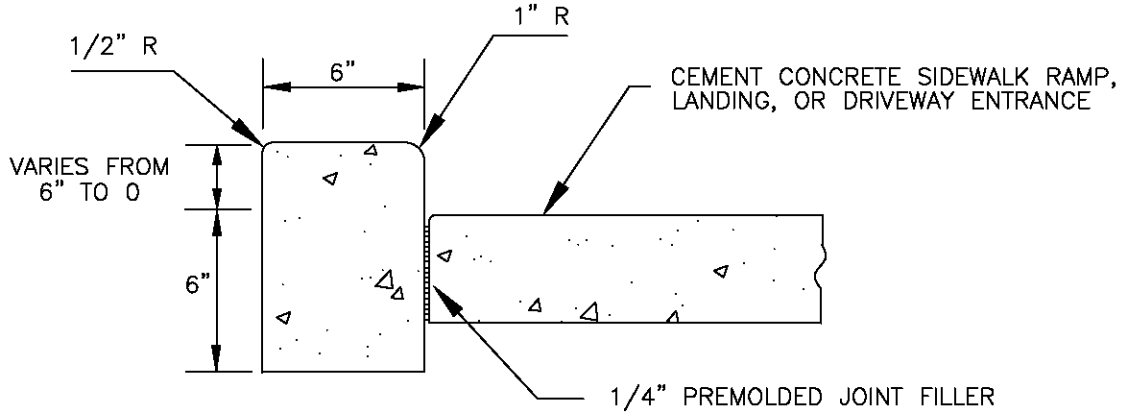
1. FORMS SHALL BE STEEL AND SET TRUE TO LINE AND GRADE (INSPECTION IS REQUIRED PRIOR TO PLACEMENT OF CONCRETE) UNLESS SPECIFIED DIFFERENTLY BY CITY PROJECT ENGINEER.
2. CONCRETE SHALL BE CEMENT CONCRETE CLASS 4000.
3. BASE COURSE SHALL BE 4" OF 5/8" MINUS CRUSHED ROCK.
4. SURVEY REQUIRED FOR CURB ALIGNMENT.

CITY OF KIRKLAND	
PLAN NO. CK–R.17	
CITY OF KIRKLAND WASHINGTON	CONCRETE CURB AND GUTTER, TYPE "A"

LAST REVISED:02/12/10



CEMENT CONCRETE PEDESTRIAN CURB



CEMENT CONCRETE PEDESTRIAN CURB

AT SIDEWALK RAMPS & LANDINGS, AND DRIVEWAY ENTRANCES

NOTES

1. FORMS SHALL BE STEEL AND SET TRUE TO LINE AND GRADE (INSPECTION REQUIRED PRIOR TO PLACEMENT OF CONCRETE).
2. CONCRETE SHALL BE CEMENT CONCRETE CLASS 4000.
3. BASE COURSE SHALL BE 4" OF 5/8" MINUS CRUSHED ROCK.
4. SEE CK-R.17 FOR CURB EXPANSION AND CONTRACTION JOINT SPACING.

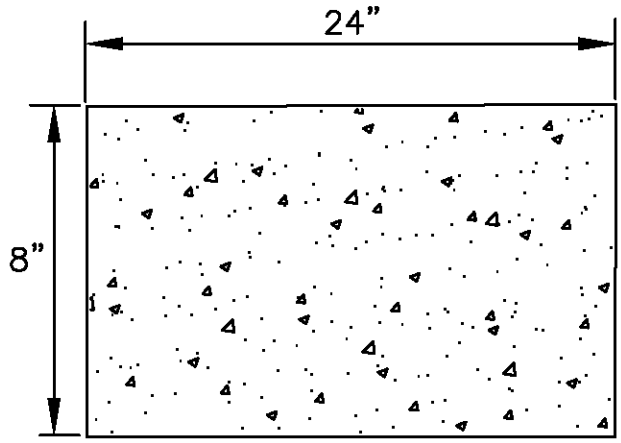
CITY OF KIRKLAND

PLAN NO. CK-R.17A

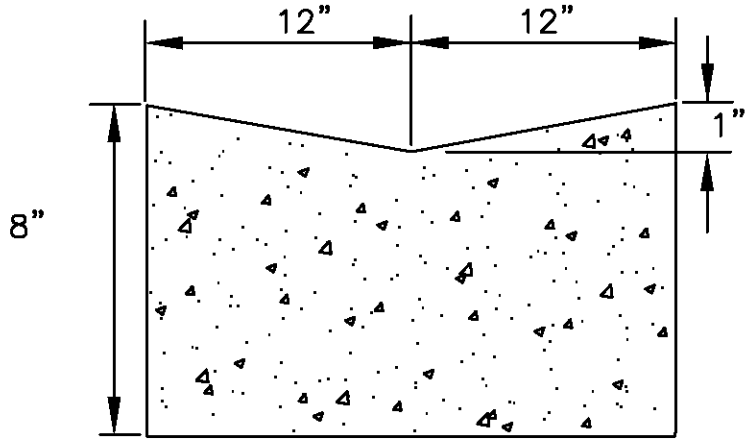
CITY OF KIRKLAND WASHINGTON

CEMENT CONCRETE PEDESTRIAN CURB

LAST REVISED:2/12/10



FLAT CURB



VALLEY GUTTER

NOTES

1. THIS DETAIL IS FOR SPECIAL USE ONLY WITH APPROVAL FROM PUBLIC WORKS INSPECTOR OR ENGINEER.

2. FORMS SHALL BE STEEL AND SET TRUE TO LINE AND GRADE (INSPECTION IS REQUIRED PRIOR TO PLACEMENT OF CONCRETE).

3. BASE COURSE SHALL BE 4" OF 5/8" MINUS CRUSHED ROCK.

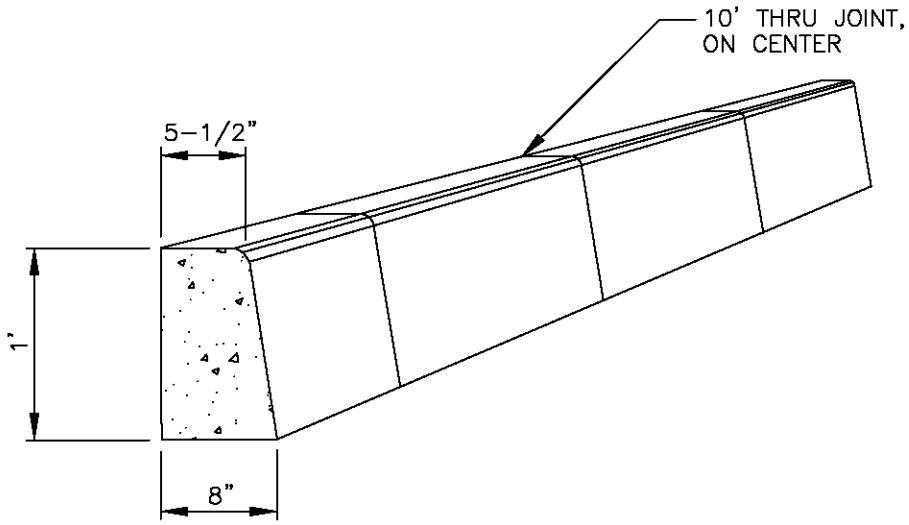
4. CONCRETE SHALL BE CEMENT CONCRETE CLASS 4000.

5. SEE CK-R.17 FOR CURB EXPANSION AND CONTRACTION JOINT SPACING.

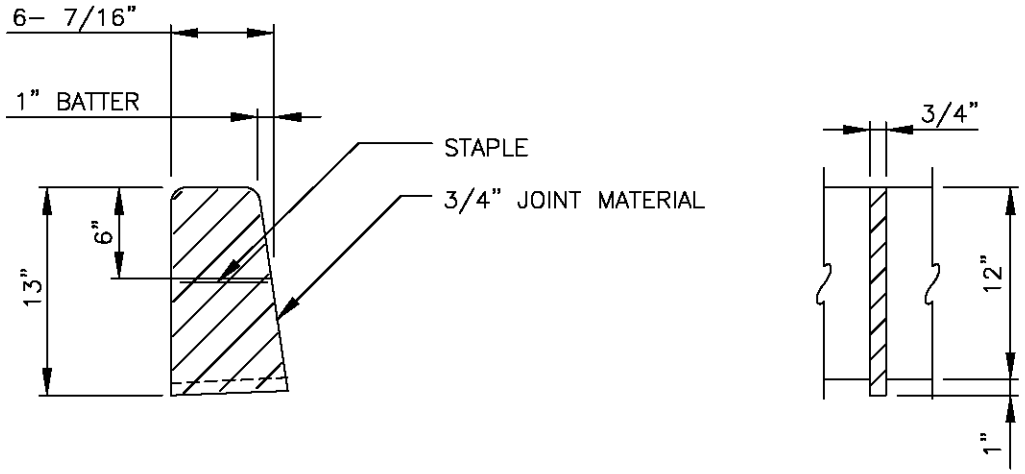
6. BROOM FINISH ONLY.

CITY OF KIRKLAND	
PLAN NO. CK-R.17B	
CITY OF KIRKLAND WASHINGTON	FLAT CURB AND VALLEY GUTTER

LAST REVISED:01/10/2011



TYPICAL SECTION FOR VERTICAL CURB



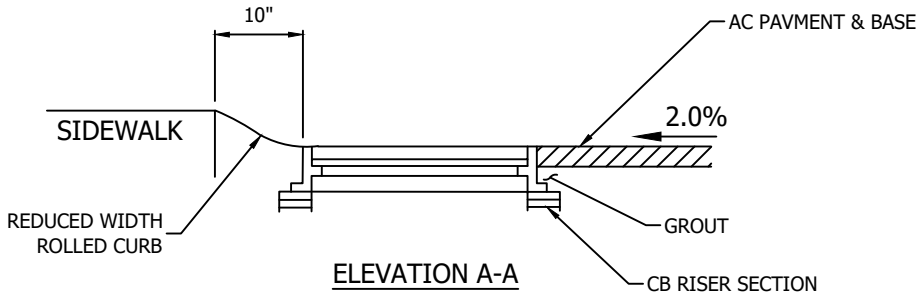
JOINT DETAIL

NOTES

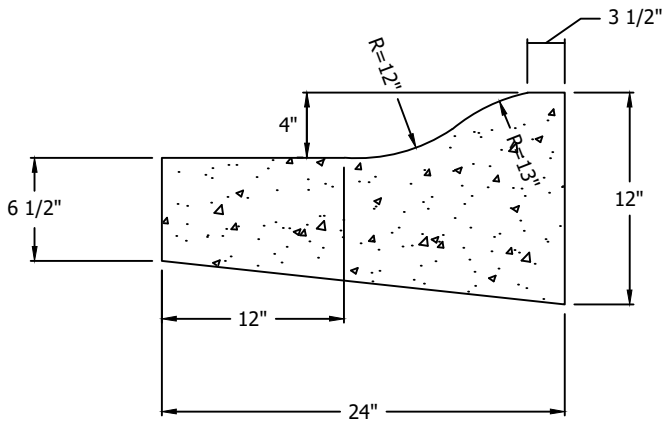
1. FORMS SHALL BE STEEL AND SET TRUE TO LINE AND GRADE (INSPECTION IS REQUIRED PRIOR TO PLACEMENT OF CONCRETE).
2. CONCRETE SHALL BE CEMENT CONCRETE CLASS 4000.
3. BASE COURSE SHALL BE 4" OF 5/8" MINUS CRUSHED ROCK.
4. INSTALLATION OF THIS TYPE OF CURB MUST HAVE PRIOR APPROVAL.

CITY OF KIRKLAND	
PLAN NO. CK-R.17C	
CITY OF KIRKLAND WASHINGTON	CONCRETE VERTICAL CURB

LAST REVISED: 01/2021



ELEVATION A-A
NTS



ROLLED CURB
ELEVATION B-B
NTS

NOTES:

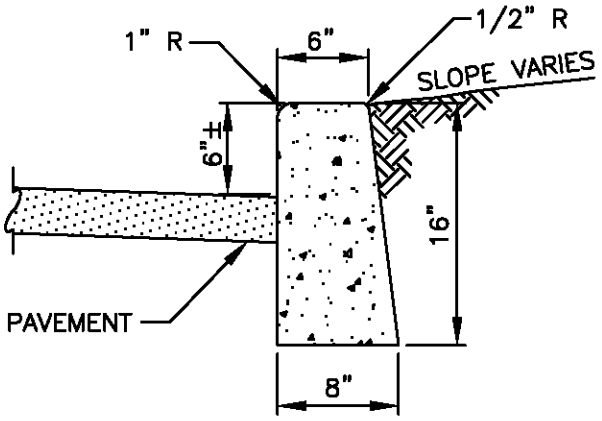
1. WHEN A THRU-CURB INLET IS REQUIRED, USE A ROLLED CURB FRAME AND GRATE.
2. MAY BE INSTALLED ONLY WITH APPROVAL FROM PUBLIC WORKS DEPARTMENT.
3. BASE COURSE SHALL BE 4" OF 5/8" MINUS CRUSHED ROCK.

CITY OF KIRKLAND

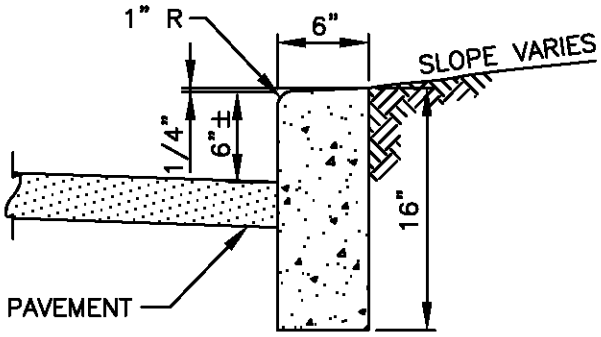
PLAN NO. CK - R.17D

GRATE/ROLLED CURB INSTALLATION

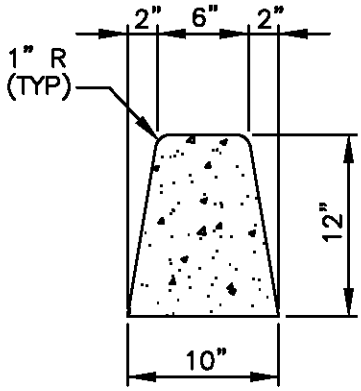
LAST REVISED: 11/30/99



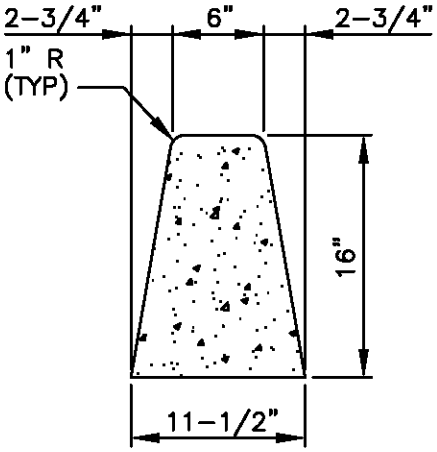
TYPE E–1 CURB



TYPE E–2 CURB



TYPE E–3 CURB



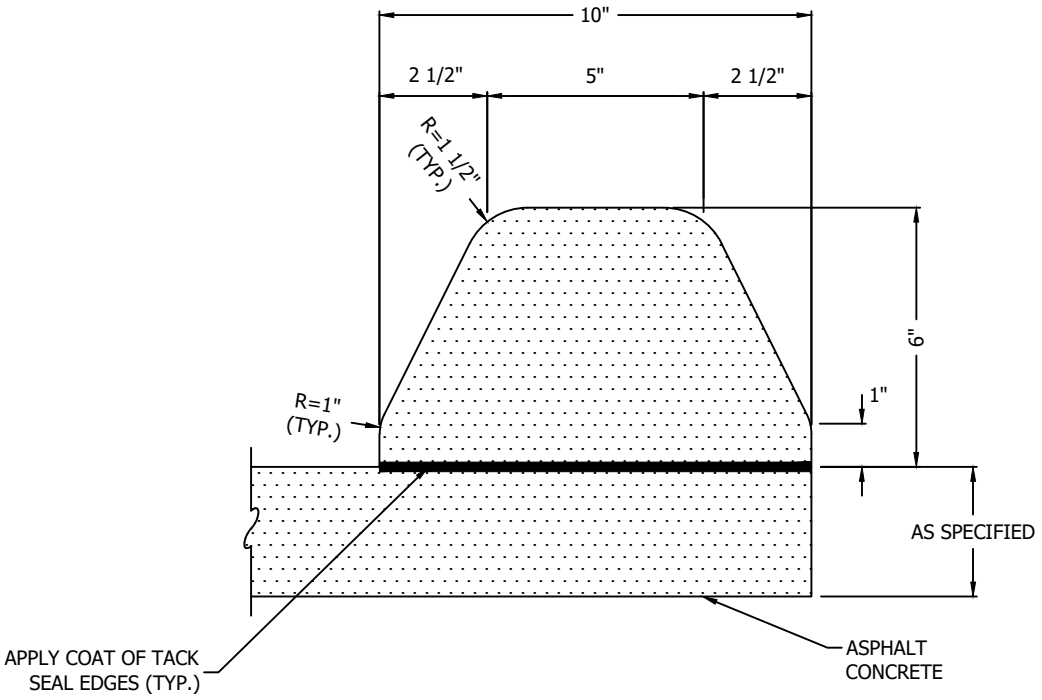
TYPE E–4 CURB

NOTES

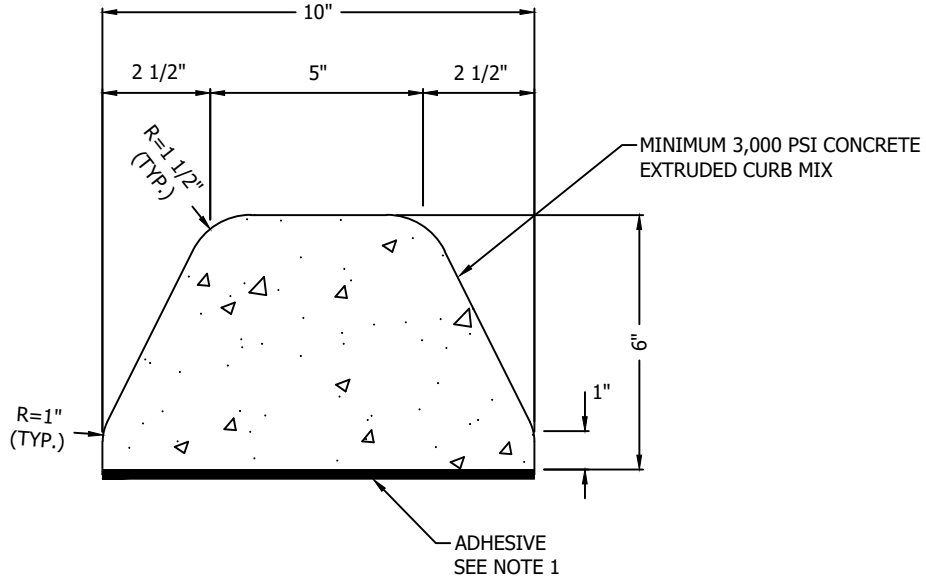
1. DUMMY JOINTS SHALL BE PLACED NOT TO EXCEED 15' CENTER TO CENTER, THEY SHALL BE NOT LESS THAN 3/16" IN THICKNESS AND SHALL EXTEND 2" BELOW THE GUTTER LINE.
2. 3/4" THRU JOINTS SHALL BE PLACED AT ALL COLD JOINTS OR AS DIRECTED BY THE ENGINEER AND SHALL EXTEND 1" BELOW BOTTOM OF CONCRETE.
3. MATERIALS SHALL MEET THE REQUIREMENTS OF THESE SPECIFICATIONS.
4. CONCRETE SHALL BE CEMENT CONCRETE CLASS 4000.

CITY OF KIRKLAND	
PLAN NO. CK–R.18	
CITY OF KIRKLAND WASHINGTON	CEMENT CONCRETE CURB E–1, E–2, E–3 & E–4

LAST REVISED: 01/2023



EXTRUDED ASPHALT CONCRETE CURB



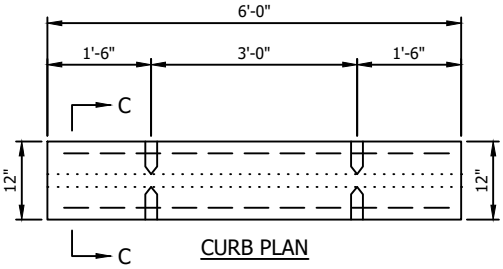
EXTRUDED CEMENT CONCRETE CURB

NOTES:

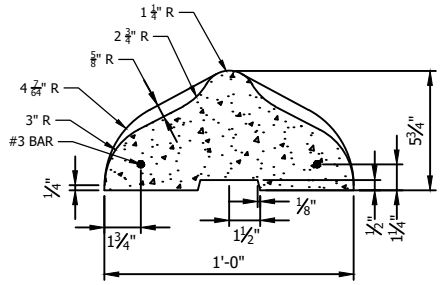
1. THE ADHESIVE SHALL MEET THE REQUIREMENTS OF WSDOT SSRBC SECTION 9-26.1 FOR TYPE-II EPOXY BONDING AGENT.
2. APPLY SUFFICIENT AMOUNT OF ADHESIVE TO ENSURE SQUEEZE OUT ALONG ALL EDGES.

CITY OF KIRKLAND	
PLAN NO. CK - R.19	
CITY OF KIRKLAND WASHINGTON	EXTRUDED CURB

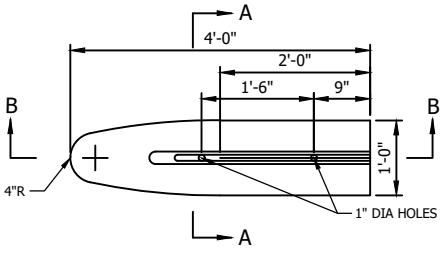
LAST REVISED: 12/24/2024



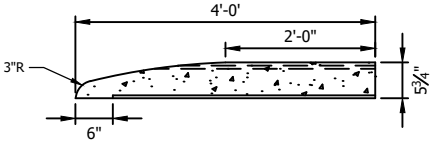
CURB PLAN



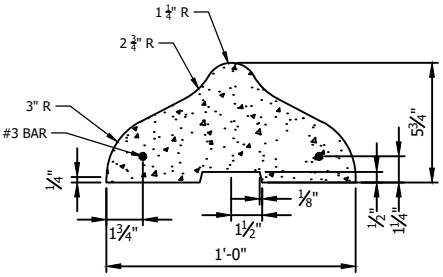
SECTION C-C



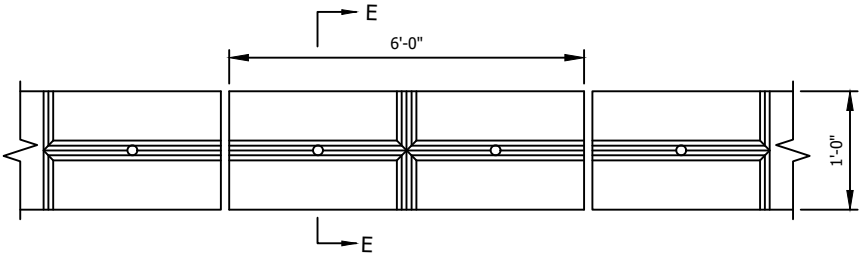
NOSING



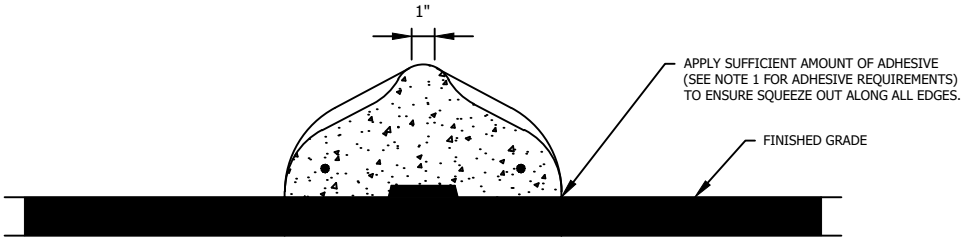
SECTION B-B



SECTION
A-A



INSTALLATION DETAIL FOR STRAIGHT PRECAST TRAFFIC CURB



SECTION
E-E

NOTES:

1. THE ADHESIVE SHALL MEET THE REQUIREMENTS OF SECTION 9.26(1) OF THE WSDOT STANDARD SPECIFICATION. USE APPROPRIATE ADHESIVE TYPE FOR EXISTING CONDITIONS.

2. MEDIAN CURB SHALL BE PAINTED. PAINT SHALL MEET SECTION 9.34.2 OF THE WSDOT STANDARD SPECIFICATION.

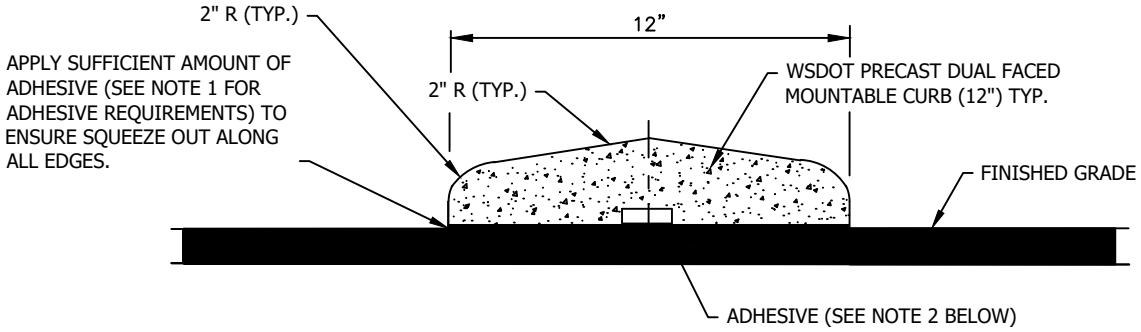
CITY OF KIRKLAND

PLAN NO. CK–R.19A

CITY OF KIRKLAND WASHINGTON

MEDIAN CURB

LAST REVISED:01/2023



MOUNTABLE MEDIAN CURB

NOT TO SCALE

NOTES:

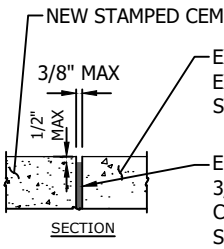
1. THE ADHESIVE SHALL MEET THE REQUIREMENTS OF SECTION 9.26(1) OF THE WSDOT STANDARD SPECIFICATION. USE APPROPRIATE ADHESIVE TYPE FOR EXISTING CONDITIONS.

2. MEDIAN CURB SHALL BE PAINTED. PAINT SHALL MEET SECTION 9.34.2 OF THE WSDOT STANDARD SPECIFICATION.

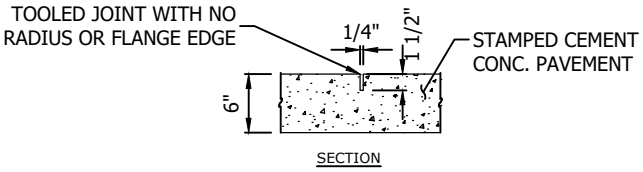
3. ALL SECTIONS TO BE 5 FOOT LENGTHS.

CITY OF KIRKLAND	
PLAN NO. CK–R.19B	
CITY OF KIRKLAND WASHINGTON	MOUNTABLE MEDIAN CURB

LAST REVISED: 12/28/2024



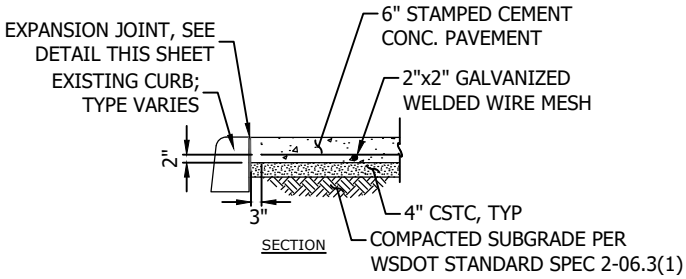
TYPICAL EXPANSION JOINT DETAIL
NTS



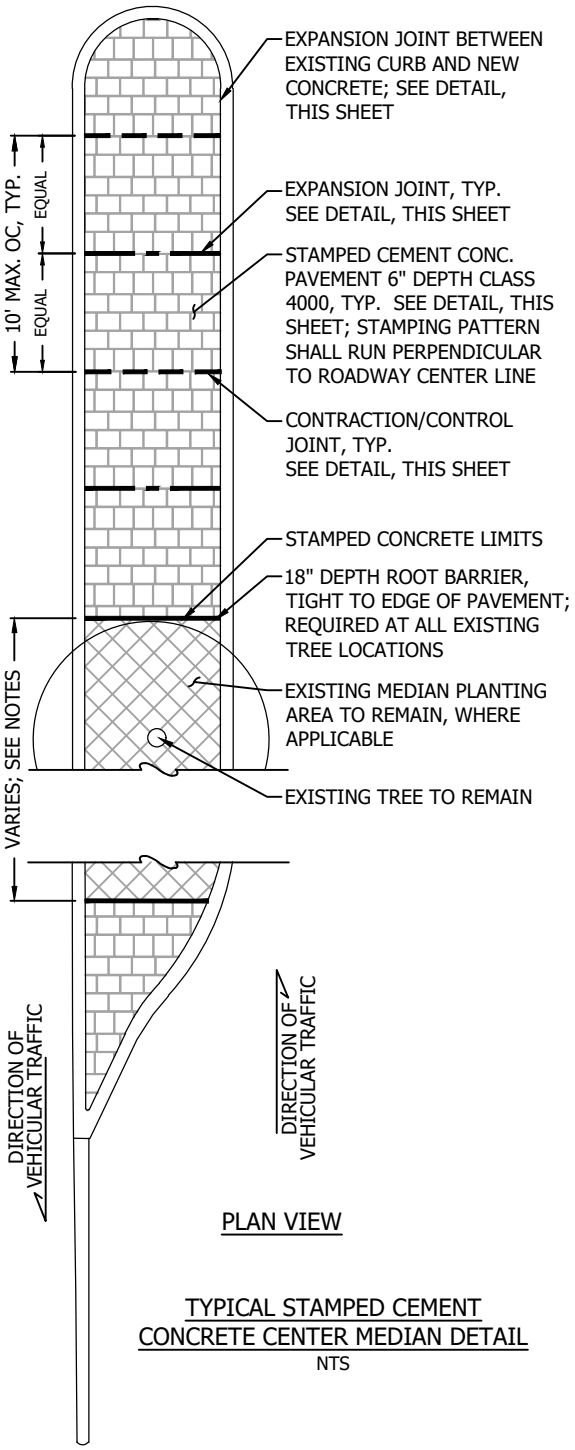
DETAIL NOTES:

1. PROVIDE CONTRACTION/CONTROL JOINTS WHERE SHOWN ON LAYOUT DETAILS.
2. CONTRACTION/CONTROL JOINTS SHALL BE FORMED IN CONFORMANCE WITH WSDOT STD SPECIFICATION SECTION 5-05.3(8)A.

TYPICAL CONTRACTION/CONTROL JOINT DETAIL
NTS



TYPICAL STAMPED CEMENT CONC. PAVEMENT DETAIL
NTS



PLAN VIEW

TYPICAL STAMPED CEMENT CONCRETE CENTER MEDIAN DETAIL
NTS

NOTES:

1. CONCRETE STAMPING TOOL FOR STAMPED CEMENT CONC. PAVEMENT SHALL BE 'COBBLESTONE' PATTERN BST5000 TEXTURED MAT AND CHISELED SLATE BST7618 TOUCH UP SKIN FROM BUTTERFIELD COLOR OR APPROVED EQUAL.
2. STAMPED CEMENT CONC. PAVEMENT SHALL RECEIVE ANTIQUING 2. RELEASE AGENT AND SEALER (INCLUDING ADDITIVE) APPLICATION USING BUTTERFIELD COLOR #PT12 PERMA-TIQUE ANTIQUING AGENT - STORM GRAY AND BUTTERFIELD COLOR CLEAR-GUARD CURE & SEAL OR APPROVED EQUAL.
3. STAMPED CEMENT CONC. PATTERN, COLOR, AND LAYOUT SHALL BE APPROVED BY CITY PRIOR TO INSTALLATION.
4. CONTRACTION/CONTROL AND EXPANSION JOINTS SHALL BE 10 FEET MAX. 4. O.C., SEE DETAIL THIS SHEET.
5. WHERE APPLICABLE, LENGTH OF PLANTER AREA VARIES BASED ON 5. DRIPLINE OF EXISTING TREE(S) TO REMAIN AND PRESENCE OF SURFACE ROOTS; LIMITS SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.

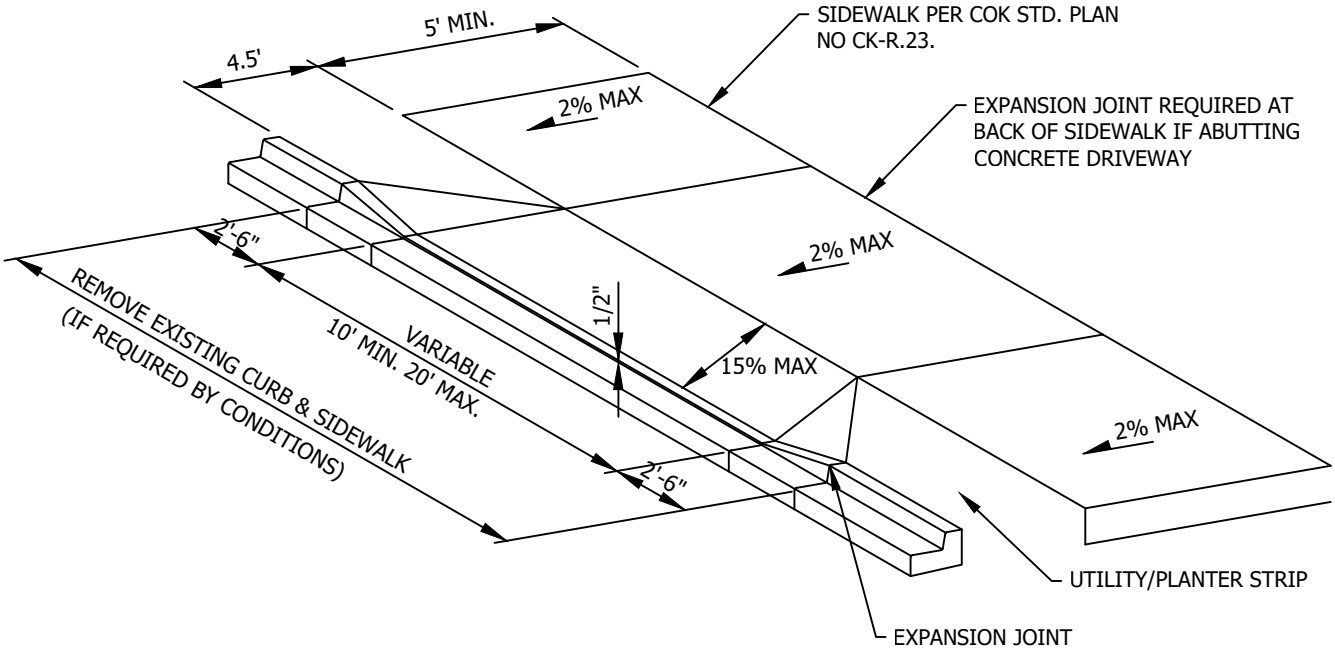
CITY OF KIRKLAND

PLAN NO. CK - R.20

CITY OF KIRKLAND WASHINGTON

TYPICAL STAMPED CEMENT CONCRETE CENTER MEDIAN DETAIL

LAST REVISED:01/2022



SINGLE FAMILY DRIVEWAY WITH PLANTER STRIP

NOTES:

1. ALL DRIVEWAYS AND WHEEL CHAIR RAMPS MUST BE DESIGNED TO MEET ADA STANDARDS. USE WSDOT STANDARD PLANS FOR LAYOUTS NOT SHOWN ON THIS PLAN WITH CLASS 4,000PSI CONCRETE FOR ALL STANDARD PLANS.

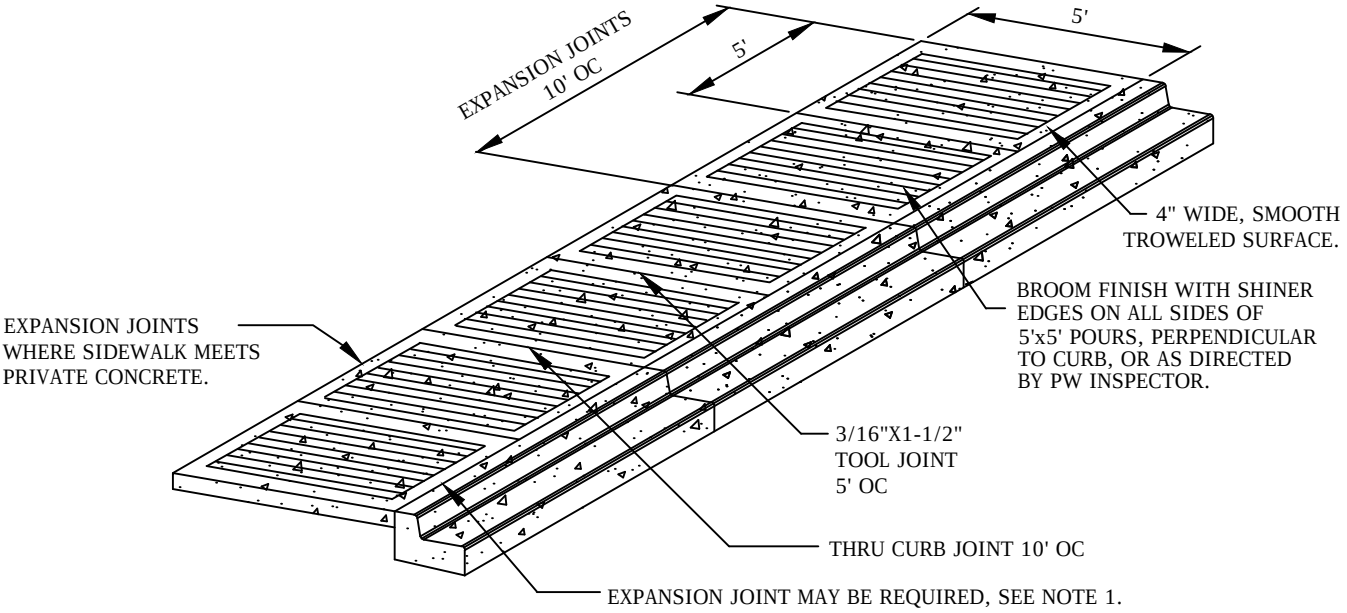
   WWW.WSDOT.WA.GOV/DESIGN/STANDARDS/PLANS.HTM

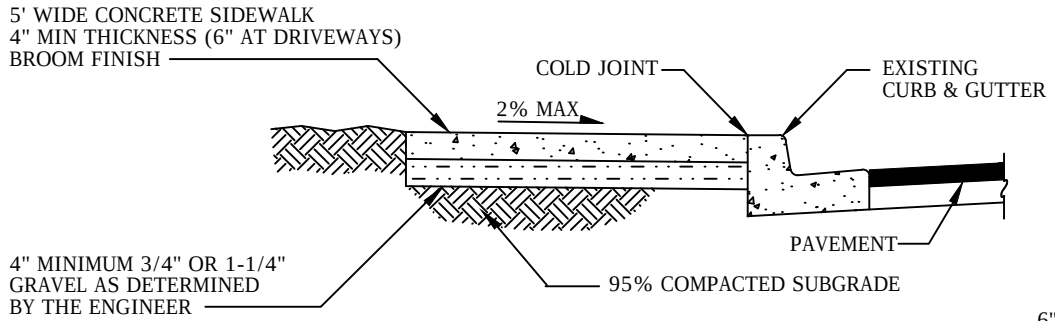
2. LANDING SHALL BE A MINIMUM OF 5' BY 5'.

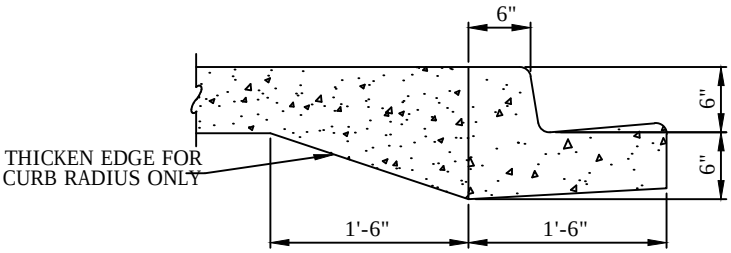
3. EXPANSION JOINT SPACING NOT TO EXCEED 10'.

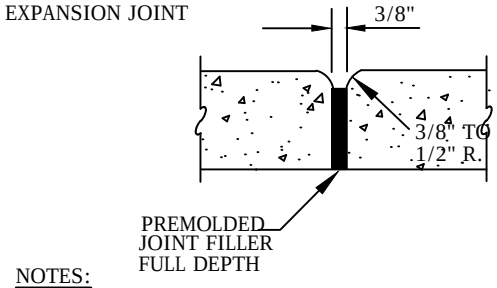
CITY OF KIRKLAND	
PLAN NO. CK–R.21	
CITY OF KIRKLAND WASHINGTON	DRIVEWAYS AND WHEEL CHAIR RAMPS

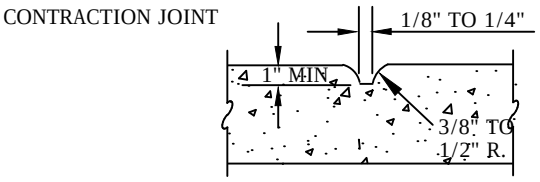
LAST REVISED: 1/1/18











NOTES:

1. SIDEWALK AND CURB & GUTTER CANNOT BE POURED MONOLITHICALLY. EXPANSION JOINT WILL BE REQUIRED WHEN CONCRETE SIDEWALK IS SURROUNDED BY OTHER HARD SURFACES (E.G., DRIVEWAY); OR AS DIRECTED BY PW INSPECTOR.
2. CONCRETE SHALL BE CEMENT CONCRETE CLASS 4000 PSI MINIMUM, WITH AIR ENTRAINMENT. NO COLOR OR TINT SHALL BE ADDED.
3. FORMS SHALL BE SET TRUE TO LINE AND GRADE AND SHALL BE STEEL UNLESS OTHERWISE APPROVED BY INSPECTOR.
4. SIDEWALK SHALL NOT BE POURED IN THE RAIN. SEE POLICY R-8, PLACING CONCRETE OR ASPHALT IN ADVERSE WEATHER CONDITIONS.

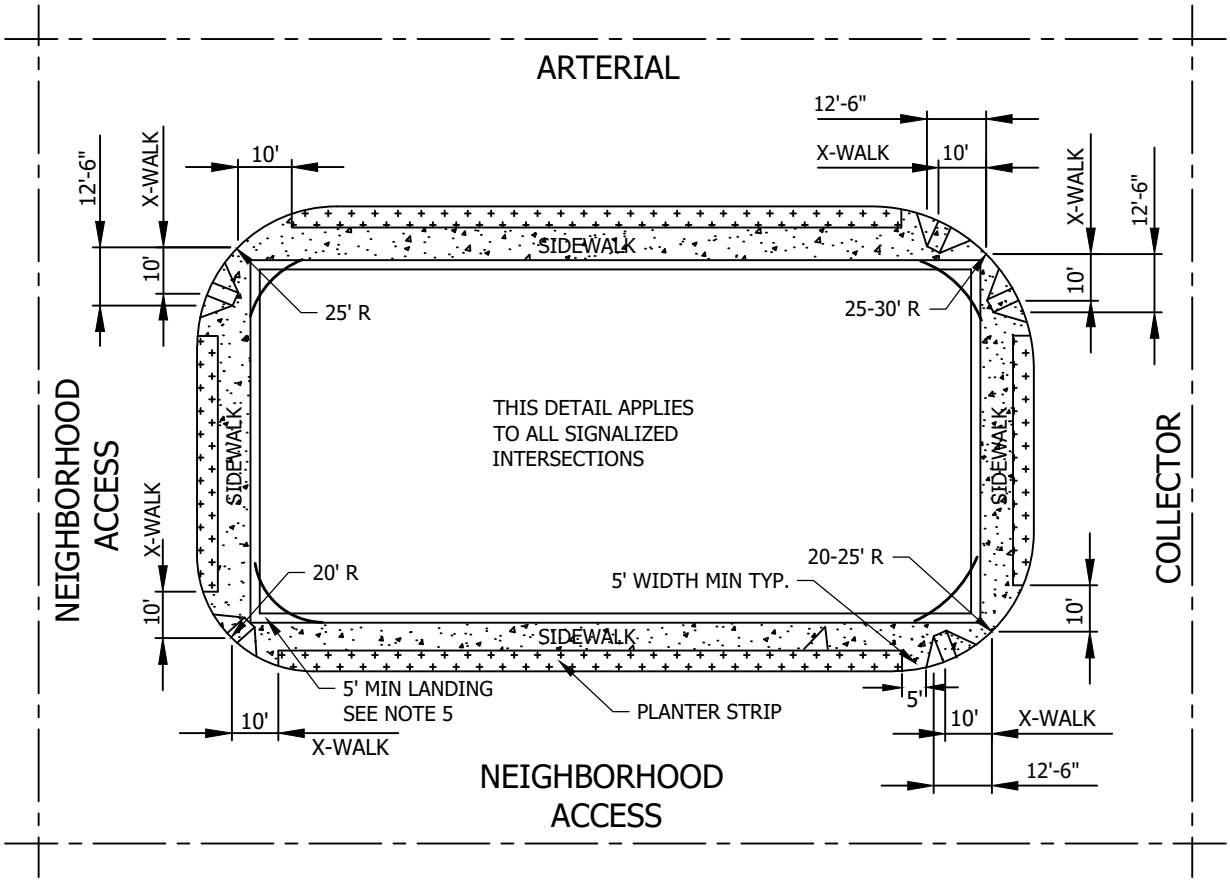
CITY OF KIRKLAND

PLAN NO. CK- R.23

CITY OF KIRKLAND WASHINGTON

SIDEWALK SECTION

LAST REVISED: 12/28/2024

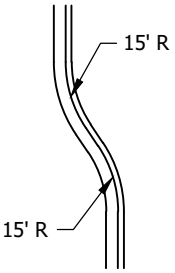


NOTES:

1. STORM DRAINAGE INLETS SHALL BE OUTSIDE THE CURB RAMP.
2. THE CURB RAMP MAY BE MOVED AWAY FROM THE CROSSWALK TO AVOID CONFLICTS WITH HYDRANTS, POLES, INLETS OR OTHER UTILITIES, EXCEPT WHERE THE STREET GRADE EXCEEDS 4%.
3. FOR SWEEPING EFFICIENCY WHEN CURB BULBS (PARKING SETBACKS) ARE USED, REVERSE CURVE RADII SHALL NOT BE LESS THAN 15 FEET. REFER TO DETAIL A.
4. FOR STAKING PURPOSES, RAMPS MAY BE LOCATED PER QUARTER DELTA AND PUBLIC WORKS APPROVAL.
5. CURB RADIUS SHALL BE AS SHOWN IN TABLE ABOVE. EXCEPTIONS CAN BE MADE FOR SPECIFIC LAND USE CONTEXTS, SUCH AS INTERSECTIONS ALONG TRANSIT ROUTES, HIGH-FREIGHT CORRIDORS, LOADING DOCKS, ETC., ON A CASE-BY-CASE BASIS. EXCEPTIONS MUST BE REVIEWED AND APPROVED BY CITY TRANSPORTATION DIVISION STAFF. SEE NOTE 6 FOR SPECIFIC REQUIREMENTS.
6. THE DEFAULT DESIGN VEHICLE FOR TURNING MOVEMENTS AT INTERSECTIONS SHALL BE A SINGLE-UNIT BOX TRUCK SU-30 FOR MOST CASES, UNLESS ON A TRANSIT OR FREIGHT ROUTE, AS DEFINED BY PUBLIC WORKS. USE OF A SWEPT-PATH ANALYSIS SOFTWARE (AUTOTURN OR SIMILAR) IS PREFERRED. A WB-67 SHALL BE ACCOMMODATED WITHIN ALL ARTERIAL INTERSECTIONS. AN SU-30 SHALL BE ACCOMMODATED AT ALL INTERSECTIONS, INCLUDING LOCAL OR NEIGHBORHOOD ACCESS STREETS. "ACCOMMODATING" FOR A VEHICLE ALLOWS ENCROACHMENT OF OTHER LANES IN THE SAME DIRECTION OF TRAVEL TO COMPLETE THE REQUIRED MANEUVER. NO ENCROACHMENT IS ALLOWED INTO OPPOSING OR ONCOMING TRAFFIC LANES. COORDINATE WITH CITY TRANSPORTATION DIVISION STAFF FOR LOCATION-SPECIFIC INQUIRIES AND DETAILS.

