

8. ROADSIDE FEATURES

8.1 Clear Zones

The designer engineer must be aware of the extensive tables of recommended clear zone distances both in the AASHTO Green Book and WSDOT Design Manual. It must also be recognized however, that serious accidents on low volume roads, especially on those below 200 ADT, are rare occurrences. At this low end of the scale, the cost of providing the recommended clear zone may be prohibitive. Research undertaken to re-evaluate the safety needs on low volume rural roads indicates that the suggested values for side slopes and clear zones should be recognized as idealistic objectives and that a more realistic approach to roadside safety on low volume roads should depend on achieving a balance between the cost and the safety effectiveness of the design treatment.

Research further indicates that, while the application of such an analysis to low volume roads indicates that individual roadside safety treatments yield very small safety contributions, some low-cost improvements do appear to be cost effective especially on the outside of curves. The removal of certain trees and relocation of utility poles are recommended. Also cited as being cost effective is the placement of guardrail on steep slopes, the removal of unnecessary guardrail on flat slopes, and the flattening of steep but low embankments. In this regard it is most important that the design engineer is aware not only of pertinent published recommendations, but also of research done subsequent to their adoption. In the final analysis, the design engineer must apply his or her own professional judgment in making the final design decisions and be prepared to defend and justify them if necessary.

8.2 Roadside Obstacles

Non-yielding or non-breakaway structures exceeding 6 inches in height, including rockeries, retaining walls, and any other objects which may be a potential concern to the traveling public, shall be placed with due regard to safety. On shoulder or mountable curb roads, such as rolled curb, extruded curb, or thickened edge, roadside obstacles that are essential to the roadway network shall be placed as close to the right-of-way line as practicable and a minimum of 10 feet measured from the edge of the traveled way or edge line.

Non-essential items, (e.g., decorative items) shall not be placed within the right-of-way on shoulder or mountable curb roads unless otherwise approved by the Public Works Director through the deviation request process. Additionally, no open water facilities, with the exception of ditches and bio-swales shall be located within the road right-of-way, unless the Public Works Director grants a deviation. Landscaping placed within the right-of-way shall meet the minimum requirements specified in Section 8.3 of these Standards.

On vertical curb roadways with speed limits less than 40 miles per hour, roadside obstacles shall be placed as far from the edge of the traveled way or edge line as practical. Such objects shall not be placed in a sidewalk or with the object edge nearest the roadway less than 8.5 feet from the face of curb on principal and minor arterials and 5.5 feet from face of curb on neighborhood collectors and local roads. On vertical curb roads with speed limits of 40 miles per hour or greater, roadside obstacles shall be placed as close to the right-of-way line as practicable and a minimum of 10 feet from the edge of the traveled way or edge line.

The Public Works Director may approve the placement of roadside obstacles within a planter strip, provided the minimum roadside obstacle requirements are met. Placement of utility structures shall be

in accordance with requirements of Chapter 9 of these Standards to include constraints on placement of poles on the outside of curves. The applicant or the design engineer may apply for the deviation for the obstacle or utility structure when justified by a traffic safety evaluation. The applicable utility company shall be contacted for the opportunity to submit a written recommendation. No structure will be approved where there is less than 2 feet from the face of the curb to the face of the object.

As specified in the WSDOT Design Manual, there shall be an unobstructed vertical clearance of at least 7 feet above the surface of any sidewalk or walkway, and 8 feet above any bikeway.

8.3 Landscaping

8.3.1 General

Landscaping in the City road right-of-way provides numerous aesthetic, environmental and safety benefits. The City's landscaping requirements are codified in Chapter 18 of the DMMC with additional requirements contained herein. The following subsections provide amplifying information for the landscaping of city roads and stormwater facilities.

