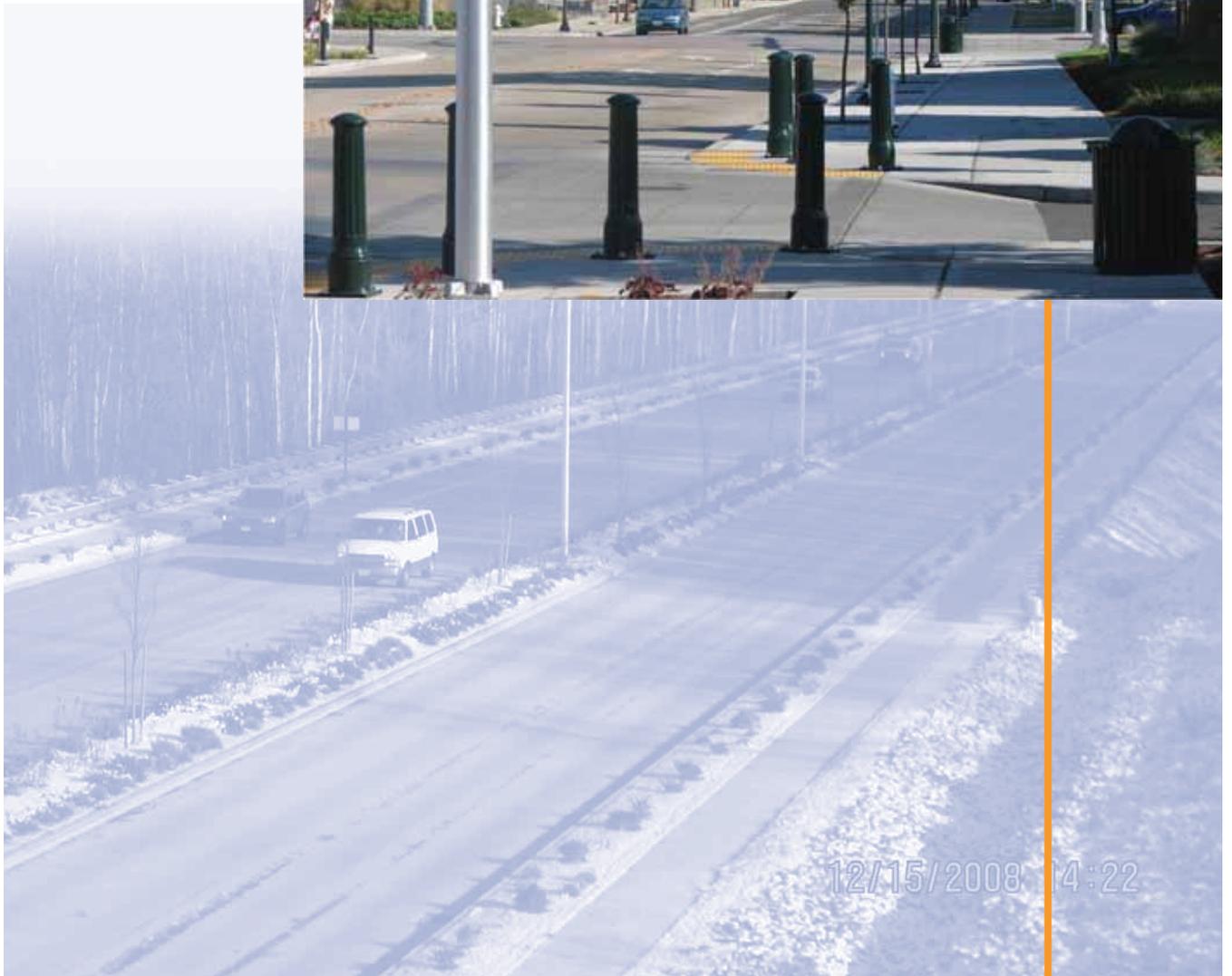


# SECTION 6: Standards for Streets



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### **6.0 STANDARDS FOR STREETS**

#### **6.1 RIGHTS-OF-WAY AND EASEMENTS**

Public streets are owned and maintained by the City, and the Developer is required to dedicate or deed right-of-way, or otherwise convey public right-of-way and/or easements, as required to construct and maintain these public streets and appurtenances.

All portions of the traveled way, curbs, gutters, sidewalks, medians, drainage facilities, street lighting, traffic signals, roundabouts, traffic circles, traffic signage and other required improvements shall be located within said right-of-way.

Easements for the purpose of construction, access, maintenance, sight distance preservation, street slopes, street lighting, or for utility and storm drain system installations may be required in conjunction with new street and street improvements.

A non-exclusive 10' utility and street lighting easement shall be provided by all private development projects adjacent to all public streets except in the Downtown Overlay District.

Permanent on-site easements for access, maintenance, and construction are required for all public and private street systems serving more than one property located outside of public right-of-way. When easements are required, legal descriptions shall be submitted prepared and stamped by a Professional Land Surveyor. A title report, dated within the last thirty (30) days, covering the properties to be encumbered by the easements, shall accompany said description.

When off-site and/or on-site easements for the extension of public or private street, water, sanitary sewer, storm drainage or other utility systems are required, these shall be approved and recorded prior to approval of the Engineering Plans. The same conditions shall also apply regarding legal descriptions and title reports.

#### **6.2 STREET TYPES AND GEOMETRICS**

General design objectives and purpose by functional classification for City streets are listed in the Kent Transportation Master Plan (TMP). Based upon these classifications, the criteria for right-of-way, street width and other Geometrics are established by the City.

The TMP defines the following streets:

- Principal Arterial 7 - Lanes (See Standard Plan 6-2)
- Principal Arterial 5 - Lanes and Minor Arterial (See Standard Plan 6-3)
- Collector Arterials – Industrial Collector Arterial (See Standard Plan 6-4)
- Collector Arterials – Residential Collector Arterial (See Standard Plan 6-5)
- Collector Arterials - Residential Collector (See Standard Plan 6-6)
- Local Access Streets – Industrial/Commercial (See Standard Plan 6-7)

- Local Access Streets – Residential (See Standard Plans 6-11 through 13)

Local streets can be comprised of industrial/commercial streets and residential streets. These streets are based on the land use zoning adjacent to the street. There are also alleys and private streets.

Where appropriate and feasible, rights-of-way should be increased to accommodate the use of low impact development and materials to handle storm water, including landscaped medians facilitating natural storm water function and bio-filtration areas (rain gardens, swales, etc.).

### **6.2.A Arterial Streets**

Arterials generally support higher traffic volumes, much of which is generated outside of the immediate area or what is termed “through traffic.” Arterials support the travel of cars and trucks and other modes, including public transit, cycling and walking.

Existing driveways may be required to be eliminated to comply with the access management requirements of these Standards.

Driveway access to minor arterial and collector arterial streets will be managed to retain the traffic volume capacity of the roadway while allowing access to parcels not served by streets of a lower classification. Existing driveways may be required to be eliminated if adequate access can be provided by streets of a lower classification.

### **6.2.B Local Streets**

These streets are designed for local traffic usage. They are typically the streets in front of residential property and some commercial and retail uses. Two subcategories of local street classifications exist based upon the type of adjacent land-use. The sub-categories, and their functions, are:

1. Industrial/Commercial Street – These streets are designed to provide direct access from the abutting industrial or commercial land uses to the collector arterial classified streets. Access to these streets is typically not restricted for reasons of safety except at or near intersections.
2. Residential Street – These streets are designed to provide direct access to abutting land uses, from collector streets in a safe and efficient manner. The design parameters of these streets, (i.e., intersection spacing, horizontal curves criteria, and right-of-way assignment at intersections) will be used to minimize vehicle operating speeds and non-locally generated “cut-through” traffic. On-street parking will generally not be restricted, except at those locations necessary for public safety. A high emphasis will be placed on safely accommodating non-motorized and pedestrian traffic in the design of these streets.

Private streets fall within the residential street classification. However, the geometric requirements for private streets are different and can be found within Section 6.2.D Private Streets.

### **6.2.C Alleys**

The horizontal and vertical geometric design criteria for residential streets shall be used to design alleys. Alleys must be designed within the following parameters:

1. An alley may serve a maximum of 30 dwelling units, have a maximum length of 400', and have no dead ends or cul-de-sacs.
2. The right-of-way or tract width shall be sufficient to construct the alley and related grading. The minimum tract width shall be 20' with a pavement surface width of 20' based on a 5' structure setback. For differing structure setback requirements, the alley surfacing width may be reduced to 18' minimum if designed to provide for safe turning access to properties.
3. Alleys shall be paved surface and have an inverted crown to control surface runoff.
4. Alleys shall connect to the public street system using a private street approach. See Standard Plan 6-46.
5. Alleys shall not intersect other alleys or half streets.
6. Alleys shall provide secondary access only to a property.

### **6.2.D Private Streets**

Any streets serving, or proposed to serve nine (9) or fewer single-family dwelling units, as determined by the Engineer, and certain streets within a planned unit development (PUD) may be considered private streets. When streets directly adjoin other lots, those lots are counted when determining the number of lots served, including any potential new lots created through redevelopment consistent with the zoning designation.

Private streets may be approved only when they are:

1. Permanently established by tract providing legal access to each affected lot, dwelling unit, or business; and sufficient to accommodate required improvements, to include provision for future use by adjacent property owners when applicable; and
2. Built to the standards, as set forth herein; and
3. Accessible at all times for emergency and public service vehicle use; and
4. Not part of, or obstructing, the present or future public neighborhood circulation plan developed in processes such as the City's Comprehensive Plan, TMP, or Capital Improvement Program; and
5. Not going to result in land locking present or future parcels; and

6. Not needed as public streets to meet the street spacing requirement or to provide access to surrounding parcels for future development; and
7. Designed to serve a potential maximum of nine (9) single-family dwelling units for the entire length of the private street system to the nearest publicly maintained street, when physical barriers, zoning or other legal constraints are considered; and
8. Maintained by a capable and legally responsible homeowners' association, or other legal entity made up of all benefited property owners; and
9. Clearly described on the face of the plat, short plat, binding site plan, site development permit or other development authorization and clearly signed as a private street, for the maintenance of which the City is not responsible; and
10. Connected to the public street system using a private street approach. See Standard Plan 6-46. Private streets serving more than nine (9) lots in a PUD may use an intersection design utilizing curb returns.

Parking on private streets is allowed on one side only. Parking is also prohibited on both sides within 60' of the intersection with the connecting street. This requirement may be reduced by the Engineer based on vehicle maneuvering diagrams provided by the Developer that shows a parking configuration that allows a Bus-40 vehicle to access the private street, if required.

The City will not accept existing private streets as public streets until they are constructed or reconstructed in conformance with current Kent City Code and these Standards.

Best management practices (BMP'S) shall be used when maintaining private streets.

Whenever a private street extends more than 150' from the nearest face of curb or edge of pavement of the connecting street, an approved cul-de-sac or hammerhead turnaround per Standard Plans 6-18 or 6-21 shall be constructed.

### **6.2.E Public Half Streets**

Half streets may be permitted as an interim facility when:

1. Such street shall not serve as primary access to more than 30 dwelling units; and
2. Such alignment is consistent with or will establish a reasonable circulation pattern; and
3. There is reasonable assurance of obtaining the prescribed additional right-of-way through future development from the adjacent property with topography suitable for completion of a full-section street.

A half street shall meet the following requirements:

1. Right-of-way width of the half street shall be a minimum width of 32' and sufficient to construct the street and related grading; and
2. The half street shall have a crown section consistent with locating the centerline of the ultimate street section, as close as possible to the property line; and
3. Traveled way shall be surfaced the same as the designated street type to a width no less than 20', combined curb and gutter, sidewalk and planter strip shall be constructed per Standard Plan 6-13; and
4. Property line edge of street shall be finished with temporary curbing, shoulders, ditches, and/or side slopes in order to assure proper drainage, bank stability, and traffic safety; and
5. Half streets shall not intersect other half streets or exceed these requirements unless otherwise approved by the Engineer.
6. Whenever a half street extends more than 150' from the nearest face of curb or edge of pavement of the connecting street, a temporary cul-de-sac or turnaround per Standard Plans 6-18, 6-21 and 6-22 shall be constructed.
7. When a half street is eventually turned to a whole street, the completing builder shall reconstruct the original half street as necessary to produce a proper full-width crowned street of a designated section per these Standards.
8. Obtaining any right-of-way or easements to accomplish the above shall be the responsibility of the Developer.

### **6.2.F Cul-de-Sacs, Islands, and Hammerheads**

The following design parameters shall apply to cul-de-sacs, islands, and hammerheads:

1. Cul-de-sacs: Whenever a dead end street extends more than 150' from the nearest face of curb or edge of pavement of the connecting street, a widened "bulb" shall be constructed as follows:
  - a. The minimum right-of-way radius across bulb section is 51.50' in a permanent or temporary cul-de-sac. Right-of-way may be reduced, provided utilities and necessary drainage are accommodated on permanent easements within the development, upon approval by the Engineer.
  - b. The minimum radius of surfacing across bulb is 45' to the face of curb. See Standard Plan 6-18.
  - c. Sidewalks shall be constructed around the cul-de-sac. Planter strips are not required.
  - d. Rolled curbs are allowed in cul-de-sacs.

- e. A permanent cul-de-sac shall not be longer than 600', measured from center of the intersecting street, along the centerline of the roadway to the center of the cul-de-sac bulb. The Engineer will consider deviations to this requirement on the basis of pertinent traffic planning factors such as topography, sensitive areas and existing development.
  - f. If a public street temporarily terminates at a property boundary, serves or will serve more than nine (9) lots, or is longer than 150' from the nearest face of curb or edge of pavement of the connecting street, a temporary cul-de-sac bulb shall be constructed near the development boundary. The paved bulb shall be 90' in diameter with sidewalks terminated as shown on Standard Plan 6-22. In lieu of the temporary cul-de-sac, a temporary hammerhead turnaround may be provided as approved by the Engineer.
  - g. Removal of the temporary cul-de-sac or hammerhead turnaround, and construction of the extension of the street infrastructure and driveways, shall be the responsibility of the Developer who extends the street. See Standard Plan 6-22.
  - h. The maximum cross slope in a bulb shall not exceed 6 percent in any direction.
  - i. Partial bulbs or eyebrows shall have a minimum paved radius and an island configuration, and the island shall be offset 4' from edge of street. See Standard Plan 6-19.
  - j. When a commercial access changes from a public to private designation, a public cul-de-sac shall be required, regardless of whether another fire access turnaround is provided elsewhere.
2. Cul-de-Sac Island: A cul-de-sac island is an optional feature for any cul-de-sac when the bulb paved diameter is 90' or less; but it is mandatory when the bulb paved diameter exceeds 90'. If provided, the island shall have cement concrete vertical curb and gutter. Maximum island diameter shall be 15' and there shall be at least a 30' wide paved traveled way around the circumference, and no parking will be allowed. An island shall be landscaped per Section 6.13 Landscape Requirements on Public Right-of-Way. The landscaping must be maintained by the homeowners' association or other responsible entity or parties, including all benefited property owners. See Standard Plan 6-19.
  3. Hammerheads: A hammerhead may be used to satisfy the turnaround requirements where a private street serves or will serve nine (9) or fewer lots. The maximum profile grade of any leg of the hammerhead turnaround shall be 6 percent. Parking and driveways shall not be allowed within the hammerhead. See Standard Plan 6-21.

### **6.3 STREET IMPROVEMENTS**

The City has developed a Transportation Master Plan, indicating existing and proposed streets and their functional classifications. It shall be the responsibility of the Engineer to identify specific conditions for street improvements and/or right-of-way reservation required as a condition of development. All street improvements shall be consistent with the adopted Comprehensive Plan, City of Kent Subdivision Code and other applicable Kent City Codes. In accordance with KCC 6.02, "Required Public Improvements", the Engineer is authorized to require the construction of off-site street and drainage improvements as a condition of issuing a permit with an "improvements valuation" of \$50,000 or 25 percent of the assessed value of the property and existing improvements. An appraisal may be used at the discretion and cost of the Developer.

As required by these Standards, or as a part of the SEPA review process, the required improvements and potential impacts of a proposed project shall be identified. The Developer shall be required to construct the improvements. In lieu of construction, and at the discretion of the Engineer, the mitigation of these impacts may be satisfied through the execution of an environmental mitigation agreement in which the Developer and his/her successors, agree to participate in the cost of construction of future off-site street and utility system improvements. If the future improvements are proposed to be funded by a Local Improvement District (LID) formed by the City in connection with a project identified in the City's Capital Improvement Plan, the Developer may be required to pay a fee in lieu construction based on the Engineer's cost estimate form or execute a No-Protest LID Covenant with the City.

#### **6.3.A Minimum Public Street Improvements**

When public street improvements are required as a condition of a land use approval process, and an abutting public street is not to current standards or is otherwise not adequate, the Developer is responsible for constructing the following minimum improvements on all public streets along their entire property frontage:

1. A half street improvement shall be provided that is equal to one-half of the final design pavement width or a minimum of 20', as measured from the centerline of right-of-way, or from the approved centerline as determined by the Engineer, to the face of the new cement concrete curb.
2. The street improvement for the frontage along the development shall include combined curbs and gutters, planting strips, street trees and landscaping, and cement concrete sidewalks depending on the street classification and the bike route classification. See Section 6.5 Driveways, Sidewalks and Non-Motorized Lanes or Trails, for additional information on sidewalks and bike lane requirements.
3. The street improvement will require an approved street lighting plan and an installed street lighting system meeting the requirements of

these Standards. See Section 6.14 Street Illumination System, for addition information on street lighting design.

4. The total combined pavement width shall be shown to have a design/remaining service life of at least twenty (20) years, in accordance with the AASHTO Guide for the Design of Pavement Sections Part I and Part II.
5. The public street improvements shall also include street channelization and pavement markings; traffic signs; a stormwater drainage conveyance, detention, and treatment system; traffic signals when specified; utilities and other street-related appurtenances.
6. Depending upon the condition of the adjacent pedestrian system and the nature of the development, the Developer may also be required to install specific on-site and off-site pedestrian sidewalks, pathways, or shared pedestrian and bicycle facilities. All subdivisions are required to provide for neighborhood connectivity via street connections, pedestrian connections, bicycle facility connections, or some combination of these connecting facilities. At a minimum, the Developer is required to provide full improvements on the frontage of their property, and tapers, merges or connections to existing improvements beyond the project property boundaries.
7. All street improvements shall include provisions for street trees. The species of these street trees shall be selected from the list of approved street trees as shown in Appendix A, and placed as shown in Standard Plans 6-54 and 6-55.
8. Monument Installation: Permanent concrete control monuments are required to be installed at controlling corners of all subdivisions and on new or re-aligned public streets. All projects shall include the placement of centerline and intersection monuments. See Standard Plan 6-72.
9. Prior to the recording of any short plat or subdivision, all surveying and the setting of all lot corners and monuments shall be complete.
10. Where utility system construction for the proposed development extends beyond the half street improvements, a full width overlay of the street may be required by the Engineer.

### **6.4 STREET DESIGN STANDARDS**

#### **6.4.A Street Design Summary**

Tables 6.7 through 6.9 at the end of this chapter summarize the minimum design standards for the various functional classifications of streets in the City.

### **6.4.B Downtown Overlay District**

The Downtown Overlay District revises and adds additional criteria for the streets within the downtown area of Kent. This area is bounded by State Route 167 to the west, Cloudy Street to the north, Kennebeck, Clark, Jason, Titus and Central Avenues to the east and Willis Street to the south. See KCC 15.09.046, Downtown Design Review.

Street cross-sections within the overlay vary from the typical street cross sections. See Standard Plans 6-8 through 6-10 and the following discussion for further information on sidewalks, Channelization, street lighting, and street furniture within the overlay.

### **6.4.C Downtown Overlay Design Standards**

#### 1. Pedestrian Zones:

This is the area from the face of the sidewalk to the property line or building face. Street furniture is allowed within this zone. A minimum clear width for pedestrians of 8' shall be maintained throughout the pedestrian zone.

#### 2. Planter/Streetscape Zones:

This is the area from the back of curb to the face of sidewalk. Street furniture, street trees, landscape planters, street lights, traffic signs and pedestrian bollards are allowed within this zone. The minimum width of 4' shall be provided.

#### 3. Sidewalks:

Sidewalks shall be finished with 2' by 2' squares. The squares shall have an alternating brush finish (vertical, horizontal, and vertical, horizontal) and shall have a 2" smooth border tooled from the joint. See Standard Plan 6-36.

#### 4. Crosswalks:

Crosswalks within the Downtown Overlay District shall be 12' wide and comprised of Portland Cement Concrete (PCC). The finish pattern shall be the same as for sidewalks. The crosswalk shall have a 1' smooth border. This border shall also extend from the mid-point of the corner to the inner intersection crosswalk border. No color shall be added to the material prior to placement. See Standard Plan 6-37.

#### 5. Street Furniture:

All street furniture shall be manufactured by Fairweather Bench Company in Port Orchard, Washington.

Benches shall be made from 2" Schedule 40 pipe with steel straps. Steel shall conform to ASTM A36 hot rolled steel and shall be wheelabrated prior to fabrication. End frames shall be ductile cast iron. All surfaces shall receive a powder coat finish applied by the dry electrostatic process. Benches with backs shall be model #PL-5, Plaza

Series, surface mount, color Forest Green #RAL6009. Benches without backs shall be 8' in length with center frame model #PL-1.5, Plaza Series, and color Forest Green #RAL6009.

Picnic tables shall be made from 2" Schedule 40 pipe with steel straps. Steel shall conform to ASTM A36 hot rolled steel and shall be wheelabrated prior to fabrication. All surfaces shall receive a powder coat finish applied by the dry electrostatic process. Picnic table shall be model #F-7 or #F-8 Plaza Series, surface mount, color Forest Green #RAL6009.

Trash receptacles shall be flared top trash receptacle with hinged dome top and 30-gallon galvanized liner, and shall be made from steel, and powder coat finish applied by the dry electrostatic process. Model #TR-12, surface mount, color Forest Green #RAL6009.

Planters shall be 29" wide at the top and 25" wide at the bottom, of various heights (24" or 18") and fabricated with steel straps, with galvanized and powder coated liner. Steel shall conform to ASTM A36 hot rolled steel and shall be wheelabrated prior to fabrication. All surfaces shall receive a powder coat finish applied by the dry electrostatic process. Planters shall be model #PTR12, Plaza Series, color Forest Green #RAL6009.

Bike racks shall be made from 2" Schedule 40 pipe 36" high and 38" long. Steel shall conform to ASTM A36 hot rolled steel and shall be wheelabrated prior to fabrication. All surfaces shall receive a powder coat finish applied by the dry electrostatic process. Bike racks shall be model #BR-1, 3 loops, color Forest Green #RAL6009.

6. Street Trees and Pedestrian Bollards with Power Outlets:

Pedestrian bollards with power outlets shall be provided at each street tree location. The bollard shall be placed on the concrete sidewalk adjacent to the tree pit. The bollard shall not be placed further than 4' from the face of curb and is preferred to be placed in the sidewalk opposite the middle of the tree pit, out of the pedestrian 8' Clear Zone, as shown on Standard Plan 6-50.

Pedestrian bollards shall be surface mount, model #B-3-L modified, color Forest Green #RAL6009. All bollards shall contain a grounded outdoor use outlet for street decorations. See Standard Plan 6-56.

7. Street Lights:

Street lights shall consist of Gullwing and Lumec Zenith Series luminaire fixtures for the street and pedestrian lighting respectively, except on SR 516 (Willis Street) between SR 167 and Central Avenue where cobra head fixtures are allowed. No cobra head or King 118 luminaires will be allowed anywhere else within the Downtown Overlay District unless otherwise approved by the Engineer. See Section 6.14 for street lighting requirements.

### **6.4.D Access Management Standard**

The City manages access through the use of medians, auxiliary lanes, driveway location and design, driveway separation, corner clearance, joint and cross access agreements, and alternative access from lowest classification Street. Unless otherwise approved by the Engineer, each vehicle shall be deemed to have a length of 25' for the purpose of calculating minimum storage lengths.

#### 1. General Access Provisions:

In general, all properties abutting public streets are permitted reasonable access to the public street system. Driveways directly giving access onto arterials may be denied if alternate access to another arterial street is available. On properties with multiple public street frontages, the City will restrict vehicular access solely to the public street having the lower street classification, and/or to the safest access location. Retail, commercial or industrial driveways shall be prohibited from access to residential streets.

Coordinated access (via cross access, joint or reciprocal access agreements recorded with the County Auditor's office) with adjacent properties may be required of the Developer, where driveways are located on arterials or driveway separation and corner clearances cannot be achieved.

The design of driveways onto principal and minor arterials may be required to restrict turning movements from or onto the arterial street, and may be required to be designed on a case-by-case basis. Factors to be considered in the design of turn-restrictive driveway geometrics will include, but are not limited to the following:

- Design vehicle
- Vehicular sight lines (See Standard Plan 6-52)
- Pedestrian sight lines (See Standard Plan 6-53)
- Pedestrian oriented development
- Driveway traffic volumes
- Public street traffic volumes and speeds
- Public street widths and channelization
- Driveway proximity to intersections, and to other driveways.

The Engineer may require any combination of these factors to be considered in the design of the driveway.

2. Access Type and Minimum Distance Allowed. Table 6.1 below shows the minimum Driveway separation and Intersection corner clearance based on street functional classification.

**Table 6.1**  
**Access Separation Requirements**

Access type	Roadway Classification					
	Principal Arterial	Minor Arterial	Collector Arterial	Residential Collector	Indust/Comm.	Residential
Minimum <b>Driveway to Driveway</b> Separation, measured closed edge to closest edge of driveway	300'	200'	200'	50'	100'	10' <sup>1,3</sup>
<sup>2</sup> Minimum <b>Corner Clearance</b> Standards, measured from the nearest edge of the driveway to the point of curvature on the curb return of the intersecting street	300'	200'	100'	100'	50'	20'

- 1 Residential driveways shall be a minimum of 5' from the nearest edge to the property line.
- 2 For parcels adjacent to a traffic signal, 300' shall be used unless a traffic study successfully demonstrates that the Intersection area of influence is less than 300'.
- 3 On a case-by-case basis in cul-de-sacs, driveways may be allowed less than a 10' separation.

3. Commercial development proponents wanting more than one (1) driveway access to a public street will be required to justify the second driveway on the basis of development generated trips.
4. Where the driveway location does not meet minimum separation criteria, or where a safe driveway location cannot be obtained, the City will require appropriate mitigation measures to provide for a driveway as safe as feasible. Acceptable mitigation may take the form of turning movement restrictions or a joint-use driveway with the adjoining property owner.
5. The minimum protected driveway throat without any turning movements or parking allowed must be provided for the number of vehicles indicated below to prevent any potential turning conflicts within their lengths. These are the minimum lengths that will be permitted, unless an approved traffic study includes a site and project specific queuing study showing that either more or less throat length is required to serve the subject development.
  - a. For drive-thru banks: for a single window, there must be storage to accommodate a minimum entering queue of four (4) vehicles; banks having two (2) lanes need to accommodate a minimum entering queue of at least three (3) vehicles per window or eight (8) vehicles total; and banks having three (3) or more lanes shall have storage to accommodate a minimum of three (3) vehicles

- for each service lane or total vehicles equal to four (4) times the number of service lanes.
- b. For vehicle wash facilities: facilities having a single service bay shall provide entering storage to accommodate a minimum of four (4) vehicles; facilities having multi-bay designs shall have a minimum entering storage space of at least three (3) vehicles for each service bay.
  - c. For fast-food restaurants with drive-thru window service: entering storage to accommodate a minimum of eight (8) vehicles per service lane shall be provided. Storage lengths for fast food restaurants are measured from the order board to the first service window.
6. Service stations shall have a minimum entering and exiting storage length to accommodate a minimum of two (2) vehicles shall be provided between the pump islands and the public right-of-way. If an espresso stand is located on-site with drive-thru windows, the minimum espresso stand storage requirements will prevail.
  7. Shopping centers having 50,000 square feet or more of gross leasing area shall have an entering and exiting throat length to accommodate a minimum of four (4) vehicles shall be provided before any crossing or turning conflicts can be permitted between the parking lot and the public right-of-way. Shopping centers having 100,000 square feet or more of gross leasing area shall provide a site and project specific queuing analysis to determine their appropriate entering and exiting storage lengths.
  8. All commercial developments having less than 50,000 square feet of gross leasing area shall have a minimum entering and exiting storage length to accommodate at least two (2) vehicles provided between the parking lot and the public right-of-way before any crossing or turning conflicts can be permitted. The City may require a site and project specific queuing analysis to determine the appropriate storage lengths when the commercial development includes one or more drive-thru facilities.
    - a. For all espresso stands with drive-thru windows, entering and exiting storage lengths shall accommodate a minimum of four (4) vehicles per window.
    - b. For pharmacies with drive-thru service: entering and exiting storage lengths shall accommodate a minimum of three (3) vehicles per service point.
    - c. For all other facilities, a minimum entering and exiting storage length of two (2) vehicles shall be provided before any crossing, or turning conflicts can be permitted between the parking lot and the public right-of-way line.

### **6.4.E Traffic Calming**

All new residential streets shall include traffic calming measures. These measures include, but are not limited to, curb bulb-outs, alternating parking, chokers, entrance gateways, landscaped medians, speed cushions, traffic circles, and raised Intersections.

Minimum traffic calming measures shall be determined by the Engineer in collaboration with the Developer based on the site's constraints such as topography, size, and location. At a minimum, all subdivisions with more than nine (9) lots shall have an entrance gateway if connected to an arterial street, and all internal intersections and streets longer than 500' shall incorporate at least one measure such as curb bulb-outs, chokers, or speed cushions unless otherwise approved by the Engineer. See Standard Plans 6-24 through 6-30

All landscaping shall be maintained by the adjacent homeowners, a homeowners' association or other responsible entity or parties including all benefited property owners.

### **6.5 DRIVEWAYS, SIDEWALKS AND NON-MOTORIZED LANES OR TRAILS**

The following standards outline the appropriate parameters for driveways, sidewalks and non-motorized lanes or trails.

#### **6.5.A Driveways**

Driveway design standards are shown in the Standard Plans 6-42 through 6-48. The required radius and minimum protected driveway throat width shall be determined by a vehicle maneuvering diagram provided by the Developer for the appropriate design vehicle. Pedestrian and vehicular sight line requirements shall be met and shown on Engineering Plans per Standard Plans 6-52 and 6-53.

All driveways shall be designed with profile grade breaks, or transitions, constructed as vertical curves to ensure adequate clearance for all vehicles. The maximum change in longitudinal profile grade for a driveway shall be 12 percent in a sag condition, and 8 percent in a crest condition. The maximum longitudinal profile grade for driveways shall be 12 percent, unless otherwise required by existing conditions as approved by the Engineer. The minimum length of vertical curve shall be 5' per 1 percent change in profile grade. See Standard Plan 6-48.

The minimum separation between street light standards and single-family residential driveways shall be 5'. The minimum separation from all other driveways shall be at least 10'.

The minimum width for all driveways to commercial, multi-family residential or industrial land uses shall be 30' unless otherwise approved by the Engineer in order to accommodate higher volumes of pedestrians in a safe and convenient manner. The width of driveways to industrial and

commercial properties may be required to be increased in order to accommodate large wheel-base vehicles.

The use of one-way driveways as a part of the on-site circulation pattern is discouraged. One-way driveways are reviewed on a case-by-case basis for impacts to the City roadway system. If the use of one-way driveways is allowed, the minimum width of each one-way driveway shall be 20'. In addition, signs shall be posted at the Driveways indicating the permitted movement (i.e., "Entrance Only" or "Exit Only – Do Not Enter"). The Engineer may also require similar signs to be posted within the on-site parking areas or drive aisles. See Standard Plans 6-43 and 6-44.

1. Private Residential Driveways:

Driveways serving a single-family residential lot shall be considered Private Residential Driveways. Private Residential Driveways shall be constructed of hot mix asphalt or cement concrete pavement at least 12' in width at the curb line unless otherwise directed by the Fire Marshal. At a minimum, the pavement for the driveway shall extend 40' from the edge of pavement or back of sidewalk on the public or private street serving that driveway, or to the front face of the carport or garage, whichever is less. See Standard Plan 6-42.

2. Private Joint Use Residential Driveways:

Driveways serving two (2) single-family residential lots shall be considered private joint use residential driveways. Private joint use residential driveways must be constructed with hot mix asphalt or cement concrete pavement at least 16' in width, unless otherwise directed by the Fire Marshal. Private use joint driveways shall be centered within a private tract for ingress/egress and utilities that is at least 4' wider than the pavement width. At a minimum, the pavement for the driveway shall extend 40' from the edge of pavement or back of sidewalk on the public or private street serving that driveway, or to the front face of the carport or garage, whichever is less. See Standard Plan 6-47.

### **6.5.B Sidewalks**

An important element of the City's Transportation Master Plan is the provisions of facilities for pedestrian use. Sidewalks shall be provided on all new and improved public streets. Sidewalks shall be constructed of Portland Cement Concrete Class 3000.

The minimum width for sidewalks varies depending on the functional classification of the street. On arterial streets, and any street adjacent to major pedestrian activity centers (retail districts and businesses, churches, schools, other public gathering places), the minimum width for sidewalks shall be 5' with a landscape planter and 10' without a landscape planter. See the Standard Plans for detailed information based on roadway classification. In instances where building doors open directly to a public sidewalk, the minimum sidewalk width shall be 10'. No street trees will be

allowed within 4' of a door opening to a public sidewalk. These widths shall be exclusive of the width of any adjacent curbs, and shall be free of obstructions such as utility poles and mailboxes.

Sidewalks will be required to be constructed on both sides of a street, and shall be placed as shown in the Standard Plans for the various street classifications. Where sidewalks are not adjacent to the curb, a landscaped planter strip between the street curb and the street-side edge of the sidewalk shall be provided.

The minimum thickness for Portland Cement Concrete sidewalks shall be 4", except at driveway approaches where the minimum thickness required shall be 6" for residential driveways and 8" for commercial/industrial driveways. See Standard Plans 6-42 through 6-46.

All streets constructed with curbs, gutters, and sidewalks, shall have ADA compliant curb ramps provided at street intersections and other pedestrian crossings. These ramps shall be located and constructed in accordance with WSDOT Standard Plans. The City requires detectable warning as truncated domes. Material shall be Federal Yellow composite cast-in-place panels. No painted concrete stamps will be allowed.

### **6.5.C Non-Motorized Lanes or Trails**

#### **1. Bike Lanes**

Bike lanes are a portion of the street that has been designated by signs and pavement markings for preferential or exclusive use by bicyclists. These lanes shall be 5' wide, located next to the curb, and designated with pavement markings according to the MUTCD. The route shall be signed with the Bike Lane (R-17) sign according to the MUTCD. See Standard Plan 6-31.

#### **2. Facilities Containing Bicycle Components:**

All bicycle facilities shall be designed and constructed according to the latest version of the Guide for the Development of Bicycle Facilities, published by AASHTO and these Standards.

#### **3. Shared Travel Lane:**

Shared travel lanes are the outside travel lanes of a street accommodate the shared usage by vehicles and bicycles. Bicycle route signing and pavement markings according to the MUYCD are required on these streets. See Standard Plan 6-31.

#### **4. Shared Use Trails (Pedestrian and Bicyclist):**

The minimum surface width of asphalt pavement is 10' for a two-way trail. Each trail shall include provisions for 2' wide gravel shoulders having cross-slopes no steeper than 2 percent on both sides of the trail. The minimum horizontal clearance shall be at least 3' from the edge of the asphalt paved trail to any trail-side obstruction.

Where trails are adjacent to ditches, creeks, or slopes steeper than 2H:1V, the gravel shoulder must be 5' wide with a minimum 6' high vinyl covered chain link fence, where appropriate, as the means to ensure that bicyclists remain safely away from such trail-side hazards.

**6.6 INTERSECTION DESIGN POLICIES**

Intersection design policies are outlined in the tables below:

**6.6.A Intersections Design**

**Table 6.2**

	<b>Design Criteria</b>	<b>Standard</b>
1.	Angle of intersection measured at 10' beyond street right-of-way line with 90° being perpendicular	Minimum 85° Maximum 95°
2.	Minimum centerline radius (2-lane) for residential streets	55 Feet
3.	Minimum curb radius	
	a. Arterials and streets classified residential collector or higher	35 Feet
	b. Residential or industrial/commercial street intersections where the highest classification involved is a residential collector	25 Feet
	c. Private street intersections where the highest classification involved is a residential street	20 Feet
4.	Minimum right-of-way line radius	25 Feet

At the intersection of two differently classified streets, the larger of the curb return radii specified in the street design table herein shall be used for establishing the right-of-way radius.

**6.6.B Intersections Spacing**

Between adjacent intersecting streets, whether crossing or T-connecting, shall be as shown in Table 6.7

**6.6.C On Sloping Approaches**

At an intersection, landings shall be provided with a profile grade not to exceed 1' difference in elevation for a distance of 30' approaching an arterial, or 20' approaching a residential or commercial street, measured

from future right-of-way line (intersected by the 2 percent profile grade extended from crowned street to right-of-way line) of intersecting street. See Standard Plan 6-23.

**6.6.D Roundabout Intersections**

When used in place of standard intersections, roundabout intersections shall be designed in accordance with current USDOT/FHWA guidelines and the WSDOT Design Manual.

**6.6.E Low Speed Curves**

Low speed curves are applicable to residential streets only as shown in Table 6.3 below.

**Table 6.3**

	<b>Radius (Ft)</b>	<b>Deflection Up to 75°</b>	<b>Deflection 75° &amp; Over</b>
1.	Minimum centerline radius (two-lane):	100'	55'
2.	Minimum curb radius:	80'	25'
3.	Minimum right-of-way line radius:	70'	25'

**6.6.F Offset and Skew Intersections**

The use of offset and skew intersections should be avoided wherever possible, and when proposed, must conform to the requirements of these Standards. New intersections shall be designed to avoid intersection angles at Street centerline of less than 85 degrees, or more than 95 degrees. Offsets between intersections shall not measure less than what is shown in the Table 6.7.

**6.6.G Intersections Within a Horizontal Curve Alignment**

The use of intersections in or near a horizontal curve shall be avoided wherever possible, especially on the inside of a horizontal curve. Intersection/driveway sight triangle standards shall be met as required in these Standards.

**6.6.H Intersection Pedestrian and ADA Compliant Access**

ADA compliant ramps shall be provided on each corner of an intersection from which pedestrian movement is permitted. Ramps shall be designed in accordance with these Standards and the ADA. See WSDOT Standard Plans.

At those locations where sidewalks are not required and are not proposed to be installed, a concrete pedestrian refuge area may be required behind, and to either side of, the pedestrian/wheelchair ramp. This refuge area shall extend a minimum of 4' clear behind the ramp, and 8' on both sides of the edges of the ramp.

Crosswalks are marked typically under the following conditions:

1. At signalized intersections; or
2. At designated school crossings; or
3. At locations approved by the Engineer.

### **6.6.I. Intersection Turn Lane Vehicular Storage**

Intersection turn lane storage shall be a minimum of 50'. When a traffic study is required by the City, the turn lane storage shall be designed on the basis of 85 percent of the queue length during the PM peak hour for 20-year forecast volumes. The analysis shall be based on signal optimization and analysis program calculations from the Transportation Research Board's Highway Capacity Manual, or computerized analysis programs, such as Synchro software, or an equivalent program approved by the Engineer.

### **6.6.J Intersection Drainage**

Intersections should be designed to avoid the sheet flow of water across the intersection of all streets classified as arterial streets. Where practical, runoff water should be carried under the intersection via catch basins and storm drains. Storm water shall be collected prior to a curb ramp and shall not be allowed to pool or puddle in front of or within a curb ramp. Where appropriate the use of low impact development design and materials to handle storm water is encouraged.

### **6.6.K Intersection Right-of-Way Requirement**

The right-of-way requirements for intersection approaches may be increased for special intersection elements such as raised median channelization, multiple left-turn lanes, exclusive and/or right turn lanes, turn lanes to accommodate large wheel base vehicles, bus turn outs, etc.

### **6.6.L Intersection/Driveway Sight Triangle Requirements**

Intersection/driveway sight triangle will be evaluated based upon the current edition of the AASHTO Policy on the Geometric Design of Highways and Streets. Sight distance requirements for each approach will be those indicated in the appropriate table in the latest edition. The City may allow mixed-use developments to use wider sidewalks to accommodate sight lines at intersections on a case-by-case basis.

### **6.6.M Intersection Channelization**

Intersection turn islands (right-turn islands) shall be constructed with raised curbs only when the resulting island encompasses an area of at least 100 square feet (exclusive of the area removed for pedestrian ramps), or if at least two of the sides of the island are a minimum of 15' long. The curbing shall be offset at least 2' from the right edge of the through travel lanes, and at least 4' from the left edge of the right-turn

lane. The curb shall be combined curb and gutter in all new installations and pre-cast concrete mountable curb sections in all retrofit installations. A minimum radius of 2' shall be used for the island noses. Landscaping should not be installed in right-turn islands. The preferred surfacing materials shall be 4" thick section of broom-finished concrete or a 3" thick surface of asphalt concrete. Stamped colored concrete may be approved by the Engineer on a case-by-case basis, provided it is not used in a pedestrian pathway portion of the island.

Divisional center medians (used between left-turn lanes and opposing traffic lanes) shall be a minimum of 4' wide and 100' long. Curbing for the median shall be combined vertical curb and gutter.

A type R4-7 ("Keep Right" symbol) sign shall be installed at the nose of all divisional center medians, facing approaching traffic.

### **6.6.N Traffic Signal Equipment**

Traffic signal controller cabinets, when installed as a part of a signal installation, shall be installed so that the door to the cabinet opens towards the intersection whenever possible. A clearance of 7' shall be provided from the face of curb to the controller cabinet. Poles shall be located no more than 5', as measured to the pole centerline, from the edge of the nearest pedestrian/wheelchair ramps on that quadrant of the intersection. See Standard Plan 6-38.

### **6.6.O Railroad Crossings for New Construction**

Adjacent driveways shall be located at least 100' from any railroad crossings measured from the centerline of the track to the nearest edge of the driveway. Intersections shall not be located within 200' of a railroad crossing, measured from the centerline of track to the nearest intersection curb return. At those locations where this separation cannot be provided, special traffic control measures may be required to be installed in the individual approaches to the intersection. Such measures may include, but not be limited to, the installation of the applicable railroad crossing warning signs, median barriers, and the installation of traffic signals interconnected to automatic crossing protection devices. Where the crossing is immediately adjacent to the intersection, the Engineer may require special intersection design and crossing protection to enhance the safety of vehicles traveling through or turning at the Intersection.

Sight distance requirements for the railroad crossing will be those indicated in the appropriate table in the latest edition of the AASHTO Policy on the Geometric Design of Highways and Streets. All removable obstructions shall be removed or relocated from the defined sight triangle, except for warning signs, luminaire poles, or other officially established traffic control devices. Where these sight distance requirements cannot be met because of pre-existing, or non-removable obstructions (buildings, for example) automatic crossing protection shall be installed.

### **6.6.P Intersection Geometric Design**

Every intersection shall be designed to accommodate the design vehicle appropriate for the lesser classified street forming the intersection. All elements of the intersection, including turning lanes medians, and islands, shall be designed so that the design vehicle will not encroach onto curbs, sidewalks, traffic control devices, islands, center medians, or encroach into the travel lanes of opposing flow traffic.

### **6.6.Q Vehicle Maneuvering Diagrams**

The Vehicle Maneuvering Diagrams (VMD) shall clearly show the outermost and innermost wheel paths and vehicle overhangs of the specified design vehicle using the intersection for entering or leaving a project site, traversing the site, backing into a dock, or otherwise maneuvering for delivery. The VMD shall show the design vehicle using the curb lane in multiple lane roadways or driveways to enter and leave the site.

The VMD shall show that the appropriate design vehicle wheel paths/vehicle overhangs are without encroachment into:

1. An opposing lane of traffic in a public street. The outside wheel paths shall be at least 1' inside the curb or edge of outside traffic lane when entering and exiting the site on a 2- or 3-lane street.
2. An opposing lane of a two-way driveway. Adjacent wheel paths of entering and exiting design vehicles should show at least 3' of minimum separation within driveways.
3. Any parking stalls. No design vehicle wheel path shall be within 3' of any required parking stalls.
4. Areas outside of the reinforced concrete driveway approach apron and protected driveway throat. The inside wheel paths for entering and exiting design vehicles should be at least 3' inside the reinforced concrete driveway approach apron.

The VMD shall show required minimum protected driveway throat lengths prior to exiting the development, and shall show that no portion of the minimum throat length will be within the driveway aisle abutting required parking stalls. All commercial and industrial project sites shall provide at least 50' of protected throat length from the exiting driveway apron. Sites which will experience more than 1,000 vehicles per peak-hour, and sites with a heavy percentage of truck traffic will require a traffic study documenting the minimum protected throat length to accommodate the expected queue.

The VMD shall clearly identify the applicable design vehicle(s) used to prepare the VMD. The applicable design vehicle shall be based on the typical delivery vehicle serving the site as approved by the Engineer. See the Standard Plans 6-101 through 6-105 for turning movements radii associated with the various design vehicles.

When no specific design vehicle is specified for a development, the appropriate design vehicle shall be the BUS-40 design vehicle. The BUS-40 design vehicle is used for service vehicles such as garbage trucks, and fire trucks.

### **6.7 BRIDGE CROSS SECTION**

Bridges shall be structurally designed to WSDOT Standards. The street section across a bridge or major culvert shall remain as shown in the Standard Plans with the exception that turn lanes, planter strips and utility strips may not be required. Turn lanes shall be reduced using the MUTCD taper formulas and a 15' taper will be required for pedestrian sidewalks or multi-use trails to bring the sidewalk adjacent to the curb and eliminate the planter strip. All tapers shall occur off of the bridge or culvert structure.

All utility systems shall be in steel casings and placed between the structural beams using approved hangers so that piping is hidden from view. No carrier lines, casings, or conduits will be allowed on the outside of the structural beams. All known utilities and future upgrades shall be accounted for in the design. In addition, two (2) 4" and two (2) 2" diameter conduits and one (1) 8" diameter steel casing shall be installed for future use. Design of the utility system hangers shall be for a full pipe condition for all utilities crossing a bridge.

### **6.8 STREET MEDIAN CHANNELIZATION**

Median channelization may be required to be installed as a part of any project. In general, median channelization will not be required or approved for local residential streets or for arterial streets where the resulting median would be less than 600' long, inclusive of any turn lane storage area. Exceptions may include the gateway entrance into development or installation of median channelization at intersections to prevent left-turn access into or out of properties in the immediate vicinity of an intersection. Median channelization must be at least 4' wide in order to accommodate any necessary traffic control devices and/or street lights.

Approval of the installation of medians will be made by the Engineer. Design plans which include median installation must be accompanied by an access plan for the impacted properties. This access plan shall denote the ownerships, uses of the directly impacted properties, and the resulting changes to the access to and from these properties.

If median channelization is required and approved with landscaping on residential collector and residential streets, the landscaping must be maintained by the homeowners association or other responsible entity or parties including all benefited property owners and a landscape maintenance agreement with the City will be required. All costs of maintenance including irrigation shall be the responsibility of the homeowners. The maintenance agreement will include the responsibility to maintain adequate sight distance for vehicular traffic, and shall be recorded with the County Auditor's Office. Type IV landscaping shall be provided including an irrigation system with separate meter per Standard Plan 3-15. All

plantings shall not restrict sight distance of the vehicles using the street at plant maturity. The landscaping shall not include large rocks, boulders, or other fixed obstructions. Street trees shall be selected from the approved street tree list shown in Appendix A. Placement of landscaping shall be such that adequate sight distance, per these Standards and AASHTO requirements, will be maintained. All landscaped medians shall be provided with fully automatic, underground irrigation systems.

No left-turn access breaks in a "continuous" center median island will be permitted within the intersection spacing limits as shown in Section 6.6.B.

### **6.9 CUL-DE-SAC/HAMMERHEAD STANDARDS**

Provisions for vehicle turnarounds must be made for either temporary or permanent non-through street conditions. The minimum radius for a cul-de-sac shall be 45', as measured from the center of the cul-de-sac to the face of curb. The maximum cross section profile grade for a cul-de-sac is 6 percent. Cross grades greater than 2 percent may only be used when the existing topography exceeds 10 percent in profile grade. See Standard Plan 6-18.

A hammerhead turnaround may be permitted if:

- The street is a private street and is more than 150' from the nearest face of curb or edge of pavement of the connecting street to its most distant point
- The street is a public street that will be extended in the future

Parking and driveways are not allowed within a turnaround. See Standard Plan 6-21.

The maximum length of a non-through street, either permanent or temporary, shall be 600' measured from the centerline of the connecting street to its most distant point.

### **6.10 FIRE ACCESS STREETS**

Fire access streets are required to serve all buildings that have exterior walls located more than 150' from the nearest face of curb or edge of pavement of the connecting street. The distance is measured by an approved route around the exterior of the building that a firefighter would take, and does not allow topographical or property separation conditions that would make it impossible to advance hose lines to the proposed building along that route. Fire access roads are also required to serve properties such as wrecking yards, lumber yards, parking lots and similar uses on lots where structures or buildings may not exist.

All fire access roads shall be a minimum of 20' in width, and shall have an unobstructed height of no less than 13'-6".

The minimum inside turning radius for a fire access street is 30' for both left and right turns, and a minimum outside turning radius of 50'.

Any fire access street in excess of 150' from the nearest face of curb or edge of pavement of the connecting street shall be provided with a turnaround at the end meeting the requirements of Section 6.9 Cul-de-Sac/Hammerhead standards.

Fire access roads must be designed for HS-20 loading, capable of supporting emergency vehicles on an all-weather basis. This means that it must have a firm gravel base with hot mix asphalt concrete pavement or cement concrete pavement above the gravel base, and it must be designed so that it will not deteriorate under adverse weather conditions and fire vehicle traffic.

The maximum profile grade for paved surface fire access streets is 12 percent, unless otherwise approved by the Fire Marshal. Homes that have access at 12 percent profile grade or greater are required to have sprinkler systems per NFPA 13 standards.

Paved fire access roads for residential structures may be accepted up to a maximum profile grade of 15 percent when all structures have sprinklers, provided that in the professional opinion of the Fire Marshal, fire fighting and rescue operations will not be impaired.

The fire access street must be constructed prior to the construction of combustible portions of the building, or the storage of combustibles on non-building lots.

One- and two-family structures (duplexes) shall be constructed no more than 600' from the closest fire hydrant. Multi-family structures shall be constructed no more than 300' from a fire hydrant.

Deviations to these fire access street standards may be made at the sole discretion of the Fire Marshal and the Engineer according to Section 1.17 Design Deviations.

### **6.11 ROADSIDE APPURTENANCES**

#### **6.11.A Mailboxes**

Mailboxes shall be located as approved by the US Postal Service and the Engineer in accordance with Standard Plan 6-70. Both the Postmaster and the City require that the location of community mailboxes and the number of units be shown on the project plans.

Mailboxes along the edge of all arterial streets shall be a "break-away" design. Single units shall be mounted per WSDOT Standard Plans. Multiple mailbox units shall be mounted on a commercially available tubular aluminum support system designed to function in either a break-away or bend-away basis. See Standard Plan 6-70. When mailboxes or mailbox clusters are installed in a sidewalk, the sidewalk shall be constructed per Standard Plan 6-40.

The use of concrete filled metal pipe for any mailboxes, or the use of horizontally mounted wooded members to support multiple mailboxes is prohibited.

#### **6.11.B Fencing**

Permanent chain link type fencing or handrail shall be required for pedestrian protection, as well as protection against unauthorized entry for, but not limited to, the following:

1. All City owned and operated facilities, including but not limited to: pump stations, wells and sewage lift stations. Fence shall be 6' high vinyl coated (black) with plastic slats for screening as required by the Engineer.
2. Adjacent to a slope, ditch, bridge, retaining wall, or other permanent facility where the lowest elevation of the facility is greater than 30" below the finished elevation of the pedestrian facility. Fencing shall be a minimum of 4' high where protection of pedestrian is required.
3. All fencing shall conform to WSDOT Standard Plans for Type 3 or Type 4 chain link fencing unless otherwise approved. The location of required fencing and access gates shall be shown on the plans.
4. In no case shall two (2) chain link or wood fences be placed parallel and less than 5' from each other. For example, fences for a rock wall cannot be placed within 5' of a fence for a subdivision boundary, yard or storm detention facility. Approved safety railing may be used in lieu of fencing, as approved by the Engineer.

### **6.11.C Structural Retaining Walls and Rock Facings**

Structural walls over 2' in height shall contain an aesthetic surface feature approved by the Engineer. Examples would be a natural stone finish, keystone type walls, or ecology block with aesthetic natural stone finishes. No structural wall over 3' in height will be allowed within building setbacks. No structural wall shall be allowed over 6' in height, except adjacent to public right-of-way.

In no case shall a mechanically stabilized retaining wall utilizing straps or webbing extending under a public street or within right-of-way be allowed unless otherwise approved by the Engineer.

Rock facings may be used for the protection of cut or fill embankments up to a maximum height of 4' above the keyway in stable soil conditions, where no significant foundation settlement or outward thrust upon the walls. No rock wall over 3' in height will be allowed within building setbacks.

Where the separation between single-family homes is 16' or more, rock facings and retaining walls up to, and including, 4' are allowed within the structure setback.

Terracing and vertical and/or horizontal modulation of the rock facing and retaining walls will allow the maximum height to be increased up to 8' in the following conditions:

1. When terracing is used, the wall height can be increased 1' for every extra foot of horizontal terracing over 4' in width.
2. When horizontal modulation is used, the height of the wall can be increased by 1' for every foot in horizontal modulation up to an 8' maximum wall height. Horizontal modulation shall start and end

within 25' of wall length, and can be repeating up to a maximum of three (3) tiers.

Rock facings and rock walls shall be constructed in accordance with the WSDOT Standard Specifications. See Standard Plans 6-60 through 6-63.

### **6.11.D Guardrail**

All guardrail installations shall be designed per WSDOT Design Manual Chapter 710.06 Beam Guardrail.

### **6.11.E Bus Stops**

Bus stops and bus turnout lanes must be provided at those locations designated by the Engineer and Metro Transit.

The pavement section for bus pullouts and bus turnout lanes shall be constructed to the requirements of WSDOT Standard Plans for Bridge Approach Slabs. The bus pullouts shall be at least 12' in width. Bus pullout designs shall be consistent with transit agency plan requirements.

Bus turnout lanes shall be provided where bus queuing or staging is required by the transit agencies operations.

### **6.11.F Conduit for Future City Use**

Conduit shall be provided behind the sidewalk for future fiber optic communication. One (1) 4" diameter Schedule 80 PVC conduit shall be provided at the back of sidewalk and at least one (1) handhole per property and/or building. Conduit shall be provided the length of the property and shall have a handhole provided at the property line for future connections. Tracer wire shall be placed inside all conduit installations.

## **6.12 TRAFFIC CONTROL DEVICES**

The following standards shall apply to all traffic control devices:

### **6.12.A Traffic Signs**

The Developer shall provide all traffic control signs including, but not limited to, street name signs, regulatory signs (including "stop", speed limit signs, "no parking" signs), warning signs, and barricades, as required by the Engineer, based on the approved Engineering Plans.

All traffic control signs shall conform to the standards of the latest edition of the MUTCD, as modified by WSDOT. All traffic control sign installations shall conform to the location and placement standards noted in MUTCD and shall include the appropriate pavement markings.

The City shall install all traffic signs according to the approved Engineering Plans at the Developer's expense. Costs shall be the actual costs including labor, overhead, equipment and materials. The costs shall be based on the latest cost schedule prepared and approved annually by the Engineer.

### **6.12.B Pavement Markings**

The location of the required pavement markings shall be shown on the Engineering Plans, and must be approved by the Engineer.

All pavement markings, including, but not limited to, pavement striping, raised pavement markers, and delineators shall be installed as a part of all projects. The location and quantity of the required pavement markings shall be shown on the plans for all street classifications. See Standard Plans 6-73 through 6-81.

### **6.12.C Construction Area Traffic Control**

The Developer shall be responsible for providing and maintaining all traffic control devices and flag persons required for maintaining public safety and traffic control in construction areas. Plans shall be submitted and approved prior to the issuance of any development permit for construction either within the public right-of-way or on the site. No work may begin until a traffic control plan has been submitted and approved by the Engineer. Traffic control plans must be prepared by a licensed Professional Engineer or a certified Traffic Control Supervisor in accordance with WSDOT and MUTCD Standards. Traffic control shall be maintained at all times when construction is in progress on all streets and alleys in the construction area. Project signs shall be installed by the Contractor when required on City projects.

Construction activities on arterial streets are only permitted between the hours of 9:00 A.M. and 3:30 P.M., unless otherwise approved by the Engineer.

### **6.12.D Traffic Signal Systems**

Installation of traffic signal systems shall be required based on the warrants established in the latest edition of the MUTCD. Approval of any particular project will be conditional upon assurance of financial participation in, or actual installation of, the signal system where projected traffic volumes indicate that the traffic volume warrants will be met; or, where the projected operation of an intersection in an unsignalized configuration will be at or below a level-of-service "E." Financial participation or construction of the traffic signal shall be based on the percentage of traffic from the development versus the total traffic volume from the street of connection to the development. In any event, the Engineer shall approve the participation level based on this criterion.

One (1) 4" and two (2) 2" diameter PVC Schedule 80 conduits with pull ropes terminating in Type 2 junction boxes shall be installed under each leg of the intersection for future traffic signal installation, as required by the Engineer.

Any damage to traffic signal systems, detection loops, and/or interconnect cables shall be repaired and restored to operation within five (5) working days. If not completed within the stated time frame, the City may choose

to complete the repairs at the Developer's cost. Costs shall include all labor at overtime rates, overhead, equipment, materials, and any other associated charges. The costs shall be based on the latest cost schedule prepared and approved annually by the Engineer.

### **6.13 LANDSCAPE REQUIREMENTS ON PUBLIC RIGHT-OF-WAY**

Landscaping within the right-of-way in planter strips or behind sidewalk shall be provided by all new subdivisions and short subdivisions, commercial/industrial projects or any other development which impact new public streets or abut existing public streets.

#### **6.13.A Landscaping Standards**

The Developer shall design and construct the required landscaping as follows:

1. Street trees shall be required on all streets. The approved street tree list is provided in Appendix A. This list is subject to periodic updating by the City. See Standard Plan 6-55 for planting details. All landscaping in the planter strips or behind the sidewalks shall also include Type 4 landscaping in accordance with KCC 15.07.
2. Maintenance of landscaped areas, including irrigation systems, ornamental plantings and other landscape elements, on right-of-way shall be the responsibility of the abutting property owner or homeowners association unless otherwise approved by the Engineer.
3. Permission by the Engineer shall be required before any plant may be planted or removed from right-of-way.
4. Plant location and spacing must meet all sight obstruction requirements. Plantings shall not obstruct the visibility of any fire hydrant or traffic control device. The street trees may be spaced at irregular intervals in order to accommodate sight distance requirements for driveways, intersections or traffic control devices.
5. Street trees shall have a minimum clearance of 8' over pedestrian ways and 14' over streets at maturity. Street trees shall be centered a minimum of 3' from the back of curbs and 2' from sidewalks unless otherwise approved by the Engineer.
6. Tree grates shall be required for all street tree plantings in the Downtown Overlay District.
7. Temporary irrigation systems may be required for the minimum 2-year maintenance period.
8. The street trees shall have a minimum 1.5" to 2.5" caliper measured 6-12" above the root crown at the time of planting. All trees shall be container grown, balled and burlap or tree bag unless otherwise approved by the Engineer. No bare root trees will be allowed.

9. The minimum tree pit size in a tree well shall be 16 square feet or three times the diameter of the root ball, whichever is greater.
10. All plant materials shall be inspected and approved by the City Arborist prior to installation.

### **6.13.B Landscaping Maintenance Requirements**

1. A maintenance agreement shall be signed prior to engineering plan approval, as described in Section 1.15.L, stipulating the minimum maintenance and quality standards. Landscaping shall be maintained in a safe, healthy, and attractive manner during the 2-year maintenance period. Landscaped areas shall be kept free of weeds and litter, and material maintained in good growing condition.
2. Regular monthly maintenance procedures for April 1 through October 1 shall be as follows:
  - Litter pickup
  - Mowing turf
  - Edging turf
  - Weeding planting beds
  - Sweeping of sidewalks
  - Irrigation of all plant materials
  - Fertilization as needed per manufacturer's specifications
  - Pruning to required heights and widths
  - Pest and disease control
3. Inspections shall be conducted every six (6) months during the 2-year maintenance period. If any portion of the landscaping dies, the Developer shall replace the plant material within thirty (30) days of notification. If the landscape material is not replaced within the specified time period, the City may use whatever portion of the required assignment of funds pursuant to Section 1.12.B needed to replace the dead landscaping. If the remaining assignment of funds is not enough to cover the costs, the City will initiate collection against the financial guarantee. The City may use either City employees or private contractors to complete the work.

### **6.14 STREET ILLUMINATION SYSTEM**

A street lighting system meeting these Standards shall be provided by all new subdivisions and short subdivisions, commercial/industrial projects or any other development which constructs new public streets or abut existing public streets.

The illumination system shall include energy efficient luminaires and shall conform in all respects with the technical requirements of these Standards, the WSDOT Standard Specifications, IESNA, National Electrical Safety Code, and the National Electrical Code. Street light system installations which do not meet the

requirements of the National Electric Code will not be accepted. See Standard Plans 6-86 through 6-92.