CURB RADIUS AT INTERSECTIONS

	ARTERIAL	COLLECTOR	NEIGHBORHOOD ACCESS
ARTERIAL	30 Ft	25 - 30 ft	25 ft
COLLECTOR	X	25 - 30 ft	20 - 25 ft
NEIGHBORHOOD ACCESS	X	X	20 ft



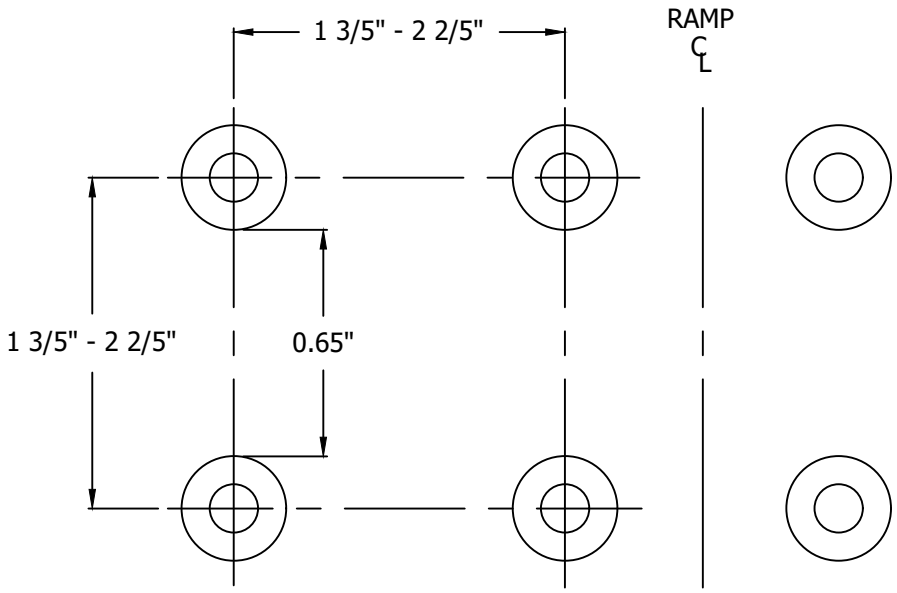
DETAIL A - MINIMUM RADIUS FOR CURB BULB/PARKING SETBACK

CITY OF KIRKLAND

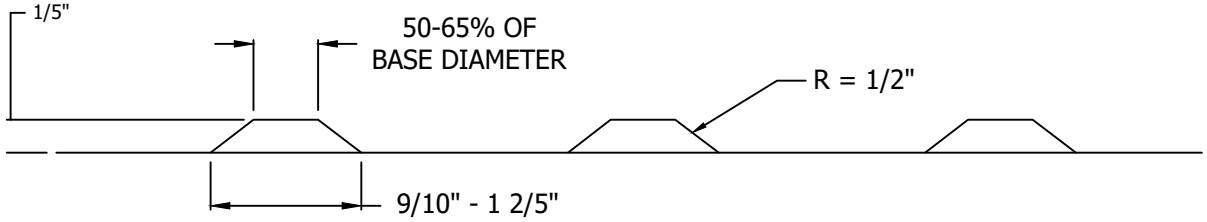
PLAN NO. CK- R.24

CURB RADIUS STANDARDS & CURB RAMP LOCATIONS

LAST REVISED: 01/2021



PLAN



ELEVATION

NOTE:

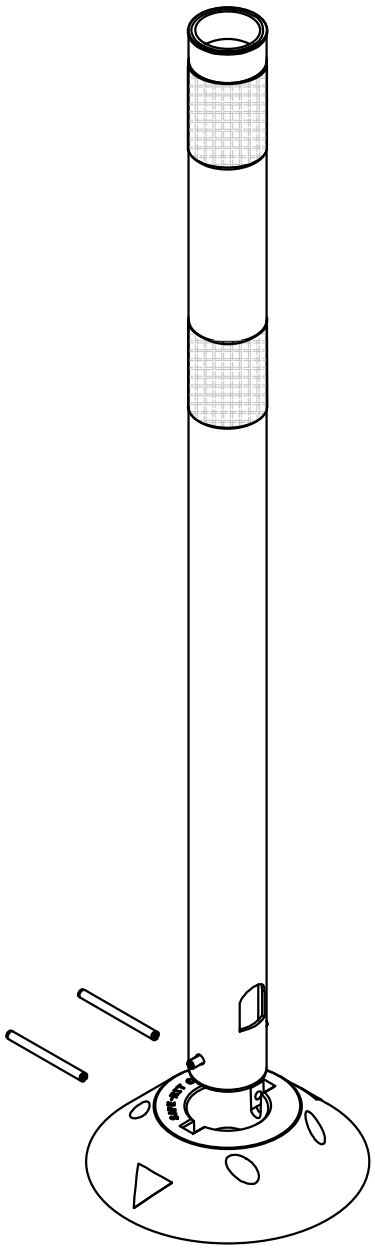
1. THE DETECTABLE WARNING PATTERN SHALL BE FORMED BY ADDING A MANUFACTURED MATERIAL BEFORE THE CONCRETE HAS CURED.
2. THE TWO-FOOT WIDE DETECTABLE WARNING PATTERN AREA ON THE RAMP SHALL BE YELLOW AND SHALL MATCH THE COLOR OF "STANDARD INTERSTATE YELLOW" PAINT AS SPECIFIED IN FORMULA K-2-83.
3. EMBOSSING THE WET CONCRETE OR INSTALLING MASONRY OF CERAMIC TILES MUST BE APPROVED BY CITY ENGINEER.

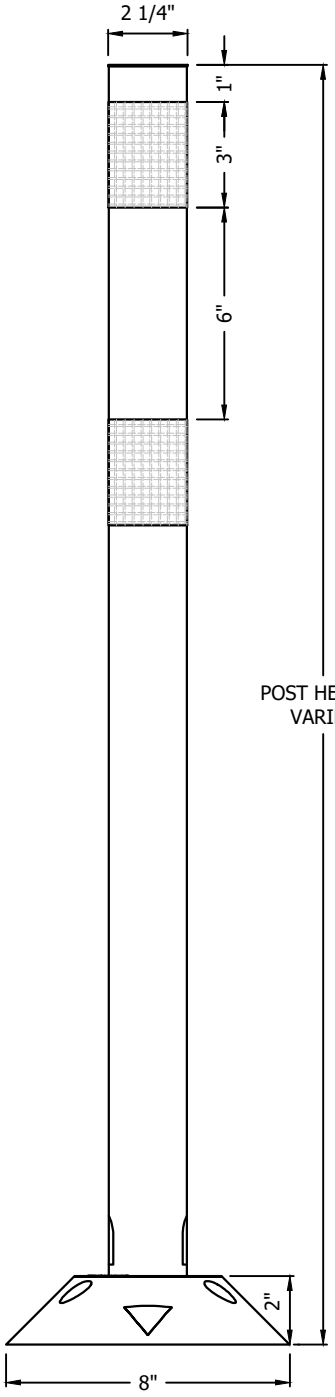
CITY OF KIRKLAND

PLAN NO. CK - R.25B

TRUNCATED DOME TEXTILE WARNING SURFACE

LAST REVISED: 07/2021





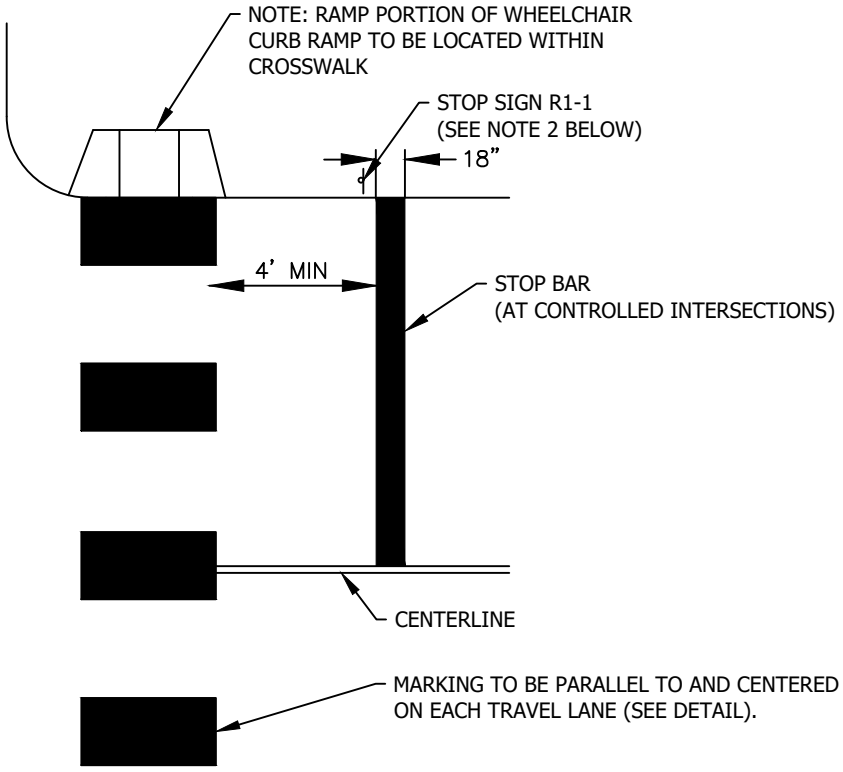
POST HEIGHT VARIES WITH TWO 3-INCH WIDE SILVER HIGH INTENSITY FLEXIBLE PRISMATIC REFLECTIVE BANDS, WITH BLACK PIN-LOCK SURFACE MOUNT BASE

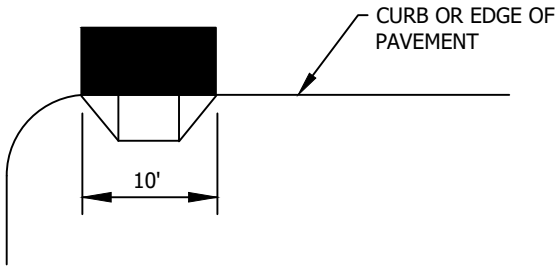
NOTES:

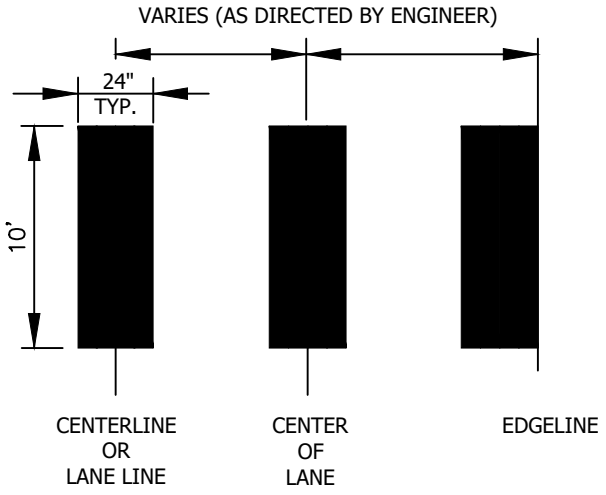
1. INSTALL ACCORDING TO MANUFACTURER'S SPECIFICATION.
2. USE ADHESIVE ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
3. COLOR AND HEIGHT ACCORDING TO ENGINEER'S SPECIFICATION

CITY OF KIRKLAND	
PLAN NO. CK - R.26	
CITY OF KIRKLAND WASHINGTON	TYPE 5 FLEXIBLE DELINEATOR SURFACE MOUNT

LAST REVISED:01/2020







DETAIL

NOTES:

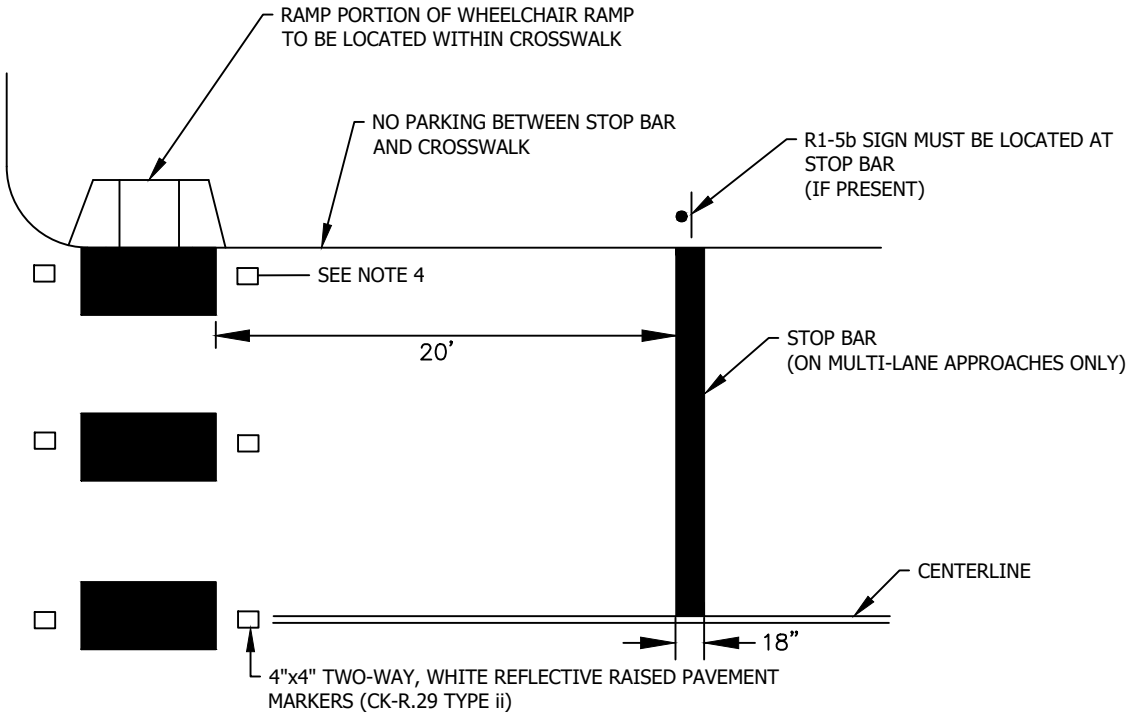
1. MARKINGS SHALL BE THERMOPLASTIC.
2. STOP SIGN LOCATION ADJACENT TO STOP BAR, OR AS DIRECTED BY ENGINEER

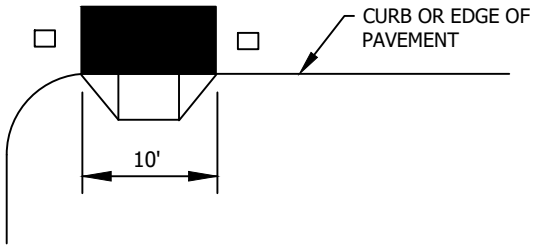
CITY OF KIRKLAND

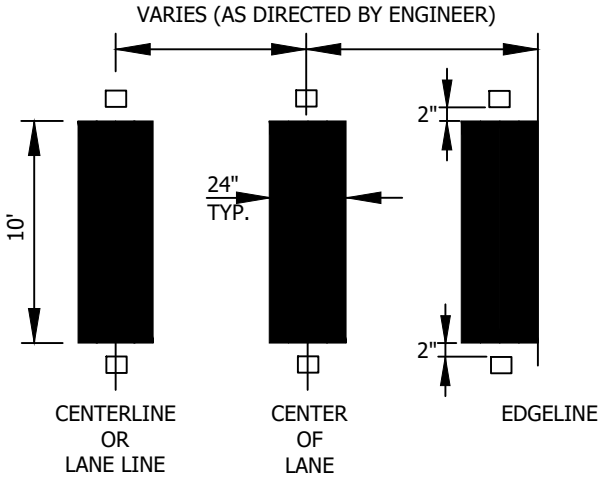
PLAN NO. CK–R.28

CROSSWALK AND STOP BAR DETAIL

LAST REVISED:01/2020







DETAIL

NOTES:

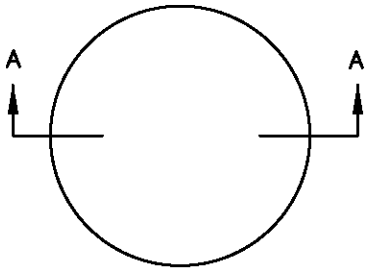
1. MARKINGS SHALL BE THERMOPLASTIC.
2. FOR TWO-WAY REFLECTIVE RAISED PAVEMENT MARKERS, SEE PLAN NO. CK-R.29 TYPE 2.
3. DO NOT PLACE RPM IN BIKE LANE OR ON EDGE LINES.

CITY OF KIRKLAND

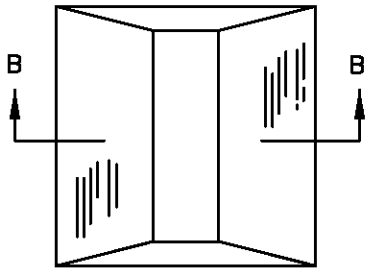
PLAN NO. CK–R.28A

CROSSWALK AND STOP BAR DETAIL FOR UNCONTROLLED APPROACHES

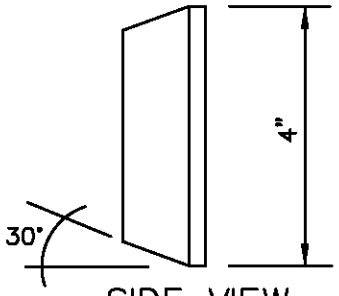
LAST REVISED: 11/30/99



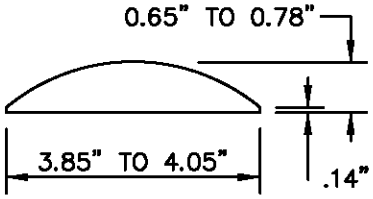
PLAN



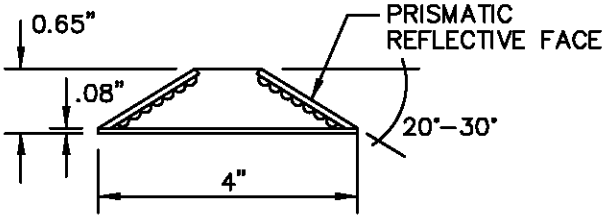
PLAN
DIRECTION OF TRAFFIC



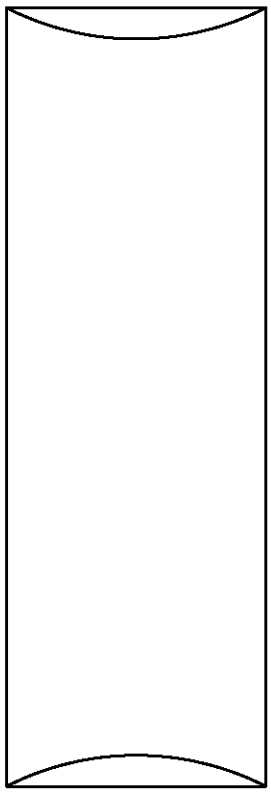
SIDE VIEW



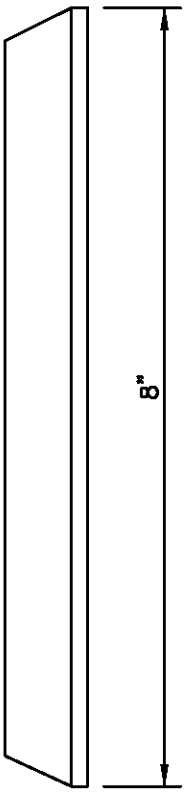
TYPE 1
SECTION A–A



TYPE 2
SECTION B–B



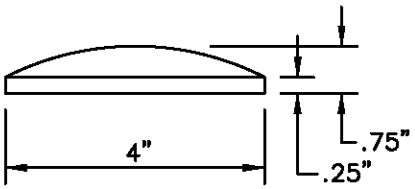
PLAN



SIDE VIEW

NOTES

1. TYPE C PAVEMENT MARKERS TO BE USED ONLY UPON APPROVAL BY TRAFFIC ENGINEER.
2. NOT TO BE USED ON EDGELINES.



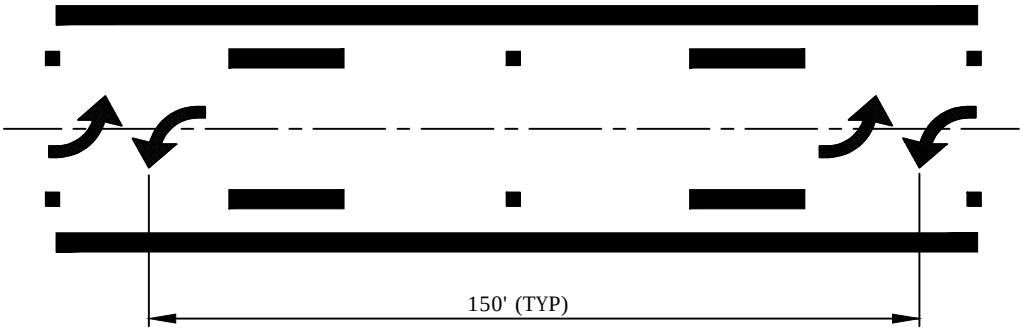
TYPE C

CITY OF KIRKLAND

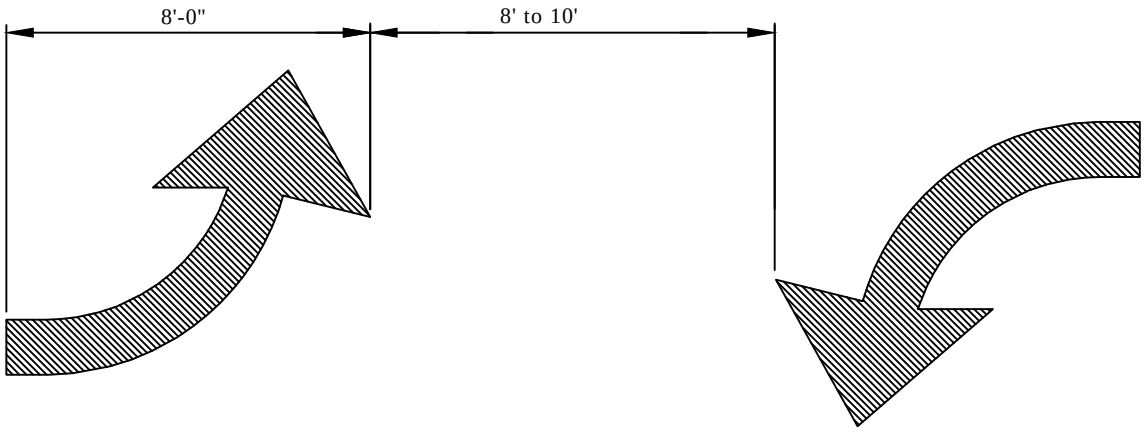
PLAN NO. CK–R.29

CITY OF KIRKLAND WASHINGTON

LANE MARKERS
(DIMENSIONS)



TWO-WAY LEFT TURN MARKERS



TYPICAL ARROW

NOTES

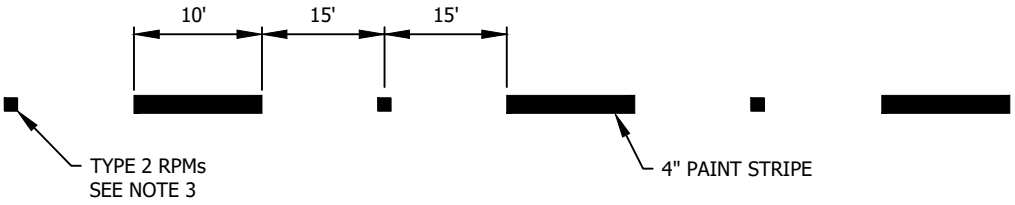
1. THERMOPLASTIC REQUIRED

CITY OF KIRKLAND

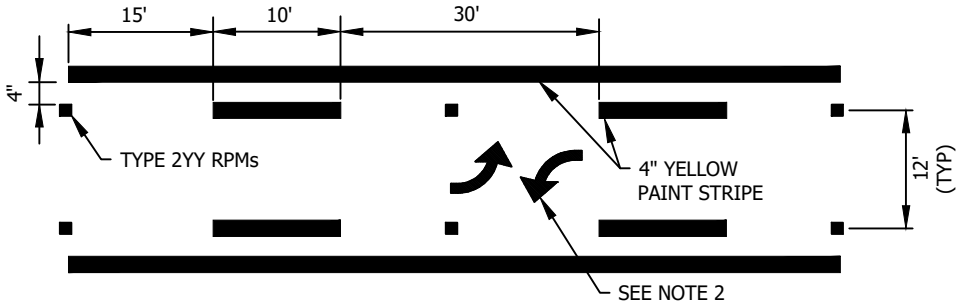
PLAN NO. CK- R.30

TWO-WAY LEFT TURN LANE AND TYPICAL ARROW

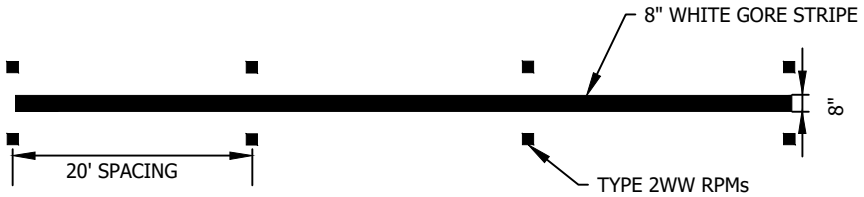
LAST REVISED:01/2023



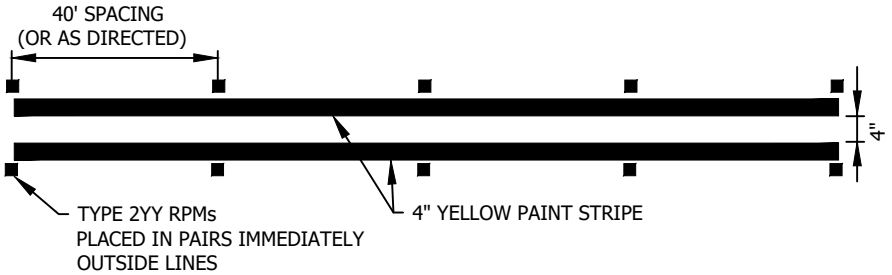
SKIP CENTER & LANE STRIPE DETAIL



TWO-WAY LEFT TURN DETAIL



GORE STRIPE DETAIL



DOUBLE YELLOW CENTER DETAIL

NOTES:

1. MATCH EXISTING PAVEMENT MARKING DIMENSIONS.
2. SEE CK-R.30 FOR TWO-WAY LEFT TURN ARROW PLACEMENT.
3. RAISED PAVEMENT MARKER BODY AND LENS COLOR SHALL CONFORM TO THE COLOR OF THE MARKING FOR WHICH THEY SUPPLEMENT, SUBSTITUTE FOR, OR SERVE AS A POSITIONING GUIDE FOR.

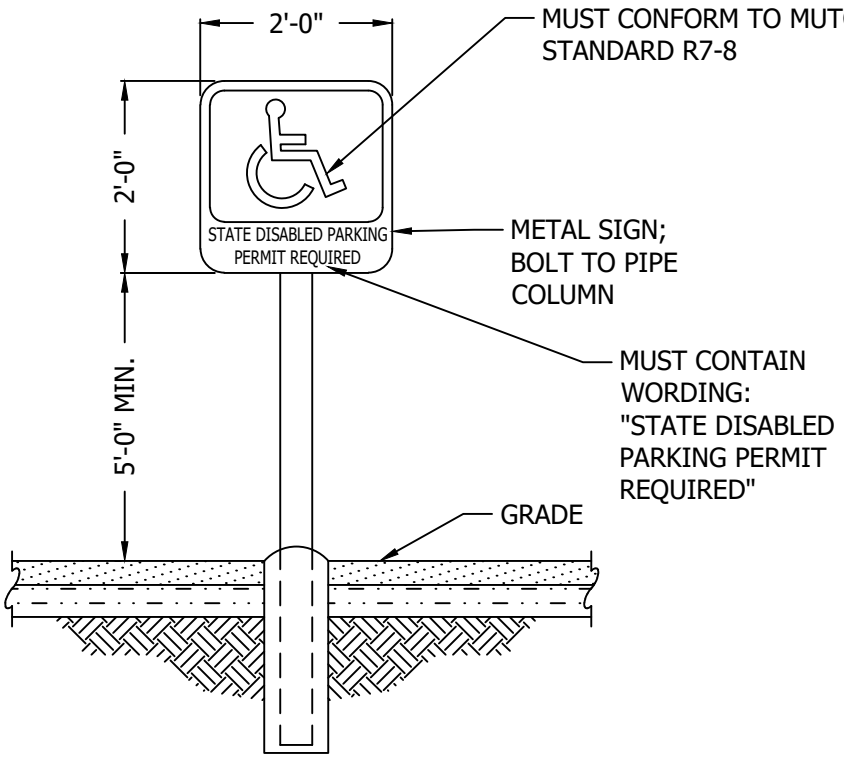
CITY OF KIRKLAND

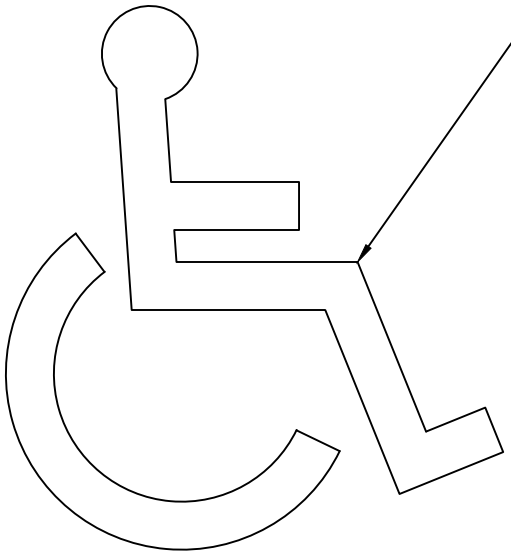
PLAN NO. CK–R.31

CITY OF KIRKLAND WASHINGTON

PAVEMENT MARKING DETAIL

LAST REVISED: 01/2021





REFER TO WSDOT STANDARD PLAN M-24.60-04 FOR REQUIRED DIMENSIONS. ACCESS PARKING SPACE SYMBOL SHALL BE "STANDARD" SIZE WITH BLUE BACKGROUN AND WHITE BORDER. NOTE THAT THE "MINIMUM" SIZE CANNOT BE USED UNLESS EXPRESSLY REQUIRED OR APPROVED BY THE CITY.

NOTES:

1. PROVIDE SYMBOL IN ALL HANDICAPPED PARKING STALLS INDICATED ON SITE PLAN.
2. PROVIDE SIGN AT ALL HANDICAPPED PARKING STALL INDICATED ON SITE PLAN.
3. SEE STANDARD DETAIL CK-R.43 FOR SIGN INSTALLATION.
4. MATERIAL SHALL BE EITHER 90 MIL. PREFORMED THERMOPLASTIC OR METHYL METHACRYLATE (MMA).

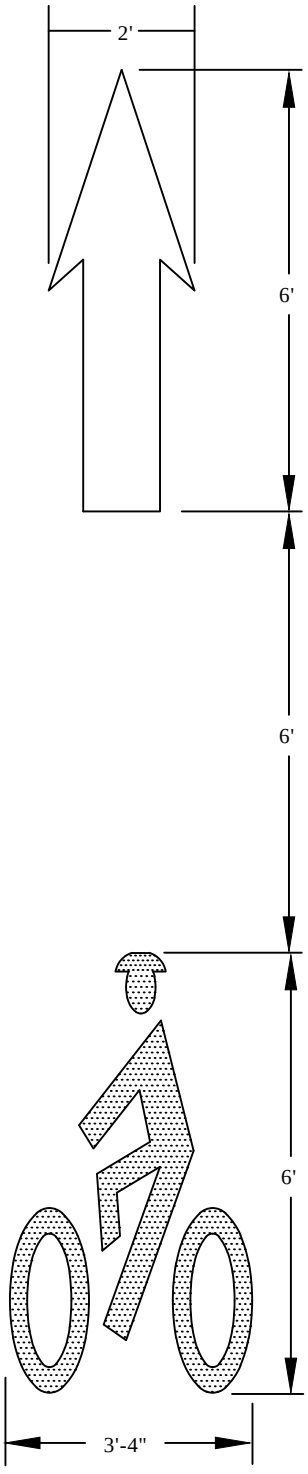
CITY OF KIRKLAND

PLAN NO. CK - R.33

CITY OF KIRKLAND WASHINGTON

HANDICAP SIGN & MARKING

LAST REVISED: 2/3/2017



NOTES:

1. BIKE LANE SYMBOLS AND ARROW MATERIAL SHALL BE 90 MILL, PREFORMED, SKID RESISTANT THERMOPLASTIC.
2. BICYCLE SYMBOL FACES ROADWAY CENTERLINE.

CITY OF KIRKLAND

PLAN NO. CK–R.34

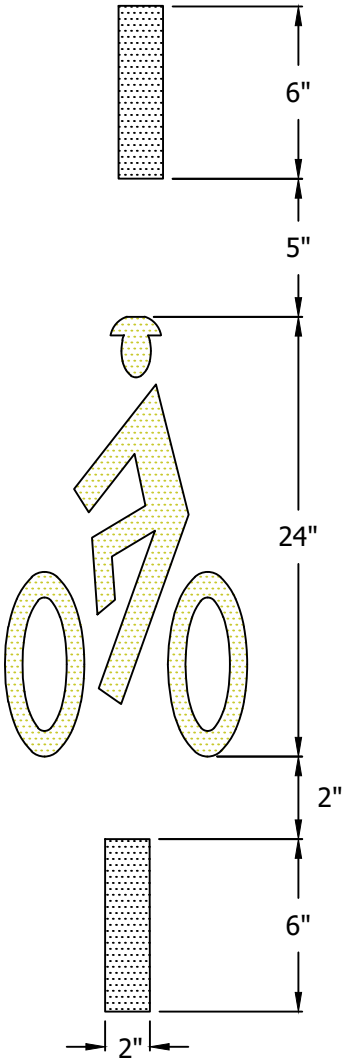
CITY OF KIRKLAND WASHINGTON

BICYCLE LANE MARKINGS

LAST REVISED: 01/2021

NOTES:

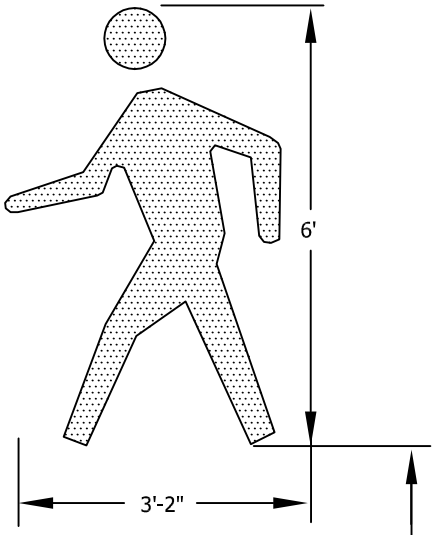
1. INSTALL MARKING AT SIGNALIZED INTERSECTIONS TO INDICATE WHERE BICYCLES SHOULD STOP IN ORDER TO ACHIEVE REGULAR AND RELIABLE DETECTION BY SIGNAL EQUIPMENT.
2. USE MARKING ON ANY APPROACH TO A SIGNALIZED INTERSECTION WHERE LOOP DETECTORS SPECIFICALLY FOR BICYCLES ARE NOT PRESENT AND ANY APPROACH WHICH IS SHOWN A GREEN INDICATION ONLY WHEN VEHICLE LOOPS ARE ACTUATED, I.E. THE APPROACH IS NOT ON "RECALL" OPERATION.
3. PLACE MARKING SUCH THAT BICYCLES WHICH STOP OVER THE MARKINGS WILL ACTIVATE THE SIGNAL.
4. PLACE THE MARKING TO ALLOW BICYCLES GOING THROUGH, TURNING RIGHT, OR TURNING LEFT TO ACTIVATE THE SIGNAL.
5. MARKINGS ARE NOT NECESSARY IN EXCLUSIVE LEFT TURN LANES OF APPROACHES THAT ARE OPERATED BOTH (1) ON RECALL AND (2) IN PERMISSIVE ONLY MODE.
6. IF AN APPROACH HAS MULTIPLE LANES SERVING THROUGH MOVEMENTS AND/OR MULTIPLE LANES SERVING THE SAME TURNING MOVEMENT, ONLY THE RIGHTMOST OF SUCH MULTIPLE LANE GROUPS SHALL BE MARKED.
7. WHERE MULTIPLE LOOPS ARE PRESENT IN A SINGLE LANE, MARKINGS SHALL BE PLACED AS CLOSE TO THE STOP BAR AS POSSIBLE.
8. IN GENERAL, MARKINGS SHALL BE PLACED OVER THE RIGHT EDGES OF SQUARE LOOPS OR CONGRUENT WITH A LINE TANGENT TO THE RIGHTMOST POINT ON THE EDGE OF A CIRCULAR LOOP.
9. IN GENERAL, BICYCLE MARKINGS ARE NOT NEEDED ON APPROACHES WHERE VIDEO DETECTION IS IN PLACE, AS LONG AS BICYCLES CAN BE DETECTED REGULARLY AND RELIABLY BY STOPPING AT THE STOP BAR IN THE MIDDLE OF THE LANE.
10. MATERIAL SHALL BE 90 MIL. PREFORMED, SKID RESISTANT THERMOPLASTIC.
11. SEE ALSO 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SECTION 9C.05; RCW 46.61.710; 2004 STANDARD HIGHWAY SIGNS PAGE 10-17.

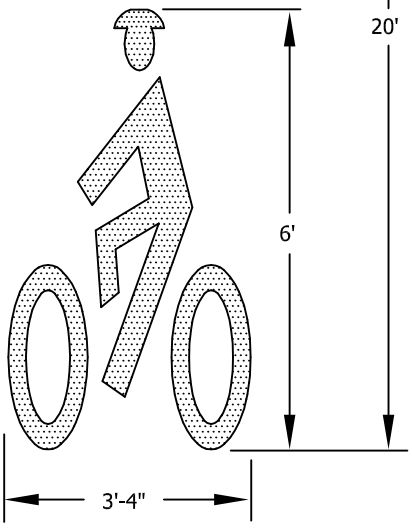


BICYCLE DETECTION MARKING DETAIL
NOT TO SCALE

CITY OF KIRKLAND	
PLAN NO. CK - R.34A	
CITY OF KIRKLAND WASHINGTON	BICYCLE DETECTION MARKING

LAST REVISED: 1/1/2019





NOTES:

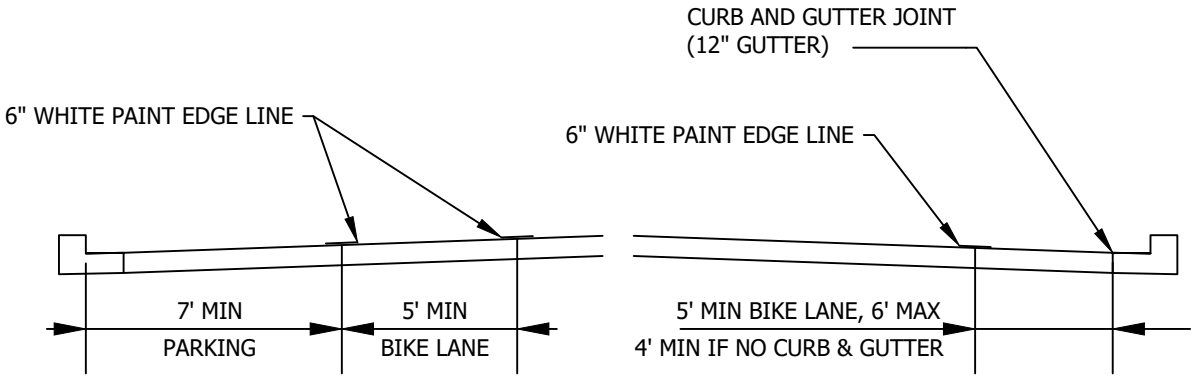
1. BIKE AND PEDESTRIAN LANE SYMBOLS MATERIAL SHALL BE 90 MILL, PERFORMED, SKID RESISTANT THERMOPLASTIC.
2. BICYCLE AND PEDESTRIAN SYMBOLS FACES ROADWAY CENTERLINE.

CITY OF KIRKLAND

PLAN NO. CK–R.34B

BICYCLE AND PEDESTRIAN LANE MARKINGS

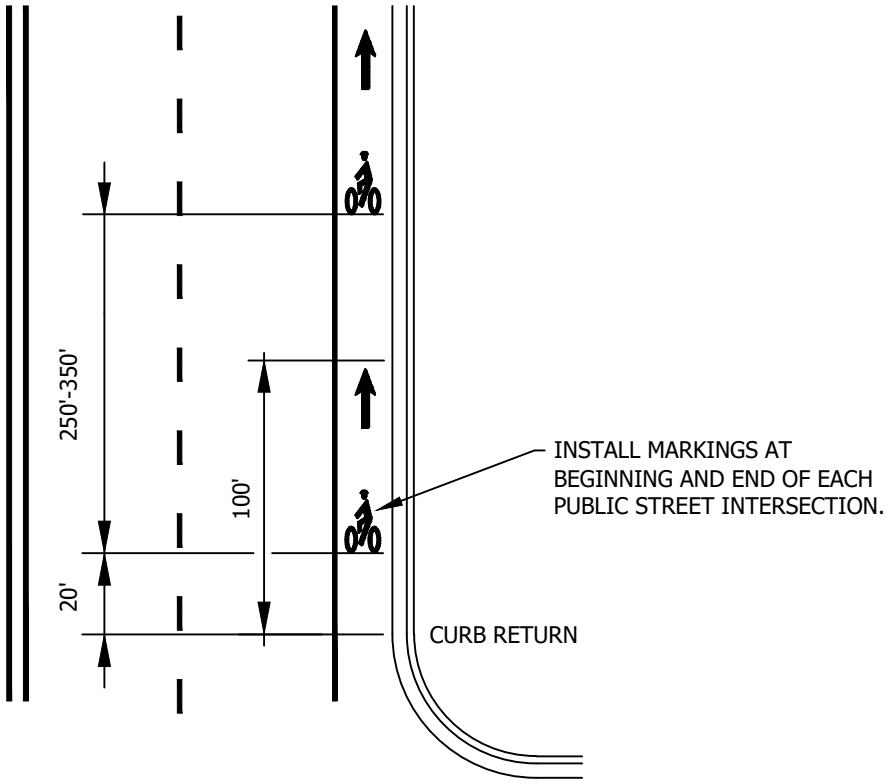
LAST REVISED: 1/2023



(MEASURED TO EDGE OF GUTTER OR CENTER OF PAINT STRIPE)

BICYCLE LANE WITH PARKING

BICYCLE LANE WITHOUT PARKING



NOTES:

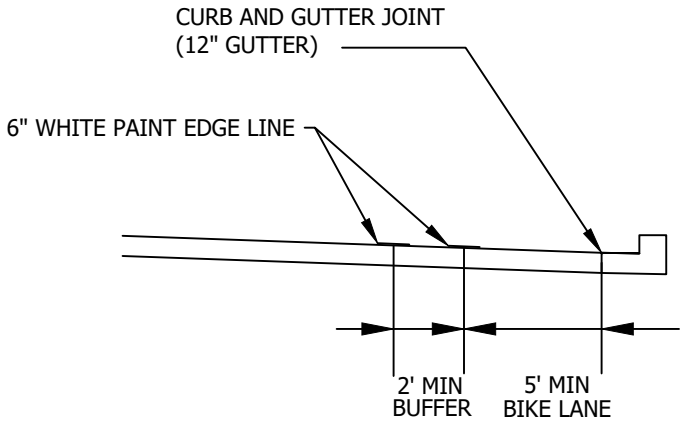
1. SEE MUTCD FOR MORE INFORMATION AND SPECIFICATIONS.
2. PER SEC. 9B.04 2009 MUTCD, DO NOT USE R3-17 SIGNS.
3. BICYCLIST AND PEDESTRIAN SYMBOLS PER CK-R.34B
4. 4' BIKE LANE WIDTH MAY BE CONSIDERED IN CONSTRAINED LOCATIONS.