8.3.2 Planter Strips

A planter strip is that portion of the right-of-way between the curb line and the sidewalk or between the sidewalk and the right-of-way line used for the planting of trees, shrubs, groundcover, or grass. Planter strips are required on arterials, as shown in Standard Drawing DM.A1.1. Planter strips may be installed, but are not required, on neighborhood collectors and local roadways, as shown in Standard Drawings DM.A2.1 through DM.A4.1. Planter strips installed in plats and sub-divisions on neighborhood collectors and local roads shall require a maintenance agreement from the homeowners associations. See Section 8.3.4 for further information. The design of planter strips must be approved by the Public Works Director through a landscaping plan in which plant maintenance, utilities and traffic safety requirements are addressed.

The preferred planter strip location is between the vertical curb and sidewalk to enhance the urban road appearance. However, planter strips may be located behind sidewalks or on both sides of sidewalks, as discussed further below, if approved by the Public Works Director, if sufficient right-of-way is available, and if the landscape design will fit with the surroundings.

The minimum width of a planting strip from back of curb to the sidewalk shall be 4 feet on local roads and neighborhood collectors (when installed) and 5 feet on collector, minor, and principal arterials.

8.3.3 Planting Types

Landscape plantings, approved for use in public right-of-way, are grouped into four categories described in Section D of the details. Height, spacing, and plant root development have been evaluated to prevent interference with overhead or underground utilities. Approved species for each category are listed in Section D of the details.

Due to the sensitive nature of critical areas, as defined by Chapter 16 of the DMMC, non-native species may not be planted for landscaping in a public right-of-way that borders a critical area.

8.3.4 Tree Planting and Maintenance

1. Tree and shrub size specifications at time of planting shall comply with Standard Drawings DM.D1.1 through DM.D4.5.
2. Trees planted within the clear zone shall have a breakaway mature trunk diameter of four inches or less. Trees with mature trunk diameters of greater than 4 inches shall be located outside the clear zone. Clear zone setbacks for larger diameter trees shall meet the requirements of Section 8.1 and 8.2.
3. Location of trees shall take into consideration fixed objects so as not to obstruct sight distance, bus shelters, street signs, luminaries, mailboxes, utility boxes and other fixtures. The Public Works Director may restrict the use of plant materials in the right-of-way where sight distance, traffic safety, pedestrian conflicts, and maintenance issues are of concern
Minimum setback of trees in right-of way from fixed objects shall meet the following criteria:
 - a) 50 feet from intersection vertical curb line
 - b) 20 feet from luminaries and utility poles
 - c) 20 feet from signs
 - d) 15 feet from bus shelters,
 - e) 10 feet from driveways
 - f) 10 feet from utility vaults/boxes
 - g) 10 feet back of sidewalk for all evergreen trees
 - h) 5 feet from hydrants
 - i) 2 feet from back of sidewalk for all deciduous trees
 - j) Outside identified sight distance restricted areas
4. Trees shall be planted so that the center of each trunk is 2.5 feet from the back of curb or, if planted behind a sidewalk, 3 feet from the back of sidewalk. Refer to Standard Drawings Section D.
5. Only shrubs, ground covers, and grasses that mature less than 24 inches in height shall be planted in the planting strips.
6. Where trees are to be planted adjacent to a sidewalk, a commercial root barrier shall be installed on the sidewalk side of each tree, parallel to and 6 inches from the sidewalk. The barrier shall be 15 feet long, centered horizontally on the tree trunk and extend from the ground surface to a depth of 36 inches or as recommended by a Registered Landscape Architect and approved by the Public Works Director.
7. The use of tree blockouts (see Standard Drawing DM.D2.1 & DM.D2.2), shall at a minimum, meet ADA standards for minimum sidewalk clearance. Tree grates that meet ADA standards may be considered for meeting the minimum sidewalk width.
8. The top 12 inches of soil within the entire planting strip shall be removed prior to planting and replaced with appropriate topsoil conducive to good plant growth. Provision for drainage and watering shall be considered required relative to the plant species approved.