These street lighting criteria and guidelines apply to all public street lighting systems. All costs for purchase of materials and installation of the street lighting system shall be borne entirely by the Developer.

Should property owners with private streets decide that they want street lights, the City shall review their lighting design for concurrency with these Standards. Street light designs not meeting these Standards will not be accepted by the City.

All public street classifications shall have street light systems owned and operated by the City except for systems on residential streets if they are owned by Puget Sound Energy. The Developer shall design and construct the system to these Standards.

**6.14.A Street Lighting Criteria and Guidelines**

The calculated street light spacing shall be decreased by 10%. This is to account for future relocations of street lights for revisions to existing or new driveways and similar improvements after the street lighting system is installed.

The minimum curb overhang by a street light luminaire with a mast arm shall be no less than 2’.

Street trees can significantly interfere with the efficient lighting of streets, and shall not be permitted within 30’ of any street light on arterial streets or within 20’ on residential streets. See Standard Plan 6-54. Where street trees and street lights have a conflict the street tree shall be placed at the back of the sidewalk and not deleted.

Street light criteria based on street widths and roadway classifications are provided in Table 6.4 below.

**Table 6.4**

Roadway Classifications	Typical Min Mounting Heights (ft)	Typical Lamp Wattage	Required Max. Uniformity Ratio (avg/min lux)	Desired Max Uniformity Ratio(max/min lux)	Required Average Maint’d Footcandles
Principal Arterials	50	400	3:1	6:1	1.5
Minor Arterials	40	400	3:1	6:1	1.5
Industrial Collector Arterials	40	250	3:1	6:1	1.0
Residential Collector Arterials	40	200	3:1	6:1	1.0
Commercial/Industrial Streets	40	200	3:1	6:1	0.8
Residential Collector Streets	16.5	200	3:1	NA	0.7
Residential Streets	16.5	100	3:1	NA	0.4

Private street intersections and gathering areas shall be lit to public residential street lighting standards. Light levels between these areas can be less than residential street light requirements, but in no case can the

light level exceed residential requirements. See Table 6.6 for typical spacing requirements.

**6.14.B Street Light Luminaires**

Only Gardco, General Electric, StressCrete Group, Lumec, and Hubbell street light luminaire fixtures shall be used in all City-owned street light systems, unless otherwise approved by the Engineer. The Gardco and Lumec luminaires are to be used exclusively within the Downtown Overlay District. Only the King or Lumec luminaires may be used on all residential streets.

1. All luminaires shall have:
  - a. High pressure sodium lamps;
  - b. 120/240 volts;
  - c. Magnetic regulator or autoreg ballast;
  - d. No PE function;
  - e. Type III IES light distribution;
  - f. Charcoal filter; and
  - g. Fusing.
  - h. Cobra head or Gullwing fixtures shall be provided with a flat glass lens and cutoff optics.
  - i. Post top or acorn fixtures shall be provided with no less than semi-cutoff optics. These fixtures shall have the capability of being retro-fit to no upright, zero light above the 90 degrees vertical plane in the future. The retro-fit shall be in the form of a decorative feature that can be added on top of the fixture. It is encouraged that only post tops with cutoff or full cutoff optics be used. In addition, post tops shall minimize light glare for drivers (vertical light between 72 degrees and 90 degrees vertical.)
2. All lamps for street light systems shall be high pressure sodium lamps (HPS) with a rated service life at 10 hours per start equal to 24,000 hours and shall have a clear finish. These HPS lamps shall also meet one of the following criteria:

**Table 6.5**

Lamps (Watts)	Min. Initial Lumens
100	9,500
150	16,000
200	22,000
250	28,000
310	37,000
400	50,000

The maximum calculated voltage drop shall not exceed 5 percent per circuit.

All privately owned street lighting systems shall provide a contact service cabinet or separate load center.

New public street light systems, with no load center within 1,000', shall provide a 100A to 150A load center sized to meet the circuit requirements. Cabinets shall have a photoelectric control mounted on top. Any residential street systems owned by Puget Sound Energy are not required to have service cabinets installed. Conduits and wiring shall be provided from the load center to the property edges for future connection into the street light system.

### **6.14.C Street Light Standards**

All street light standards (poles) used in City owned street light systems are shown below. All others must be approved by the Engineer on a case-by-case basis.

1. Hapco Series 21 and Series 22 aluminum street light standards and mast arms
2. Valmont Series 21 and Series 22 aluminum street light standards and mast arms
3. Items 1 and 2 above are pre-approved products. All others require written approval of the Engineer prior to bid submittal for City CIP projects or prior to ordering for Developer projects. When completing gaps or extending existing street light systems, the poles shall be the same as the existing poles.
4. Pedestrian poles in the Downtown Overlay District shall be made from one piece of seamless 4" round tube of extruded aluminum with a wall thickness of 0.125", decorative base cover and polyester powder coat finish, ZED model #P104AF-14-GY-LBC3-GY, color Forest Green #RAL6009 or approved equal.
5. Breakaway couplers for street light standards shall conform to PrecisionForm, Inc. Model PFI 200-1A Coupler or approved equal.

### **6.14.D Street Light Calculations**

When street lighting systems are designed according to these Standards and the criteria provided herein, no additional documentation or calculations will be required. Should an alternate system which does not follow these criteria be proposed, calculations shall be submitted to the Engineer for review and approval. The supporting documentation and calculations will include, and consider, the following elements:

1. Existing street light characteristics, and/or the location of street intersections along the streets being improved.

2. The mounting height and the bracket or arm length.
3. The street lighting system configuration.
4. The luminaire, IESNA light distribution pattern (IESNA electronic file shall be called out), and lamp used, including initial lumens.
5. The light loss factor (LLF) used in calculations. (LLF = 0.76 unless otherwise approved by the City)
6. The maximum illumination, the minimum illumination, and the average illumination.
7. The uniformity ratios for: avg lux / min lux; and for max lux / min lux.
8. The curb overhang for luminaires located on the outside of streets in feet, and/or the curb overhang for luminaires located within medians in feet.
9. The width of the median(s) in feet.
10. Street tree information, including, but not limited to, spacing/ location within medians and along the outside of streets.
11. Voltage drop calculations for each circuit.

**6.15 STREET LIGHT CRITERIA**

**Table 6.6**

**Principal Arterial Streets**

Street Layout	Mounting Height (ft)	Spacing <sup>1,2,3</sup>	HPS Lamp (Watts)	Max Aver: Minimum Uniform Ratio	Max: Minimum Uniform Ratio	Illum Level End-of-life (ft-candles)	Mast Arm Length (ft)	Min Pole setback from curb (ft)	Fixture Type
Standard 7-Lanes, 80' width	50	245 (2R_STG)	400	3:1	6:1	1.5	6	3	Cobra- head
With Bike Lanes, 90' width	50	225 (2R_STG)	400	3:1	6:1	1.5	6	3	Cobra- head
Standard 7-Lanes, 80' width	50	245 (2R_OPP)	400	3:1	6:1	1.5	6	3	Cobra- head
With Bike Lanes, 90' width	50	225 (2R_OPP)	400	3:1	6:1	1.5	6	3	Cobra- head

**Minor Arterial Streets**

Street Layout	Mounting Height (ft)	Spacing <sup>1,2,3</sup>	HPS Lamp (Watts)	Max Aver: Minimum Uniform Ratio	Max: Minimum Uniform Ratio	Illum Level End-of-life (ft-candles)	Mast Arm Length (ft)	Min Pole setback from curb (ft)	Fixture Type
Standard 5-Lanes, 58' width	40	325 (2R_STG)	400	3:1	6:1	1.5	6	3	Cobra- head
With Bike Lanes, 68' width	40	295 (2R_STG)	400	3:1	6:1	1.5	6	3	Cobra- head
Standard 5-Lanes, 58' width	40	180 (2R_OPP)	250	3:1	6:1	1.5	6	3	Cobra- head
With Bike Lanes, 68' width	40	165 (2R_OPP)	250	3:1	6:1	1.5	6	3	Cobra- head

**Industrial Collector Arterial Streets**

Street Layout	Mounting Height (ft)	Spacing <sup>1,2</sup>	HPS Lamp (Watts)	Max Aver: Minimum Uniform Ratio	Max: Minimum Uniform Ratio	Illum Level End-of-life (ft-candles)	Mast Arm Length (ft)	Min Pole setback from curb (ft)	Fixture Type
Standard 44' width	40	315 (2R_STG)	250	3:1	6:1	1.0	6	3	Cobra- head
Standard 44' width	40	235 (2R_STG)	200	3:1	6:1	1.0	6	3	Cobra- head

**Residential Collector Arterial Streets - 2 or 3 Lanes**

Street Layout	Mounting Height (ft)	Spacing <sup>1,2</sup>	HPS Lamp (Watts)	Max Aver: Minimum Uniform Ratio	Max: Minimum Uniform Ratio	Illum Level End-of-life (ft-candles)	Mast Arm Length (ft)	Min Pole setback from curb (ft)	Fixture Type
Standard 36' width	40	310 (2R_STG)	250	3:1	6:1	1.0	6	3	Cobra- head
With Bike Lanes 46' width	40	310 (2R_STG)	250	3:1	6:1	1.0	6	3	Cobra- head

**Downtown Overlay Streets <sup>4</sup>**

Street Layout	Mounting Height (ft)	Spacing <sup>1,2,3</sup>	HPS Lamp (Watts)	Max Aver: Minimum Uniform Ratio	Max: Minimum Uniform Ratio	Illum Level End-of-life (ft-candles)	Mast Arm Length (ft)	Min Pole setback from curb (ft)	Fixture Type
Standard 58' Minor Arterial	35/14	360/60 (2R_STG/2R_OPP)	250/70	3:1	6:1	1.5	N/A	3	Gullwing/ Lumec DSX
Standard 40' Res. Col. Art.	35/14	500/125 (2R_STG/2R_OPP)	250/70	3:1	6:1	1.0	N/A	3	Gullwing/ Lumec DSX
Bike Lane 50' Res. Col. Art.	35/14	500/125 (2R_STG/2R_OPP)	250/70	3:1	6:1	1.0	N/A	3	Gullwing/ Lumec DSX
Standard 40' Local Comm.	35/14	500/125 (2R_STG/2R_OPP)	250/70	3:1	6:1	1.0	N/A	3	Gullwing/ Lumec DSX
Bike Lanes 50' Local Comm.	35/14	500/125 (2R_STG/2R_OPP)	250/70	3:1	6:1	1.0	N/A	3	Gullwing/ Lumec DSX

**Industrial / Commercial Street – 2 or 3 Lanes**

Street Layout	Mounting Height (ft)	Spacing <sup>1,2</sup>	HPS Lamp (Watts)	Max Aver: Minimum Uniform Ratio	Max: Minimum Uniform Ratio	Illum Level End-of-life (ft-candles)	Mast Arm Length (ft)	Min Pole setback from curb (ft)	Fixture Type
Standard 32' width	35	360 (2R_STG)	200	3:1	6:1	0.8	6	3	Cobra- head
With Bike Lanes 42' width	35	340 (2R_STG)	200	3:1	6:1	0.8	6	3	Cobra- head

**Residential Collector Streets <sup>5</sup>**

Street Layout	Mounting Height (ft)	Spacing <sup>1,2</sup>	HPS Lamp (Watts)	Max Aver: Minimum Uniform Ratio	Max: Minimum Uniform Ratio	Illum Level End-of-life (ft-candles)	Mast Arm Length (ft)	Min Pole setback from curb (ft)	Fixture Type
Standard Lanes, 36' width	16.5 (14.0)	100 (130) (2R_STG)	100 (70)	4:1	6:1	0.7	6	3	King 118 (Lumec DSX)
With Bike Lanes, 44' width	16.5 (14.0)	70 (100) (2R_STG)	100 (70)	4:1	6:1	0.7	6	3	King 118 (Lumec DSX)

**Residential Streets <sup>5,</sup>**

Street Layout	Mounting Height (ft)	Spacing <sup>1</sup>	HPS Lamp (Watts)	Max Aver: Minimum Uniform Ratio	Max: Minimum Uniform Ratio	Illum Level End-of-life (ft-candles)	Mast Arm Length (ft)	Min Pole setback from curb (ft)	Fixture Type
Standard 28' width	16.5 (14.0)	105	100 (70)	6:1	NA	0.4	0	3	King 118 (Lumec DSX)
Standard 32' width	16.5 (14.0)	90	100 (70)	6:1	NA	0.4	0	3	King 118 (Lumec DSX)

**Footnotes:**

1. "Spacing" is the spacing between street lights on the same side of the road.
2. 2R\_STG – Street lights on both sides of the street with a staggered configuration.
3. 2R\_OPP – Street lights on both sides of the street with an opposing configuration.
4. Downtown Overlay District street lighting is a combination of both Gullwing and Lumec DSX street lights. The first number refers to the Gullwing street light and the second number refers to the Lumec DSX street light.
5. These numbers apply to both the King 118 fixture and the Lumec DSX fixture. When there is a number in a parenthesis it refers to requirements for the Lumec DSX fixture only.

**Private Streets**

Private street intersections and gathering areas shall be lit to residential street light standards. Light levels between these areas can be less than residential street light requirements, but in no case can the light level exceed residential requirements.

**6.16 PAVEMENT DESIGN AND CONSTRUCTION**

When existing public streets are required to be improved or widened by the City, the Developer may use the existing asphalt pavement surface as part of the required minimum pavement depth and width. The improved street shall have a remaining service life of twenty (20) years. The Developer shall cold mill (grind) and overlay, at a minimum depth of 2", one half of the street fronting the development unless otherwise directed by the Engineer. The improved pavement section may consist of all new pavement or a portion of existing pavement and new pavement overlay to achieve the required remaining service life of twenty (20) years.

Pavement analysis and design shall be consistent with Part II and Part III of the AASHTO Guide for Design of Pavement Sections, latest edition, and the pavement analysis report shall provide all of the necessary information required by the design guide.

In addition to the pavement analysis and design discussed above, the completed street improvement shall provide a 2 percent transverse side slope from the existing centerline crown point.

When the existing crown location does not coincide with the required street centerline, or the 2 percent transverse side slopes of existing pavement are not available, the Developer is required to grind and provide an asphalt overlay at a minimum depth of 2" to achieve the 2 percent transverse side slope..

Prior to construction of the asphalt overlays, any failed pavement sections within the improvement limits will also be removed and permanently patched by the Developer according to the requirements of these Standards. See Standard Plans 6-64 through 6-69.

When an existing asphalt pavement is used, the Developer shall remove by saw cut at least the outer 1' of the existing asphalt pavement to provide a strong and straight edge for the new asphalt to match. The actual outside line for this asphalt pavement removal will be determined on-site by the Engineer to ensure that all inadequate and failing pavement is removed.

When an asphalt overlay occurs adjacent to an existing concrete curb and gutter, the Developer is required to install the new asphalt pavement flush with the existing curb and gutter. The Developer will do this by cold milling (grinding) a minimum 4' wide strip of pavement immediately abutting the concrete curb and gutter. The minimum depth of this grinding shall be 2" and shall leave a minimum 2" of existing pavement in place. Should there be less than 2" of remaining asphalt pavement, the Developer shall remove and replace the outer 4' of asphalt pavement.

When the surface of the existing street pavement is determined, by the Engineer, to be too rough or irregular, the Developer shall provide an asphalt overlay, cold milling, or a combination of the two, to provide an acceptable riding surface for the improved public street.

### **6.16.A Pavement Design**

See the Standard Plans for detailed pavement design information and minimum pavement sections. Portland cement concrete streets may be considered as an acceptable alternative to asphalt concrete streets for most street classifications. Specific approval by the Engineer is required prior to design of concrete streets.

Porous pavements may also be considered for low traffic volume private residential streets and driveways. Porous pavement is a permeable paving material which allows stormwater to percolate through the pavement to the gravel base. The pavement consists of a uniform, open-graded coarse aggregate, cemented together with either concrete or asphalt. Water reaching the gravel base either infiltrates into the soil or is routed to the conveyance systems via underdrains. The Developer must sign a maintenance agreement with the City confirming that the development will be required to bi-annually vacuum sweep the pavement surface followed by a high pressure wash.

### **6.16.B Pavement Construction**

All pavement construction shall be in accordance with the WSDOT Standard Specifications except as modified herein.

When asphalt concrete is placed in lifts, tack coat in accordance with the WSDOT Standard Specifications shall be used unless the lifts are placed on the same day, and approved by the Engineer.

In areas where soft subgrades require stabilization, approved geotextile fabric and/or soil stabilizing may be used. Ballast material may also be used where necessary.

### **6.16.C Materials Certifications and Compaction Tests**

All construction activities shall meet the materials certifications and compaction testing requirements on the WSDOT Standard Specifications and the WSDOT Construction Manual.

Compaction tests shall be performed by an approved geotechnical or testing firm under the direction of a Professional Engineer registered in the State of Washington under contract with the Developer. Copies of the reports shall be furnished to the Inspector.

## **6.17 ALL UTILITIES WITHIN CITY RIGHT-OF-WAY**

Utility systems to be located within existing and proposed right-of-way shall be constructed in accordance with current franchise and/or permit requirements, and in compliance with these Standards. In their use of the right-of-way, utilities will be given consideration in accordance with the traffic-carrying requirements of the street which are, namely, to provide safe, efficient and convenient passage for motor vehicles, pedestrians, bicycles, and other transportation uses. Aesthetics shall be a consideration. Underground installation of electric and telecommunication utilities will be strongly encouraged, particularly in urban development. Utilities are subject to City codes and policies relating to drainage, erosion/sedimentation control and sensitive areas as set forth in the Chapter 5 of these Standards and the City's Surface Water Design Manual.

Placement of permanent structures or objects for franchised utilities that block ready access to City utilities and the connected appurtenances shall not be allowed, unless otherwise approved by the Engineer.

It is the responsibility of the Developer to verify the location of all existing and proposed underground and aerial utilities prior to design. The Developer shall coordinate the design with the respective utility. Those existing utilities in conflict with any of the project street improvements shall be relocated at the Developer's expense.

All properties adjacent to a new street shall be provided with water, sanitary sewer, storm drainage, and private utility service in such a manner as to avoid future street improvements and the associated disruptions to traffic. The number and location of service "stub outs" to be installed shall be based upon the lot

configuration of the properties adjacent to the proposed street improvements. All overhead electrical and/or communication utilities shall be placed underground if the criteria for undergrounding are met per the requirements of the KCC 7.10.

All permits for new placement and replacement of existing utility poles, and other utility system structures above grade, shall be accompanied by written certification from the utility's Professional Engineer or from an agent authorized by the utility. They must certify that the installations conform to these Standards, and that the proposed work is in conformity with sound engineering principles relating to highway safety.

### **6.17.A Standard Utility Locations Within the Right-of-Way**

Utilities within the right-of-way on new streets, or on streets where existing topography, utilities or storm drains are not in conflict, shall be located as indicated below. Where existing utilities or storm drains are in place, new utilities shall conform to these Standards as closely as practicable and still be compatible with the existing installations. Above-ground utilities located within intersections shall be placed so as to avoid conflict with placement of curb ramps and signal poles. Mains and service connections to all lots shall be completed prior to placing of surface materials.

#### 1. Gas and Water Lines:

##### a. Curb and gutter section:

Preferable: 1.5' back of curb, or at distance which will clear root masses of street trees if these are present or anticipated.  
Otherwise: In the street as close to the curb as practical without encroachment into the storm drainage system.

##### b. Designated side of centerline:

GAS: Preferable south and west.

WATER: Preferable north and east.

##### c. Depth: 36" minimum cover from finished grade, ditch bottom or natural ground.

#### 2. Individual water service lines and side sewers shall:

##### a. Be placed with minimum 36" cover from finished grade, ditch bottom or natural ground.

##### b. Use right-of-way only as necessary to make side connections.

##### c. For any one connection, do not extend more than 60' along or through the right-of-way, or the minimum width of the existing right-of-way.

##### d. Water meter boxes, when placed or replaced, shall be located on the right-of-way line immediately adjacent to the property being served, unless otherwise approved by the Engineer.

### 3. Sanitary sewers:

- a. In general, 5' south and west of centerline; depth 36" minimum cover from finished grade, ditch bottom or natural ground.
- b. Side sewers shall be provided to all adjacent lots or parcels.
- c. Side sewers shall be placed perpendicular to street centerline.
- d. Existing parcels with potential for future development based on the existing zoning shall be provided with a minimum 8" diameter pipe from the manhole to the cleanout at the right-of-way line at the lowest point adjacent to the main along the parcel frontage.

### 4. Force main sanitary sewers:

In the case of individual sanitary sewer service lines which are force mains, the pipe shall:

- a. Be a minimum 2" inside diameter, or as required by the utility to maintain internal scouring velocity.
- b. If nonmetallic, contain wire or other acceptable proximity detection features; or be placed in a cast iron or other acceptable metal casing.
- c. Be placed with minimum 36" cover from finished grade, ditch bottom or natural ground, within 10 degrees of perpendicular to street centerline, and extend to right-of-way line.
- d. Bored under street, unless otherwise approved by the Engineer.
- e. Sanitary sewer and water lines shall be separated 10' horizontally and 1.5' vertically in accordance with the latest edition of DOE's Criteria for Sewage Work Design.
- f. Gravity systems, whether sanitary or storm drainage, shall have precedence over other systems in planning and installation, except where a non-gravity system has already been installed under previous approved permit and subject to applicable provisions of such permits or franchises.

### 5. Utilities:

Electric utilities, power, telephone, cable TV, fiber optic conduit: Preferably, underground with 36" minimum cover, either side of street, under or behind the sidewalk, at plan location and depth compatible with other utilities and storm drains. Otherwise, every new placement and every replacement of existing utility poles and other utility system structures above grade shall conform to the following:

Utility poles, traffic signal poles or other approved essential roadside obstacles may be placed within the right-of-way, and shall be as far back from the traveled way or auxiliary lane as practicable. When allowed, they shall be located as follows:

- a. On shoulder-type or mountable curb streets, installation of new or relocated poles or obstacles shall be located behind existing ditches and in accordance with the criteria in this section and Standard Plan 6-50. Placement of a guard rail or traffic barrier between the traveled way and the pole or obstacle shall not satisfy this requirement, unless the guard rail or barrier already exists for other purposes and the pole provides a minimum of 3.5' separation from the barrier. Deviations will be considered only when other reasonable alternatives do not exist.
- b. On vertical curb-type streets with a speed limit less than 40 mph, poles or obstacles shall be placed clear of sidewalks and at least 10' from face of curb to face of obstacle in commercial/business areas and in the planter strip at 3' from face of curb to face of obstacle in residential areas. On urban streets with speed limits of 40 mph or greater, hazardous objects shall be placed as close to the right-of-way line as practicable, and a minimum of 10' from the edge of the traveled way, face of curb or edge line to the face of obstacle and in accordance with Standard Plan 6-50.
- c. Notwithstanding other provisions regarding pole locations described in these Standards, no pole shall be located so that it poses a hazard to the general public. Utilities shall place and replace poles with primary consideration given to public safety. Existing utility poles in locations that do not comply with these Standards that are damaged through vehicle collision, shall be considered a hazard by the City and be relocated by the utility, at their expense, in accordance with these Standards. Additionally, existing utility poles that do comply with these Standards and are damaged through vehicle collision more than three (3) times in any 10-year period shall be relocated by the responsible utility, as approved by the Engineer, at their expense.
- d. Every effort shall be made to meet these Standards during emergency replacement of existing utility poles and other structures. After a pole has been replaced, all utilities sharing that pole shall have a maximum of 180 days to relocate their facilities to the new pole and remove the old pole.
- e. The above constraints on pole and obstacle location will not apply to locations not accessible by moving vehicles, "Breakaway Structures" whose break-off resistance does not exceed that of a single 4" x 4" wood post or a 1.5" standard (hollow) iron pipe, or to "breakaway" fire hydrants installed according to manufacturer's specifications.
- f. For franchised utility permits, the utility must request any deviation from pole and obstacle clearance criteria in accordance with Section 1.17 Design Deviations. Up to three (3) contiguous damaged or weakened poles may be replaced at existing locations in accordance with emergency procedures. However, sequential

permits resulting in continuous replacement of a pole line shall not be allowed. A pole or other obstacle, which incurs repeated damage from errant vehicles, shall be relocated outside the clear zone. See Standard Plan 6-51.

- g. Locations of poles shall also be compatible with driveways, intersections, street trees, underground utilities, and other street features (i.e., they shall not interfere with sight distances, street signing, traffic signals, culverts, etc.). To the extent possible, utilities shall share facilities so that a minimum number of poles are needed.
- h. Where street uses leave insufficient overhang, anchor, and tree-trimming space for overhead utilities, additional easements and/or right-of-way may be required to accommodate the utilities. The costs associated with additional easements and/or right-of-way for this purpose shall be borne by the Developer, utility, builder, or other party initiating the improvement. The associated cost of relocating the utility system shall not be borne by the City.
- i. Notwithstanding other provisions, underground systems shall be located at least 5' away from the street centerline. Additionally, the underground systems shall not disturb existing survey monuments, unless there is no reasonable alternative.

### **6.17.B Utility Underground Installations**

All hard surface street crossings shall be jacked or bored. Exceptions will be on a case-by-case basis with the approval of the Engineer. The current WSDOT Standard Specifications, Sections 7-08 and 7-08.3(3) will generally apply, unless otherwise stated.

#### **1. New Street Construction, Reconstruction and Widening:**

##### **a. Cuts on traveled way:**

When approved, the open cut shall be a neat-line cut made by saw cutting a continuous line. Trench sides shall be kept as nearly vertical as possible. Compaction and restoration must be done as detailed below and immediately after the trench is backfilled, so as to cause least disruption to traffic. The asphalt or cement pavement shall be cut a minimum of 1' beyond all edges of the trench. See Standard Plans 6-64 through 6-69.

On crossings required to be opened to traffic, and prior to final trench restoration, steel plates shall be installed by the contractor, as directed by the Engineer.

##### **b. Cuts parallel and traverse to street alignment:**

The entire trench backfill depth must meet 95 percent of the maximum density compaction as determined by the compaction

control tests described in Section 2-03.3(14)D of the WSDOT Standard Specifications.

Regardless of trench depth, the backfill material shall meet the requirements for gravel borrow per Section 9-03.14(1) of the WSDOT Standard Specifications. When the material remaining in the trench bottom is unsuitable, the excavation shall be continued to such additional depth and width as required by the Inspector.

After backfill and compaction, an immediate cold mix patch shall be placed and maintained in good drivable condition acceptable to the Engineer. On asphalt pavement, a permanent hot mix patch the same thickness as the existing asphalt or a minimum of 2", whichever is greater, shall be placed and sealed with a paving grade asphalt within seven (7) calendar days on arterial streets and in the downtown area overlay, and within thirty (30) calendar days on all other streets. Cement concrete pavement shall be restored in accordance with Section 5-05.3(22) of the WSDOT Standard Specifications within the same time parameters stated above.

Backfill material outside the street prism may be the excavated material as long as it is free of wood waste, debris, clods and/or any rocks exceeding 6" in any dimension and meets the compaction requirements of Section 2-03.3(14)C of the WSDOT Standard Specifications.

### 2. Existing Streets:

#### a. Cuts on traveled way:

All hard surface street crossings shall be jacked or bored. Exceptions will be on a case-by-case basis with the approval of the Engineer, if it can be shown that boring is not feasible due to conflicts or soil conditions, or unless the utility system, including drainage structures, can be installed just prior to reconstruction or overlay of the street by a City Capital Improvement Project.

When approved, the open cut shall be a neat-line cut made by saw-cutting a continuous line. Trench sides shall be kept as nearly vertical as possible. Compaction and restoration must be done as detailed below and immediately after the trench is backfilled, so as to cause least disruption to traffic. The asphalt or cement pavement shall be cut a minimum of 1' beyond all edges of the trench. See Standard Plans 6-64 through 6-69.

#### b. Cuts parallel to street alignment:

In cuts parallel to the street alignment, the entire trench excavation and restoration shall meet the requirements of Section 6.17.B.1b of these Standards. The restoration shall include, but is not limited to, repairing all failures and cracking of the paved surface, repairing failures caused by the construction activity,

rebuilding the cross slope to uniformity, and overlaying the area where the pavement was removed.

c. Cuts transverse to street alignment:

- 1) Without exception, the entire trench shall be backfilled with CSTC meeting the requirements of Section 9-03.9(3) or controlled density fill (CDF) meeting the requirements of Section 2-09.3(1)E of the WSDOT Standard Specifications. Backfill shall be placed and compacted mechanically in 6" lifts to 95 percent of the maximum density as determined by the compaction control tests described in Section 2-03.3(14)D of the WSDOT Standard Specifications. If the capability can be demonstrated, based on compaction equipment or quality of backfill to achieve 95 percent density in thicker lifts, the depth of backfill lifts may be increased up to 1'. If the Inspector approves use of CDF, it shall meet the requirements of Section 6.17.B.3 of these Standards.
- 2) After backfill and compaction, an immediate cold mix patch shall be placed and maintained in a drivable condition acceptable to the Engineer. On asphalt pavement, a permanent hot mix patch the same thickness as the existing asphalt or a minimum of 2", whichever is the greater, shall be placed and sealed with a paving grade asphalt within seven (7) calendar days on arterial streets and within the downtown area overlay, and within thirty (30) calendar days on all other streets. Cement concrete pavement shall be restored in accordance with Section 5-05.3(22) of the WSDOT Standard Specifications within the same time parameters stated above.

d. Pavement restoration:

Pavement restoration shall meet the following requirements for:

1) Arterials: See Standard Plans 6-64 through 6-69.

2) Non-Arterials:

OCI  $\geq$  75: See Standard Plans 6-64 through 6-69 and full width slurry seal or full width overlay with 1" of HMA Class 3/8"

75 > OCI  $\geq$  55: See Standard Plans 6-64 through 6-69 and full width 2" HMA Class 1/2".

OCI < 55: See Standard Plans 6-64 through 6-69.

OCI is the overall condition index of the pavement. Please contact the City's Pavement Management Analyst at 253-856-5600 for the OCI of a particular street.

3. Controlled Density Fill:

As an alternative to mechanical compaction, trench backfill above the bedding and below the base course or ATB may be accomplished by use of CDF in a design mixture according to Section 2-09.3(1)E of WSDOT

Standard Specifications. The contractor shall provide a mix design in writing, and the CDF shall not be placed until the Engineer has reviewed the mix design. CDF shall meet the requirements of Section 6-02.3(5)C of the WSDOT Standard Specifications and shall be accepted based on a certificate of compliance. The producer shall provide a certificate of compliance for each truckload of control density backfill. The certificate of compliance shall verify that the delivered material is in compliance with the mix design. Testing of CDF shall be in accordance with ASTM D4832.

### **6.17.C Final Adjustment of Utility Facilities**

All utility system covers which are located on proposed asphalt streets, shall be temporarily placed at subgrade elevation prior to placing crushed surfacing material.

Final adjustment of all covers and access entries shall be made following final paving as follows:

1. Saw-cutting or neat-line jack hammering of the pavement around lids and covers. Opening should not be larger than 12" beyond the radius of the cover.
2. Removing base material, surfacing course, and frame; adding raising bricks and grout; replacing frame and cover matching the finished profile grade of the surrounding pavement.
3. Filling and mechanically compacting around the structure and frame with crushed surfacing material or ATB, or placing in 5" minimum thickness of cement concrete Class 4000 to within 2" of the top.
4. Filling the remaining 2" with HMA compacted and sealed to provide a dense, uniform surface.
5. Final adjustment of all covers and access entries shall be completed within thirty (30) days of final paving.

### **6.18 FINAL CLEANUP**

In addition to restoration of the of the street as described above, the responsible Developer shall care of adjacent areas in compliance with Sections 1-04.11 and 8-01 in the WSDOT Standard Specifications. In particular:

#### **6.18.A Streets**

Streets shall be cleaned and swept, both during and after the installation work. The contractor shall remove any track-out material by the end of the work day, when the material causes a safety issue, or when required by the Engineer.

**6.18.B Disturbed Soils**

Disturbed soils shall be finished graded, seeded and mulched after installation of utilities. In limited areas, seeding and mulching by hand, using approved methods, will be acceptable.

**6.18.C Ditch Lines**

Ditch lines with soil susceptible to erosion and subject to rapid flows may require seeding, matting, netting, check dams, or rock lining to control erosion.

**6.18.D Downstream Drainage**

Any silting of downstream drainage facilities, whether ditches or pipe and catch basins, which results from the construction activity shall be cleaned out and the site restored to a stable condition as part of site cleanup.

**6.18.E Temporary Control Materials and Fencing**

Remove all temporary erosion and sediment control materials and fencing and dispose of properly, when authorized by the Engineer.

**6.19 ROADWAY DESIGN STANDARDS**

**Table 6.7**

Design Parameter	Arterial Roadways		Collector Roadways			Local Roadways		
	Principal	Minor	Arterial		Residential	Industrial/ Commercial Street	Residential Street	Private Streets
			Industrial	Residential	-			
Standard Plan <sup>1</sup>	6-2, 6-3	6-3	6-4	6-5	6-6	6-7	6-11, 6-12	6-15
Design Capacity (ADT)	30,000-50,000	20,000-30,000	<15,000	<5,000	<3,500	5,000-10,000	<1,000	<90
Design Speed (mph) <sup>2</sup>	35-60	35-45	30-35	30-35	30-35	30-35	25	25
Intersection Spacing	2600'	1300'	600'	600'	300'	300'	200'	200'
Intersection Tangent <sup>3</sup>	150'	150'	100'	100'	100'	100'	50'	10'
Gradient Maximum	9% <sup>4</sup>	12%	12%	12%	12%	12%	12% <sup>8</sup>	15% <sup>5</sup>
Gradient Minimum	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%

Design Parameter	Arterial Roadways		Collector Roadways			Local Roadways		
	Principal	Minor	Arterial		Residential	Industrial/ Commercial Street	Residential Street	Private Streets
			Industrial	Residential	-			
Curb Return Radius <sup>6</sup>	35'	35'	35'	35'	25'	35'	25'	20' <sup>8,9</sup>
Geometric Design Vehicle	WB-50	WB-50	WB-62	BUS-40	BUS-40	WB-62	BUS-40	BUS-40
Driveway Corner Clearance <sup>7</sup>	300'	200'	100'	100'	100'	50'	20'	20' <sup>8,9</sup>
Dwy to Dwy Separation <sup>10</sup>	300'	200'	200'	200'	50'	100'	10'	10'

**Table 6.8**  
**Arterial and Collector Streets Design Values**

Design Speed (mph) <sup>2</sup>	30	35	40	45	50	55	60
Min. horizontal curvature for 6% Stopping Sight Distance, radius (ft) (max allowable on arterials) <sup>11</sup>	275	380	510	650	835	1,065	1,340
Stopping sight distance (ft)	200	250	305	360	425	495	570
Intersection/Driveway sight distance (ft)							
Right turn movement <sup>12</sup>	290	335	385	430	480	530	575
Left-turn movement (to cross 1 lane) <sup>13,14</sup>	335	390	445	500	555	610	665
Passing sight distance (ft) for 2 lane street	1090	1280	1470	1625	1835	1985	2135
<b>Vertical Curve Length</b>							
'K' sag (min) <sup>15,16</sup>	37	49	64	79	96	115	136
'K' crest (min) <sup>15</sup>	19	29	44	61	84	114	151

**Table 6.9**  
**Local Streets Design Values**

<b>Design Speed (mph) <sup>2</sup></b>	<b>25</b>	<b>30</b>
Min. horizontal curvature for normal crown section, radius (ft) <sup>17,18</sup>	180	330
Stopping sight distance (ft)	155	200
Intersection/Driveway sight distance		
Right turn movement (ft) <sup>9</sup>	240	290
Left-turn movement (to cross 1 lane) <sup>10,11</sup>	280	335

**Footnotes for Tables 6.7, 6.8 and 6.9**

1. The horizontal widths may be increased to accommodate bio-swales, special mid-block or intersection geometric configurations, and bus turn-outs.
2. The design speed is equivalent to the posted speed plus 5 mph.
3. Distance is measured from the Point of Curb Return (PCR) to the centerline Point of Curvature (PC) or Point of Tangent (PT).
4. The design maximum of 9 percent for streets classified as principal arterials is based upon criteria from the WSDOT. This design maximum may be exceeded for routes not anticipated to be reclassified as State Highways, or for which no practical/economic alternative exists.
5. Street gradients that exceed 12 percent, up to the design maximum of 15 percent, must be approved by the Fire Marshal. Approval may include the requirement that fire suppression sprinkler systems be installed in all residential structures that have their sole access from that street.
6. At the intersection of two dissimilarly classified streets, the larger curb return radius shall be used. Two-centered or three-centered curves should be used on oblique angle intersections, or in order to accommodate WB-62 or WB-50 vehicles.
7. Distance is measured from the near side of the driveway to the ultimate location of the P.C.R. of the adjacent intersecting street. City approval of driveways within this buffer zone may be contingent upon driveway geometrics that restrict turns to either right-in or right-out only. Reciprocal access agreements with the adjoining property owners may also be required as a condition of location approval.
8. Residential driveways shall be a minimum of 5' from the nearest edge to the property line.
9. On a case-by-case basis in cul-de-sacs, driveways will be allowed with less than a 10' separation.

10. For parcels adjacent to a traffic signal, 300' shall be used unless a traffic study demonstrates that the intersection area of influence is less than 300'.
11. The superelevation rate may be increased with the approval of the Engineer. Superelevation rates of 0.06 should not be exceeded on routes that are anticipated to have significant truck traffic in the travel stream, or on streets that are anticipated to have on-street parking permitted. Superelevation should not be used on local residential streets.
12. Intersection/driveway sight distance shown is for a stopped passenger vehicle to turn right onto a two-lane roadway with grades of 3 percent or less. The time gap used in calculation of the right turn sight distance is 6.5 seconds. For other conditions the time gap must be adjusted and required sight distance re-calculated. (See AASHTO "A Policy on Geometric Design of Highways and Streets").
13. Intersection/driveway sight distance shown is for a stopped passenger vehicle to turn left onto a two-lane roadway with no median and grades of 3 percent or less. The time gap used in calculation of the left-turn sight distance is 7.5 seconds. For other conditions the time gap must be adjusted and required sight distance re-calculated. (See AASHTO "A Policy on Geometric Design of Highways and Streets").
14. On multi-lane roadways: For left-turns onto a two-way roadways with more than two (2) lanes, add 0.5 seconds for passenger cars and 0.7 seconds for trucks to the time gap for each additional lane from the left, in excess of one, to be crossed by the turning vehicle.
15. The length of vertical curve per percent change in the algebraic difference of the adjacent grades or "k" values are based on AASHTO's "A Policy on Geometric Design of Highways and Streets".
16. The AASHTO "comfort curve" for sag curve design, where the length of the sag curve is determined by the equation below is an acceptable alternative if adequate supplemental street illumination is provided. ("A" = the algebraic difference in roadway longitudinal gradients, "V" = Design Speed)

$$L = \frac{A \times V^2}{46.5}$$

17. For residential streets with lower design speeds, this value may be reduced upon approval by the Engineer. Superelevation and upgraded street drainage may be used to reduce this minimum.
18. For "L" or 90 degree turns, the centerline radius can be reduced to 55'.
19. See Standard Plan 6-1 Intersection Geometry Reference for more information.

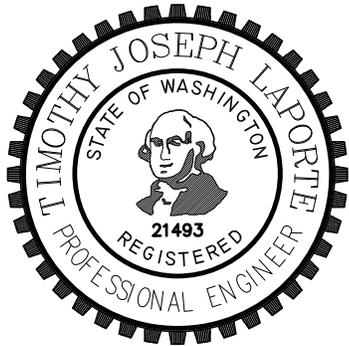
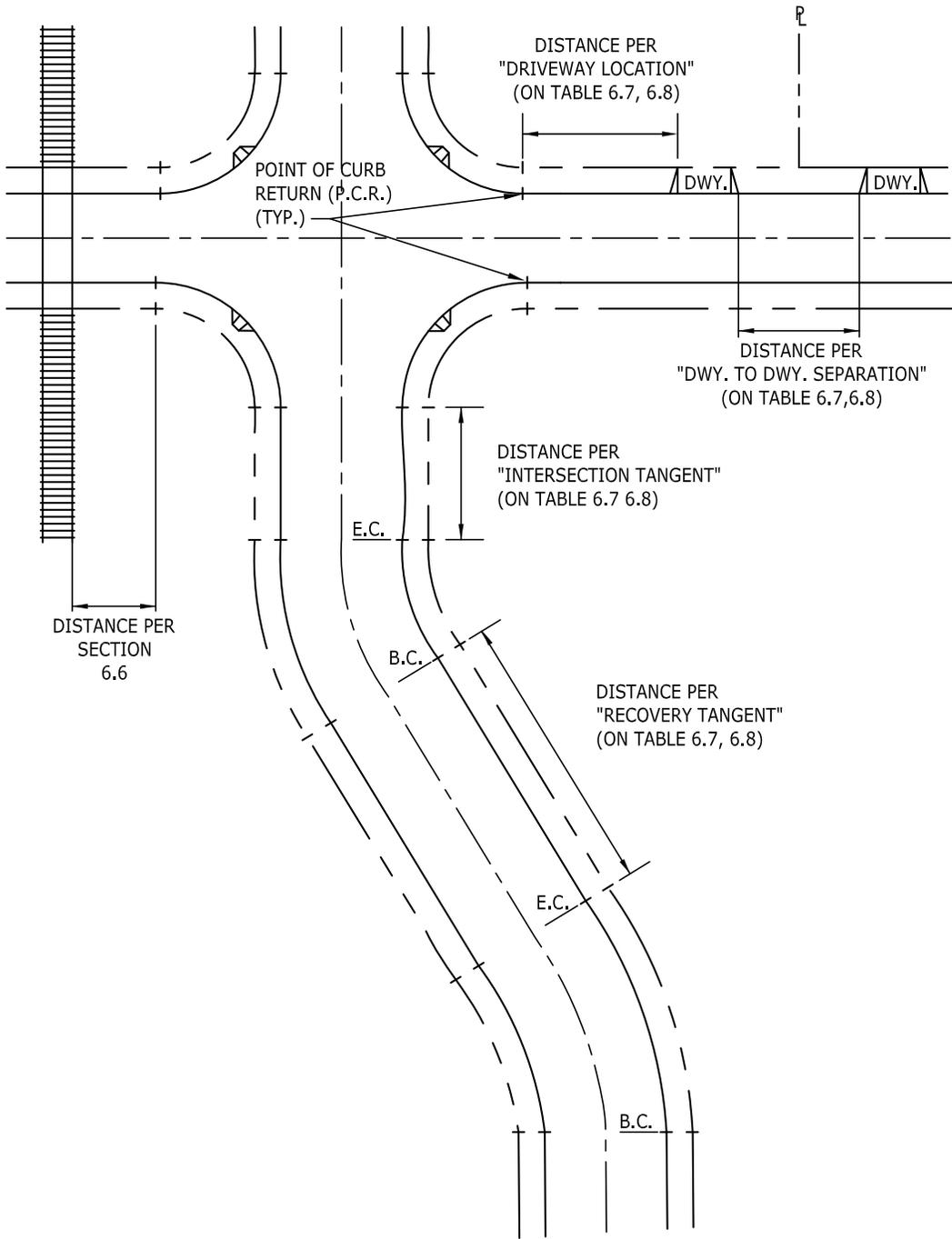
### **6.20 STREET SYSTEM STANDARD PLANS**

- 6-1 Intersection Geometry Reference
- 6-2 Principal Arterial Street 7 Lane Section
- 6-3 Principal Arterial 5 Lane Section and Minor Arterial Street
- 6-4 Industrial Collector Arterial Street
- 6-5 Residential Collector Arterial Street
- 6-6 Residential Collector
- 6-7 Industrial / Commercial Local Streets
- 6-8 Downtown Overlay - Minor Arterial Street
- 6-9 Downtown Overlay - Residential Collector Arterial Street
- 6-10 Downtown Overlay - Industrial/Commercial Street
- 6-11 Residential Parking One Side Local Street
- 6-12 Residential Parking Both Sides Local Street
- 6-13 Public Residential Half-Street
- 6-14 Alley
- 6-15 Private Street
- 6-16 Porous Pavement Cross-Section
- 6-17 Street Median
- 6-18 Standard Cul-de-Sac
- 6-19 Urban Eyebrow
- 6-20 Typical Elbow
- 6-21 Standard Hammerhead Private Street Only
- 6-22 Temporary Cul-de-Sac
- 6-23 Intersection Landing
- 6-24 Traffic Calming – Traffic Circle
- 6-25 Traffic Calming – Gateway
- 6-26 Traffic Calming – Residential Intersection Neckdowns
- 6-27 Traffic Calming – Arterial/Residential Intersection Neckdowns
- 6-28 Traffic Calming – Chokers
- 6-29 Traffic Calming – Speed Cushion
- 6-30 Traffic Calming – Raised Intersection
- 6-31 Bike Route - Signed Shared Roadway

6-32	Trail
6-33	Cement Concrete Curbs
6-34	Curb and Sidewalk Joints
6-35	Expansion and Contraction Joints
6-36	Downtown Sidewalk
6-37	Downtown Crosswalk
6-38	Curb Ramp Locations
6-39	Cement Concrete Sidewalk Transition to Asphalt Shoulder
6-40	Sidewalk for Mailbox Cluster
6-41	Handrails
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6-43	Commercial Cement Concrete Driveway Approach
6-44	Industrial Cement Concrete Driveway Approach
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6-46	Private Street Approach Serving 9 Lots or Less
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6-48	Residential Driveway Slope
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6-53	Pedestrian Sight Lines
6-54	Street Tree Locations
6-55	Street Tree Planter
6-56	Sidewalk Bollard with Receptacle
6-57	Site Grading
6-58	Minor Fills Around Trees
6-59	Cuts and Fills Around Trees
6-60	Walls in Cut Section for Public ROW
6-61	Walls in Fill Section for Public ROW
6-62	Walls under Sidewalk for Public ROW
6-63	Height Measurements for Perimeter Wall Locations

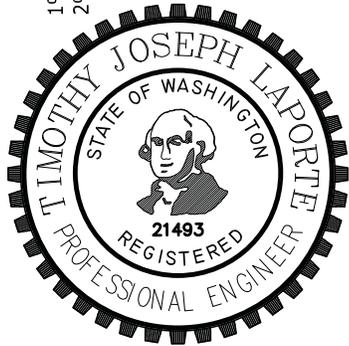
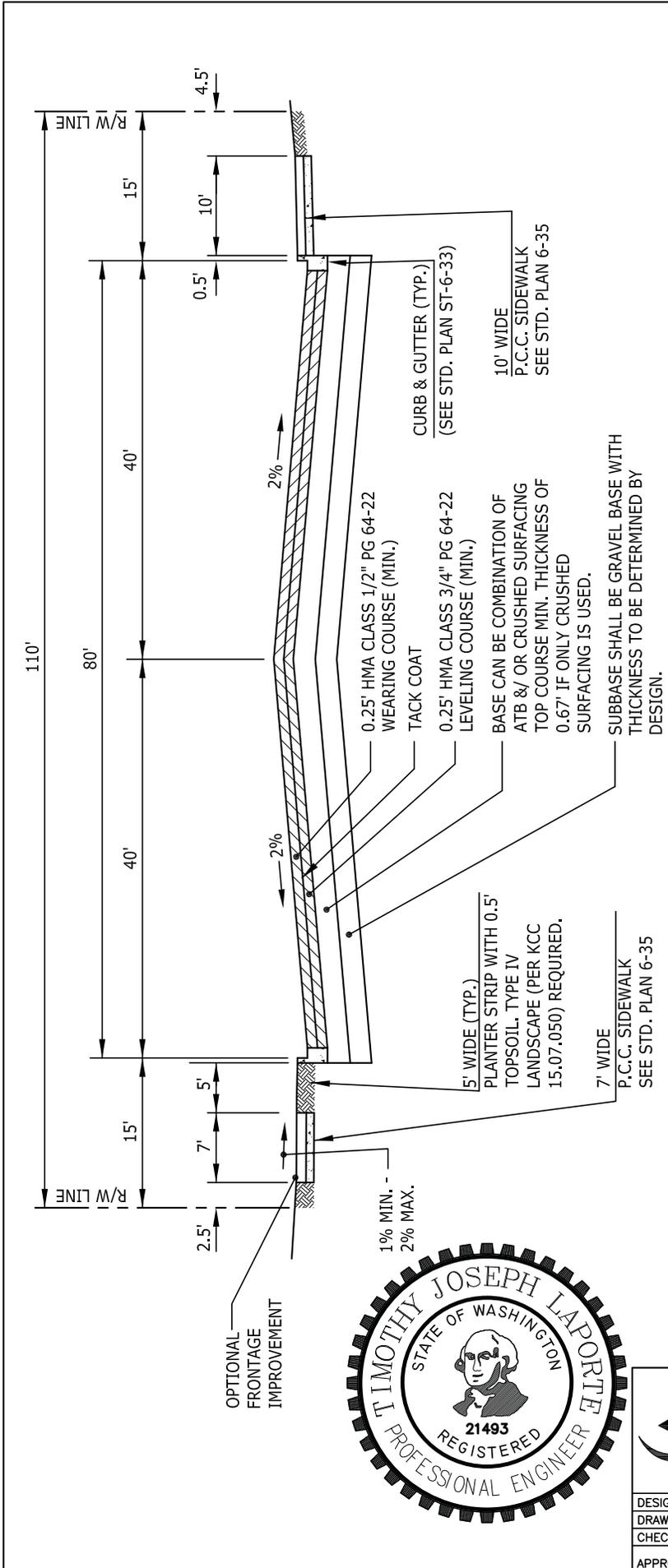
6-64	Flexible Pavement Patching Transverse Cut
6-65	Flexible Pavement Patching Longitudinal Cut
6-66	Asphalt Overlay for Roadway Trench Repair
6-67	Rigid Pavement Patching Transverse Cut
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6-84	Street Name Signs
6-85	Mast Arm Mounted Street Name Sign
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6-89	Light Standard Foundation and Junction Box
6-90	Junction Box and Street Light Wire Runs
6-91	Street Light Trench for Conduit Runs
6-92	Street Light Schedule
6-93	Standard Junction Box, Types 1 and 2
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6-96	Service Cabinet, Concrete Base and One-Line Diagram

6-97	Traffic Signal Controller and UPS Base
6-98	Induction Loop Details
6-99	Induction Loop Installation Notes
6-100	Induction Loop Placement
6-101	Turning Template AASHTO Type P Vehicle
6-102	Turning Template AASHTO Type SU Vehicle
6-103	Turning Template AASHTO Type BUS-40 Vehicle
6-104	Turning Template AASHTO Type WB-50 Vehicle
6-105	Turning Template AASHTO Type WB-62 Vehicle



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>INTERSECTION GEOMETRY</b> REFERENCE	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____	<b>6-1</b>	
APPROVED _____			

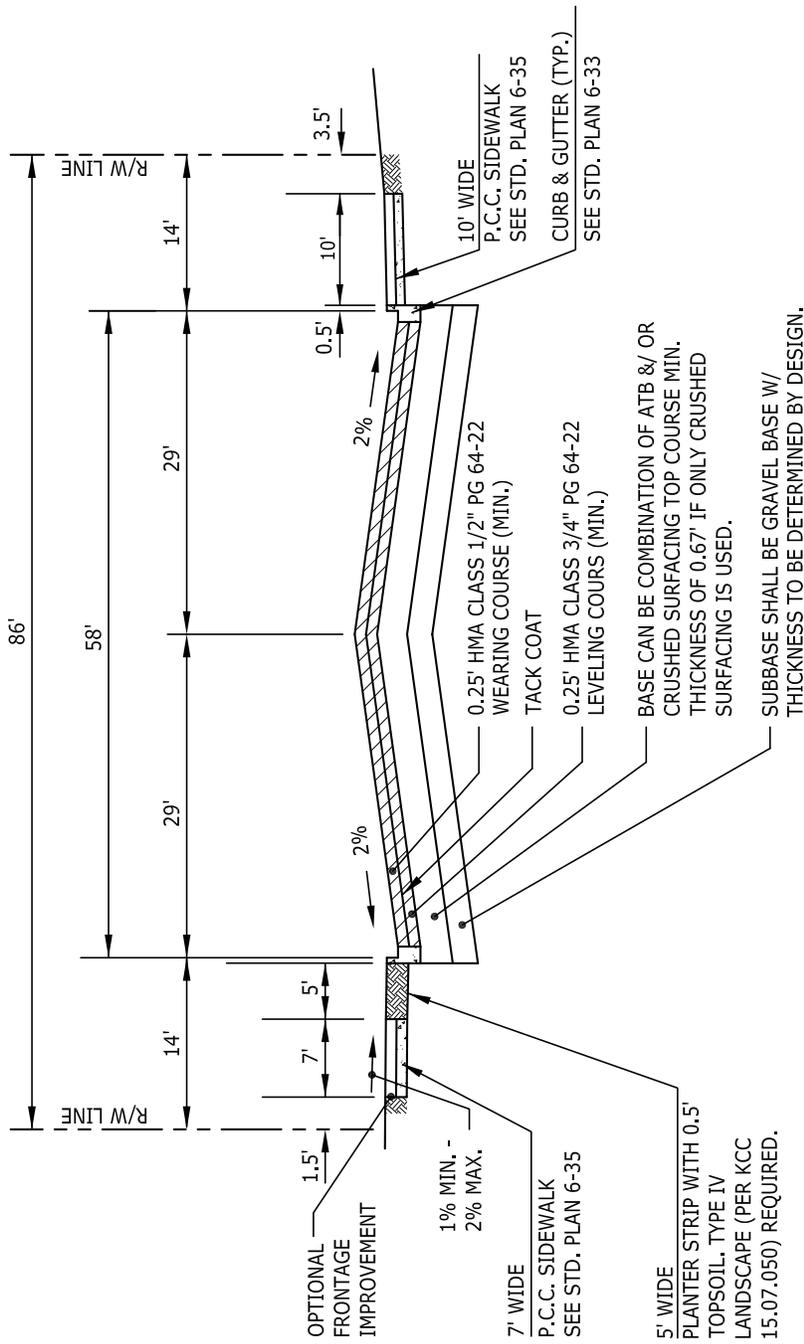


**NOTES:**

1. THE PAVEMENT WIDTH IS MADE UP OF 4 11'-WIDE TRAVEL LANES, 2 12'-WIDE CURB LANES, AND 1 12'-WIDE TURN LANE.
2. THE 1' GUTTER IS INCLUDED IN THE CURB LANE WIDTH; AND THE 0.5' CURB IS NOT INCLUDED IN THE SIDEWALK OR PLANTER STRIP WIDTH.
3. ADD 14' TO STANDARD CROSS SECTION WHEN DUAL LEFT TURN LANES ARE REQUIRED AT AN INTERSECTION. STORAGE LENGTH TO BE DETERMINED BY A TRAFFIC STUDY.
4. ADDITIONAL WIDTH WILL BE REQUIRED FOR NONMOTORIZED FACILITIES IF THE STREET IS ON A DESIGNATED BICYCLE ROUTE. SEE THE TRANSPORTATION MASTER PLAN AND STANDARD PLAN 6-31.
5. A LANDSCAPED MEDIAN SHOULD BE USED WHERE THE CITY DETERMINES A TWO-WAY LEFT-TURN LANE IS NOT REQUIRED.
6. A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN. AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
7. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5% CONSTRUCTION TOLERANCE SHALL BE 1% MIN. AND 2% MAX.
8. NEW DEVELOPMENT ADJACENT TO AN ARTERIAL SHALL PROVIDE A 10' UTILITY AND STREET LIGHT EASEMENT ON BOTH SIDES OF THE RIGHT-OF-WAY.
9. STREET TREES WILL BE REQUIRED BEHIND THE SIDEWALK.

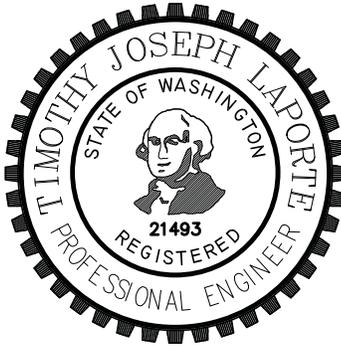
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>PRINCIPAL ARTERIAL STREET</b> 7 LANE SECTION	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____	<b>6-2</b>	
APPROVED _____			



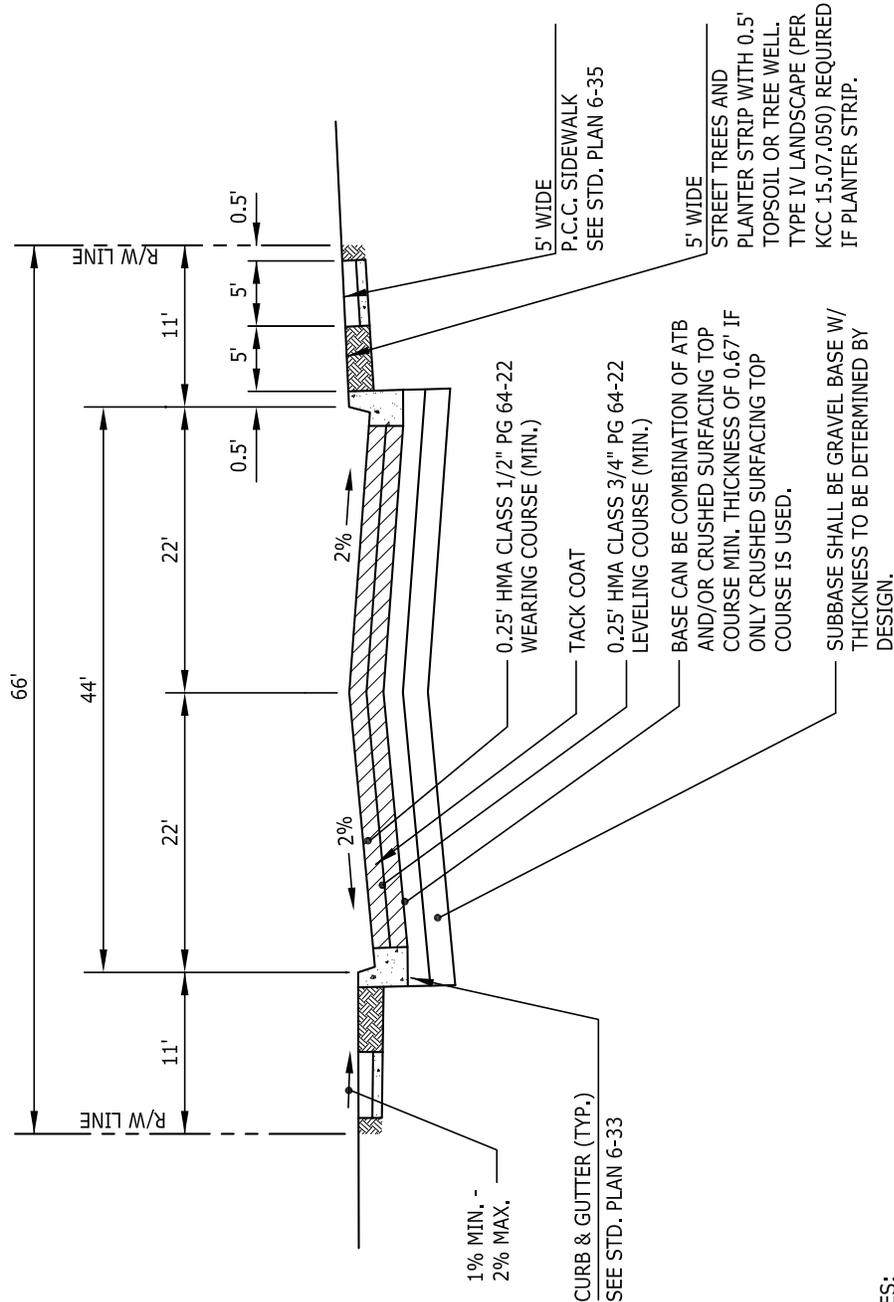
**NOTES:**

1. THE PAVEMENT WIDTH IS MADE UP OF 2 11'-WIDE TRAVEL LANES, 2 12'-WIDE CURB LANES, AND 1 12'-WIDE TURN LANE.
2. THE 1' GUTTER IS INCLUDED IN THE CURB LANE WIDTH; AND THE 0.5' CURB IS NOT INCLUDED IN THE SIDEWALK OR PLANTER STRIP WIDTH.
3. ADD 14' TO STANDARD CROSS SECTION WHEN DUAL LEFT TURN LANES ARE REQUIRED.
4. ADDITIONAL WIDTH WILL BE REQUIRED FOR NONMOTORIZED FACILITIES IF THE STREET IS ON A DESIGNATED BICYCLE ROUTE. SEE THE TRANSPORTATION MASTER PLAN AND STANDARD PLAN 6-31.
5. A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN. AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
6. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.
7. NEW DEVELOPMENT ADJACENT TO AN ARTERIAL SHALL PROVIDE A 10' UTILITY AND STREET LIGHT EASEMENT ON BOTH SIDES OF THE RIGHT-OF-WAY.
8. STREET TREES WILL BE REQUIRED BEHIND THE SIDEWALK.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>PRINCIPAL ARTERIAL 5 LANE SECTION AND MINOR ARTERIAL STREET</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-3</b>	
CHECKED _____	ENGINEER _____		
APPROVED _____			



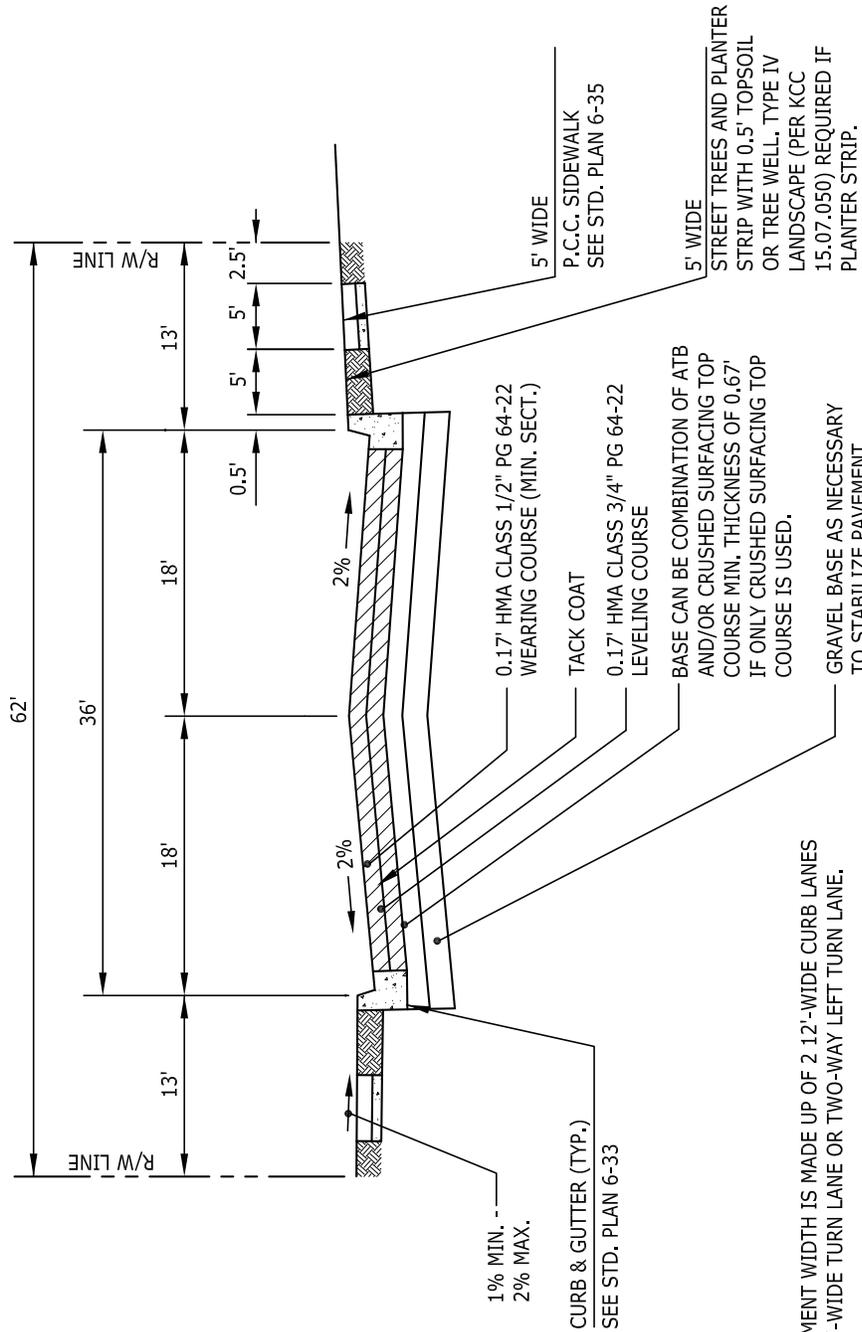
**NOTES:**

1. THE PAVEMENT WIDTH IS MADE UP OF 2 15'-WIDE TRAVEL LANES AND 1 14'- WIDE TURN LANE.
2. THE 1' GUTTER IS INCLUDED IN THE CURB LANE.
3. ADDITIONAL WIDTH WILL BE REQUIRED FOR NONMOTORIZED FACILITIES IF THE STREET IS ON A DESIGNED BICYCLE ROUTE. SEE THE TRANSPORTATION MASTER PLAN AND STANDARD PLAN 6-31.
4. THIS TYPICAL STREET CROSS SECTION DOES NOT PROVIDE FOR ON-STREET PARKING.
5. A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN. AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
6. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.