CITY OF KIRKLAND

PLAN NO. CK- R.35

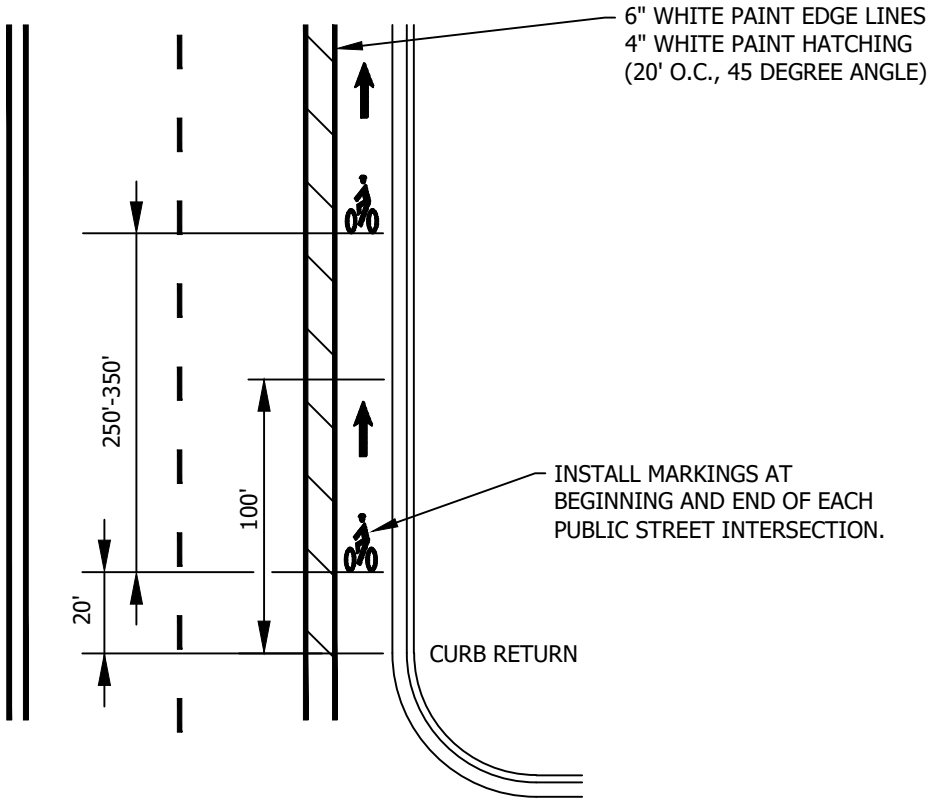
CITY OF KIRKLAND WASHINGTON

TYPICAL BICYCLE LANE - WIDTH, SIGNING & MARKING



BUFFERED BICYCLE PEDESTRIAN LANE WITHOUT PARKING

(MEASURED TO EDGE OF GUTTER OR CENTER OF PAINT STRIPE)



NOTES:

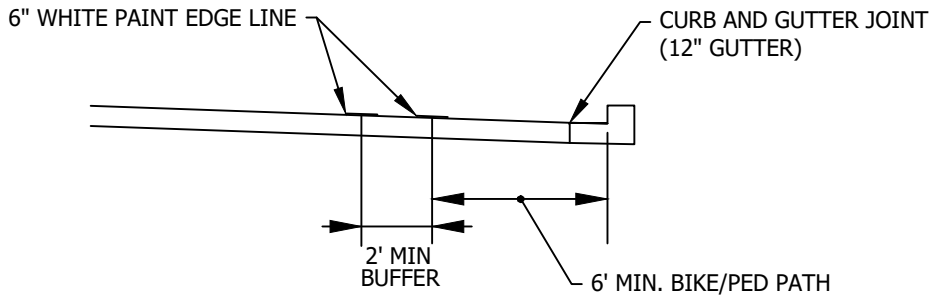
1. SEE MUTCD FOR MORE INFORMATION AND SPECIFICATIONS.
2. PER SEC. 9B.04 2009 MUTCD, DO NOT USE R3-17 SIGNS.
3. BICYCLIST AND PEDESTRIAN SYMBOLS PER CK-R.34.
4. 4' BIKE LANE WIDTH MAY BE CONSIDERED IN CONSTRAINED LOCATIONS.

CITY OF KIRKLAND

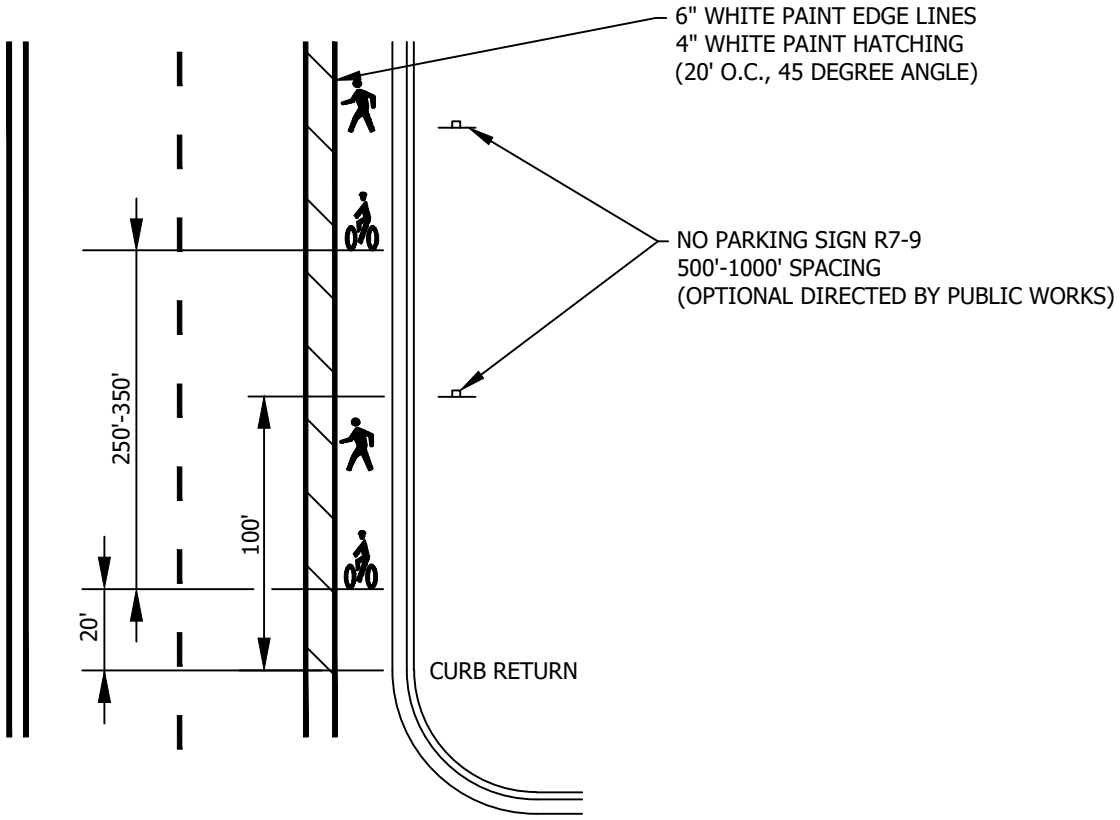
PLAN NO. CK-R.35A

TYPICAL BUFFERED BICYCLE LANE - WIDTH, SIGNING & MARKING

LAST REVISED: 01/2024



BUFFERED BICYCLE / PEDESTRIAN PATH WITHOUT PARKING
(MEASURED TO FACE OF CURB OR CENTER OF PAINT STRIPE)



NOTES:

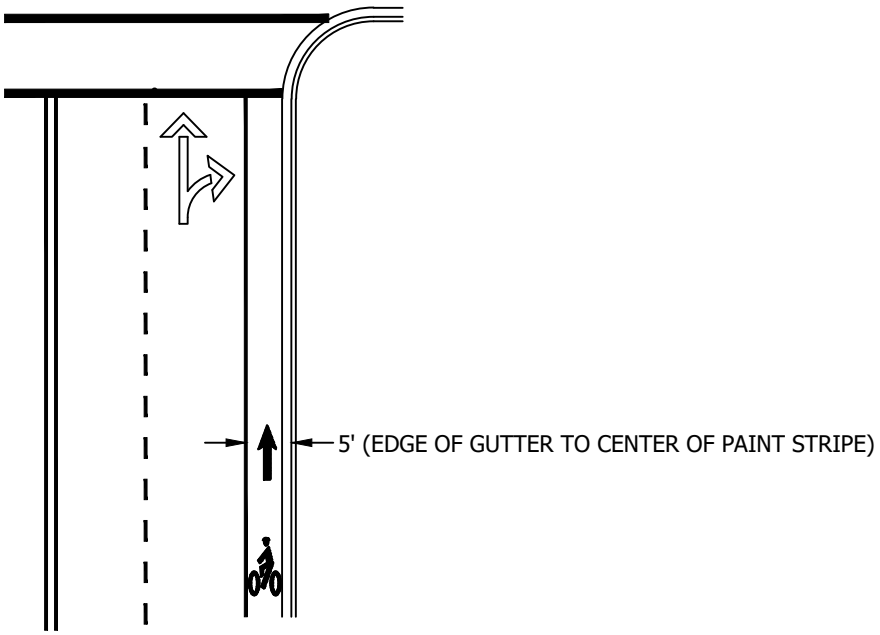
1. SEE MUTCD FOR MORE INFORMATION AND SPECIFICATIONS.
2. PER SEC. 9B.04 2009 MUTCD, DO NOT USE R3-17 SIGNS.
3. BICYCLIST AND PEDESTRIAN SYMBOLS PER CK-R.34B

CITY OF KIRKLAND

PLAN NO. CK- R.35B

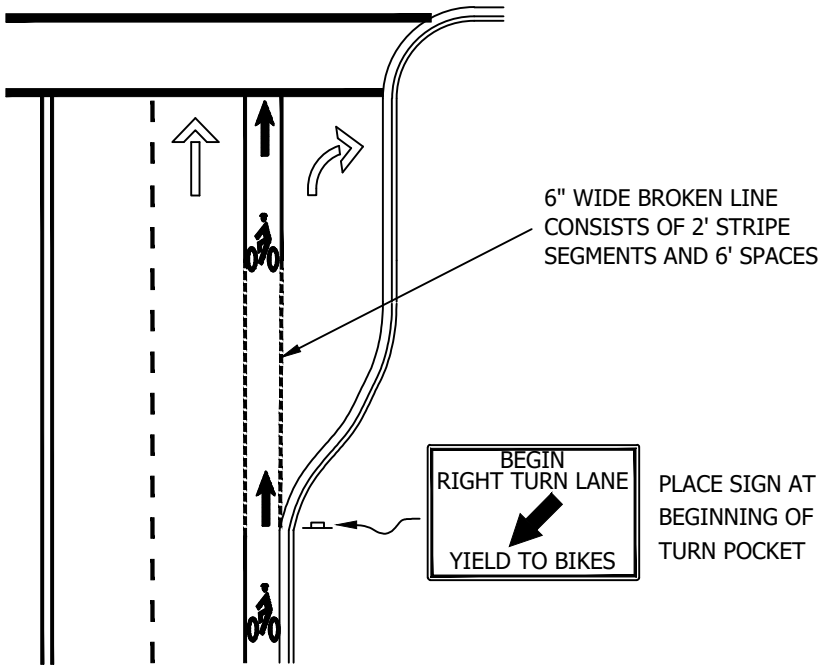
TYPICAL ON-STREET BUFFERED BICYCLE/ PEDESTRIAN SHARED PATH

LAST REVISED:01/2023



TYPICAL RIGHT-THROUGH LANE

(BICYCLE LANE CONTINUES THROUGH INTERSECTION)



TYPICAL RIGHT TURN POCKET

(BICYCLE LANE CONTINUES THROUGH INTERSECTION)

NOTE:

SEE MUTCD FOR MORE INFORMATION
AND SPECIFICATIONS.
RIGHT TURN POCKETS WITH HIGH RIGHT TURN VEHICLE VOLUMES OR LOCATED ON PRIORITY BICYCLE CORRIDORS SHALL BE 90 MIL, PREFORMED, SKID-RESISTANT GREEN THERMOPLASTIC or MMA BETWEEN BROKEN LINES, REFER TO
CK-R.36A FOR DETAILS.

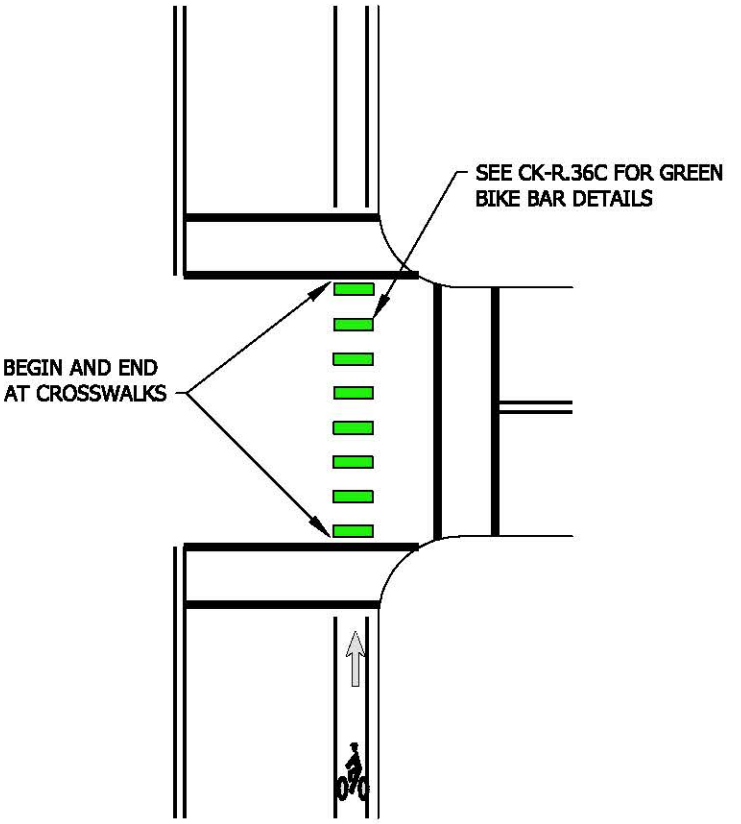
CITY OF KIRKLAND

PLAN NO. CK–R.36

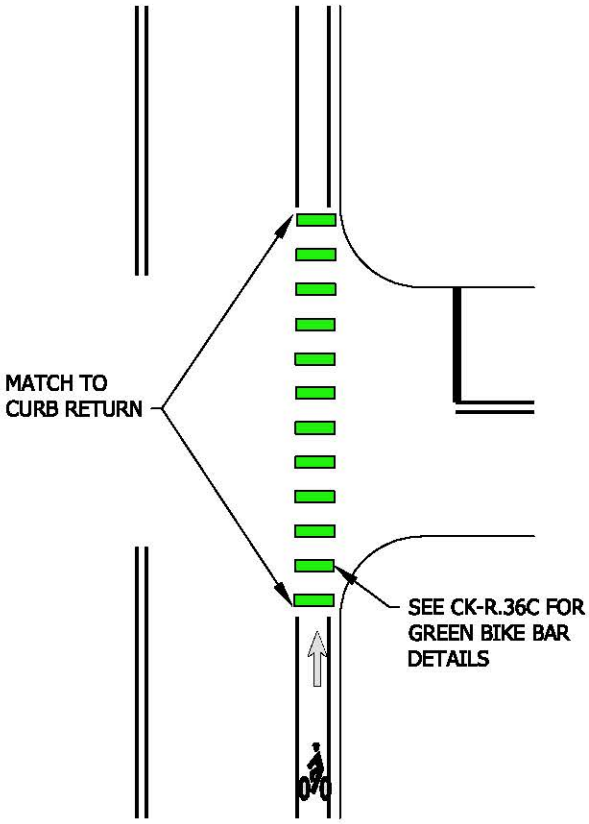
CITY OF KIRKLAND WASHINGTON

TYPICAL BICYCLE LANE TREATMENTS AT INTERSECTION

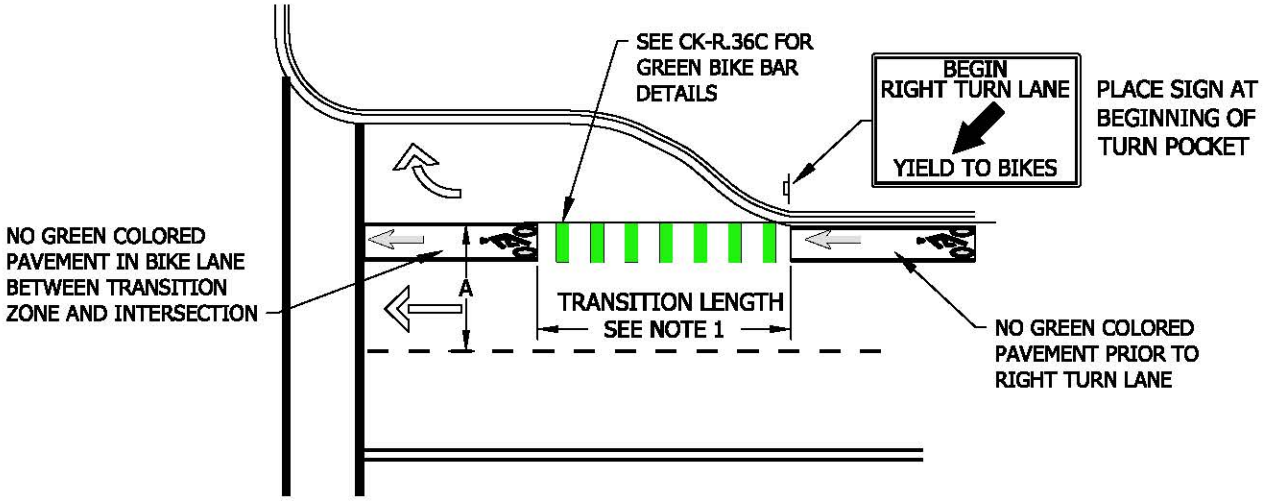
LAST REVISED:01/2020



TYPICAL TREATMENT THROUGH INTERSECTION WITH CROSSWALKS



TYPICAL TREATMENT THROUGH INTERSECTION WITHOUT CROSSWALKS



TYPICAL TREATMENT AT A RIGHT TURN POCKET
(BICYCLE LANE CONTINUES THROUGH INTERSECTION)

NOTES:

1. TRANSITION LENGTH = 5 x A (TYPICALLY 80' AS SHOWN).
2. GREEN COLORED PAVEMENT, BIKE LANE SYMBOL, AND ARROW SHALL BE EITHER 90 MIL PREFORMED THERMOPLASTIC OR METHYL METHACRYLATE (MMA).
3. SEE PLAN NO. CK-R.34 FOR MORE DETAILS ABOUT BIKE LANE SYMBOLS AND ARROWS.
4. MARKING UNSIGNALIZED INTERSECTIONS WITH GREEN PAVEMENT IS EVALUATED ON A CASE-BY-CASE BASIS

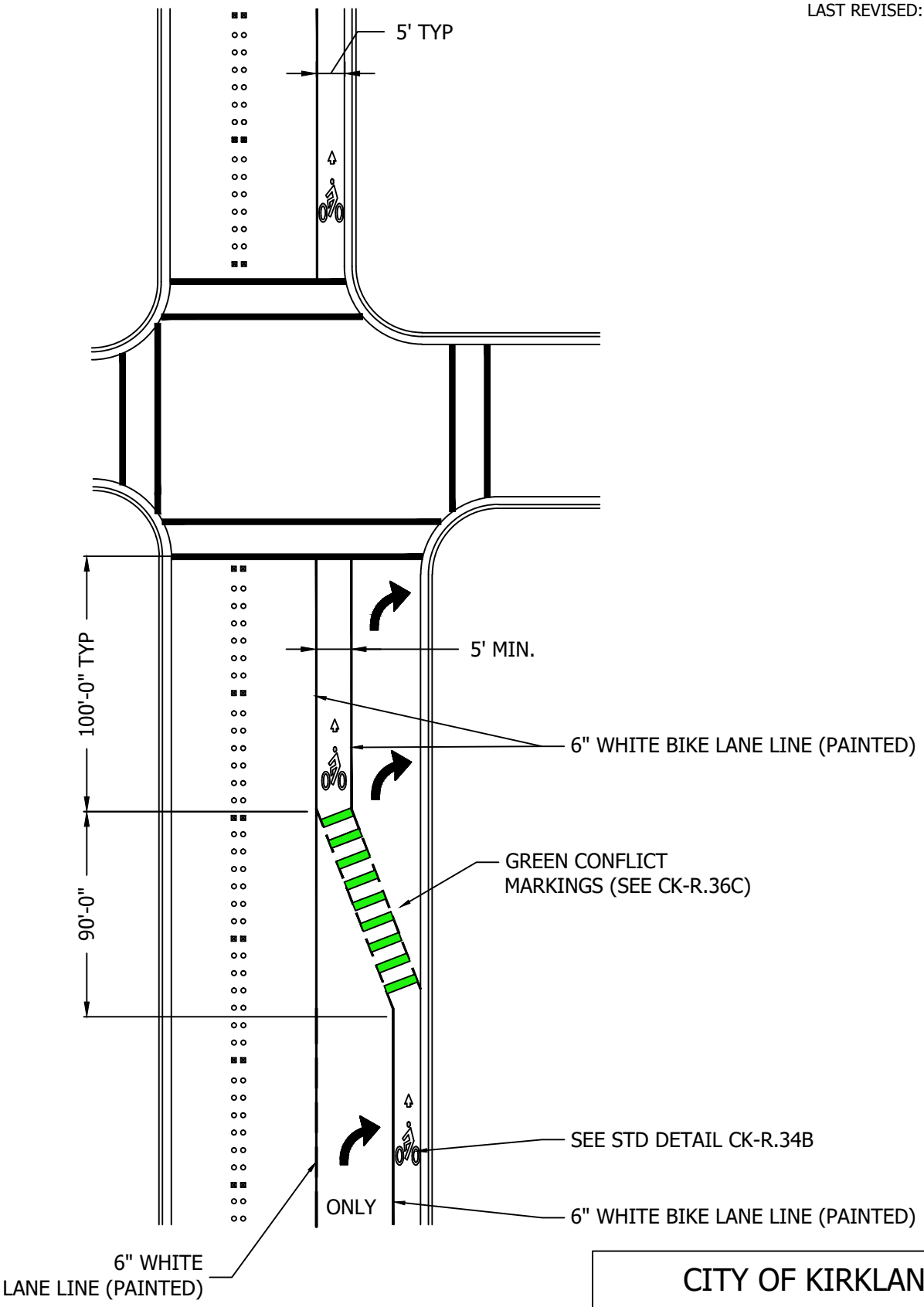
CITY OF KIRKLAND

PLAN NO. CK-R.36A

CITY OF KIRKLAND WASHINGTON

GREEN BIKE LANE AT INTERSECTION

LAST REVISED: 01/2023

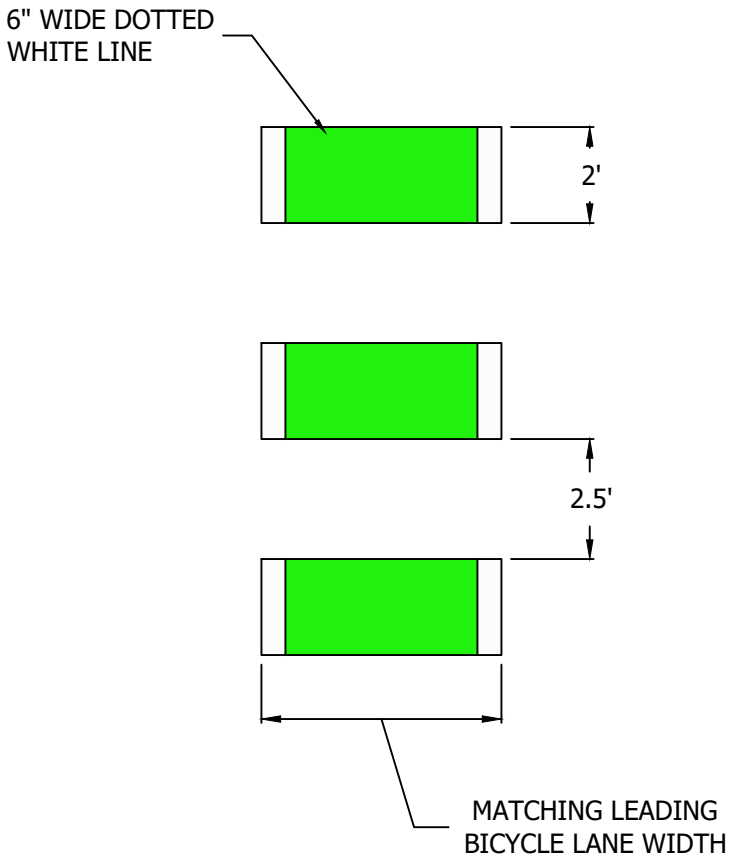


CITY OF KIRKLAND

PLAN NO. CK - R.36B

BIKE LANE TREATMENT AT DROP LANE RIGHT TURN

LAST REVISED: 01/2021

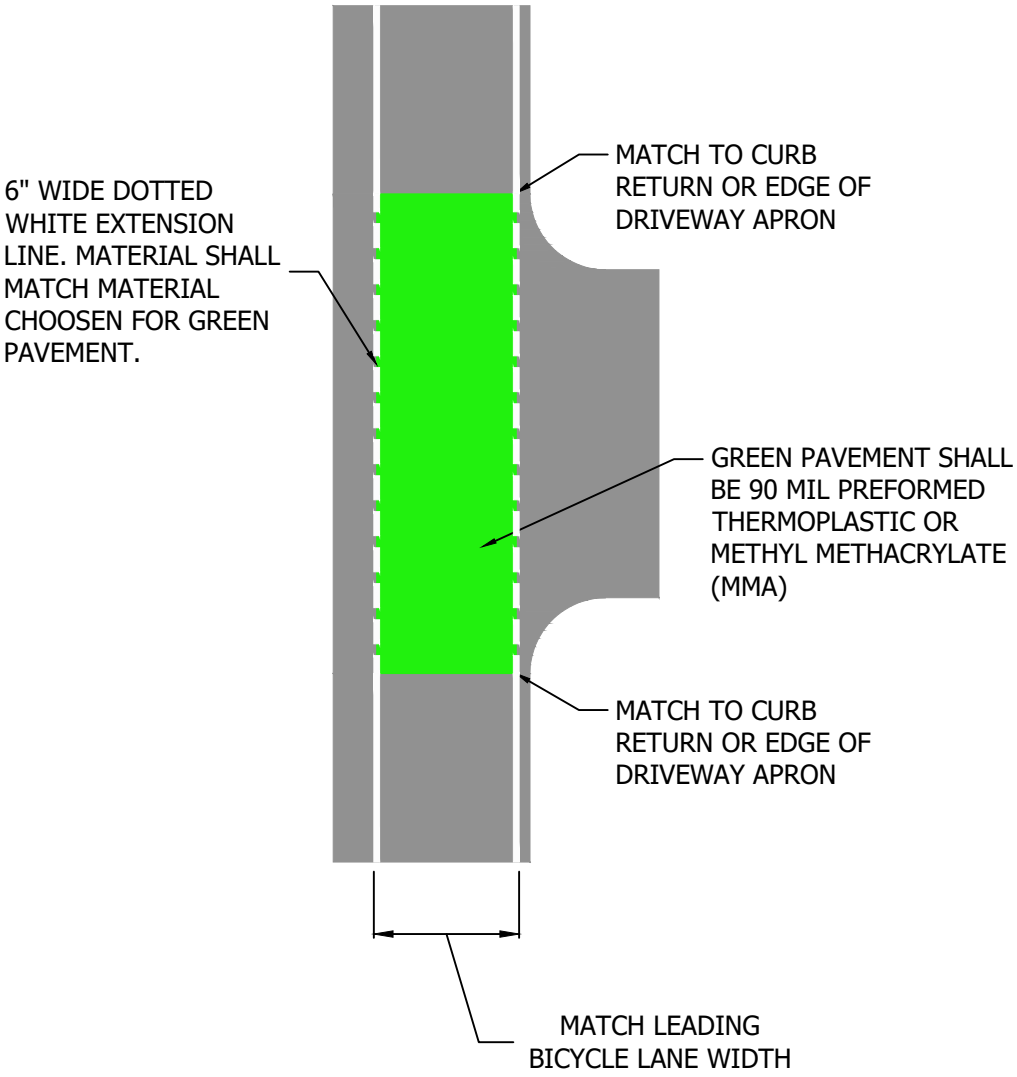


NOTE:

ALL MARKINGS, INCLUDING GREEN COLORED PAVEMENT AND WIDE DOTTED WHITE LINE, SHALL BE EITHER 90 MIL. PREFORMED THERMOPLASTIC OR METHYL METHACRYLATE (MMA)

CITY OF KIRKLAND	
PLAN NO. CK - R.36C	
CITY OF KIRKLAND WASHINGTON	TYPICAL INTERSECTION/ CONFLICT ZONE BIKE LANE PAVEMENT MARKING

LAST REVISED: 01/2021

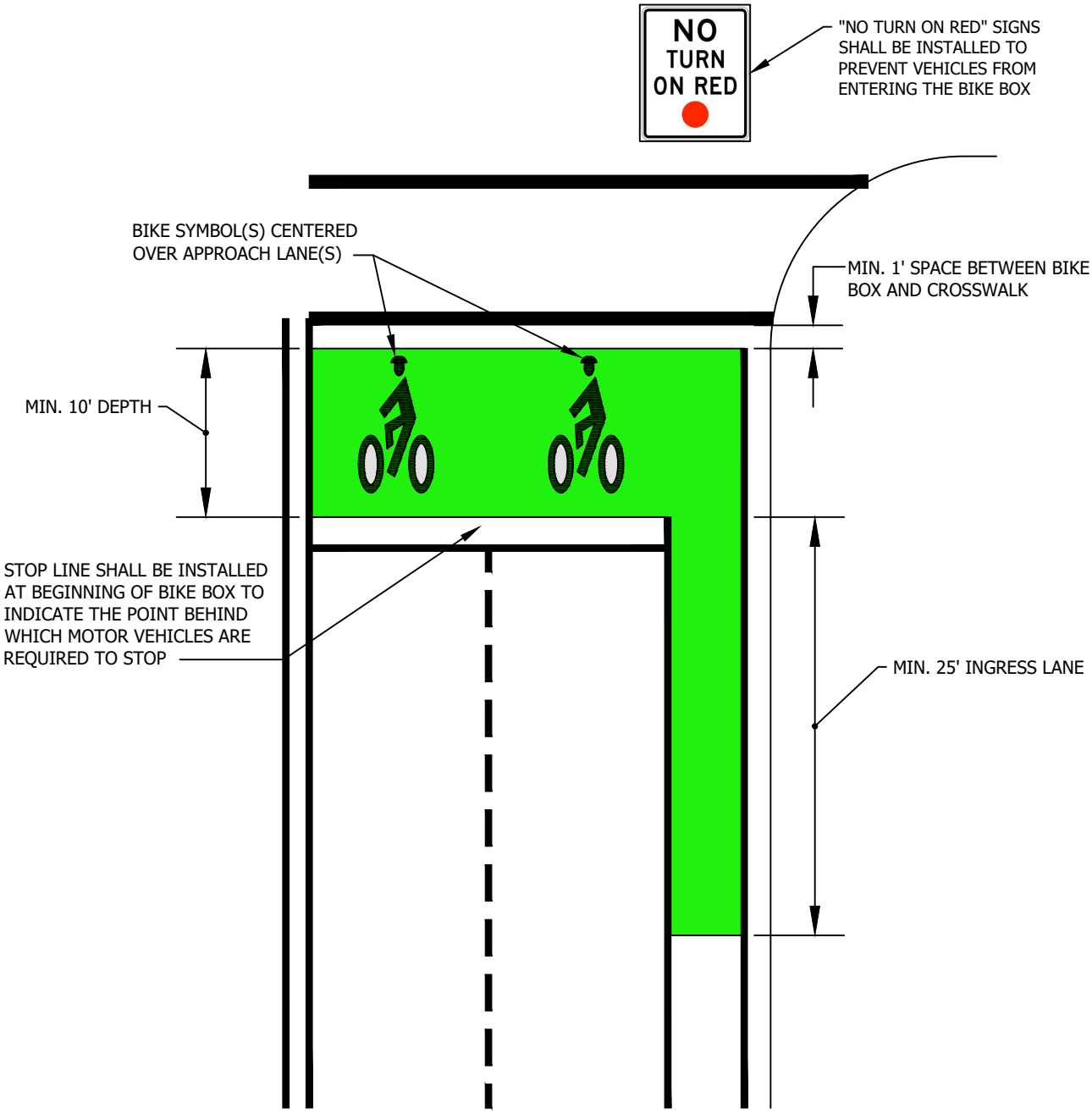


NOTE:

DRIVEWAYS ARE NOT TYPICALLY MARKED WITH GREEN PAVEMENT, BUT DRIVEWAYS WITH HIGH VEHICLE VOLUMES OR OTHER COMPLEX VEHICULAR MOVEMENTS SHOULD BE EVALUATED TO INCLUDE GREEN PAVEMENT MARKINGS.

CITY OF KIRKLAND	
PLAN NO. CK - R.36D	
CITY OF KIRKLAND WASHINGTON	TYPICAL DRIVEWAY CROSSING BIKE LANE PAVEMENT MARKING

LAST REVISED:01/2020



NOTES:

1. GREEN COLORED PAVEMENT AND BIKE LANE SYMBOL SHALL BE EITHER 90 MIL PREFORMED THERMOPLASTIC OR METHYL METHACYLATE (MMA). THE SAME MATERIAL SHALL BE USED FOR BOTH THE BIKE SYMBOLS AND THE GREEN PAVEMENT TREATMENT.
2. SEE PLAN NO. CK-R.34 FOR BIKE LANE SYMBOL DETAILS.
3. SEE CK-R.28 FOR STOP LINE DIMENSIONS.

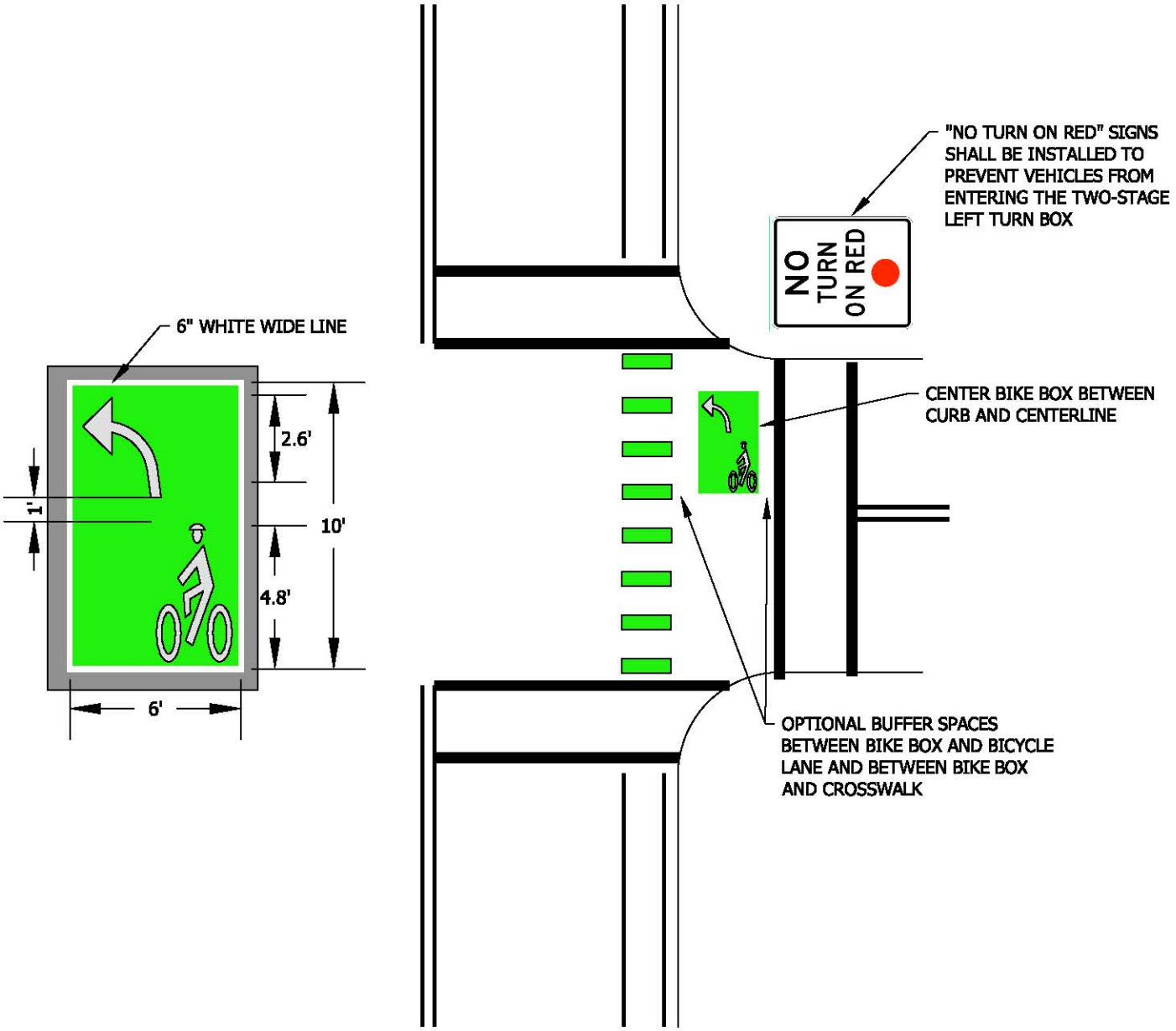
CITY OF KIRKLAND

PLAN NO. CK–R.36E

CITY OF KIRKLAND WASHINGTON

TYPICAL BIKE BOX AT A SIGNALIZED INTERSECTION

LAST REVISED: 01/2020



NOTES:

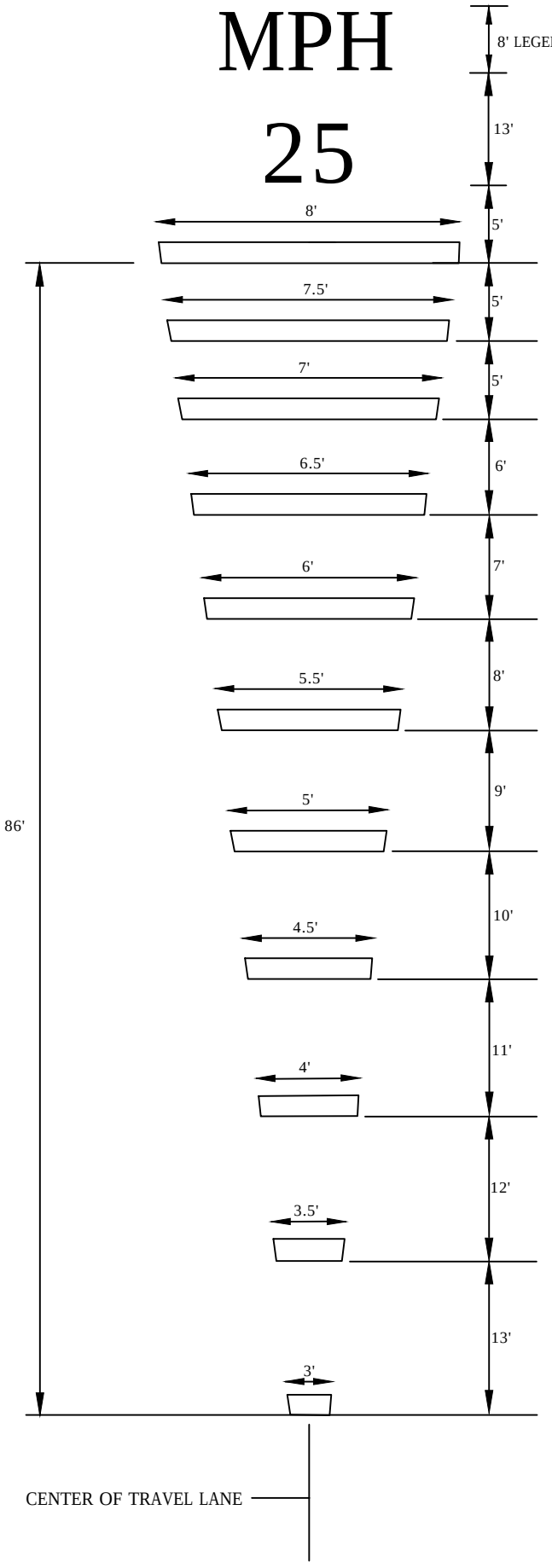
1. ARROW, BIKE SYMBOL, WHITE WIDE LINE, AND GREEN COLORED PAVEMENT SHALL BE EITHER 90 MIL PREFORMED THERMOPLASTIC OR METHYL METHACRYLATE (MMA). THE SAME MATERIAL SHALL BE USED FOR ALL ELEMENTS OF THE TWO-STAGE LEFT TURN BOX.
2. THE QUEUE BOX SHALL BE PLACED IN A PROTECTED AREA. THIS WILL TYPICALLY BE BETWEEN THE BICYCLE LANE AND THE PEDESTRIAN CROSSING BUT CAN ALSO BE PLACED ON THE LEFT SIDE OF THE BICYCLE INTERSECTION CROSSING DEPENDING ON INTERSECTION GEOMETRY.

CITY OF KIRKLAND

PLAN NO. CK–R.36F

TYPICAL TWO STAGE LEFT TURN BIKE BOX

LAST REVISED: 01/01/2018



PAVEMENT MARKING DETAIL

NOT TO SCALE

NOTES:

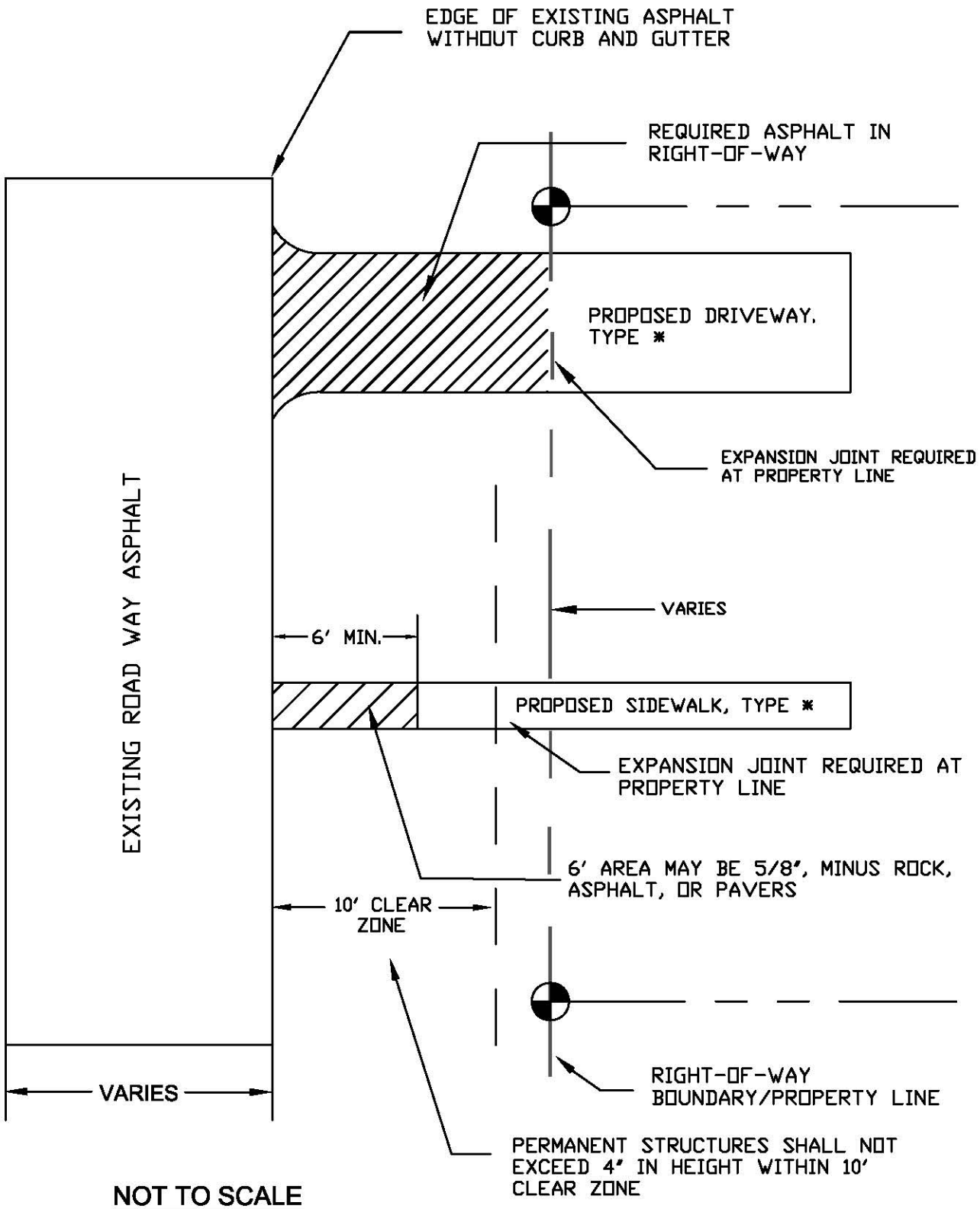
1. TRANSVERSE BAR WIDTH IS 1'.