9. Permanent irrigation systems may be required in the right-of-way and shall be designed by the landscape architect and/or engineer of record.
10. The applicant/developer shall ensure that any temporary irrigation systems are either removed or properly disconnected to prevent water leakage prior to final roadway acceptance by the City.
11. Trees shall be trimmed so that no branches extend below 14 feet above a traffic lane, 7 feet above pedestrian facility, and 8 feet above a bicycle lane.
12. Where a landscaping area within the right-of-way is proposed by a developer but not required by these street standards, a maintenance agreement shall be required.

8.3.5 Stormwater Facility Landscaping

Stormwater detention facilities shall be landscaped with vegetative buffers/screens pursuant to Chapter 18 of the DMMC. Submit landscaping plan for review by City.

Fencing around the facilities may be required for safety and security. Black vinyl-coated chain link fence is specified.

8.3.6 Landscaping in Traffic Islands, Circles, and Medians

Traffic islands, circles, and medians may be paved or planted with low shrubs (24-inches mature height or less) and ground covers, if long-term maintenance is provided and they have no traffic or pedestrian safety issues as determined by a Registered Professional Engineer. These planter islands shall be at least 9 feet wide from curb face to face. The first 20 feet of these islands may be planted with low shrubs and ground covers. Deciduous trees may be used if set back a minimum of 20 feet from the front of the island and evergreens at a minimum of 30 feet.

8.4 Cut and Fill Slopes

Side slopes shall generally be constructed no steeper than 3H:1V on both fill slopes and cut slopes. Slopes steeper than 2H:1V may be approved by the Public Works Director through a deviation request upon showing that the steeper slopes, based on soil analyses, will be stable. Side slopes on projects funded by federal grants shall be constructed in conformance with Local Agency Guidelines.

Side slopes shall be stabilized by grass sod or seeding or by other planting or surfacing materials acceptable to the Public Works Director.

Slope easements adjacent to the right-of-way may be required for maintenance and protection of cut or fill slopes.

8.5 Guardrail

Evaluation, design and installation of guardrails shall be in accordance with the WSDOT Design Manual, the AASHTO Roadside Design Guide, the WSDOT/APWA Standard Plans, and these Standards.

New roadways shall be designed with due regard to safety for the traveling public. To ensure a safe roadway configuration, the following features shall be included in the roadway design in order of preference:

1. Provide 4H:1V or flatter cut/fill slopes adjacent to the roadway where vertical change to existing grade is greater than 6 feet.
2. Provide 3H:1V or flatter cut/fill slopes where 4H:1V slopes cannot be provided and vertical change to existing grade exceed 6 feet.
3. Design location of stormwater runoff ponds where they are not accessible from errant vehicles.
4. Where slopes steeper than 3H:1V are necessary for cut/fill embankments, barrier systems are required. Evaluate need for barrier systems and provide design in conformance with WSDOT/APWA Standard Plans, Standard Specifications, and the WSDOT Design Manual and approved by a Registered Professional Engineer.
5. Guardrail, if required, shall be Type 31 with steel posts in conformance with WSDOT/APWA Standard Plans unless otherwise approved by the Public Works Director.

8.6 Safety Railings

Safety railings may be required for pedestrians and/or bicyclists along roadways, bridges or pedestrian facilities. Reference standards for design, depending on the type of facility to be constructed, include the following:

- AASHTO Standard Specifications for Highway Bridges
- WSDOT Design Manual
- International Building Code
- Americans with Disabilities Act (ADA)

8.7 Mail Boxes

- A. The responsibilities for location support structures, and installation of mailboxes in connection with the construction or reconstruction of City roads are as follows:
 1. The Public Works Director will:
 - a. Require road improvement plans to show clearly the designated location or relocation of mailboxes, whether single or in clusters.
 - b. Require with this information any necessary widening or reconfiguration of sidewalks with suitable knockouts or open strips for mailbox posts or pedestal.
 - c. Require these plans to include a statement on the first sheet that mailbox locations as shown on these plans have been coordinated with the serving post office. This will be a prerequisite to plan approval.
 - d. Require construction of mailbox locations in accordance with these plans, through usual inspection and enforcement procedures.