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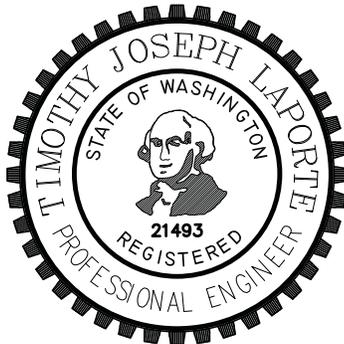
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>INDUSTRIAL COLLECTOR</b> <b>ARTERIAL STREET</b>	
DESIGNED: DWH	SCALE: NONE	STANDARD PLAN	
DRAWN: BB	DATE: -		
CHECKED: -	ENGINEER	<b>6-4</b>	
APPROVED: _____			



**NOTES:**

1. THE PAVEMENT WIDTH IS MADE UP OF 2 12'-WIDE CURB LANES AND 1 12'-WIDE TURN LANE OR TWO-WAY LEFT TURN LANE.
2. THE 1' GUTTER IS INCLUDED IN THE CURB LANE.
3. ADDITIONAL WIDTH WILL BE REQUIRED FOR NONMOTORIZED FACILITIES IF THE STREET IS ON A DESIGNATED BICYCLE ROUTE. SEE THE TRANSPORTATION MASTER PLAN AND STANDARD PLAN 6-31.
4. THIS TYPICAL STREET CROSS SECTION DOES NOT PROVIDE FOR ON-STREET PARKING.
5. A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN. AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
6. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.
7. NEW DEVELOPMENT ADJACENT TO AN ARTERIAL SHALL PROVIDE A 10' UTILITY AND STREET LIGHT EASEMENT ON BOTH SIDES OF THE RIGHT-OF-WAY.

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**CITY OF KENT**  
ENGINEERING DEPARTMENT

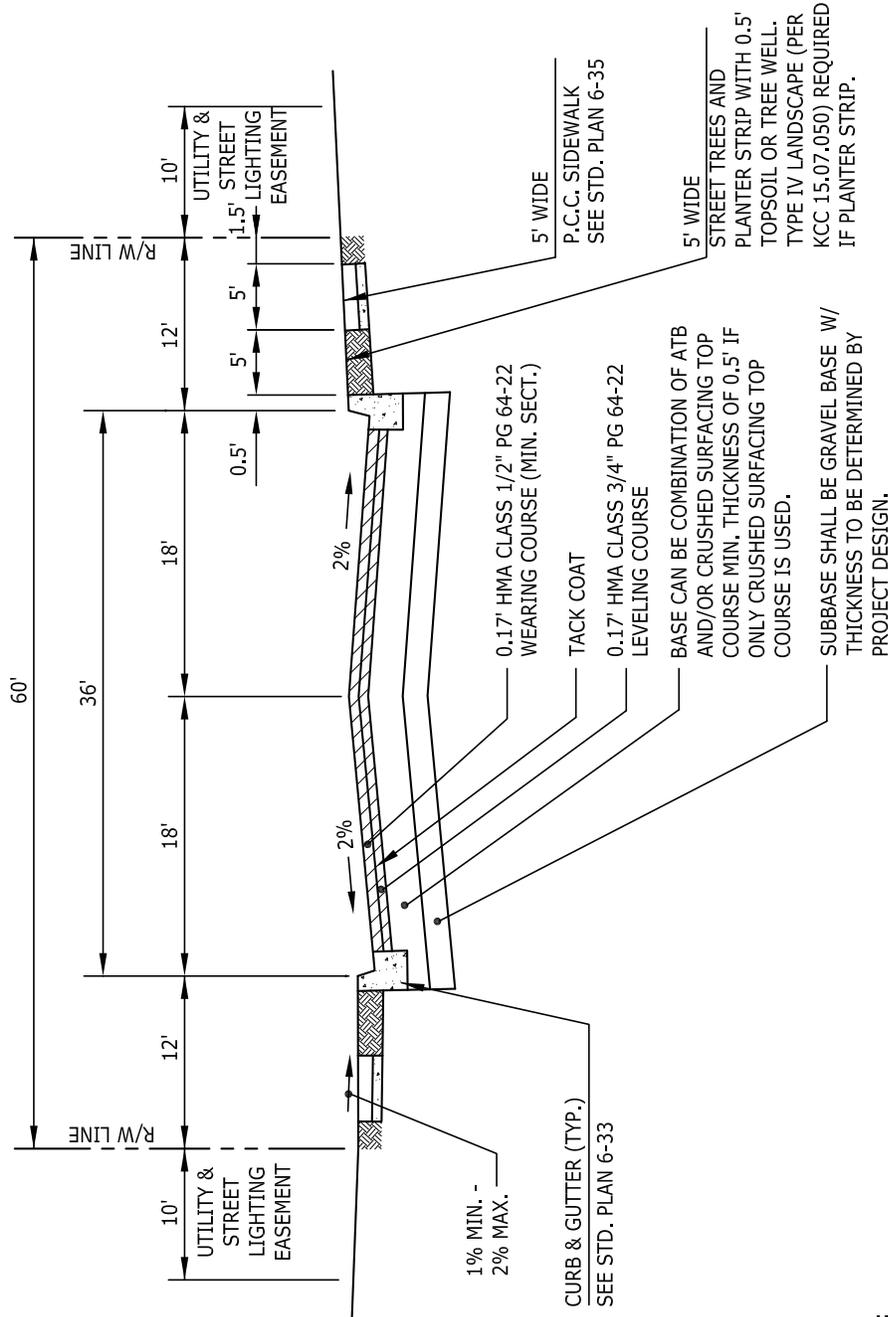
**RESIDENTIAL COLLECTOR**  
**ARTERIAL STREET**

DESIGNED DWH  
DRAWN BB  
CHECKED \_\_\_\_\_  
APPROVED \_\_\_\_\_

SCALE NONE  
DATE -  
ENGINEER

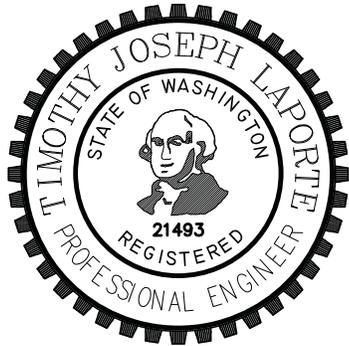
STANDARD PLAN

**6-5**



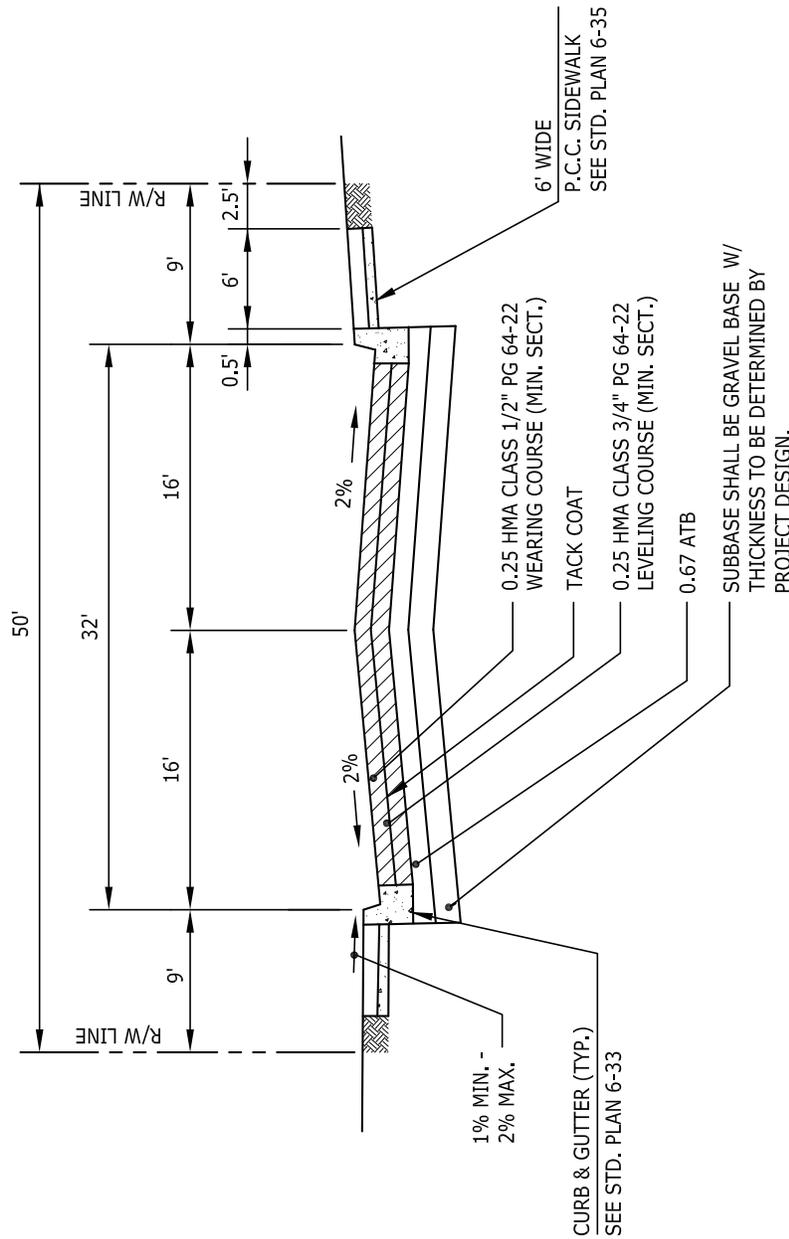
**NOTES:**

1. THE PAVEMENT WIDTH IS MADE UP OF 2 12'-WIDE CURB LANES AND 1 12'-WIDE TWO-WAY LEFT TURN LANE OR PARKING (NOT BOTH).
2. THE 1' GUTTER IS INCLUDED IN THE CURB LANE.
3. ADDITIONAL WIDTH WILL BE REQUIRED FOR NONMOTORIZED FACILITIES IF THE STREET IS ON A DESIGNATED BICYCLE ROUTE. SEE THE TRANSPORTATION MASTER PLAN AND STANDARD PLAN 6-31.
4. PARKING ALLOWED WHERE CENTER TURN LANES ARE NOT REQUIRED. NO ADDITIONAL WIDTH REQUIRED FOR PARKING.
5. A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN. AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
6. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>RESIDENTIAL COLLECTOR</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-6</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



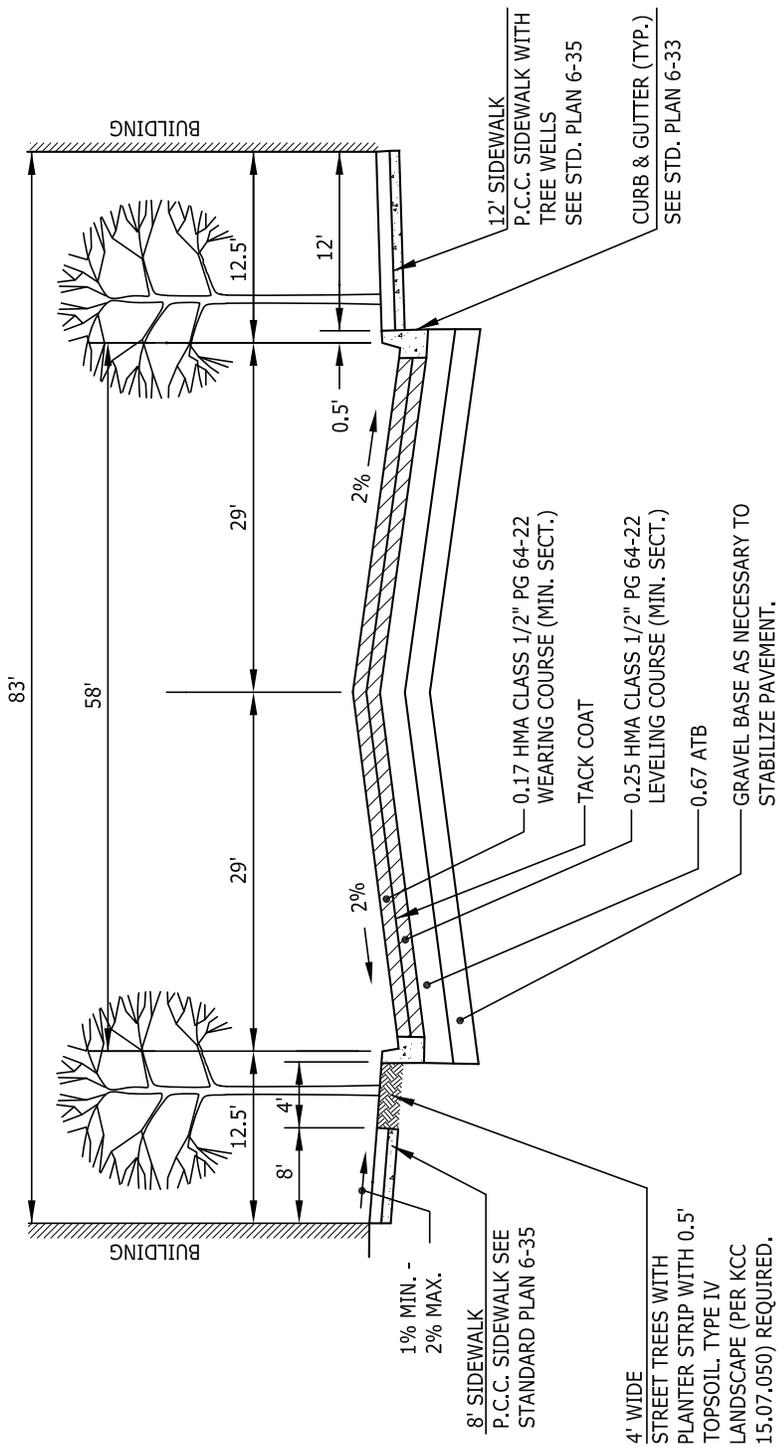
**NOTES:**

1. THE PAVEMENT WIDTH IS MADE UP OF 2 16'-WIDE CURB LANES.
2. THE 1' GUTTER IS INCLUDED IN THE CURB LANE.
3. ADDITIONAL WIDTH WILL BE REQUIRED FOR NONMOTORIZED FACILITIES IF THE STREET IS ON A DESIGNATED BICYCLE ROUTE. SEE THE TRANSPORTATION MASTER PLAN AND STANDARD PLAN 6-31.
4. ADD 16' TO STANDARD CROSS SECTION WHEN ON STREET PARKING IS PERMITTED.
5. A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN. AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
6. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.

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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>INDUSTRIAL / COMMERCIAL</b> LOCAL STREETS	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-7</b>	
CHECKED _____	ENGINEER _____		
APPROVED _____			

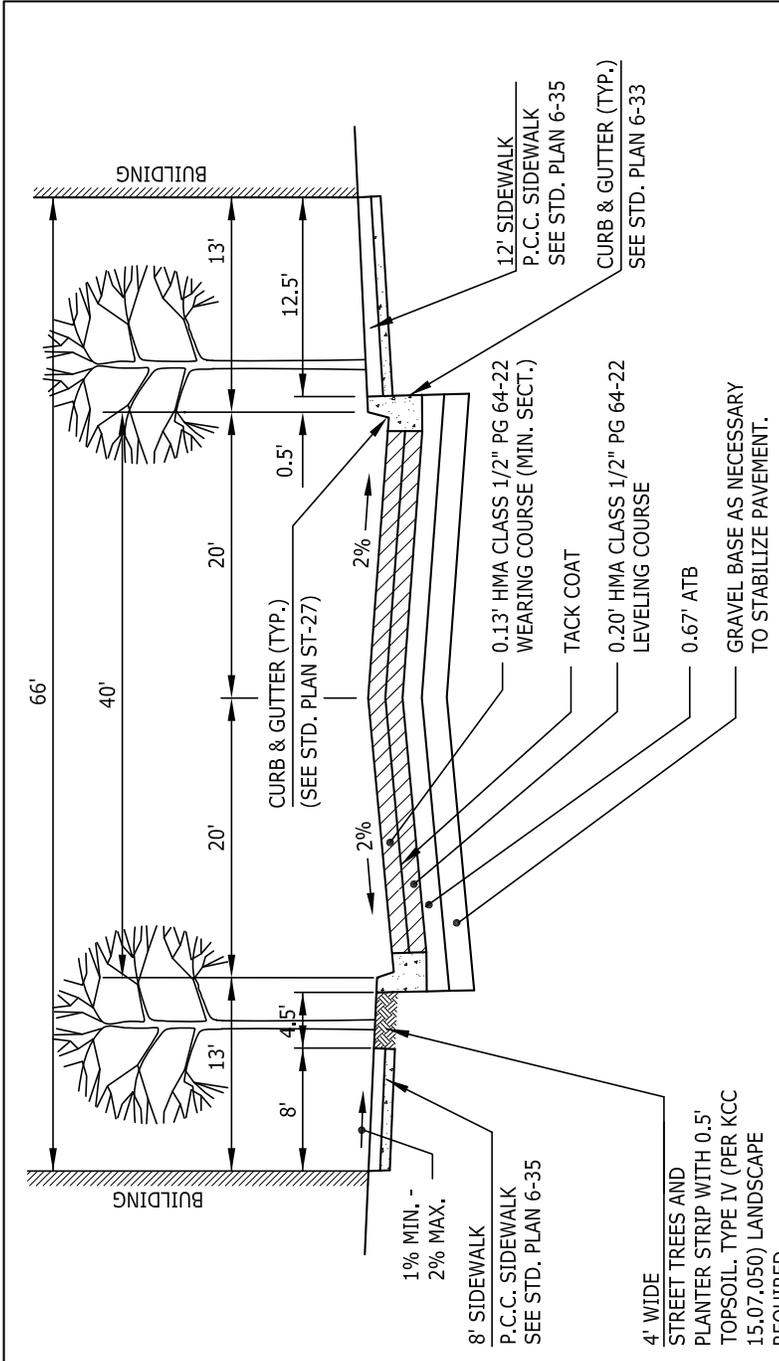


- NOTES:**
- THIS DETAIL SHALL BE USED FOR CENTRAL AVE; WILLIS ST, WEST OF CENTRAL AVE; SMITH ST. AND JAMES ST., SR-167 TO CENTRAL AVE; MEEKER ST WEST OF 4TH AVE; AND 4TH AVE NORTH OF WILLIS.
  - THE PAVEMENT WIDTH IS MADE UP OF 2 11'-WIDE TRAVEL LANES, 2 12'-WIDE CURB LANES, AND 1 12'-WIDE TURN LANE.
  - THE 1' GUTTER IS INCLUDED IN THE CURB LANE; AND THE 0.5' CURB IS NOT INCLUDED IN THE SIDEWALK OR PLANTER STRIP WIDTH.
  - AN 8' CLEAR WIDTH FOR PEDESTRIAN TRAVEL IS REQUIRED ON THE SIDEWALK.
  - THE 12' SIDEWALK WIDTH CAN BE REVISED TO A 4' PLANTER STRIP AND 8' SIDEWALK.
  - ADD 14' TO STANDARD CROSS SECTION WHEN DUAL LEFT TURN LANES ARE REQUIRED AT AN INTERSECTION. STORAGE LENGTH TO BE DETERMINED BY A TRAFFIC STUDY.
  - ADDITIONAL WIDTH WILL BE REQUIRED FOR NONMOTORIZED FACILITIES IF THE STREET IS ON A DESIGNATED BICYCLE ROUTE. SEE THE TRANSPORTATION MASTER PLAN AND STANDARD PLAN 6-31.
  - A LANDSCAPED MEDIAN SHOULD BE USED WHERE THE ENGINEER DETERMINES A TWO-WAY LEFT-TURN LANE IS NOT REQUIRED.
  - WHEN A ZERO FOOT SETBACK IS NOT UTILIZED, A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
  - DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.



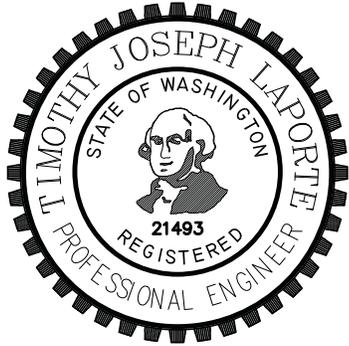
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>DOWNTOWN OVERLAY</b> <b>MINOR ARTERIAL STREET</b>	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED	-	ENGINEER	
APPROVED	-	ENGINEER	
			<b>6-8</b>



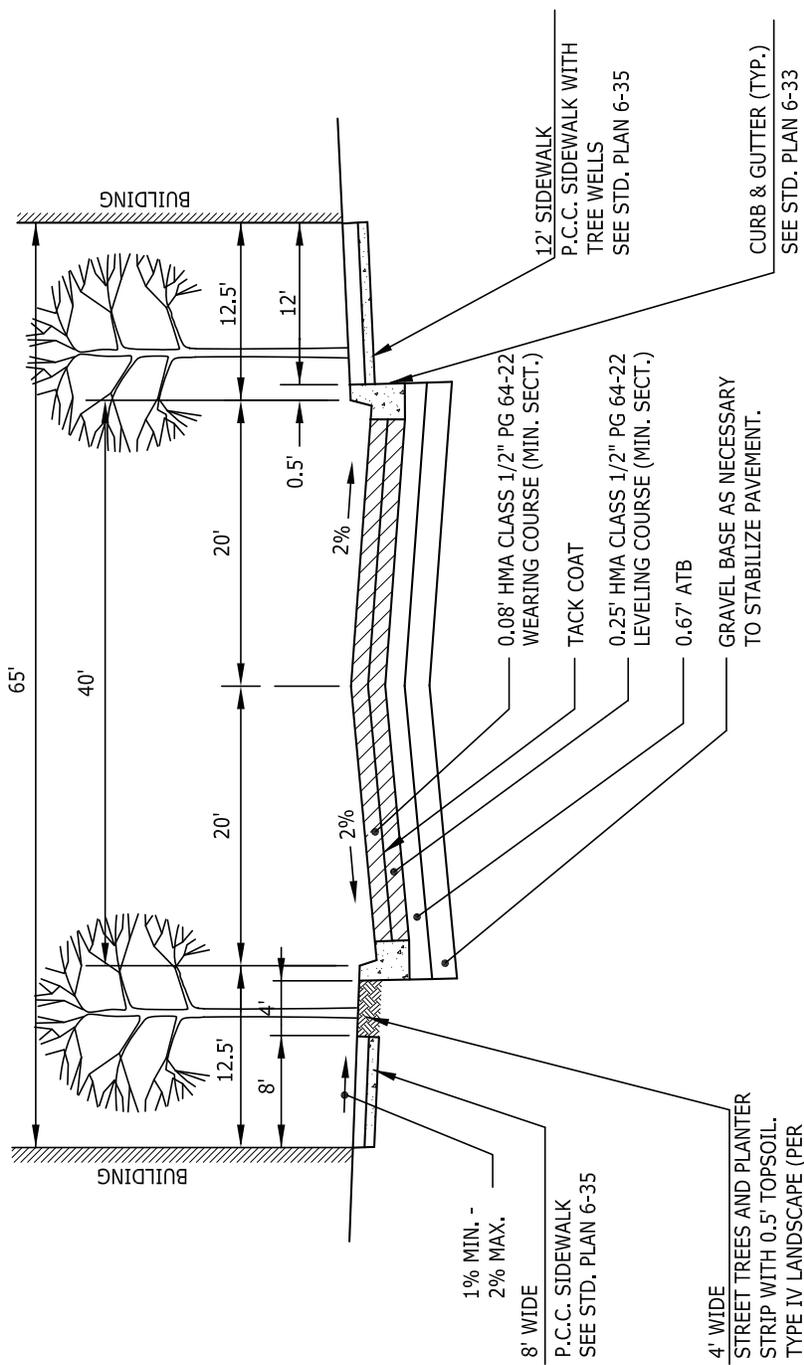
**NOTES:**

1. FOR GOWE ST. WEST OF CENTRAL AVE.
2. THE PAVEMENT WIDTH IS MADE UP OF 2 12'-WIDE CURB LANES AND 2 8'-WIDE PARKING LANES.
3. THE 1' GUTTER IS INCLUDED IN THE CURB LANE; AND THE 0.5' CURB IS NOT INCLUDED IN THE SIDEWALK OR PLANTER STRIP WIDTH.
4. AN 8' CLEAR WIDTH FOR PEDESTRIAN TRAVEL IS REQUIRED ON THE SIDEWALK.
5. THE 12' SIDEWALK WIDTH CAN BE REVISED TO A 4' PLANTER STRIP AND 8' SIDEWALK.
6. ADDITIONAL WIDTH WILL BE REQUIRED FOR NONMOTORIZED FACILITIES IF THE STREET IS ON A DESIGNATED BICYCLE ROUTE. SEE THE TRANSPORTATION MASTER PLAN AND STANDARD PLAN 6-31.
7. WHEN A ZERO FOOT SETBACK IS NOT UTILIZED, A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
8. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.



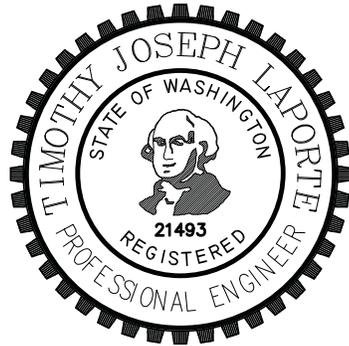
NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION IS KEPT ON FILE AT THE CITY OF KENT. A COPY MAY BE OBTAINED UPON REQUEST.

 <p><b>CITY OF KENT</b> ENGINEERING DEPARTMENT</p> <p><b>DOWNTOWN OVERLAY</b> <b>RESIDENTIAL COLLECTOR</b> <b>ARTERIAL STREET</b></p>		
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-9</b>
CHECKED _____	ENGINEER _____	
APPROVED _____		



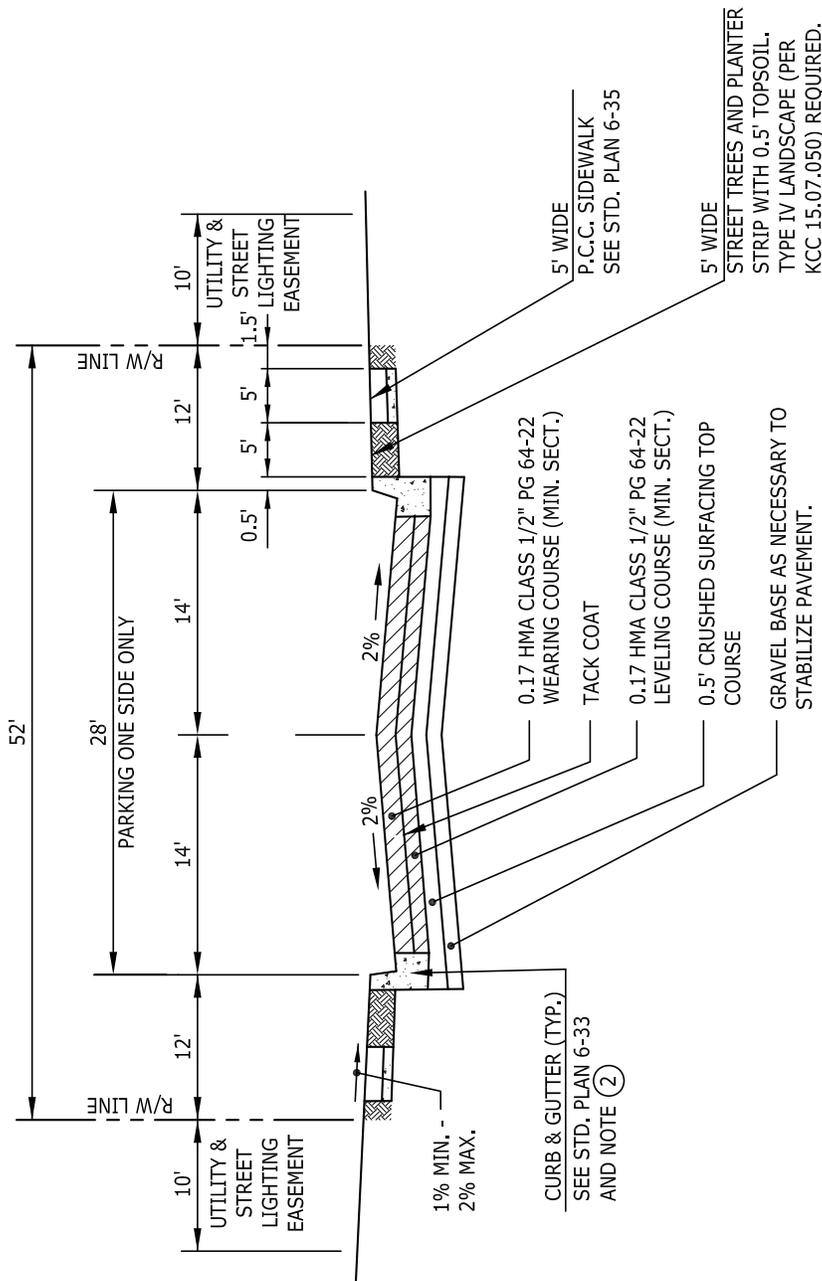
**NOTES:**

1. THE PAVEMENT WIDTH IS MADE UP OF 2 12'-WIDE LANES AND 2 8'-WIDE PARALLEL PARKING AREAS.
2. THE 1' GUTTERS ARE INCLUDED IN THE PARKING AREA; AND THE 0.5' CURB IS NOT INCLUDED IN THE SIDEWALK OR PLANTER STRIP WIDTH.
3. AN 8' CLEAR WIDTH FOR PEDESTRIAN TRAVEL IS REQUIRED ON THE SIDEWALK.
4. THE 12' SIDEWALK WIDTH CAN BE REVISED TO A 4' PLANTER STRIP AND 8' SIDEWALK.
5. ADDITIONAL WIDTH WILL BE REQUIRED FOR NONMOTORIZED FACILITIES IF THE STREET IS ON A DESIGNATED BICYCLE ROUTE. SEE THE TRANSPORTATION MASTER PLAN AND STANDARD PLAN 6-31.
6. WHEN A ZERO FOOT SETBACK IS NOT UTILIZED, A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
7. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.



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		<b>CITY OF KENT</b>	
		ENGINEERING DEPARTMENT	
<b>DOWNTOWN OVERLAY</b>		<b>INDUSTRIAL/COMMERCIAL</b>	
<b>LOCAL STREET</b>		<b>6-10</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



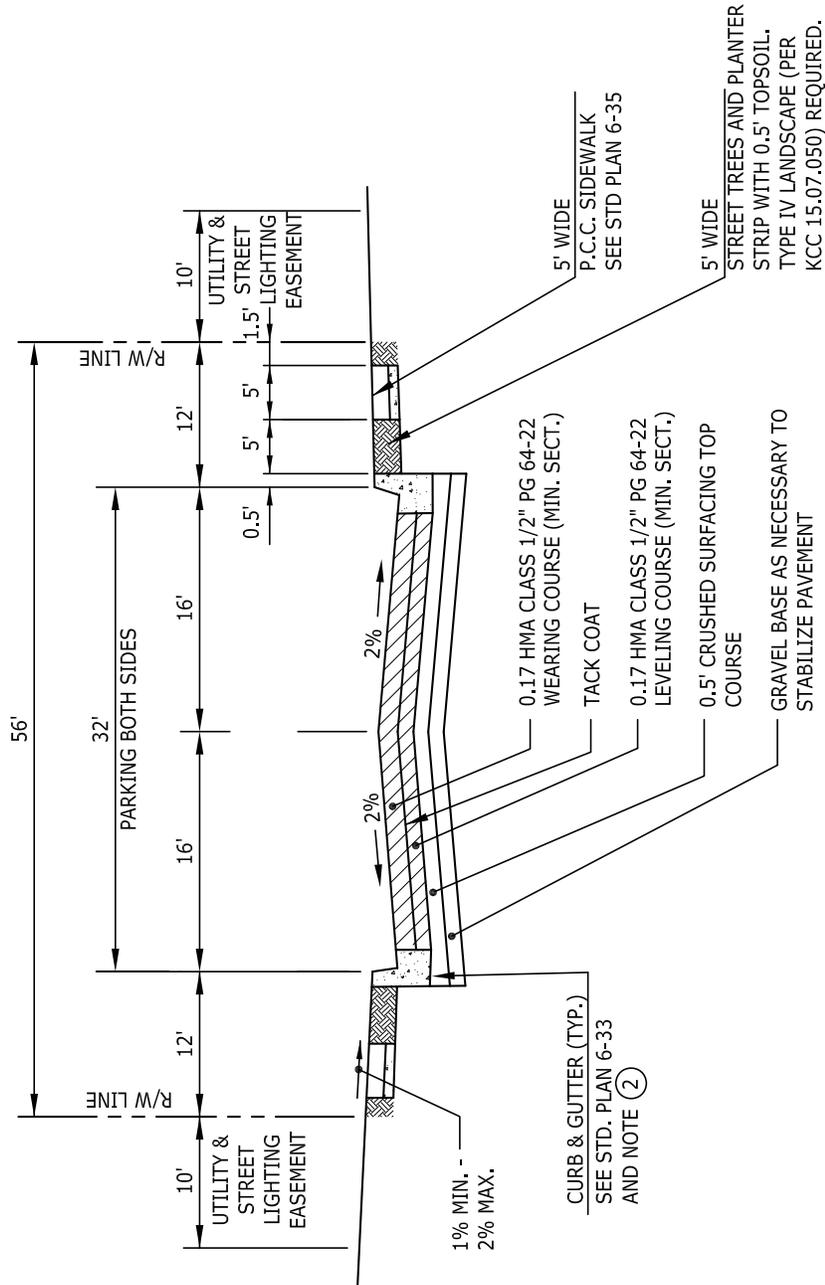
**NOTES:**

1. THE 1' GUTTERS ARE INCLUDED IN THE STREET WIDTH.
- ② INSTALLATION OF ROLLED CURB (STD. PLAN 6-33) IS RESTRICTED TO CUL-DE-SAC SECTIONS ONLY.
3. PARKING SHALL ALTERNATE SIDES EVERY BLOCK OR AS APPROVED BY THE ENGINEER.
4. PARKING SHALL BE RESTRICTED 15' BEFORE AND AFTER ANY FIRE HYDRANTS.
5. A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN. AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
6. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.



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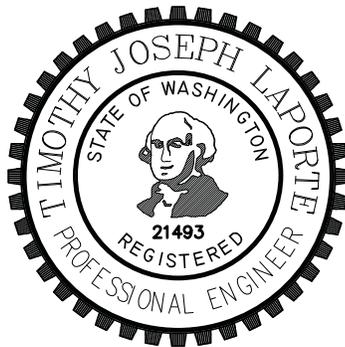
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>RESIDENTIAL - PARKING ONE SIDE LOCAL STREET</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-11</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



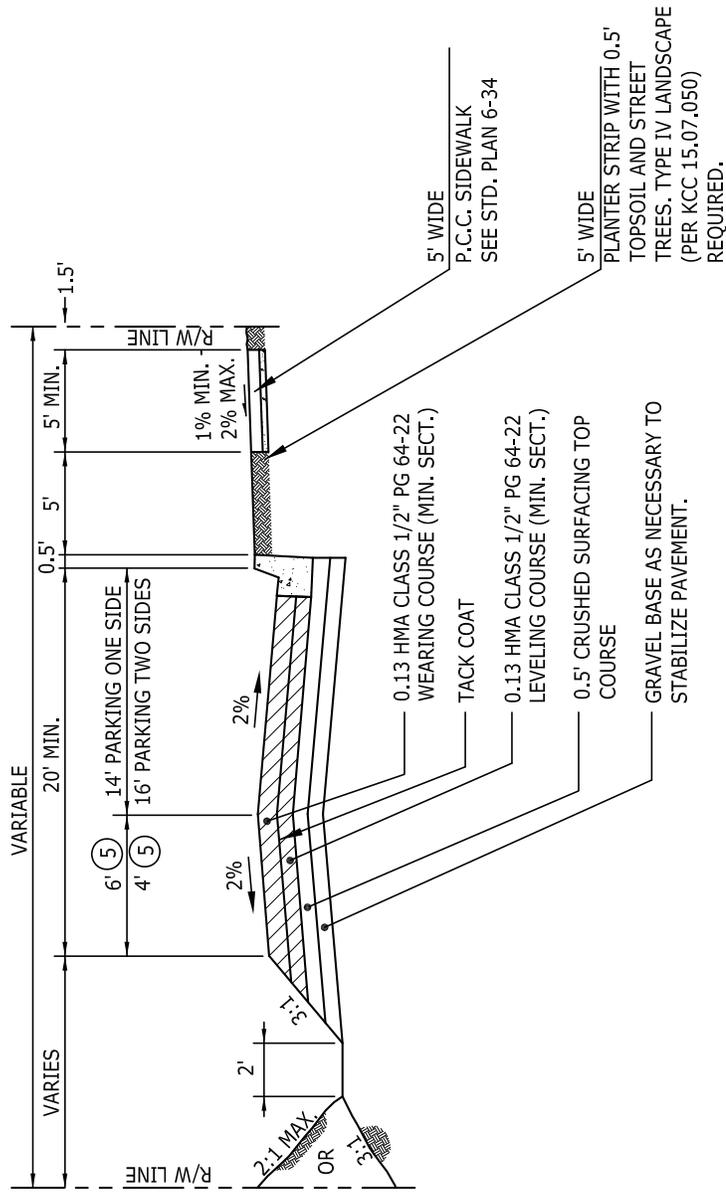
**NOTES:**

1. THE 1' GUTTERS ARE INCLUDED IN THE STREET WIDTH.
- ② INSTALLATION OF ROLLED CURB (STD. PLAN 6-33) IS RESTRICTED TO CUL-DE-SAC SECTIONS ONLY.
3. PARKING SHALL BE RESTRICTED 15' BEFORE AND AFTER ANY FIRE HYDRANTS.
4. A 1' LEVEL AREA BEHIND THE SIDEWALK WITH A 1% MIN. AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
5. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.

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		<b>CITY OF KENT</b>	
		ENGINEERING DEPARTMENT	
DESIGNED: DWH DRAWN: BB CHECKED: _____ APPROVED: _____		<b>RESIDENTIAL - PARKING</b> <b>BOTH SIDES</b> <b>LOCAL STREET</b>	
		SCALE: NONE DATE: - ENGINEER: _____	<b>6-12</b>

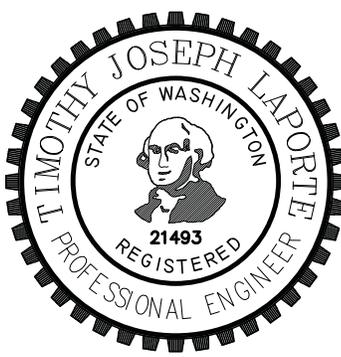


5. THIS SECTION OF PAVEMENT MAY BE ELEVATED TO DRAIN TO THE NEW CURB AND GUTTER WHEN THE FAR-SIDE OF THE HALF STREET DOES NOT HAVE EXISTING DRAINAGE FACILITIES. THE ELEVATED PAVEMENT WILL BE REMOVED AND REPLACED WHEN THE SECOND HALF OF THE HALF STREET IS CONSTRUCTED.

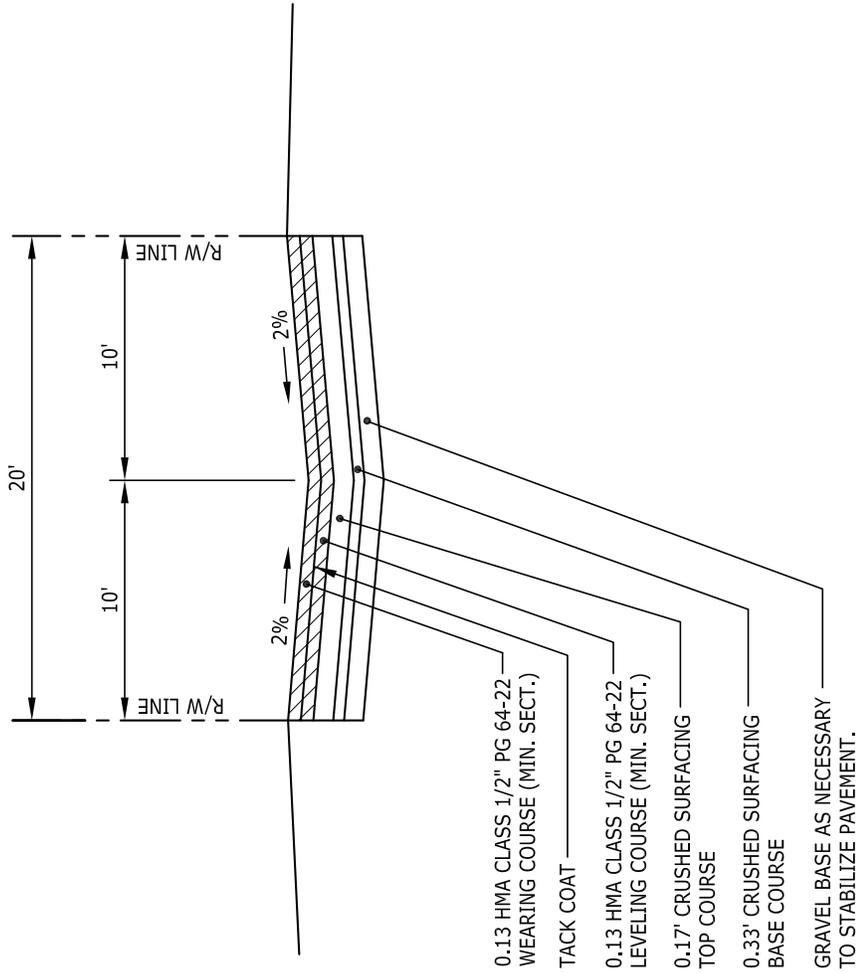
NOTES:

- EDGE OF PAVEMENT TO BE CONSTRUCTED AS SHOWN FOR CUT OR FILL SECTION AS APPROPRIATE.
- STREET SHALL BE WITHIN EXISTING OR DEDICATED RIGHT-OF-WAY WITH A MINIMUM WIDTH OF 2' MORE THAN THE IMPROVEMENTS.
- A 1' AREA BEHIND THE SIDEWALK WITH A 1% MIN. AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE SIDEWALK AND 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
- DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.

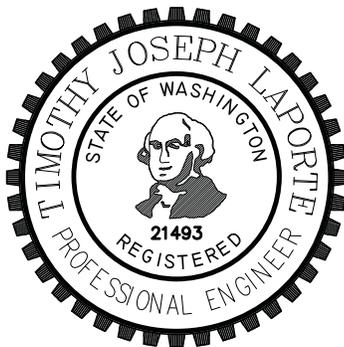
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>PUBLIC RESIDENTIAL HALF-STREET</b>	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED			
APPROVED			ENGINEER
			<b>6-13</b>

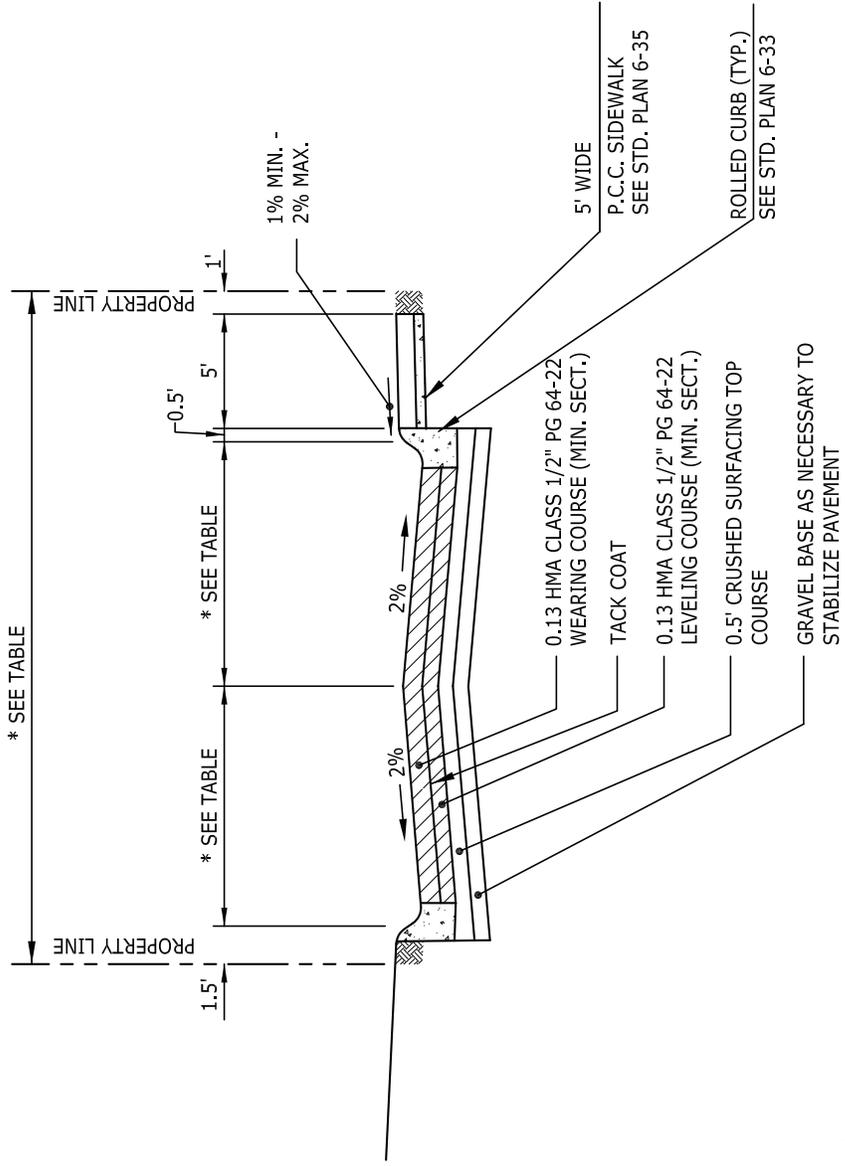


**NOTE:**  
 REDUCED PAVEMENT WIDTH  
 ALLOWED PER SECTION 6.2.C.1



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>ALLEY</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____	<b>6-14</b>	
APPROVED _____			

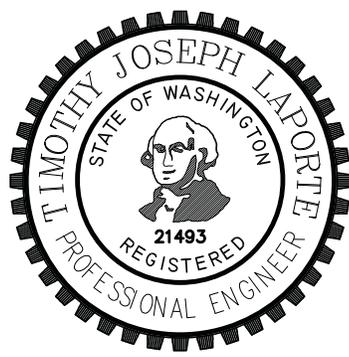


**NOTES:**

1. 5' WIDE SIDEWALK/PAVED WALKWAY REQUIRED THE ENTIRE LENGTH OF A PRIVATE STREET SERVING 5 OR MORE LOTS.
2. FIRE LANE MARKING PURSUANT TO 6-77.
3. NO PARKING ON EITHER SIDE OF THE ROAD FOR A DISTANCE OF 15' BEFORE AND AFTER ANY FIRE HYDRANTS.
4. A 1' LEVEL AREA BEHIND THE CURB OR SIDEWALK WITH A 1% MIN. AND 2% MAX. SHALL BE PROVIDED. WHEN THE SLOPE BEHIND THE 1' LEVEL AREA EXCEEDS 3:1, 0.33' OF COMPACTED CRUSHED SURFACING TOP COURSE SHALL BE PROVIDED IN THE 1' AREA.
5. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.

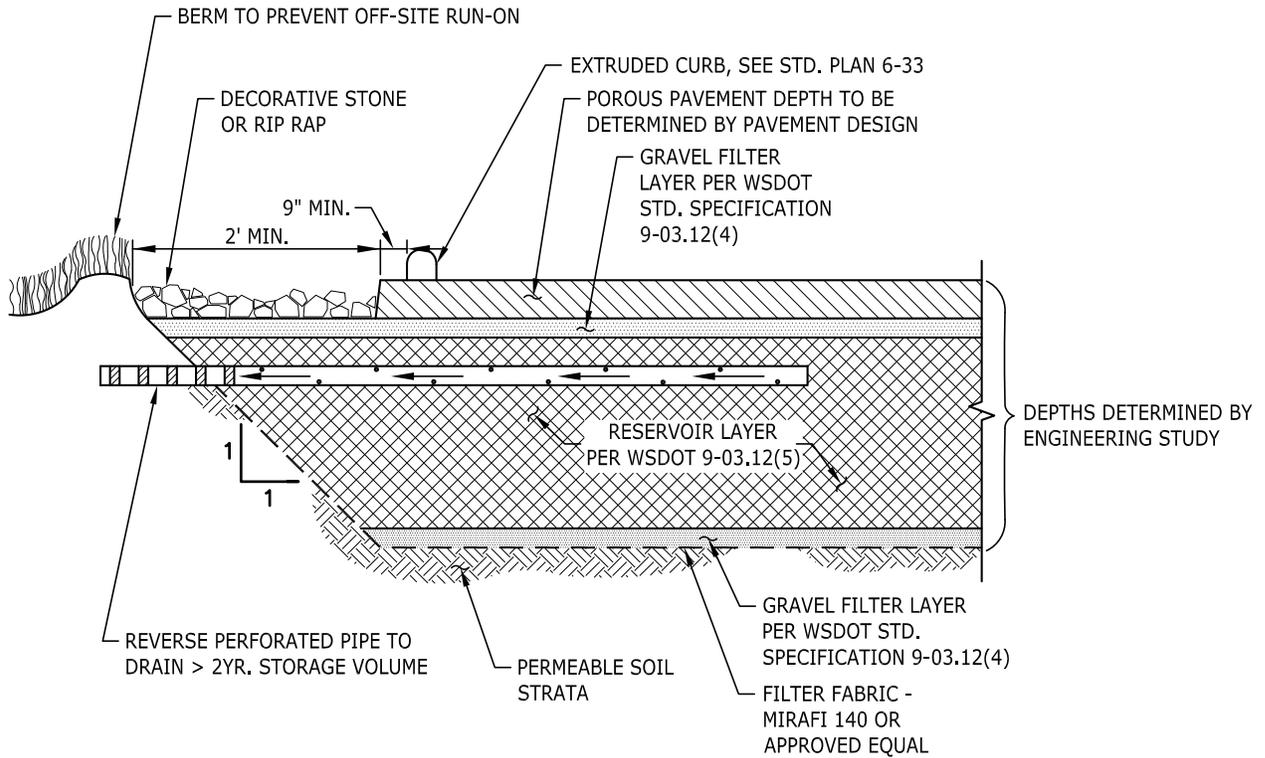
PARKING	TYPICAL LANE WIDTHS	STANDARD TRACT WIDTH
ONE SIDE ONLY	2 TRAVEL LANES AT 10' = 20' 1-6' PARKING AREA	34'
BOTH SIDES	2 TRAVEL LANES AT 10' = 20' 2-6' PARKING AREAS	40'

TRACT WIDTH TABLE

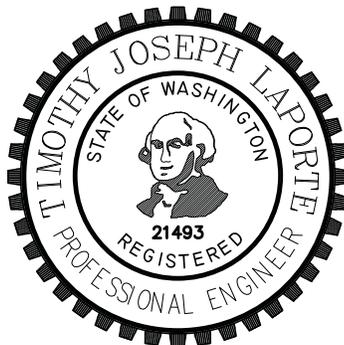


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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>PRIVATE STREET</b>	
DESIGNED: <u>DWH</u>	SCALE: <u>NONE</u>	<b>6-15</b>	
DRAWN: <u>BB</u>	DATE: <u>-</u>		
CHECKED: _____	ENGINEER: _____		
APPROVED: _____			

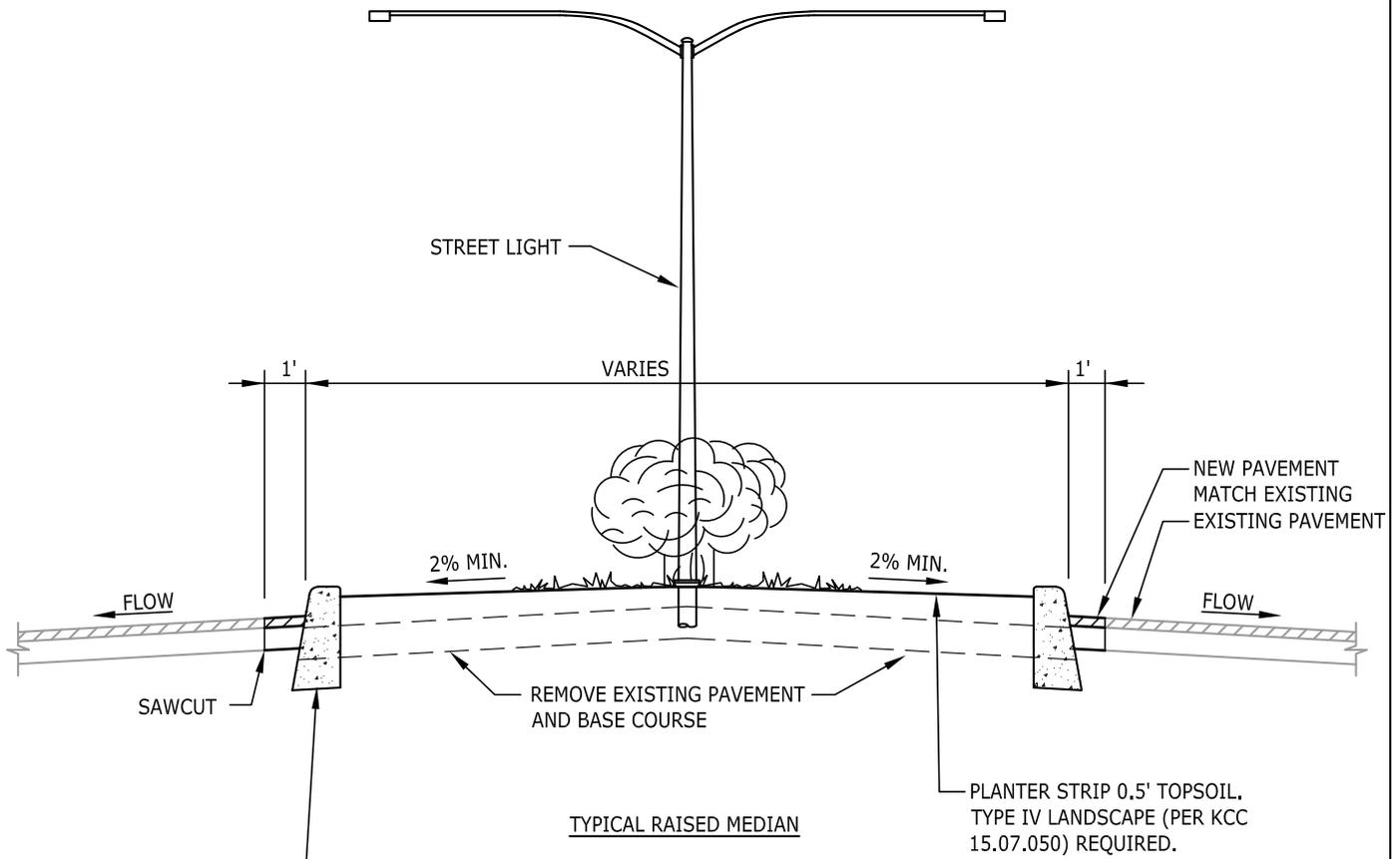


SIDE VIEW  
NOT TO SCALE

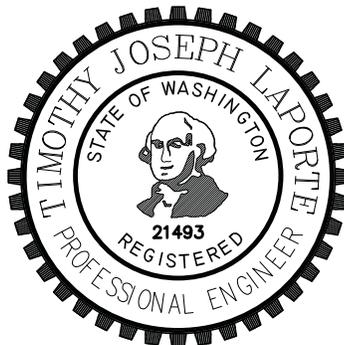


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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>POROUS PAVEMENT CROSS-SECTION</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-16</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			

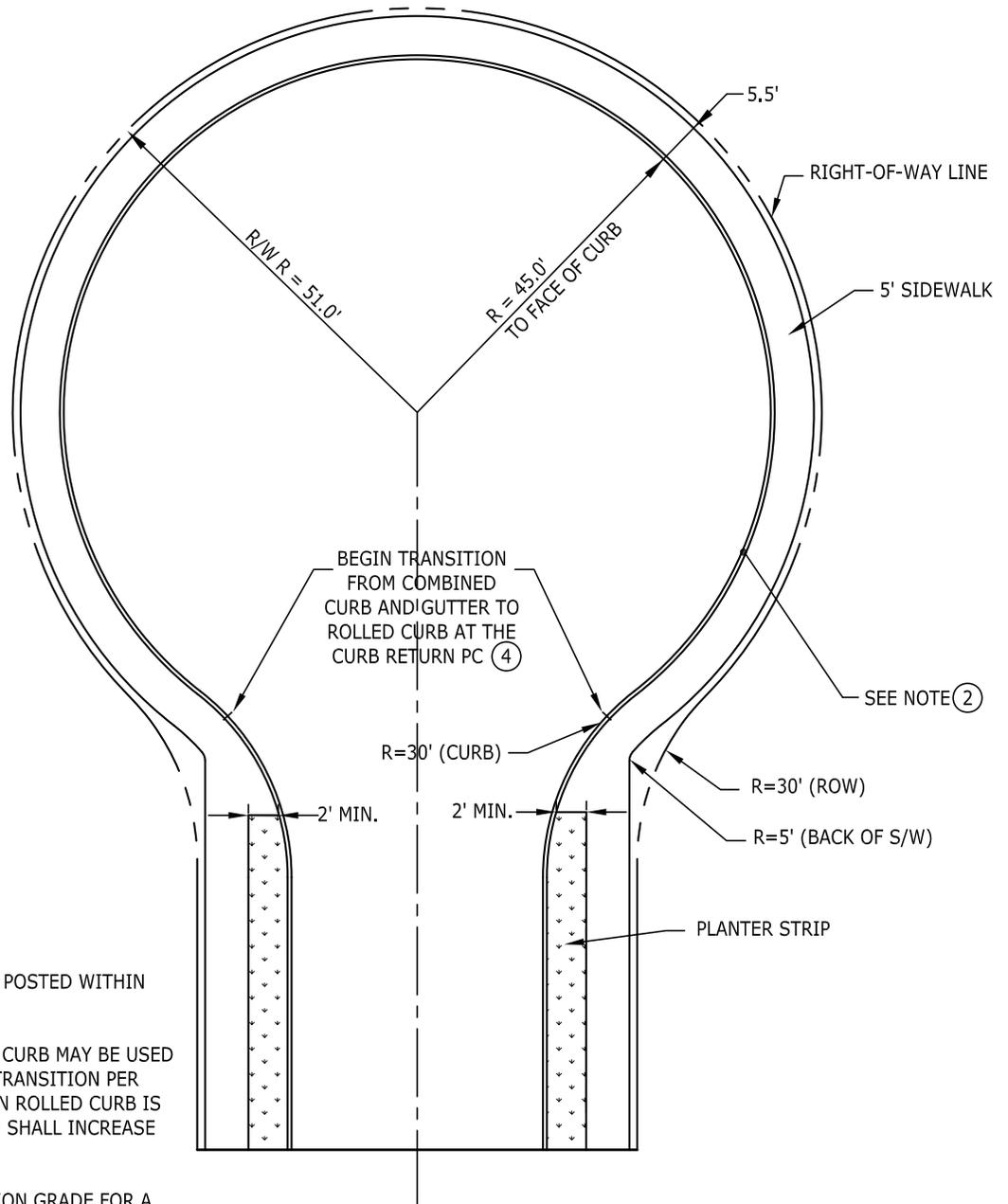


CEMENT CONCRETE TRAFFIC CURB - WSDOT PLAN F10.12-00



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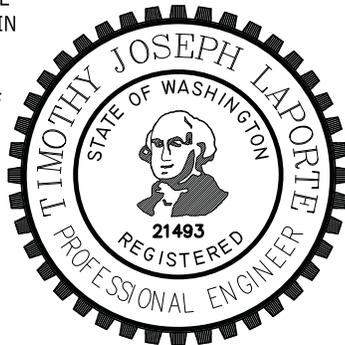
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>STREET MEDIAN</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE _____	<b>6-17</b>	
CHECKED _____	ENGINEER _____		
APPROVED _____			



**NOTES:**

1. "NO PARKING" SIGNS TO BE POSTED WITHIN CUL-DE-SAC.
- ② CEMENT CONCRETE ROLLED CURB MAY BE USED ON THE CUL-DE-SAC WITH TRANSITION PER STANDARD PLAN 6-33. WHEN ROLLED CURB IS USED THE SIDEWALK DEPTH SHALL INCREASE FROM 4" TO 6"
3. THE MAXIMUM CROSS SECTION GRADE FOR A CUL-DE-SAC IS 6%. CROSS GRADES GREATER THAN 2% MAY ONLY BE USED WHEN THE EXISTING TOPOGRAPHY EXCEEDS 10% IN GRADE.
- ④ NO DRIVEWAYS ALLOWED WITHIN 5' OF CURB TRANSITION.