CITY OF KIRKLAND

PLAN NO. CK- R.38

TRANSVERSE BAR PAVEMENT MARKING PATTERN

LAST REVISED:2/3/2003

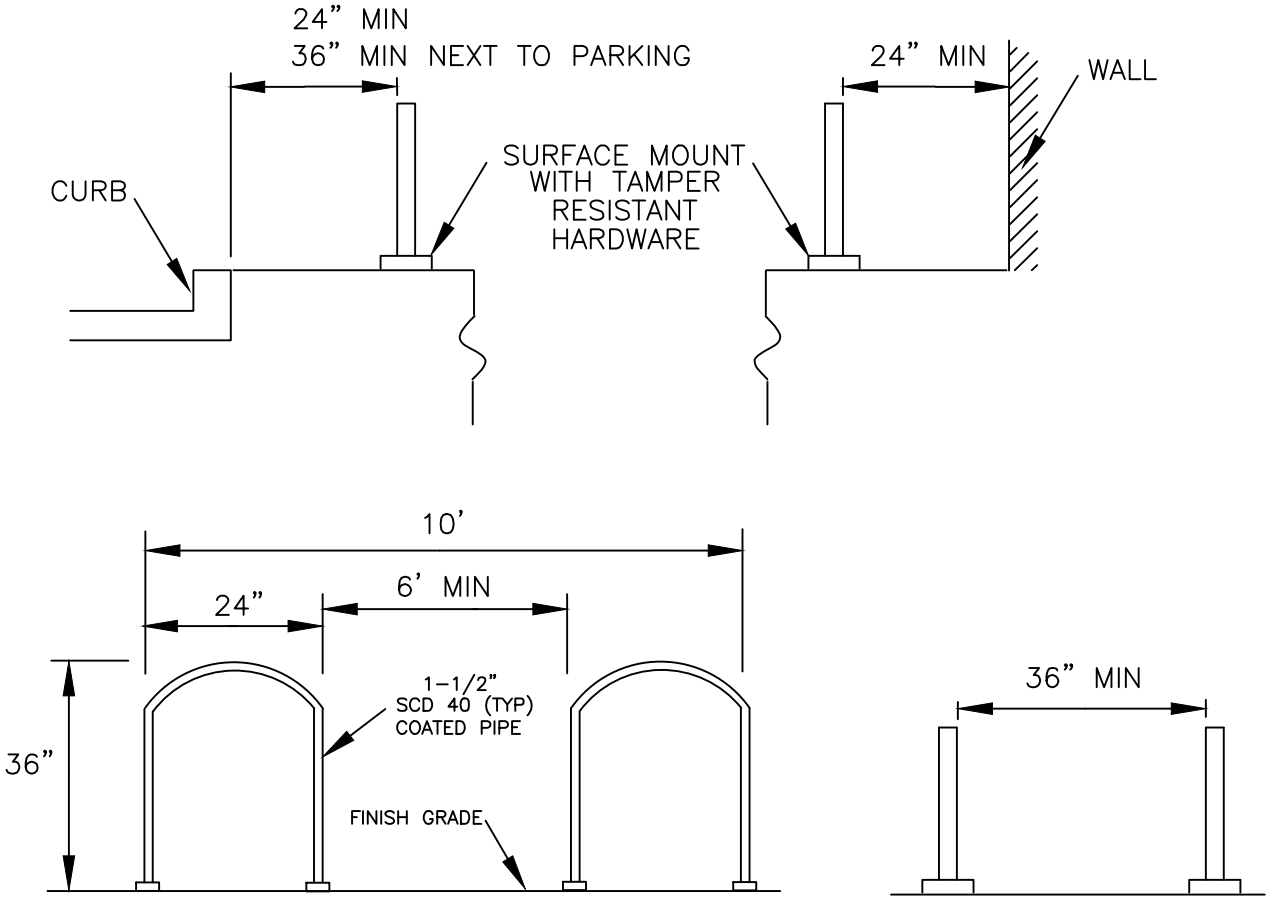


NOT TO SCALE

*ALL PRIVATE SIDEWALKS AND DRIVEWAYS IN THE PUBLIC RIGHT-OF-WAY SHALL BE MAINTAINED BY ADJACENT PROPERTY OWNER

CITY OF KIRKLAND	
PLAN NO. CK-R.39	
CITY OF KIRKLAND WASHINGTON	PRIVATE SIDEWALK AND DRIVEWAY FOR UNIMPROVED RIGHT-OF-WAY

LAST REVISED:01/2023



BICYCLE PARKING RACK DETAIL

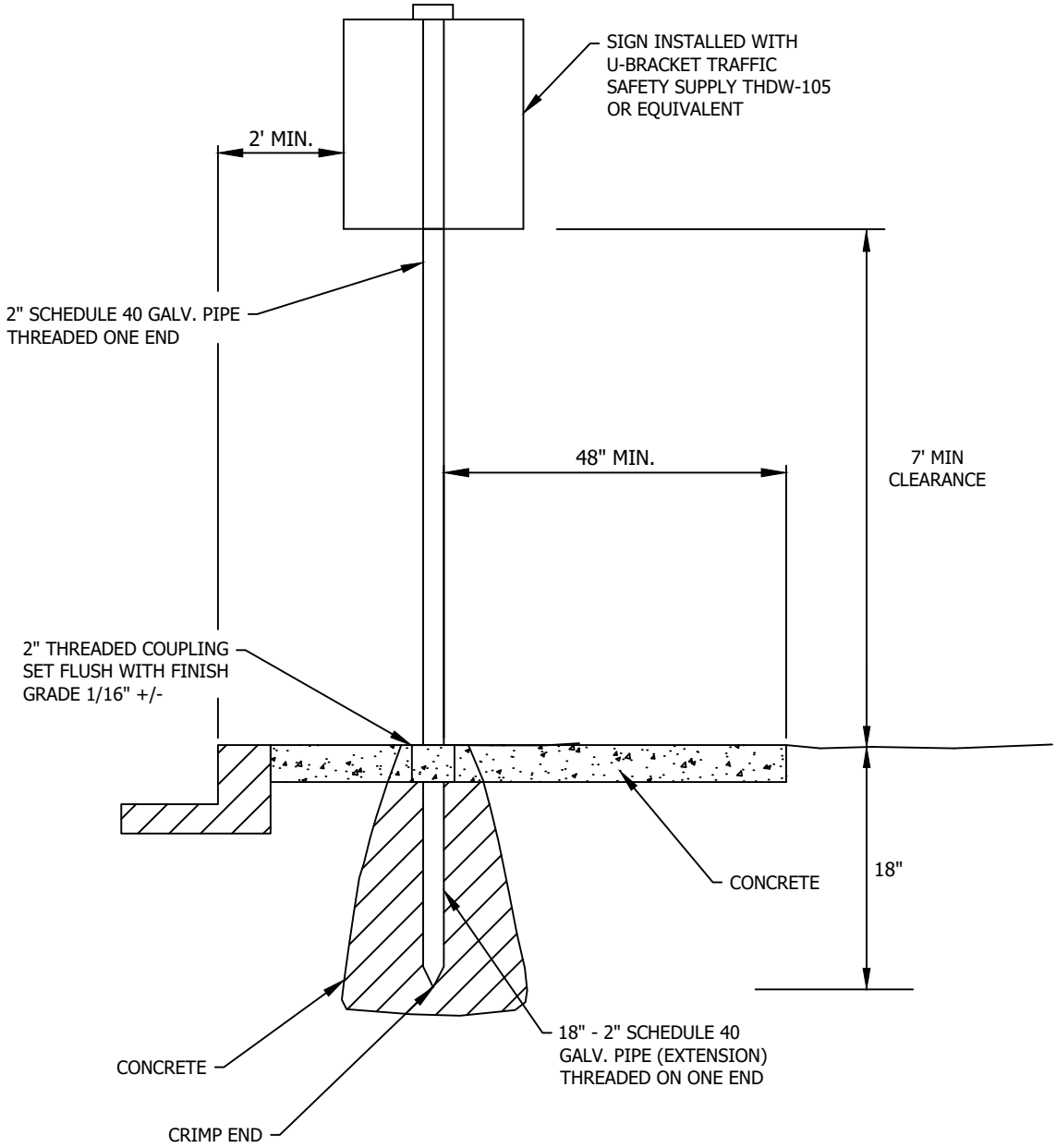
NOT TO SCALE

NOTES:

1. UNLESS OTHERWISE APPROVED, BICYCLE PARKING RACKS SHALL BE GALVANIZED OR STAINLESS STEEL "INVERTED U TYPE" OR APPROVED EQUIVALENT. OTHER RACKS MAY BE ALLOWED BUT MUST MEET THE FOLLOWING FUNCTIONAL REQUIREMENTS:
   - SUPPORT THE FRAME OF A BICYCLE IN TWO PLACES AND PREVENT THE BICYCLE FROM TIPPING OVER
   - ALLOW THE FRAME AND ONE WHEEL TO BE LOCKED TO THE RACK WHEN BOTH WHEELS ARE LEFT ON THE BIKE.
   - ALLOW THE FRAME AND BOTH WHEELS TO BE LOCKED TO THE RACK IF THE FRONT WHEEL IS REMOVED.
   - ALLOW THE USE OF A U-SHAPED LOCK.
   - BE SECURELY ANCHORED BY SURFACE MOUNT.
   - BE USABLE BY BIKES WITH NO KICKSTAND.
   - BE USABLE BY BIKES WITH WATER BOTTLE CAGES.
   - BE USABLE BY A WIDE VARIETY OF SIZES AND TYPES OF BICYCLES.
   - BE COATED BY MANUFACTURER.
   - UTILIZE AN INTUITIVE DESIGN.
2. INSTALL PER MANUFACTURER'S RECOMMENDATION.

CITY OF KIRKLAND	
PLAN NO. CK-R.40	
CITY OF KIRKLAND WASHINGTON	BICYCLE PARKING RACK

LAST REVISED:01/2026



NOTES:

1. SIGN ASSEMBLIES SHALL BE INSTALLED PER THIS PRE-APPROVED PLAN AND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
2. IF SIGN MUST BE PLACED IN EXISTING CONCRETE, CORE HOLE SHALL BE 8" DIAMETER.
3. S1-1 SIGNS SHALL BE BLACK ON FLUORESCENT GREEN.
4. W11-2 SIGNS SHALL BE BLACK ON YELLOW.
5. ALL SIGNS SHALL HAVE ANTI-GRAFFITI COATING. SEE CONTRACT SPECIAL PROVISIONS FOR MORE INFORMATION.

CITY OF KIRKLAND

PLAN NO. CK–R.43

CITY OF KIRKLAND WASHINGTON

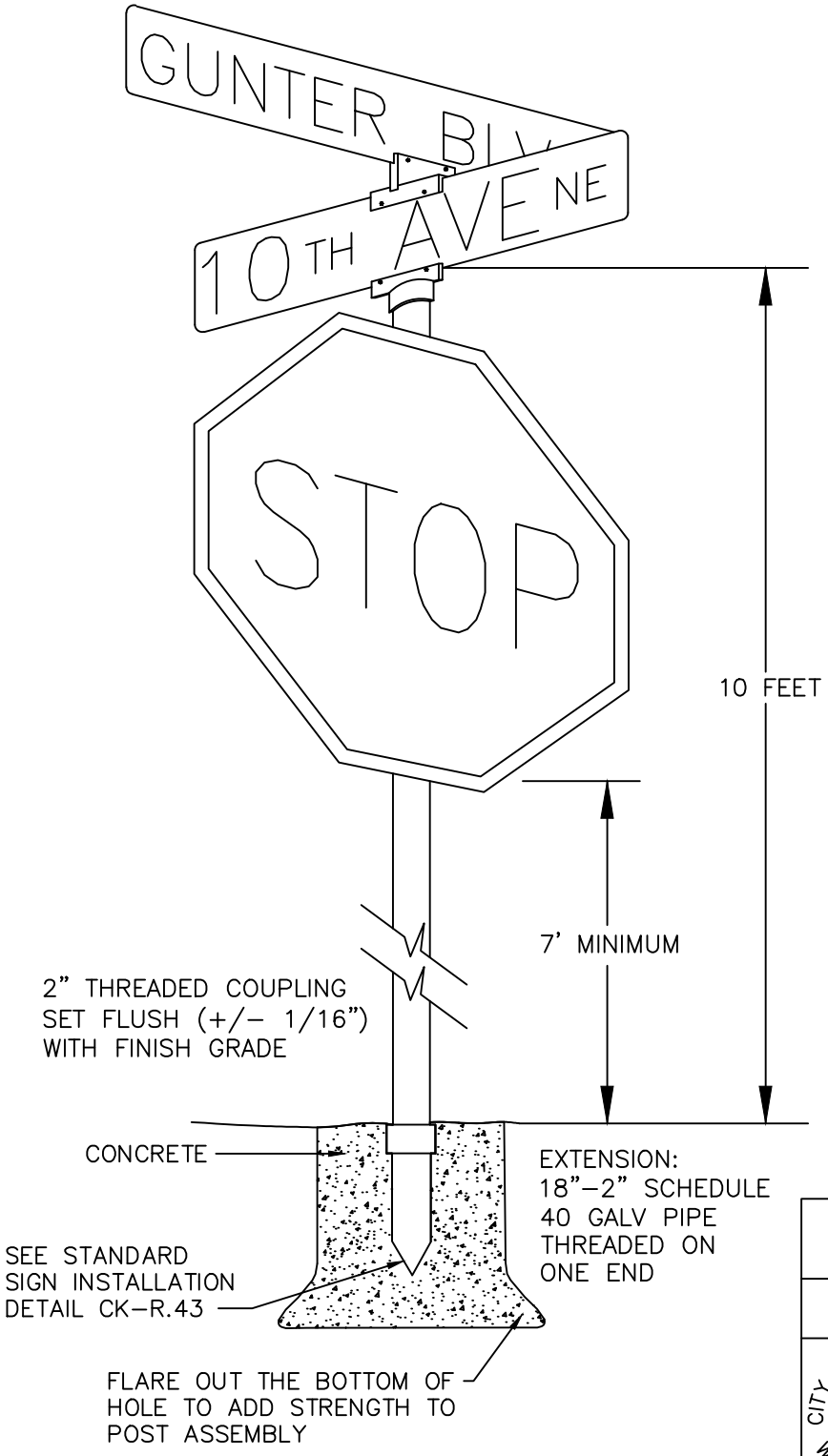
STANDARD SIGN INSTALLATION

LAST REVISED: 01/2024

SIGN:
6"x24" SHEET ALUMINUM 0.080" THICK

BACKGROUND:
GREEN REFLECTIVE SHEETING, OR BLUE FOR PRIVATE ROADS WITH 3/8" WHITE BORDER. SHEETING SHALL MEET MUTCD REQUIREMENTS FOR REFLECTIVITY.

LETTERS
4" UC C SERIES, EXCEPT SUFFIXES AND PREFIXES 3" UC C SERIES



STREET SIGN MOUNTING
HARDWARE:
TRAFFIC SAFETY SUPPLY 16503925
OR EQUIVALENT

STOP SIGN MOUNTING
HARDWARE:
TRAFFIC SAFETY SUPPLY
THDW-105 U BRACKET
OR EQUIVALENT

POST:
10'x2" SCHEDULE 40
GALVANIZED STEEL PIPE

SIGN:
R1-1 30"x30"
HIGH INTENSITY PRISMATIC

NOTES:
1. IF SIGN MUST BE PLACED IN EXISTING CONCRETE, CORE HOLE SHALL BE 8" DIAMETER.
2. ALL SIGNS SHALL HAVE ANTI-GRAFFITI COATING. SEE CONTRACT SPECIAL PROVISIONS FOR MORE INFORMATION.

CITY OF KIRKLAND

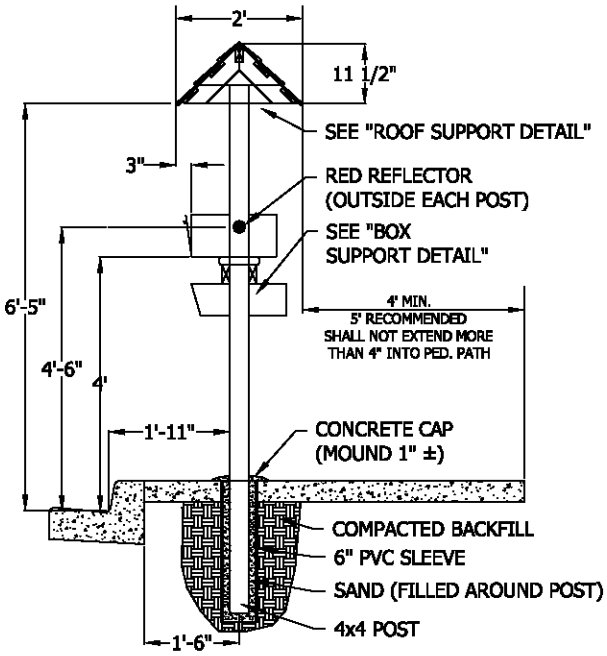
PLAN NO. CK-R.44

CITY OF KIRKLAND WASHINGTON

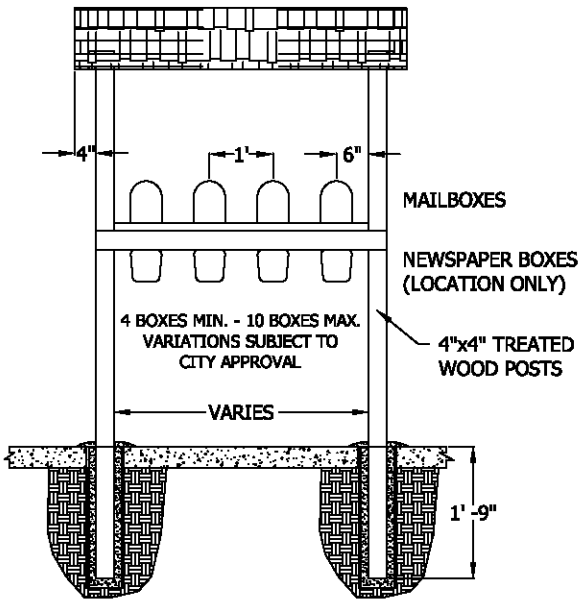
STREET NAME
SIGN STANDARD

LAST REVISED: 01/2020

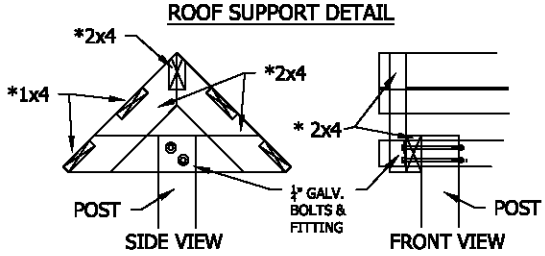
FULL SIDE VIEW



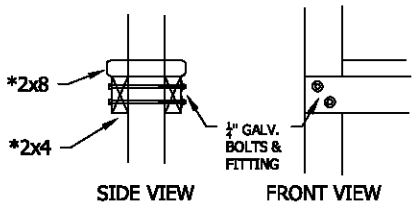
FULL FRONT VIEW



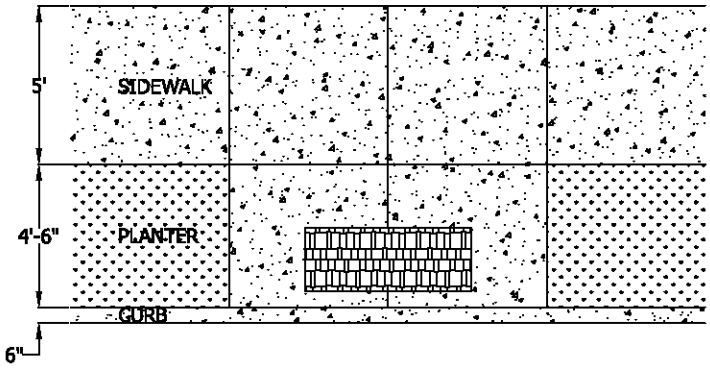
ROOF SUPPORT DETAIL



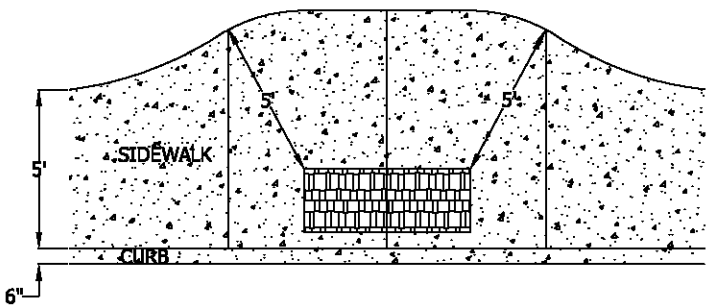
MAILBOX SUPPORT DETAIL



MAILBOX CLUSTER LOCATION W/ PLANTER STRIP



MAILBOX CLUSTER LOCATION W/O PLANTER STRIP



NOTES:

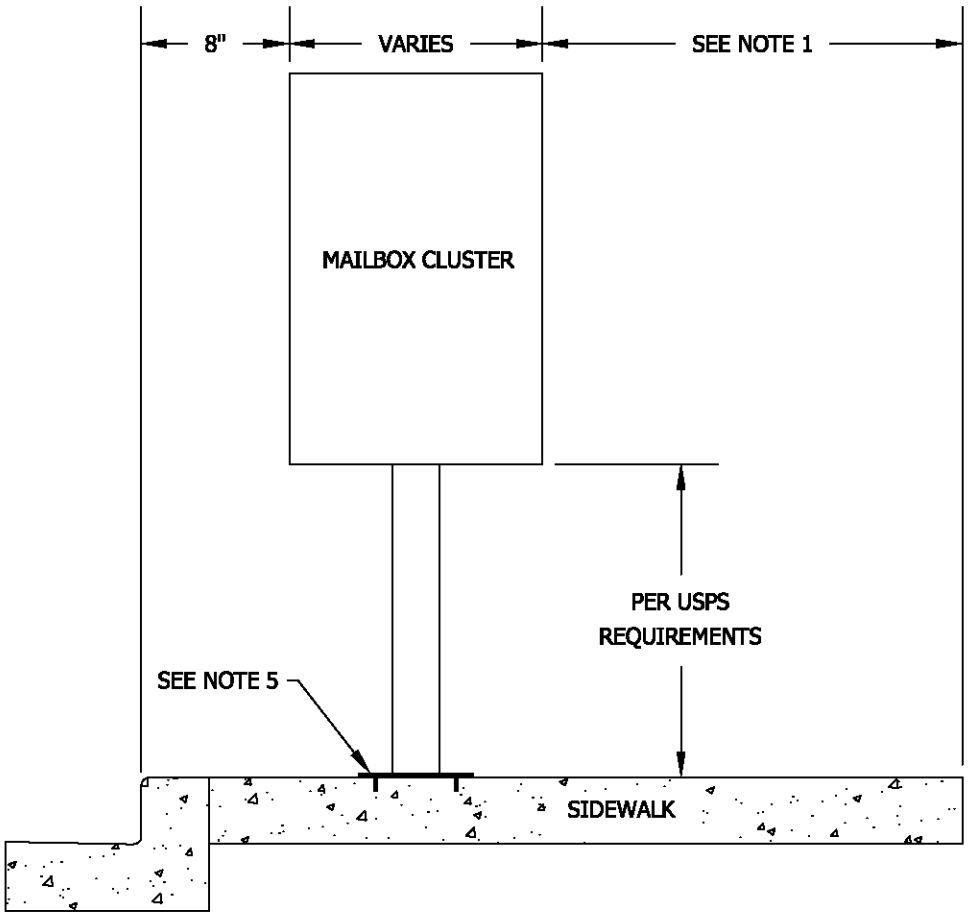
1. ALL WOOD SHALL BE NO. 1 GRADE CEDAR OR PRESSURE TREATED.
2. MAILBOXES MUST BE TYPE "APPROVED BY THE POSTMASTER GENERAL" WITH A UNIFORM BOX STYLE AND METHOD OF ADDRESS IDENTIFICATION PER EACH STANDARD.
3. LOCATION IS SUBJECT TO APPROVAL BY CITY FOR PROTECTION OF VIEWS AND ACCESS.
4. THIS STANDARD DETAIL DEPICTS THE MINIMUM STRUCTURAL AND DIMENSIONAL STANDARD. ANY DEVIATION MUST BE APPROVED BY THE APPROPRIATE CITY PERSONNEL.
5. IF PLACED IN THE PEDESTRIAN CIRCULATION PATH, THE MAIL BOX AND/OR ROOF SHALL NOT EXTEND MORE THAN 4" INTO THE PATH.

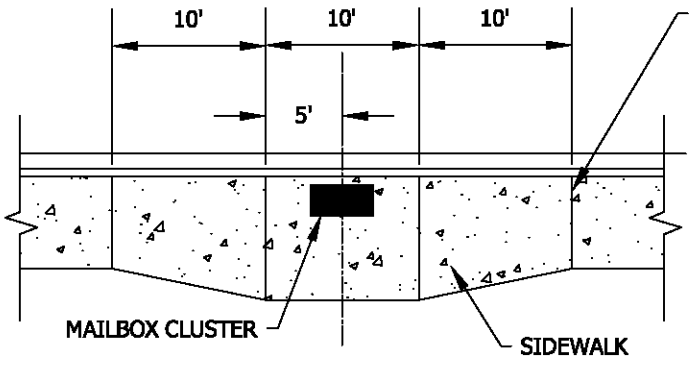
CITY OF KIRKLAND

PLAN NO. CK–R.45A

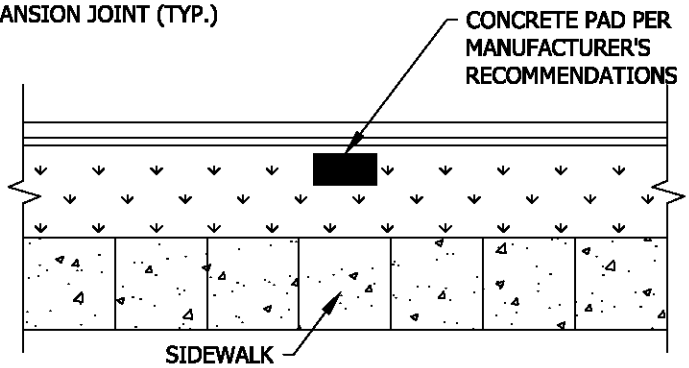
MAILBOX CLUSTER - TRADITIONAL WOOD DESIGN

LAST REVISED:01/2020





SINGLE RIBBON SIDEWALK
TRANSITION DETAIL



SIDEWALK WITH PLANTER STRIP

NOTES:

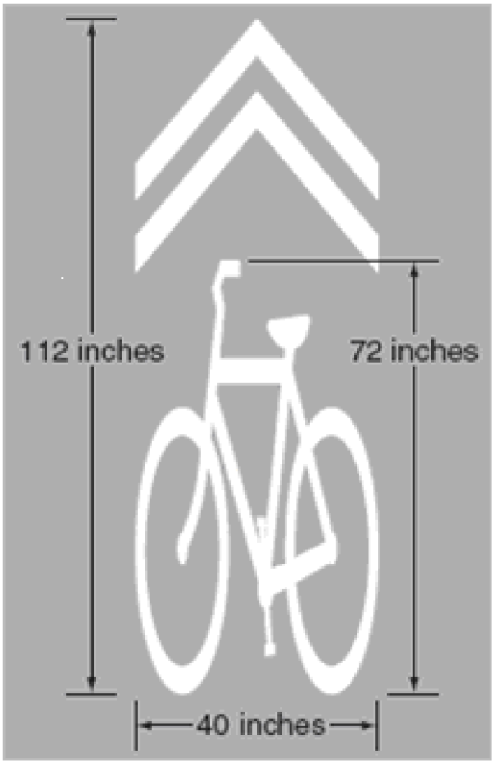
1. MEANDER SIDEWALK AROUND MAILBOX TO MAINTAIN FULL WIDTH OF SIDEWALK.
2. COORDINATE MAILBOX LOCATION WITH LOCAL POSTMASTER AND ENSURE MAILBOX SHALL NOT IMPACT SIGHT LINES.
3. ADDITIONAL REQUIREMENTS PER REVIEW ENGINEER FOR INSTALLATION ALONG ARTERIAL STREETS.
4. FOR USE WITH USPS APPROVED MAILBOXES ONLY.
5. ANCHOR BOLDS SHALL BE CUT FLUSH TO MOUNTING SURFACE.
6. ALL SIDEWALKS INSTALLED PER COK STD. PLAN NO. CK-R.23.
7. FOR INSTALLATION AT LOCATION WITHOUT CURB, TOP OF CONCRETE PAD SHALL BE FLUSH WITH GROUND SURFACE. PLACEMENT SHALL BE APPROVED IN ADVANCE BY REVIEW ENGINEER.
8. REFER TO COK POLICY R-37 FOR MAILBOX NO PARKING SIGN INFORMATION.

CITY OF KIRKLAND

PLAN NO. CK-R.45B

MAILBOX CLUSTER - METAL DESIGN

LAST REVISED: 01/18/2018



SHARED LANE MARKING DETAIL

NOT TO SCALE

NOTES:

1. PLACE MARKING IN CENTER OF TRAVELED WAY, EVERY 250'-350'.

2. SEE SECTION 9C.07, 2009 MUTCD FOR MORE GUIDANCE.

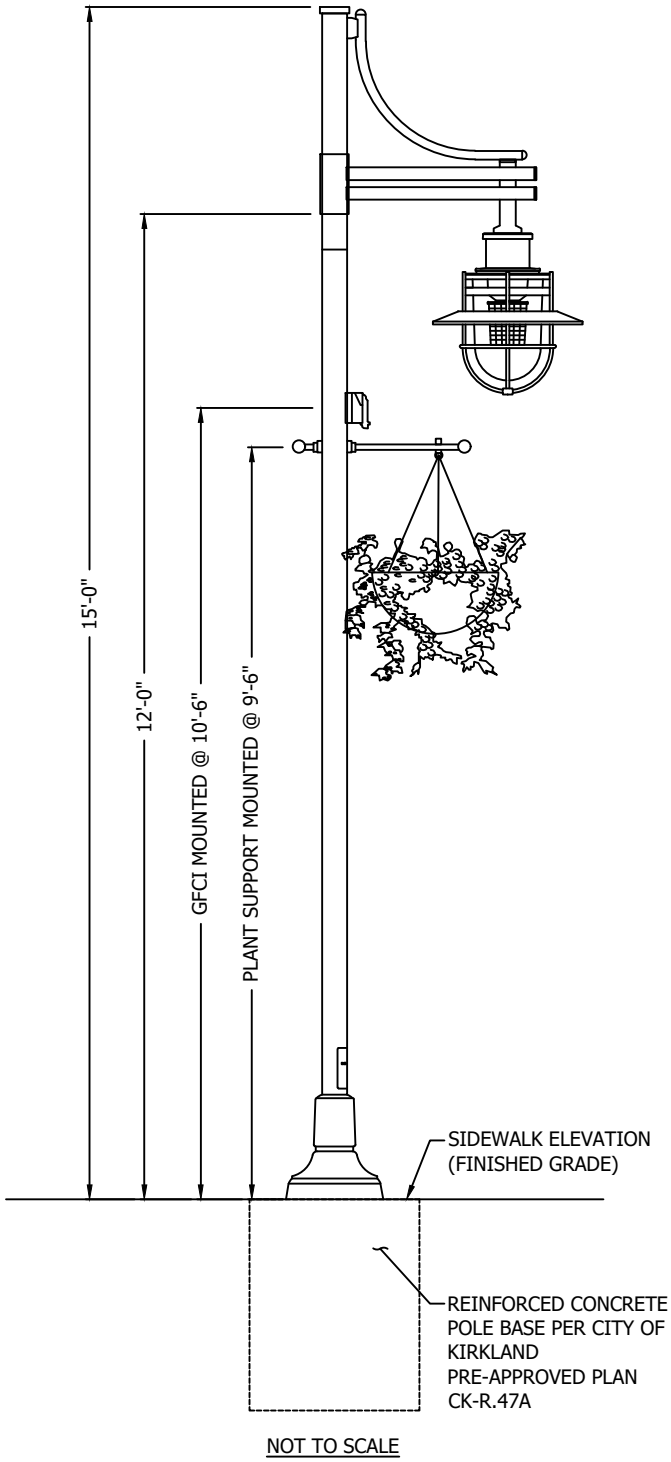
3. SHARED LANE MARKING MATERIAL SHALL BE 90 MILL, PREFORMED, SKID RESISTANT THERMOPLASTIC.

CITY OF KIRKLAND

PLAN NO. CK- R.46

SHARED LANE MARKING

LAST REVISED: 01/2026



NOT TO SCALE

NOTES

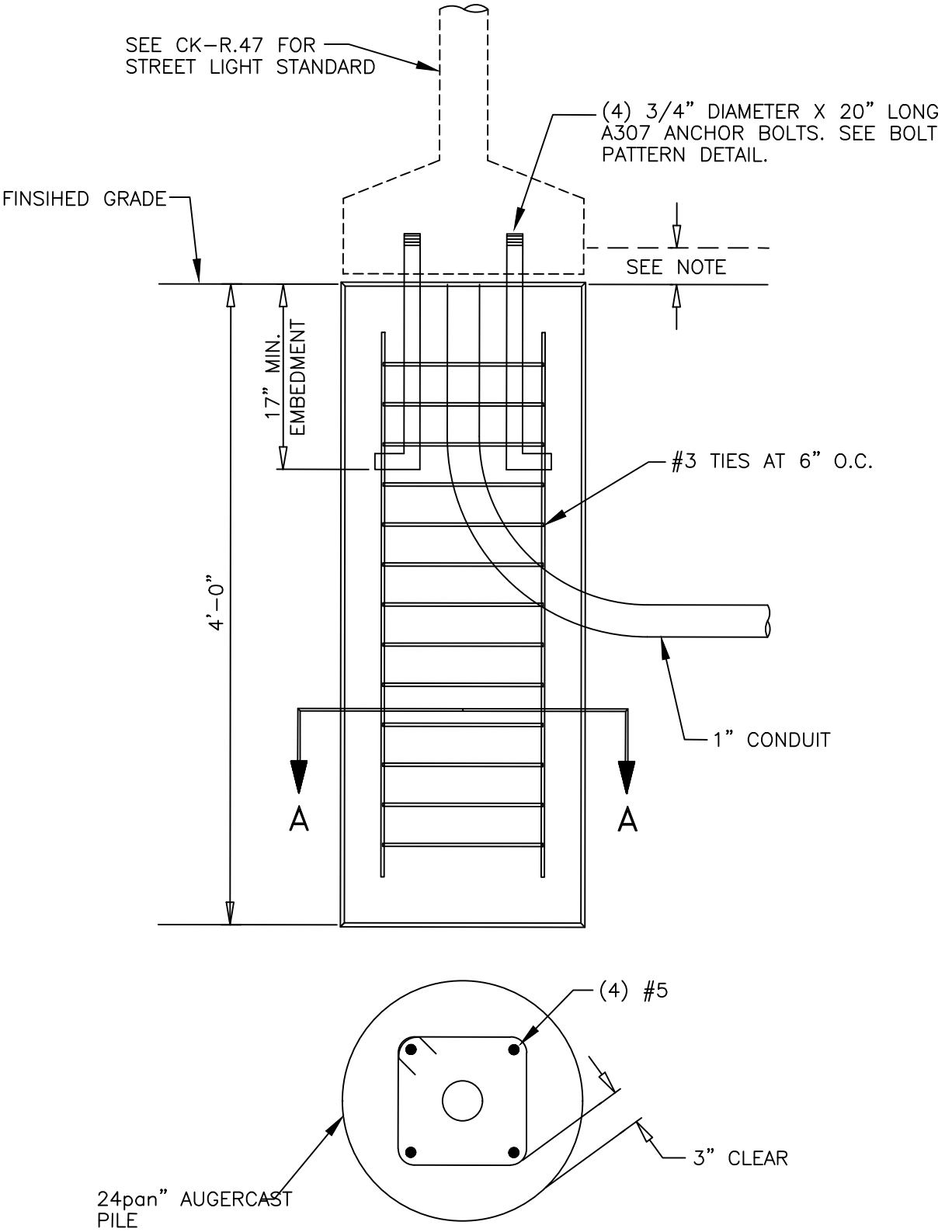
1. THE STANDARD PEDESTRIAN LIGHT ASSEMBLY CONSISTS OF THE FOLLOWING IN DARK FOREST GREEN COLOR (RAL6012 TEXTURED GN8TX):
   - APR4U-12-GFII-LBC2-PSS16-GN8TX 12-FOOT TALL ALUMINUM POLE WITH TWO-PIECE ROUND BASE COVER, AND SINGLE PLANT SUPPORT
   - 3/4"X24"X4" F1554 GRADE-55 DOMESTIC GALVANIZED ANCHOR BOLT KIT
   - CN1-1A-GN8TX MOUNTING BRACKET
   - LUMEC CANDELA PENDANT LED LUMINAIRE FIXTURE, 3000K COLOR TEMPERATURE, **CAND1-65W42LED3K-G2-PC-C-RLE5-UNV-GN8TX** OR APPROVED EQUAL
   - GFI DUPLEX RECEPTACLE, WEATHER RESISTANT, 120V, GROUND FAULT INTERRUPTER, WIRED WITH 15 AMP SEPARATE CIRCUIT, NEMA 15-15R
2. POLE ASSEMBLY COLOR MAY BE TEAL INSTEAD OF DARK FOREST GREEN DEPENDING ON SURROUNDING AREA, AS DIRECTED AND APPROVED BY PUBLIC WORKS.
3. POLE SPACING TO BE APPROXIMATELY 60 FEET ON CENTER AND/OR AS REQUIRED BY CITY OF KIRKLAND PUBLIC WORKS DEPARTMENT BASED ON LIGHTING ANALYSIS OR OTHER FACTORS. SEE PUBLIC WORKS PRE-APPROVED PLANS POLICY R-40 FOR LIGHTING DESIGN GUIDELINES.
4. PEDESTRIAN LIGHT POLES SHALL BE PLACED AT THE BACK OF THE SIDEWALK WHEREVER PRACTICAL. POLE PLACEMENT SHALL COMPLY WITH PUBLIC WORKS PRE-APPROVED PLAN CK-R.47B AND POLICY R-40.
5. ALL SPLICE CONNECTIONS IN J-BOX SHALL BE MADE USING:
   A. C-TAP (COPPER CRIMP)
   B. 3M 2000 MASTIC COVER
   C. 3M SUPER 88 TAPE

CITY OF KIRKLAND

PLAN NO. CK - R.47

CENTRAL BUSINESS DISTRICT PEDESTRIAN LIGHT STANDARD

LAST REVISED:01/2024



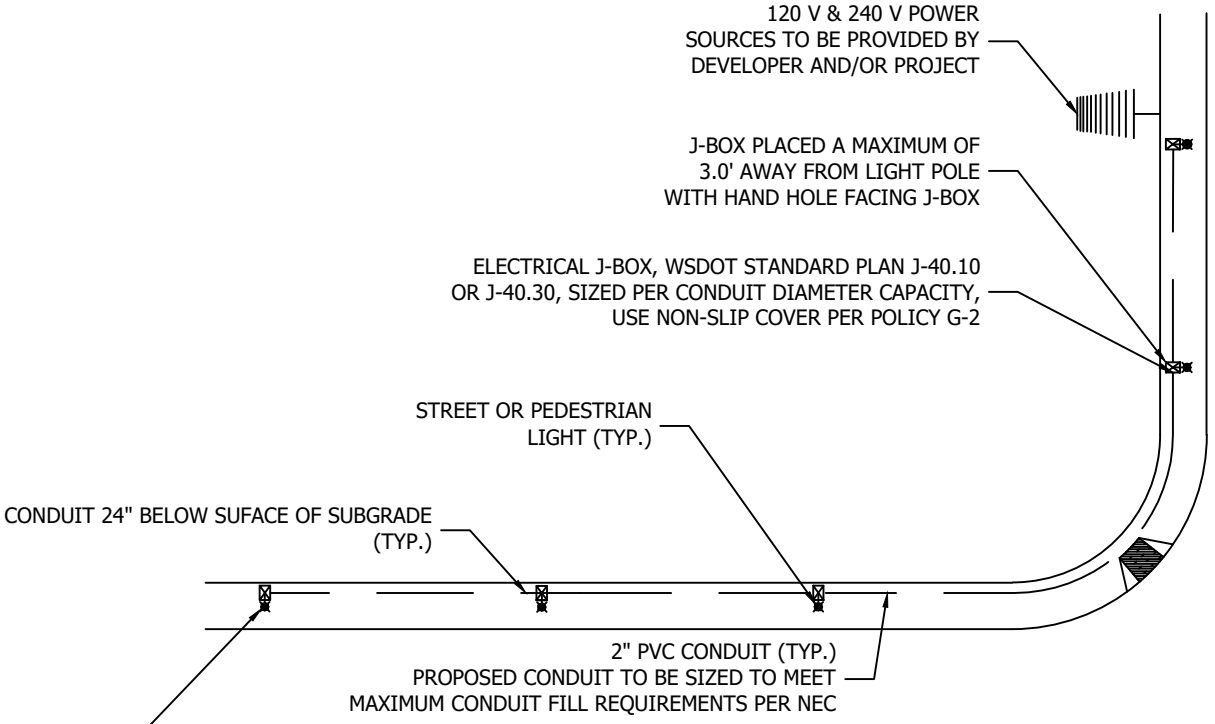
SECTION A–A

NOTE:

IF SLOPE OF GRADE EXCEEDS 2% THEN FLAT TOP OF PILE WILL EXTEND ABOVE GRADE AROUND ALL OF IT'S CIRCUMFERENCE.

CITY OF KIRKLAND	
PLAN NO. CK–R.47A	
CITY OF KIRKLAND WASHINGTON	PEDESTRIAN LIGHT POLE BASE DETAIL

LAST REVISED: 12/30/2024



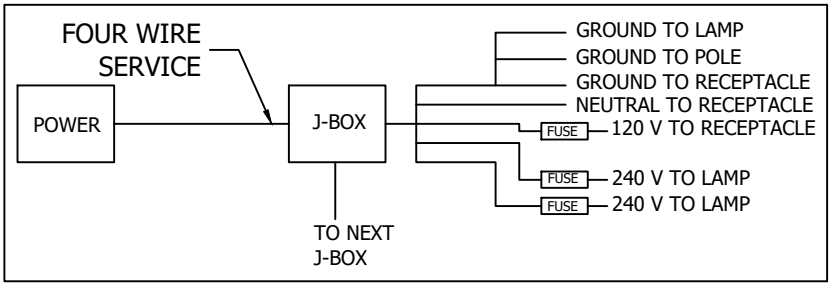
NOTES:

1. ALL SPLICE CONNECTIONS IN J-BOX SHALL BE MADE USING:
   A. C-TAP (COPPER CRIMP)
   B. 3M 2000 MASTIC COVER
   C. 3M SUPER 88 TAPE

2. STREET AND PEDESTRIAN LIGHT POLES SHALL HAVE A MINIMUM 4-FOOT OFFSET FROM THE FACE OF THE POLE TO ANY NEARBY BARRIERS, WALLS, FENCES, AWNINGS, OR SIMILAR FOR MAINTENANCE ACCESS.

3. STREET AND PEDESTRIAN LIGHT POLES SHALL HAVE A MINIMUM 10 FT OFFSET FROM THE EDGE OF DRIVEWAY CUT. SEE CITY OF KIRKLAND STREET LIGHT DESIGN GUIDELINES FOR MORE INFORMATION.

4. REFER TO POLICY R-10 FOR OFFSET REQUIREMENTS TO STREET TREES.



CITY OF KIRKLAND

PLAN NO. CK - R.47B

STREET AND PEDESTRIAN LIGHT PLAN LAYOUT

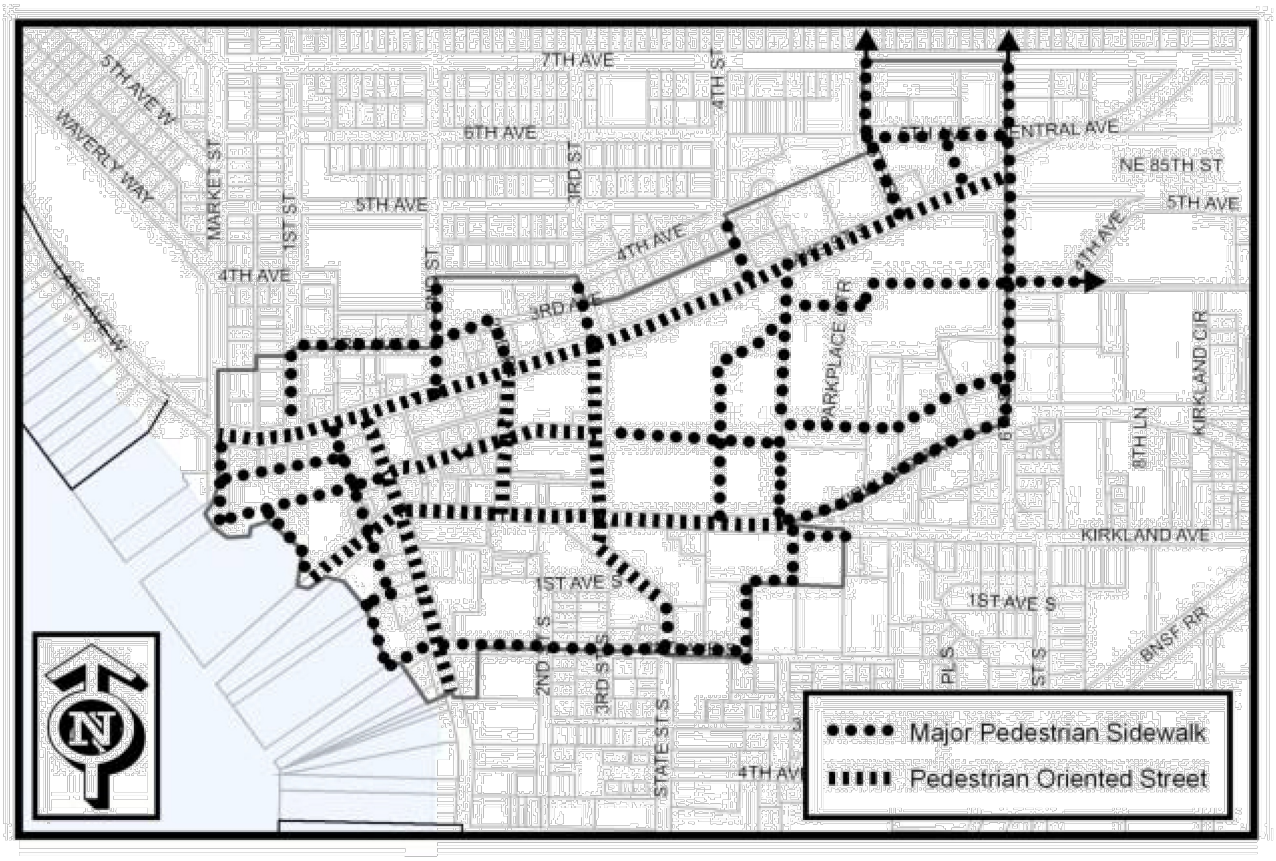
Updated Jan 2026

NOT USED

CITY OF KIRKLAND

PLAN NO. CK - R.47C

LAST REVISED: 12/30/2024



NOTES:

1. PEDESTRIAN LIGHTING IS REQUIRED ALONG ALL PEDESTRIAN-ORIENTED STREETS AND ALONG ALL MAJOR PEDESTRIAN PATHWAYS.

2. SIDEWALK WIDTHS AND REQUIREMENTS VARY THROUGHOUT THE PEDESTRIAN CORRIDOR. REFER TO CHAPTER 110.52 OF THE KIRKLAND ZONING CODE.