2. The Postmaster or designated serving post office will:
 - a. Designate location and manner of grouping of mailboxes when so requested by the design engineer. Note on the plans the type of mailbox delivery: NDCBU (Neighborhood Delivery and Collection Box Unit), or Residential type box. Authenticate by stamp or signature when these data have been correctly incorporated into the plans.
 - b. Do all necessary coordination with owners or residents involved to secure agreement as to mailbox location and to instruct them regarding mailbox installation. Actually install or relocate NDCBUs if these are the types of box to be used in the neighborhood.
 3. Owners or residents served by mailboxes, at time of original installation, will:
 - a. If using individual mailboxes, clustered or separate, install and thereafter maintain their own mailboxes as instructed by the post office.
 - b. If NDCBU delivery, rely on Post Office to provide and maintain NDCBUs.
 4. Builders or their contractors shall:
 - a. Where there are existing mailboxes and no plans to replace them with NDCBUs:

When it becomes necessary to remove or otherwise disturb existing mailboxes within the limits of any project, install the boxes temporarily in such a position that their function will not be impaired. After construction work has been completed, reinstall boxes at original locations or at new approved locations as indicated on the plans or as directed by the Public Works Director. Use only existing posts or materials except that any damage caused by the builder or his/her contractor is to be repaired at the expense of the builder.
 - b. Where there are existing NDCBUs or plans to install NDCBUs:

Call on the Postmaster or designated serving post office to locate or relocate NDCBUs and make the necessary installation.
- B. Installation methods are as follows:
1. Mailboxes, in the general case, shall be set in accordance with Standard Drawing DM.G1.1. Boxes shall be clustered together when practical and when reasonably convenient to the houses served.
 2. NDCBUs will be installed by the Postal Service generally in accordance with Standard Drawing DM.G1.1.
 3. Non-yielding and non-breakaway mailbox structures will not be allowed within the clear zone. See Section 8.1 and 8.2 of these Standards. The use of concrete filled metal pipe for any mailboxes, or the use of horizontally mounted wooded members to support multiple mailboxes is expressly prohibited.

8.8 Fire Hydrants

The placement of bollards (or similar objects) within the right-of-way as a means to “protect” fire hydrants from being struck by errant vehicles is expressly prohibited. Relocation of the fire hydrant outside the clear zone should be considered if ongoing maintenance is needed.

8.9 Bollards

When necessary to deny motor vehicle access to an easement, tract, or shared use path/trail, except for maintenance or emergency vehicles, the point of access may be closed by a line of bollards. These shall include one or more fixed bollards on each side of the traveled way and removable, locking bollards across the traveled way. Spacing shall provide one bollard on centerline of trail and other bollards spaced at a maximum of 50 inches on center on trails 10 feet wide or less. Spacing shall be 60 inches on center on trails wider than 10 feet. Bollard design shall be in accordance with Standard Drawing DM.E3.1. No fire apparatus access roads shall be blocked in this manner without the concurrence of the Fire Marshal. When used, bollards shall be located outside the designated clear zone.

8.10 Gates

See Des Moines Ordinance 1334 Exhibit "A" for gate requirements contained herein.