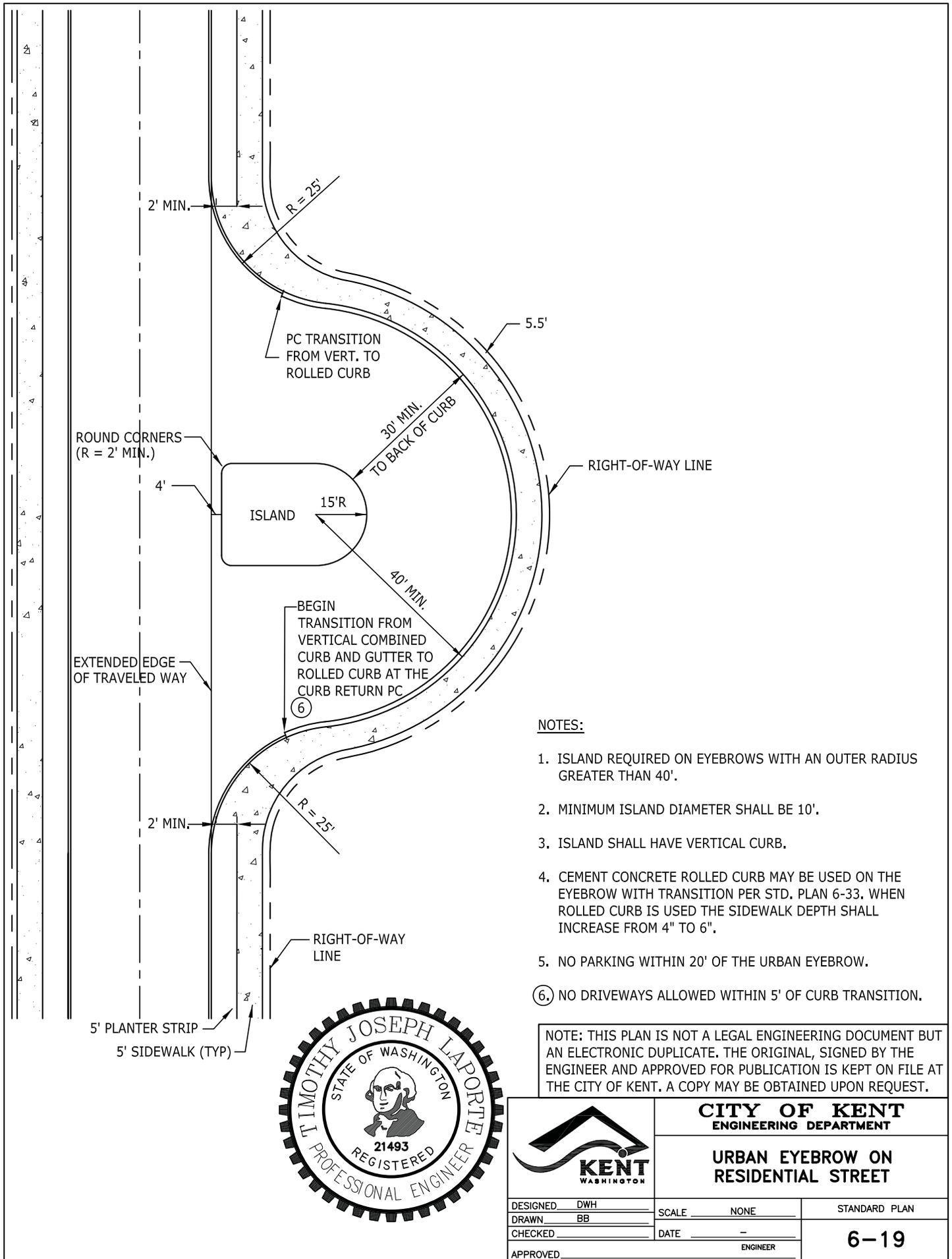
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**CITY OF KENT**  
ENGINEERING DEPARTMENT

**STANDARD CUL-DE-SAC BULB  
ON RESIDENTIAL STREET**

DESIGNED	DWH	SCALE	NONE	STANDARD PLAN
DRAWN	BB	DATE	-	<b>6-18</b>
CHECKED			ENGINEER	
APPROVED				



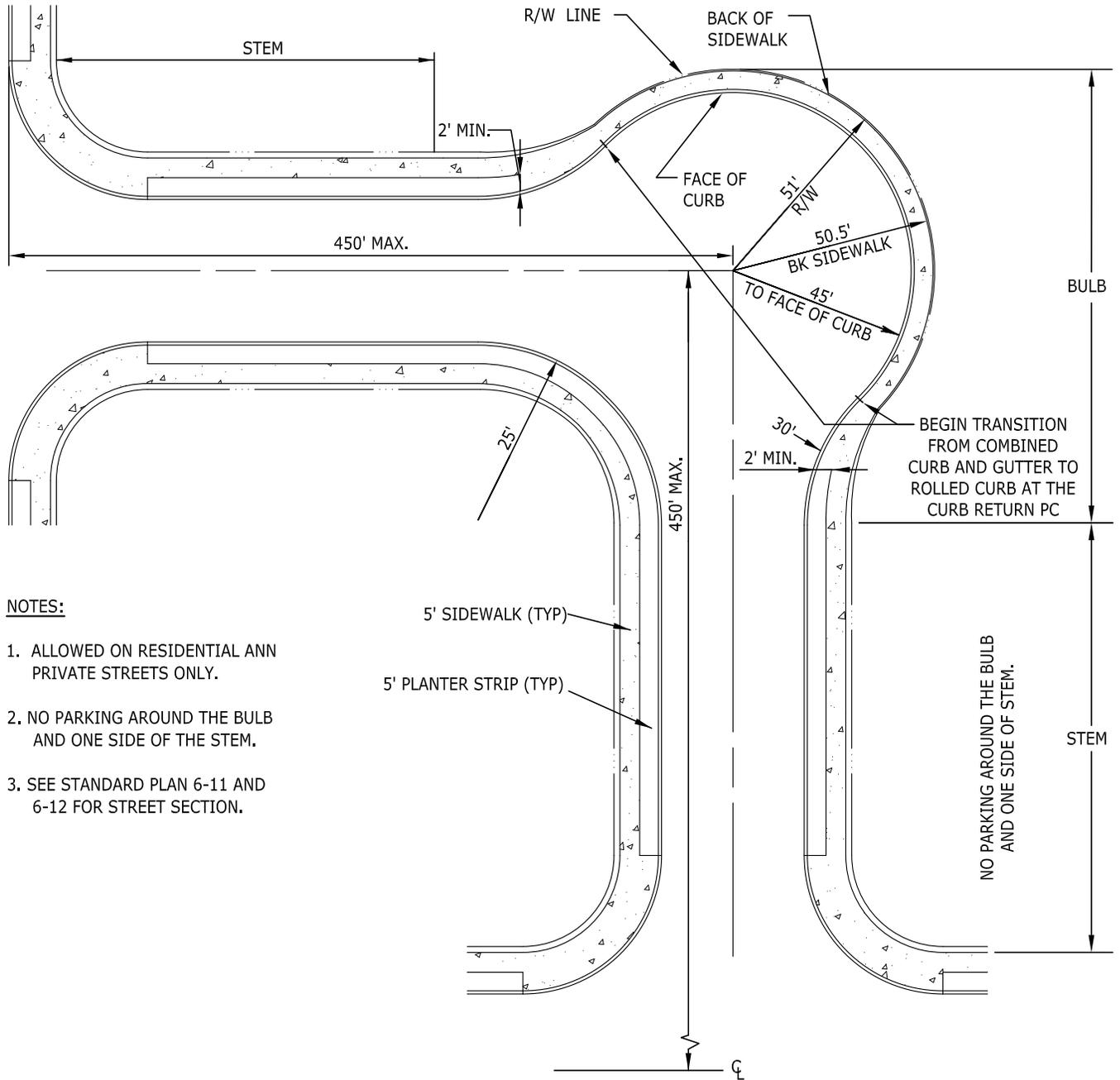
**NOTES:**

1. ISLAND REQUIRED ON EYEBROWS WITH AN OUTER RADIUS GREATER THAN 40'.
2. MINIMUM ISLAND DIAMETER SHALL BE 10'.
3. ISLAND SHALL HAVE VERTICAL CURB.
4. CEMENT CONCRETE ROLLED CURB MAY BE USED ON THE EYEBROW WITH TRANSITION PER STD. PLAN 6-33. WHEN ROLLED CURB IS USED THE SIDEWALK DEPTH SHALL INCREASE FROM 4" TO 6".
5. NO PARKING WITHIN 20' OF THE URBAN EYEBROW.
- ⑥ NO DRIVEWAYS ALLOWED WITHIN 5' OF CURB TRANSITION.

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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>URBAN EYEBROW ON RESIDENTIAL STREET</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>STANDARD PLAN</b>  <b>6-19</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



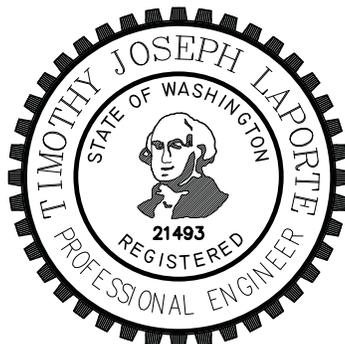
**NOTES:**

1. ALLOWED ON RESIDENTIAL AND PRIVATE STREETS ONLY.
2. NO PARKING AROUND THE BULB AND ONE SIDE OF THE STEM.
3. SEE STANDARD PLAN 6-11 AND 6-12 FOR STREET SECTION.

5' SIDEWALK (TYP)

5' PLANTER STRIP (TYP)

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**CITY OF KENT**  
ENGINEERING DEPARTMENT

**TYPICAL ELBOW ON  
RESIDENTIAL STREET**

DESIGNED DWH

DRAWN BB

CHECKED \_\_\_\_\_

APPROVED \_\_\_\_\_

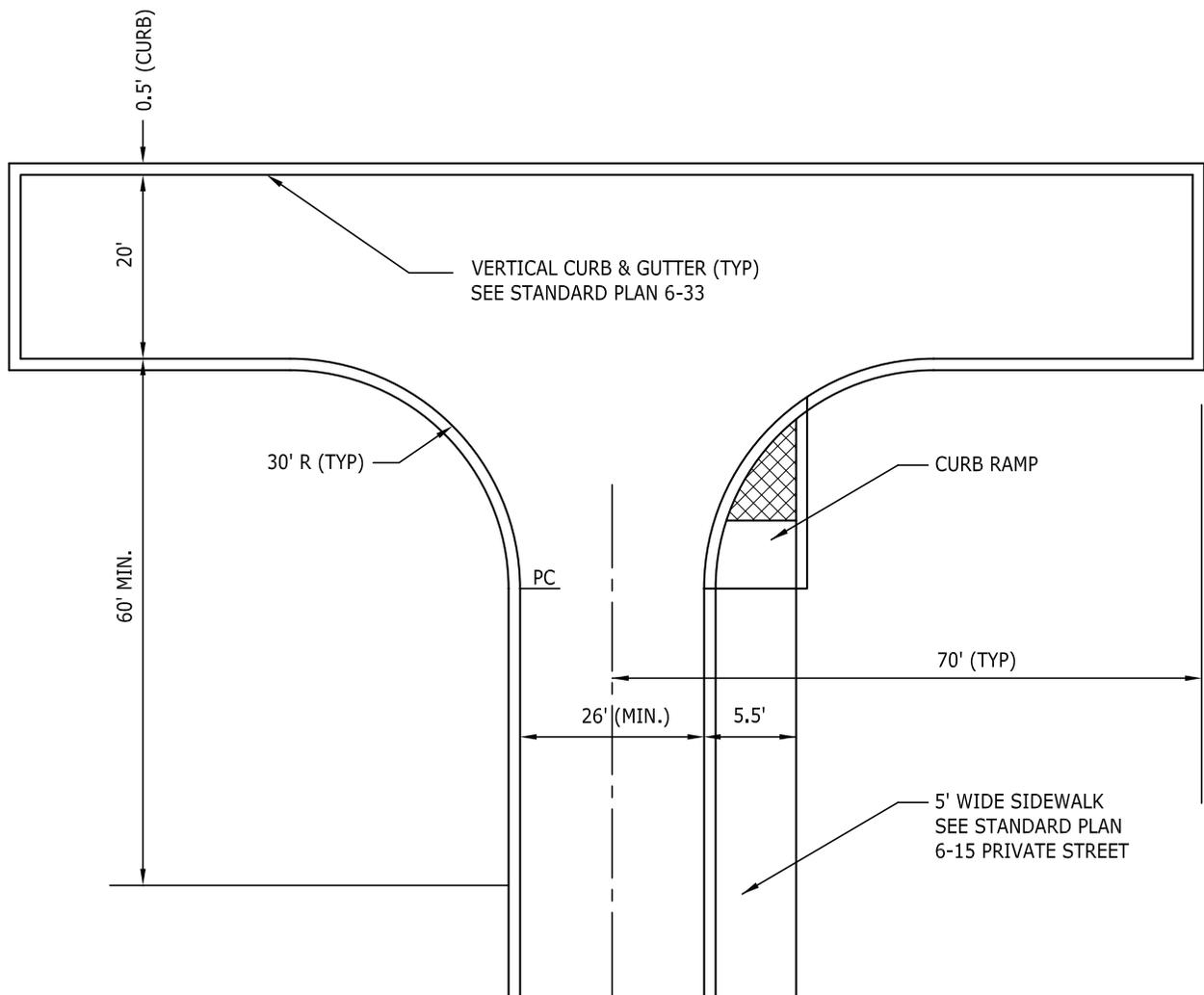
SCALE NONE

DATE \_\_\_\_\_

ENGINEER

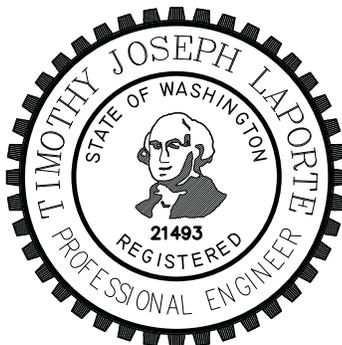
STANDARD PLAN

**6-20**



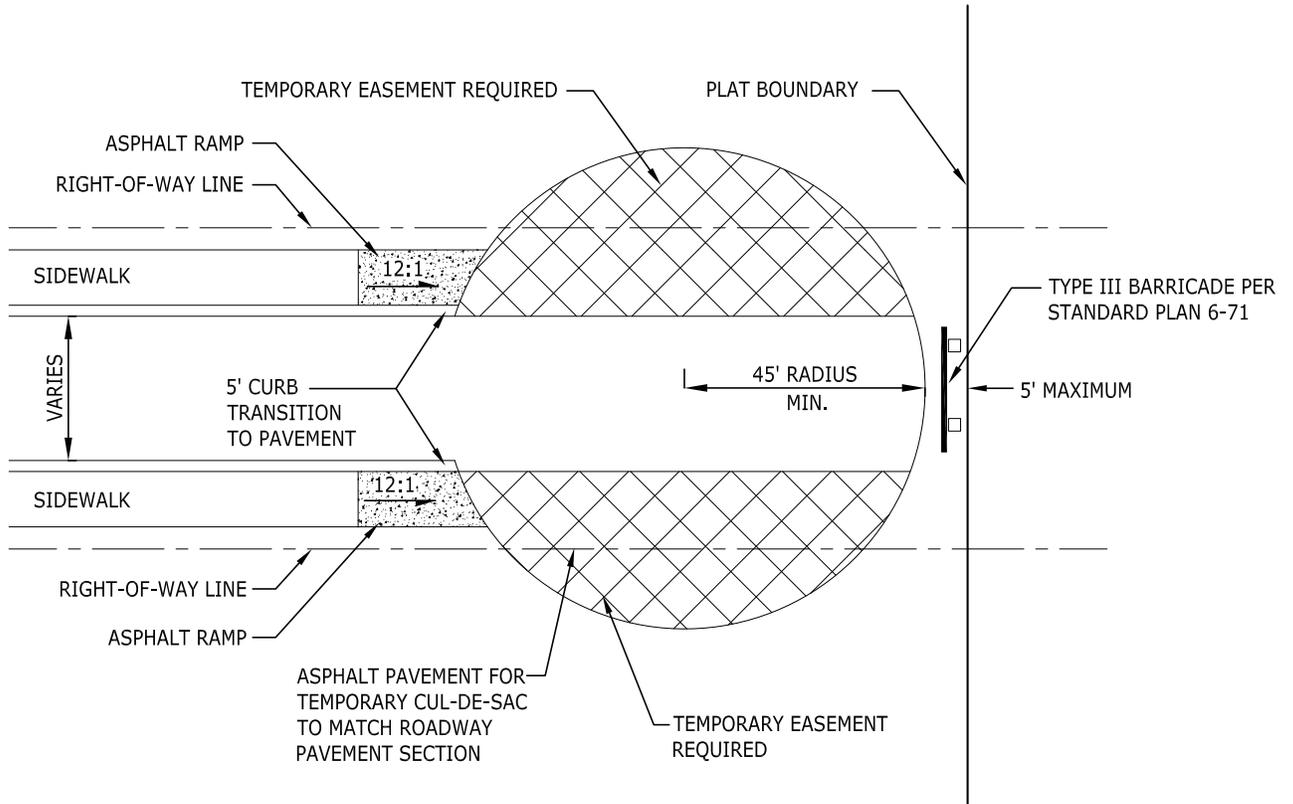
**NOTES:**

1. "NO PARKING" SIGNS TO BE POSTED PRIOR TO, ALONG AND AFTER TURNAROUND FOR A DIST. OF 60' FROM THE PC. ADD FIRE LANE MARKINGS PER STANDARD PLAN 6-77.
2. TURNAROUNDS CANNOT USE A DRIVEWAY.



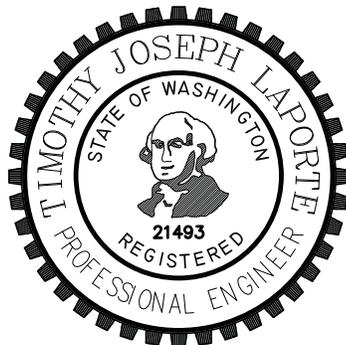
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	<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
	<b>STANDARD HAMMERHEAD PRIVATE STREET ONLY</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-21</b>
CHECKED _____	ENGINEER _____	
APPROVED _____		



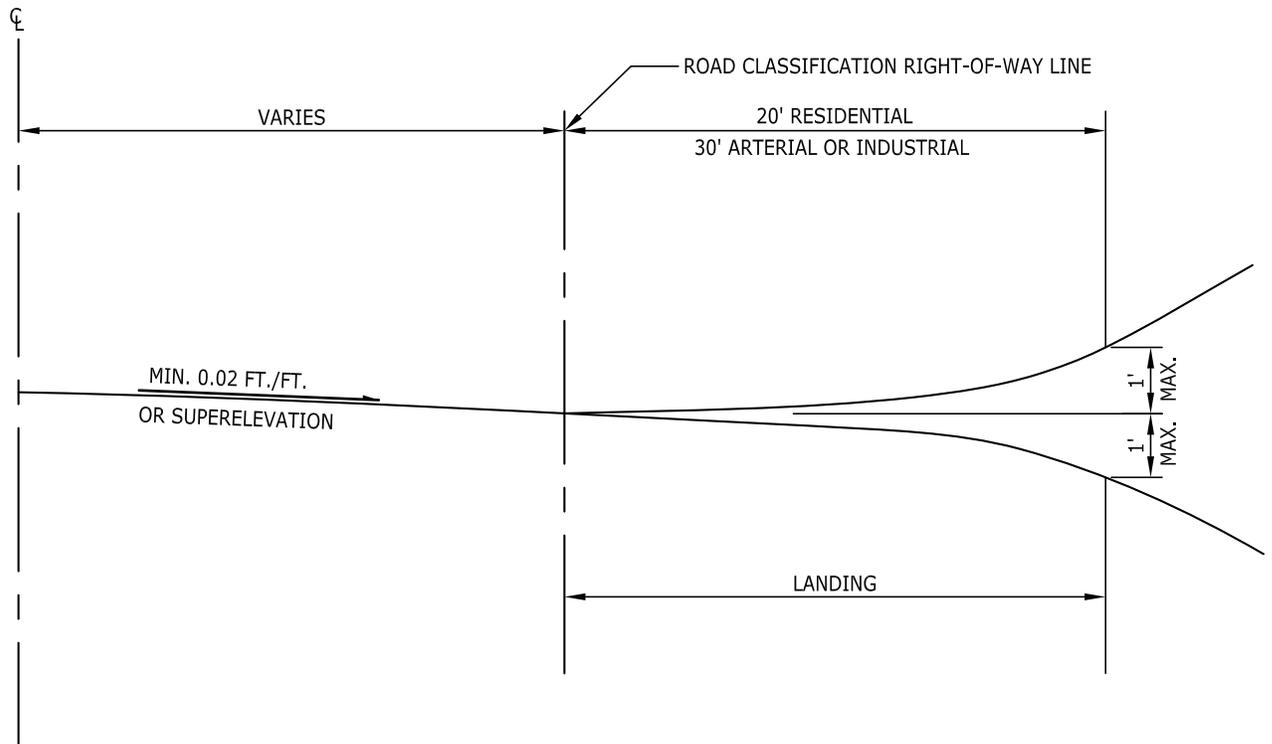
**NOTES:**

1. BARRICADE REQUIRED AT END OF BULB. BARRICADES SHALL CONFORM TO THE STANDARDS OF SECTION 6F-63 IN THE CURRENT MUTCD.
2. THE SIDEWALK SHALL NOT BE EXTENDED THRU THE TEMPORARY CUL-DE-SAC. ASPHALT RAMPS MUST OCCUR PRIOR TO THE CUL-DE-SAC.
3. DEVELOPMENT ADJACENT TO A TEMPORARY CUL-DE-SAC SHALL BE RESPONSIBLE TO REMOVE THE CUL-DE-SAC AND EXTEND THE ROADWAY, INCLUDING THE RECONSTRUCTION OF ANY DRIVEWAYS WITHIN THE RIGHT-OF-WAY THAT MAY BE AFFECTED BY THE ASPHALT REMOVAL.
4. NO PARKING WITHIN THE CUL-DE-SAC.



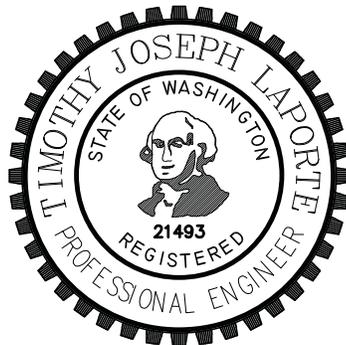
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TEMPORARY CUL-DE-SAC</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN <b>6-22</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



**NOTE:**

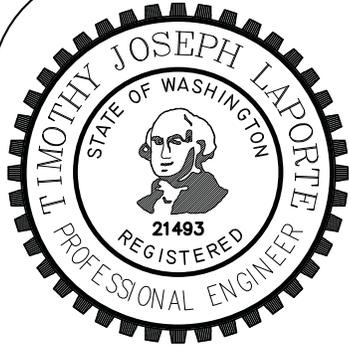
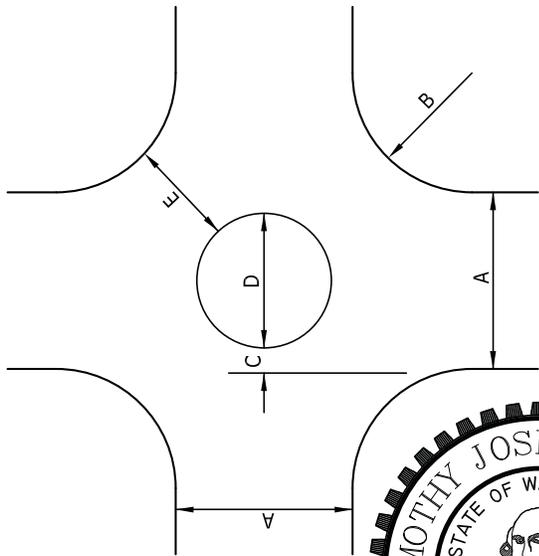
1. ON SLOPING APPROACHES AT THE INTERSECTION, LANDING SHALL BE PROVIDED WITH GRADE NOT TO EXCEED ONE FOOT DIFFERENCE IN ELEVATION FOR A DISTANCE OF 30 FEET APPROACHING AN ARTERIAL OR 20 FEET APPROACHING A RESIDENTIAL OR COMMERCIAL STREET, MEASURED FROM FUTURE RIGHT-OF-WAY LINE (INTERSECTED BY AN IMAGINARY 2 PERCENT GRADE EXTENDED FROM CROWNED ROAD TO RIGHT-OF-WAY LINE) OF INTERSECTING STREET.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>INTERSECTION LANDING</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-23</b>	
CHECKED _____	ENGINEER _____		
APPROVED _____			

**GEOMETRY**



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**DIMENSIONS**

A STREET WIDTH	B CURB RETURN RADIUS	C OFFSET DISTANCE	D CIRCLE DIAMETER	E OPENING WIDTH
	<15'	RECONSTRUCT CURBS		
	15'	5.5'	9'	16'+
	18'	5.0'	10'	17'+
	20'	4.5'	11'	18'-
	25'	4.0'	12'	19'+
	<12'	RECONSTRUCT CURBS		
	12'	5.5'	13'	16'
	15'	5.0'	14'	17'-
	20'	4.5'	15'	18'+
	25'	3.5'	17'	20'-
	12'	5.5'	19'	16'+
	15'	5.0'	20'	17'-
	18'	5.0'	20'	17'-
	20'	4.5'	21'	18'-
	25'	4.0'	22'	19'+
	30'	3.0'	24'	20'
	12'	5.5'	21'	16'+
	15'	5.0'	22'	17'-
	18'	4.5'	23'	18'-
	20'	4.0'	24'	19'-
	25'	4.0'	24'	19'+
	30'	2.5'	27'	20'
	12'	5.0'	26'	17'-
	15'	5.0'	26'	17'+
	18'	4.5'	27'	18'+
	20'	4.0'	28'	19'+
	25'	3.5'	29'	20'-
	30'	1.5'	33'	20'

**OPTIMUM**

**CRITERIA**

OFFSET DISTANCE (C)	OPENING WIDTH (E)
5.5' MAX.	16' MIN.
5.0'	17' ±
4.5'	18' ±
4.0'	19' ±
3.5' OR LESS	20' ±

**NOTES:**

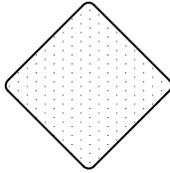
1. USE DIMENSION SCHEDULE AS A DESIGN GUIDE. FINAL DIMENSIONS TO BE DETERMINED BY THE ENGINEER.
2. FOR PLANTER ISLAND SPECIFICATIONS SEE SHEET 2.

		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT <b>TRAFFIC CALMING</b> <b>TRAFFIC CIRCLE</b> SHEET 1 OF 2	
		DESIGNED <u>DWH</u>	SCALE <u>NONE</u>
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			

OMI-3, 18" X 18" YELLOW HIGH INTENSITY TYPE 1 OBJECT MARKER, PLACED IN TRAFFIC CIRCLE FOR EACH APPROACH. ALL SIGNS TO BE MOUNTED ON SINGLE POST. LOCATION TO BE DETERMINED BY ENGINEER. SIGN HEIGHT: 5' FROM BOTTOM OF LOWER SIGN TO BARK MULCH.

W2-6, 30" X 30" BLACK ON YELLOW, PLACED 75' TO 100' BACK FROM TRAFFIC CIRCLE ON EACH APPROACH. SEE STD. PLAN ST-75 FOR POST TYPE AND INSTALLATION.

SIGNING



RPM TYPE 2 YELLOW, STIMONITE 953:

- USE 12 FOR  $\leq 15'$  DIA.
- USE 16 FOR  $< 20'$  DIA.
- USE 20 FOR  $\geq 20'$  DIA.

ADJUST MANHOLES, VALVE BOXES, AND MONUMENT CASES TO NEW GRADE.

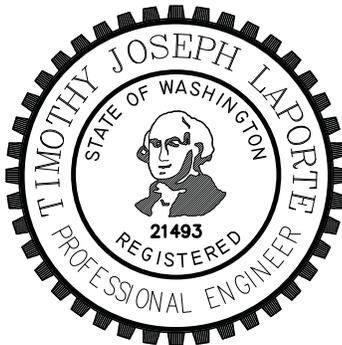
USE 2-#4 REBAR DOWEL, 12" LENGTH, AT EACH JOINT (TYP.)

SAWCUT AND REMOVE ASPHALT

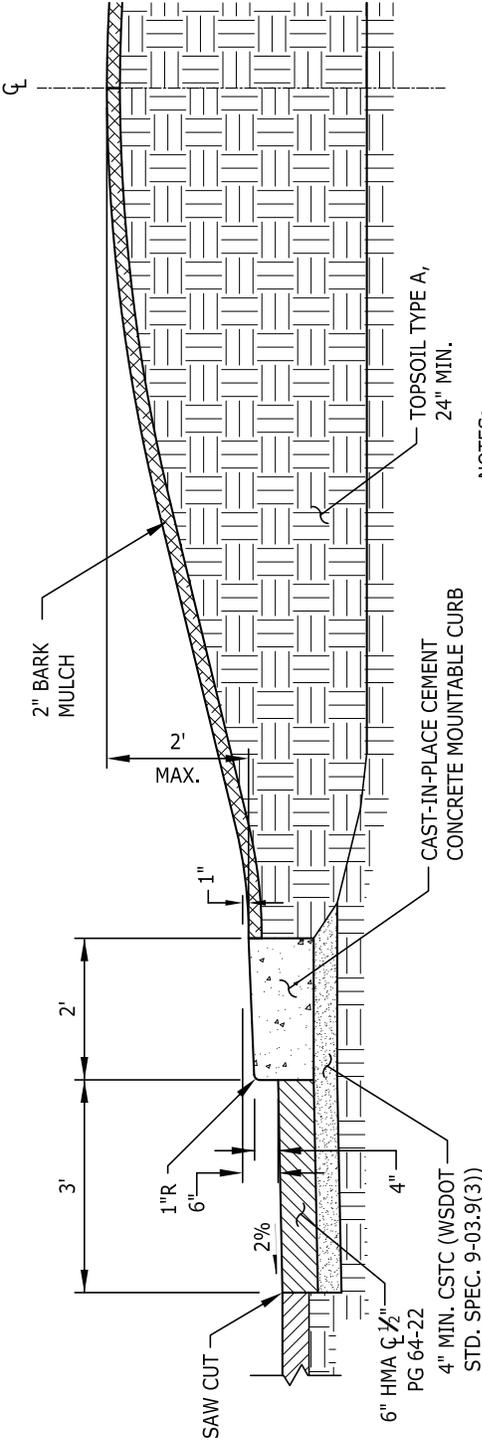
BACKFILL WITH TOPSOIL AND BARK (WSDOT STD. SPEC. 9-14.4(3))

CAST-IN-PLACE CEMENT CONCRETE MOUNTABLE CURB

THROUGH JOINTS:  
4 JOINTS FOR  $< 20'$  DIA.  
8 JOINTS FOR  $> 20'$  DIA.



TYPICAL TRAFFIC CIRCLE



NOTES:

1. LANDSCAPING TO BE TYPE IV PER KCC 15-07.050.
2. MONUMENT PROTECTION/PRESERVATION NOTIFY KENT SURVEYING PRIOR TO MONUMENT ADJUSTMENT. RAISE MONUMENT TO GRADE IN APPROPRIATE CASING.

MONUMENTS ADJUSTMENTS SHALL BE PER RCW 58.09.130 "MONUMENTS DISTURBED BY CONSTRUCTION ACTIVITIES -- PROCEDURE-- REQUIREMENTS."

TYPICAL SECTION A-A

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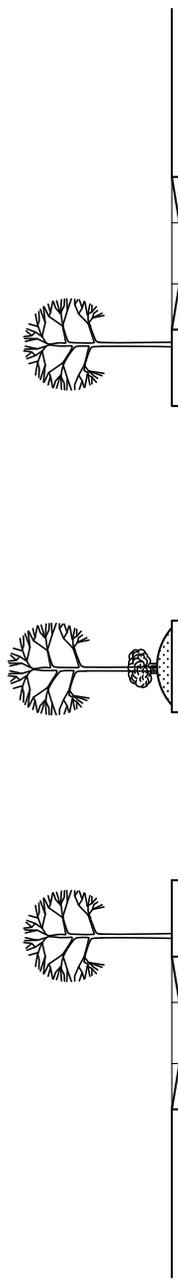
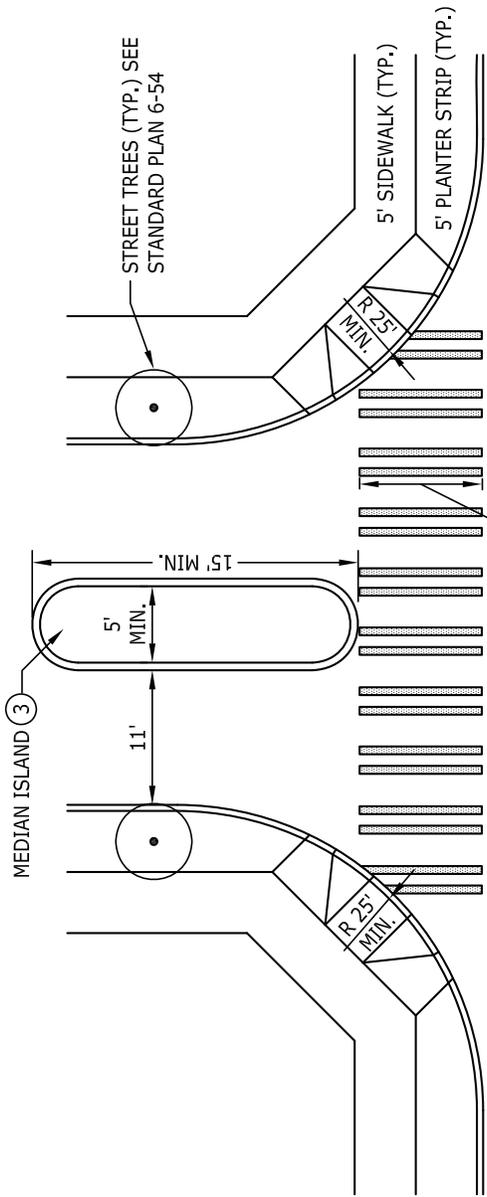


**CITY OF KENT**  
ENGINEERING DEPARTMENT

**TRAFFIC CALMING**  
**TRAFFIC CIRCLE**  
SHEET 2 OF 2

DESIGNED	DWH	SCALE	NONE	STANDARD PLAN
DRAWN	BB	DATE	-	
CHECKED				
APPROVED			ENGINEER	

**6-24**



**NOTES:**

1. FOR CURB RETURN RADIUS SEE TABLE 6-7
2. CURB RAMPS PER STANDARD PLAN 6-38
3. MEDIAN ISLAND SHALL BE CONSTRUCTED USING CEMENT CONCRETE CURB, SEE STANDARD PLAN 6-17
4. TYPE IV LANDSCAPING PER KCC 15.07.050 WITH STREET TREES REQ'D.

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**CITY OF KENT**  
ENGINEERING DEPARTMENT

**TRAFFIC CALMING  
GATEWAYS**

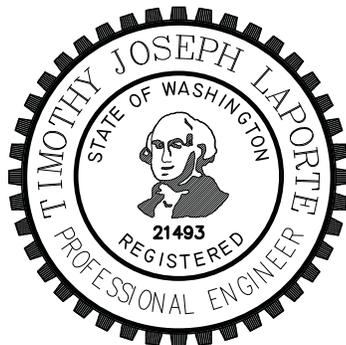
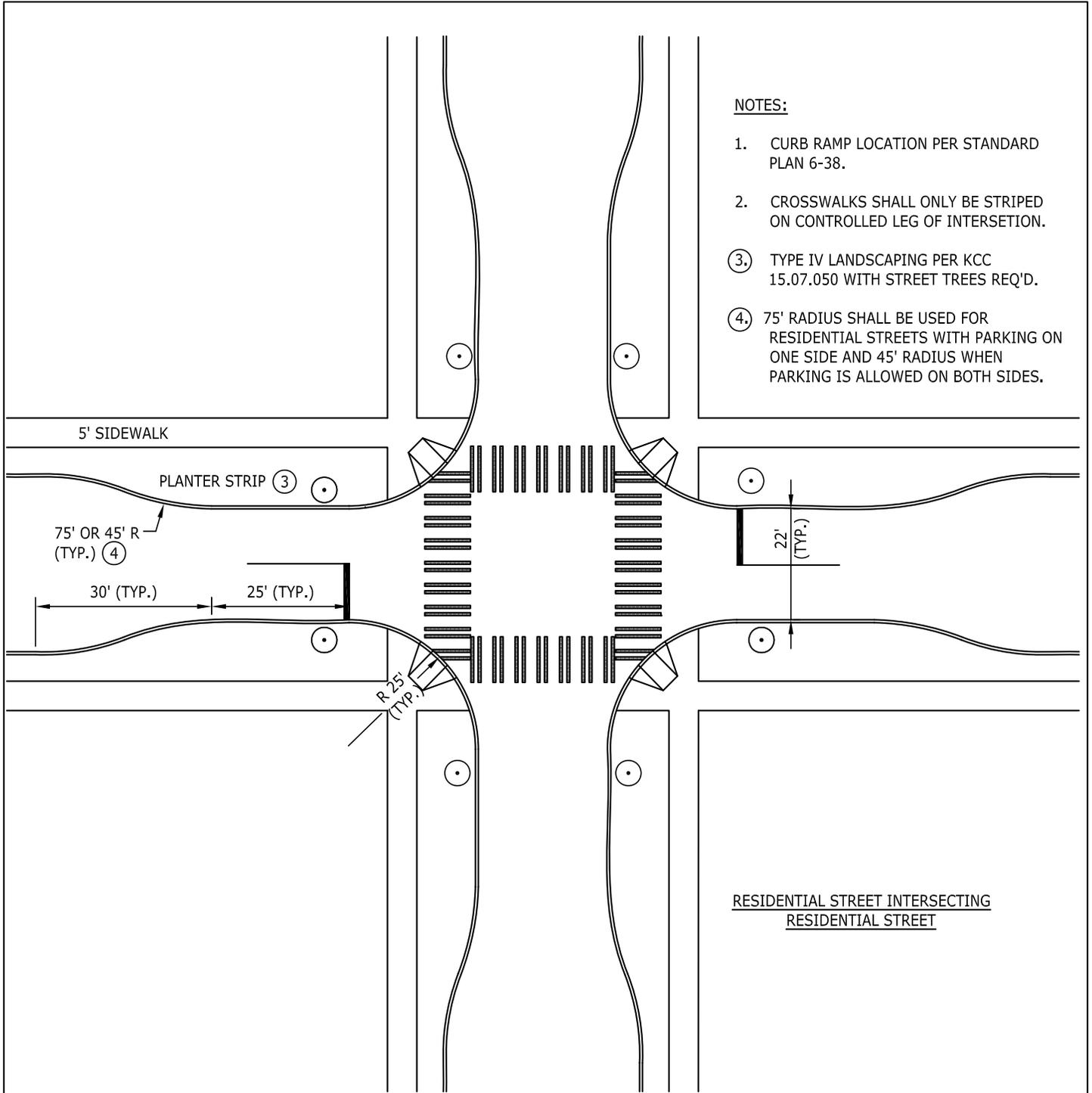
DESIGNED	DWH
DRAWN	BB
CHECKED	
APPROVED	

SCALE	NONE
DATE	
	ENGINEER

STANDARD PLAN
<b>6-25</b>

**NOTES:**

1. CURB RAMP LOCATION PER STANDARD PLAN 6-38.
2. CROSSWALKS SHALL ONLY BE STRIPED ON CONTROLLED LEG OF INTERSECTION.
- ③ TYPE IV LANDSCAPING PER KCC 15.07.050 WITH STREET TREES REQ'D.
- ④ 75' RADIUS SHALL BE USED FOR RESIDENTIAL STREETS WITH PARKING ON ONE SIDE AND 45' RADIUS WHEN PARKING IS ALLOWED ON BOTH SIDES.

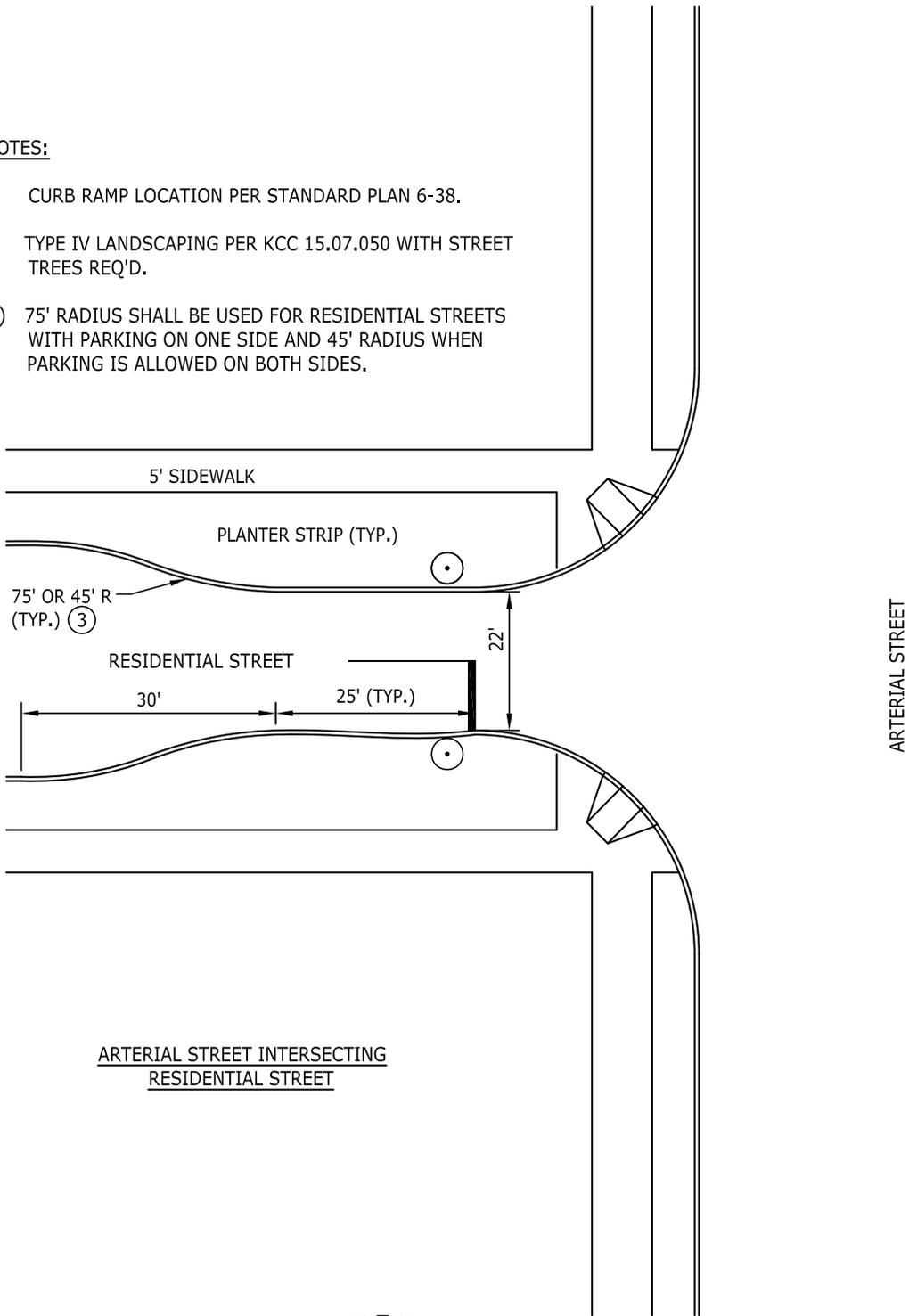


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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TRAFFIC CALMING RESIDENTIAL INTERSECTION NECKDOWNS</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-26</b>	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			

NOTES:

1. CURB RAMP LOCATION PER STANDARD PLAN 6-38.
2. TYPE IV LANDSCAPING PER KCC 15.07.050 WITH STREET TREES REQ'D.
- ③ 75' RADIUS SHALL BE USED FOR RESIDENTIAL STREETS WITH PARKING ON ONE SIDE AND 45' RADIUS WHEN PARKING IS ALLOWED ON BOTH SIDES.



ARTERIAL STREET INTERSECTING  
RESIDENTIAL STREET

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**CITY OF KENT**  
ENGINEERING DEPARTMENT  
**TRAFFIC CALMING**  
**ARTERIAL/RESIDENTIAL**  
**INTERSECTION NECKDOWNS**

DESIGNED DWH  
DRAWN BB  
CHECKED \_\_\_\_\_  
APPROVED \_\_\_\_\_

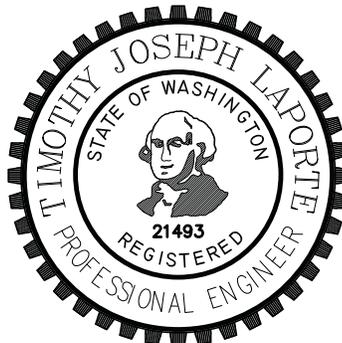
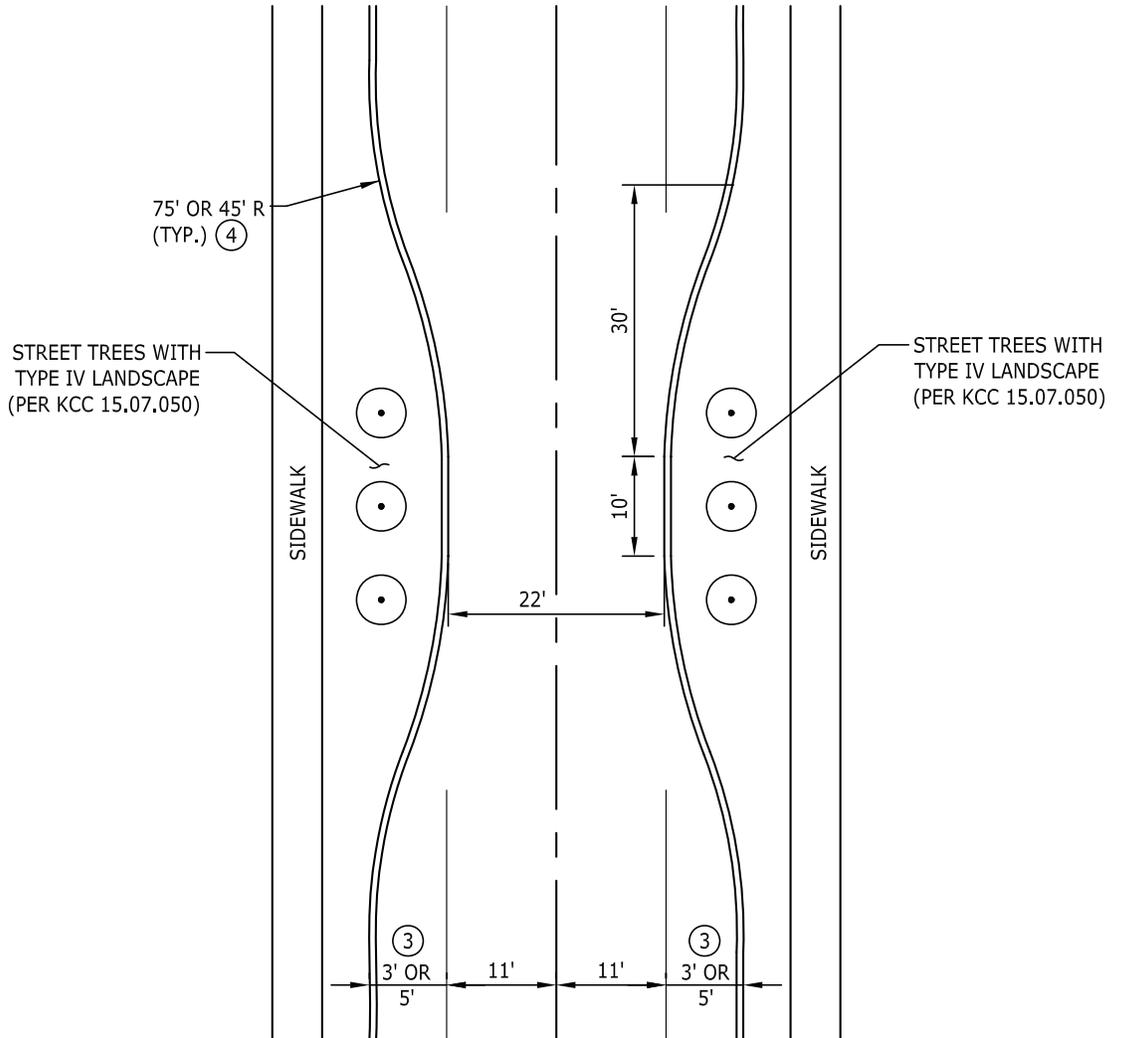
SCALE NONE  
DATE \_\_\_\_\_  
ENGINEER \_\_\_\_\_

STANDARD PLAN

**6-27**

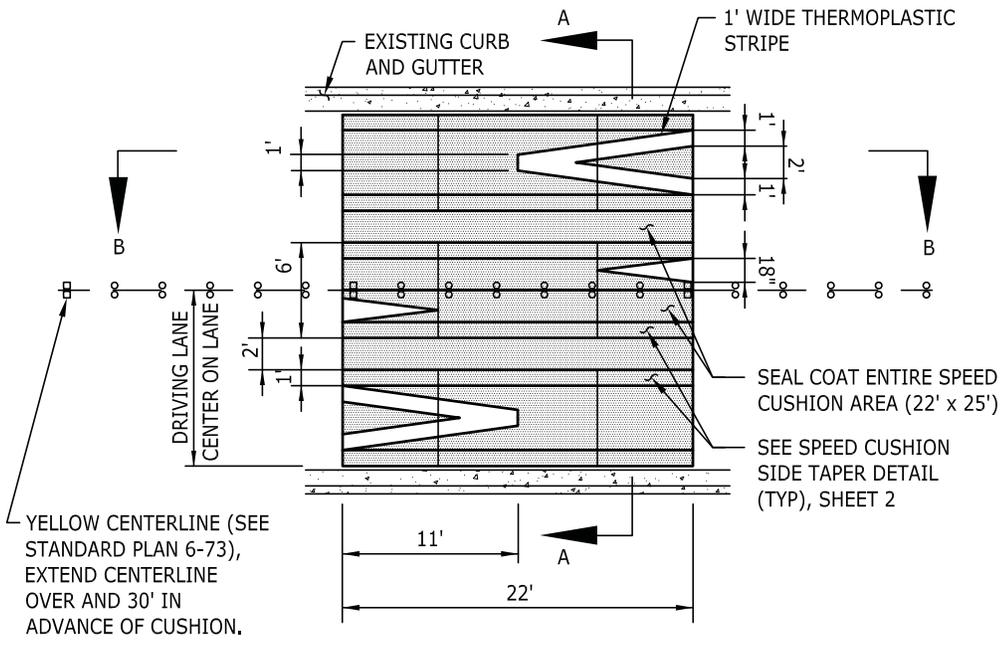
**NOTES:**

1. CHOKERS SHALL BE USED ONLY ON RESIDENTIAL STREETS.
2. CHOKERS SHALL BE SPACED A MAXIMUM OF 400' CENTER TO CENTER.
- ③ 3' SHALL BE USED FOR RESIDENTIAL STREETS WITH PARKING ON ONE SIDE AND 5' WHEN PARKING IS ALLOWED ON BOTH SIDES OF THE STREET.
- ④ 75' RADIUS SHALL BE USED FOR RESIDENTIAL STREETS WITH PARKING ON ONE SIDE AND 45' RADIUS WHEN PARKING IS ALLOWED ON BOTH SIDES.



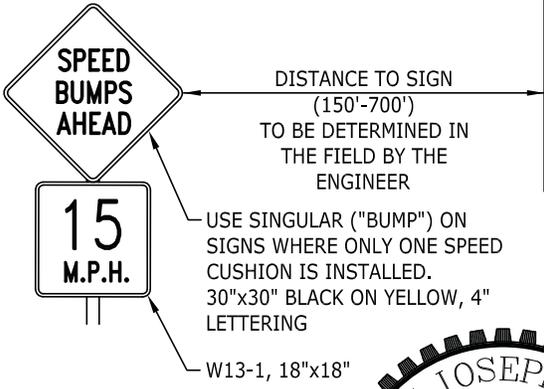
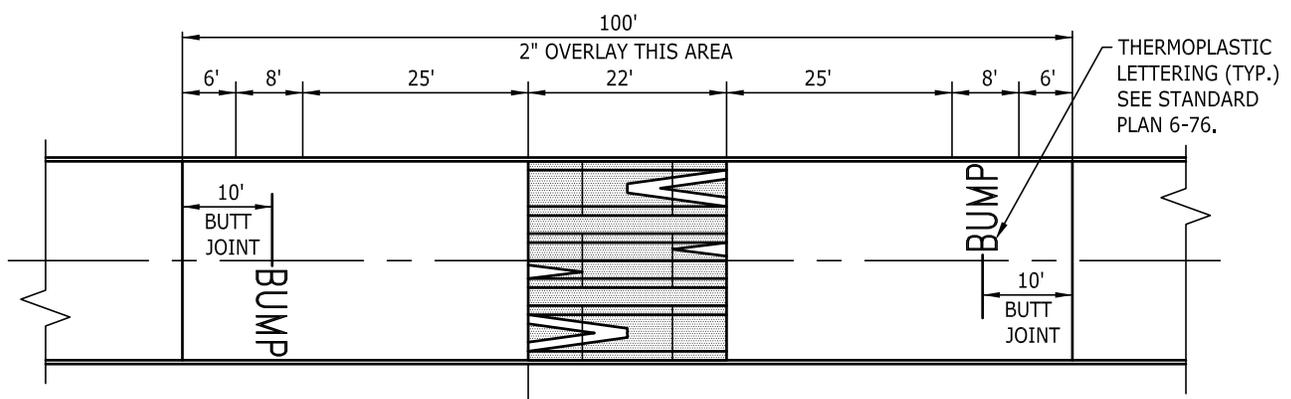
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TRAFFIC CALMING CHOKERS</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-28</b>	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			



MARKING DETAIL

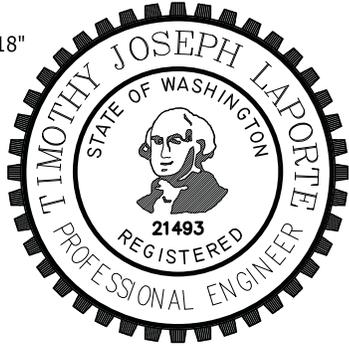
SPEED CUSHION  
NTS



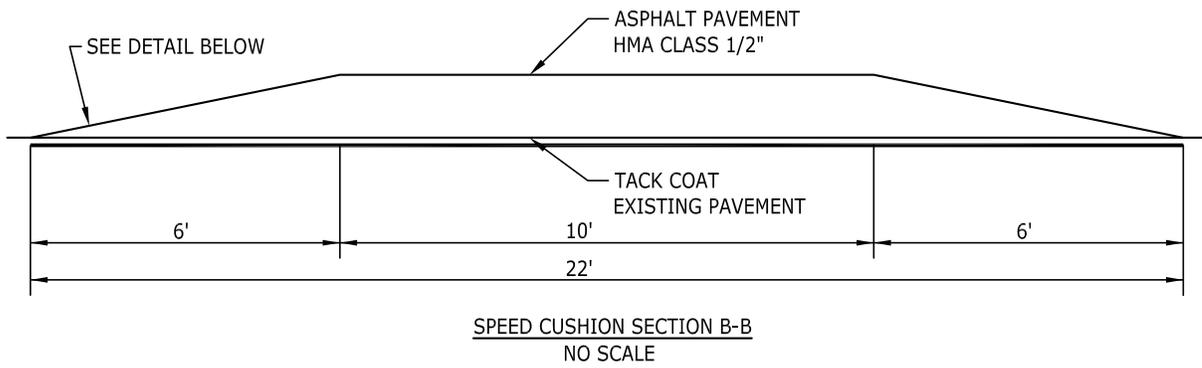
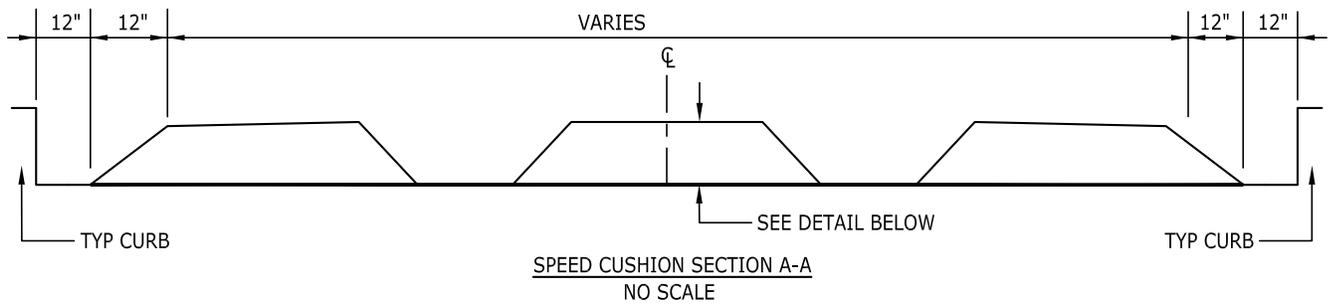
NOTES:

1. SIGNS AND MARKINGS TYPICAL BOTH DIRECTIONS.
2. SEE STANDARD PLANS 6-82 & 6-83 FOR SIGN INSTALLATION.
3. A TEMPLATE MUST BE USED IN SHAPING THE SPEED TABLE.
4. SPEED TABLE MUST BE MADE IN TWO LIFTS.
5. 2" OVERLAY NOT REQUIRED FOR NEW PAVEMENT OR EXISTING PAVEMENT DETERMINED TO BE IN GOOD CONDITION BY THE ENGINEER.