CITY OF KIRKLAND

PLAN NO. CK–R.47D

PEDESTRIAN CIRCULATION IN THE CBD

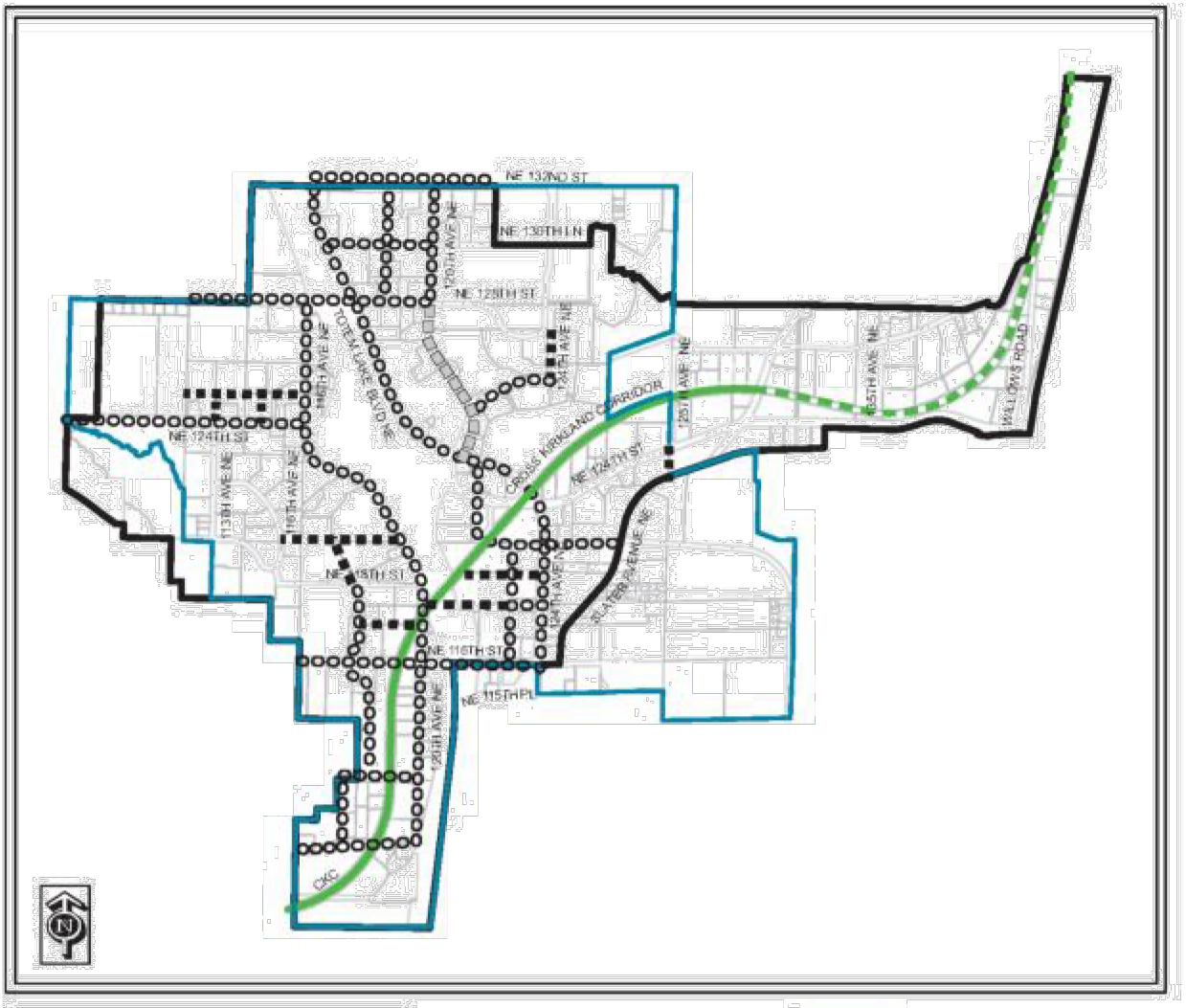
Updated Jan 2026

NOT USED

CITY OF KIRKLAND

PLAN NO. CK - R.47E

LAST REVISED: 12/30/2024



See Section 110.40.20 for Sidewalk Improvement Standards

Cross Kirkland Corridor

Major Ped Sidewalks

Pedestrian-Oriented Street

Through-Block Pathway
(Location Estimated)

NOTES:

1. PEDESTRIAN LIGHTING IS REQUIRED ALONG ALL PEDESTRIAN-ORIENTED STREETS AND ALONG ALL MAJOR PEDESTRIAN SIDEWALKS AND PATHWAYS.

2. SIDEWALK WIDTHS AND REQUIREMENTS VARY THROUGHOUT THE PEDESTRIAN CORRIDOR. REFER TO CHAPTER 110.52 OF THE KIRKLAND ZONING CODE.

CITY OF KIRKLAND

PLAN NO. CK - R.47F

CITY OF KIRKLAND WASHINGTON

PEDESTRIAN CIRCULATION IN TOTEM LAKE

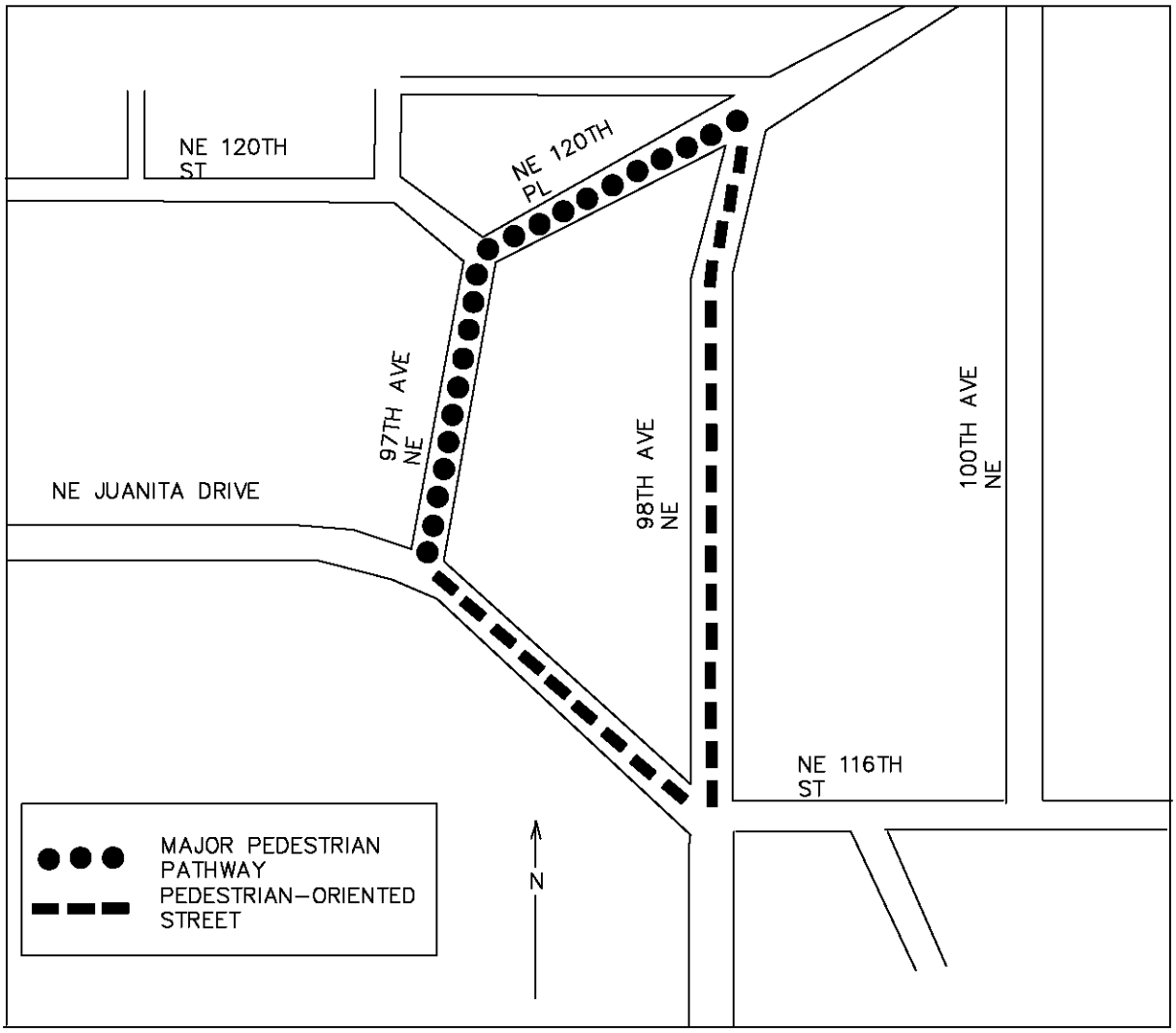
Updated Jan 2026

NOT USED

CITY OF KIRKLAND

PLAN NO. CK - R.47G

LAST REVISED: 1/11/05



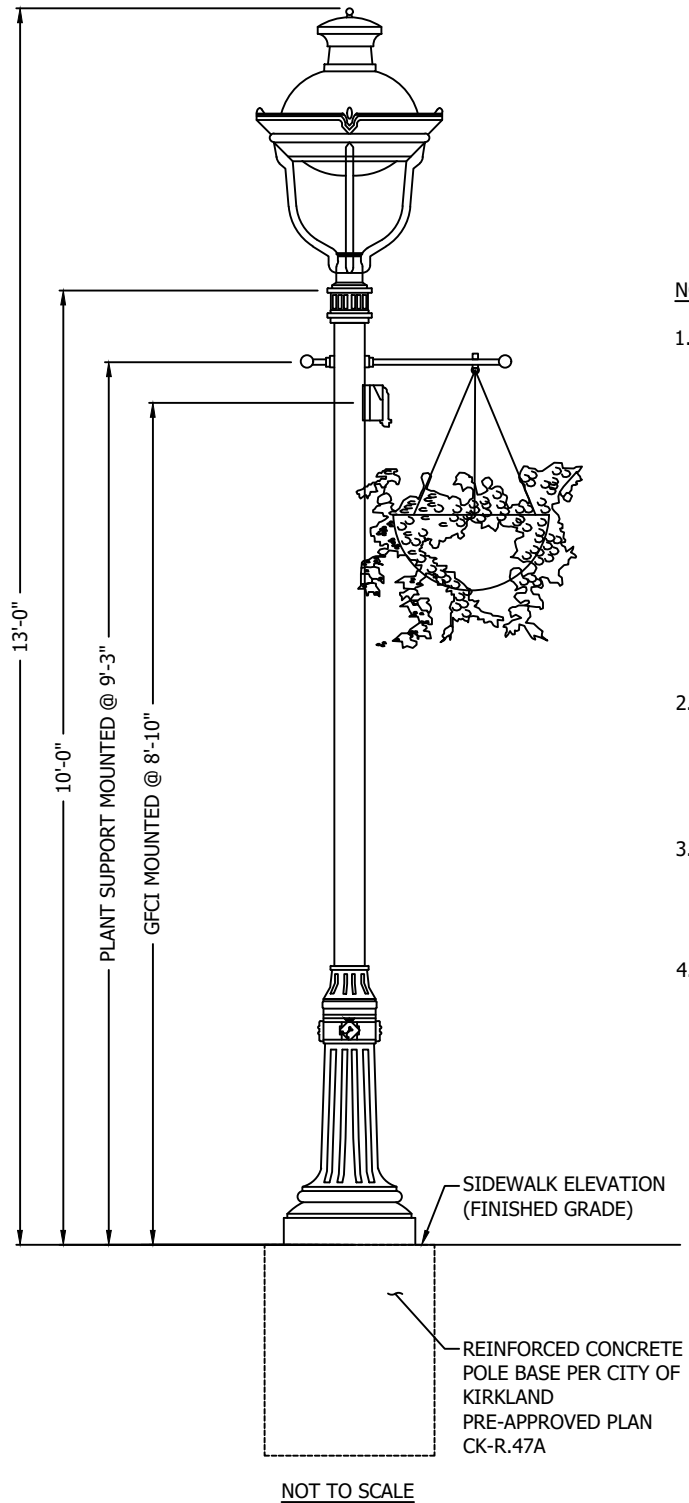
NOTE:
PEDESTRIAN LIGHTING IS REQUIRED ALONG ALL PEDESTRIAN-ORIENTED STREETS AND ALONG ALL MAJOR PEDESTRIAN PATHWAYS.

CITY OF KIRKLAND

PLAN NO. CK-R.47H

PEDESTRIAN CIRCULATION IN THE JBD

LAST REVISED: 01/2026



NOT TO SCALE

NOTES

1. THE STANDARD PEDESTRIAN LIGHT ASSEMBLY CONSISTS OF THE FOLLOWING IN BURGUNDY COLOR (TEXTURED RD2TX):
   - APR4U-10-PSS16-GFII-B40-RD2TX 10-FOOT TALL ALUMINUM POLE WITH TWO-PIECE ROUND BASE COVER, AND SINGLE PLANT SUPPORT
   - 3/4"X24"X4" F1554 GRADE-55 DOMESTIC GALVANIZED ANCHOR BOLT KIT
   - LUMEC ANCESTRA POST-TOP LED LUMINAIRE FIXTURE, 3000K COLOR TEMPERATURE, **AT30-80W48LED4K-G3-LE3S-UNV-DMG-CPT-RD2TX** OR APPROVED EQUAL
   - GFI DUPLEX RECEPTACLE, WEATHER RESISTANT, 120V, GROUND FAULT INTERRUPTER, WIRED WITH 15 AMP SEPARATE CIRCUIT, NEMA 15-15R

2. POLE SPACING TO BE APPROXIMATELY 60 FEET ON CENTER AND/OR AS REQUIRED BY CITY OF KIRKLAND PUBLIC WORKS DEPARTMENT BASED ON LIGHTING ANALYSIS OR OTHER FACTORS. SEE PUBLIC WORKS PRE-APPROVED PLANS POLICY R-40 FOR LIGHTING DESIGN GUIDELINES.

3. PEDESTRIAN LIGHT POLES SHALL BE PLACED AT THE BACK OF THE SIDEWALK WHEREVER PRACTICAL. POLE PLACEMENT SHALL COMPLY WITH PUBLIC WORKS PRE-APPROVED PLAN CK-R.47B AND POLICY R-40.

4. ALL SPLICE CONNECTIONS IN J-BOX SHALL BE MADE USING:
   A. C-TAP (COPPER CRIMP)
   B. 3M 2000 MASTIC COVER
   C. 3M SUPER 88 TAPE

CITY OF KIRKLAND	
PLAN NO. CK - R.47I	
CITY OF KIRKLAND WASHINGTON	JBD STREET LIGHT STANDARD

LAST REVISED: 1/26/07

Pedestrian Circulation
in the North Rose Hill Business
District

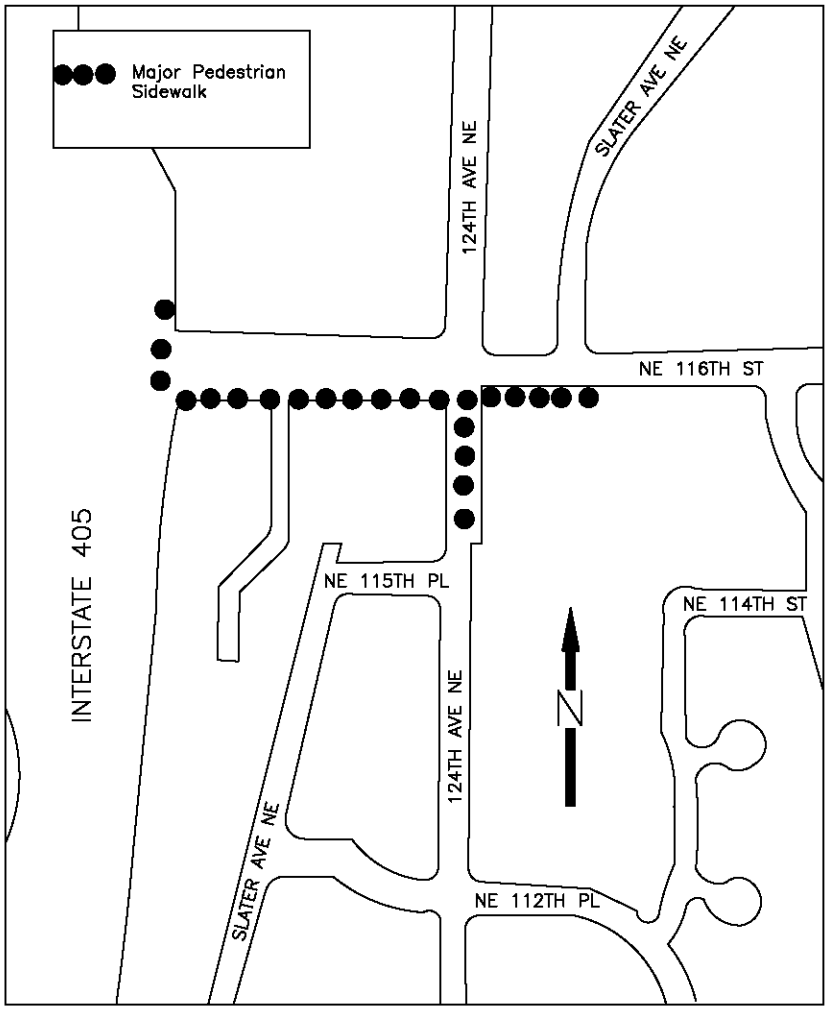


FIGURE 92.10.C

NOTE:
PEDESTRIAN LIGHTING IS REQUIRED ALONG ALL PEDESTRIAN-ORIENTED STREETS AND ALONG ALL MAJOR PEDESTRIAN PATHWAYS.

CITY OF KIRKLAND	
PLAN NO. CK-R.47J	
CITY OF KIRKLAND WASHINGTON	PEDESTRIAN CIRCULATION IN NRHBD

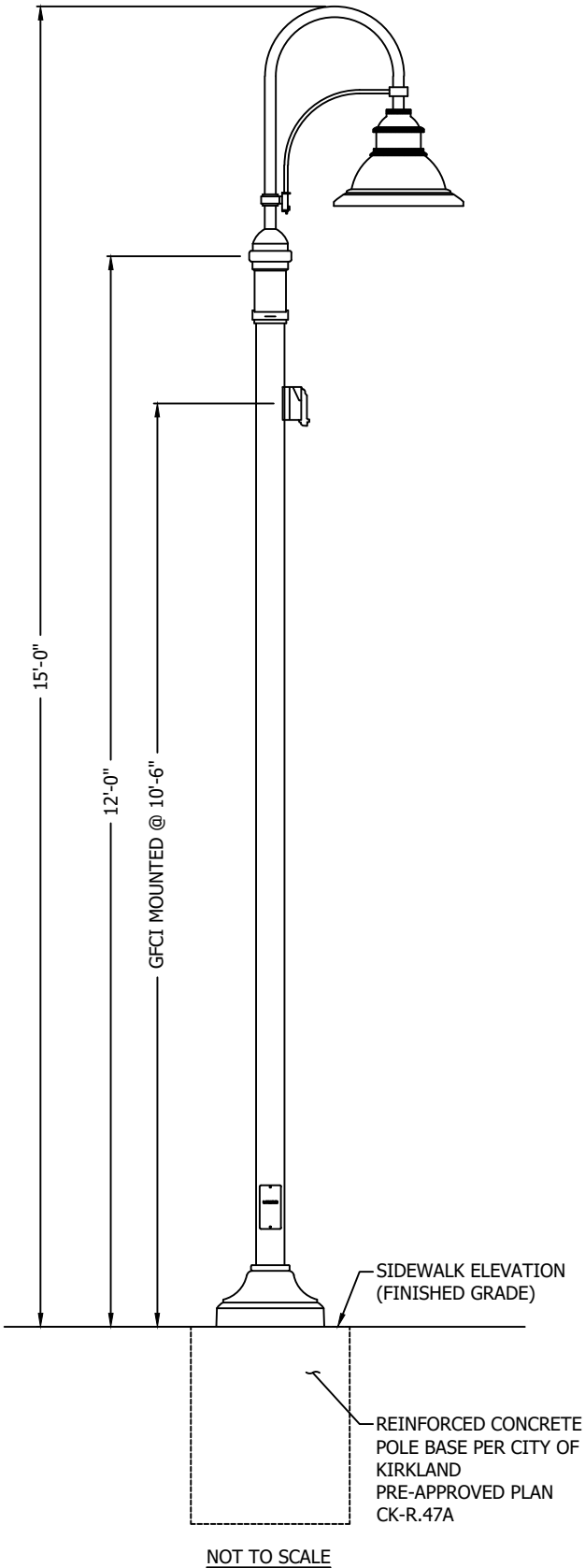
Updated Jan 2026

NOT USED

CITY OF KIRKLAND

PLAN NO. CK - R.47K

LAST REVISED: 01/2026



NOT TO SCALE

NOTES

1. THE STANDARD PEDESTRIAN LIGHT ASSEMBLY CONSISTS OF THE FOLLOWING IN SCARLET COLOR (TEXTURED RD4TX):
   - APR4U-12-GFII-LBC4C-RD4TX 12-FOOT TALL ALUMINUM POLE WITH TWO-PIECE ROUND BASE COVER
   - 3/4"X24"X4" F1554 GRADE-55 DOMESTIC GALVANIZED ANCHOR BOLT KIT
   - [DBB-003]-1A90DEG-RD4TX MOUNTING BRACKET
   - LUMEC DOMUS PENDANT LED LUMINAIRE FIXTURE, 3000K COLOR TEMPERATURE, **DOS-55W32LED3K-G3-LE3F-UNV-RD4TX** OR APPROVED EQUAL
   - GFI DUPLEX RECEPTACLE, WEATHER RESISTANT, 120V, GROUND FAULT INTERRUPTER, WIRED WITH 15 AMP SEPARATE CIRCUIT, NEMA 15-15R

2. POLE SPACING TO BE APPROXIMATELY 60 FEET ON CENTER AND/OR AS REQUIRED BY CITY OF KIRKLAND PUBLIC WORKS DEPARTMENT BASED ON LIGHTING ANALYSIS OR OTHER FACTORS. SEE PUBLIC WORKS PRE-APPROVED PLANS POLICY R-40 FOR LIGHTING DESIGN GUIDELINES.

3. PEDESTRIAN LIGHT POLES SHALL BE PLACED AT THE BACK OF THE SIDEWALK WHEREVER PRACTICAL. POLE PLACEMENT SHALL COMPLY WITH PUBLIC WORKS PRE-APPROVED PLAN CK-R.47B AND POLICY R-40.

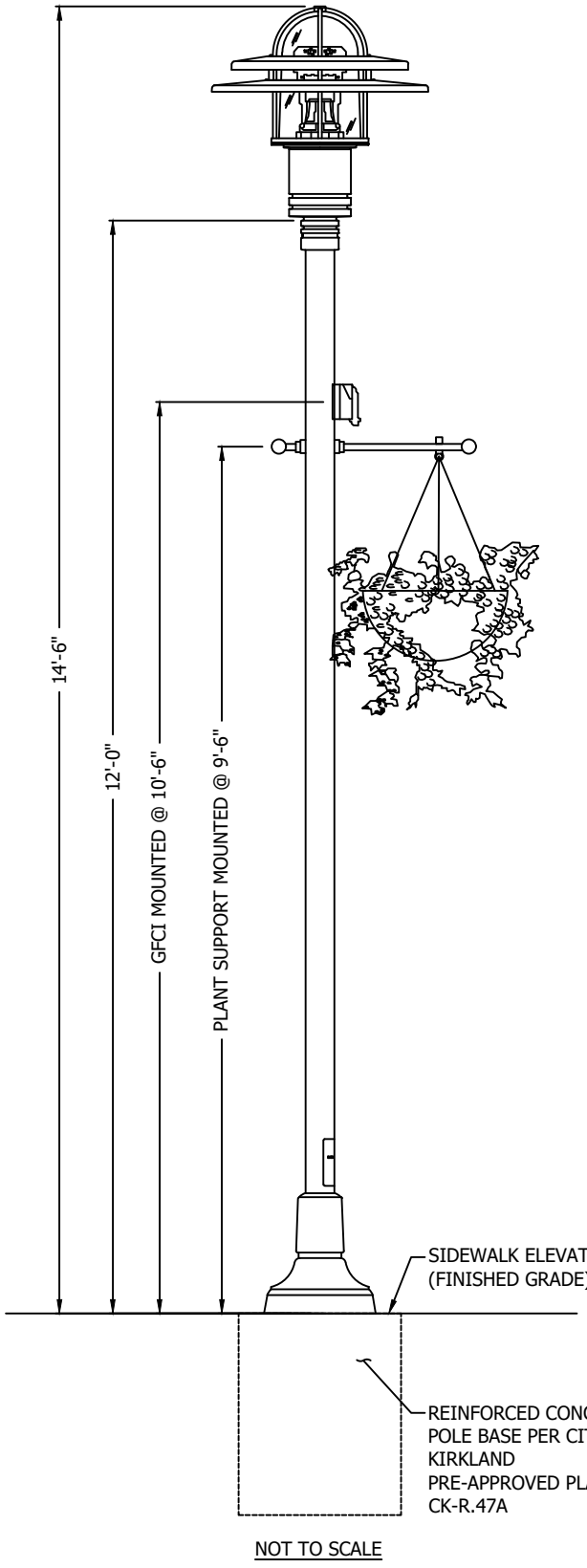
4. ALL SPLICE CONNECTIONS IN J-BOX SHALL BE MADE USING:
   A. C-TAP (COPPER CRIMP)
   B. 3M 2000 MASTIC COVER
   C. 3M SUPER 88 TAPE

CITY OF KIRKLAND

PLAN NO. CK - R.47L

NE 85TH ST STREET LIGHT STANDARD

LAST REVISED: 01/2026



NOT TO SCALE

NOTES

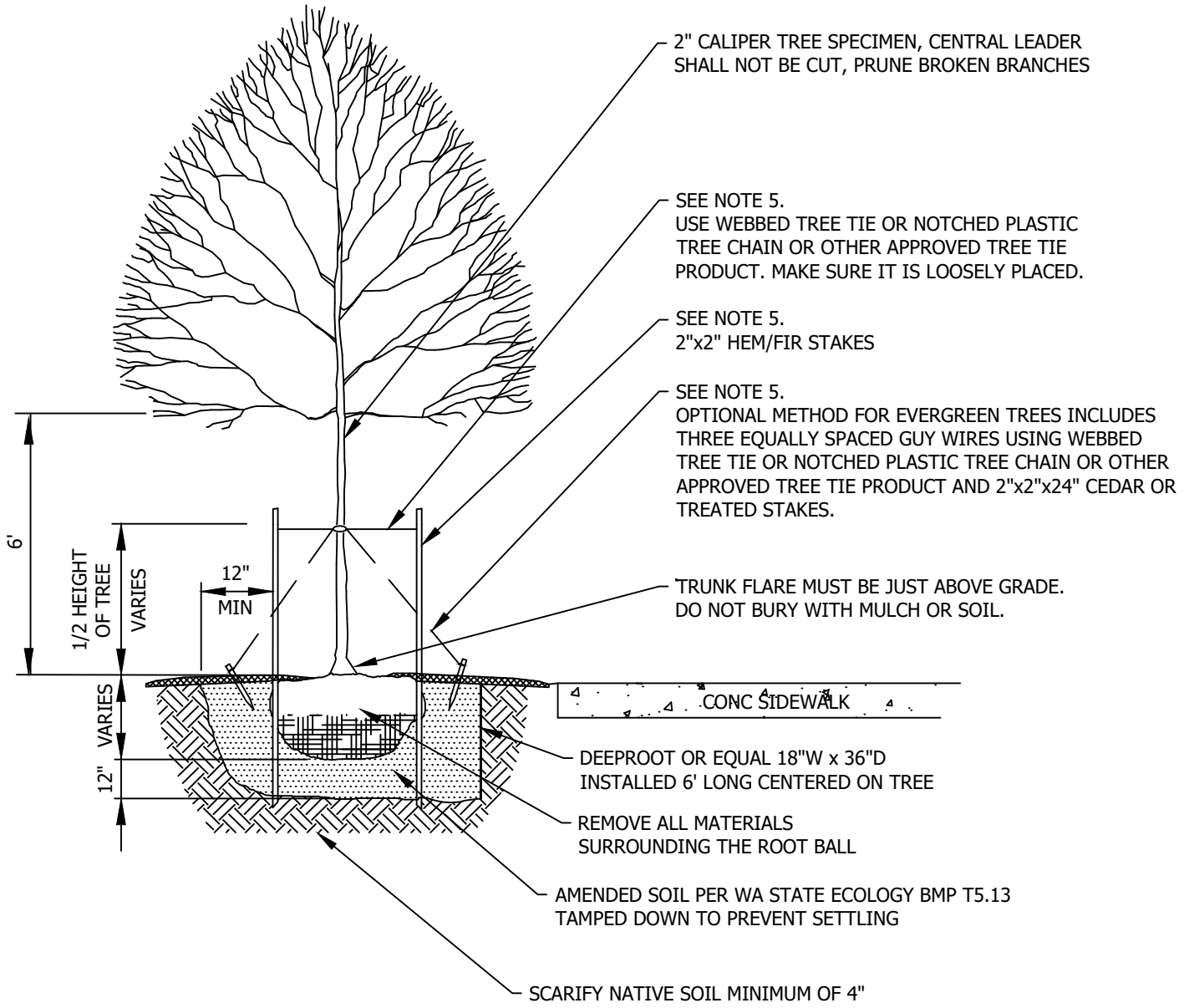
1. THE STANDARD PEDESTRIAN LIGHT ASSEMBLY CONSISTS OF THE FOLLOWING IN DARK FOREST GREEN COLOR (RAL6012 TEXTURED GN8TX):
   - APR4U-12-GFII-LBC2-PSS16-GN8TX 12-FOOT TALL ALUMINUM POLE WITH TWO-PIECE ROUND BASE COVER, AND SINGLE PLANT SUPPORT
   - 3/4"X24"X4" F1554 GRADE-55 DOMESTIC GALVANIZED ANCHOR BOLT KIT
   - LUMEC CANDELA POST-TOP LED LUMINAIRE FIXTURE, 3000K COLOR TEMPERATURE, **CAND2-65W42LED3K-G2-PC-C-RLE5-UNV-GN8TX** OR APPROVED EQUAL
   - GFI DUPLEX RECEPTACLE, WEATHER RESISTANT, 120V, GROUND FAULT INTERRUPTER, WIRED WITH 15 AMP SEPARATE CIRCUIT, NEMA 15-15R
2. POLE SPACING TO BE APPROXIMATELY 60 FEET ON CENTER AND/OR AS REQUIRED BY CITY OF KIRKLAND PUBLIC WORKS DEPARTMENT BASED ON LIGHTING ANALYSIS OR OTHER FACTORS. SEE PUBLIC WORKS PRE-APPROVED PLANS POLICY R-40 FOR LIGHTING DESIGN GUIDELINES.
3. PEDESTRIAN LIGHT POLES SHALL BE PLACED AT THE BACK OF THE SIDEWALK WHEREVER PRACTICAL. POLE PLACEMENT SHALL COMPLY WITH PUBLIC WORKS PRE-APPROVED PLAN CK-R.47B AND POLICY R-40.
4. ALL SPLICE CONNECTIONS IN J-BOX SHALL BE MADE USING:
   A. C-TAP (COPPER CRIMP)
   B. 3M 2000 MASTIC COVER
   C. 3M SUPER 88 TAPE

CITY OF KIRKLAND

PLAN NO. CK - R.47M

TOTEM LAKE PEDESTRIAN STREET LIGHT STANDARD

LAST REVISED: 01/2025



NOTES:

1. SIZE OF PLANTING PIT SHALL BE 4' BY 6' BY 3' DEEP.
2. FOR DECIDUOUS TREES, 2" CALIPER MINIMUM AND BRANCHING STARTS 5' ABOVE GRADE (UNLESS OTHER APPROVED BY CITY.)
3. FOR PLANTING DISTANCES NEAR INTERSECTIONS AND DRIVEWAYS, REFER TO PRE-APPROVED PLANS NOTEBOOK.
4. TREES SHALL NOT BE PLANTED WITHIN 10' OF ANY UG UTILITY ACCESS WHICH MAY BE LOCATED IN THE PLANTER STRIP OR ADJACENT SIDEWALK.
5. STAKE ONLY WHEN NECESSARY OR IF REQUIRED BY THE CITY AND INCLUDE TIMELINE FOR REMOVAL OF STAKES AND TIES.
6. ROOT BARRIER TO BE DEEPROOT (OR APPROVED EQUAL 18" BY 36" BY 6' LONG INSTALLED ON BOTH CURB AND SIDEWALK SIDE.
7. SPECIAL CONSTRUCTION NOTE FOR FILTERRA TREE BOXES: AT THE TIME OF PLANTING, IN ADDITION TO FILTERRA MANUFACTURER SPECS., TREES MUST BE A MIN. 51 INCHES TALL ABOVE THE TREE GRATE SURFACE AND 0.75 INCH DIAM. AT THE GRATE OPENING. THE TREE SHOULD MEASURE AT LEAST 5.25 FT FROM THE ROOT COLLAR OF THE TREE.

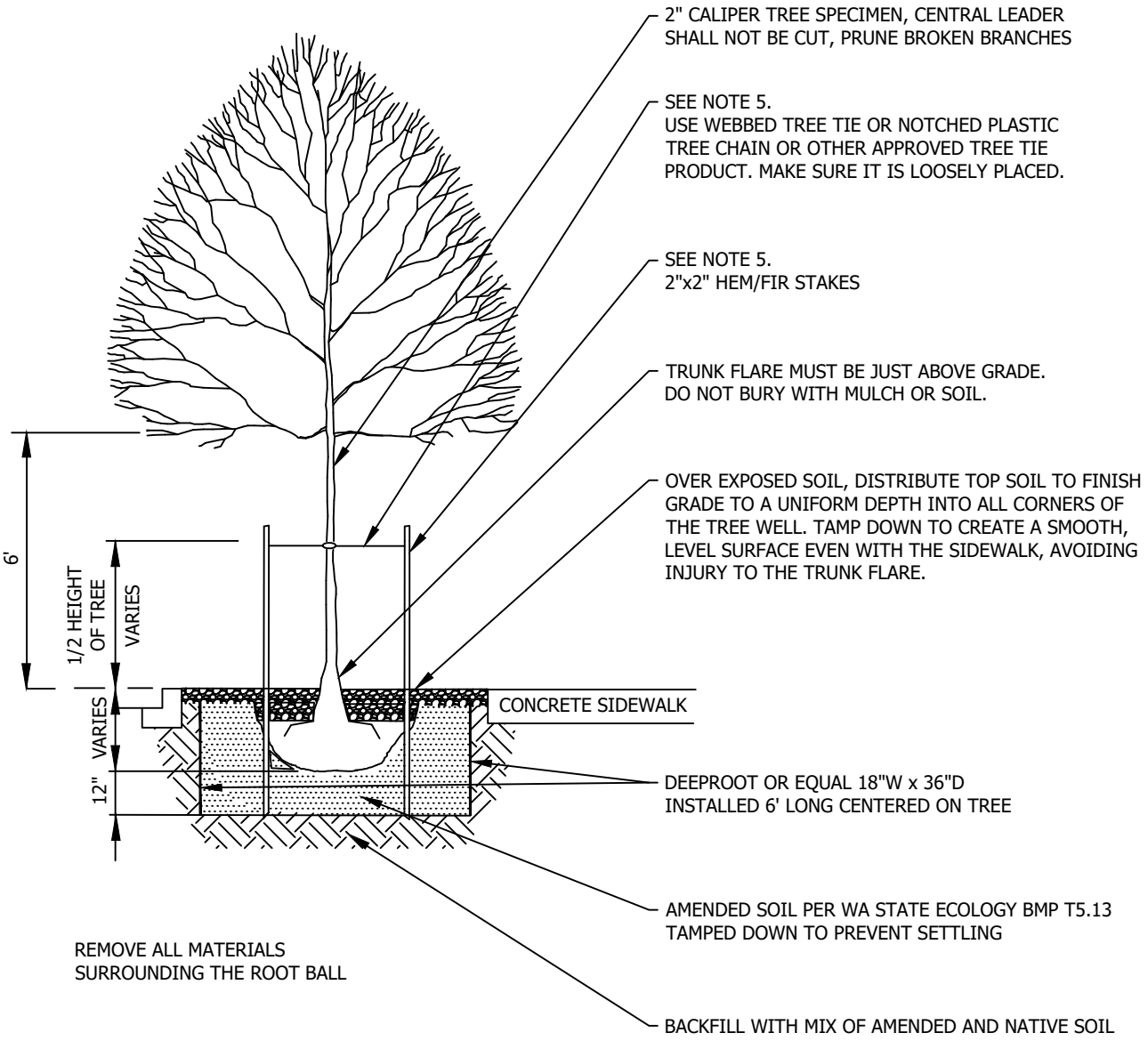
CITY OF KIRKLAND

PLAN NO. CK–R.48

CITY OF KIRKLAND WASHINGTON

TREE PLANTING DETAIL

LAST REVISED: 01/2025



NOTES:

1. SIZE OF PLANTING PIT SHALL BE 3 TIMES LARGER THAN ROOT BALL.
2. FOR DECIDUOUS TREES, 2" CALIPER MINIMUM AND BRANCHING STARTS 5' ABOVE GRADE (UNLESS OTHER APPROVED BY CITY).
3. FOR PLANTING DISTANCES NEAR INTERSECTIONS AND DRIVEWAYS, REFER TO PRE-APPROVED PLANS NOTEBOOK.
4. TREES SHALL NOT BE PLANTED WITHIN 10' OF ANY UG UTILITY ACCESS, WHICH MAY BE LOCATED IN THE PLANTER STRIP OR ADJACENT SIDEWALK.
5. STAKE AND INCLUDE TIMELINE FOR REMOVAL OF STAKES AND TIES.
6. ROOT BARRIER TO BE DEEPROOT (OR APPROVED EQUAL) 18" WIDTH BY 36" DEPTH BY 6' LONG TOTAL INSTALLED ON BOTH CURB AND SIDEWALK SIDE.
7. SPECIAL CONSTRUCTION NOTE FOR FILTERRA TREE BOXES: AT THE TIME OF PLANTING, IN ADDITION TO FILTERRA MANUFACTURER SPECS., TREES MUST BE A MIN. 51 INCHES TALL ABOVE THE TREE GRATE SURFACE AND 0.75 INCH DIAM. AT THE GRATE OPENING. THE TREE SHOULD MEASURE AT LEAST 5.25 FT FROM THE ROOT COLLAR OF THE TREE.

CITY OF KIRKLAND

PLAN NO. CK–R.48A

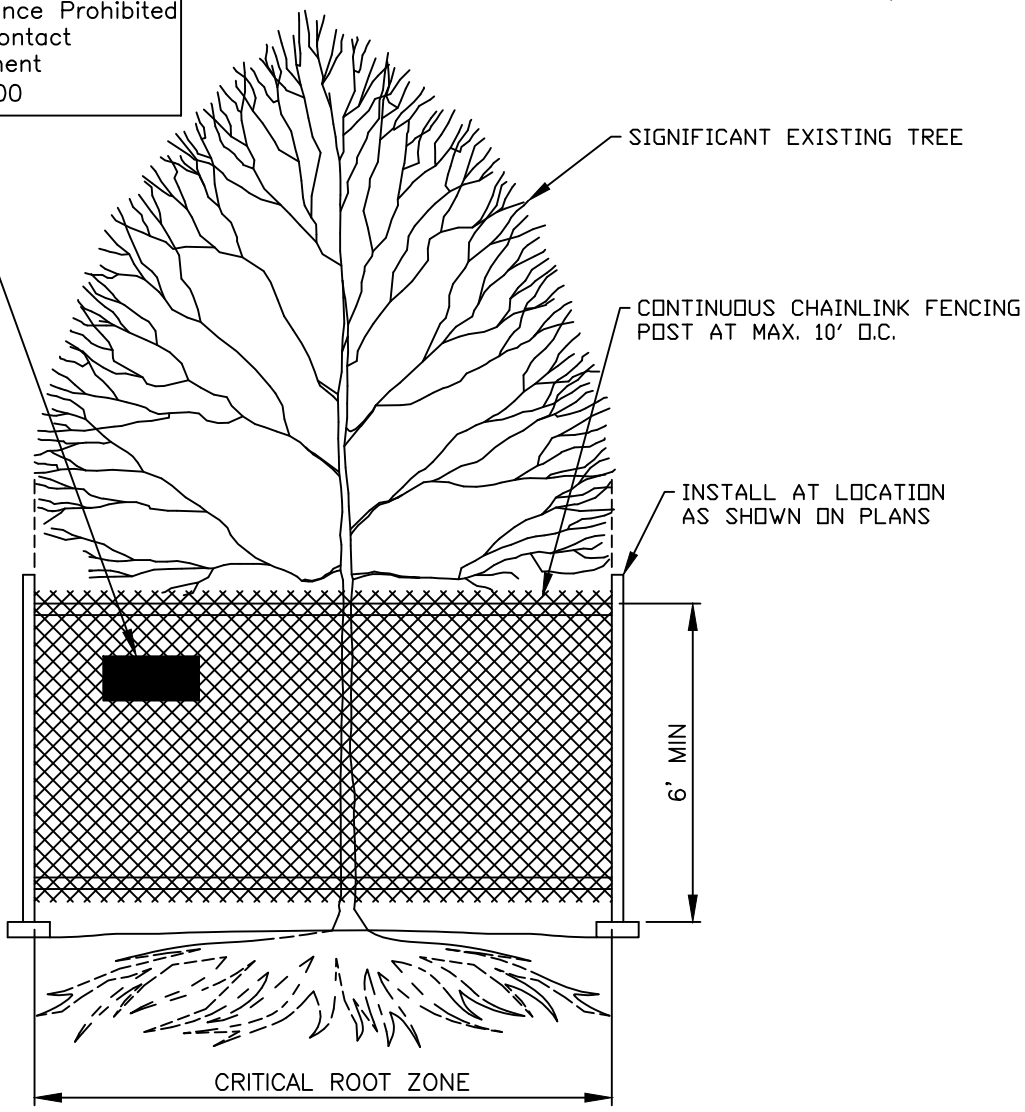
CITY OF KIRKLAND WASHINGTON

4'X6' TREE WELL PLANTING DETAIL

FENCING SIGN DETAIL

Tree Protection Area, Entrance Prohibited
To report violations contact
City Code Enforcement
at (425) 587–3600

LAST REVISED: 1/2022



NOTES:

1. MINIMUM SIX (6) FOOT HIGH TEMPORARY, CONTINUOUS CHAIN LINK FENCE SHALL BE PLACED AT THE CRITICAL ROOT ZONE OR DESIGNATED LIMIT OF DISTURBANCE OF THE TREE TO BE SAVED, FENCE SHALL COMPLETELY ENCIRCLE SIGNIFICANT EXISTING TREE(S). INSTALL CONTINUOUS CHAIN LINK FENCING POST(S) USING PIER BLOCK ONLY AT MAXIMUM 10 (TEN) FEET O.C. AVOID POST OR STAKES INTO MAJOR ROOTS, MODIFICATIONS TO FENCING MATERIAL AND LOCATION MUST BE APPROVED BY PLANNING OFFICIAL.

2. TREATMENT OF ROOTS EXPOSED DURING CONSTRUCTION; FOR ROOTS OVER ONE (1) INCH DIAMETER DAMAGED DURING CONSTRUCTION, MAKE A CLEAN STRAIGHT CUT TO REMOVE DAMAGED PORT OF ROOT, ALL EXPOSED ROOTS SHALL BE TEMPORARILY COVERED WITH DAMP BURLAP TO PREVENT DRYING AND COVERED WITH SOIL AS SOON AS POSSIBLE.

3. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MACHINERY SHALL BE ALLOWED WITHIN THE LIMIT OF THE FENCING, FENCING SHALL NOT BE MOVED OR REMOVED UNLESS APPROVED BY THE CITY PLANNING OFFICIAL. WORK WITHIN PROTECTION FENCE SHALL BE DONE MANUALLY UNDER THE SUPERVISION OF THE ON–SITE ARBORIST AND WITH PRIOR APPROVAL BY THE CITY PLANNING OFFICIAL.