1. Private gates or other traffic barriers should be permitted only in cases where adequate provisions are made for access by fire, police, medical emergency, visitors and other public services (such as mail service, garbage collection, public utility emergency repairs, UPS/FedEx deliveries, home repair and maintenance vehicles, parking, etc.).
2. Private gates are allowed only on private streets and private driveways.
3. If, at any time, a private street is converted to, and accepted by the City, as a public street; any private gate(s) shall be removed.
4. In cases where the proposed gate or other barrier will affect 10 or more dwelling units, an engineering study will be required which addresses queuing patterns and associated questions related to items listed in No. 1 above. Recommended mitigation measures shall be submitted to the City along with the application. The traffic study shall be performed by a licensed and registered professional engineer within Washington State.
5. The entrance to the proposed gate shall be designed and stamped by a licensed and registered professional engineer within Washington State, and shall allow for a safe turnaround without backing on public right-of-way for vehicles in front of the gate in cases where the vehicle is denied entry. The design for the gated entrance shall consider the abutting public right of way and roadside alignments and grades, sight distance, posted speeds and other traffic engineering criteria relevant to designing the particular gated entrance. The gate design shall also consider current and future projects contained in the City's adopted Transportation Comprehensive Plan.
6. A sign shall be located on the private street at a point visible from the public roadway indicating "locked gate ahead".
7. All gates shall be equipped with a lockbox with momentary push-button switch and Opticom.
8. All gates shall include an activation system for use by private property owners. This system shall operate independently of the emergency access system, and may utilize keypads magnetic cards, radio transmitters, or other mechanisms approved by the City of Des Moines and South King County Fire District.
9. All gates shall include a default to unlocked, open position in the event of a power outage.

10. There shall be pedestrian access around all gates.
11. Gate construction, height and aesthetics shall be determined through the design review process, which is conducted by the Economic Development Department. The gate and related equipment shall be coated in a manner to prevent corrosion. The gate shall be constructed in a manner so as to allow viewing of obstructions located within the swing path of the gate. In no event shall the moving portion of the gate exceed 10 feet in height.
12. If the gate obstructs access to public utilities or appurtenances, the utility purveyors shall be provided with sufficient activation devices, keys, or the access code to the gate as required.
13. All gates shall be erected a minimum of thirty feet from the edge of any public right of way. A property survey may be required to determine where the property line is located.
14. All gates shall include adequate provisions for illumination and/or reflectorization in order to be properly seen during periods of darkness and inclement weather conditions.
15. Any person desiring to install a gate shall apply for a gate permit from the Public Works Department. The application shall contain the following information:
 - a) A vicinity and site map of the proposed location for the gate;
 - b) A plan view and elevation of the gate installation illustrating gate dimensions and direction of the swing path for the gate;
 - c) A plan view of the gate turnaround maneuvering plan;
 - d) The location of the access-control panel;
 - e) Control system information;
 - f) The names and addresses of all property owners affected by the residential access. A gate cannot be installed without 100 percent approval.
 - g) Both the City of Des Moines and South King County Fire District shall review all gate applications. Prior to any permit issuance, approvals from both entities shall be obtained.
 - h) Building Permits and inspections shall be required for all gate installations;
 - i) Such other information as may be required by the Public Works Department; or other associated City departments such as Economic Development, or South King County Fire District;
 - j) The application shall be signed and dated by all co-owners of the private street.
16. Any person submitting an application for a gate shall pay a non-refundable fee to be set by administrative order of the City Manager at the time the application is submitted to cover staff review costs. This fee shall be in addition to any other development or construction fees for the subject property.
17. Upon receipt of a properly completed application for a gate installation request conforming to City standards together with the private gate application fee, the Public Works Department shall begin the review process. Upon completion of a thorough review of the application, the Public Works Director, or his designee may issue a permit authorizing the installation and construction of the gate. The City retains the right to have such gates removed and/or relocated at the applicant's sole expense should the City deem such action