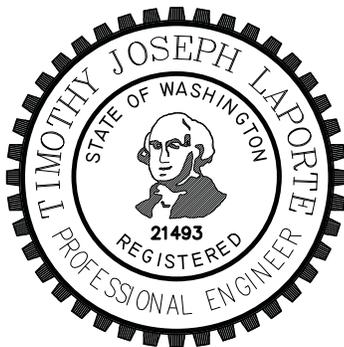
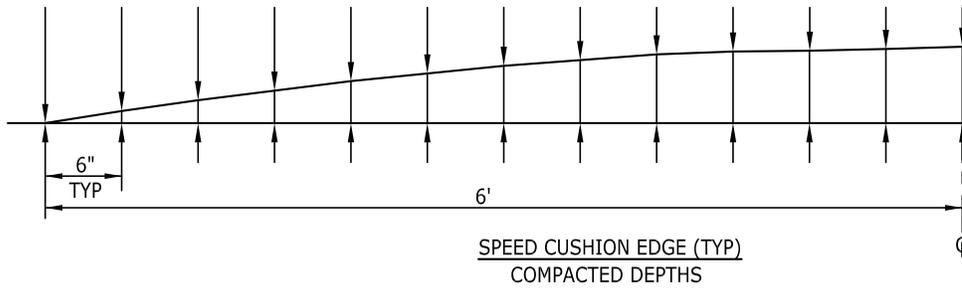
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT <b>TRAFFIC CALMING</b> <b>SPEED CUSHION</b> SHEET 1 OF 2	
DRAWN BB	DATE	<b>6-29</b>	
CHECKED	ENGINEER		
APPROVED			



0	0.64	1.22	1.75	2.22	2.64	3.00	3.31	3.56	3.75	3.89	3.97	4.00"	← 4" SPEED CUSHION
0	0.56	1.07	1.53	1.94	2.31	2.63	2.89	3.11	3.28	3.40	3.48	3.50"	← 3.5" SPEED CUSHION
0	0.48	0.92	1.31	1.67	1.98	2.25	2.48	2.67	2.81	2.92	2.96	3.00"	← 3" SPEED CUSHION

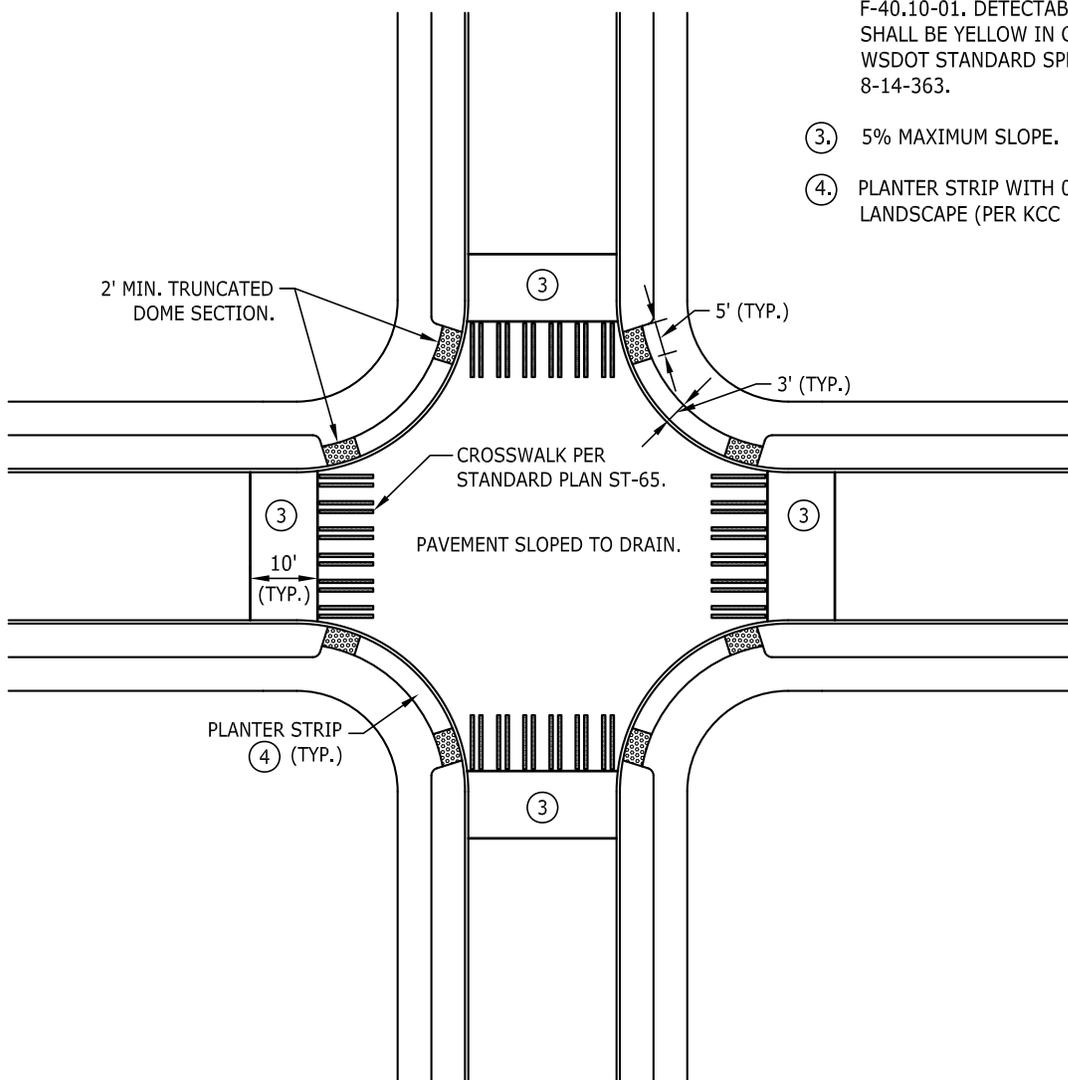


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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TRAFFIC CALMING SPEED CUSHION</b> SHEET 2 OF 2	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-29</b>	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			

**NOTES:**

1. DO NOT USE ON STREETS WITH GRADES ABOVE 7%.
2. TRUNCATED DOME PATTERN SHALL BE WSDOT F-40.10-01. DETECTABLE WARNING PATTERN SHALL BE YELLOW IN COMPLIANCE WITH WSDOT STANDARD SPECIFICATIONS 8-14-363.
- ③ 5% MAXIMUM SLOPE.
- ④ PLANTER STRIP WITH 0.5' TOPSOIL. TYPE IV LANDSCAPE (PER KCC 15.07.050) REQUIRED

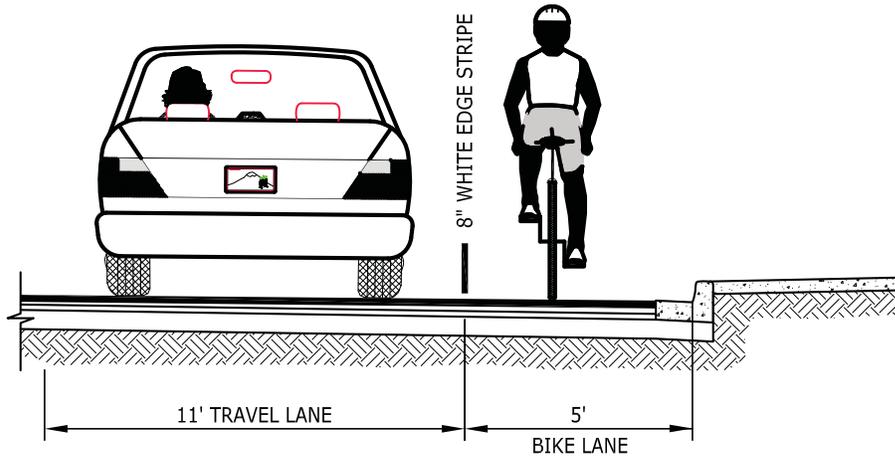


RESIDENTIAL STREET INTERSECTING  
RESIDENTIAL STREET

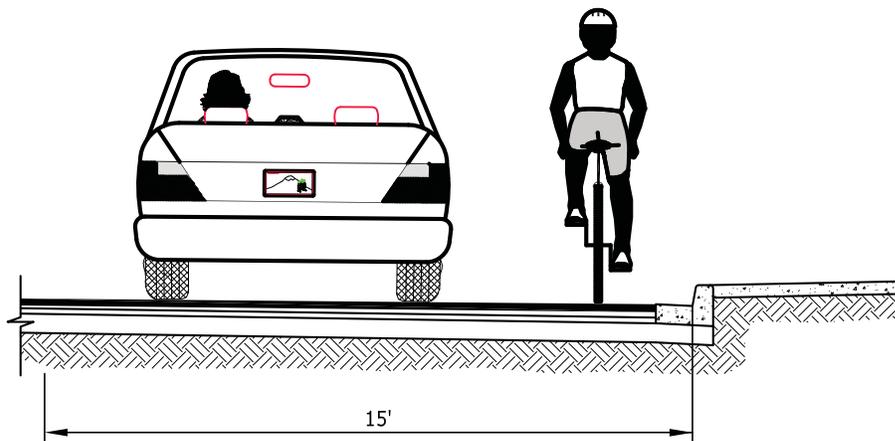


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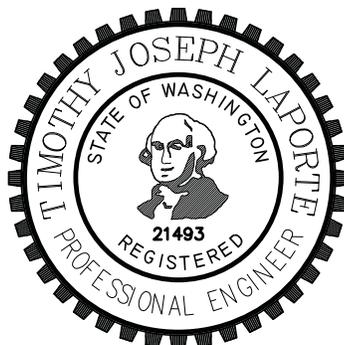
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TRAFFIC CALMING RAISED INTERSECTION</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-30</b>	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			



BIKE LANE

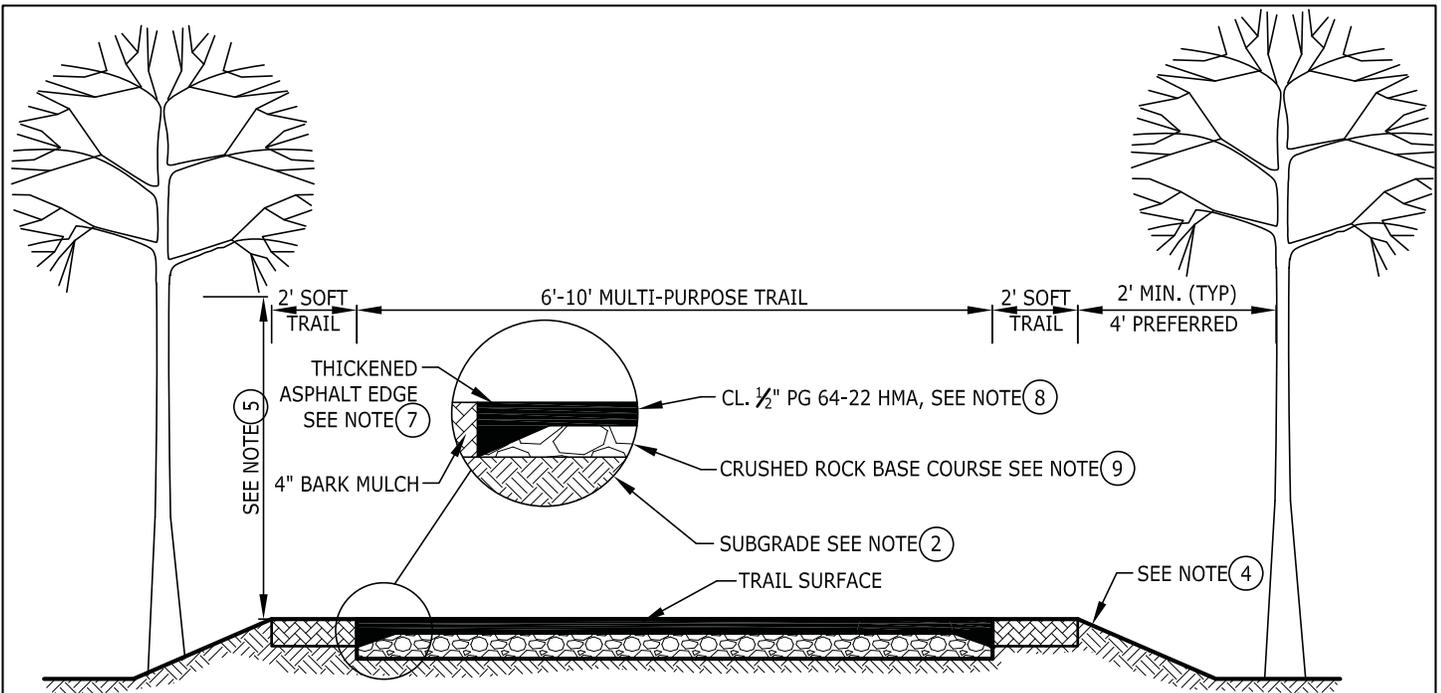


SIGNED SHARED TRAFFIC LANE

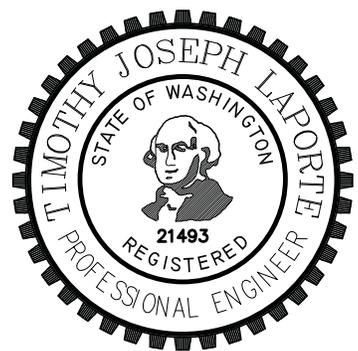


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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>BIKE ROUTE – SIGNED SHARED ROADWAY</b>	
DESIGNED: DWH	SCALE: NONE	STANDARD PLAN  <b>6-31</b>	
DRAWN: BB	DATE: -		
CHECKED: _____	ENGINEER		
APPROVED: _____			

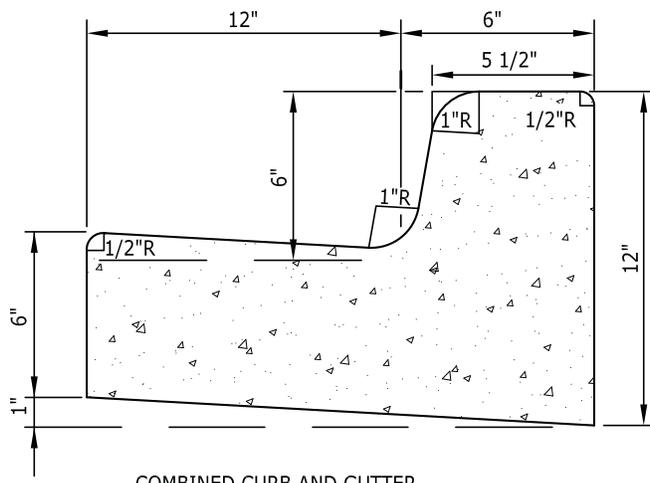


1. TRAIL CENTERLINE TO BE STAKED IN THE FIELD BY CONTRACTOR AND APPROVED BY THE ENGINEER.
2. SUBGRADE SHALL CONSIST OF UNDISTURBED NATIVE SOIL COMPACTED TO 95% DENSITY. SUBGRADE TO BE TREATED WITH AN APPROVED HERBICIDE PRIOR TO INSTALLATION OF ASPHALT. FILTER FABRIC MAY BE REQUIRED BETWEEN SUBGRADE AND BASE COURSE.
3. ROOT BARRIER MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
4. MAXIMUM TRAIL SIDE SLOPE IS 3:1. GRADE WITH COMPACTED TOPSOIL BACKFILL AS REQUIRED. BOTTOM OF SIDESLOPE SHALL BE GRADED TO PREVENT ACCUMULATION OF RUN-OFF.
5. MINIMUM BRANCH CLEARANCE ABOVE TRAIL SURFACE IS 8.5 FEET. FOR EQUESTRIAN TRIALS MINIMUM BRANCH CLEARANCE FROM TRAIL SURFACE IS 10 FEET.
6. MAXIMUM CROSS-SLOPE FOR TRAIL SURFACE IS 2%.
7. TRAIL SHALL HAVE THICKENED ASPHALT EDGES FOR EROSION PROTECTION: 6" (THICK) x 10" (WIDE) MINIMUM.
8. ASPHALT PAVEMENT SHALL BE HMA CL. 1/2" PG 64-22. THICKNESS TO BE SPECIFIED BY THE ENGINEER. MINIMUM THICKNESS IS 3".
9. BASE COURSE SHALL BE 5/8" MINUS CRUSHED ROCK COMPACTED TO 95% DENSITY. THICKNESS TO BE SPECIFIED BY THE ENGINEER. MINIMUM THICKNESS IS 4".
10. TRAIL WIDTH TO BE DETERMINED BY THE ENGINEER.
11. PAVEMENT MARKINGS AND SIGNS SHALL FOLLOW THE MUTCD AND AASHTO "GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES."

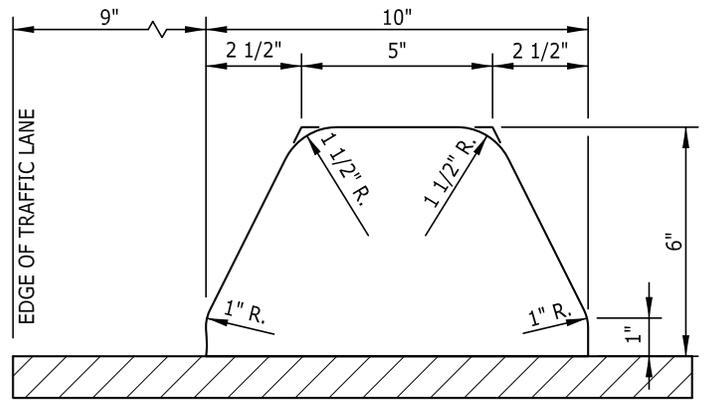


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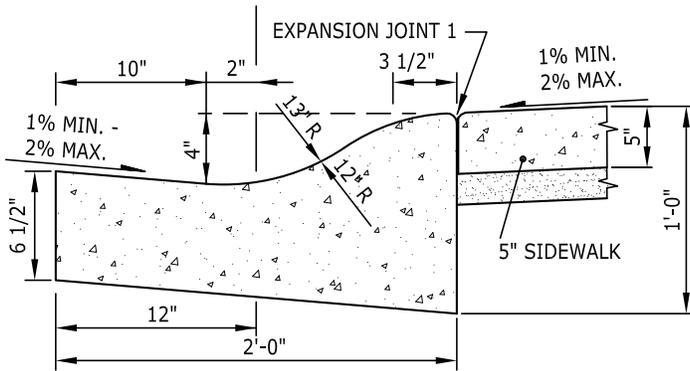
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TRAIL</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN  <b>6-32</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED <u>-</u>	ENGINEER <u>-</u>		
APPROVED <u>-</u>			



**COMBINED CURB AND GUTTER**



**CONCRETE EXTRUDED CURB**

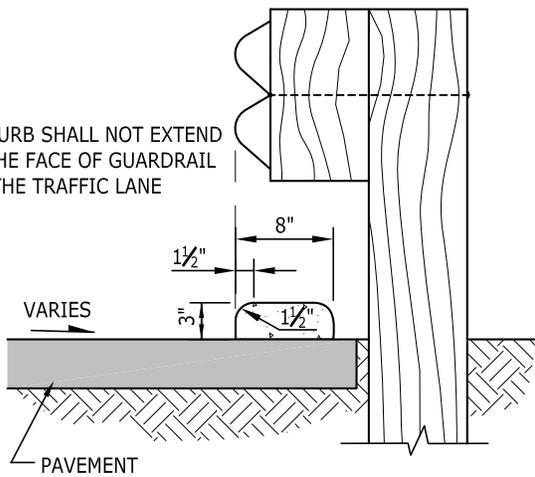


**ROLLED CURB**

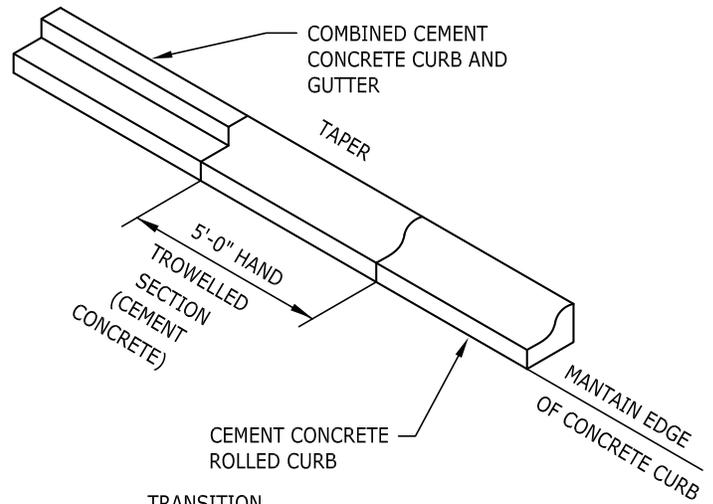
**NOTES:**

1. CONCRETE CLASS 3000 IS REQUIRED.
2. ROLLED CURB MAY ONLY BE USED WITHIN A CUL-DE-SAC.
3. IN ROADWAY SECTIONS WITH SUPER ELEVATION, THE GUTTER PAN WILL MATCH THE ADJACENT PAVEMENT SLOPE.
4. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.

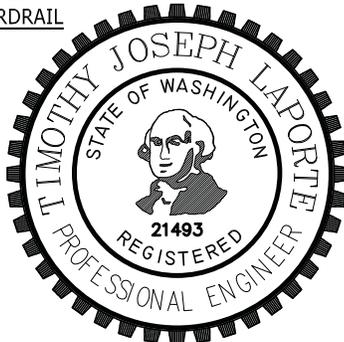
**NOTE:**  
FACE OF CURB SHALL NOT EXTEND BEYOND THE FACE OF GUARDRAIL TOWARD THE TRAFFIC LANE



**EXTRUDED CONCRETE CURB UNDER GUARDRAIL**

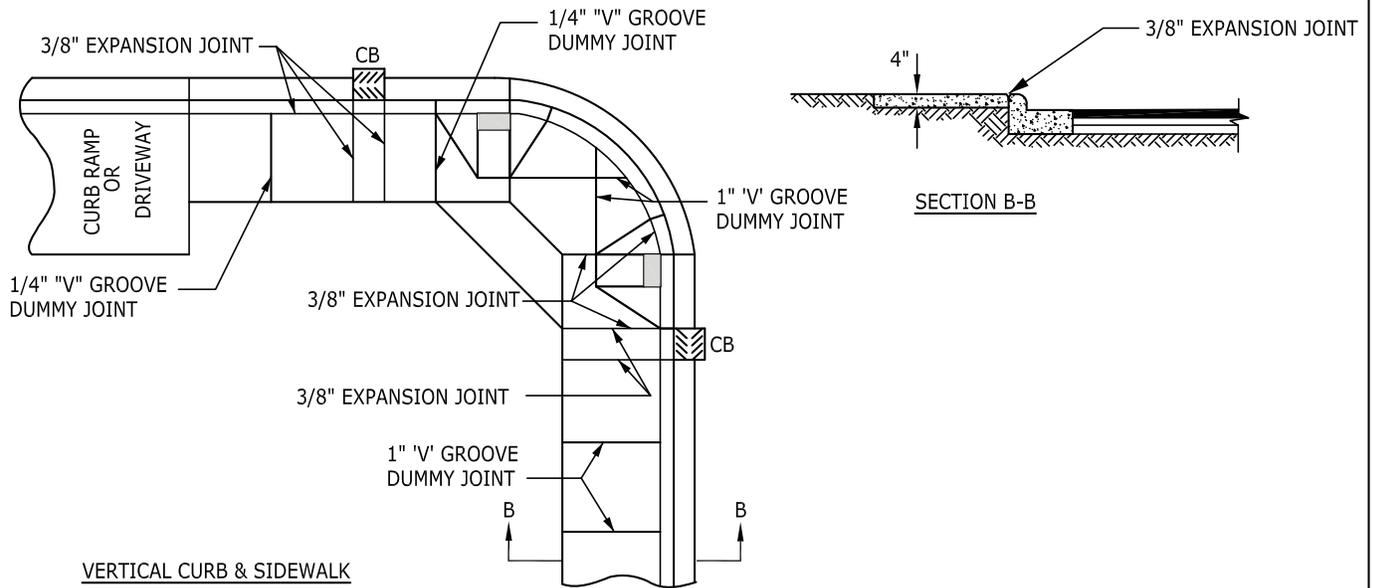


**TRANSITION**

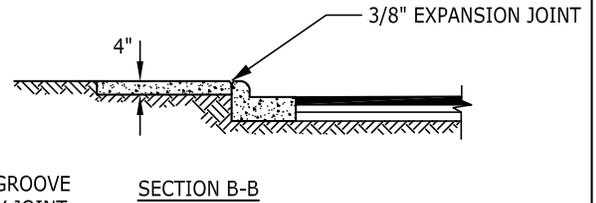


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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>CEMENT CONCRETE CURBS</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>STANDARD PLAN</b>  <b>6-33</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED <u>-</u>	ENGINEER <u>-</u>		
APPROVED <u>-</u>			



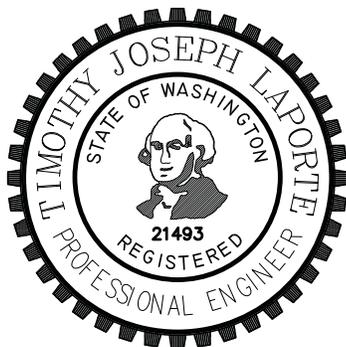
VERTICAL CURB & SIDEWALK



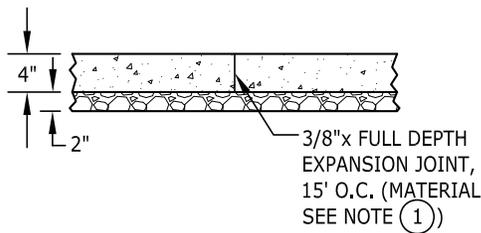
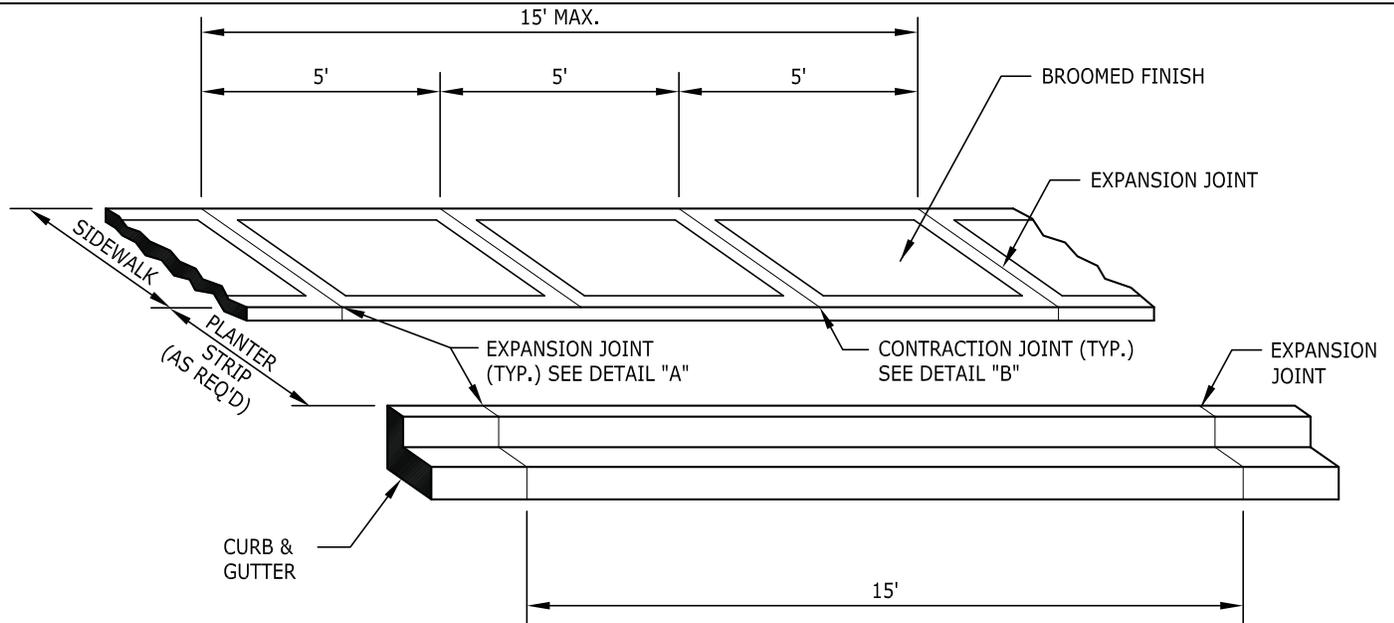
**NOTES:**

1. AN EXPANSION JOINT CONSISTING OF 3/8" x FULL DEPTH OF PREMOLDED JOINT MATERIAL SHALL BE PLACED AROUND FIRE HYDRANTS; POLES, POSTS, AND UTILITY CASTINGS AND ALONG WALLS OR STRUCTURES IN PAVED AREAS. JOINT MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M33 (ASTM D994).
2. AN EXPANSION JOINT CONSISTING OF 3/8" OR 1/4" x FULL DEPTH OF PREMOLDED JOINT MATERIAL SHALL BE PLACED IN CURBS AND SIDEWALKS AT A MINIMUM OF 15 FOOT INTERVALS AND AT SIDES OF DRAINAGE INLETS. WHEN CURBS AND/OR SIDEWALKS ARE PLACED BY SLIP-FORMING, A PREMOLDED STRIP UP TO 1/2" THICK AND UP TO FULL DEPTH MAY BE USED.
3. EXPANSION JOINTS IN SIDEWALK SHALL BE LOCATED SO AS TO MATCH THE JOINTS IN THE CURB WHETHER SIDEWALK IS ADJACENT TO CURB OR SEPARATED BY PLANTING STRIP.
4. CONTRACTION JOINTS CONSISTING OF 1/4" V-GROOVES SHALL BE MADE IN SIDEWALK AT FIVE FOOT INTERVALS, INTERMEDIATE TO THE EXPANSION JOINTS.
5. AS ALTERNATIVE TO EXPANSION JOINTS AROUND STRUCTURES, REINFORCING BARS MAY BE EMBEDDED IN CONCRETE ON FOUR SIDES OF STRUCTURES.
6. INTERFACE BETWEEN CURB AND ADJACENT SIDEWALK ON INTEGRAL POUR CONSTRUCTION SHALL BE FORMED WITH 1/4" RADIUS EDGING TOOL. ON SEPARATE POUR CONSTRUCTION AN EXPANSION JOINT CONSISTING OF 3/8" OR 1/4" x FULL DEPTH OF PREMOLDED JOINT MATERIAL SHALL BE PLACED BETWEEN THE CURB OR THICKENED EDGE AND THE ADJACENT SIDEWALK.
7. A 1" EDGED GROOVE MAY REPLACE THE 3/8" EXPANSION JOINT AT INTERFACE BETWEEN CURB AND ADJACENT SIDEWALK FOR SEPARATE POUR CONSTRUCTION.

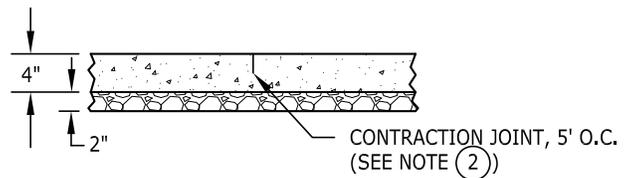
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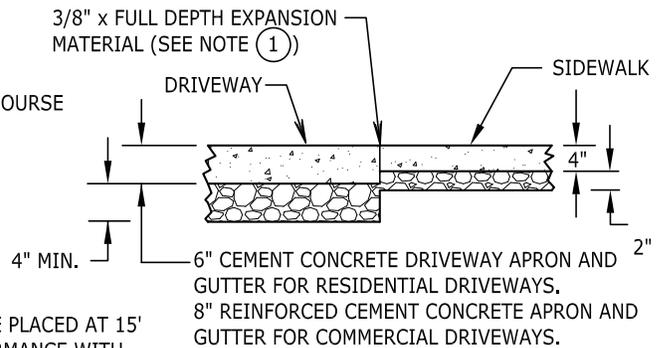
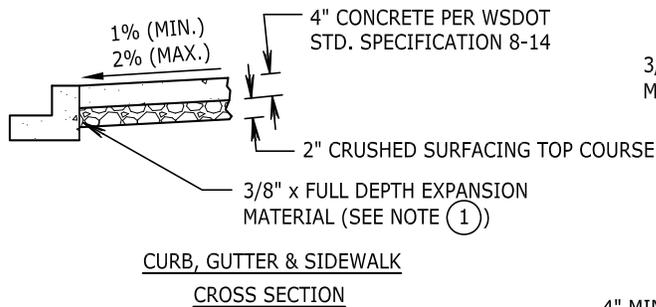
		<b>CITY OF KENT</b>	
		ENGINEERING DEPARTMENT	
		<b>CURB AND SIDEWALK JOINTS</b>	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED			
APPROVED			ENGINEER
			<b>6-34</b>



DETAIL "A"  
EXPANSION JOINT



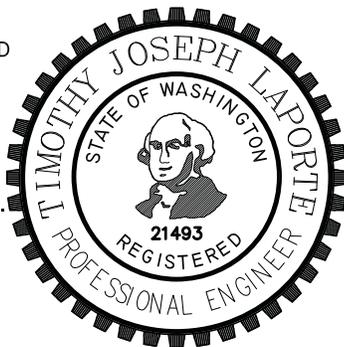
DETAIL "B"  
CONTRACTION JOINT



DRIVEWAY CROSS SECTION

NOTES:

1. EXPANSION JOINT MATERIAL TO BE 3/8" x FULL DEPTH AND SHALL BE PLACED AT 15' O.C. SPACING. ELASTOMETRIC JOINT MATERIAL SHALL BE IN CONFORMANCE WITH WSDOT STD. SPECIFICATION SECTION 9-04.1 (4) AN ALTERNATE OF PLASTIC BOND BREAKER MATERIAL WILL BE ALLOWED.
2. CONTRACTION JOINT SHALL BE 1/4" WIDE BY 2" DEEP AT 5' SPACING.
3. EXPANSION JOINTS SHALL BE INSTALLED IN CURB & GUTTER AND SIDEWALK AT P.C. & P.T. AT ALL CURB RETURNS AND ALL ANGLE POINTS.
4. FORM & SUB-GRADE INSPECTION REQUIRED BEFORE POURING CONCRETE.
5. EXPANSION JOINTS IN SIDEWALKS AND CURBS SHALL BE ALIGNED WITH EACH OTHER AND NOT OFFSET.
6. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>EXPANSION AND CONTRACTION JOINTS</b>	
DESIGNED: DWH	SCALE: NONE	STANDARD PLAN <b>6-35</b>	
DRAWN: BB	DATE: -		
CHECKED: _____	ENGINEER		
APPROVED: _____			

PROVIDE MEDIUM BROOM FINISH WITH ALTERNATING DIRECTION OF BROOM STROKE TO CREATE A "PARQUET" PATTERN. PARQUET PATTERN TO BE CREATED IN THE FIELD WITH REGARD TO EQUAL SPACING OF ALTERNATING PATTERN BETWEEN 6" SMOOTH TROWEL FINISH BORDER.

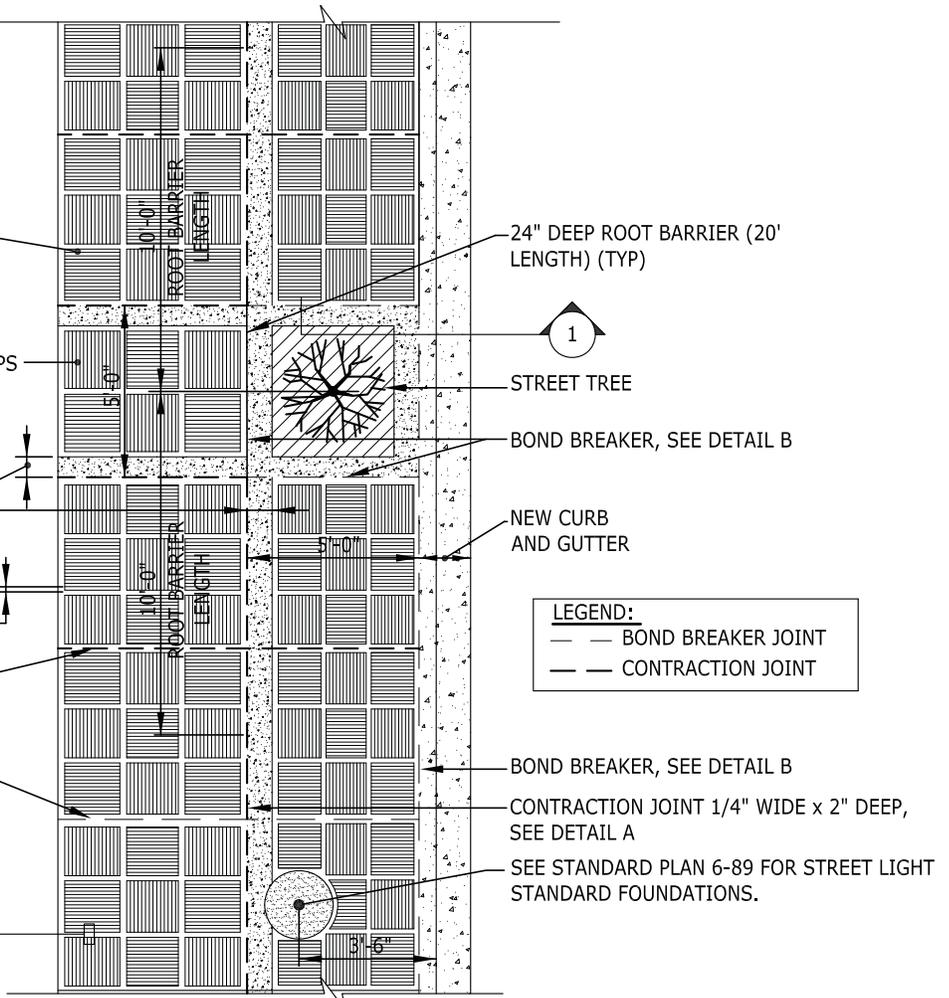
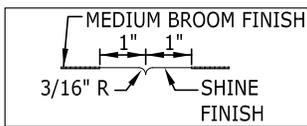
NOTE:  
EXCLUDE SCORE PATTERN ACROSS DRIVEWAYS AND WHEELCHAIR RAMPS

6" WIDE SMOOTH TROWEL FINISH (TYP)

2" WIDE TROWEL JOINT (TYP)

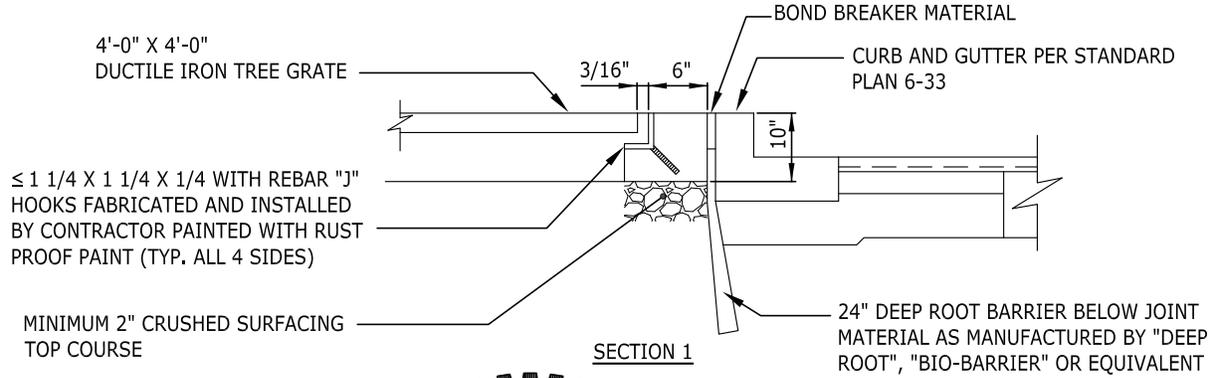
CONTRACTION JOINT 1/4" WIDE x 2" DEEP AT 5' O.C. SEE DETAIL A

3/8" X FULL DEPTH BOND BREAKER JOINT AT 15' O.C. (TYP) OR AS DIRECTED BY ENGINEER, SEE BELOW

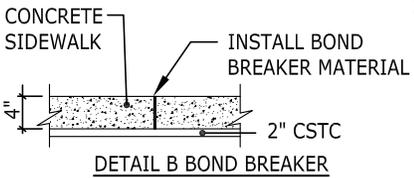
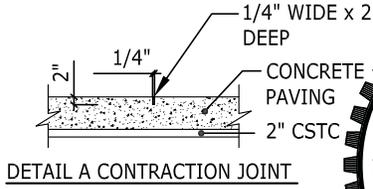


**LEGEND:**  
— — BOND BREAKER JOINT  
— — CONTRACTION JOINT

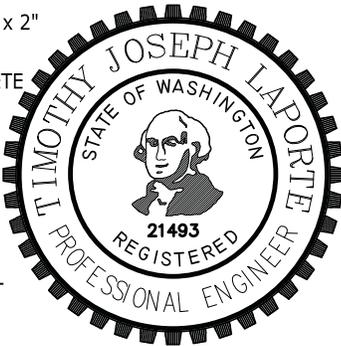
PLAN VIEW



SECTION 1

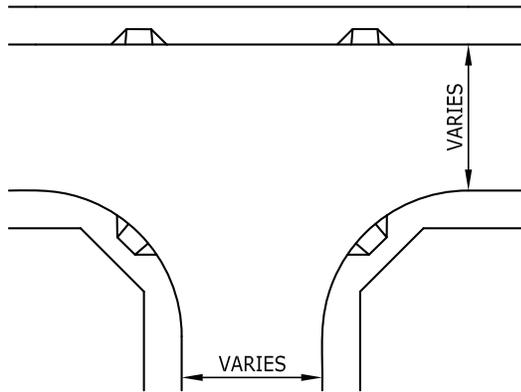


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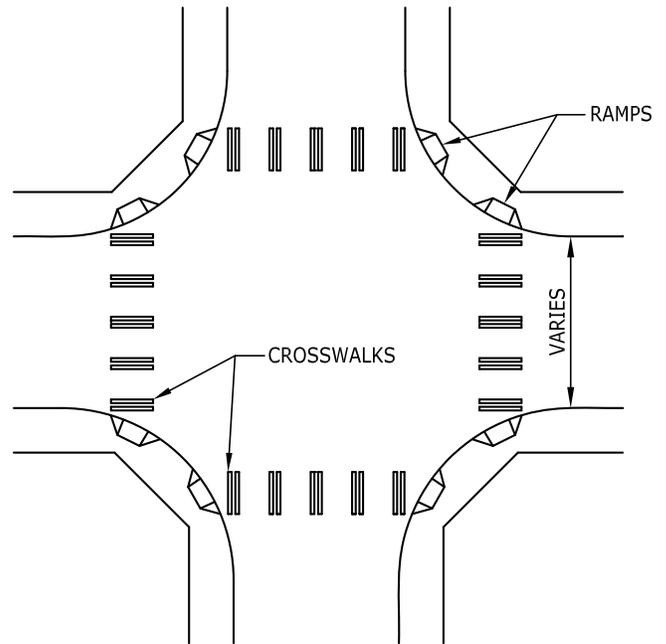
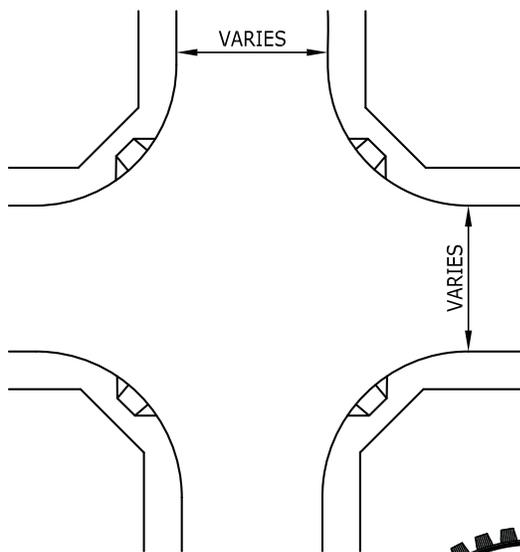
<b>CITY OF KENT</b> ENGINEERING DEPARTMENT		
<b>DOWNTOWN SIDEWALK</b>		
DESIGNED: DWH	SCALE: NONE	STANDARD PLAN
DRAWN: BB	DATE: -	<b>6-36</b>
CHECKED: _____	ENGINEER	
APPROVED: _____		





ACCEPTABLE RAMP LOCATIONS  
FOR RETROFIT OR ALTERATION

NON ARTERIAL RAMP LOCATIONS

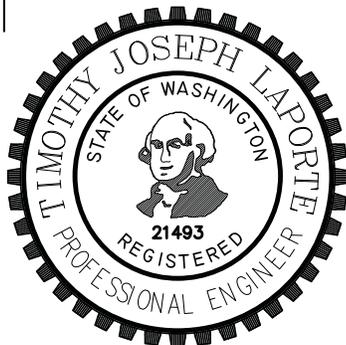


ARTERIAL RAMP LOCATIONS  
FOR NEW CONSTRUCTION  
OR STANDARD RECONSTRUCTION

NOTES:

1. CATCH BASIN AND INLETS SHALL BE OUTSIDE THE CURB RAMP (32 IN. MIN. CLEARANCE FROM RAMP).
2. CARE SHALL BE TAKEN TO KEEP THE RAMP FROM CONFLICTING WITH HYDRANTS, POLES, INLETS, AND OTHER UTILITIES.
3. CONSTRUCT RAMP IN ACCORDANCE WITH WSDOT 40.10-01 THRU 42.10-00.
4. CROSSWALKS ARE NOT ALWAYS MARKED.
5. WHEN RAMPS ARE CONSTRUCTED ON THE SIDE OF STREET, RAMPS SHALL BE ALIGNED WITH COMPANION CROSSINGS ON OPPOSITE SIDE OF STREET.

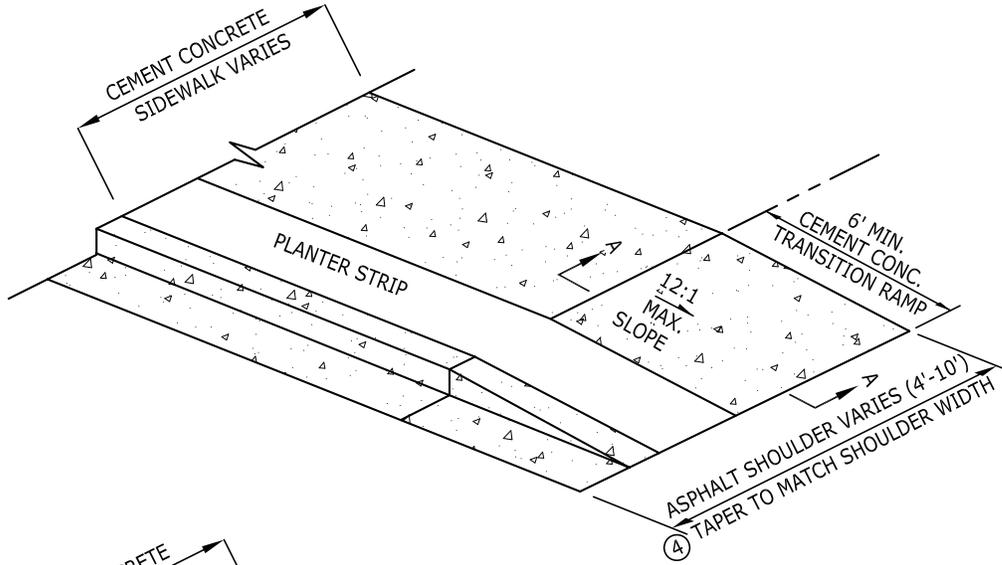
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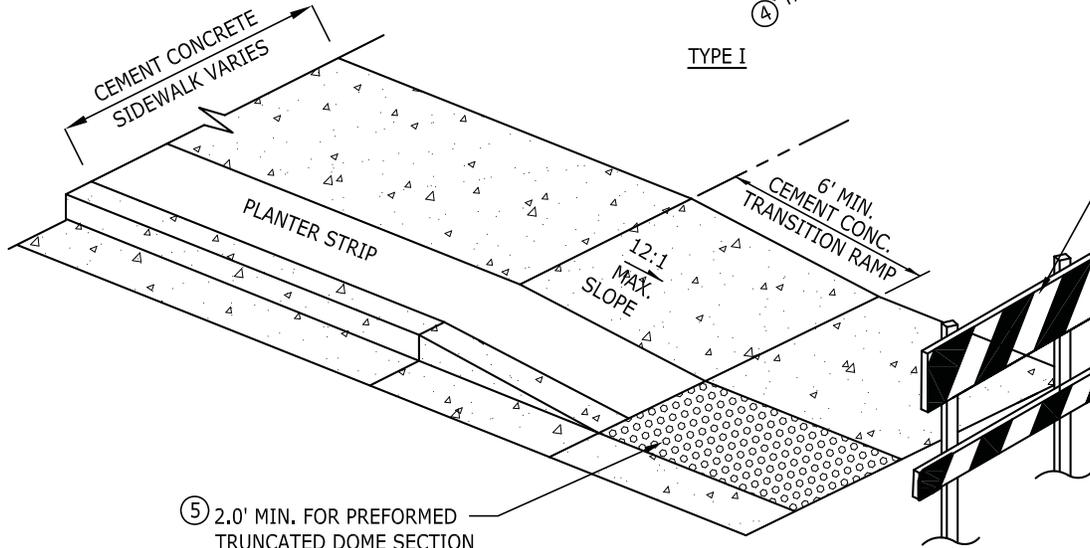
**CITY OF KENT**  
ENGINEERING DEPARTMENT

**CURB RAMP LOCATIONS**

DESIGNED: DWH	SCALE: NONE	STANDARD PLAN
DRAWN: BB	DATE: -	<b>6-38</b>
CHECKED: _____	ENGINEER	
APPROVED: _____		

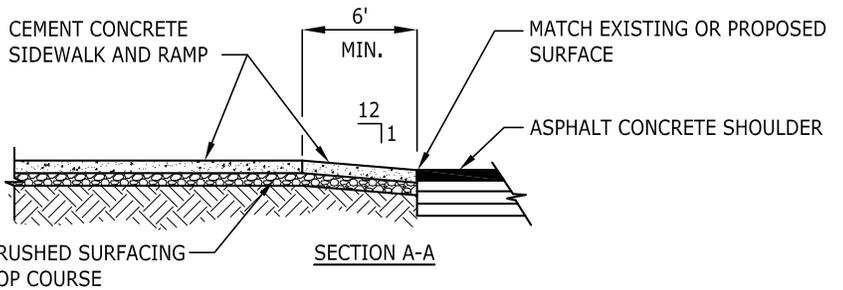


TYPE I



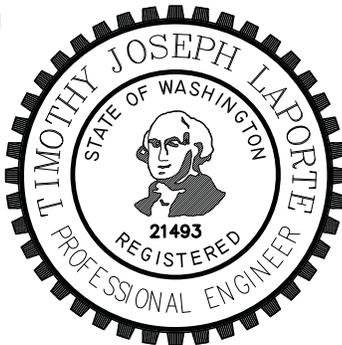
TYPE II

PERMANENT TYPE II BARRICADE SEE STD. PLAN 6-71



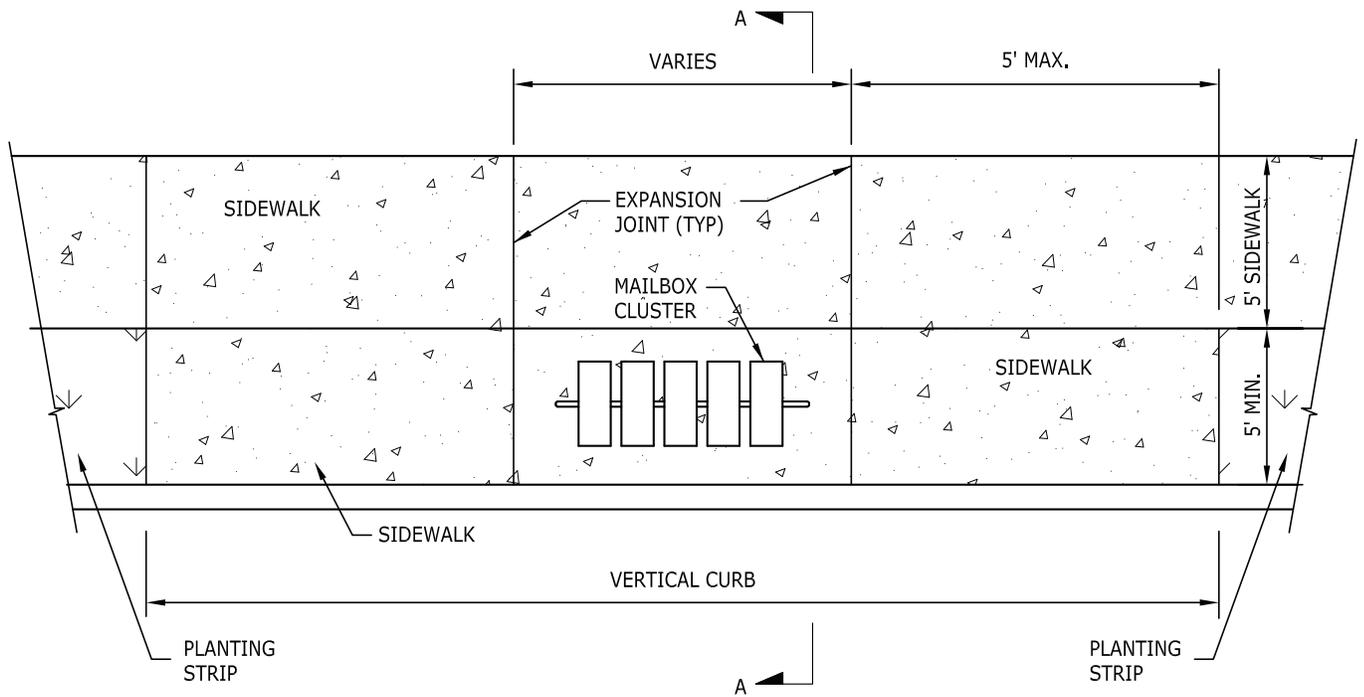
**NOTES:**

1. SEE ROADWAY CROSS SECTION DETAILS FOR SIDEWALK WIDTHS.
2. SHOULDER SHALL BE SURFACED TO MATCH ADJACENT ROADWAY; PAVED SHOULDER SLOPE SHALL MATCH CROWN SLOPE OR 0.02 FT./FT.
3. SEE STANDARD PLAN 6-34 FOR CURB AND SIDEWALK JOINTS.
- ④. 10' MIN. ASPHALT TAPER IF NO PAVED SHOULDER.
- ⑤. RAMP SHALL UTILIZE A PREFORMED TRUNCATED DOME PATTERN. (WSDOT 40.10.01) DETECTABLE WARNING PATTERN SHALL BE YELLOW IN COMPLIANCE WITH WSDOT STANDARD SPECIFICATIONS 8-14.3(3)

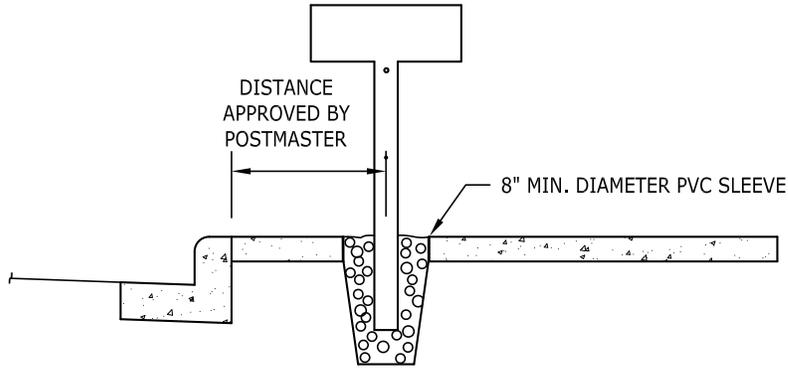


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		<b>CITY OF KENT</b>	
		ENGINEERING DEPARTMENT	
<b>CEMENT CONCRETE SIDEWALK TRANSITION TO ASPHALT SHOULDER</b>			
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	
CHECKED			
APPROVED		ENGINEER	
			<b>STANDARD PLAN</b>
			<b>6-39</b>



PLAN



SECTION A-A

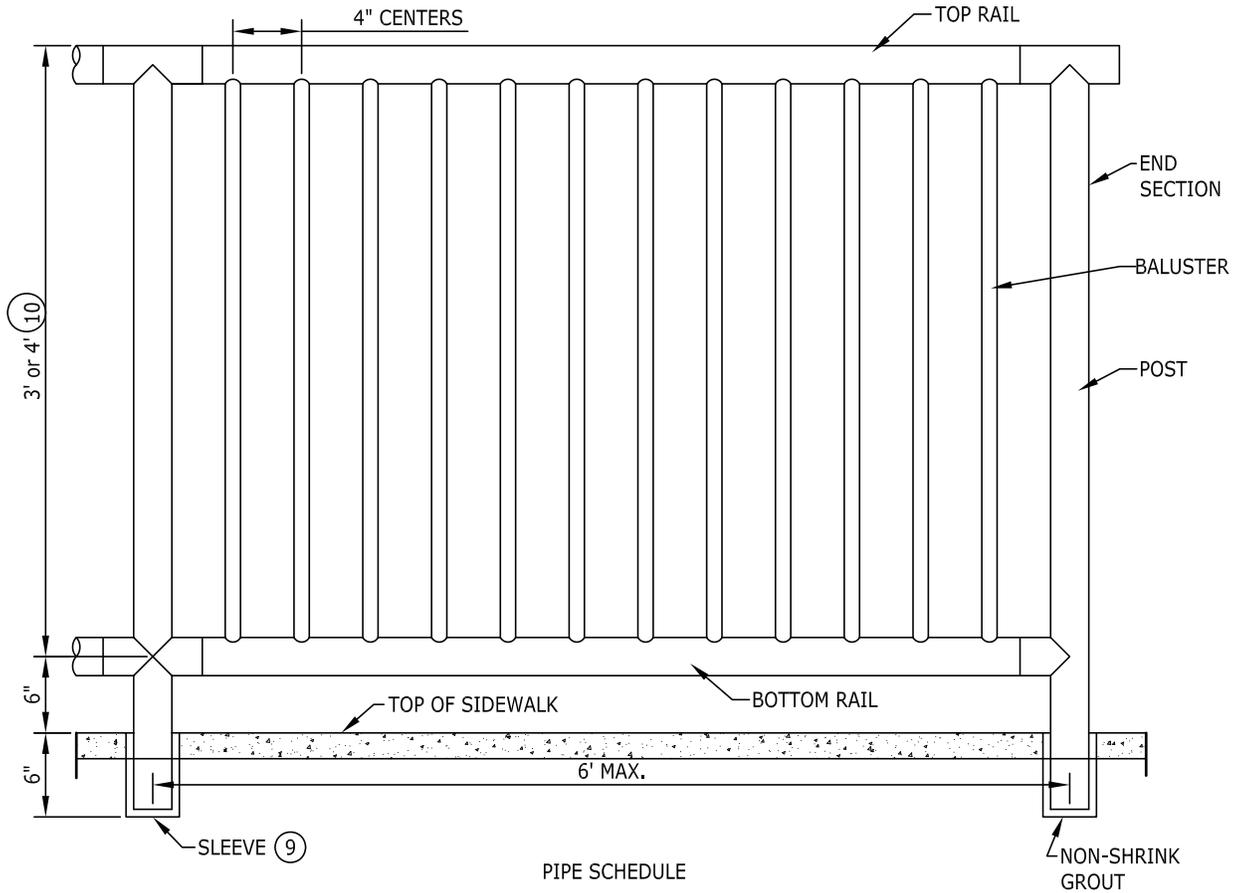
**NOTES:**

1. CURB AND GUTTER INSTALLATION TO BE PER STANDARD PLANS 6-33 AND 6-34.
2. SIDEWALK SCORE MARKS TO BE PER STANDARD PLANS 6-34 AND 6-35.
3. MAIL BOX INSTALLATION TO BE PER STANDARD PLAN 6-70.
4. ALL LOCATIONS TO BE APPROVED BY THE POSTMASTER.