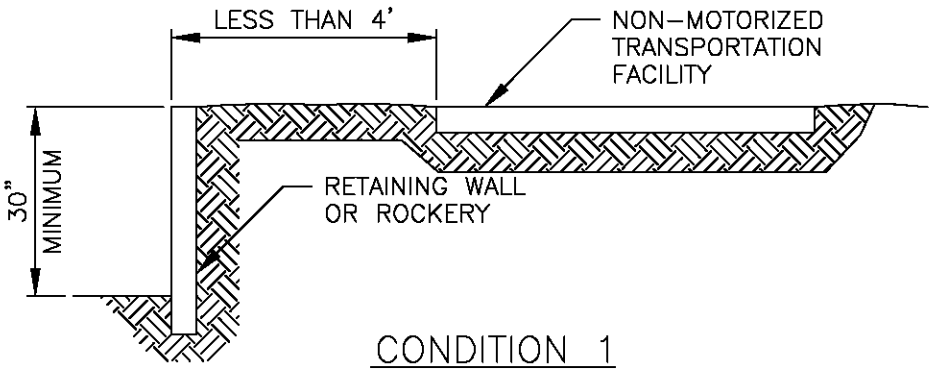
4. A PRINTED TREE PROTECTION AREA SIGN NOTING (TREE PROTECTION AREA – ENTRANCE PROHIBITED. TO REPORT VIOLATIONS, CONTACT CITY CODE ENFORCEMENT AT 425–587–3600.", MUST BE POSTED ALONG THE FENCE EVERY FIFTEEN (15) FEET. PRINT AND LAMINATE THE SIGN (AVAILABLE ONLINE) AND POST ON SITE.

CITY OF KIRKLAND

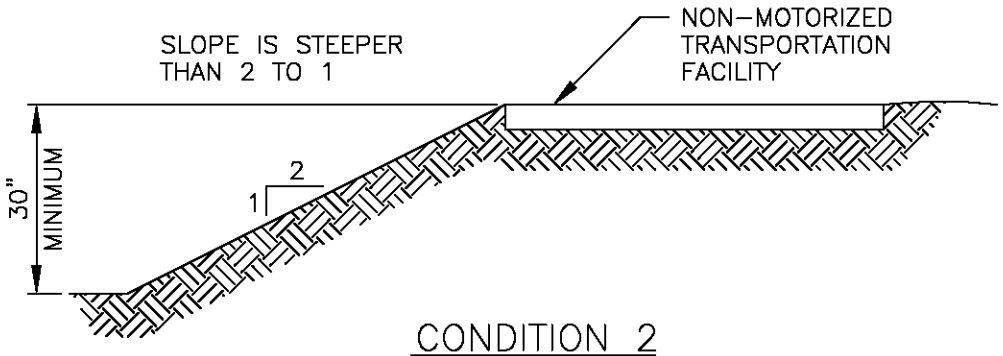
PLAN NO. CK–R.49

CITY OF KIRKLAND WASHINGTON

TREE PROTECTION



CONDITION 1



CONDITION 2

NOTES

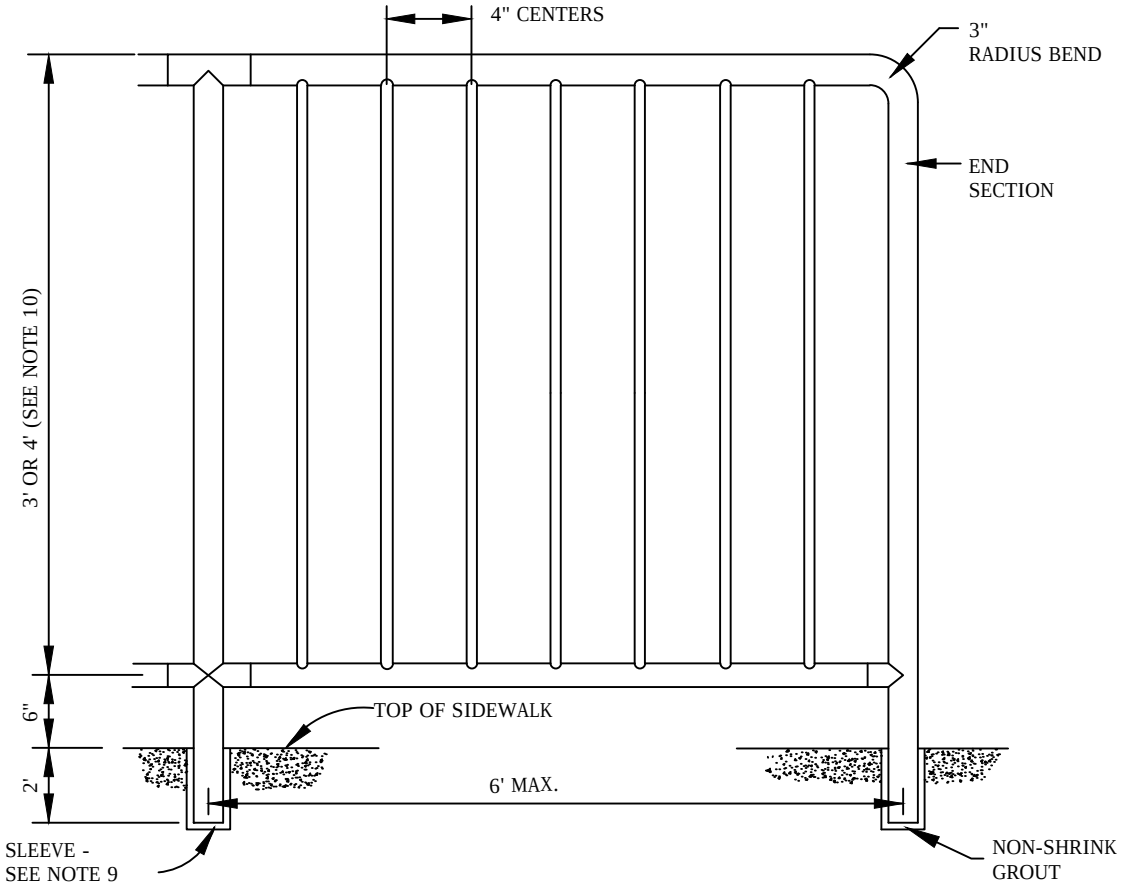
1. SAFETY RAIL TYPE AND INSTALLATION TO BE SPECIFIED BY THE REVIEW ENGINEER.

CITY OF KIRKLAND

PLAN NO. CK–R.50

CONDITIONS REQUIRING SAFETY RAILINGS

LAST REVISED: 1/1/18



PIPE SCHEDULE

(ALL DIMENSIONS O.D.)

PANEL HEIGHT	TOP RAIL/POST	BOTTOM RAIL	BALUSTER
3'	1.90"	1.90"	.840"
4'	2.875"	2.375"	.840"

NOTES

1. RAILING SHALL BE ALUMINUM PIPE RAIL OR APPROVED EQUIVALENT. INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS.
2. SHOP DRAWINGS OF RAILING SHALL BE SUBMITTED FOR APPROVAL SHOWING COMPLETE DIMENSIONS AND DETAILS OF FABRICATION AND INCLUDING AN ERECTION DIAGRAM. MATERIALS BEING USED SHALL BE SPECIFIED IN THE SHOP DRAWINGS.
3. ALL ALUMINUM PARTS SHALL BE GIVEN A CLEAR ANODIC COATING AT LEAST 0.0006 INCH THICK AND BE HOT WATER SEALED AND SHALL HAVE A UNIFORM FINISH.
4. PIPE RAILING AND PIPE RAILING SPLICES MAY BE HEATED TO NOT MORE THAN 400°F FOR A PERIOD NOT TO EXCEED 30 MINUTES TO FACILITATE FORMING OR BENDING.
5. CUTTING SHALL BE DONE BY SAWING OR MILLING AND ALL CUTS SHALL BE TRUE AND SMOOTH. FLAME CUTTING WILL NOT BE PERMITTED.
6. PIPE RAILING, PIPE BALUSTERS AND PIPE RAILING SPLICES SHALL BE ADEQUATELY WRAPPED TO ENSURE SURFACE PROTECTION DURING HANDLING AND TRANSPORTATION TO THE JOB SITE.
7. WELDING OF ALUMINUM SHALL BE IN ACCORDANCE WITH THE LATEST AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS.
8. ALLOW FOR EXPANSION AT APPROXIMATELY EVERY FOURTH POST.
9. RAILS, POSTS AND FORMED ELBOWS SHALL BE A.S.T.M B-241 OR B-429 ALLOY, 6063-T6 SCHEDULE 40 (STD. PIPE). BRACKETS, ENDCAPS AND OTHER FITTINGS SHALL BE A.S.T.M. 6063-T5. SPLICES AND REINFORCING SLEEVES SHALL BE DRAWN ALUMINUM TUBING 6063-T832. SLEEVE I.D. SHALL BE 1" GREATER THAN POST O.D.
10. PANEL HEIGHT: 3 FEET FOR PEDESTRIAN USES
    4 FEET FOR COMBINED BICYCLE AND PEDESTRIAN USES

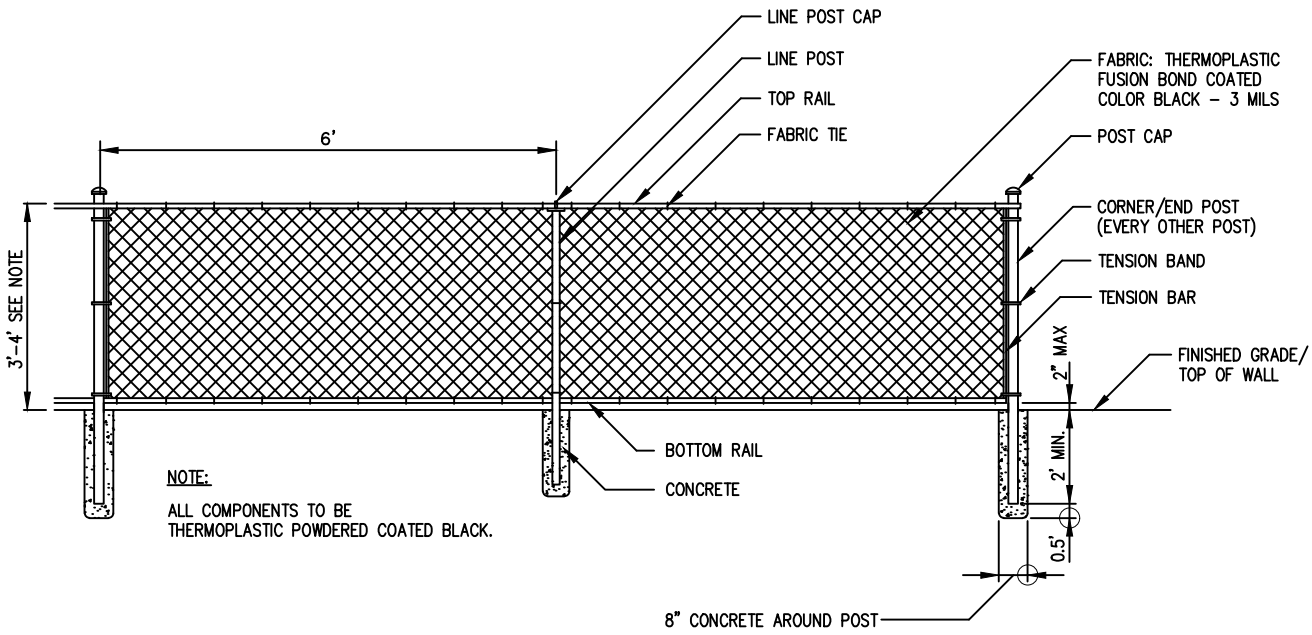
CITY OF KIRKLAND

PLAN NO. CK- R.51

CITY OF KIRKLAND WASHINGTON

SAFETY RAILING IN SIDEWALK

LAST REVISED:01/2026



PIPE SCHEDULE

(ALL DIMENSIONS I.D.)

BOTTOM/TOP RAIL	CORNER/END POST	LINE POST
1.25"	2.5"	2"

NOTES

1. ALL FENCING MATERIALS SHALL COMPLY WITH THE WSDOT/APWA STANDARD SPECIFICATIONS SECTION 9-16 CLASS 1 MATERIAL. INSTALLATIONS PER MANUFACTURER'S RECOMMENDATIONS.

2. SHOP DRAWINGS OF RAILING SHALL BE SUBMITTED FOR APPROVAL SHOWING COMPLETE DIMENSIONS AND DETAILS OF FABRICATION AND INCLUDING AN ERECTION DIAGRAM. MATERIALS BEING USED SHALL BE SPECIFIED IN THE SHOP DRAWINGS.

3. ALL STEEL PARTS SHALL BE GIVEN A BLACK ULTRAVIOLET-INSENSITIVE THERMOPLASTIC POWDER COATING AT LEAST 3 MILS THICK AND SHALL HAVE A UNIFORM FINISH.

4. CUTTING SHALL BE DONE BY SAWING OR MILLING AND ALL CUTS SHALL BE TRUE AND SMOOTH. FLAME CUTTING WILL NOT BE PERMITTED.

5. ALL MATERIALS SHALL BE ADEQUATELY WRAPPED TO ENSURE SURFACE PROTECTION DURING HANDLING AND TRANSPORTATION TO THE JOB SITE.

6. ANY WELDING OF STEEL SHALL BE IN ACCORDANCE WITH THE LATEST AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS.

7. PANEL HEIGHT:
   - 3 FEET FOR PEDESTRIAN USES
   - 4 FEET FOR COMBINED BICYCLE AND PEDESTRIAN USES

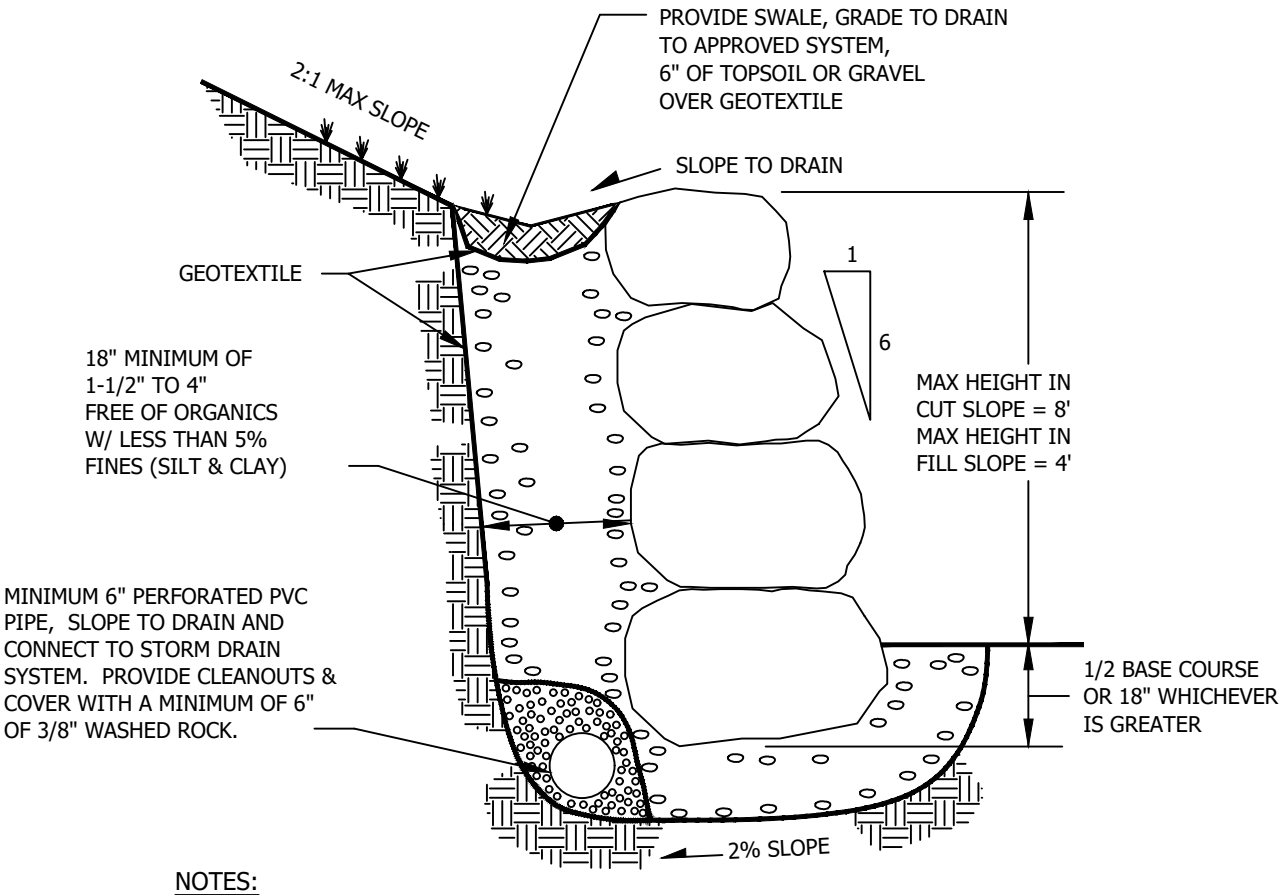
8. ALTERNATIVE MOUNTING OPTIONS MAY BE CONSIDERED FOR SAFETY RAIL MOUNTED ON TOP OF STRUCTURAL WALLS. ENGINEERING ANALYSIS IS REQUIRED FOR STRUCTURAL ELEMENTS AND SHALL BE REVIEWED AND APPROVED BY PUBLIC WORKS PRIOR TO USE.

CITY OF KIRKLAND

PLAN NO. CK–R.51A

CHAIN LINK SIDEWALK SAFETY RAIL

LAST REVISED: 01/2026



NOTES:

1. CALL FOR CLEAR AND GRADE INSPECTION PRIOR TO BASE COURSE BEING PLACED. VERIFICATION OF ROCKERY HEIGHT, FOUNDATION MATERIAL, AND ROCK SIZE BY CITY CLEAR AND GRADE INSPECTOR IS REQUIRED.

2. 4" TO 6" QUARRY SPALLS SHOULD BE PLACED DIRECTLY FROM TRUCK OR OTHER SUITABLE CONTAINER IN ORDER TO MAINTAIN CLEAN BACKFILL.

3. SPALLS MAY NOT BE NEEDED AT BASE OF ROCKERY IF NATIVE FOUNDATION MATERIAL IS SUITABLE AS DETERMINED BY THE GEOTECHNICAL ENGINEER OR THE CITY CLEARING AND GRADING INSPECTOR.

4. OPENINGS CHINKED WITH QUARRY SPALLS.

5. IF ROCKERY HEIGHT EXCEEDS 4', IT MUST BE DESIGNED BY A PRACTICING GEOTECHNICAL/ CIVIL ENGINEER LICENSED IN THE STATE OF WASHINGTON. NO ROCKERY SHALL BE GREATER THAN 8' IN HEIGHT UNLESS APPROVED BY CITY.

6. A ROCKERY GREATER THAN 4' IN HEIGHT AND ON PRIVATE PROPERTY SHALL REQUIRE A BUILDING PERMIT WITH A THIRD PARTY INSPECTION TO BE CONSTRUCTED.

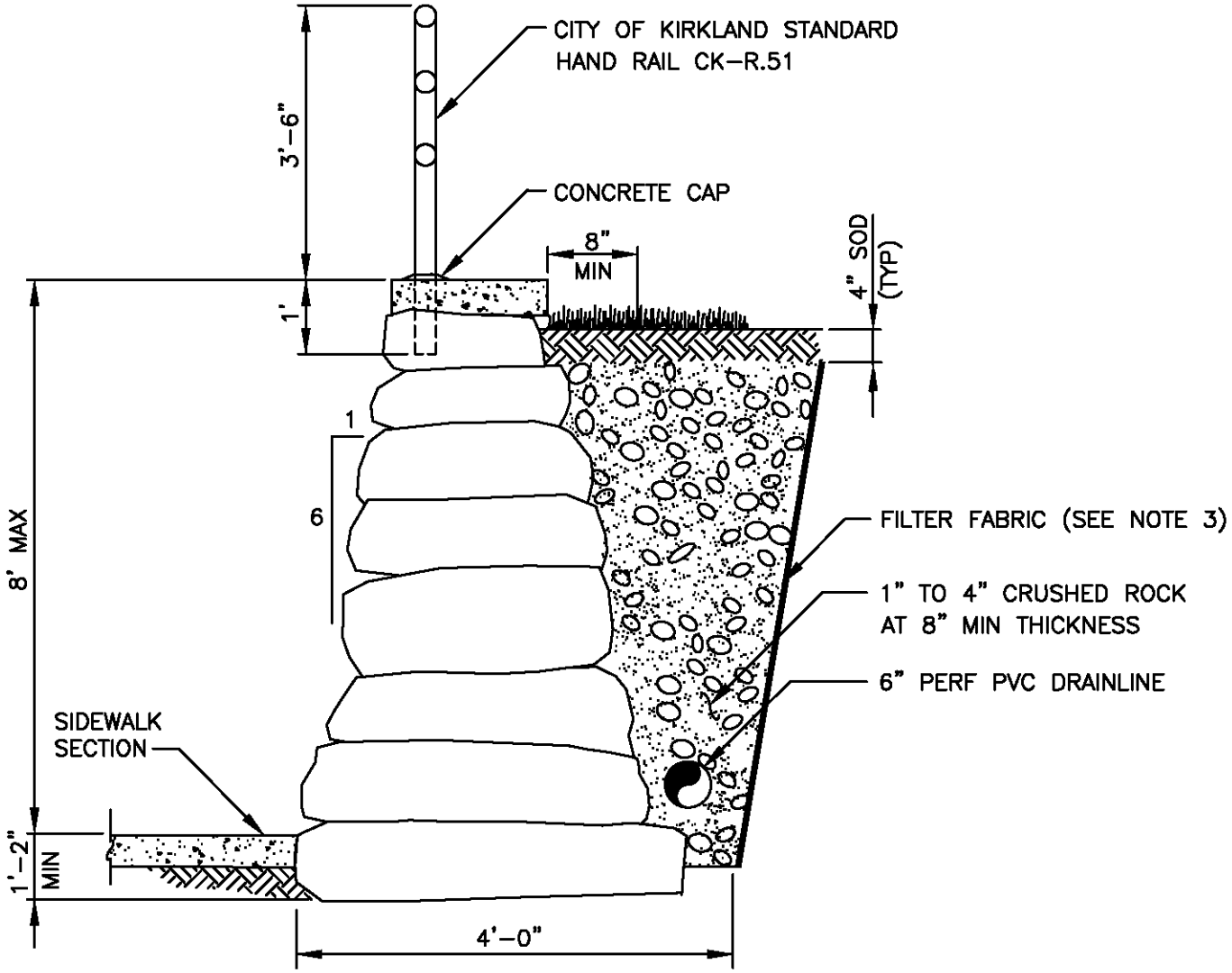
CITY OF KIRKLAND

PLAN NO. CK- R.52

CITY OF KIRKLAND WASHINGTON

ROCKERY WALL
(RIGHT-OF-WAY
AND PRIVATE ACCESS
ROAD USE ONLY)

LAST REVISED:03/31/08



ROCKERY HEIGHT (FT)	SIZE OF D	MIN ROCK SIZE (BASE)	MIN ROCK SIZE (TOP)
2	3 INCHES	2–MAN	1–MAN
4	6 INCHES	3–MAN	2–MAN
6	9 INCHES	4–MAN	2–MAN
8	12 INCHES	5–MAN	2–MAN

NOTES

1. ROCKERY MUST BE INSTALLED BY LICENSED ROCKERY CONTRACTOR.
2. IF ROCKERY HEIGHT EXCEEDS 4', IT MUST BE DESIGNED BY A PRACTICING GEOTECHNICAL/ CIVIL ENGINEER LICENSED IN THE STATE OF WASHINGTON.
3. FILTER FABRIC SHALL BE MIRAFI 140 N SERIES OR APPROVED EQUAL.
4. APPROVED 6" PERF PVC DRAINLINE TIE TO PUBLIC STORM SYSTEM MUST BE INSPECTED BY PUBLIC WORKS.

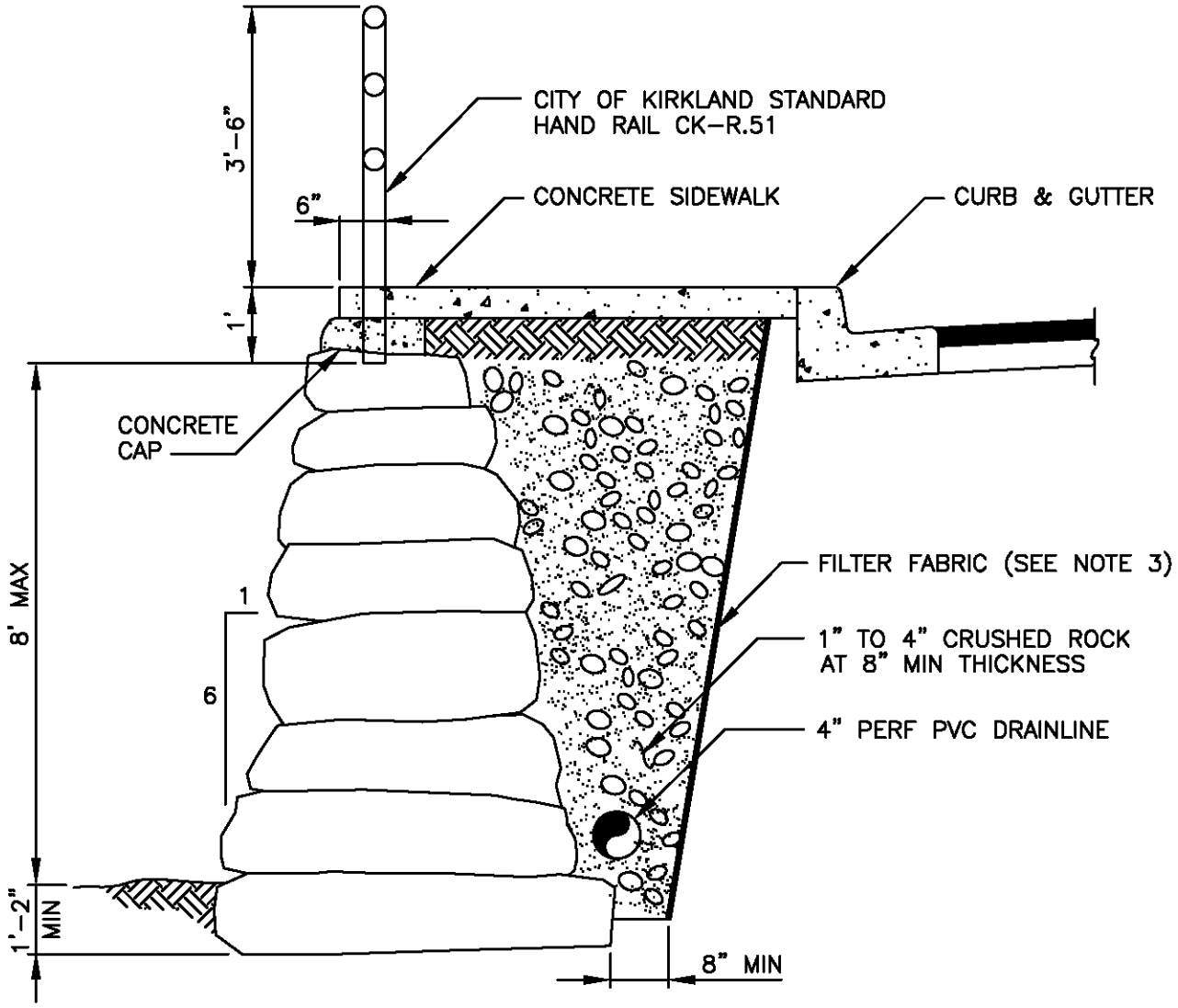
CITY OF KIRKLAND

PLAN NO. CK–R.53

CITY OF KIRKLAND WASHINGTON

ROCKERY DETAIL BANK SUPPORT

LAST REVISED:03/31/08



ROCKERY HEIGHT (FT)	SIZE OF D	MIN ROCK SIZE (BASE)	MIN ROCK SIZE (TOP)
2	3 INCHES	2-MAN	1-MAN
4	6 INCHES	3-MAN	2-MAN
6	9 INCHES	4-MAN	2-MAN
8	12 INCHES	5-MAN	2-MAN

NOTES

1. ROCKERY MUST BE INSTALLED BY LICENSED ROCKERY CONTRACTOR.
2. IF ROCKERY HEIGHT EXCEEDS 4', IT MUST BE DESIGNED BY A PRACTICING GEOTECHNICAL/ CIVIL ENGINEER LICENSED IN THE STATE OF WASHINGTON.
3. FILTER FABRIC SHALL BE MIRAFI 140 N SERIES OR APPROVED EQUAL.
4. APPROVED 6" PERF PVC DRAINLINE TIE TO PUBLIC STORM SYSTEM MUST BE INSPECTED BY PUBLIC WORKS.

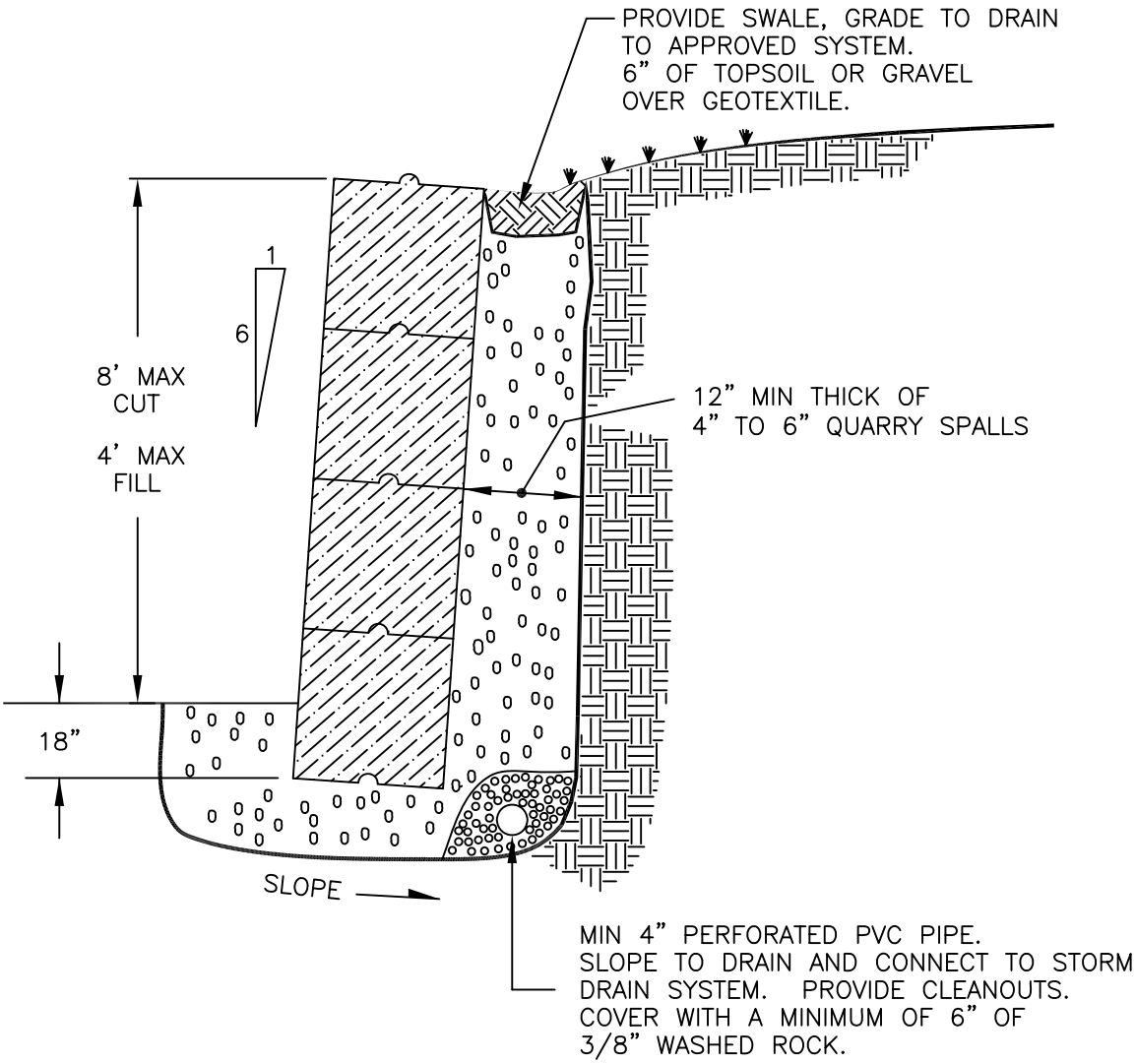
CITY OF KIRKLAND

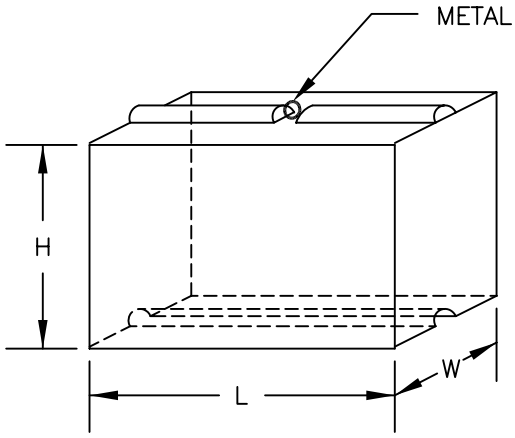
PLAN NO. CK-R.54

CITY OF KIRKLAND WASHINGTON

ROCKERY DETAIL SIDEWALK SUPPORT

LAST REVISED: 11/30/99





CONCRETE TONGUE AND GROOVE BLOCK

SIZES

H	L	W
2'–0"	3'–0"	2'–0"
2'–0"	6'–0"	2'–0"

NOTE:

1. MAX DEPTH OF CUT SHALL BE 8 FEET, AND MAX DEPTH OF FILL SHALL BE 4' OR AS APPROVED BY GEOTECHNICAL ENGINEER. IN ANY CASE, THE CITY MAY REQUIRE INSPECTION AND APPROVAL BY A GEOTECHNICAL ENGINEER.

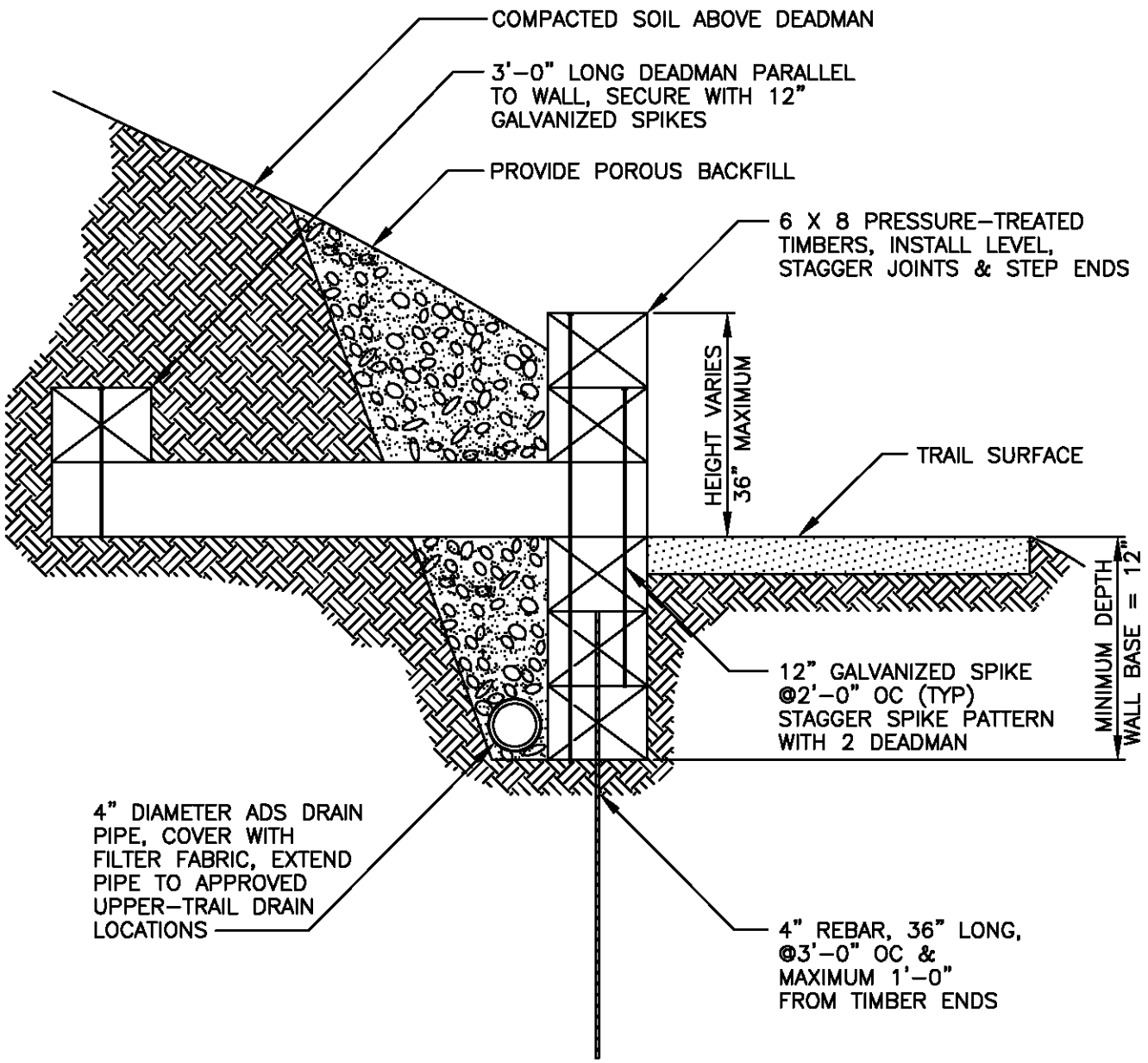
CITY OF KIRKLAND

PLAN NO. CK–R.55

CITY OF KIRKLAND WASHINGTON

ECOLOGY BLOCK WALL

LAST REVISED: 11/30/99



NOTES

1. ALL WOOD SHALL BE 'HEM–FIR', #2 OR BETTER.
2. ALL WOOD ACZA PRESSURE–TREATED PER LP–22, 0.6 RETENTION OR AS APPROVED BY OWNER.

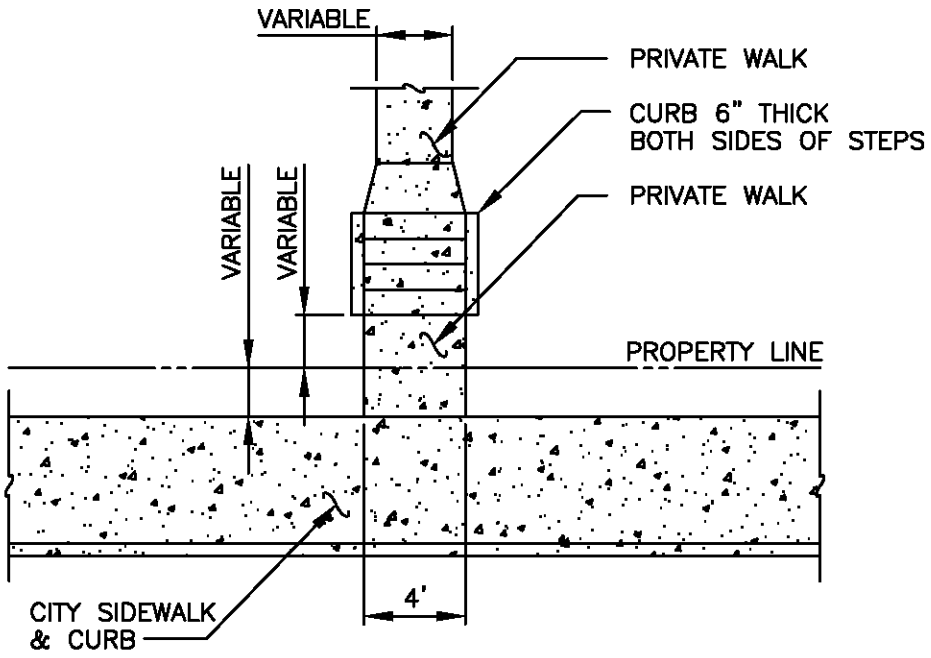
CITY OF KIRKLAND

PLAN NO. CK–R.56

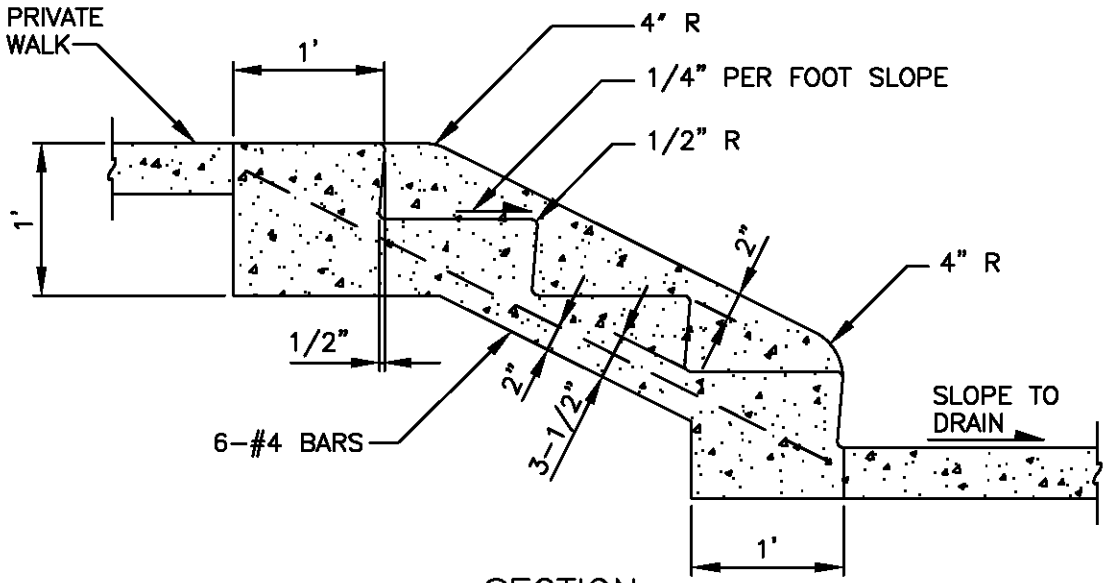
CITY OF KIRKLAND WASHINGTON

TIMBER RETAINING WALL

LAST REVISED: 11/30/99



PLAN



SECTION

NOTES

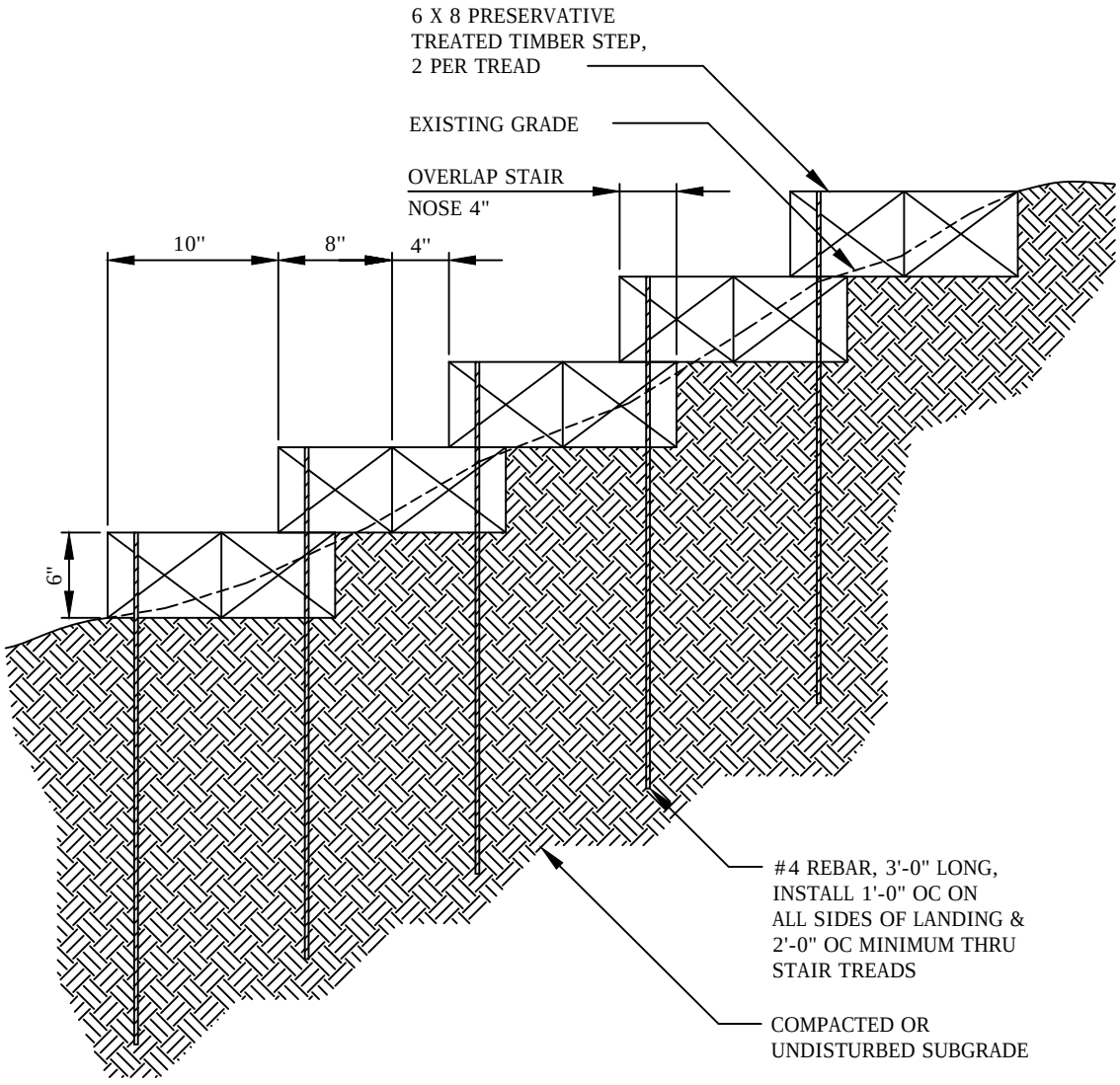
1. STEPS SHALL BE 4'-0" WIDE, CURB TO CURB, PLUS 6" CURBS ON EACH SIDE.
2. CEMENT CONCRETE SHALL BE CLASS 4000 TROWEL FINISH.
3. NUMBER OF STEPS SHALL SUIT INDIVIDUAL CONDITIONS, WITH TREAD AND RISER DIMENSIONS TO SUIT THE GRADE.
4. RISERS SHALL BE 5" MINIMUM, 7" MAXIMUM: TREAD SHALL BE 11" MINIMUM, 12" MAXIMUM.
5. HANDRAIL REQUIRED ON BOTH SIDES PER BUILDING CODE STANDARDS.