- necessary for public safety. The applicant may appeal any removal/relocation decision to the Hearing Examiner.
18. The City shall have no liability for any damage to the gate resulting from City vehicles or City personnel accessing the property, whether responding to actual or false emergencies. Any damage sustained to City vehicles due to the gate installation shall be the responsibility of the party responsible for maintenance and repair of the gate.
 19. The City shall have the right to access the property to inspect the gate on a periodic basis without being liable for trespass.
 20. Maintenance and repair of the gate and related equipment shall be the responsibility of the applicant. A maintenance agreement between ALL affected property owners shall be submitted to, reviewed, and approved of, by the City prior to being recorded with King County against ALL properties involved. The applicant may, with the consent of the City, assign the obligation for maintenance and repair of the gate and related equipment to another person or entity, including a homeowner's association.
 21. Upon notification by the City of any defects in the gate installation, the party responsible for maintenance and repair shall effect necessary repairs within fourteen days. Failure to make repairs within the specified period shall constitute a violation of the terms of the gate permit, and in such event, the City may require removal of the gate and related equipment. An extension of the time to make necessary repairs may be granted for just cause if requested in writing by the party responsible for maintenance and repair of the gate.
 22. A turnaround analysis utilizing an SU30 as the design vehicle shall be provided for review of gate permits. The turnaround analysis must document a reasonable (three-point maximum) turnaround for an SU30 vehicle.
 23. Gate permits for residential properties may include a deviation request for potential flexibility in the gate requirements. Deviations are reviewed by the Public Works Director on a case-by-case basis and may allow for a reduction of the gate setback to 20 feet from the traveled way or right-of-way and flexibility in turnaround requirements.
 24. Gate permits for commercial properties may include a deviation request for potential flexibility in the gate requirements. Deviations are reviewed by the Public Works Director on a case-by-case basis. The deviation request for a commercial gate typically would include a traffic study by a licensed engineer to demonstrate potential queuing and its traffic safety impacts on the adjacent roadway.

8.11 Roadway Barricades

Temporary and permanent barricades shall conform to the standards described in Section 6C-8 of the MUTCD.

1. Type I or Type II barricades may be used when traffic is maintained through the area being constructed/reconstructed.
2. Type III barricades shall be used when roadways and/or proposed future roadways are closed to traffic. Type III barricades shall extend completely across a roadway or from curb to curb. Where provision must be made for access of equipment and authorized vehicles, the Type III barricades may be provided with movable sections that can be closed when work is not in progress, or with indirect openings that will discourage public entry. Where

- job site access is provided through the Type III barricades, the applicant/contractor shall assure proper closure at the end of each working day.
3. In the general case, Type III permanent barricades shall be installed to close streets to traffic. They shall also be used to close off lanes where additional emphasis is desirable.
 4. Type III barricades shall be used at the end of a local access street terminating abruptly without a cul-de-sac bulb or on temporarily stubbed off streets. Each such barricade shall be used together with an end-of-road marker.

8.12 Bus Stops and Shelters

Land development applications and city road projects are reviewed by local transit agencies for provision of appropriate transit facilities. During the design of arterials and neighborhood collectors, the design engineer shall contact the transit agencies, and the local school district to determine bus stop locations and other bus operation needs.

The project shall provide ADA accessible landing pads at designated bus stops, and where required shall include turn-outs and shelter pads. Pedestrian and disabled access improvements within the right-of-way to and from the bus loading zone or turn-out from nearby businesses or residences shall also be provided as part of the road improvement. Surfacing for bus zones and turn-outs shall at a minimum meet the requirements of Section 7.4 of these Standards. Metro's publication, "Metro Transportation Facility Design Guidelines," or other applicable agencies guidelines may require additional surfacing requirements.

8.12.1 Bus Pullouts

Bus pullouts are typically not recommended. Each case where a pullout may be considered will be reviewed by the Public Works Director and transit agency.

8.12.2 Bus Landing Pad

A landing pad, at least 9 feet wide and 15 feet long, shall be constructed at bus stops, or where requested by a transit agency or school district, for passenger waiting and wheelchair access.

8.13 Shared Use Paths and Trails

A shared use path is a multi-use facility, physically separated from the roadway, for bicyclists, pedestrians or other non-motorized users.

Shared use paths and trails shall be provided where designated in the City Comprehensive Plan or where required by the Public Works Director because of anticipated significant public usage.

Shared use paths and trails are typically located on an easement, in a tract, or within the right-of-way when separated from the roadway by a drainage ditch or barrier. Where multi-purpose trails intersect with motorized traffic, sight distance, markings, and signalization (if warranted) shall be as provided in MUTCD.

Shared use paths shall be designed to meet the requirements of 12-foot-minimum paved width, see Chapter 7.6.1 of these Standards and WSDOT Design Manual Chapter 1515.