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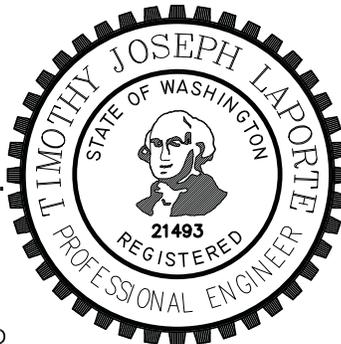
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>SIDEWALK FOR MAILBOX CLUSTER</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-40</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



**NOTES:**

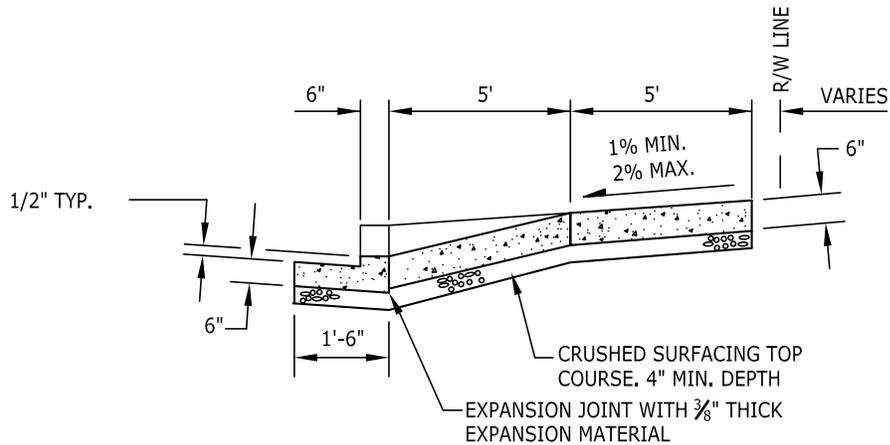
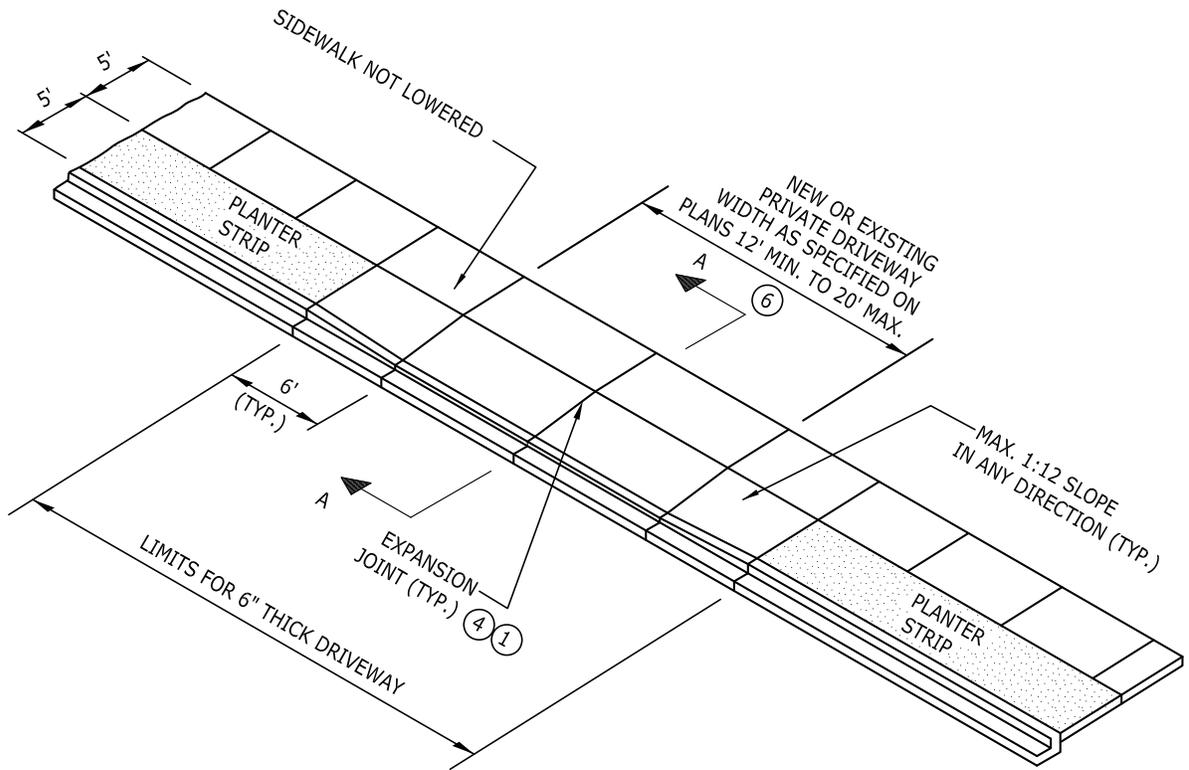
1. RAILING SHALL BE CV PIPE RAIL, GALVANIZED STEEL OR APPROVED EQUIVALENT. INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS.
2. SHOP DRAWINGS OF RAILING SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL SHOWING COMPLETE DIMENSIONS AND DETAILS OF FABRICATION AND INCLUDING AN ERECTION DIAGRAM. MATERIALS BEING USED SHALL BE SPECIFIED IN THE SHOP DRAWINGS.
3. ALL GALVANIZED STEEL 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 GALVANIZED STEEL SHALL BE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 6-03.3(25)
8. ALLOW FOR EXPANSION AT APPROXIMATELY EVERY FOURTH POST.

9. RAILS, POSTS AND FORMED ELBOWS SHALL BE ASTM A53. BRACKETS, END CAPS AND OTHER FITTINGS SHALL BE ASTM A865. SPLICES AND REPAIRS SHALL BE GALVANIZED PER ASTM A780. 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.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>HANDRAILS</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-41</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			STANDARD PLAN

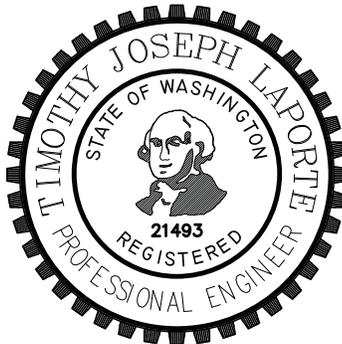


SECTION A-A

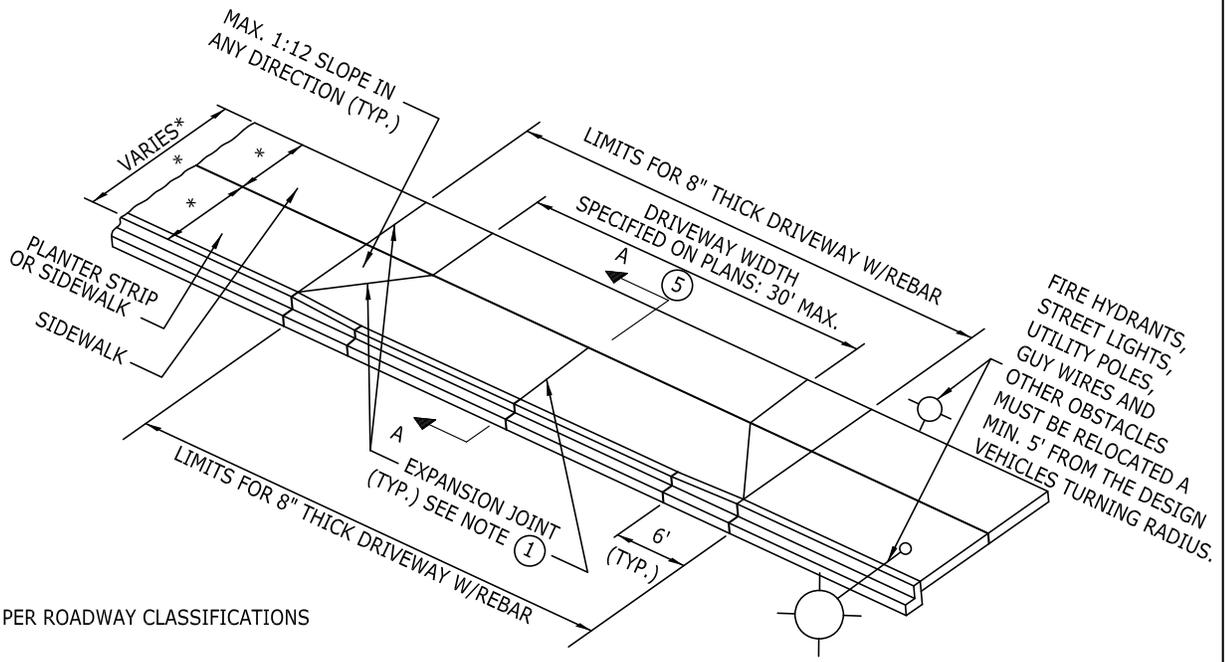
**NOTES:**

- ① EXPANSION JOINTS SHALL BE PLACED AT 15' MAXIMUM SPACING. ELASTOMETRIC JOINT MATERIAL SHALL BE IN CONFORMANCE TO WSDOT STANDARD SPECIFICATION 9-04.1 (4)
- 2. SEE STANDARD PLAN 6-48 FOR DRIVEWAY SLOPES.
- 3. THE DRIVEWAY APPROACH WIDTH, AND DRIVEWAY WIDTH ARE DETERMINED BY THE DESIGN VEHICLE TURNING MANUEVERS. SEE SECTION 6.6.Q.
- ④ MAXIMUM DRIVEWAY SLOPE IS 12%.
- 5. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.
- ⑥ DRIVEWAYS SHALL BE PAVED FROM THE BACK OF THE SIDEWALK TO THE GARAGE OR 40' BEHIND THE RIGHT-OF-WAY LINE, WHICHEVER IS LESS.

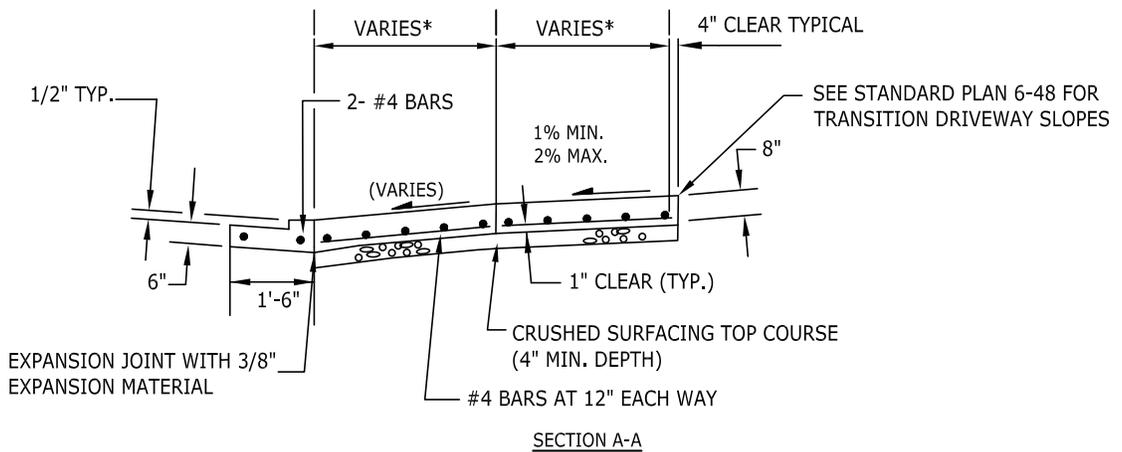
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>RESIDENTIAL CEMENT CONCRETE DRIVEWAY APPROACH</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-42</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



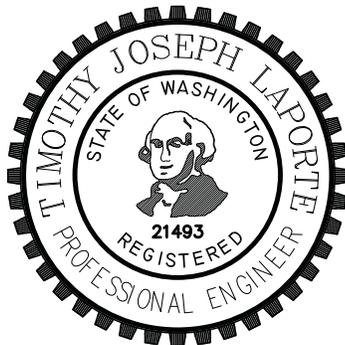
\*DIMENSIONS PER ROADWAY CLASSIFICATIONS



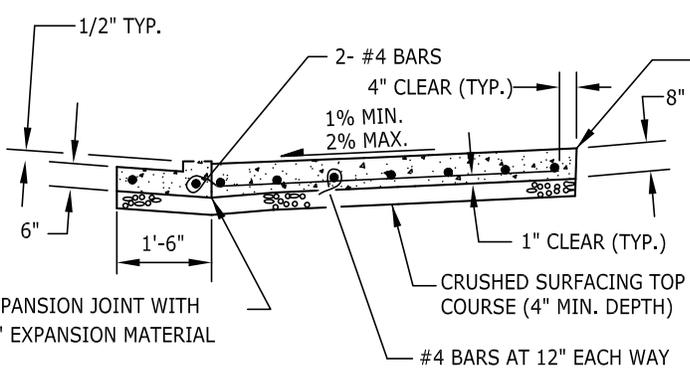
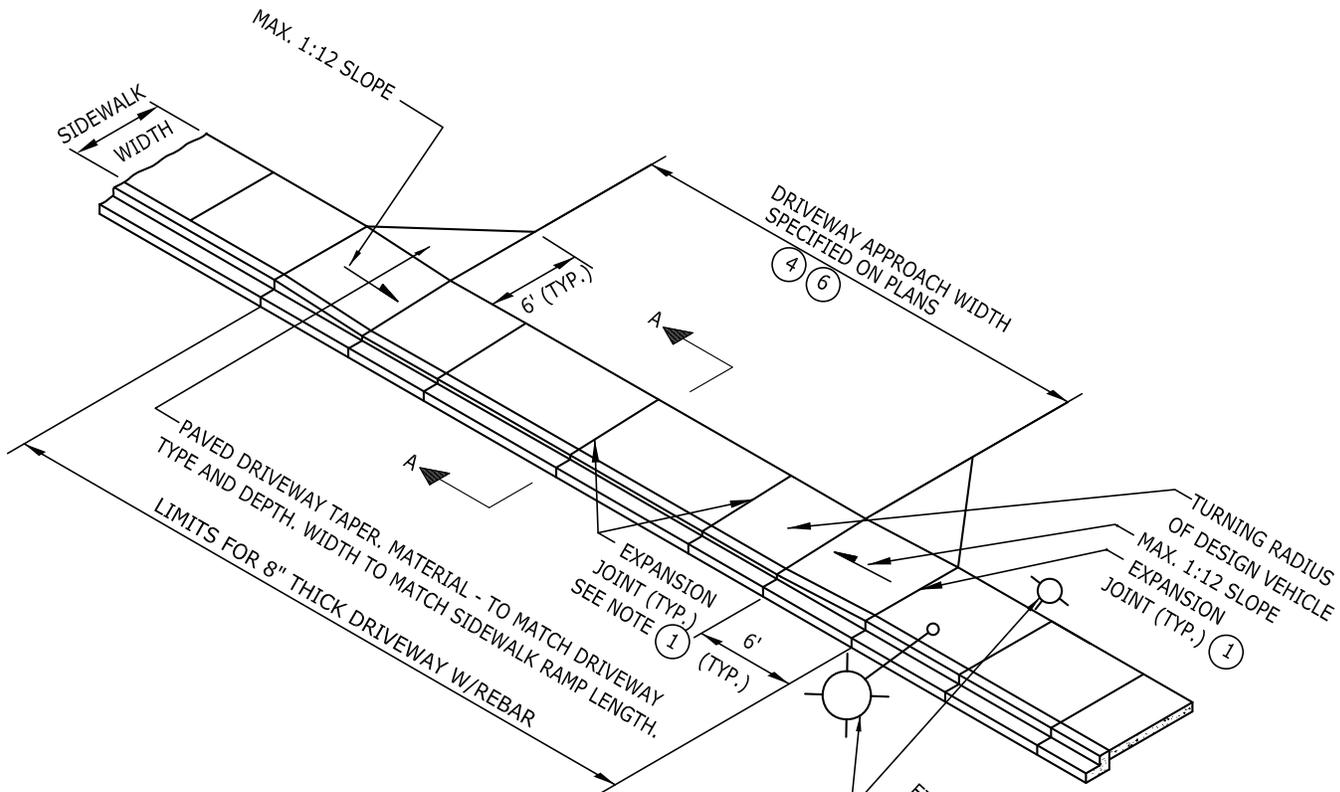
**NOTES:**

- ① EXPANSION JOINTS SHALL BE PLACED AT 15' MAXIMUM SPACING. ELASTOMERIC JOINT MATERIAL SHALL BE IN CONFORMANCE TO WSDOT STANDARD SPECIFICATIONS. SECTION 9-04.1 (4)
- 2. SEE STANDARD PLAN 6-48 FOR DRIVEWAY SLOPES.
- 3. THE DRIVEWAY APPROACH WIDTH, AND DRIVEWAY WIDTH ARE DETERMINED BY THE DESIGN VEHICLE TURNING MANUEVERS. SEE SECTION 6.6.Q.
- 4. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.
- ⑤ DRIVEWAYS SHALL BE PAVED FROM THE BACK OF THE SIDEWALK TO THE GARAGE OR 40' BEHIND THE RIGHT-OF-WAY LINE, WHICHEVER IS LESS.

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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>COMMERCIAL CEMENT CONCRETE DRIVEWAY APPROACH</b>	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED			
APPROVED		ENGINEER	
			<b>6-43</b>



SECTION A-A

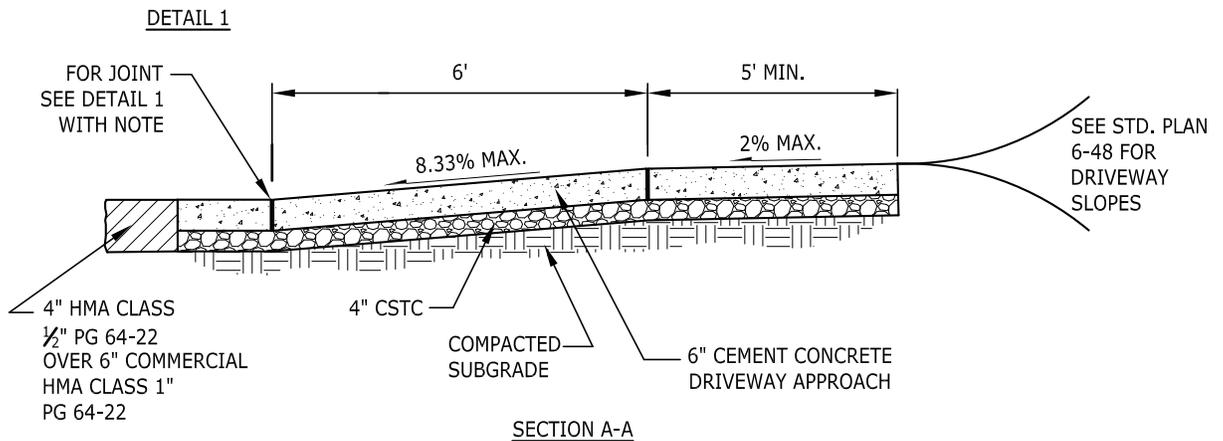
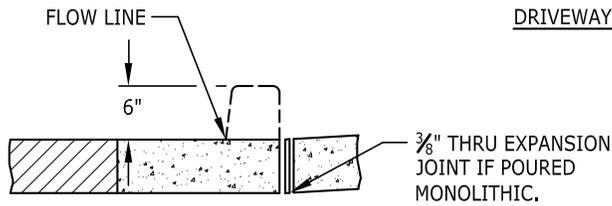
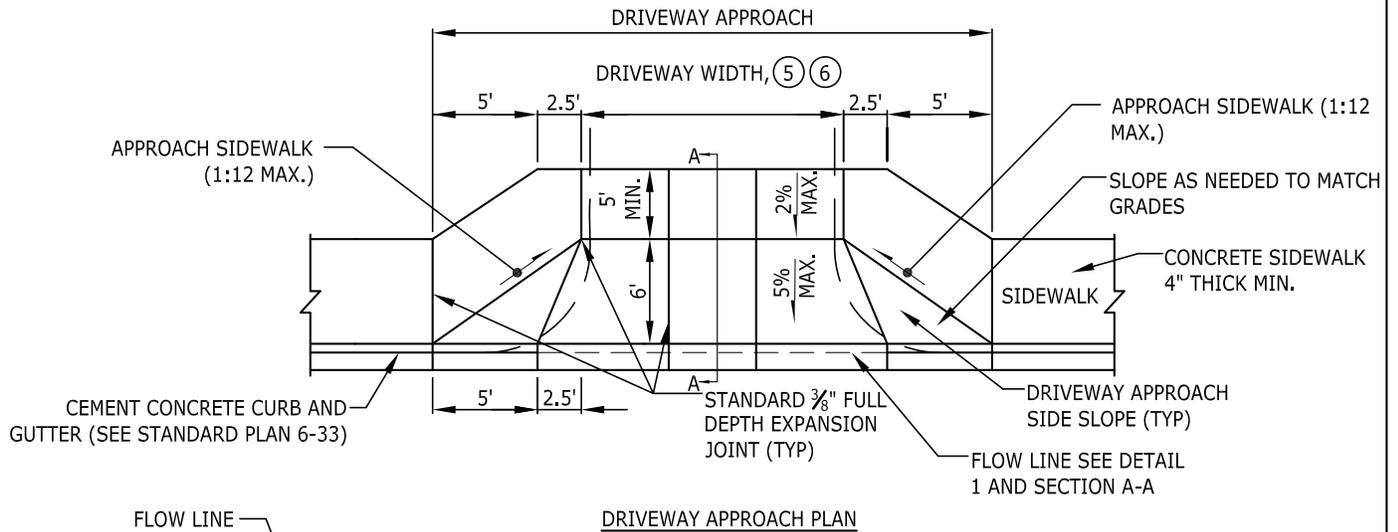
**NOTES:**

- ①. EXPANSION JOINTS SHALL BE PLACED AT 15' MAXIMUM SPACING. ELASTOMETRIC JOINT MATERIAL SHALL BE IN CONFORMANCE WITH SECTION 9-04.1 (4) OF THE WSDOT STANDARD SPECIFICATIONS.
- 2. SEE STANDARD PLAN 6-48 DRIVEWAY SLOPES.
- 3. THE DRIVEWAY APPROACH WIDTH, AND THE DRIVEWAY WIDTH ARE DETERMINED BY APPROVED VEHICULAR MANEUVERING DIAGRAMS. SEE SECTION 6.6.Q.
- ④. ALL DRIVEWAYS ARE TO BE SYMMETRICAL.
- 5. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.
- ⑥. DRIVEWAYS SHALL BE PAVED FROM THE BACK OF THE SIDEWALK TO THE GARAGE OR 40' BEHIND THE RIGHT-OF-WAY LINE, WHICHEVER IS LESS.

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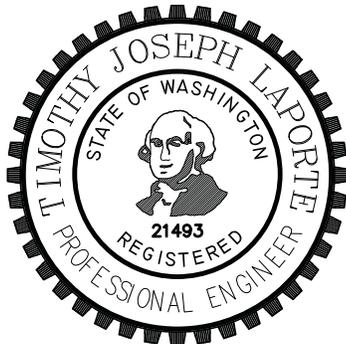


		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>INDUSTRIAL CEMENT CONCRETE DRIVEWAY APPROACH</b>	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED			
APPROVED		ENGINEER	
			<b>6-44</b>



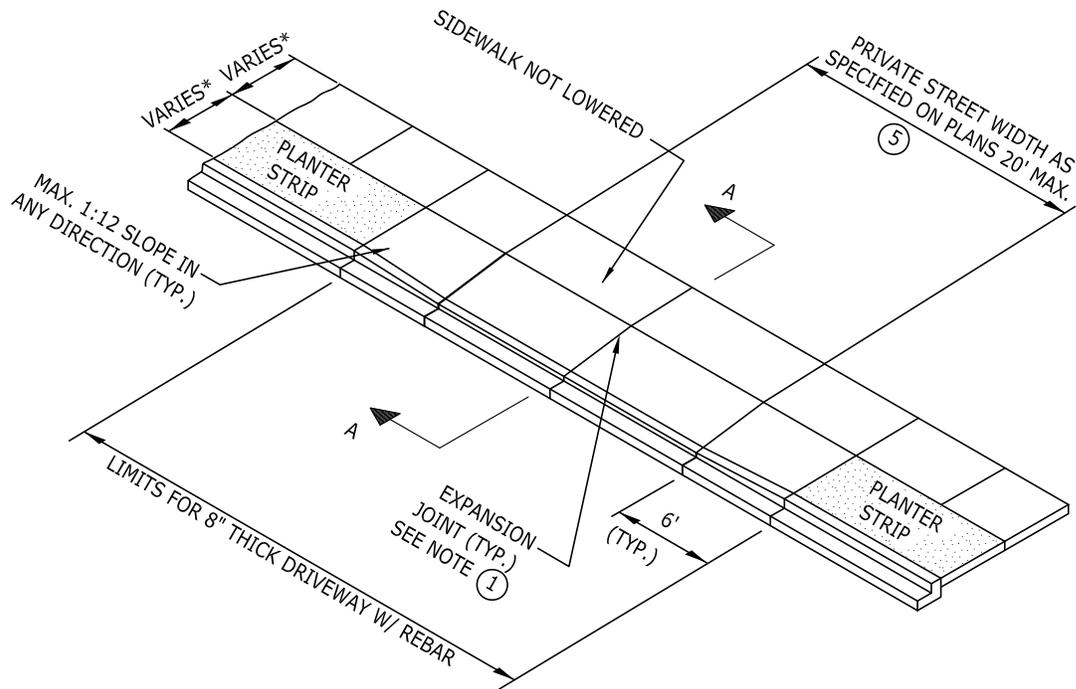
**NOTES:**

1. MAXIMUM DRIVEWAY GRADE BEHIND DRIVEWAY APPROACH IS 12%. SLOPE ROUNDING IS REQUIRED AT DRIVEWAY GRADE TRANSITIONS AS SHOWN IN SECTION A-A.
2. CONCRETE SHALL BE A CLASS 4000 P.C.C. MIX WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS (CURB, GUTTER, DRIVEWAY APPROACH, RAMPS AND ALL OTHER ITEMS SPECIFIED BY THE ENGINEER).
3. CONCRETE PAVEMENT SHALL BE BRUSHED TRANSVERSELY WITH A FIBER OR WIRE BRUSH OF A TYPE APPROVED BY THE ENGINEER.
4. 3/8" THRU EXPANSION JOINTS SHALL BE PLACED AT BACK, SIDES AND FRONT. MAXIMUM EXPANSION JOINT SPACING IS 14' CENTER TO CENTER.
5. DRIVEWAY WIDTHS SHALL BE SPECIFIED BY THE ENGINEER. DRIVEWAY WIDTH DOES NOT INCLUDE ADJACENT RAMPS.
6. DRIVEWAYS SHALL BE PAVED FROM THE BACK OF SIDEWALK TO THE GARAGE OR 40' BEHIND THE RIGHT-OF-WAY LINE, WHICHEVER IS LESS.

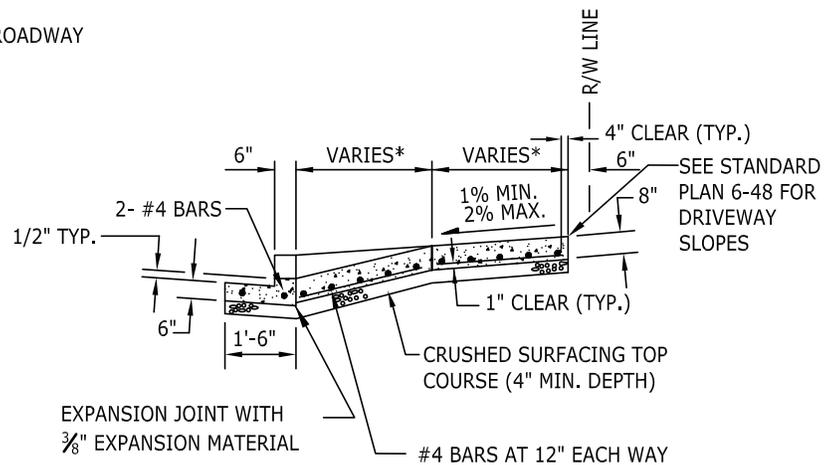


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		<b>ALTERNATE DRIVEWAY OR PRIVATE ROAD APPROACH</b>	
DRAWN <u>BB</u>	CHECKED _____	DATE <u>-</u>	<b>6-45</b>
APPROVED _____	ENGINEER		



\* DIMENSIONS PER ROADWAY CLASSIFICATION



SECTION A-A

**NOTES:**

① EXPANSION JOINTS SHALL BE PLACED AT 15' MAXIMUM SPACING. ELASTOMETRIC JOINT MATERIAL SHALL BE IN CONFORMANCE TO SECTION 9-04.1 (4) OF THE WSDOT STANDARD SPECIFICATIONS.

2. SEE ST-24 + ST-25 FOR INTERSECTION LANDING AND STREET PROFILE INFORMATION.

3. THE DRIVEWAY APPROACH WIDTH, AND THE DRIVEWAY WIDTH ARE DETERMINED BY APPROVED VEHICULAR MANEUVERING DIAGRAMS. SEE SECTION 6.6.Q.

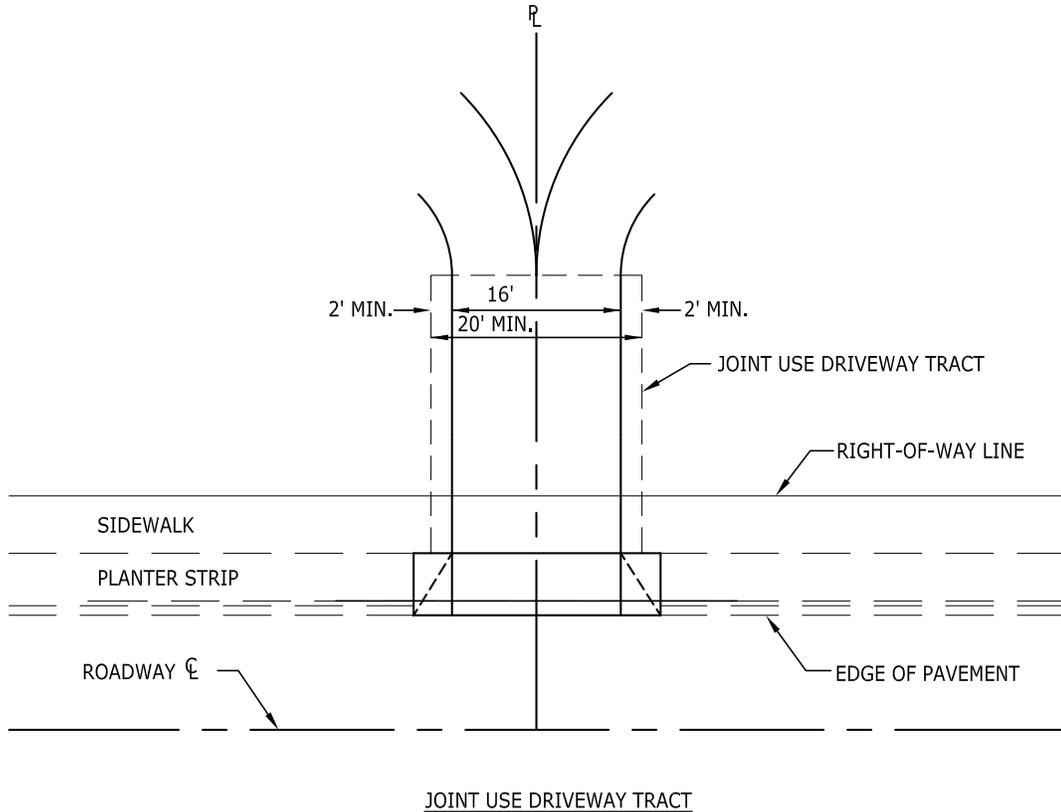
4. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.

⑤ DRIVEWAYS SHALL BE PAVED FROM THE BACK OF THE SIDEWALK TO THE GARAGE OR 40' BEHIND THE RIGHT-OF-WAY LINE, WHICHEVER IS LESS.

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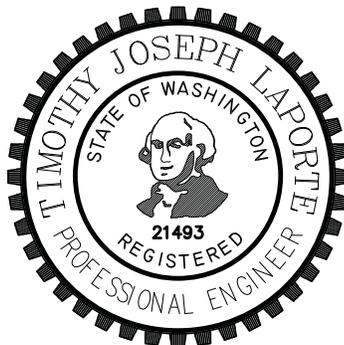
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>PRIVATE STREET APPROACH</b> SERVING 9 LOTS OR LESS	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED			
APPROVED			ENGINEER
			<b>6-46</b>



**NOTES:**

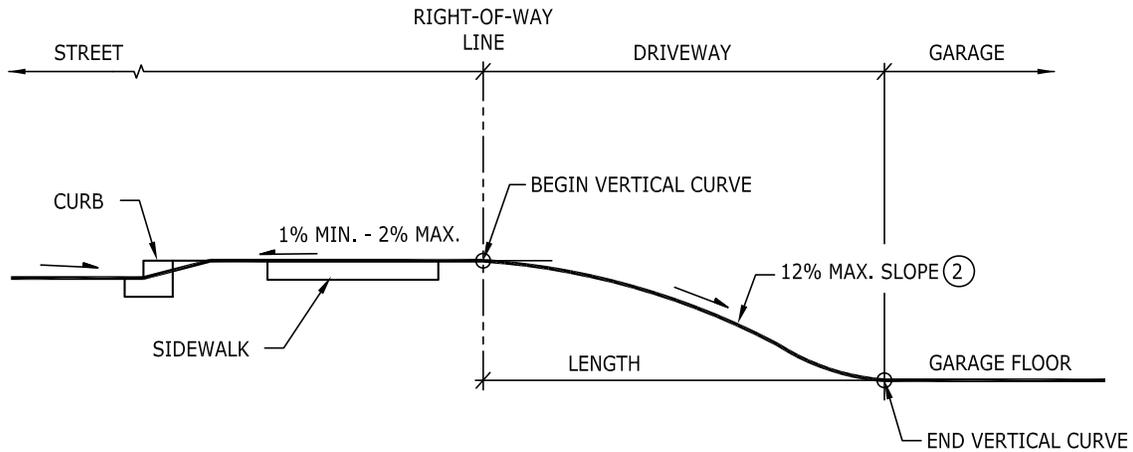
NO PORTION OF DRIVEWAY WIDTH SHALL BE ALLOWED WITHIN 5' OF SIDE LOT LINES IN RESIDENTIAL AREAS OR 9' IN COMMERCIAL AREAS EXCEPT AS FOLLOWS:

- A. A JOINT USE DRIVEWAY TRACT MAY BE USED TO SERVE TWO PARCELS:
  - (1) MINIMUM TRACT WIDTH IN URBAN AREAS SHALL BE 20' WITH A 16' PAVED SURFACE, CROSS SLOPE IN ONE DIRECTION AND CURB OR THICKENED EDGE ON ONE SIDE. MINIMUM TRACT LENGTH SHALL BE 20' FROM RIGHT-OF-WAY LINE.
  - (2) MINIMUM TRACT WIDTH SHALL BE 20'; 30' IF A DITCH IS REQUIRED. MINIMUM TRACT LENGTH SHALL BE 20' FROM RIGHT-OF-WAY LINE. RADIUS RETURNS ON PAVED APRON SHALL HAVE 10' RADII OR AS DETERMINED BY THE APPROVED VMD. SEE SECTION 6.6.Q.
  - (3) THE CITY MAY ALLOW USE OF AN OFF-SITE ACCESS EASEMENT TO THE STREET IF THE ONLY STREET ACCESS IS THROUGH AN ADJACENT PARCEL NOT OWNED BY THE APPLICANT.
- B. DRIVEWAYS MAY UTILIZE FULL WIDTH OF NARROW "PIPE-STEM" PARCELS OR EASEMENTS IF APPROVED BY THE ENGINEER.
- C. MAY BE USED ON CUL-DE-SAC BULBS AS NECESSARY FOR PROPOSED RESIDENTIAL ACCESS.

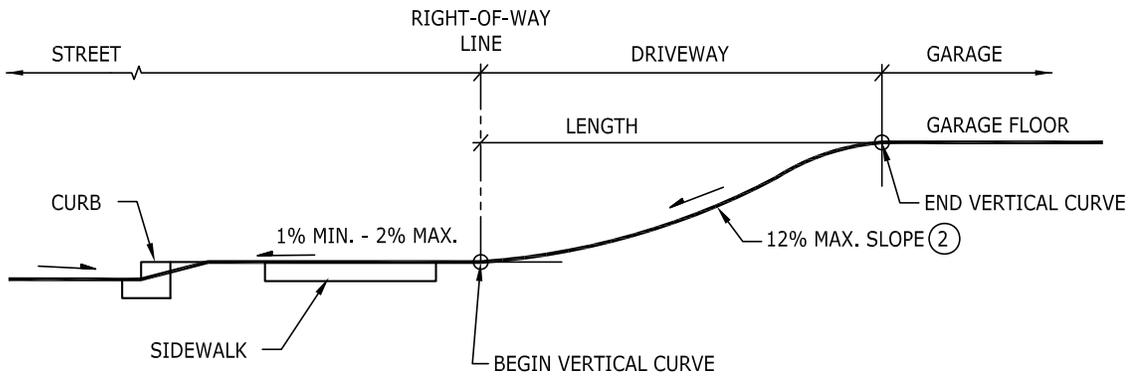


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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>JOINT USE DRIVEWAY TRACT</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-47</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



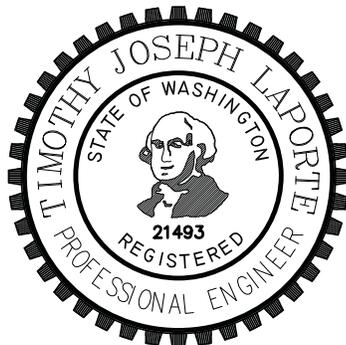
CREST VERTICAL CURVE



SAG VERTICAL CURVE

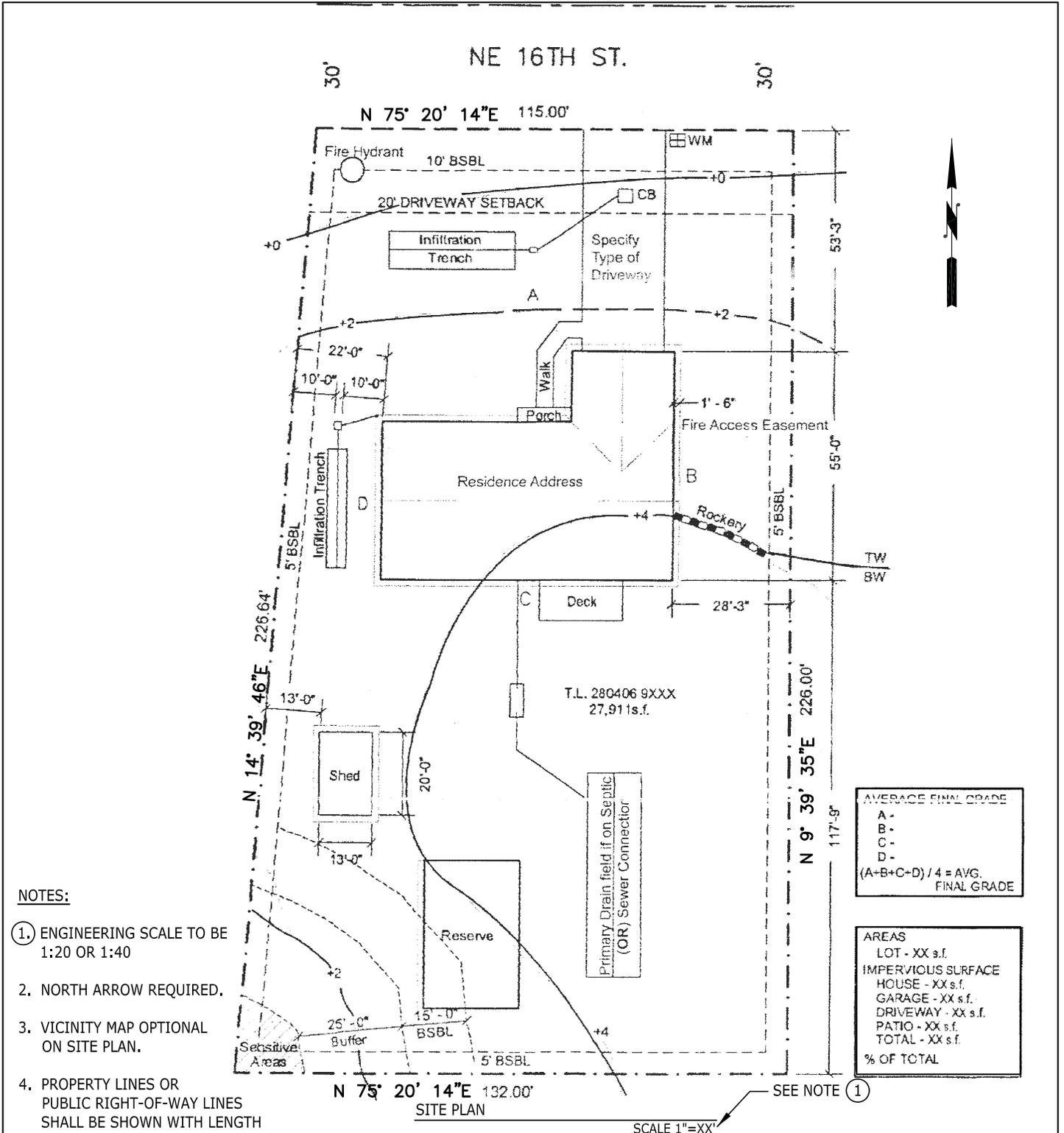
NOTES:

1. MINIMUM VERTICAL CURVE LENGTH SHALL BE:  
 CREST VERTICAL CURVES: 10 FT.  
 SAG VERTICAL CURVES: 15 FT.
- ②. FOR BACK-IN ACCESS ONLY, MAX. SLOPE IS 10%
3. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>RESIDENTIAL DRIVEWAY SLOPE</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-48</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



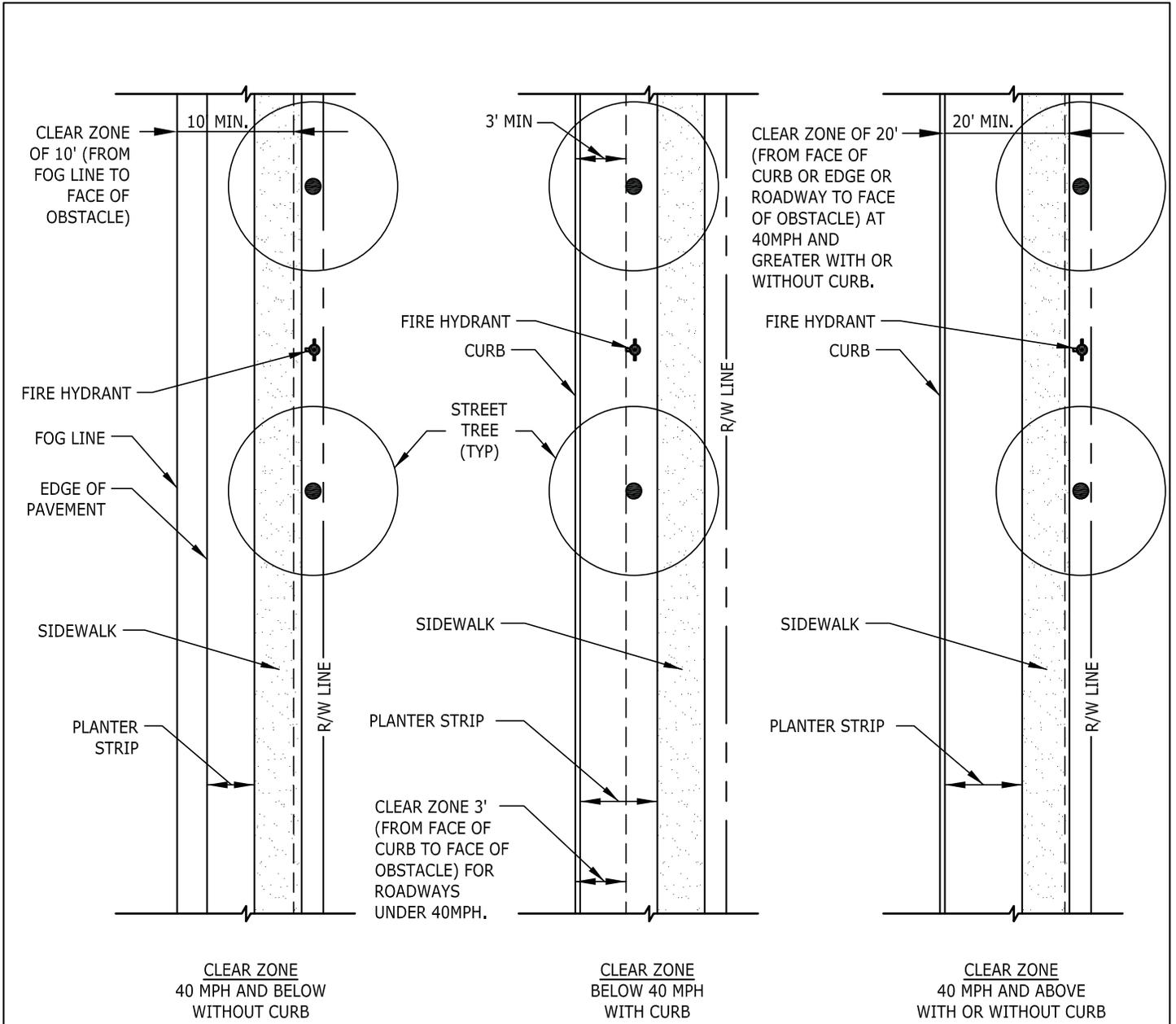
**NOTES:**

- ① ENGINEERING SCALE TO BE 1:20 OR 1:40
2. NORTH ARROW REQUIRED.
3. VICINITY MAP OPTIONAL ON SITE PLAN.
4. PROPERTY LINES OR PUBLIC RIGHT-OF-WAY LINES SHALL BE SHOWN WITH LENGTH AND BEARING.
5. ALL EXISTING TOPOGRAPHY AND PHYSICAL FEATURES AND ALL PROPOSED INFRASTRUCTURE IMPROVEMENTS SHALL BE SHOWN.
6. DEVELOPMENT NAMES AND LAND USE FOR SURROUNDING PROPERTIES TO BE SHOWN.
7. SHOW SETBACKS AND SENSITIVE AREAS.



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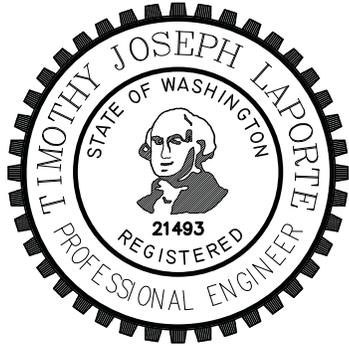
		<b>CITY OF KENT</b> <b>ENGINEERING DEPARTMENT</b>	
<b>SAMPLE SITE PLAN</b>			
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	
CHECKED		ENGINEER	
APPROVED			
			<b>STANDARD PLAN</b>  <b>6-49</b>



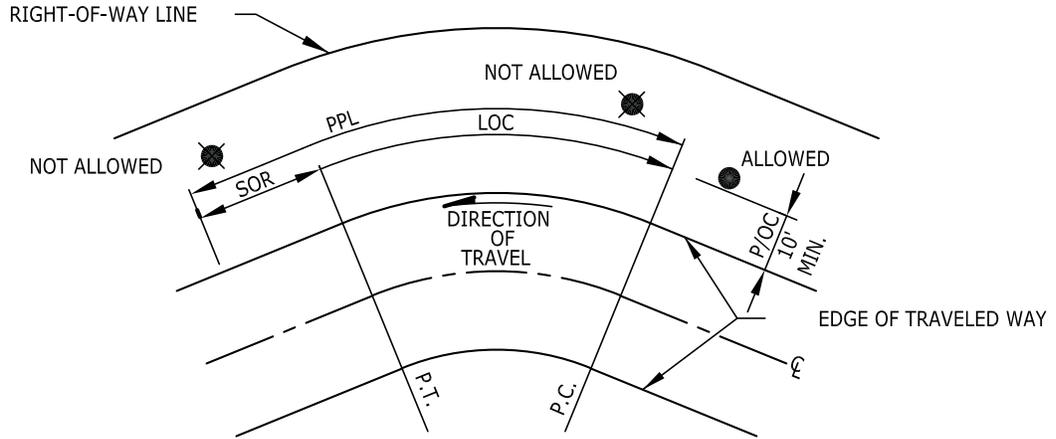
**NOTES:**

1. THE AASHTO "ROADSIDE DESIGN GUIDE" AND "A POLICY ON GEOMETRY DESIGN OF HIGHWAYS AND STREETS" SHALL GUIDE ACCEPTABLE CLEAR ZONE DISTANCES
2. ALL OBSTACLES (SUCH AS FIRE HYDRANTS OR STREET LIGHTS) WITHIN THE CLEAR ZONE FROM THE FACE OF CURB SHALL HAVE BREAKAWAY FEATURES.

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		<b>CITY OF KENT</b>	
		ENGINEERING DEPARTMENT	
		<b>CLEAR ZONES</b>	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED			
APPROVED		ENGINEER	
			<b>STANDARD PLAN</b>
			<b>6-50</b>



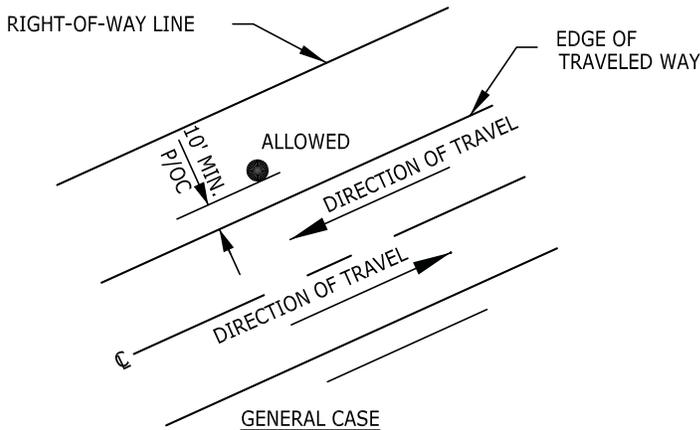
**OUTSIDE OF CURVE  
POSTED 40 MPH & OVER**

LOC: LENGTH OF CURVE (FEET) AT EDGE OF TRAVELED WAY FROM P.C. TO P.T.  
 SOR: SAFETY OVERRUN (FEET) BEYOND P.T.  
 PPL: PROHIBITED POLE LOCATION (FEET) (LOC + SOR) WHERE POLES OR OBSTACLES MUST BE REMOVED OR BARRICADED.

PPL (FEET) ON OUTSIDE OF CURVES WITH POSTED SPEED LIMIT OF 40 MPH & OVER.	
40 MPH	LOC + 220 (SOR)
45	LOC + 255
50	LOC + 290
55	LOC + 325

APPLIES TO ROADWAY WITH SHOULDER OR MOUNTABLE CURB ON OUTSIDE OF CURVE, WITH:

- RADIUS LESS THAN 2500', AND
- POSTED SPEED GREATER THAN OR EQUAL TO 40 M.P.H.



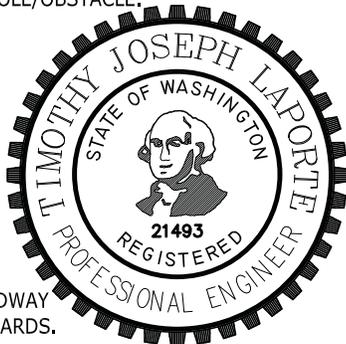
P/OC: POLE/OBSTACLE CLEARANCE TO NEAREST FACE OF POLE/OBSTACLE.

NOTES:

1. THE STANDARDS SHALL APPLY TO EVERY NEW PLACEMENT AND EVERY PLANNED, NON-EMERGENCY REPLACEMENT OF EXISTING POLES AND OTHER UTILITY STRUCTURES WITHIN KENT RIGHT-OF-WAY.
2. NO POLES MAY BE REPLACED ON THE OUTSIDE OF A CURVE WITH A POSTED SPEED LIMIT OF 40 MPH OR OVER UNLESS APPROVED THROUGH A DEVIATION.
3. SEE SECTION 6.17

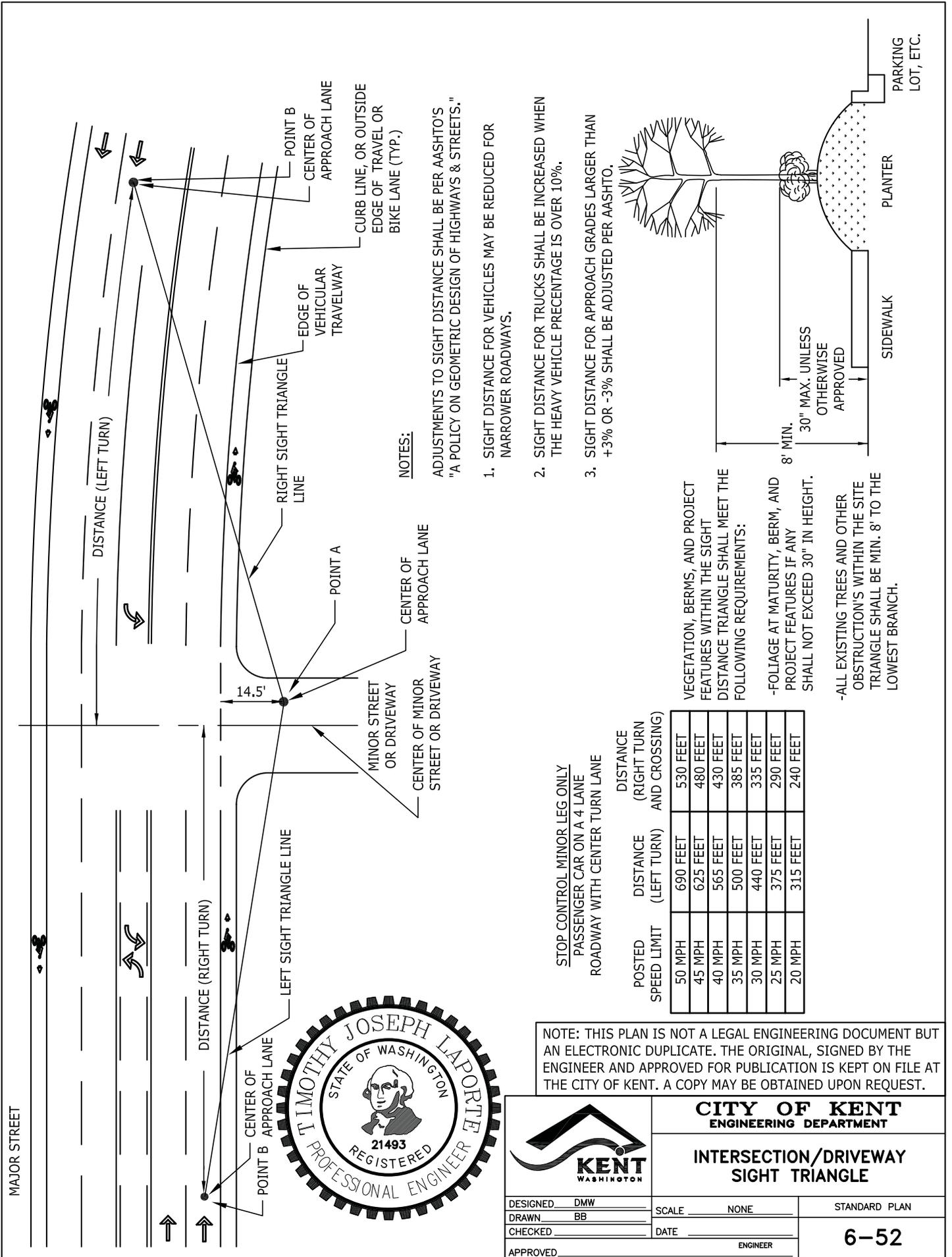
APPLIES: TO ROADWAY WITH SHOULDER OR MOUNTABLE CURB ON:

1. TANGENT, OR
2. INSIDE OF CURVE, OR
3. OUTSIDE OF CURVE, EITHER WITH  
 -POSTED SPEED LESS THAN 40 MPH OR  
 -RADIUS GREATER THAN 3500' ON ROADWAY MEETING ALL CURRENT DESIGN STANDARDS.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>CLEARANCE OF ROADSIDE OBSTACLES FOR UTILITIES ON EXISTING SHOULDER TYPE ROAD</b>	
DESIGNED FDS	SCALE NONE	STANDARD PLAN	
DRAWN JM	DATE 6-11-99		
CHECKED DMJ	ENGINEER	<b>6-51</b>	
APPROVED			



**NOTES:**

ADJUSTMENTS TO SIGHT DISTANCE SHALL BE PER AASHTO'S "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS & STREETS."

1. SIGHT DISTANCE FOR VEHICLES MAY BE REDUCED FOR NARROWER ROADWAYS.
2. SIGHT DISTANCE FOR TRUCKS SHALL BE INCREASED WHEN THE HEAVY VEHICLE PERCENTAGE IS OVER 10%.
3. SIGHT DISTANCE FOR APPROACH GRADES LARGER THAN +3% OR -3% SHALL BE ADJUSTED PER AASHTO.

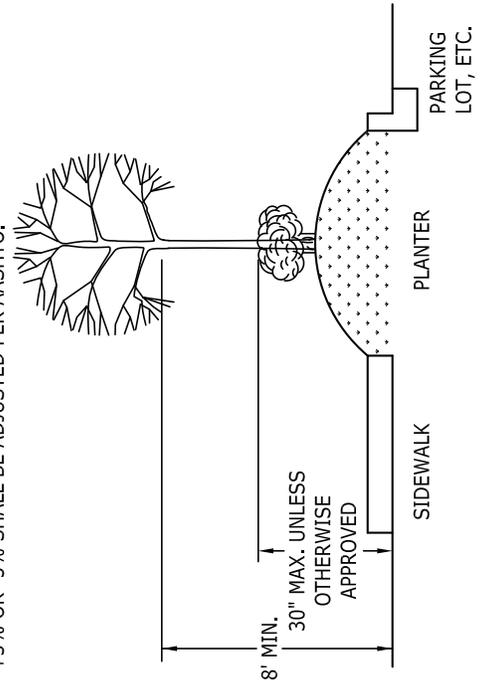
STOP CONTROL MINOR LEG ONLY  
PASSENGER CAR ON A 4 LANE  
ROADWAY WITH CENTER TURN LANE

POSTED SPEED LIMIT	DISTANCE (LEFT TURN)	DISTANCE (RIGHT TURN AND CROSSING)
50 MPH	690 FEET	530 FEET
45 MPH	625 FEET	480 FEET
40 MPH	565 FEET	430 FEET
35 MPH	500 FEET	385 FEET
30 MPH	440 FEET	335 FEET
25 MPH	375 FEET	290 FEET
20 MPH	315 FEET	240 FEET

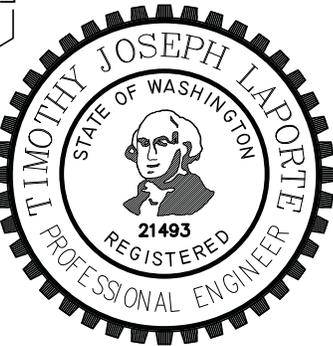
VEGETATION, BERMS, AND PROJECT FEATURES WITHIN THE SIGHT DISTANCE TRIANGLE SHALL MEET THE FOLLOWING REQUIREMENTS:

-FOLIAGE AT MATURITY, BERM, AND PROJECT FEATURES IF ANY SHALL NOT EXCEED 30" IN HEIGHT.

-ALL EXISTING TREES AND OTHER OBSTRUCTION'S WITHIN THE SITE TRIANGLE SHALL BE MIN. 8' TO THE LOWEST BRANCH.