CITY OF KIRKLAND

PLAN NO. CK-R.57

CEMENT CONCRETE STEPS

LAST REVISED: 1/18/18



NOTES

1. ALL WOOD SHALL BE 'HEM-FIR', #2 OR BETTER (WITH ROUGH-SAWN WALKING SURFACE).

2. ALL WOOD ACZA PRESSURE-TREATED PER LP-22, 0.6 RETENTION OR AS APPROVED BY CITY.

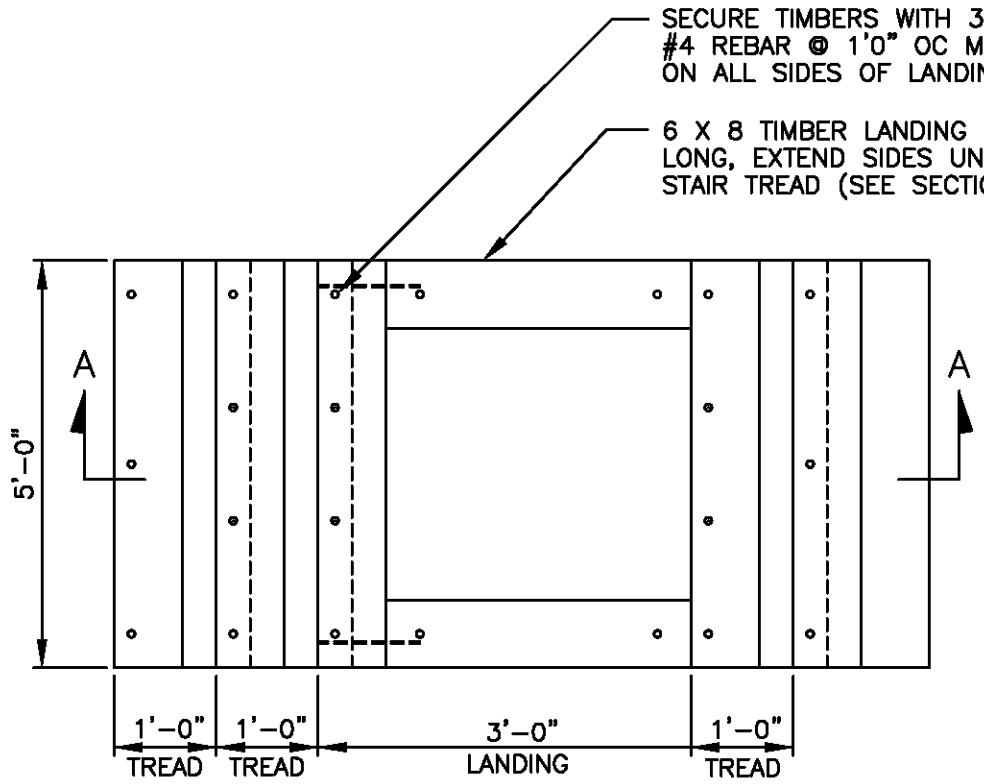
CITY OF KIRKLAND

PLAN NO. CK- R.58

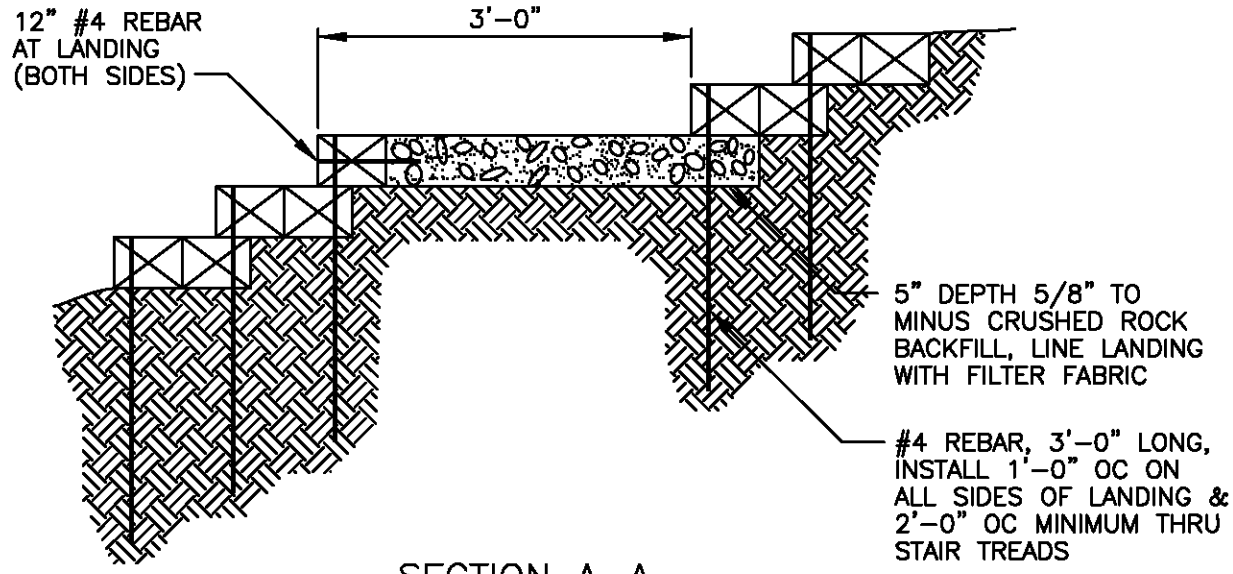
CITY OF KIRKLAND WASHINGTON

TIMBER STAIRS

LAST REVISED: 11/30/99



PLAN



SECTION A–A

NOTES

1. ALL WOOD SHALL BE 'HEM–FIR', #2 OR BETTER (WITH ROUGH–SAWN WALKING SURFACE).
2. ALL WOOD ACZA PRESSURE–TREATED PER LP–22, 0.6 RETENTION OR AS APPROVED BY CITY.

CITY OF KIRKLAND

PLAN NO. CK–R.59

CITY OF KIRKLAND WASHINGTON

TIMBER STAIRS LANDING

LAST REVISED: 1/18/18

CK-R.60: Permitted Groundcover in Public Landscape Strip

IN ADDITION TO GRASS, THE FOLLOWING TYPES OF GROUNDCOVER CAN BE PLANTED IN A LANDSCAPE STRIP (THE PLANTING AREA BETWEEN CURB AND SIDEWALK) IN THE PUBLIC RIGHT-OF-WAY.

* LOWFAST COTONEASTER
* POTENTILLA
* KINNIKINNICK
* SALAL
* HEATHER AND HEATH
* VINCA MINOR (FOR SHADY AREAS)
* ORNAMENTAL GRASS SUCH AS:
    - -BLUE FESCUE
    - -CAREX/ SEDGE
    - -DWARF LAVENDER
    - -IBERIS
    - -OTHERS AS APPROVED.

MAINTENANCE OF THE GROUNDCOVER, INCLUDING WATERING, TRIMMING, AND WEEDING IS THE RESPONSIBILITY OF THE ADJACENT PROPERTY OWNERS.

PLANTING SHALL BE AS FOLLOWS:

* 4" MINIMUM PLANT SIZE
* 9" MINIMUM SPACING ON CENTER
* GROWTH SHALL BE NO HIGHER THAN 12" ADJACENT PROPERTY OWNER IS RESPONSIBLE FOR KEEPING HEIGHT BELOW THIS 12" MAXIMUM.
* PREFERRED PLANTING DATES BETWEEN OCTOBER AND FEBRUARY.

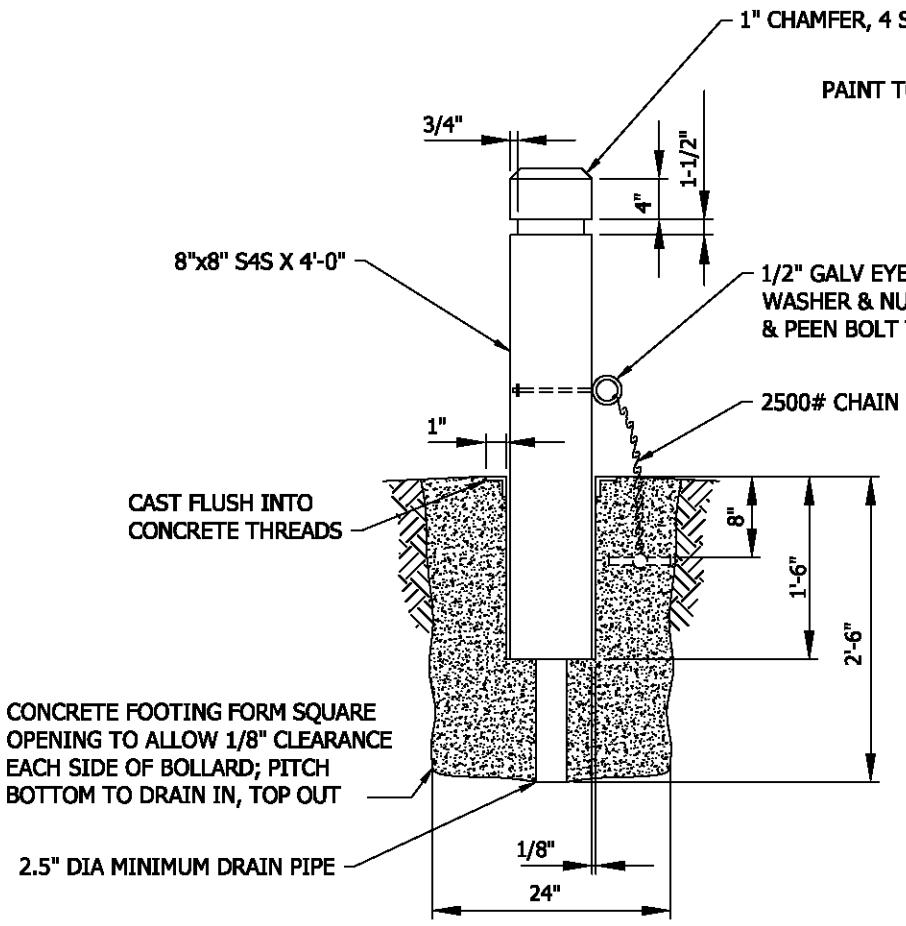
CITY OF KIRKLAND

PLAN NO. CK- R.60

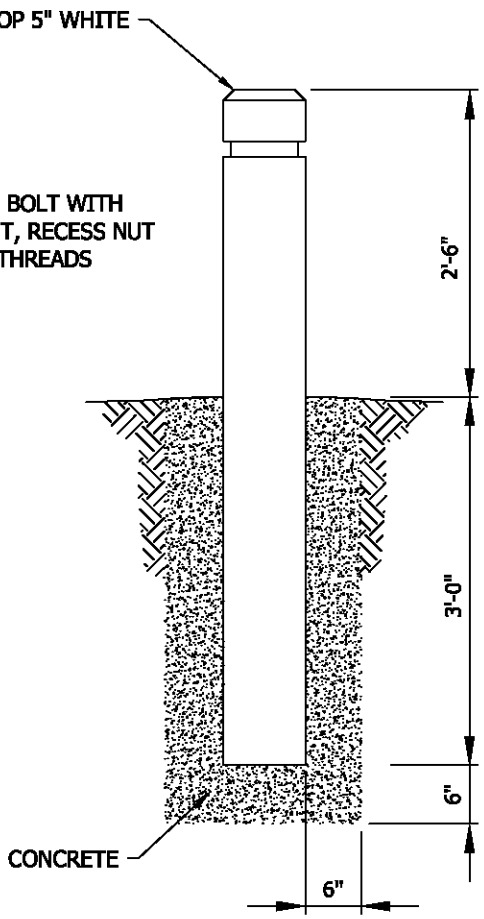
CITY OF KIRKLAND WASHINGTON

PERMITTED GROUNDCOVER
PUBLIC LANDSCAPE STRIP

LAST REVISED: 01/2020



REMOVABLE BOLLARD



FIXED BOLLARD

NOTES:

1. TIMBER SHALL BE PRESSURE TREATED FIR, DENSE CONSTRUCTION GRADE, AND SHALL BE PRESSURE TREATED.
2. NUTS BOLTS, AND WASHERS CONFORM TO ASTM A307.
3. ALL ALUMINUM CONSTRUCTION.
4. CONCRETE SHALL BE CLASS C.
5. PITCH GRADE ON FIXED BOLLARD TO DRAIN AWAY FROM POST.
6. SPACING OF BOLLARDS TO BE 5' ON CENTER.

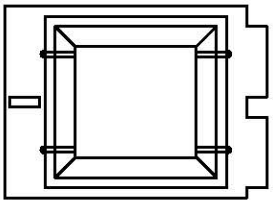
CITY OF KIRKLAND

PLAN NO. CK- R.61

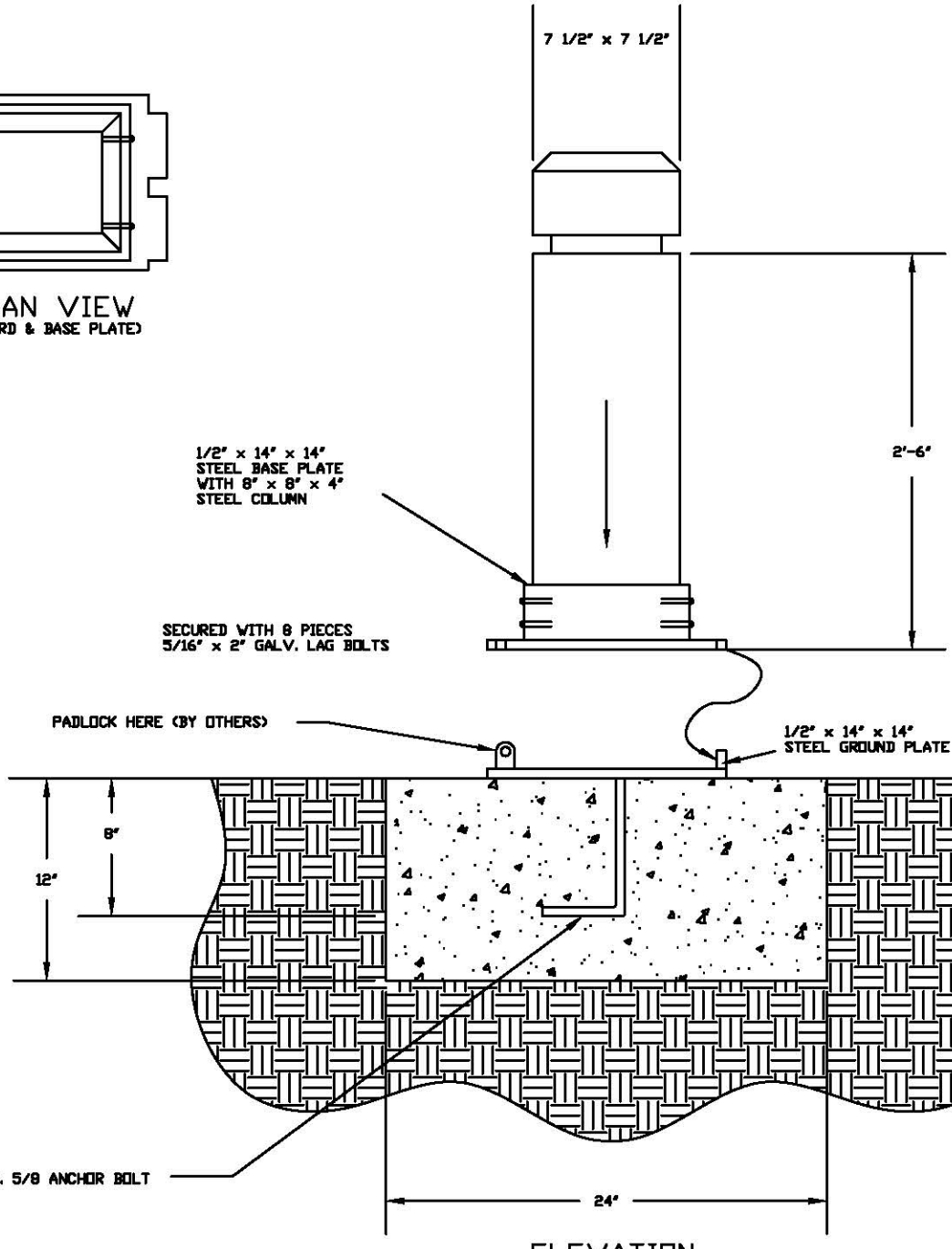
CITY OF KIRKLAND WASHINGTON

BOLLARDS

LAST REVISED: REVDATE



PLAN VIEW
(BOLLARD & BASE PLATE)



ELEVATION

NOTES:

1. 7 1/2" x 7 1/2" DOUGLAS FIR, ROUGH CUT. PRESSURE TREATED AFTER FABRICATION TO 40# OR REFUSAL CCA PER AWPA C-2, SUNWOOD, NON-INCISED.
2. STEEL HOT-DIPPED GALVANIZED AFTER FABRICATION

BOLLARD

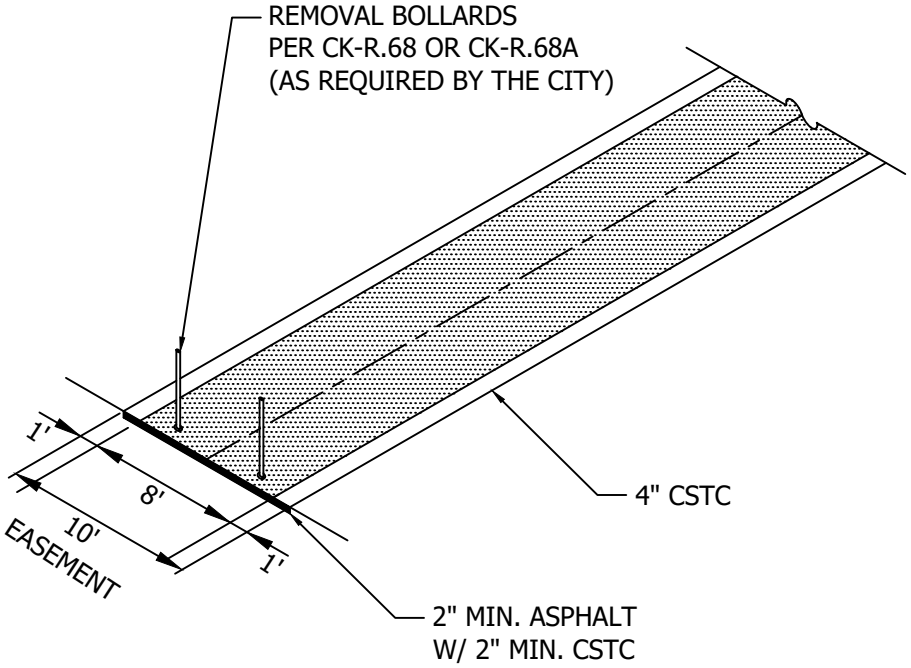
CITY OF KIRKLAND

PLAN NO. CK-R.61A

CITY OF KIRKLAND WASHINGTON

ALTERNATIVE BOLLARD

LAST REVISED: 01/2021



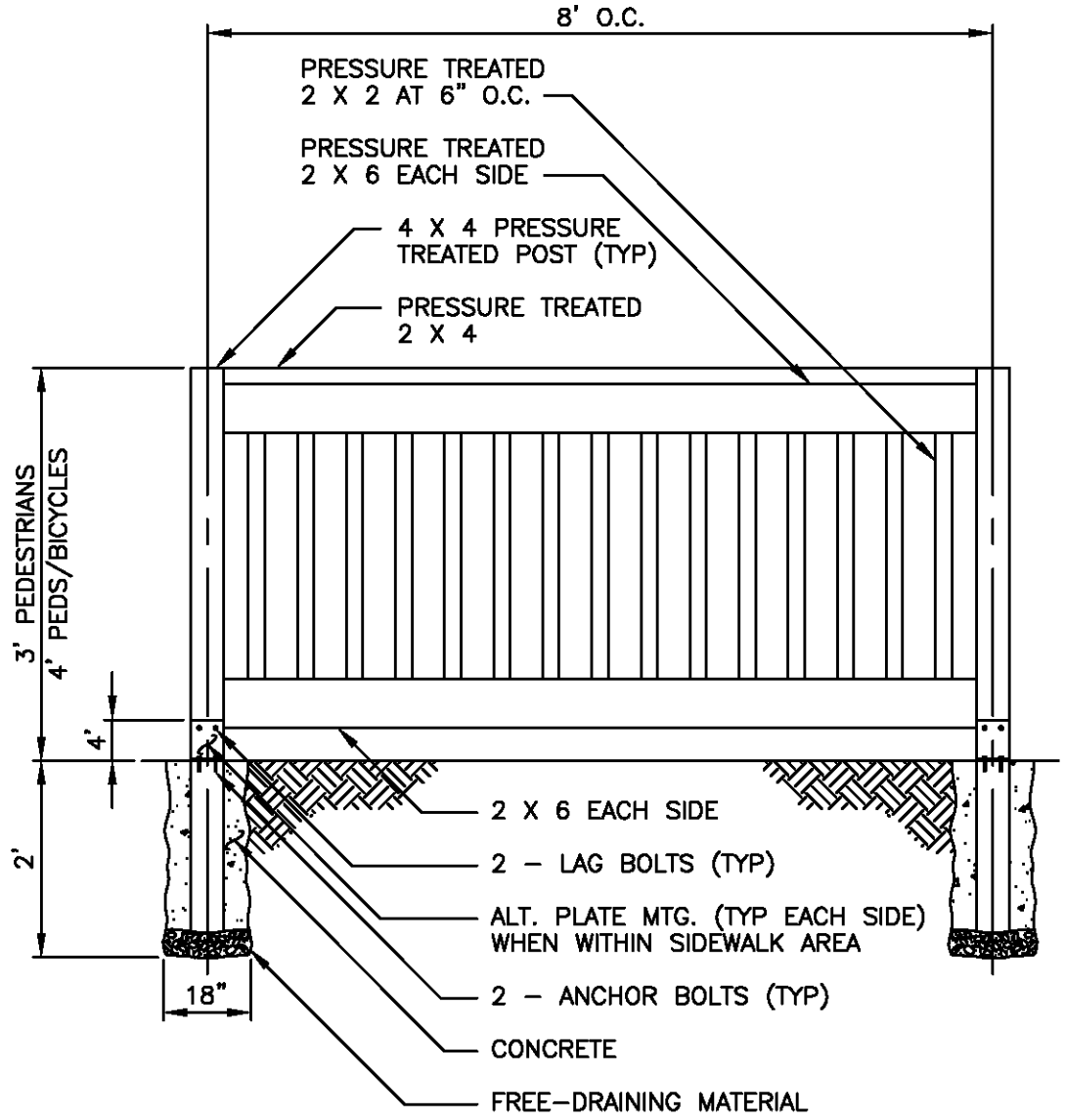
8' ASPHALT WALKWAY

NOTES:

1. FOLLOW CK-R.68 OR CK-R.68A FOR INSTALLATION REQUIREMENTS.
2. WALKWAY PAVEMENT WIDTH MUST BE 10' WHERE CONNECTIONS ARE REQUIRED TO THE CROSS KIRKLAND OR EASTSIDE RAIL CORRIDORS.

CITY OF KIRKLAND	
PLAN NO. CK - R.62	
CITY OF KIRKLAND WASHINGTON	PEDESTRIAN / WALKWAY EASEMENT

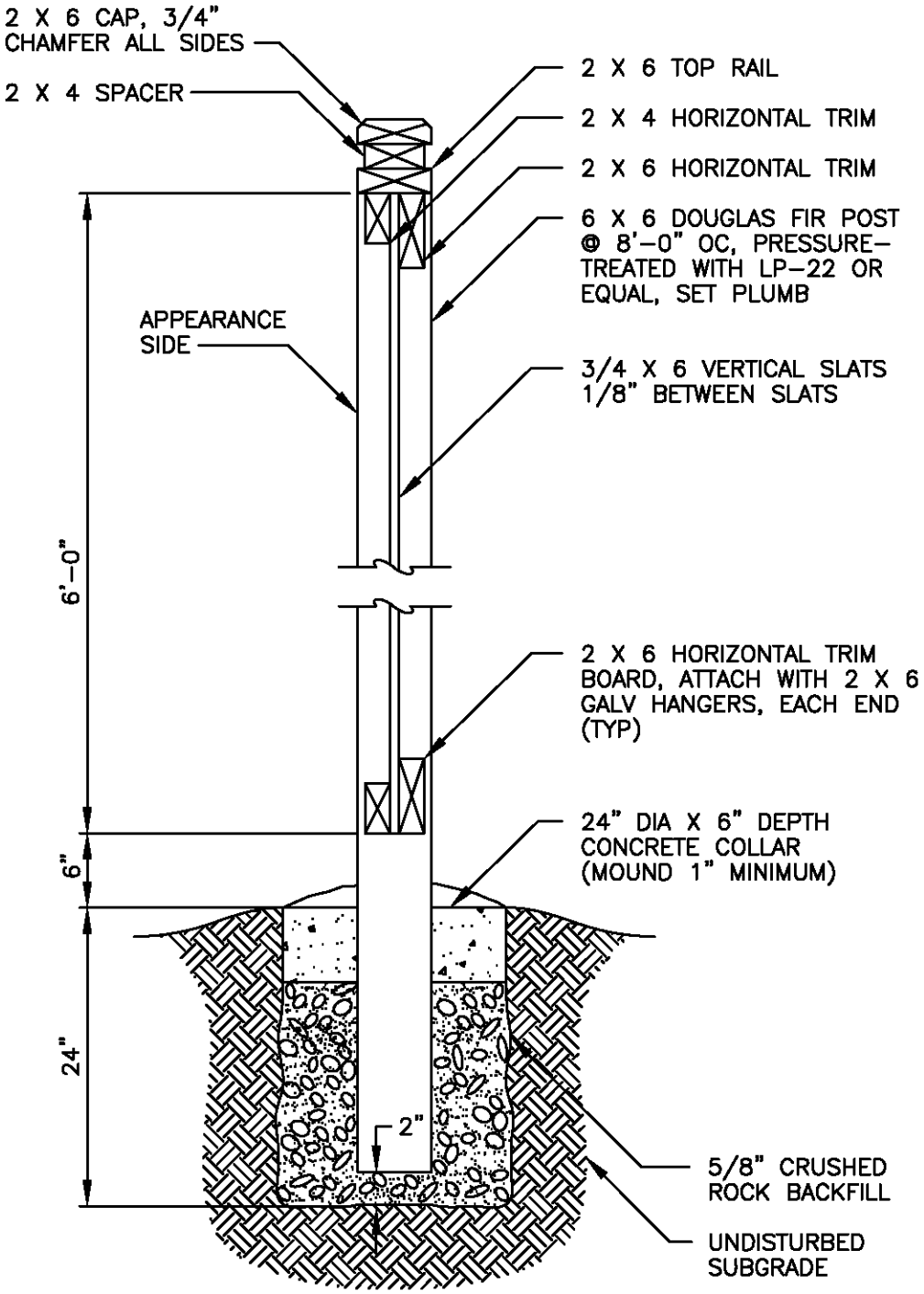
LAST REVISED: 11/30/99



NOTE: TO BE USED ONLY WHEN ALLOWED BY THE PUBLIC WORKS DEPARTMENT WITH WOOD BOARDWALK.

CITY OF KIRKLAND	
PLAN NO. CK–R.63	
CITY OF KIRKLAND WASHINGTON	WOOD SAFETY RAILING

LAST REVISED:01/30/09



NOTES

1. ALL WOOD TO BE WESTERN RED CEDAR GRADE 'B' OR BETTER UNLESS OTHERWISE INDICATED.
2. FASTEN ALL MATERIALS WITH 10d GALVANIZED NAILS UNLESS OTHERWISE INDICATED.

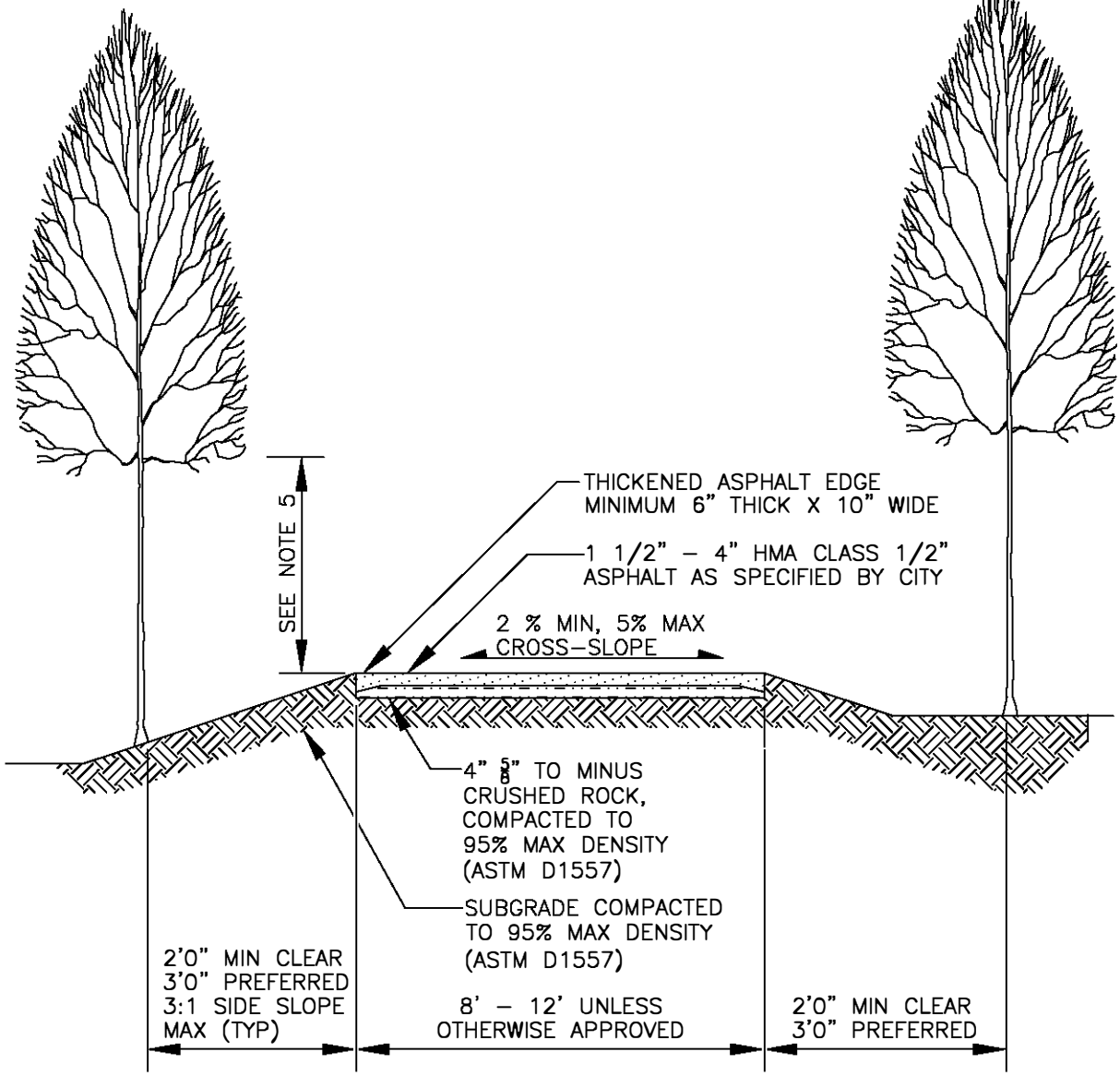
CITY OF KIRKLAND

PLAN NO. CK-R.64

CITY OF KIRKLAND WASHINGTON

BOARD FENCE

LAST REVISED: 1/18/18



NOTES

1. ALL PLANS MUST BE APPROVED BY THE CITY PRIOR TO CONSTRUCTION OF THE TRAIL. TRAIL CENTERLINE TO BE STAKED IN FIELD BY CONTRACTOR AND APPROVED BY THE APPROPRIATE CITY INSPECTOR.

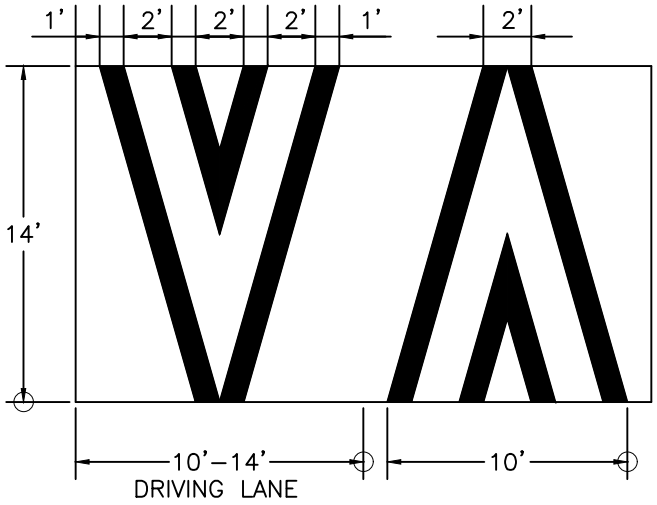
2. ALL HAZARD TREES AND TREE LIMBS, AS DEFINED BY THE WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES HAZARD TREE BULLETIN, SHALL BE FELLED AND REMOVED FROM THE SITE.

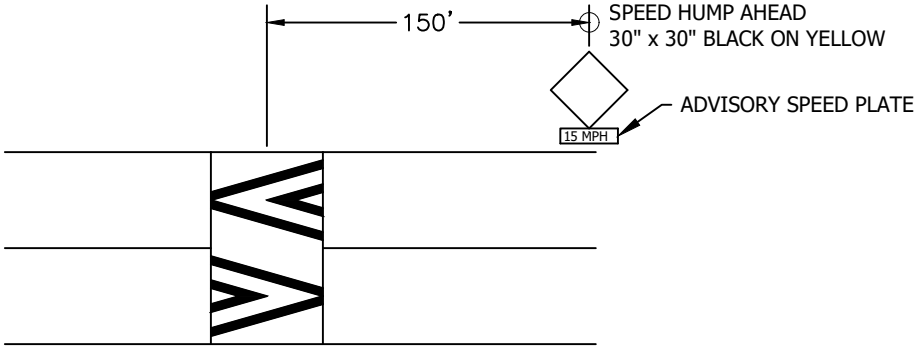
3. SUBGRADE TO BE TREATED WITH AN APPROVED HERBICIDE PRIOR TO PLACING ASPHALT.

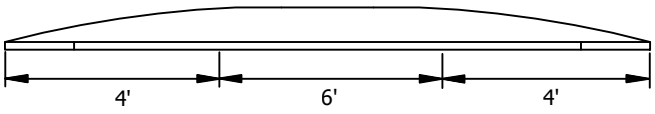
4. MINIMUM BRANCH CLEARANCE ABOVE TRAIL SURFACE = 7'–0" (TYPICAL), 10'–0" IF EQUESTIAN USE IS ANTICIPATED.

CITY OF KIRKLAND	
PLAN NO. CK– R.65	
CITY OF KIRKLAND WASHINGTON	ASPHALT SECTION FOR MULTIPURPOSE AND PAVED PATHS

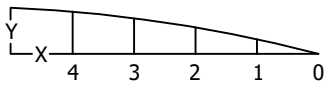
LAST REVISED:01/2022







SLOTTED SPEED HUMP SECTION
NO SCALE



X (ft)	Y (in)
0	0.00
1	1.50
2	2.25
3	2.75
4	3.00

VERTICAL DIMENSION CHART
NO SCALE

NOTES:

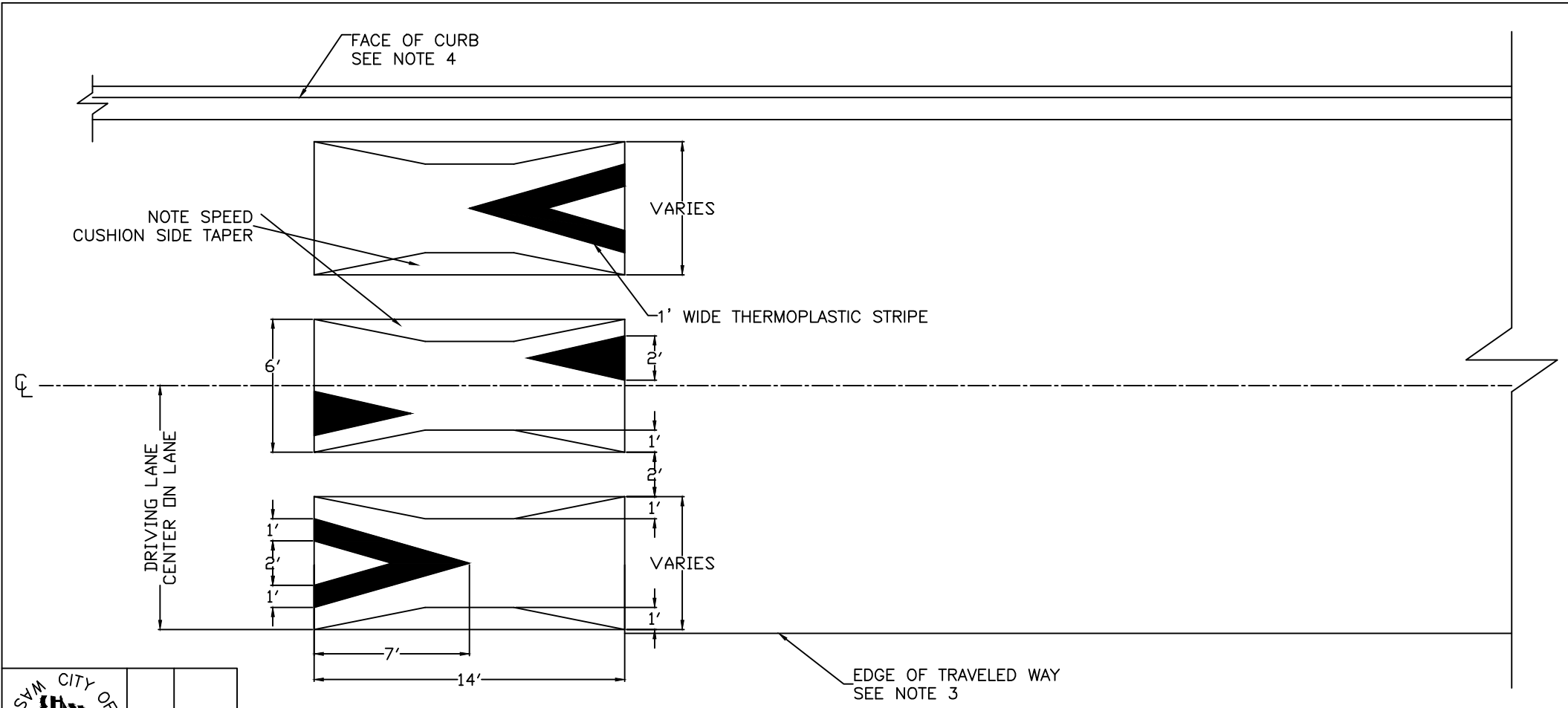
1. CHEVRON MARKINGS TO BE WHITE 3M PREFORMED COLD PLASTIC.
2. SIGN LOCATION SHALL BE VERIFIED BY THE PROJECT ENGINEER PRIOR TO INSTALLATION.

CITY OF KIRKLAND

PLAN NO. CK–R.67

CITY OF KIRKLAND WASHINGTON

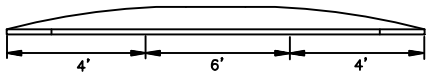
SPEED HUMP MARKING AND SIGNAGE



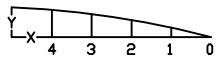
SPEED CUSHION

NO SCALE

MARKING, LAYOUT, AND EDGE DETAIL



SPEED CUSHION SECTION
NO SCALE



X (ft)	Y (in)
0	0.00
1	1.50
2	2.25
3	2.75
4	3.00

VERTICAL DIMENSION CHART
NO SCALE

NOTES:

1. PAVEMENT MARKINGS TYPICAL IN BOTH DIRECTIONS OF TRAVEL
2. ALL SPEED CUSHION MARKINGS SHALL BE PLASTIC
3. WHEN PLACED ON ROADWAY WITH NO CURB AND GUTTER, EDGE OF SPEED CUSHION EXTENDS TO EDGE OF TRAVEL WAY
4. WHEN PLACED ON ROADWAY WITH CURB AND GUTTER, EDGE OF SPEED CUSHION TO BE PLACED 2' FROM FACE OF CURB.
5. NOTE SIDE TAPER ON SPEED CUSHION.

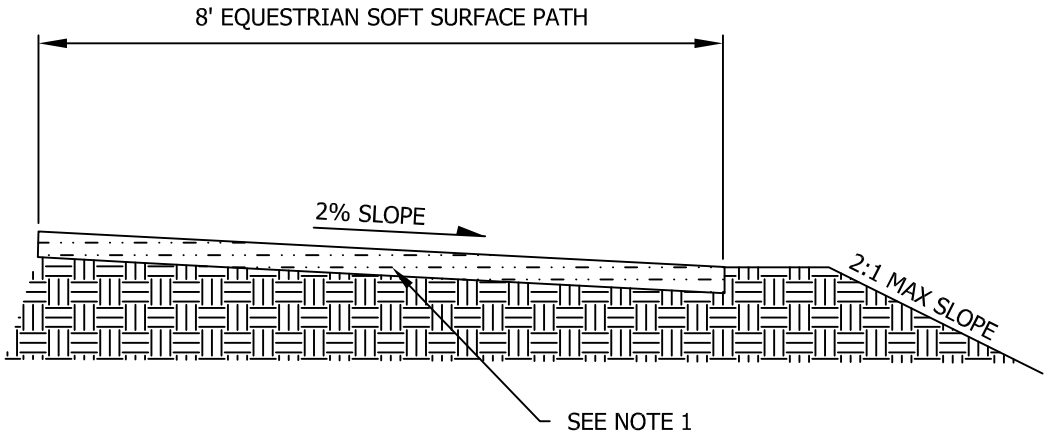
CITY OF KIRKLAND

PLAN NO. CK-R.67B

SPEED CUSHION MARKING AND SIGNAGE

LAST REVISED:01/2024

LAST REVISED:01/1/19

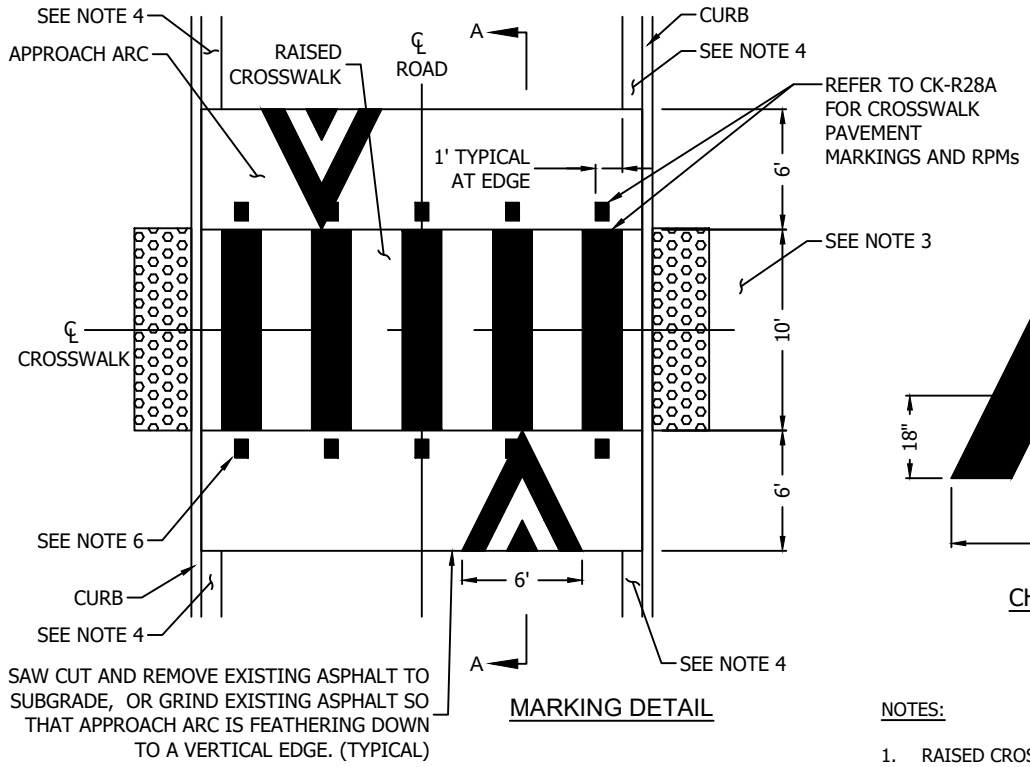


NOTE:

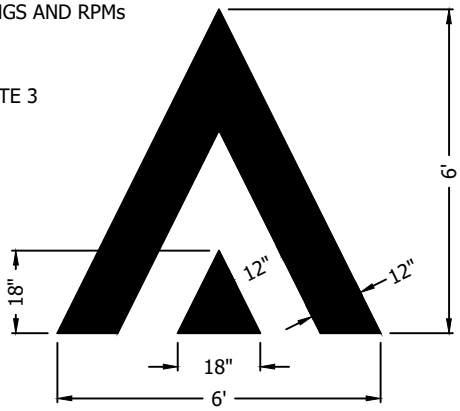
MATERIAL FOR PATHWAY PER STABILIZER SOLUTIONS OR EQUAL.
MULTI-USE PATH TO BE 4" THICK GRAVEL PATH ($\frac{1}{4}$") MINUS WITH
STABILIZER BINDER MIXED IN AT RATE OF 15 LB/ TON OF GRAVEL
AND INSTALLED PER STABILIZER MANUFACTURER'S SPECIFICATIONS.