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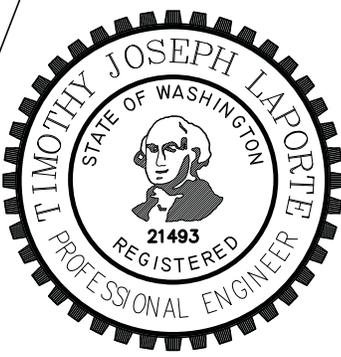
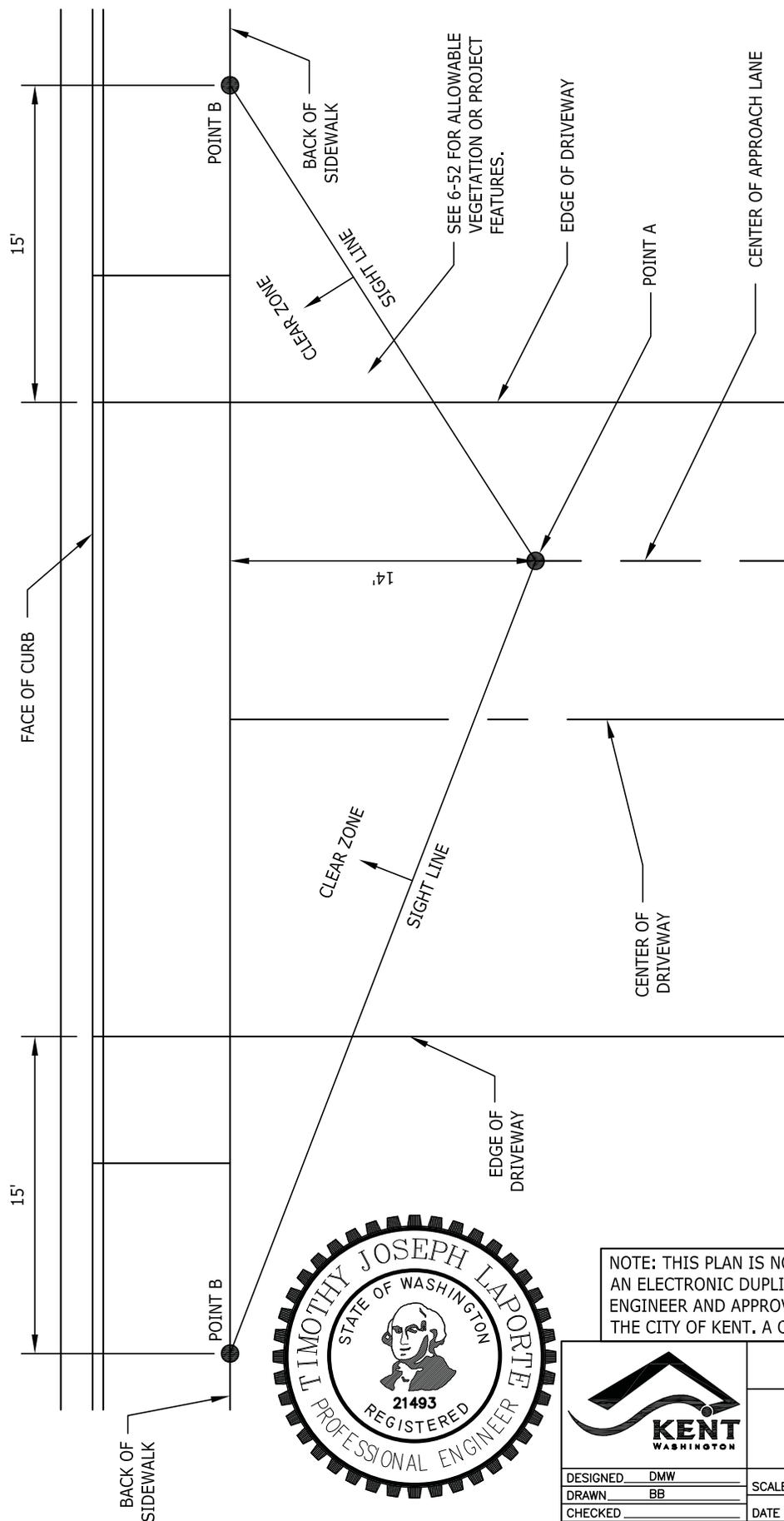
**CITY OF KENT**  
ENGINEERING DEPARTMENT

**INTERSECTION/DRIVEWAY**  
**SIGHT TRIANGLE**

DESIGNED: DMW  
DRAWN: BB  
CHECKED: \_\_\_\_\_  
APPROVED: \_\_\_\_\_

SCALE: NONE  
DATE: \_\_\_\_\_  
ENGINEER

STANDARD PLAN  
**6-52**



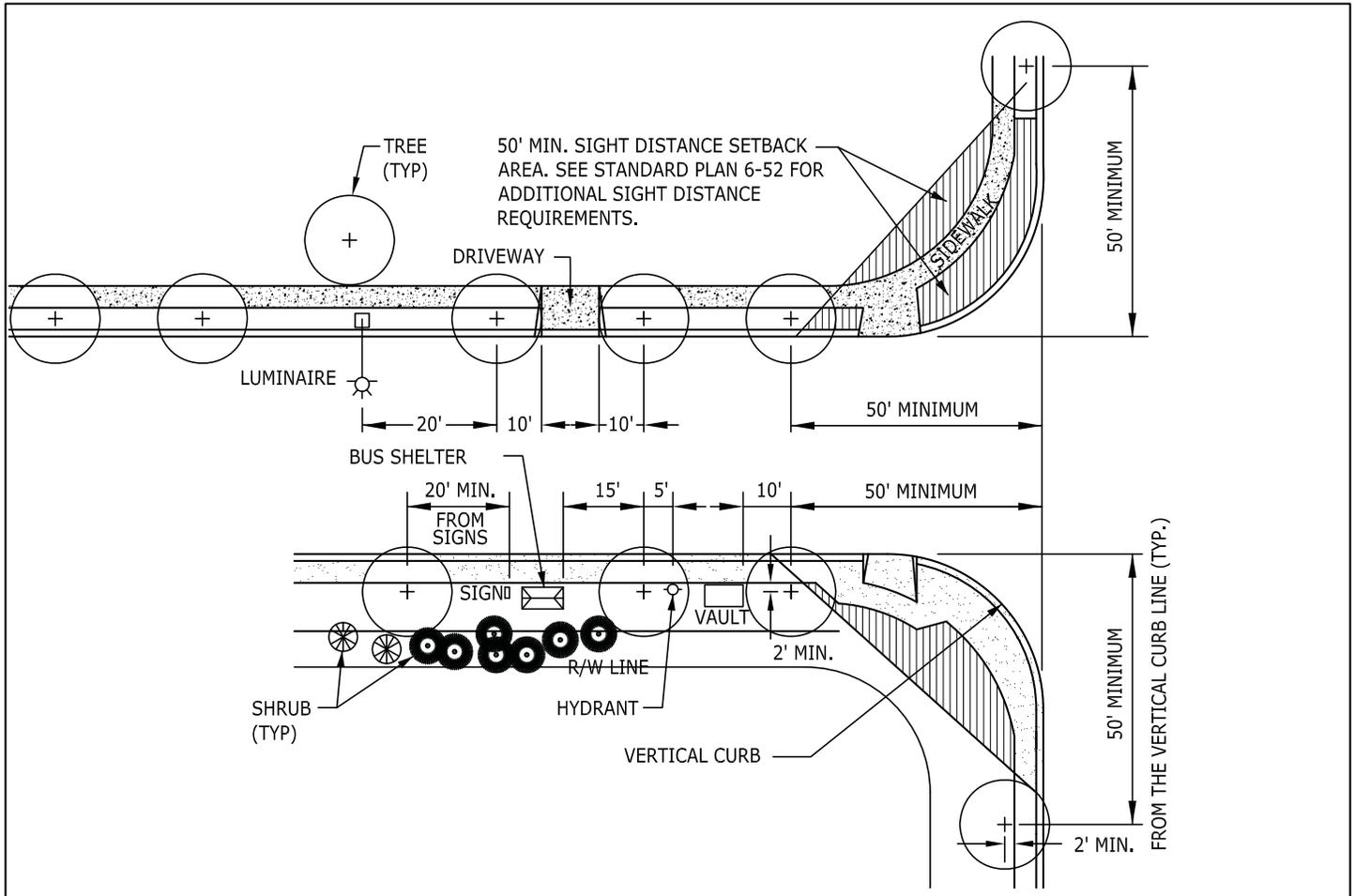
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**CITY OF KENT**  
ENGINEERING DEPARTMENT

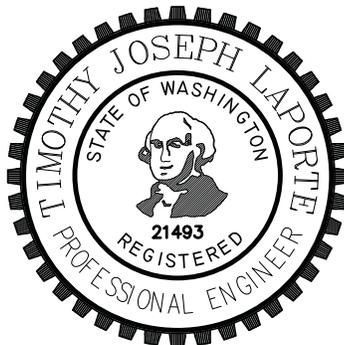
**PEDESTRIAN SIGHT LINES**

DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE _____	<b>6-53</b>
CHECKED _____	ENGINEER _____	
APPROVED _____		



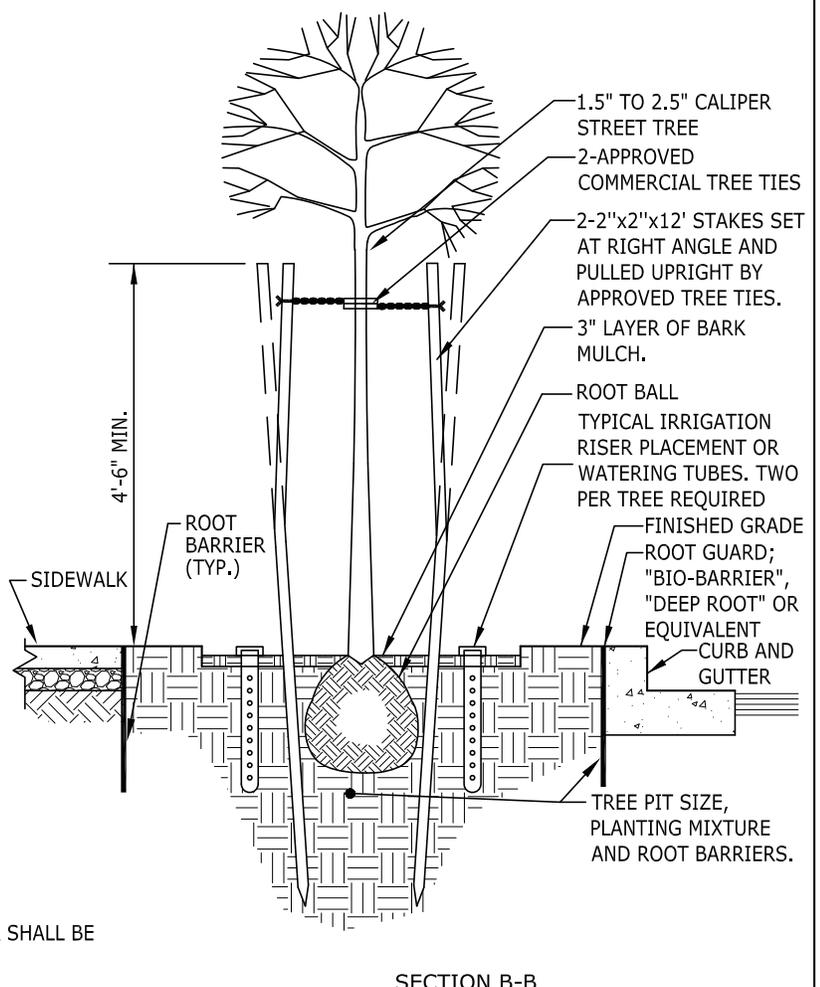
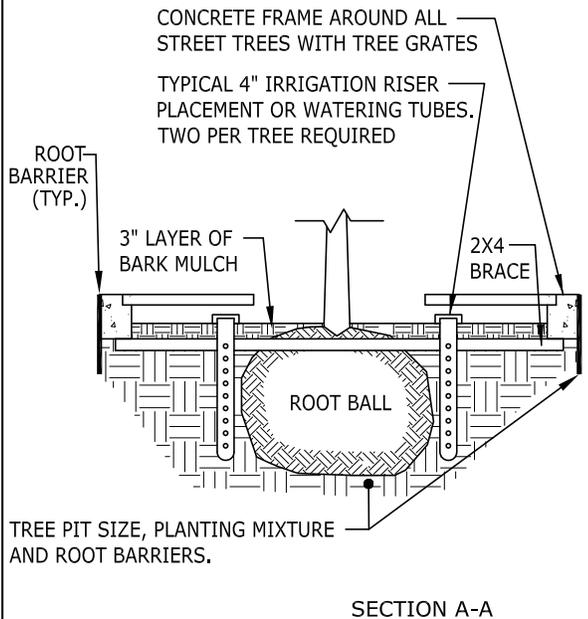
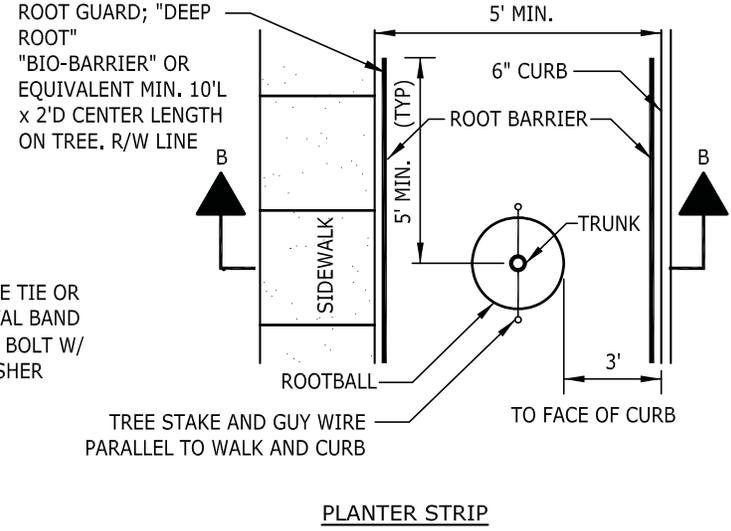
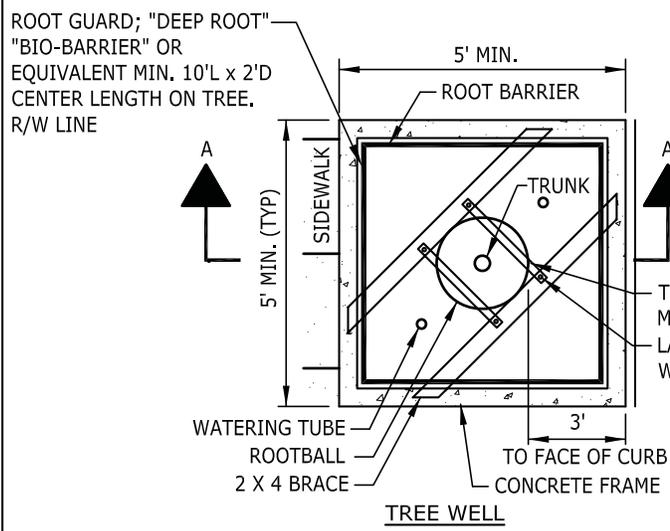
**NOTES:**

1. TREES SHALL GENERALLY BE PLANTED WITHIN PLANTING STRIPS OR AT THE BACK OF THE SIDEWALK IF THERE ARE NO PLANTING STRIPS.
2. WITHIN PLANTING STRIPS:
  - A. MIN. DISTANCE FROM THE FACE OF TREE OR OTHER ROADSIDE OBSTACLE TO THE FACE OF CURB SHALL BE 3'.
  - B. MINIMUM CLEAR SIDEWALK WIDTH SHALL BE 5 FT. IN RESIDENTIAL OR 8 FT. IN BUSINESS DISTRICTS.
3. PLANS SHALL BE COORDINATED WITH KING COUNTY METRO SERVICE PLANNING ON BUS ROUTES.
4. AN APPROVED TREE LIST IS INCLUDED IN APPENDIX A.
5. SEE STANDARD PLAN 6-50 FOR CLEAR ZONE REQUIREMENTS. TYPE IV LANDSCAPE (PER KCC 15.07.050) REQUIRED IN PLANTER AREAS.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>STREET TREE LOCATIONS</b>	
DESIGNED: DWH	SCALE: NONE	STANDARD PLAN <b>6-54</b>	
DRAWN: BB	DATE: -		
CHECKED:	ENGINEER		
APPROVED:			

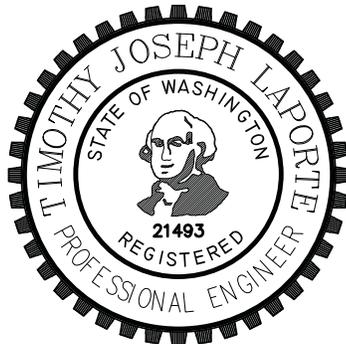
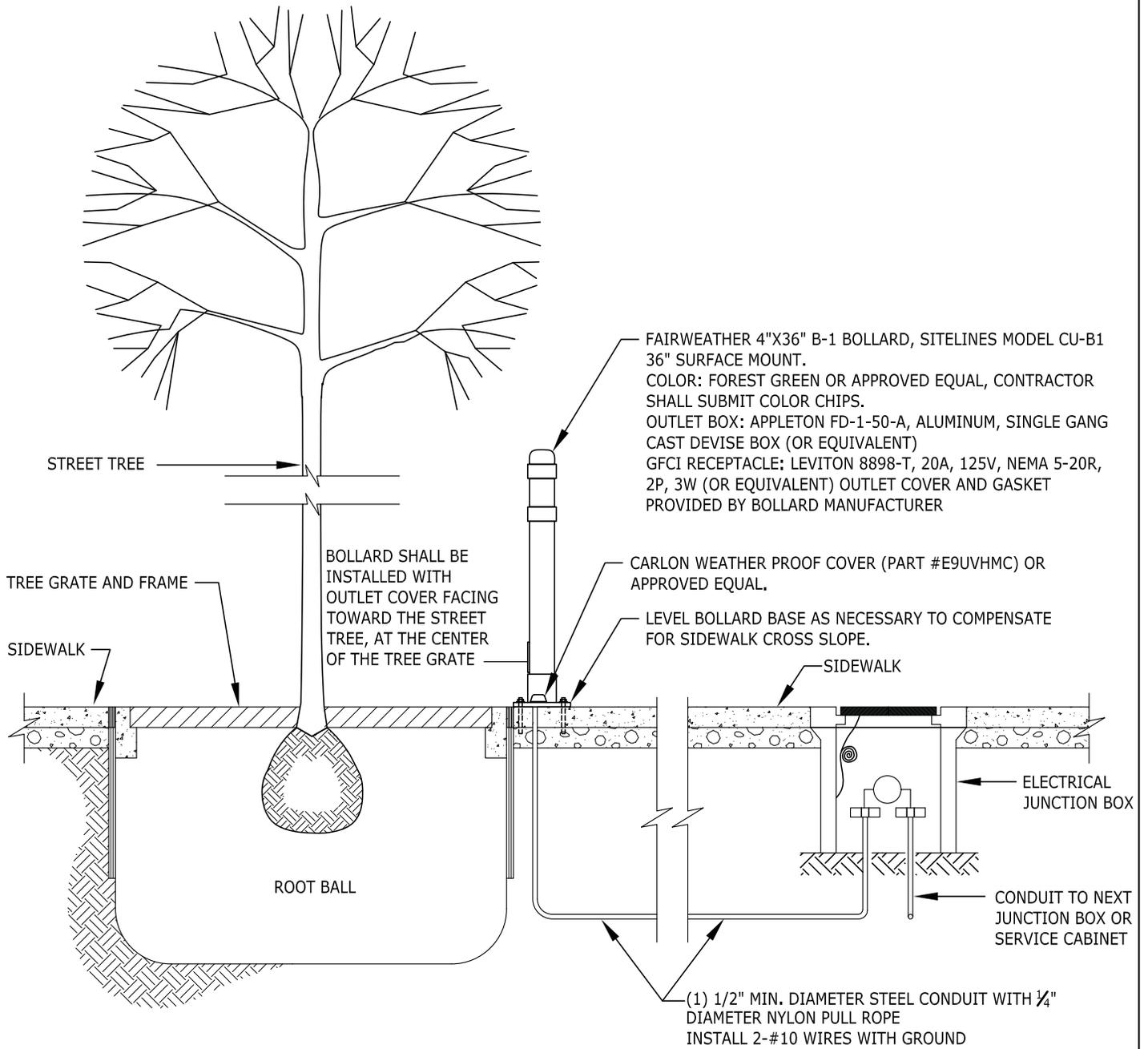


- NOTES:**
1. SEE STANDARD PLAN 6-36 FOR DOWNTOWN SIDEWALKS.
  2. IF TREE IS LOCATED BEHIND THE SIDEWALK, A ROOT BARRIER SHALL BE INSTALLED AT THE EDGE OF THE SIDEWALK.
  3. IN TREE WELLS, THE ROOT BARRIER SHOULD BE PLACED ALL AROUND THE TREE PIT AND STAPLED TOGETHER.
  4. FOR BURLAP GROWN TREES THE BURLAP SHALL BE REMOVED AT PLANTING TO A DEPTH OF AT LEAST THE ROOT BALL.
  5. FOR CONTAINER GROWN TREES ALL ROOT BOUND ROOTS SHALL BE CUT AND SEPARATED.
  6. NO PRUNING OF THE TREES AT PLANTING.



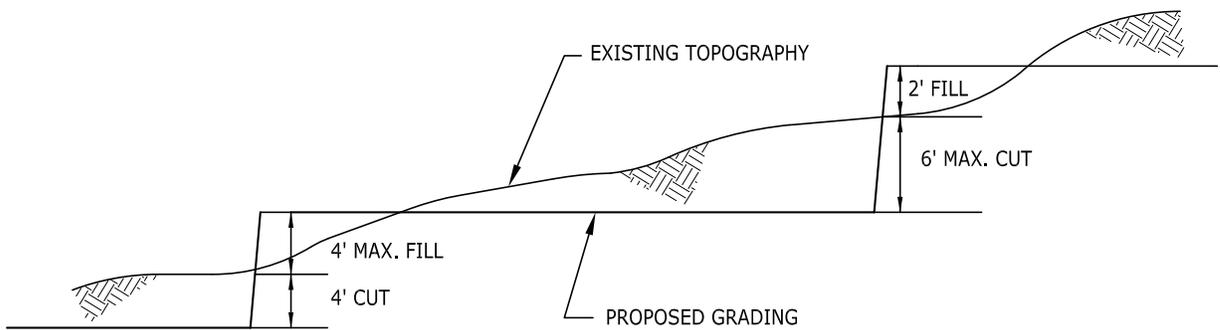
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>STREET TREE IN PLANTER</b>	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED		ENGINEER	
APPROVED		STANDARD PLAN	
			<b>6-55</b>



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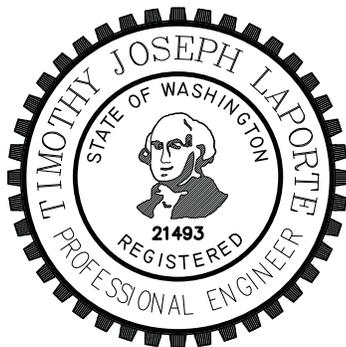
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>SIDEWALK BOLLARD WITH RECEPTACLE</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-56</b>	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____	STANDARD PLAN	
APPROVED _____			



SITE GRADING REQUIREMENTS:

1. 8' NET CHANGE ALLOWED FROM EXISTING TOPOGRAPHY.
2. 4' MAXIMUM FILL
3. 6' MAXIMUM CUT
4. FOR MAXIMUM RETAINING WALL HEIGHTS, SEE STANDARD PLAN 6-63.
5. SITE GRADING DOES NOT APPLY TO GRADING FOR STORMWATER FACILITIES.

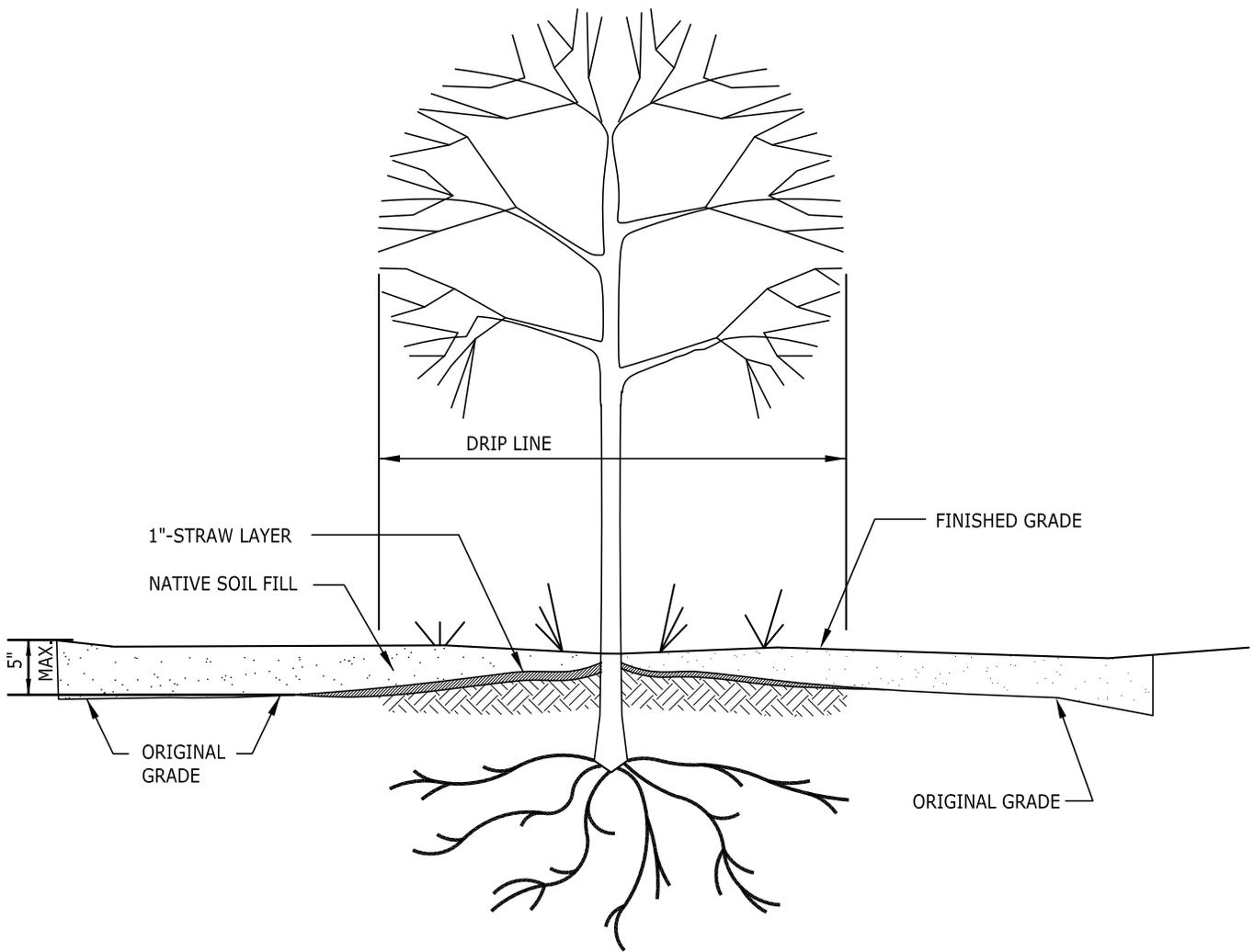
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**CITY OF KENT**  
ENGINEERING DEPARTMENT

**SITE GRADING**

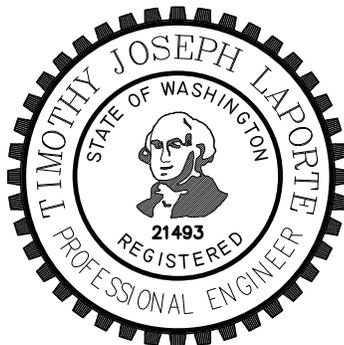
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-57</b>
CHECKED _____	ENGINEER _____	
APPROVED _____		



**NOTES:**

1. EXTEND STRAW OUT TO DRIPLINE OF TREE.
2. COMPACT SOIL BY HAND EQUIPMENT ONLY.

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**CITY OF KENT**  
ENGINEERING DEPARTMENT

**MINOR FILLS AROUND TREES**

DESIGNED FDS

DRAWN JM

CHECKED DMJ

APPROVED

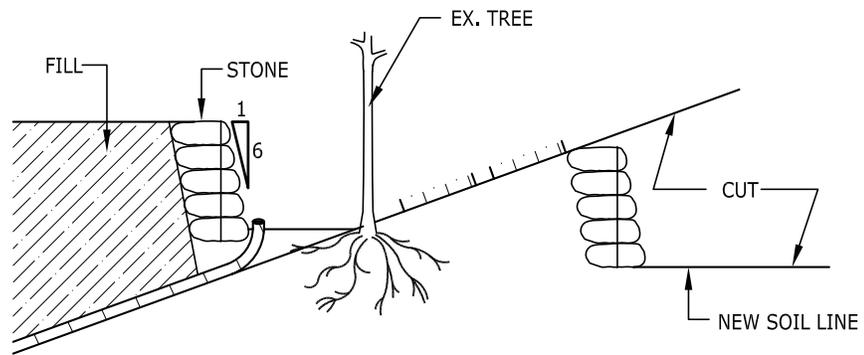
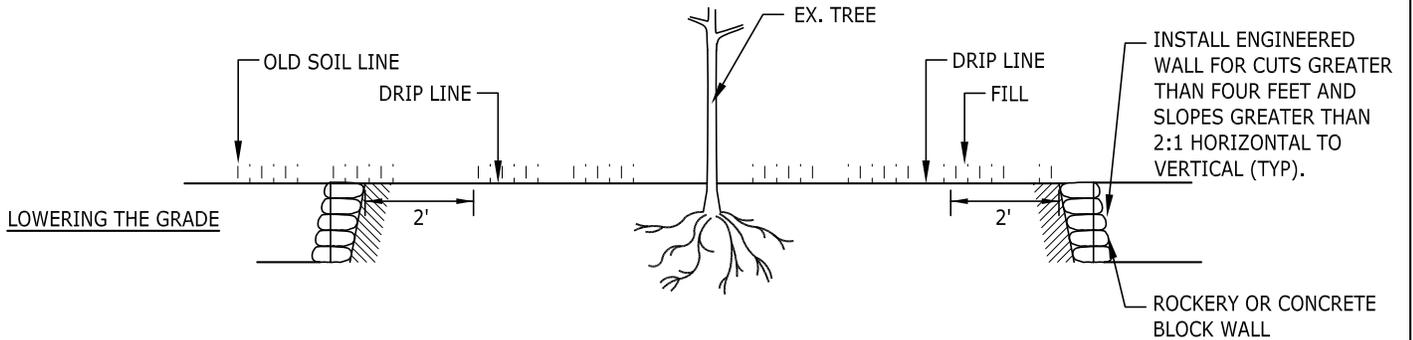
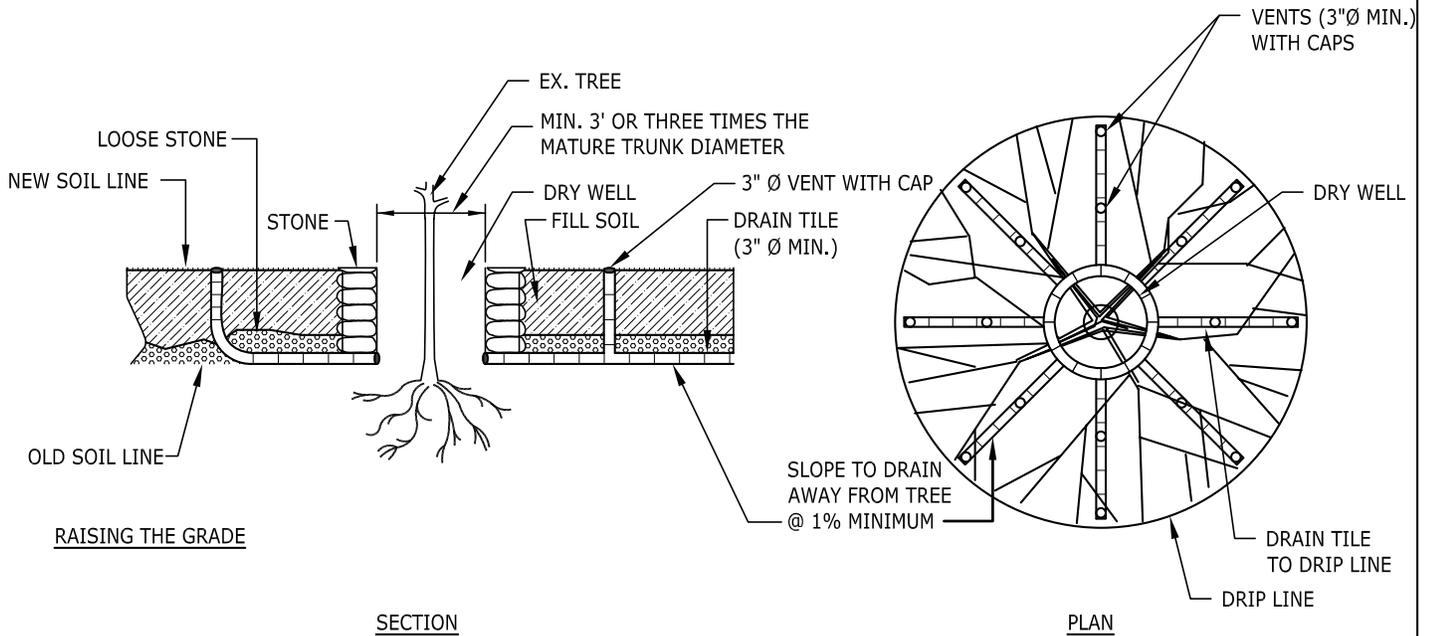
SCALE NONE

DATE 6-11-99

ENGINEER

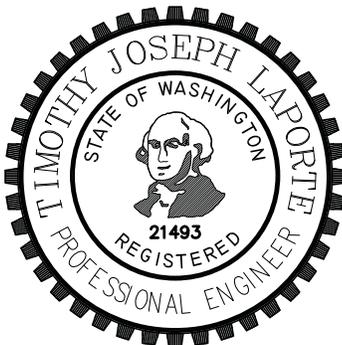
STANDARD PLAN

**6-58**



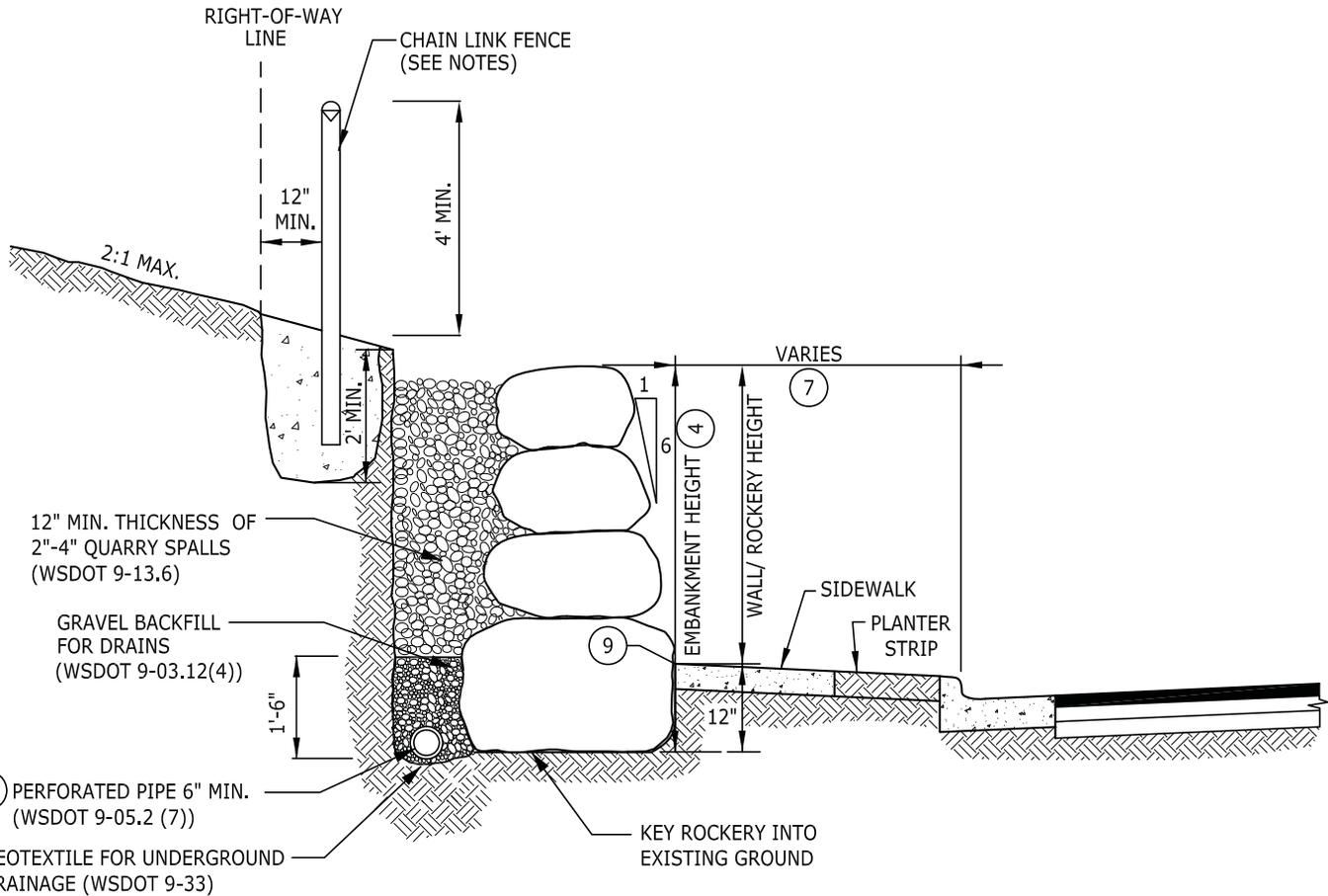
**NOTES:**

1. ALL DRAIN TILE SHALL BE PERFORATED PVC AND WRAPPED IN PERMEABLE DRAIN FABRIC OR CLOTH SOCKS DESIGNED FOR PERFORATED PIPE.
2. MINIMUM BATTER ON DRY WELLS WALLS SHALL BE 1:6 HORIZONTAL TO VERTICAL.
3. ALL FILL SOIL SHALL BE COMPACTED BY HAND EQUIPMENT ONLY.
4. FINAL INSTALLATION SHALL BE REVIEWED AND APPROVED BY A LICENSED ARBORIST.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>CUTS OR FILLS AROUND TREES</b>	
DESIGNED <u>FDS</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>JM</u>	DATE <u>6-11-99</u>	<b>6-59</b>	
CHECKED <u>DMJ</u>	ENGINEER		
APPROVED _____			



8 PERFORATED PIPE 6" MIN. (WSDOT 9-05.2 (7))

GEOTEXTILE FOR UNDERGROUND DRAINAGE (WSDOT 9-33)

KEY ROCKERY INTO EXISTING GROUND

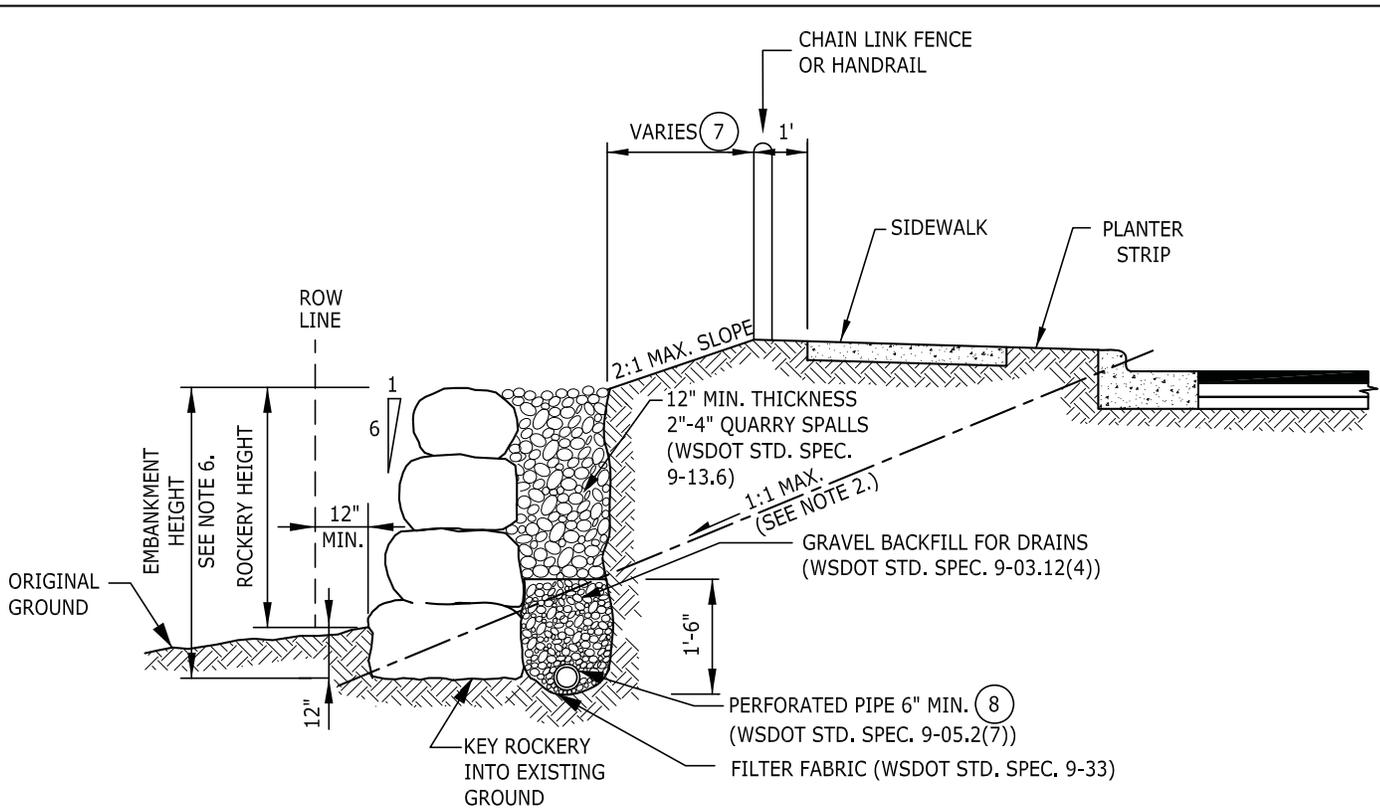
**NOTES:**

1. SEE STRUCTURAL RETAINING WALLS AND ROCK FACINGS IN THE STANDARDS, SECTION 6.11.C.
2. FACE OF ROCKERY OR RETAINING WALL MUST BE OUTSIDE THE CLEAR ZONE AS SHOWN ON STANDARD PLAN 6-50.
3. CHAIN LINK FENCE, TYPE NO. 3 OR 4 (SEE WSDOT STANDARD PLANS) OR HANDRAIL REQUIRED WHEN ROCKERY HEIGHT IS 30 IN. OR GREATER. SEE STD. PLAN 6-41.
4. 8'-0" MAX. HEIGHT ADJACENT TO PUBLIC RIGHT-OF-WAY. 3'-0" TO 6'-0" MAX. HEIGHT ADJACENT TO OTHER PROPERTIES PER STANDARD PLAN 6-57 OR BETWEEN INTERIOR LOTS.
5. WALL HEIGHTS EXCEEDING 3'-0" IN HEIGHT ARE ALLOWED WHEN ADJACENT TO A STREET. ROCKERIES OVER 6'-0" IN HEIGHT ARE REQUIRED TO BE ENGINEERED.
6. DESIGN SIDEWALK CROSS GRADE SHALL BE 1.5%.
7. AS NECESSARY TO MEET TERRAIN AND SIGHT DISTANCE REQUIREMENTS.
8. PIPE TO DRAIN TO CITY STORM SYSTEM OR NATURAL DRAINAGE COURSE.
9. PROVIDE EXPANSION JOINT PER STANDARD PLAN 6-34



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>WALLS IN CUT SECTION</b> <b>PUBLIC ROW</b>	
DESIGNED: DWH	SCALE: NONE	<b>6-60</b>	
DRAWN: BB	DATE: -		
CHECKED: _____	DATE: _____	<b>6-60</b>	
APPROVED: _____	ENGINEER		



**NOTES:**

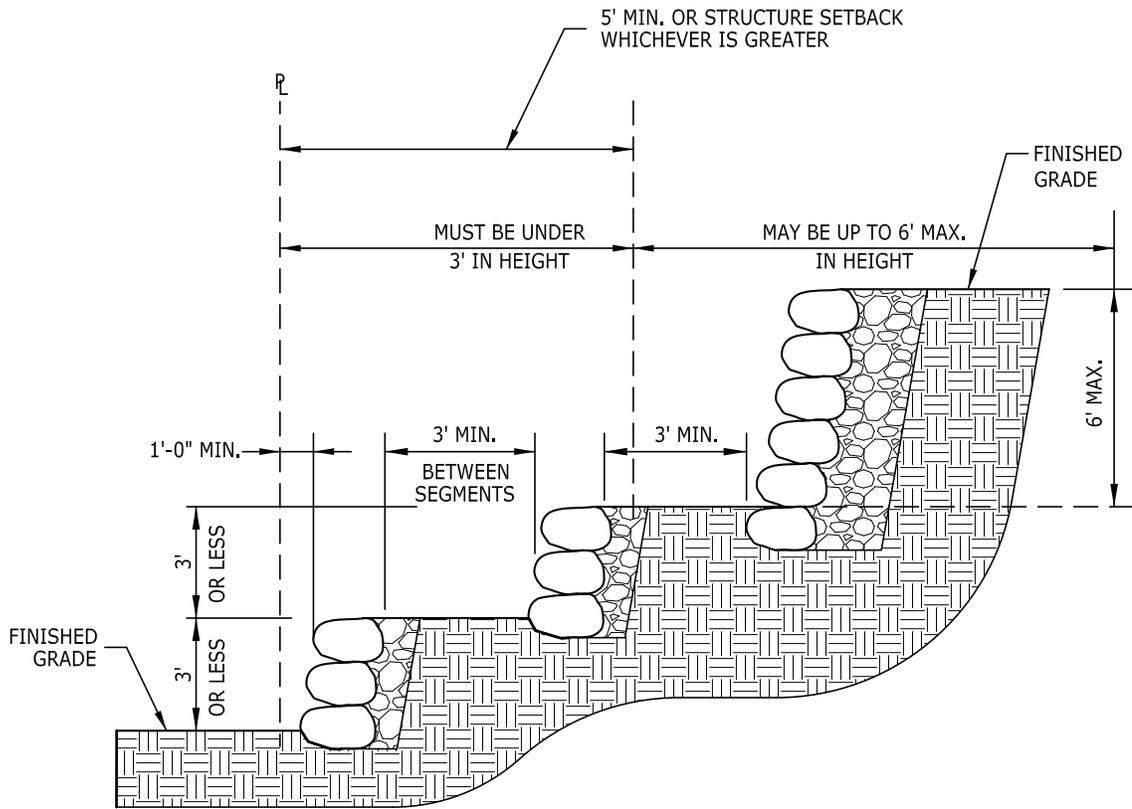
1. SEE STRUCTURAL RETAINING WALLS AND ROCK FACINGS IN THE STANDARDS, SECTION 6.11.C.
2. FLATTER SLOPE MAY BE REQUIRED BASED ON GEOTECHNICAL INVESTIGATION.
3. CHAIN LINK FENCE, TYPE NO. 3 OR 4 (SEE WSDOT STANDARD PLANS) OR HANDRAIL REQUIRED WHEN ROCKERY HEIGHT IS 30 IN. OR GREATER. SEE STANDARD PLAN 6-44.
4. WALL HEIGHTS EXCEEDING 3'-0" IN HEIGHT ARE ALLOWED WHEN ADJACENT TO A STREET. ROCKERIES OVER 6'-0" IN HEIGHT ARE REQUIRED TO BE ENGINEERED.
5. TRAFFIC BARRIERS MAY BE REQUIRED ON ROADS WITH SPEED LIMITS OF 40 MPH OR GREATER, WHERE ROCKERY HEIGHTS EXCEED 6'-0" SEE CHAPTER 7 OF THE WSDOT DESIGN MANUAL.
6. 8'-0" MAX. HEIGHT ADJACENT TO PUBLIC RIGHT-OF-WAY. 3'-0" TO 6'-0" MAX. HEIGHT ADJACENT TO OTHER PROPERTIES PER STANDARD PLAN 6-63 OR 4'-0" BETWEEN INTERIOR LOTS.
7. AS NECESSARY TO MEET TERRAIN AND SIGHT DISTANCE REQUIREMENTS.
8. PIPE TO DRAIN TO CITY STORM SYSTEM OR NATURAL DRAINAGE COURSE.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>WALLS IN FILL SECTION</b> <b>PUBLIC ROW</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-61</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			





**NOTES:**

1. THE HEIGHT OF THE WALL WITHIN A STRUCTURE SETBACK IS LIMITED TO 3'-0" IN TOTAL HEIGHT MEASURED FROM FINISHED GRADE AT THE BASE OF THE WALL TO THE TOP OF THE WALL.
2. WALL HEIGHTS EXCEEDING 3'-0" IN HEIGHT ARE ALLOWED WHEN ADJACENT TO A STREET. ROCKERIES OVER 6'-0" IN HEIGHT ARE REQUIRED TO BE ENGINEERED.
3. WHERE THE SEPARATION BETWEEN SINGLE FAMILY HOMES WITHIN THE DEVELOPMENT IS LESS THAN 16', A WALL HEIGHT OF 4'-0" IS ALLOWED WITHIN THE STRUCTURE SETBACKS.

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**CITY OF KENT**  
ENGINEERING DEPARTMENT

**HEIGHT MEASUREMENT FOR PERIMETER WALL LOCATION**

DESIGNED DWH

DRAWN BB

CHECKED \_\_\_\_\_

APPROVED \_\_\_\_\_

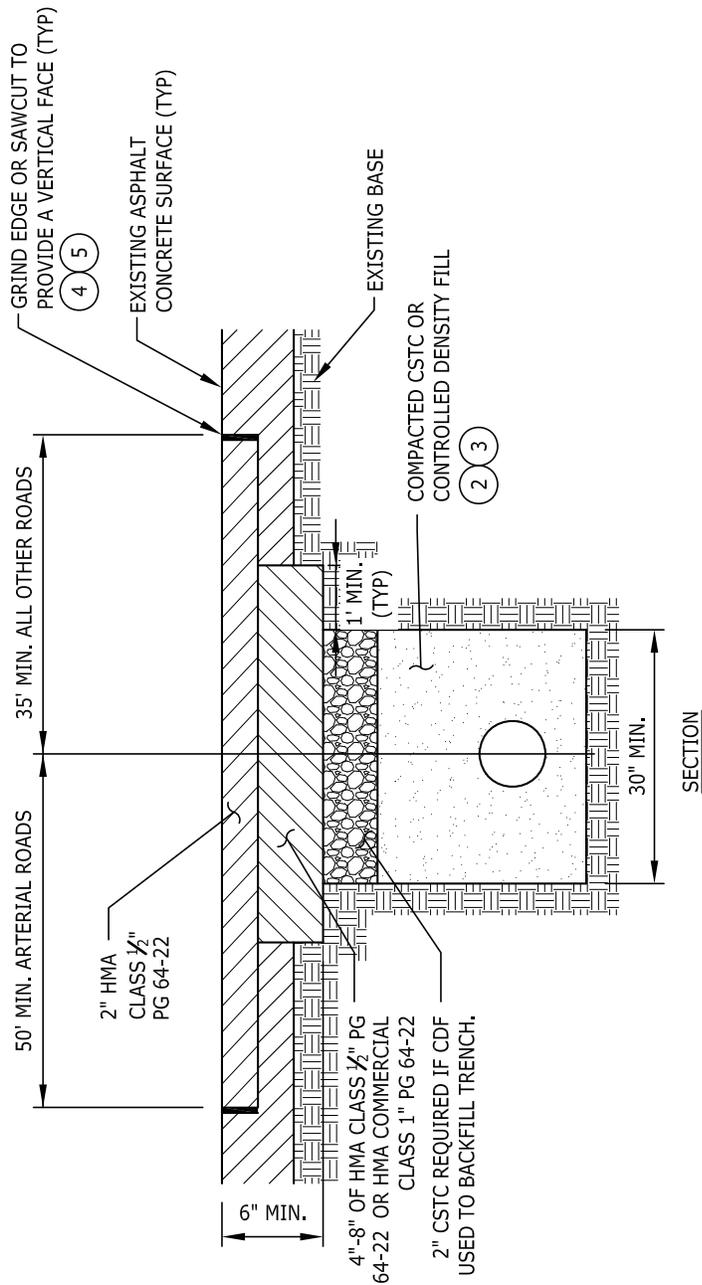
SCALE NONE

DATE -

ENGINEER

STANDARD PLAN

**6-63**



SECTION

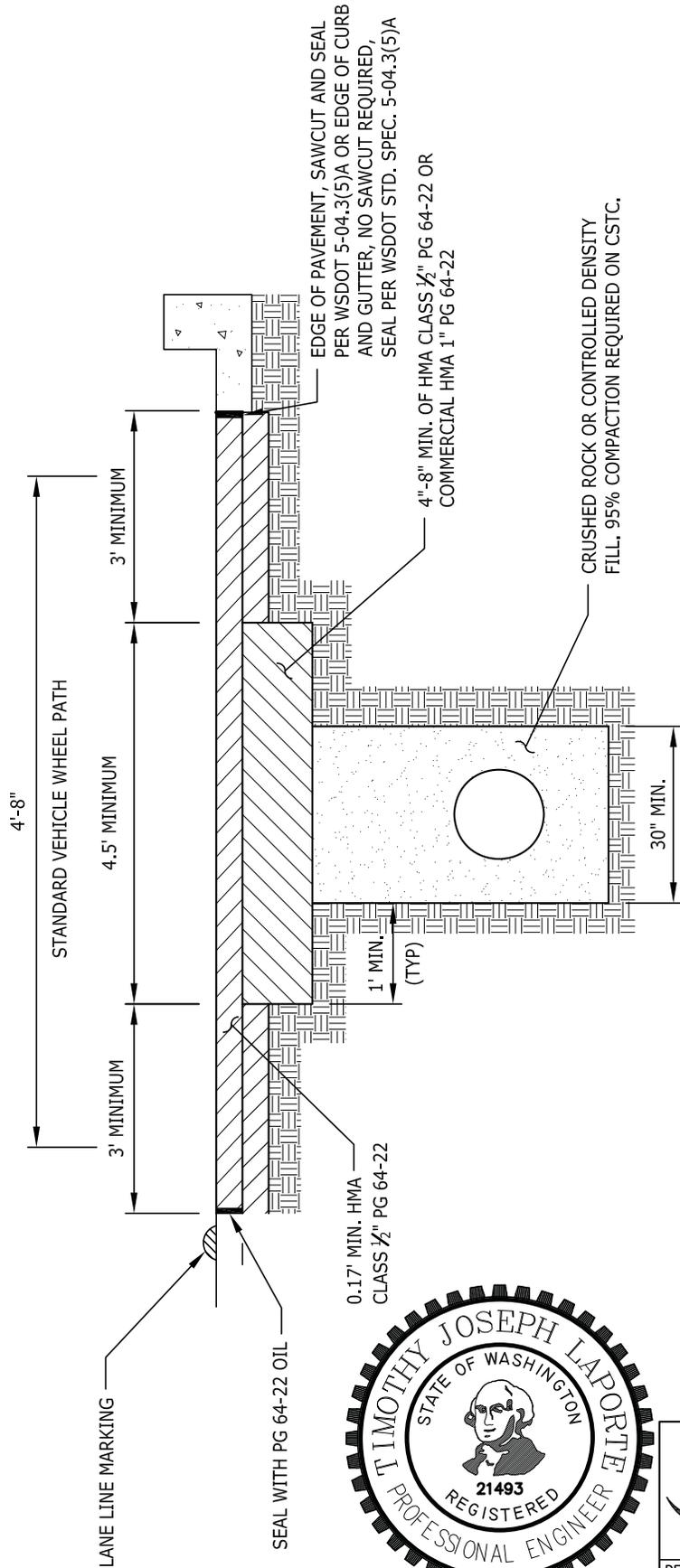
NOTES:

1. ASPHALT CONCRETE MIX SHALL BE HMA CLASS 1/2" PG 64-22.
2. ALL TRENCH BACKFILL SHALL BE CSTC, WSDOT STD. SPEC. 9-03.9(3), OR CONTROLLED DENSITY FILL.
3. CONTROL DENSITY FILL SHALL MEET WSDOT STANDARDS AS STATED IN WSDOT STD. SPEC. 2-09.3(1)E.
4. ALL SAW CUTS SHALL BE VERTICAL AND IN STRAIGHT LINES AS DIRECTED BY ENGINEER PER WSDOT STANDARD SPECIFICATIONS 5-04.3(5).
5. TACK ASPHALT FACES OF SAW CUTS AND SEAL SAW CUTS PER WSDOT STD. SPEC. 5-04.3(5) AND 5.04.3(5)A.
6. HOT MIX ASPHALT SHALL BE AT LEAST 6 INCHES THICK ON LOCAL STREETS; 8 TO 10 INCHES THICK ON ARTERIALS.
7. PAVING FABRIC (IF FOUND) WILL NOT REQUIRE REPLACEMENT.
8. TEMPORARY TRAFFIC MARKINGS SHALL BE PLACED IN KIND IMMEDIATELY AFTER PAVING AND PERMANENT STRIPING SHALL BE REPLACED WITHIN 30 DAYS OF THE PAVING OPERATION.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>FLEXIBLE PAVEMENT PATCHING TRANSVERSE CUT</b>	
DESIGNED: DWH	SCALE: NONE	STANDARD PLAN	
DRAWN: BB	DATE: -		
CHECKED: -	ENGINEER	<b>6-64</b>	
APPROVED: _____			

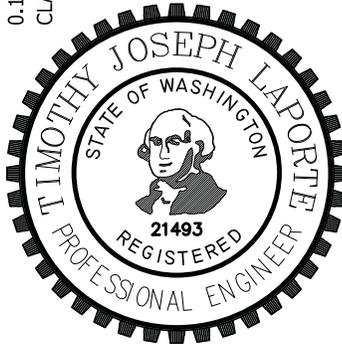


**NOTES:**

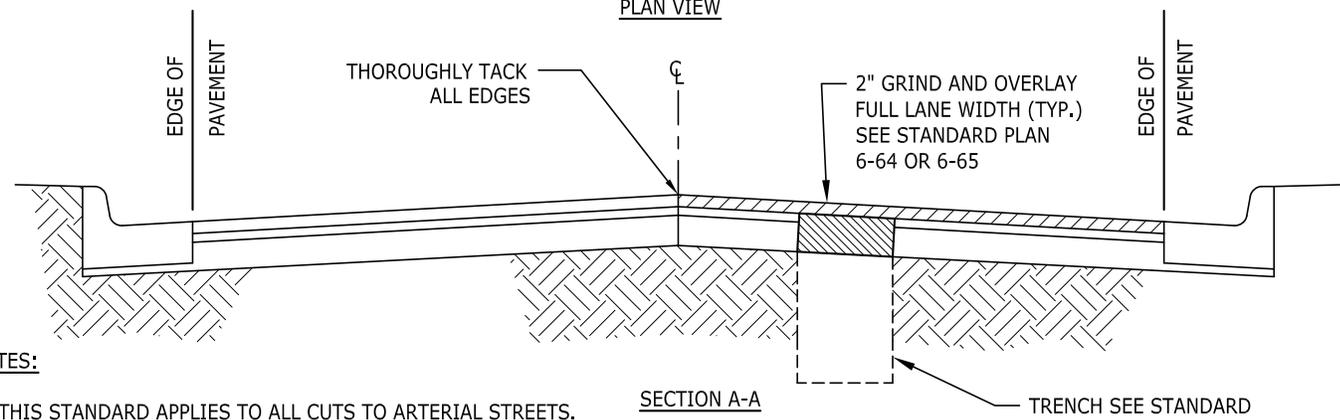
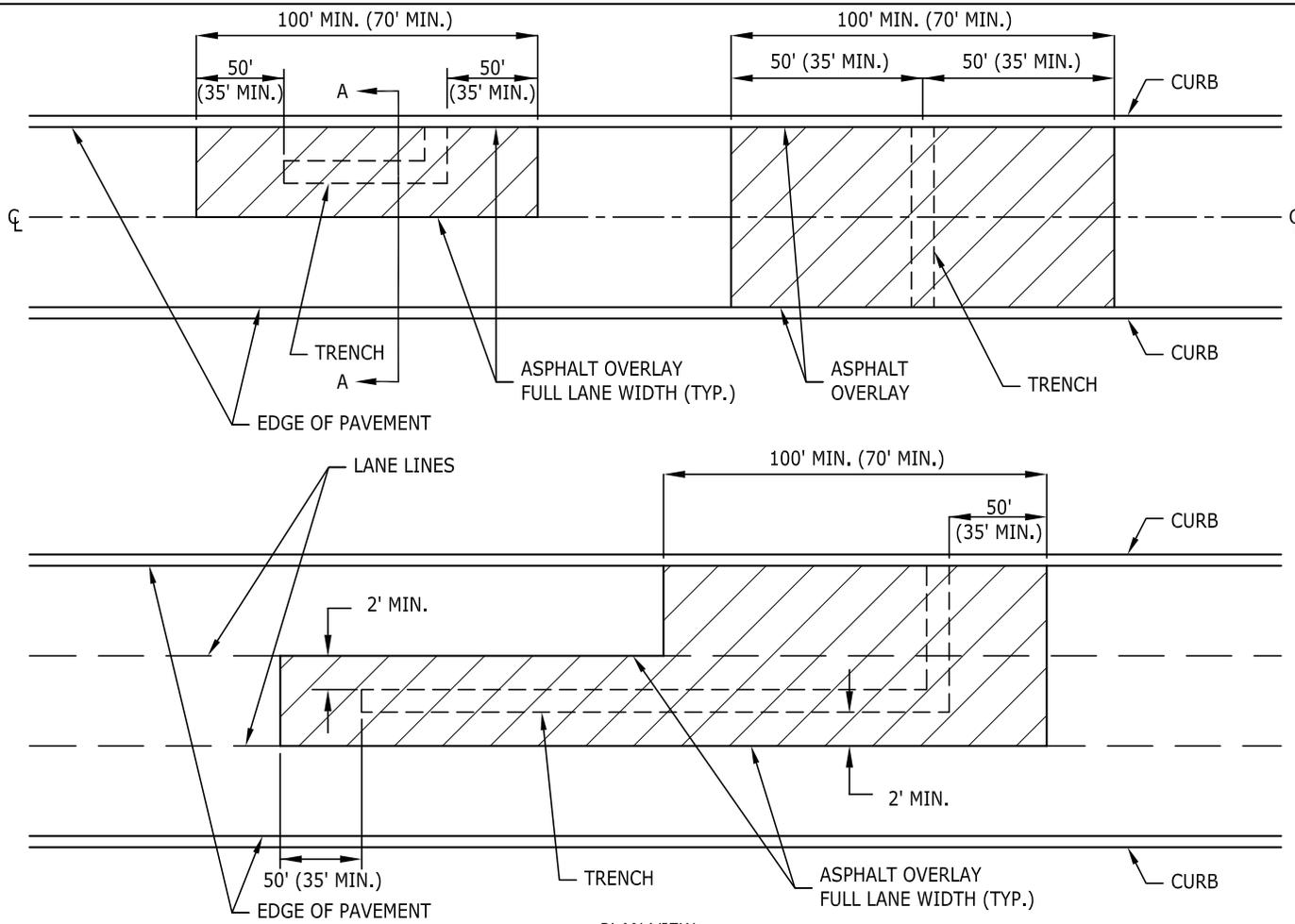
1. ALL TRENCH BACKFILL SHALL BE CSTC, WSDOT 9-03.9(3), OR CONTROLLED DENSITY FILL.
2. CONTROL DENSITY FILL SHALL MEET WSDOT STANDARDS AS STATED IN WSDOT STD. SPECIFICATIONS 2-09.3(1)E.
3. ALL SAW CUTS SHALL BE VERTICAL AND IN STRAIGHT LINES AS DIRECTED BY ENGINEER PER WSDOT STD. SPECIFICATIONS SECTION 5-04.3(5).
4. TACK ASPHALT FACES OF SAW CUTS AND SEAL SAW CUTS PER WSDOT STD. SPECIFICATIONS 5-04.3(5) AND 5.04.3(5)A.
5. HOT MIX ASPHALT SHALL BE AT LEAST 6 INCHES THICK ON LOCAL STREETS; 8 TO 10 INCHES THICK ON ARTERIALS.
6. PAVING FABRIC (IF FOUND) WILL NOT REQUIRE REPLACEMENT.