CITY OF KIRKLAND	
PLAN NO. CK–R.68	
CITY OF KIRKLAND WASHINGTON	EQUESTRIAN SOFT TRAIL DETAIL

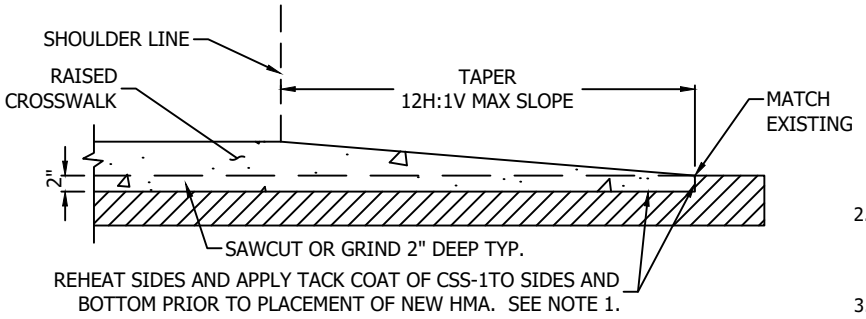
LAST REVISED: 12/23/2024



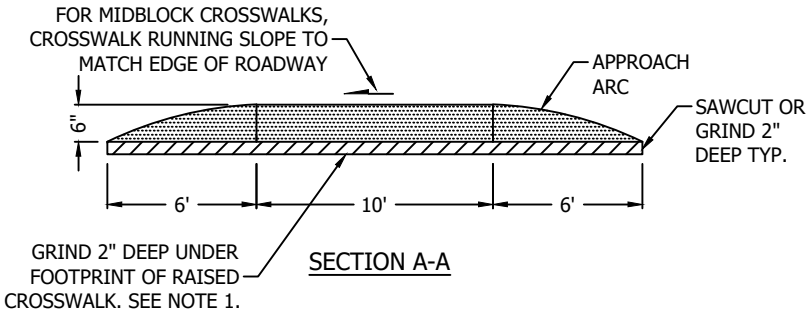
MARKING DETAIL



CHEVRON DETAIL



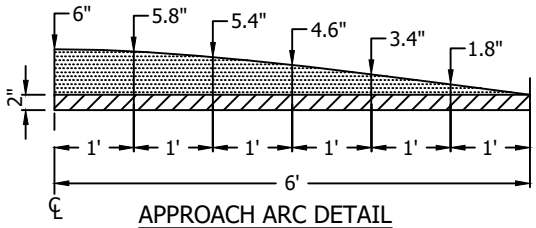
SECTION - RAISED CROSSWALK AT ASPHALT SHOULDER



SECTION A-A

NOTES:

1. RAISED CROSSWALK SHALL BE 1/2" HMA. GRIND EXISTING PAVEMENT TO 2" DEPTH, OR SAWCUT AND REMOVE ASPHALT UNDER RAISED CROSSWALK FOOTPRINT. APPLY CSS-1TACK COAT PRIOR TO PLACING NEW HMA. SEAL ALL JOINTS WITH PG 64-22 AND APPLY A SAND BLANKET WHEN COMPLETE. HMA MUST BE COMPACTED IN NO GREATER THAN 2" LIFTS. ALL RAISED CROSSWALK MARKINGS SHALL BE THERMOPLASTIC, HEAT FUSED PREFORMED, 90 MIL., OR EQUAL APPROVED BY THE ENGINEER.
2. CHEVRON TO BE CENTERED IN THE DRIVING LANE. LOCATION SHALL BE VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
3. INSTALLATION OF A RAISED CROSSWALK AT AN EXISTING CROSSWALK LOCATION WILL REQUIRE EXISTING CURB RAMPS TO BE REDESIGNED.
4. THE DESIGN OF THE RAISED CROSSWALK SHALL ENSURE STORMWATER IS ADEQUATELY ADDRESSED TO AVOID PONDING.
5. RAISED CROSSWALKS SHALL ONLY BE INSTALLED ON STREETS FUNCTIONALLY CLASSIFIED AS LOCAL OR COLLECTOR.
6. DO NOT PLACE RPM IN BIKE LANE OR ON EDGE LINES.
7. SEE CITY OF KIRKLAND PRE-APPROVED PLAN CK-R.69A AND CK-R.69B FOR SIGNING DETAILS AND REQUIREMENTS.
8. RAISED CROSSWALKS SHALL NOT BE INSTALLED ON ROADWAYS WITH LONGITUDINAL GRADES EXCEEDING 8%.



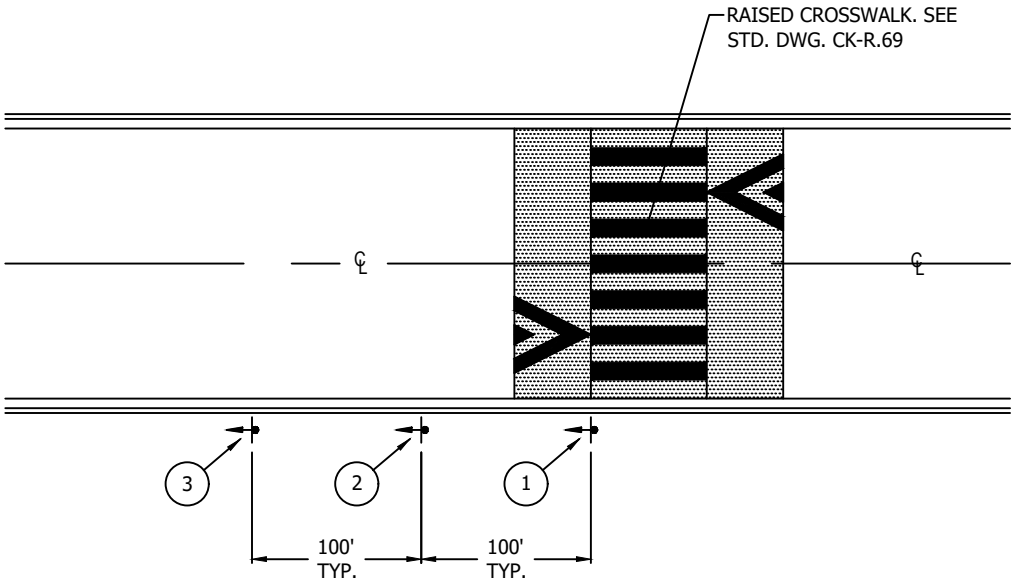
APPROACH ARC DETAIL

CITY OF KIRKLAND

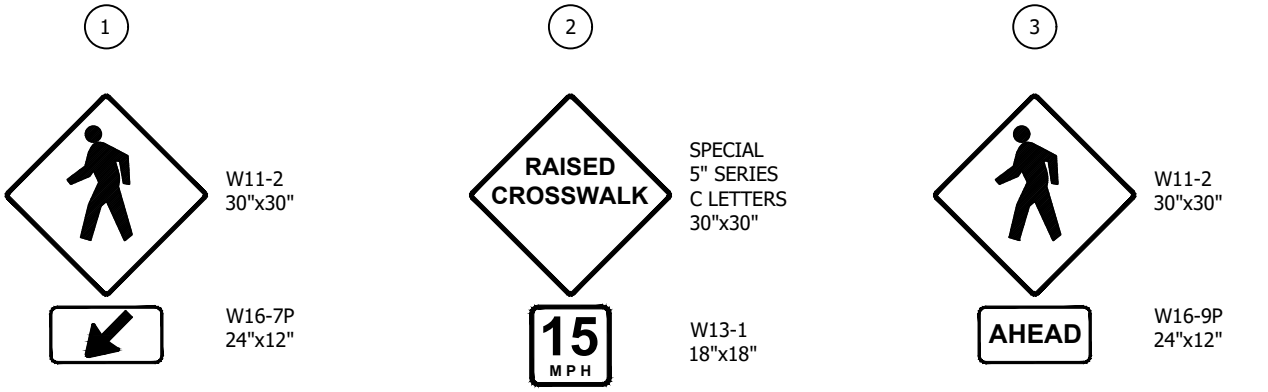
PLAN NO. CK - R.69

RAISED CROSSWALK DETAIL

LAST REVISED: 12/23/2024



SIGNING PLACEMENT



(OPTIONAL SIGN - APPROVAL BY ENGINEER)

NOTES:

1. SIGNS SHALL HAVE YELLOW BACKGROUND WITH BLACK LEGEND AND BORDER.
2. SIGN SPACING MAY BE ADJUSTED TO REFLECT SITE CONDITIONS AND SHALL BE APPROVED BY THE ENGINEER.
3. REFER TO PRE-APPROVED PLAN CK-R.43 FOR ADDITIONAL SIGN PLACEMENT REQUIREMENTS.

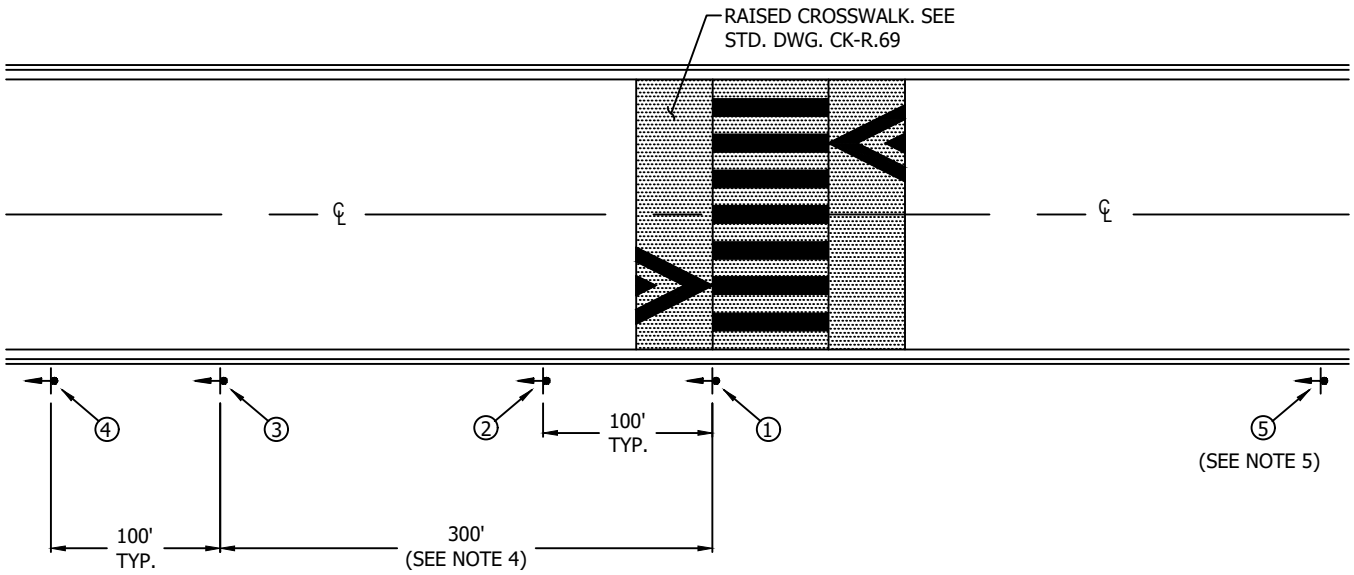
CITY OF KIRKLAND

PLAN NO. CK - R.69A

CITY OF KIRKLAND WASHINGTON

RAISED CROSSWALK SIGNING DETAIL

LAST REVISED: 12/23/2024



① S1-1 36"x36"
W16-7p 24"x12"

② RAISED CROSSWALK
SPECIAL 5" SERIES C LETTERS 30"x30"
15 MPH
W13-1 18"x18"

③ SCHOOL SPEED LIMIT 20 WHEN CHILDREN ARE PRESENT
S5-1 24"x48"
(SEE NOTE 3)

④ S1-1 36"x36"
AHEAD
W16-9p 24"x12"

⑤ END SCHOOL ZONE
S5-2 24"x30"

NOTES:

1. SIGN COMBINATIONS ①,②,③,④ ADDITIONAL PLAQUES SHALL BE FLUORESCENT YELLOW-GREEN WITH BLACK LEGEND AND BORDER. CONSTRUCT ALL SIGNS PER CURRENT MUTCD REQUIREMENTS.
2. SIGN SPACING MAY BE ADJUSTED TO REFLECT SITE CONDITIONS AND SHALL BE APPROVED BY THE ENGINEER.
3. IN SCHOOL SPEED ZONES WITH FLASHING BEACONS, USE BOTTOM MESSAGE "WHEN FLASHING" OR AS DIRECTED BY THE ENGINEER.
4. IF ROADWAY BORDERS A SCHOOL, THIS DISTANCE MAY INCREASE AS PER RCW 46.61.440.
5. CONFIRM SCHOOL ZONE LIMITS WITH TRANSPORTATION ENGINEER.
6. REFER TO PRE-APPROVED PLAN CK-R.43 FOR ADDITIONAL SIGN PLACEMENT REQUIREMENTS.

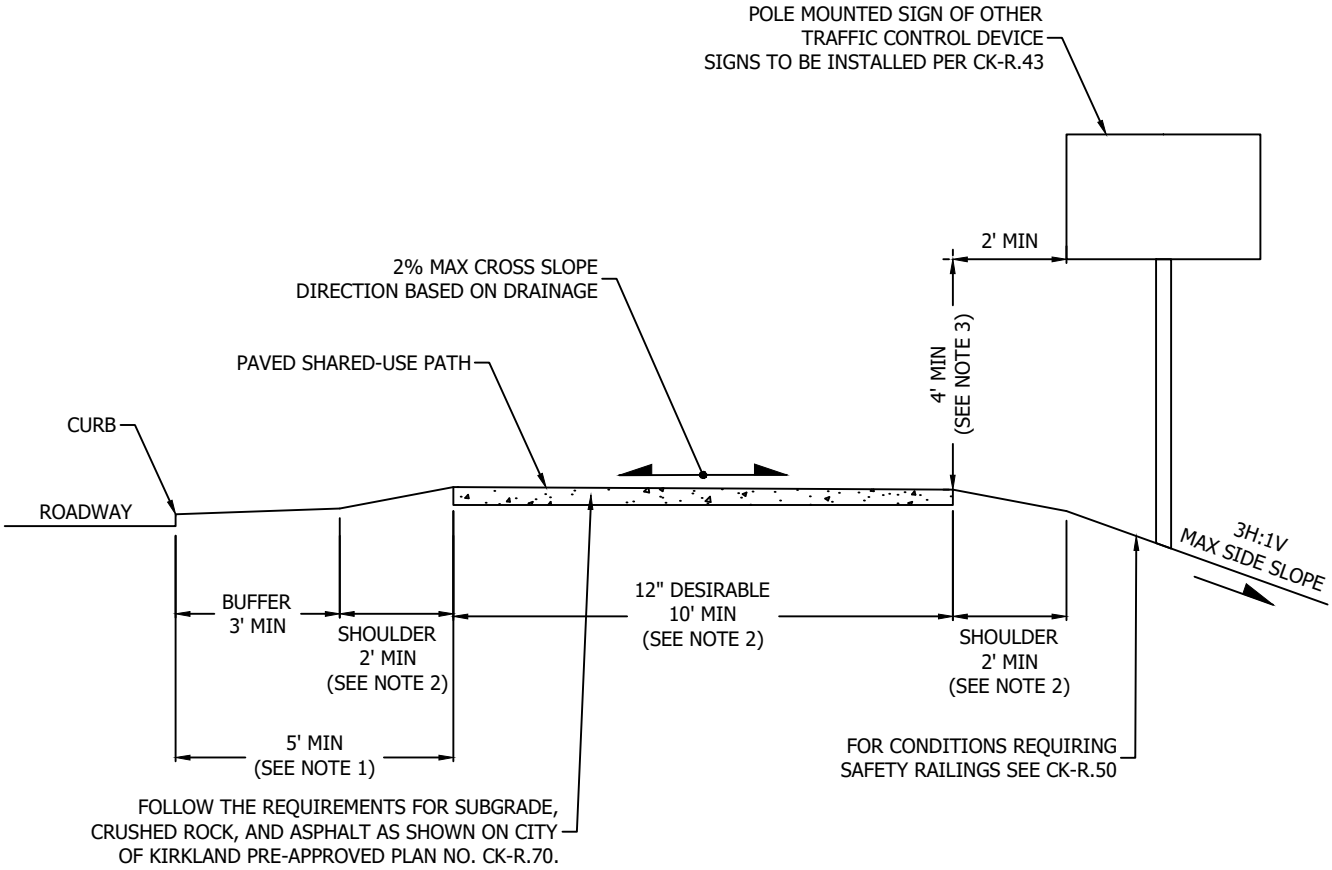
CITY OF KIRKLAND

PLAN NO. CK - R.69B

CITY OF KIRKLAND WASHINGTON

RAISED SCHOOL CROSSWALK SIGNING DETAIL

LAST REVISED: 12/23/2024

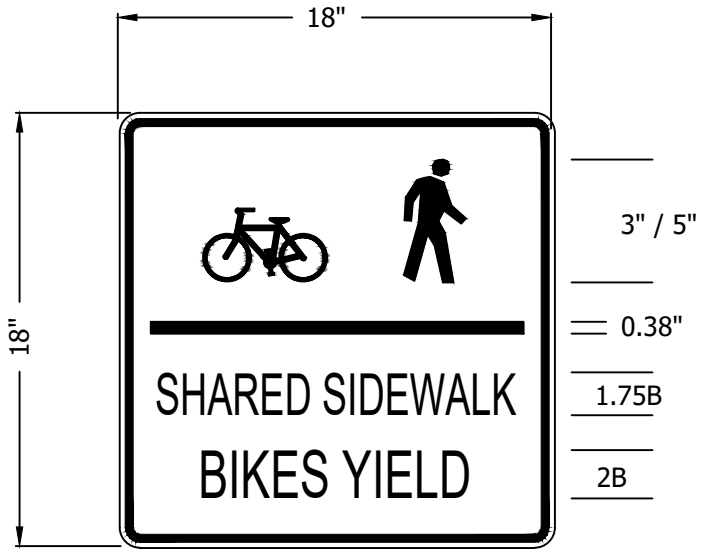


NOTES:

1. MINIMUM 5 FT SEPARATION FROM ROADWAY REQUIRED FROM A COMBINED WIDTH OF BUFFER AND PATH SHOULDER. IN CONSTRAINED CONDITIONS BUFFER MAY BE LESS WITH BARRIER SEPARATION. BUFFER MATERIAL SHALL BE STAMPED CONCRETE WHEN LESS THAN 4 FT WIDTH.
2. PATH SURFACE MATERIAL MAY BE ASPHALT OR CONCRETE. IF CONCRETE IS USED, THE DESIGNER SHALL PROVIDE A PAVEMENT DESIGN TO BE REVIEWED AND APPROVED BY THE CITY OF KIRKLAND. SHOULDERS MAY BE GRAVEL OR PAVED THE SAME MATERIAL AS THE PATH SURFACE. IF SHOULDERS ARE PAVED, THEY SHALL HAVE A CROSS SLOPE MATCHING THE PAVED PATH. IF THE SHOULDERS ARE UNPAVED, THEY SHALL HAVE A MAX CROSS SLOPE OF 6H:1V.
3. IF BUFFER OR SHOULDER IS PAVED/WALKABLE USE 7FT VERTICAL CLEARANCE FROM EDGE OF PATH TO BOTTOM EDGE OF ANY VERTICAL OBSTRUCTION.

CITY OF KIRKLAND	
PLAN NO. CK - R.70	
CITY OF KIRKLAND WASHINGTON	SHARED-USE PATH: ADJACENT TO ROADWAY DETAIL

LAST REVISED: 12/23/2024



BLACK ON WHITE

NOTES:

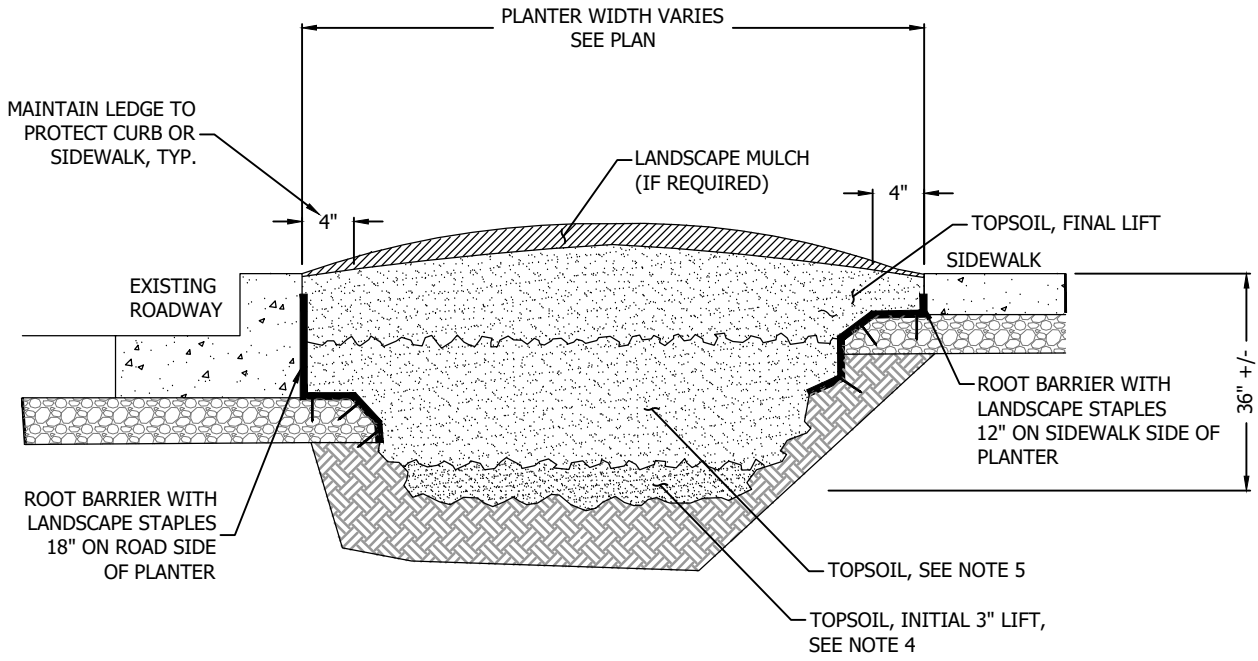
1. SHARED SIDEWALK SIGN TO BE USED ON WIDE SIDEWALKS THAT DON'T MEET REQUIREMENTS FOR SHARED-USE PATH. SEE CONTRACT PLANS FOR PLACEMENT.

2. ALL SIGNS SHALL HAVE ANTI-GRAFFITI COATING. SEE CONTRACT SPECIAL PROVISIONS FOR MORE INFORMATION.

3. REFER TO PRE-APPROVED PLAN CK-R.43 FOR ADDITIONAL SIGN PLACEMENT REQUIREMENTS.

CITY OF KIRKLAND	
PLAN NO. CK - R.71	
CITY OF KIRKLAND WASHINGTON	SHARED SIDEWALK SIGN DETAIL

LAST REVISED: 12/23/2024

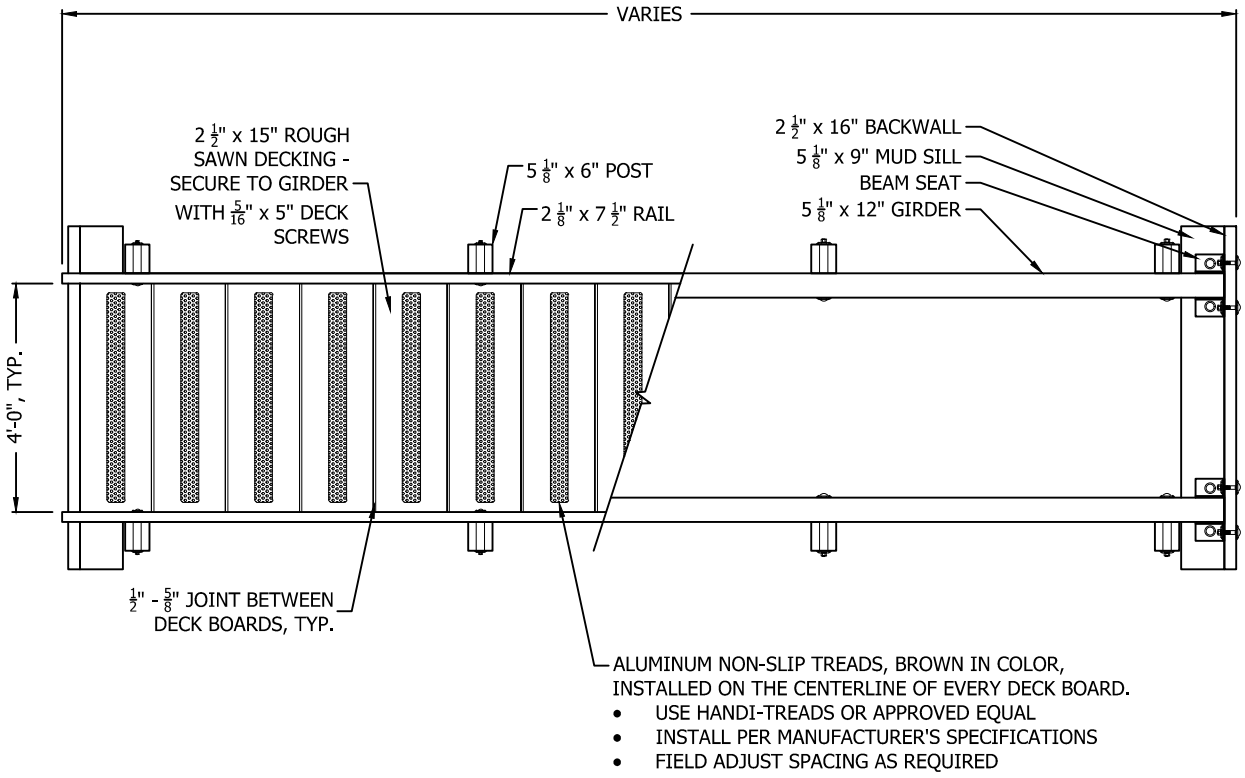


NOTES:

1. EXCAVATE EXISTING SOIL TO 36" +/- DEPTH FROM TOP OF ADJACENT CURB OR SIDEWALK. AVOID UNDERMINING ADJACENT CURB OR SIDEWALK.
2. ROOT BARRIER SHALL BE FLEXIBLE MESH MATERIAL, 100% NYLON, RASCHEL KNIT CONSTRUCTION, MIN. 10 OZ/SQ. YD., TRIMMED SELVAGE, FIRM/EXTRA FIRM ACRYLIC TOPICAL RESIN FINISH, MINIMUM BURST STRENGTH 250 LBF (ASTM D 3787-89 BURST OF KNIT GOODS). Q899 WITH EXTRA FIRM FINISH BY JASON MILLS IS PRE-APPROVED.
3. INSTALL ROOT BARRIER WITH A MINIMUM DEPTH OF 12"-18" (SEE FIGURE ABOVE) AND OVERLAP ROOT BARRIER PIECES BY A MINIMUM OF 12", SECURE WITH LANDSCAPE STAPLES AS NECESSARY. THE ROOT BARRIER SHALL BE INSTALLED NO HIGHER THAN 2" BELOW THE TOP OF CURB OR SIDEWALK, SHALL BE CONTINUOUS AROUND THE BED PERIMETER, AND SHALL EXTEND 5 FEET ON EITHER SIDE OF THE TREE TRUNK.
4. PLACE 3"+/- OF TOPSOIL TYPE A AND INCORPORATE TO A DEPTH OF 6" (3" TO 4" INTO THE SUBGRADE).
5. INSTALL 12" +/- LIFT OF TOPSOIL TYPE A AND COMPACT TO 85%.
6. INSTALL FINAL LIFT OF TOPSOIL TYPE A TO ACHIEVE FINISH GRADE, FLUSH WITH THE TOP OF CURB OR SIDEWALK WITH A MOUND IN THE CENTER 6:1, AND COMPACT TO 85%.
7. INSTALL 2" +/- LANDSCAPE MULCH, FULL DEPTH IN THE CENTER AND FEATHERED AT THE EDGES TO BECOME FLUSH WITH CURB OR SIDEWALK.
8. OPEN SOIL: EXCLUSIVELY REFERS TO EITHER UNCOMPACTED NATIVE SOILS (NO GREATER THAN 80% PROCTOR) OR AMENDED SOILS MEETING THE STANDARDS FOR APPROVED "TYPE A" TOPSOIL.

CITY OF KIRKLAND	
PLAN NO. CK - R.72	
CITY OF KIRKLAND WASHINGTON	SOIL PREPARATION FOR TREE PLANTING

LAST REVISED: 12/23/2024

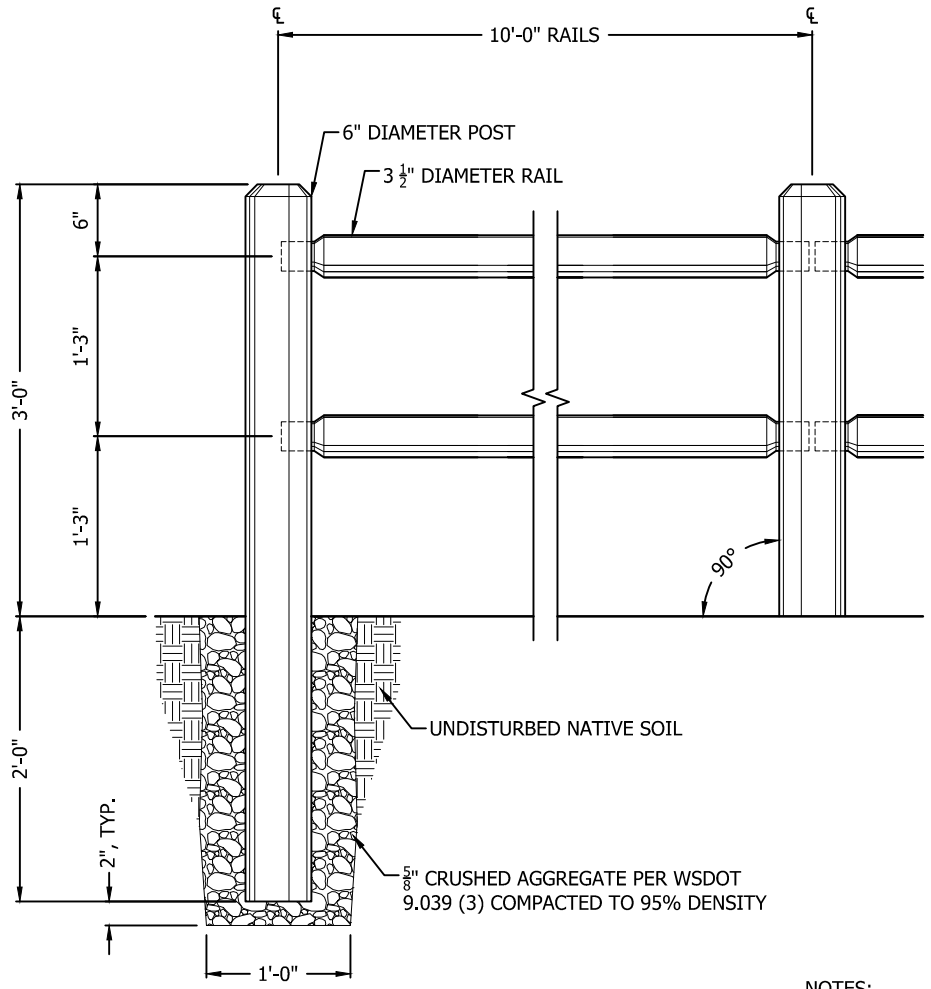


NOTES:

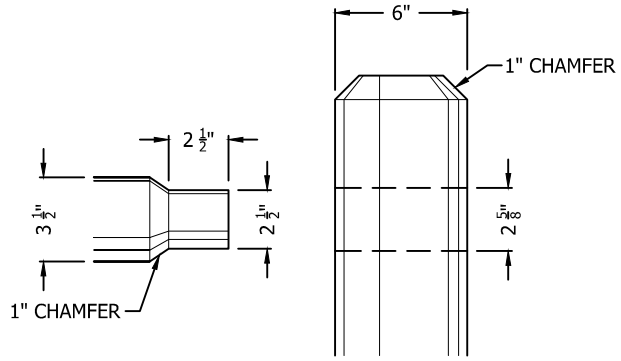
1. THIS DRAWING IS FOR REFERENCE ONLY. EACH BRIDGE SHALL BE ENGINEERING BASED ON SPECIFIC SITE CONDITIONS, ADA COMPLIANCE (IF REQUIRED), AND THE CITY OF KIRKLAND BUILDING CODE REQUIREMENTS.
2. ALL WOOD SHALL BE GLULAM WEST COAST DOUGLAS FIR 24F-VA/COMB. 2, OR GLULAM ALASKAN YELLOW CEDAR COMB. 70, OR APPROVED EQUAL. WOOD TREATMENT TO BE DETERMINED BY KIRKLAND PUBLIC WORKS OR PARKS STAFF.
3. ALL HARDWARE AND CONNECTORS SHALL BE HOT DIPPED GALVANIZED.

CITY OF KIRKLAND	
PLAN NO. CK - R.73	
CITY OF KIRKLAND WASHINGTON	TRAIL BRIDGE GUIDELINE

LAST REVISED: 12/30/2024



ELEVATION



MILLING AND DRILLING DIMENSIONS

NOTES:

1. POSTS SHALL BE 5-FOOT BY 6-INCH DIAMETER ROUND POSTS MILLED FROM PINE, OR AS APPROVED BY KIRKLAND PUBLIC WORKS. END AND 90° POST HOLES TO BE DRILLED AT HALF PENETRATION, LINE (180°) POST HOLES TO BE DRILLED AT FULL PENETRATION.
2. RAILS SHALL BE 10-FOOT BY 3 ½-INCH DIAMETER ROUND RAILS MILLED FROM PINE, OR AS APPROVED BY KIRKLAND PUBLIC WORKS.
3. ALL MATERIALS TO BE PT ACQ/CBA, OR APPROVED EQUAL, PRIOR TO SITE DELIVERY AND INSTALLATION.
4. SECURE RAILS BY DRIVING 3-INCH WOOD SCREWS THROUGH THE BACKSIDE (SIDE FACING AWAY FROM TRAIL, PARKING LOT, ETC.) OF POSTS.

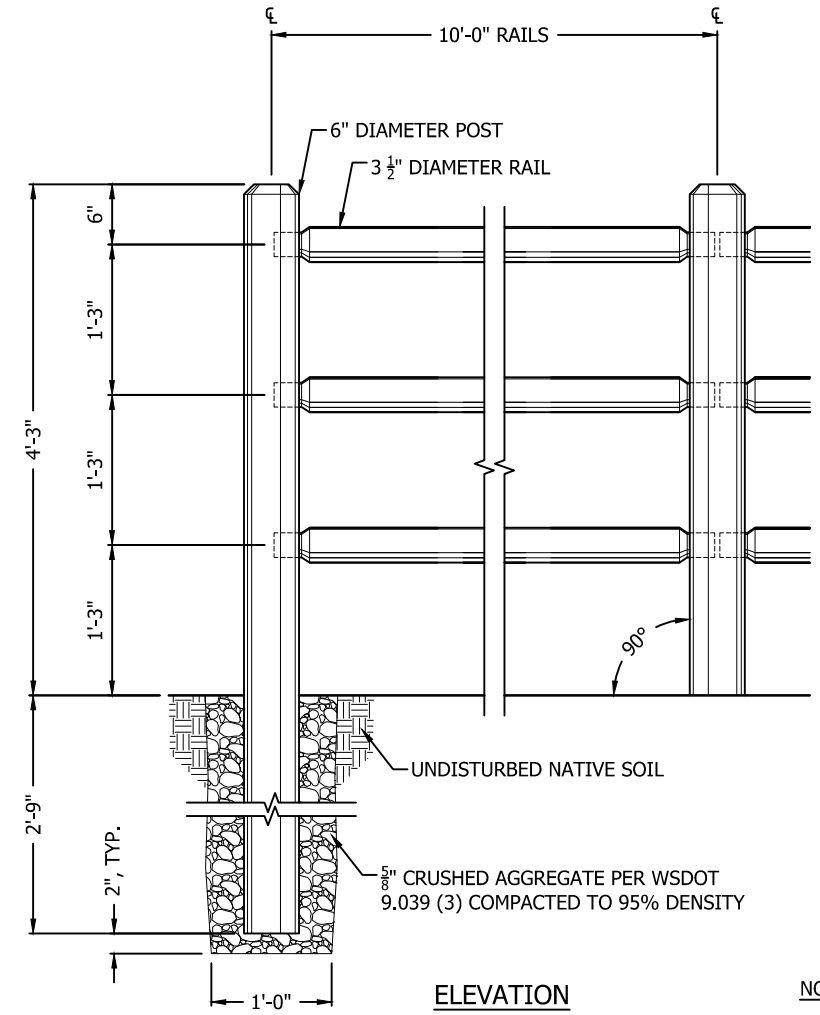
CITY OF KIRKLAND

PLAN NO. CK - R.74

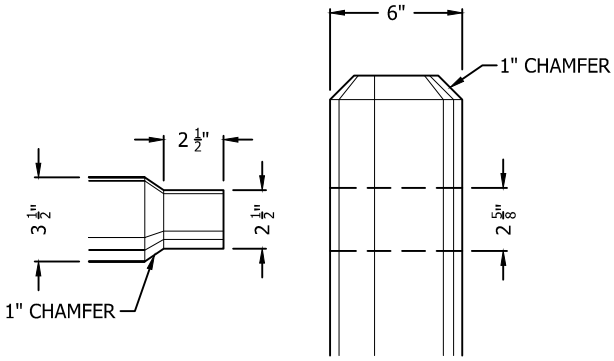
CITY OF KIRKLAND WASHINGTON

FENCE - POST AND TWO RAIL

LAST REVISED: 12/30/2024



ELEVATION



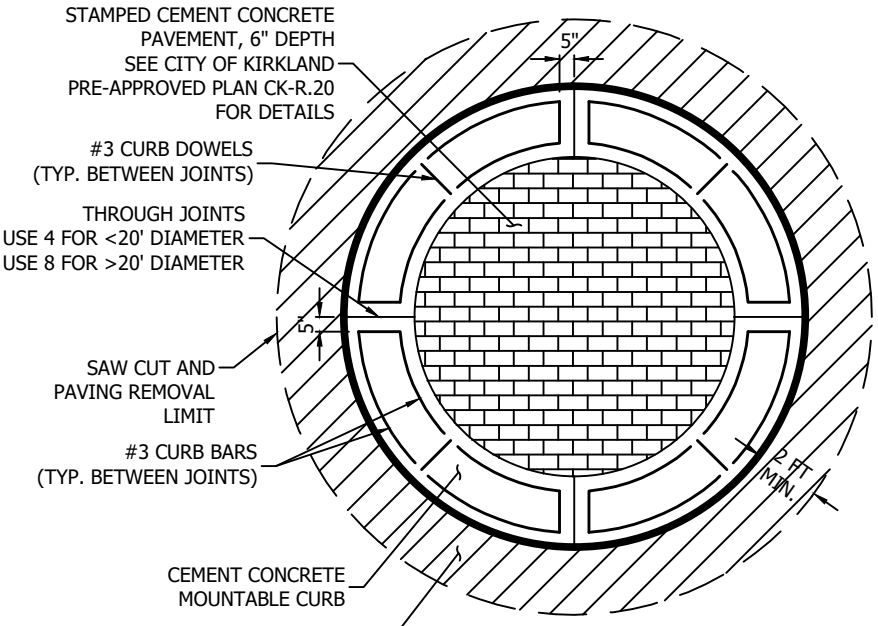
MILLING AND DRILLING DIMENSIONS

NOTES:

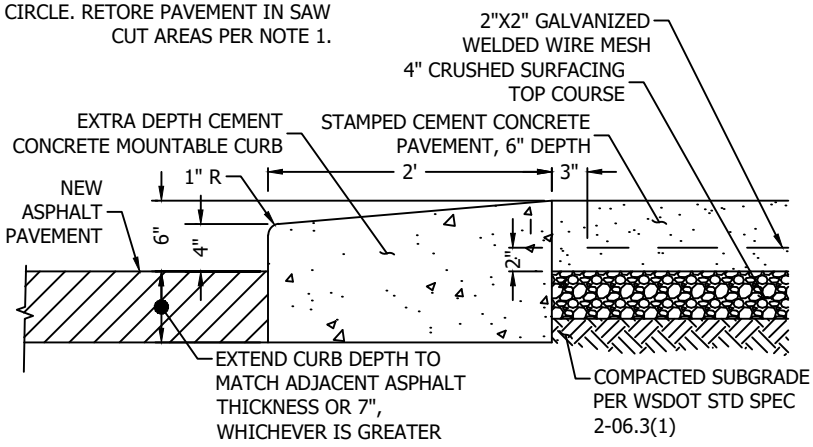
1. POSTS SHALL BE 7-FOOT BY 6-INCH DIAMETER ROUND POSTS MILLED FROM PINE, OR AS APPROVED BY KIRKLAND PUBLIC WORKS. END AND 90° POST HOLES TO BE DRILLED AT HALF PENETRATION, LINE (180°) POST HOLES TO BE DRILLED AT FULL PENETRATION.
2. RAILS SHALL BE 10-FOOT BY 3 ½-INCH DIAMETER ROUND RAILS MILLED FROM PINE, OR AS APPROVED BY KIRKLAND PUBLIC WORKS.
3. ALL MATERIALS TO BE PT ACQ/CBA, OR APPROVED EQUAL, PRIOR TO SITE DELIVERY AND INSTALLATION.
4. SECURE RAILS BY DRIVING 3-INCH WOOD SCREWS THROUGH THE BACKSIDE (SIDE FACING AWAY FROM TRAIL, PARKING LOT, ETC.) OF POSTS.

CITY OF KIRKLAND	
PLAN NO. CK - R.75	
CITY OF KIRKLAND WASHINGTON	FENCE - POST AND THREE RAIL (CKC FENCING)

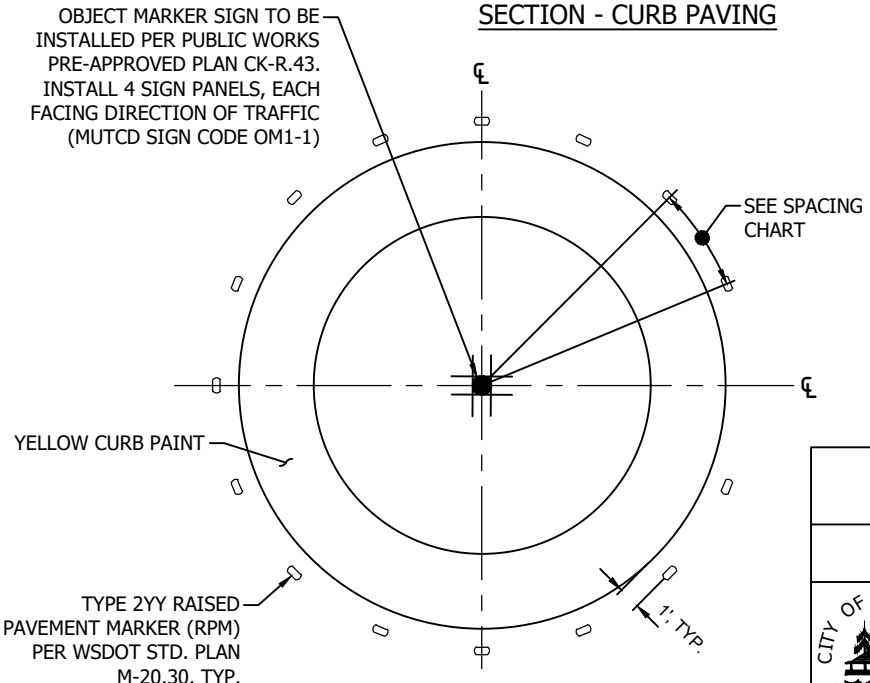
LAST REVISED: 01/2026



PAVING DETAIL



SECTION - CURB PAVING



SIGNING AND MARKING DETAIL

NOTES:

1. SAW CUT AND REMOVE EXISTING ASPHALT TO SUBGRADE. APPLY CSS-1 TACK COAT PRIOR TO PLACING NEW HMA. SEAL ALL JOINTS WITH PG 64-22 AND APPLY A SAND BLANKET WHEN COMPLETE. HMA MUST BE COMPACTED IN NO GREATER THAN 2" LIFTS. RESTORE HMA PER CITY STANDARD. SEE CITY OF KIRKLAND PRE-APPROVED PLAN CK-R.09 FOR DETAILS.
2. DIAMETER OF TRAFFIC CIRCLE TO BE DETERMINED DURING ENGINEERING DESIGN.
3. VERIFY ALL PERMISSIBLE TURNING MOVEMENTS EXCEPT U-TURNS FOR AASHTO (P) PASSENGER VEHICLES AND (SU-30) SINGLE-UNIT TRUCKS. AT LEAST 2' CLEARANCE SHALL BE MAINTAINED BETWEEN TIRES AND ANY CURB. (P) VEHICLES SHALL TRAVEL COUNTER-CLOCKWISE AROUND TRAFFIC CIRCLE. (SU-30) TRUCKS MAY TRAVEL IN EITHER DIRECTION AROUND TRAFFIC CIRCLE.
4. LOW-GROWTH LANDSCAPING MAY BE INSTALLED IN PLACE OF STAMPED CONCRETE PAVEMENT WITH COMMUNITY MEMBER LANDSCAPING MAINTENANCE AGREEMENT. ANY LANDSCAPING INSTALLED WITHIN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM WITH PUBLIC WORKS POLICIES R-13 AND R-15.
5. THE DESIGN OF THE TRAFFIC CIRCLE SHALL ENSURE STORMWATER IS ADEQUATELY ADDRESSED TO AVOID PONDING.
6. TRAFFIC CIRCLES SHALL ONLY BE INSTALLED AT INTERSECTIONS WHERE BOTH STREETS ARE EITHER FUNCTIONALLY CLASSIFIED AS LOCAL OR COLLECTOR.
7. UTILITY, STORMWATER, AND SURVEY MONUMENTS SHALL BE CONSIDERED AND RELOCATED AS PART OF THE DESIGN PROCESS.
8. CEMENT CONCRETE CLASS 4000 WITH AIR ENTRAINMENT SHALL BE USED.

RPM SPACING CHART	
DIAMETER OF CIRCLE	DEGREE OF SPACING
≤12'-0"	EVERY 45°
≤20'-0"	EVERY 30°
>20'-0"	EVERY 22.5°
(FACING VEHICLE APPROACHES)	

CITY OF KIRKLAND

PLAN NO. CK - R.76

NEIGHBORHOOD TRAFFIC CIRCLE