LESS THAN FULL WIDTH OVERLAY

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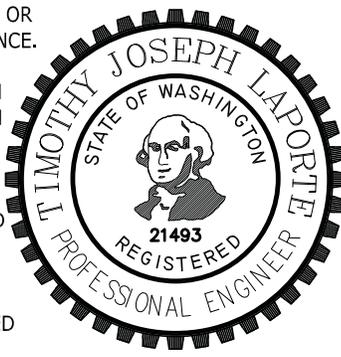


		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>FLEXIBLE PAVEMENT PATCHING LONGITUDINAL CUT</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-65</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



**NOTES:**

1. THIS STANDARD APPLIES TO ALL CUTS TO ARTERIAL STREETS. SEE SECTION 6.16. DIMENSIONS IN PARENTHESIS APPLIES TO ALL OTHER STREETS.
2. OVERLAY AREA MAY BE MODIFIED BY THE ENGINEER 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. ON PRINCIPAL AND MINOR ARTERIALS THE OVERLAY LENGTH MAY BE MODIFIED TO 150' (MIN.)
5. UTILITY PATCHES WITHIN 75' OF EACH OTHER SHALL BE TREATED AND REPAIRED AS ONE PATCH.

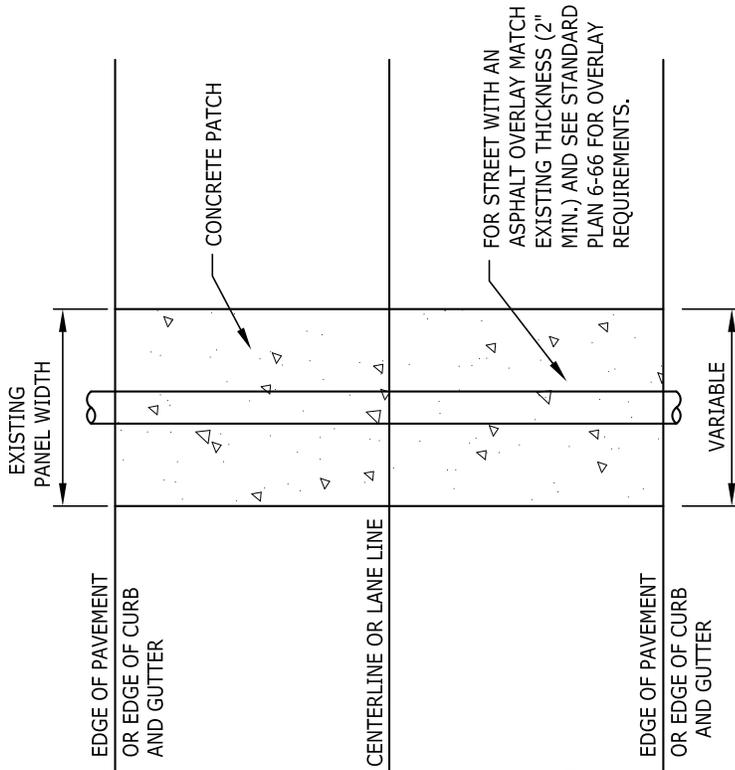


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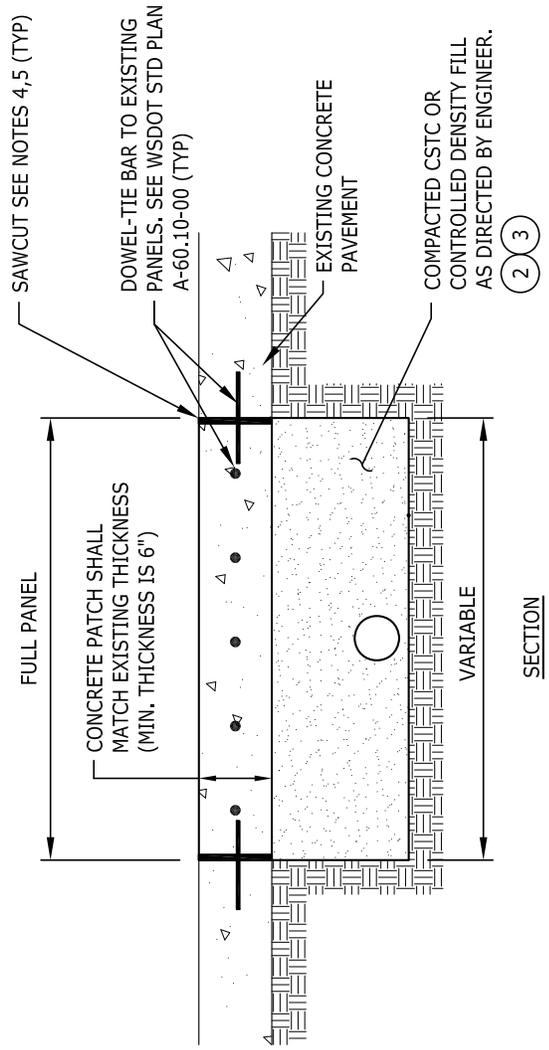
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>ASPHALT OVERLAY FOR ROADWAY TRENCH REPAIR</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>STANDARD PLAN</b>  <b>6-66</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED <u>-</u>	ENGINEER <u>-</u>		
APPROVED <u>-</u>			

**NOTES:**

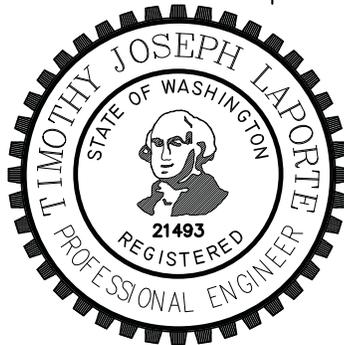
1. PORTLAND CEMENT CONCRETE SHALL BE CLASS 4000.
2. ALL TRENCH BACKFILL SHALL BE CSTC, WSDOT STD. SPECIFICATION 9-03.9(3), OR CONTROLLED DENSITY FILL.
3. CONTROL DENSITY FILL SHALL MEET WSDOT STANDARDS AS STATED IN WSDOT STD. SPECIFICATION 2-09.3(1)E.
4. ALL SAW CUTS SHALL BE VERTICAL AND PERPENDICULAR OR PARALLEL TO THE ROAD CENTERLINE AS DIRECTED BY ENGINEER.
5. FOR ASPHALT OVERLAYS TACK ASPHALT FACES OF SAW CUTS AND SEAL SAW CUTS PER WSDOT STD. SPECIFICATIONS 5-04.3(5) AND 5-04.3(5)A.
6. FOR RIGID PAVEMENT OVERLAD WITH ASPHALT PAVEMENT, PANEL REPLACEMENT SHALL BE PERFORMED FIRST AND THEN GRIND AND OVERLAY ASPHALT PER STANDARD 6-66. A WOVEN FABRIC SHALL BE PLACED BETWEEN THE CONCRETE AND ASPHALT PAVEMENT TO REDUCE REFLECTIVE CRACKING IN THE ASPHALT.
7. FULL CONCRETE PANEL(S) REPLACEMENT IS REQUIRED.
8. A MINIMUM 4-DAY CURING PERIOD WILL BE REQUIRED PRIOR TO OPENING TO TRAFFIC. ON ARTERIALS OR WHERE OTHERWISE SPECIFIED BY THE ENGINEER, ADDITIVES MAY BE REQUIRED TO REDUCE THE CURING TIME TO 3 DAYS OR LESS.



**PLAN**



**SECTION**

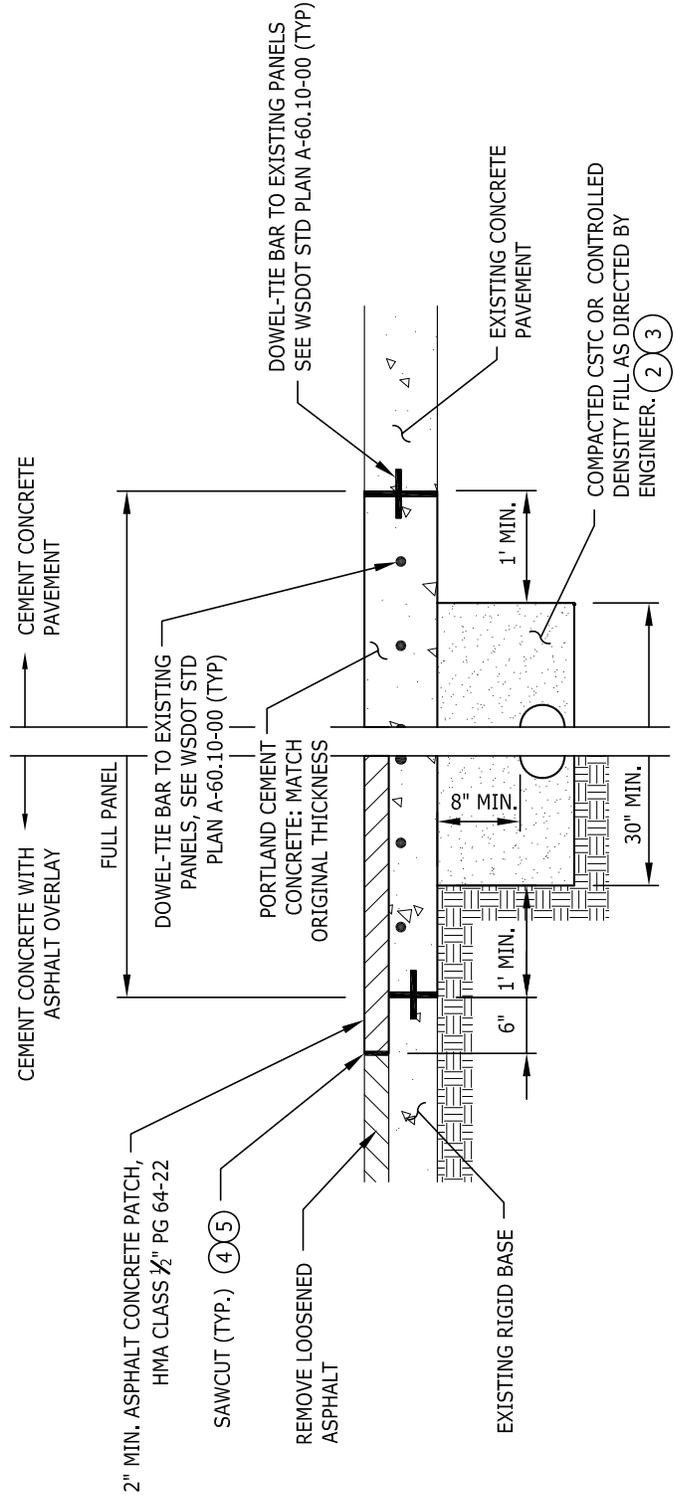


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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>RIGID PAVEMENT PATCHING TRANSVERSE CUT</b>	
DESIGNED: <u>DWH</u>	SCALE: <u>NONE</u>	<b>6-67</b>	
DRAWN: <u>BB</u>	DATE: <u>-</u>		
CHECKED: _____	ENGINEER: _____		
APPROVED: _____			

**NOTES:**

1. 2" MIN. ASPHALT CONCRETE MIX SHALL BE HMA CLASS ½" PG 64-22. PORTLAND CEMENT CONCRETE SHALL BE CLASS 4000.
2. ALL TRENCH BACKFILL SHALL BE CSTC, WSDOT STD. SPECIFICATION 9-03.9(3), OR CONTROLLED DENSITY FILL.
3. CONTROL DENSITY FILL SHALL MEET WSDOT STANDARDS AS STATED IN WSDOT STD. SPECIFICATION 2-09.3(1)E.
4. ALL SAW CUTS SHALL BE VERTICAL AND PERPENDICULAR OR PARALLEL TO THE ROADWAY CENTERLINE AS DIRECTED BY ENGINEER.
5. TACK ASPHALT FACES OF SAW CUTS AND SEAL SAW CUTS PER WSDOT STD. SPECIFICATIONS 5-04.3(5) AND 5-04.3(5)A.
6. FOR RIGID PAVEMENT OVERLaid WITH ASPHALT PAVEMENT, PANEL REPLACEMENT SHALL BE PERFORMED FIRST AND THEN GRIND AND OVERLAY ASPHALT PER STANDARD PLAN 6-66. A WOVEN FABRIC SHALL BE PLACED BETWEEN THE CONCRETE AND ASPHALT PAVEMENT TO PREVENT REFLECTIVE CRACKING IN THE ASPHALT.
7. FULL PANEL REPLACEMENT IS REQUIRED.
8. A MINIMUM 4-DAY CURING PERIOD WILL BE REQUIRED PRIOR TO OPENING TO TRAFFIC. ON ARTERIALS ADDITIVES WILL BE REQUIRED TO REDUCE THE CURING TIME TO 3 DAYS MIN.

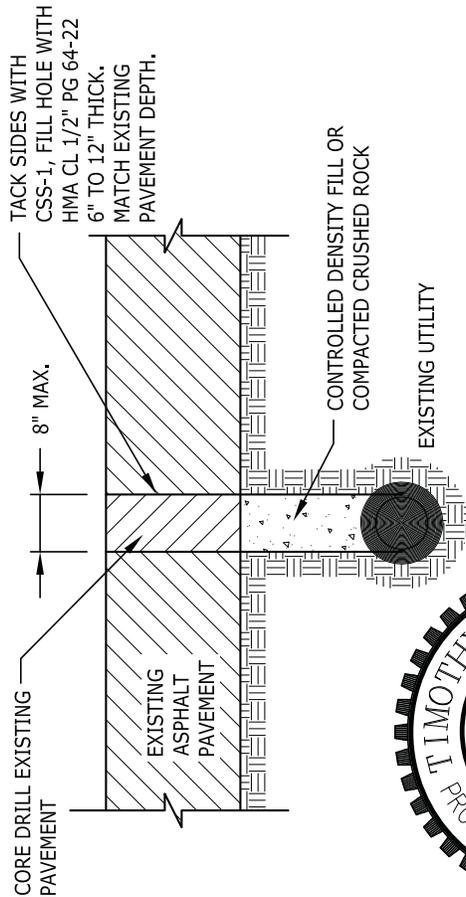
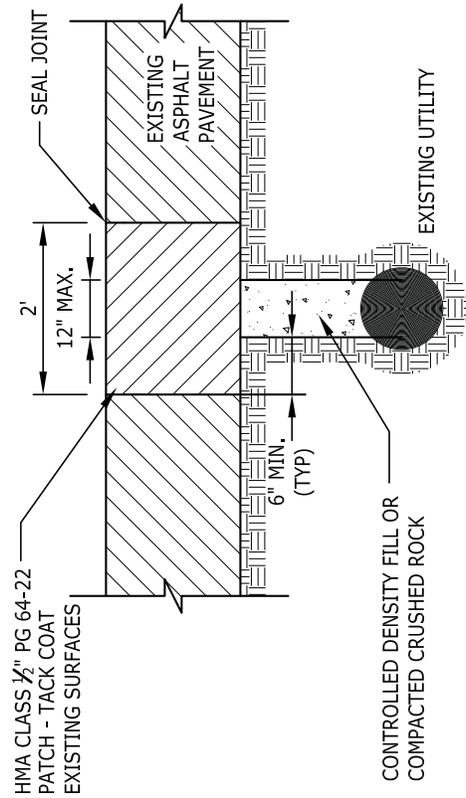


SECTION

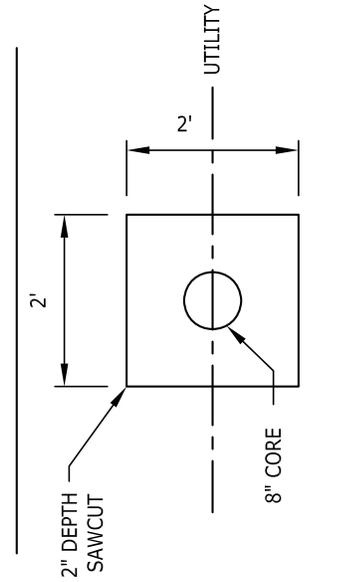


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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>RIGID PAVEMENT PATCHING</b> LONGITUDINAL CUT	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN <b>6-68</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



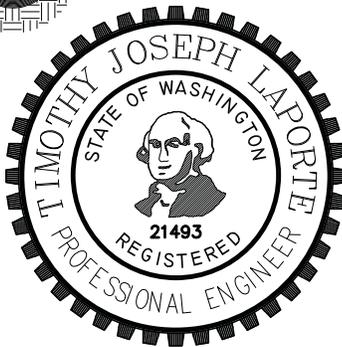
ALTERNATE REPAIR



NOTES:

1. TO BE USED FOR NO-CUT AND GRIND & OVERLAY STREET RESTORATION CLASSIFICATIONS.
2. THE EXISTING PAVEMENT SHALL BE CUT FULL DEPTH WITH AN EIGHT INCH DIAMETER CORE DRILL. THE SUBBASE MATERIAL SHALL BE REMOVED USING A VACUUM EXCAVATOR, KEEPING THE EXCAVATION AS MINIMAL AS POSSIBLE.
3. BACKFILL THE EXCAVATION WITH A SIX INCH CUSHION OF CSTC OVER THE UTILITY THEN FILL THE REMAINING VOID WITH CDF OR COMPACTED CSTC TO THE BOTTOM OF THE EXISTING ASPHALT PAVEMENT.
4. REPAIR THE CORED PAVEMENT SECTION WITH HMA CLASS 1/2" PG 64-22 AND SEAL THE JOINT.
5. IF THE OPENING IS LARGER THAN THE 8 INCH CORE, THE PAVEMENT RESTORATION WILL INCLUDE A 2' BY 2' PATCH CENTERED ON THE EXCAVATION.
6. IF THE EXCAVATION IS LARGER THAN 2' BY 2', THE STANDARD GRIND AND OVERLAY RESTORATION SHALL BE USED.
7. PAVEMENT CORES SHALL BE STAGGERED BETWEEN LANES WITH A 50' MIN. DISTANCE BETWEEN CORES.

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**CITY OF KENT**  
ENGINEERING DEPARTMENT

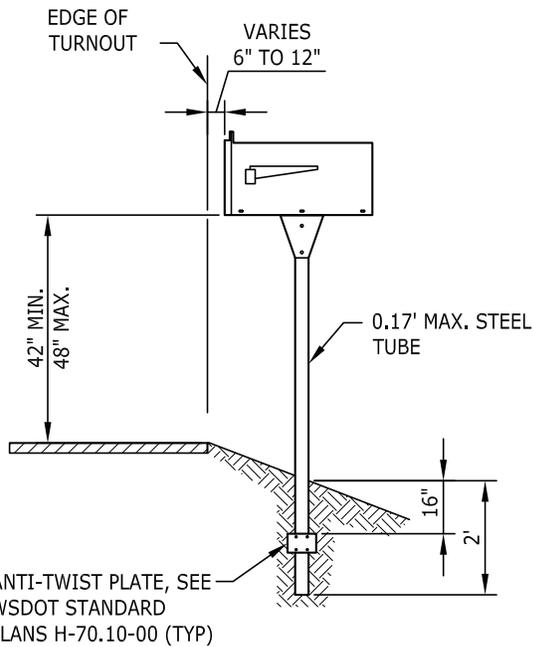
**PAVEMENT RESTORATION FOR  
WINDOW CUTS OR POT HOLING**

DESIGNED DWH  
DRAWN BB  
CHECKED \_\_\_\_\_  
APPROVED \_\_\_\_\_

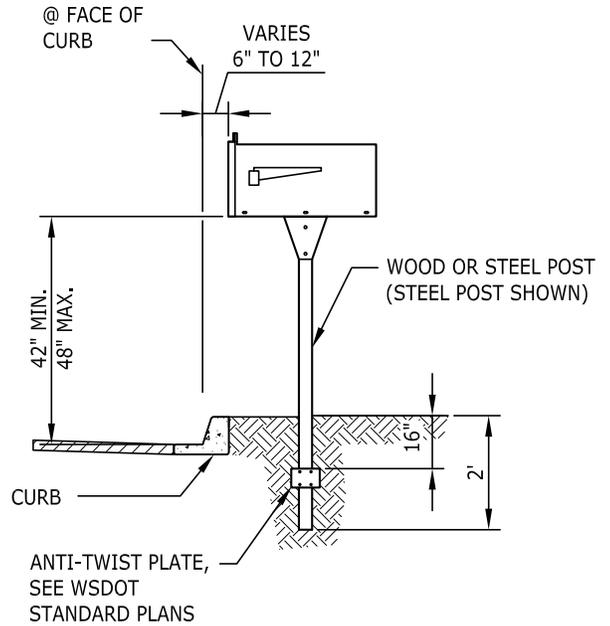
SCALE NONE  
DATE -  
ENGINEER

STANDARD PLAN

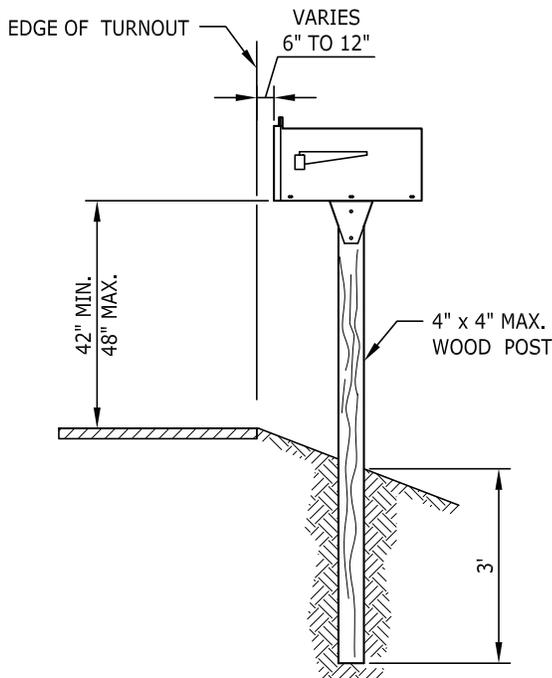
**6-69**



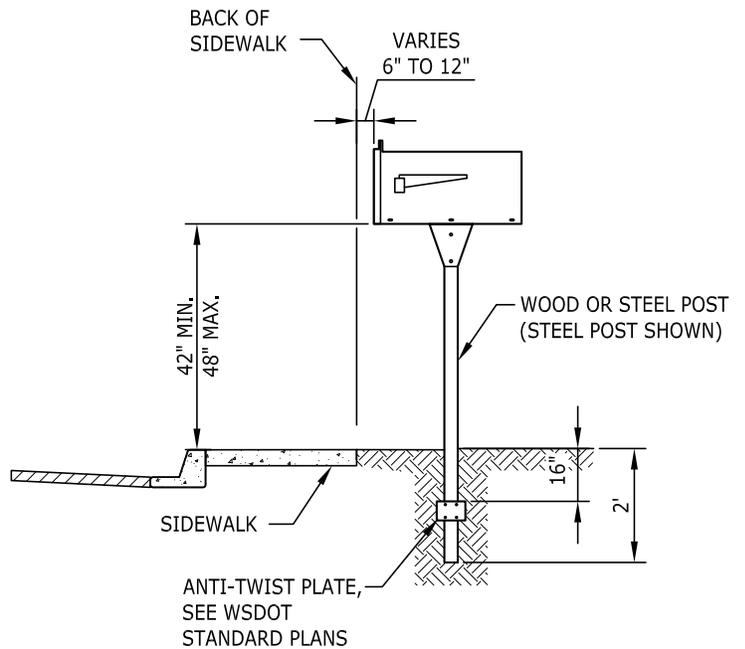
TYPE 1 (STEEL POST OPTION)



TYPE 1 INSTALLED BEHIND CURB



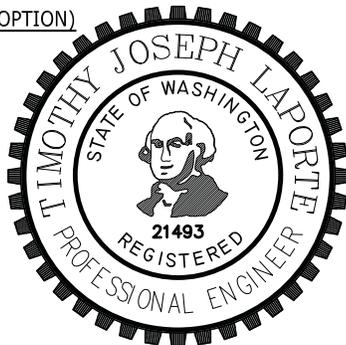
TYPE 1 (WOOD POST OPTION)



TYPE 1 INSTALLED BEHIND SIDEWALK

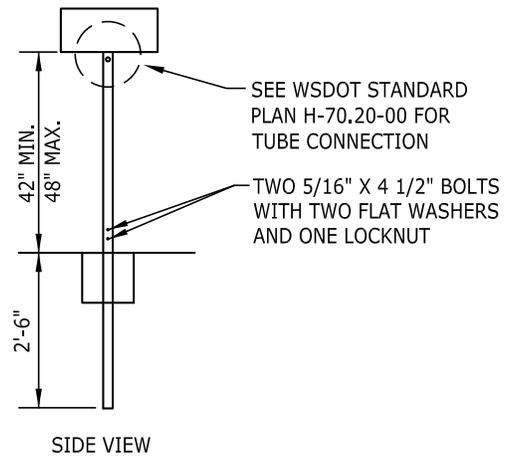
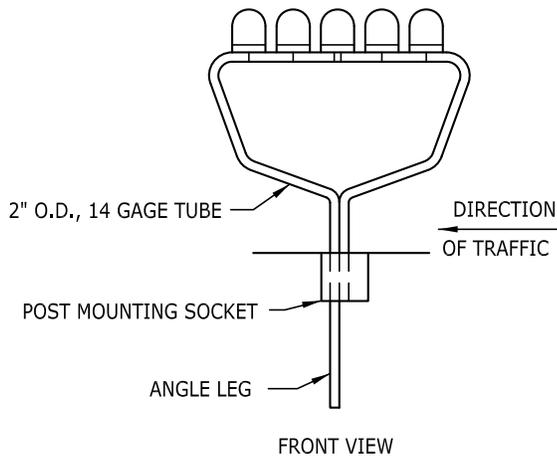
NOTE:

1. ALL LOCATIONS TO BE APPROVED BY THE POSTMASTER.
2. SEE WSDOT STANDARD PLANS H-70.10-00 AND H-70.20-00 FOR DETAILS.



NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION IS KEPT ON FILE AT THE CITY OF KENT. A COPY MAY BE OBTAINED UPON REQUEST.

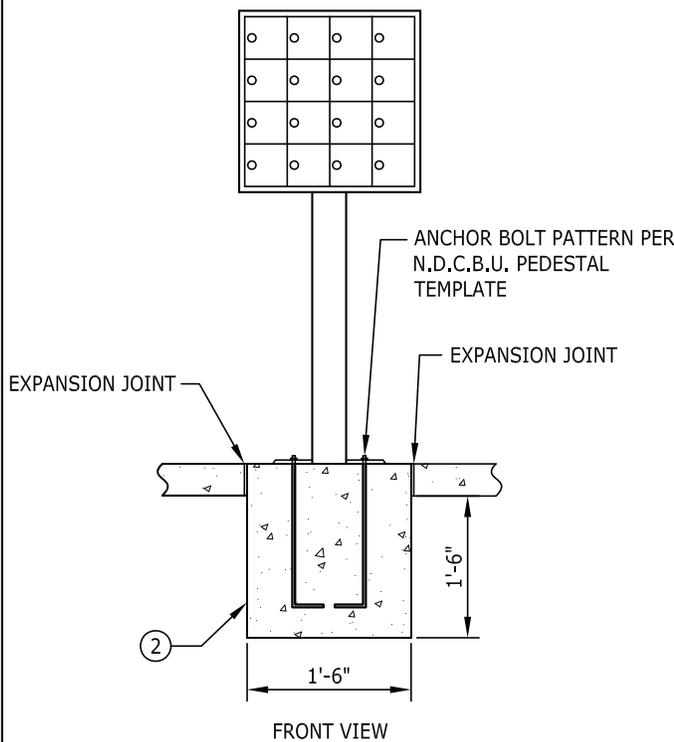
		<b>CITY OF KENT</b>	
		ENGINEERING DEPARTMENT	
<b>MAILBOX INSTALLATION</b>		<b>TYPE 1 AND 2</b>	
<b>SHEET 1 OF 2</b>		<b>6-70</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



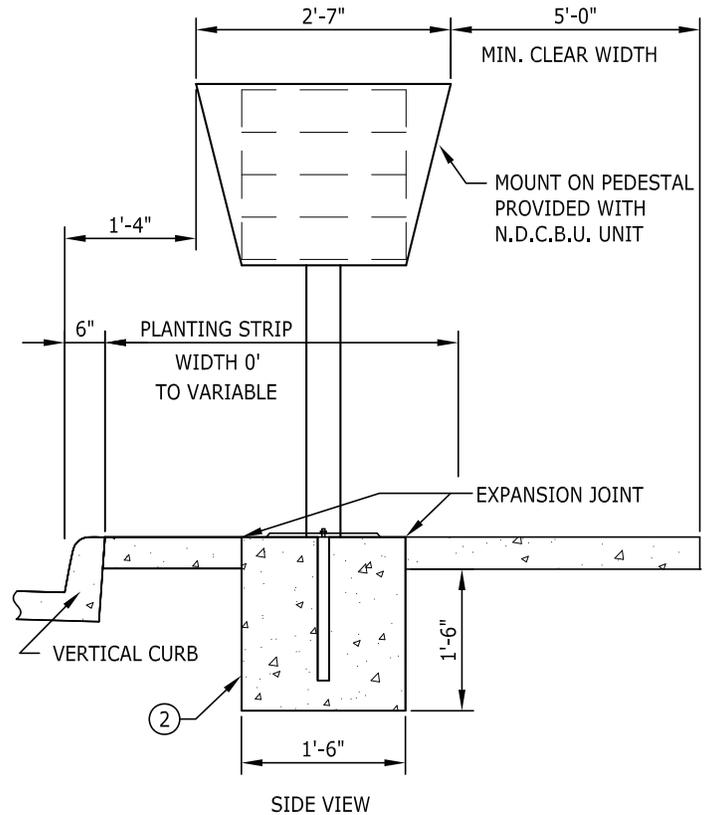
TYPE 2  
(MULTIPLE BOX INSTALLATION)

**NOTES:**

1. SEE STANDARD PLAN 6-40 FOR SIDEWALK REQUIREMENTS.
2. SEE WSDOT STANDARD PLAN H-70.20-00 FOR DETAILS.

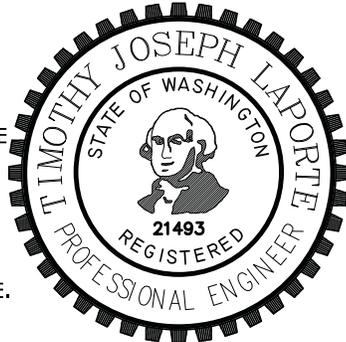


TYPE N.D.C.B.U. INSTALLATION  
(NEIGHBORHOOD DELIVERY AND COLLECTION BOX UNIT)



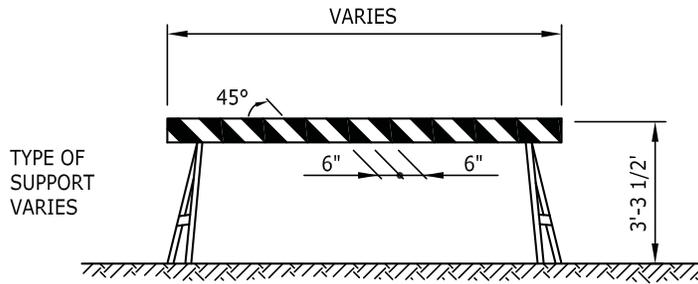
**NOTES:**

1. THE POSTMASTER OR DESIGNATED SERVING POST OFFICE WILL DESIGNATE THE LOCATION AND MANNER OF GROUPING OF MAIL BOXES.
2. INSTALLATION OF N.D.C.B.U. (INCLUDING CONSTRUCTION OF BASE) WILL BE DONE BY U.S. POSTAL SERVICE.
3. SEE STANDARD PLAN 6-34 FOR CURB AND SIDEWALK JOINTS.



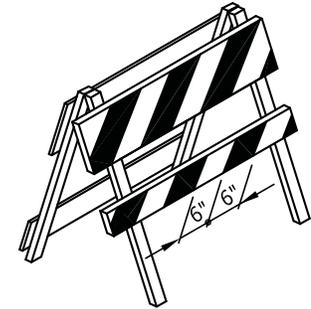
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>MAILBOX INSTALLATION</b> TYPE 1 AND 2 SHEET 2 OF 2	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-70</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			

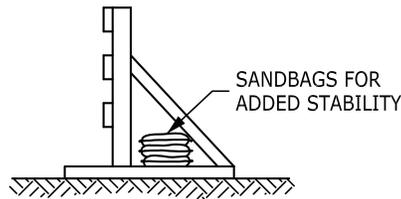


TYPE OF SUPPORT VARIES

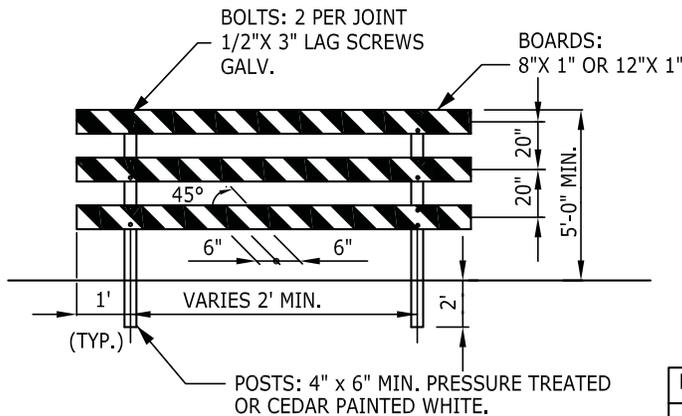
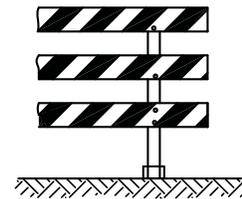
TYPE I BARRICADE



TYPE II BARRICADE



MOVABLE (TEMPORARY)  
TYPE III BARRICADE



BOLTS: 2 PER JOINT  
1/2" X 3" LAG SCREWS  
GALV.

BOARDS:  
8" X 1" OR 12" X 1"

POSTS: 4" X 6" MIN. PRESSURE TREATED  
OR CEDAR PAINTED WHITE.

FIXED (PERMANENT)  
TYPE III BARRICADE

NOTE:

FOR DIMENSIONS NOT SHOWN, SEE TABLE.

STRIPE NOTES:

- ORANGE & WHITE IF TEMPORARY. RED & WHITE IF PERMANENT.
- REFLECTORIZED
- SLANT DOWNWARD, RIGHT OR LEFT, IN DIRECTION TRAFFIC WILL PASS. SLANT BOTH DIRECTIONS FROM MIDDLE IF TRAFFIC PASSES BOTH ENDS. WIDTH 6" EXCEPT 4" IF RAILS ARE LESS THAN 3' LONG.
- SLANT DOWNWARD TO MIDDLE AT END OF CLOSED ROAD.

SEE MUTCD SEC.6F.63

BARRICADE NOTES:			
TYPE	I	II	III
WIDTH OF RAIL	8" MIN. 12" MAX.	8" MIN. 12" MAX.	8" MIN. 12" MAX.
LENGTH OF RAIL	2' MIN.	2' MIN.	4' MIN.
HEIGHT	3' MIN.	3' MIN.	5' MIN.
TYPE OF FRAME	DEMOUNTABLE OR HEAVY "A"	LIGHT "A" FRAME	POST OR SKIDS
FLEXIBILITY	MOVABLE	PORTABLE	MOVABLE OR PERMANENT

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**CITY OF KENT**  
ENGINEERING DEPARTMENT

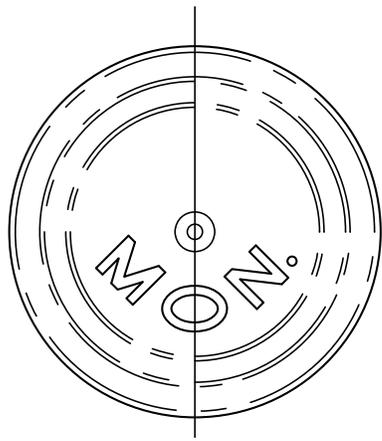
**ROADWAY BARRICADES**

DESIGNED: DWH  
DRAWN: BB  
CHECKED: \_\_\_\_\_  
APPROVED: \_\_\_\_\_

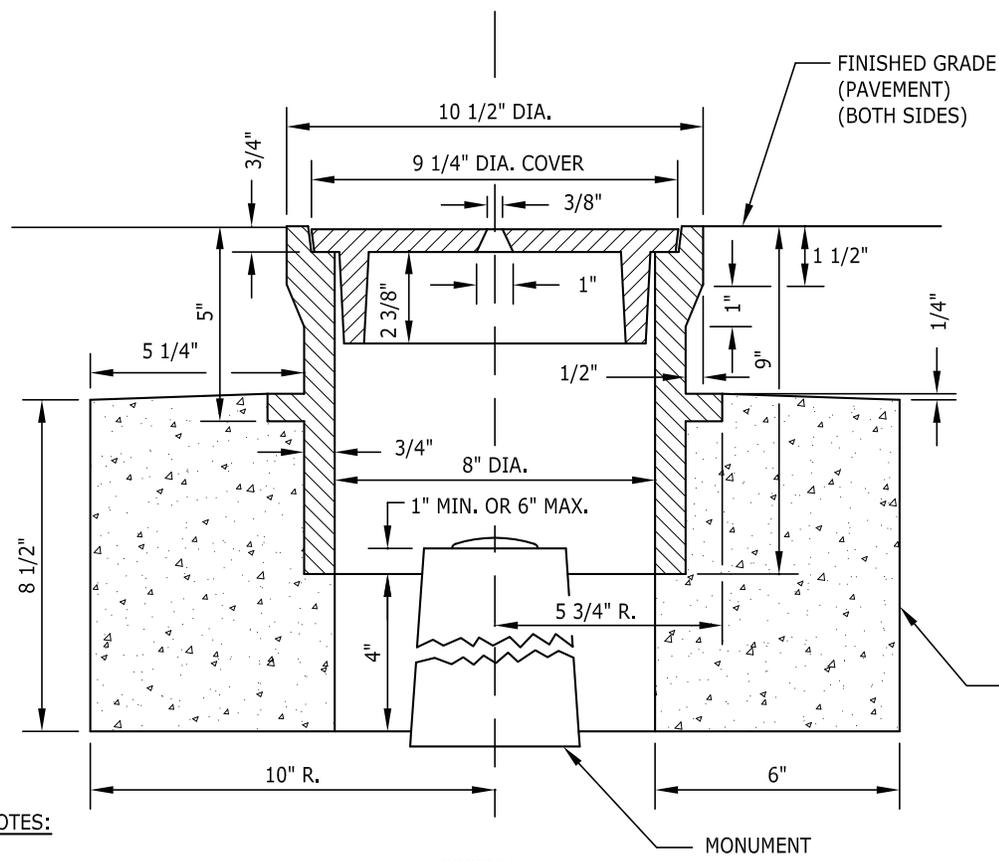
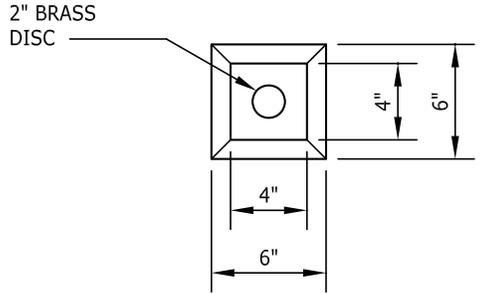
SCALE: NONE  
DATE: -  
ENGINEER

STANDARD PLAN

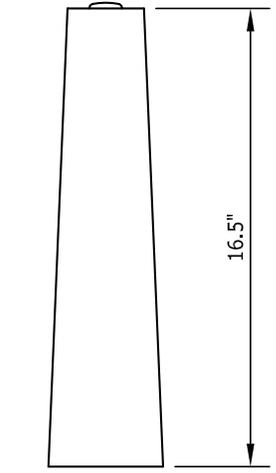
**6-71**



PLAN OF COVER



SECTION



MONUMENT DETAIL

CONCRETE CLASS 3000 BASE

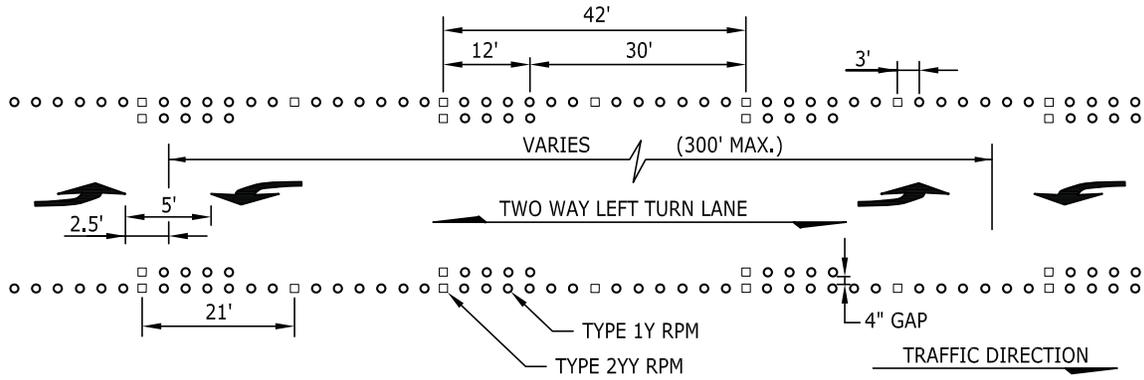
NOTES:

1. MONUMENT, MONUMENT CASE AND COVER - OLYMPIC FOUNDRY WSDOT 8" x 9", PART NO. 1015 OR PRE-APPROVED EQUAL.
2. MONUMENT POST - FOG-TITE MONUMENT POST, OR PRE-APPROVED EQUAL.
3. THE CASTINGS SHALL BE GRAY-IRON CASTINGS, ASTM DESIGNATION A-48, CLASS 40. THE COVER AND SEAT SHALL BE MACHINED SO AS TO HAVE PERFECT CONTACT AROUND THE ENTIRE CIRCUMFERENCE AND FULL WIDTH OF BEARING SURFACE.
4. WHEN THE MONUMENT, MONUMENT CASE AND COVER ARE PLACED IN CEMENT CONCRETE PAVEMENT THE CONCRETE BASE WILL NOT BE NECESSARY.

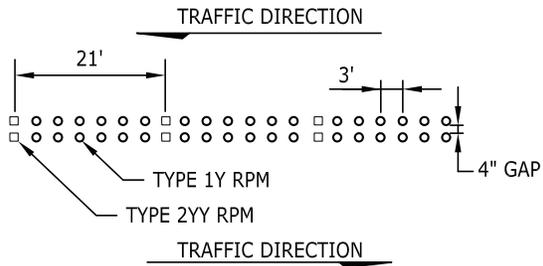


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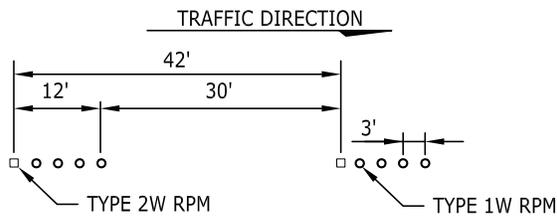
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>STANDARD MONUMENT, MONUMENT CASE AND COVER</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-72</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



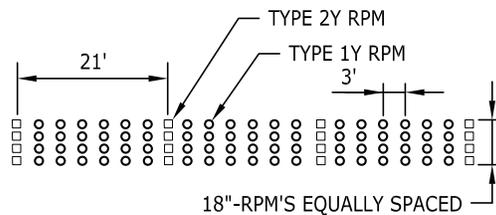
TWO WAY LEFT TURN LINES



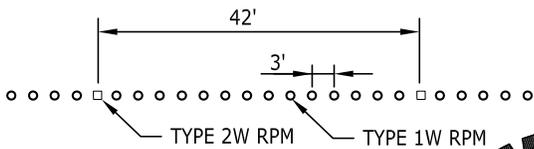
DOUBLE YELLOW CENTER LINE



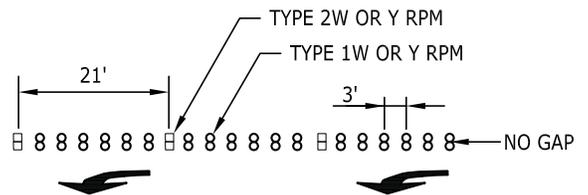
LANE LINE



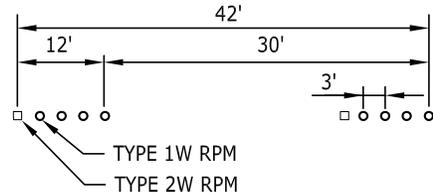
BARRIER LINE



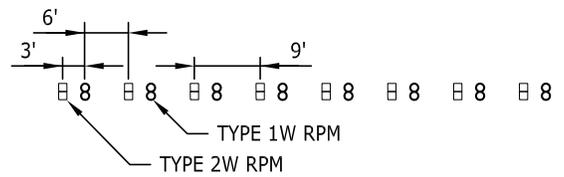
EDGE LINE



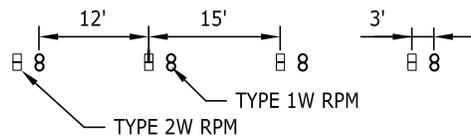
WIDE LINE



SKIP CENTER LINE

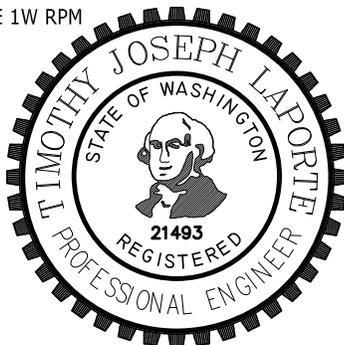


DOTTED WIDE LINE



DROP LANE LINE

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**CITY OF KENT**  
ENGINEERING DEPARTMENT

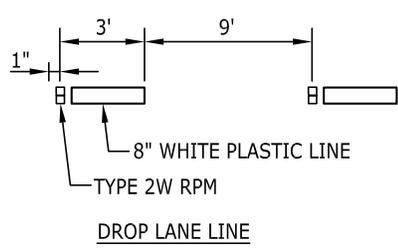
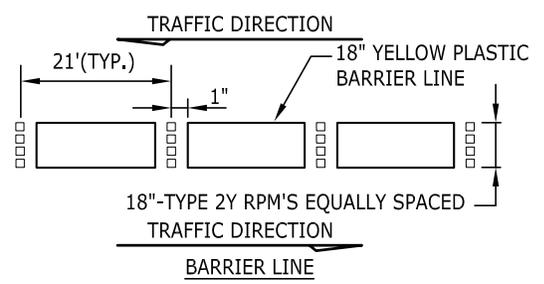
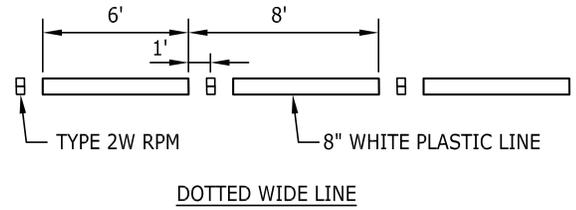
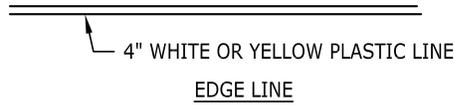
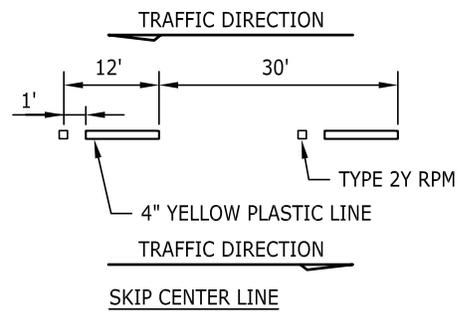
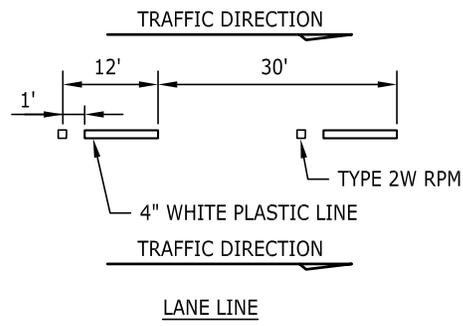
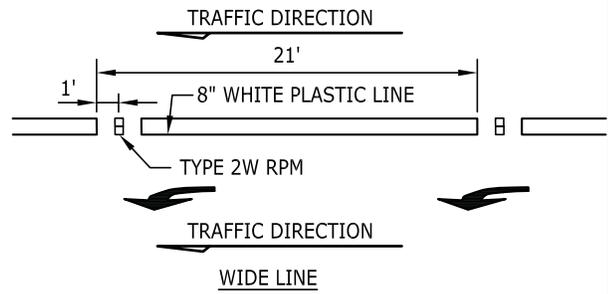
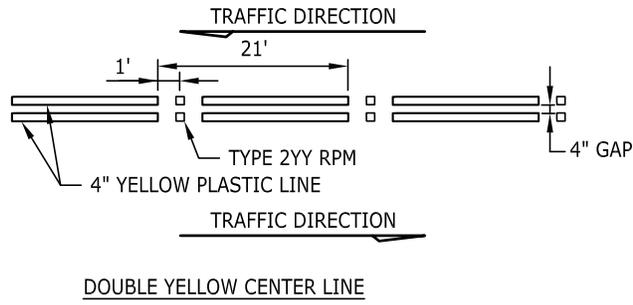
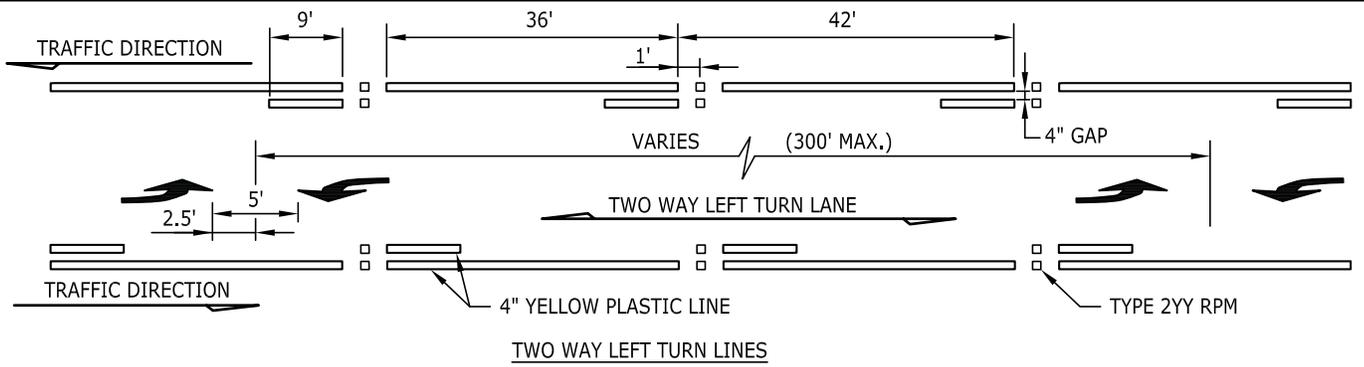
**TYPICAL RPM LANE MARKINGS**

DESIGNED DWH  
DRAWN BB  
CHECKED  
APPROVED

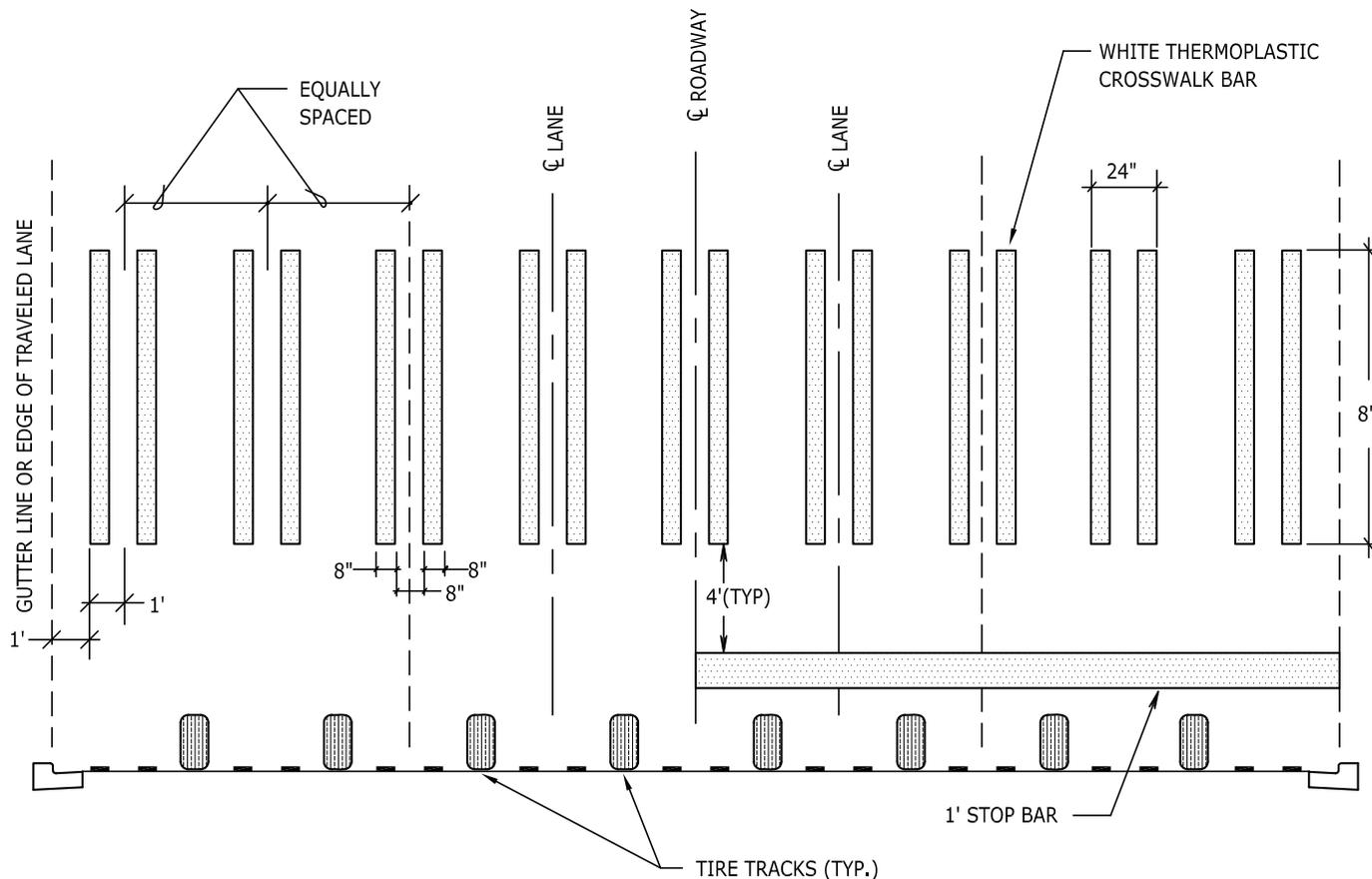
SCALE NONE  
DATE -  
ENGINEER

STANDARD PLAN

**6-73**



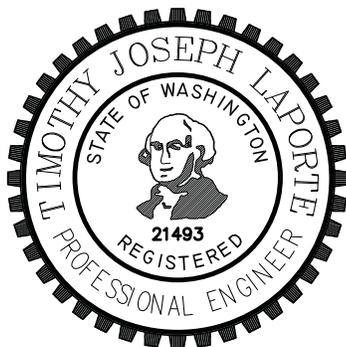
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TYPICAL THERMOPLASTIC LANE MARKINGS</b>	
DESIGNED FS	SCALE NONE	STANDARD PLAN	
DRAWN SPS	DATE 02-2003		
CHECKED	CITY ENGINEER	<b>6-74</b>	
APPROVED			



\* TYPICAL 4 LANE ROADWAY CONFIGURATION

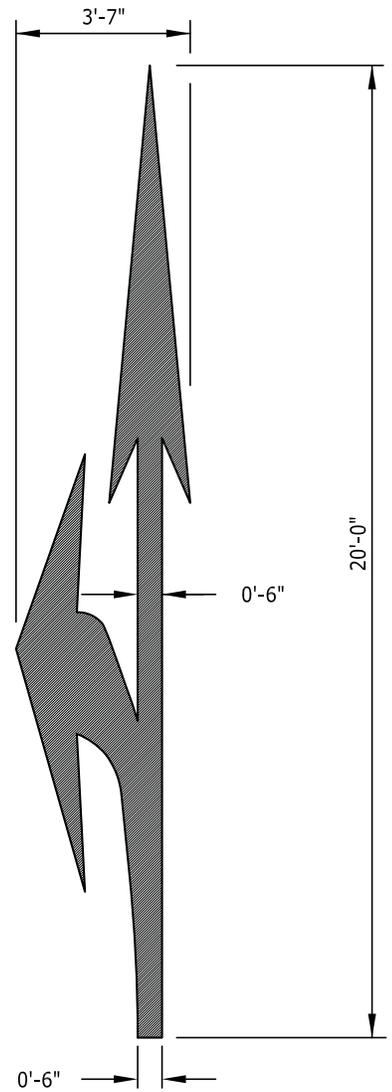
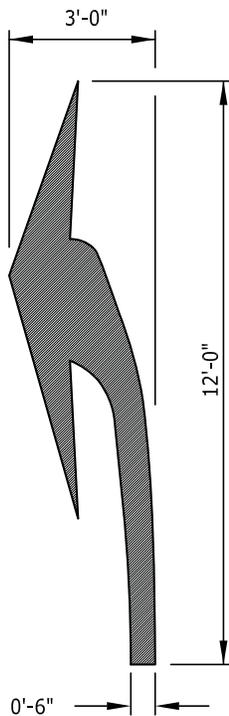
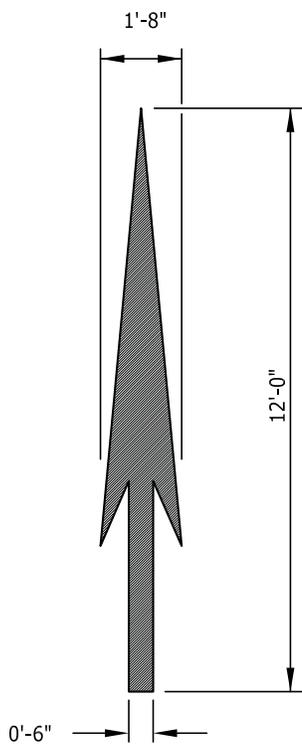
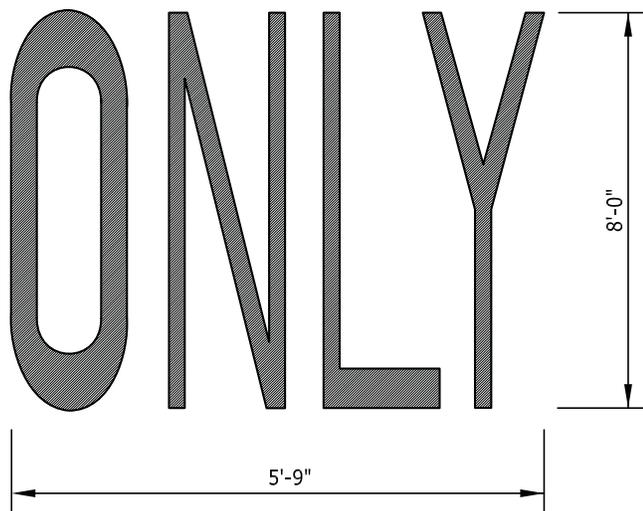
\* NOTES:

1. FOR ROADWAYS WITH MORE OR LESS LANES, THE SAME CONFIGURATION APPLIES, CENTER THERMOPLASTIC BARS ON THE LANE LINES, AND IN THE CENTER OF THE TRAVELED PORTION OF THE LANE TO MINIMIZE TIRE WEAR ON THE THERMOPLASTIC.
2. THE CENTERLINE OF THE CROSSWALK SHALL GO FROM THE CENTERLINE OF THE CURB RAMP ON ONE SIDE OF THE STREET TO THE CENTERLINE OF THE CURB RAMP ON THE OTHER SIDE OF THE STREET UNLESS OTHERWISE SHOWN ON THE PLANS.
3. GLASS BEADS (PER WSDOT STANDARD SPECS. SECTION 9-34) SHALL BE ADDED TO ALL THERMOPLASTIC CROSSWALKS AND STOP BARS.



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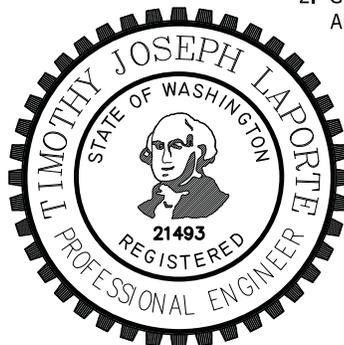
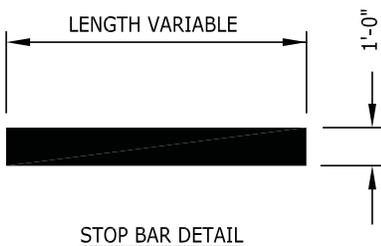
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>THERMOPLASTIC CROSSWALK MARKINGS</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-75</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



**NOTES:**

1. THERMOPLASTIC MATERIAL SHALL BE USED, UNLESS DIRECTED BY THE ENGINEER.
2. GLASS BEADS (PER WSDOT STANDARD SPECS. SECTION 9-34) SHALL BE ADDED TO ALL THERMOPLASTIC CROSSWALKS AND STOP BARS.

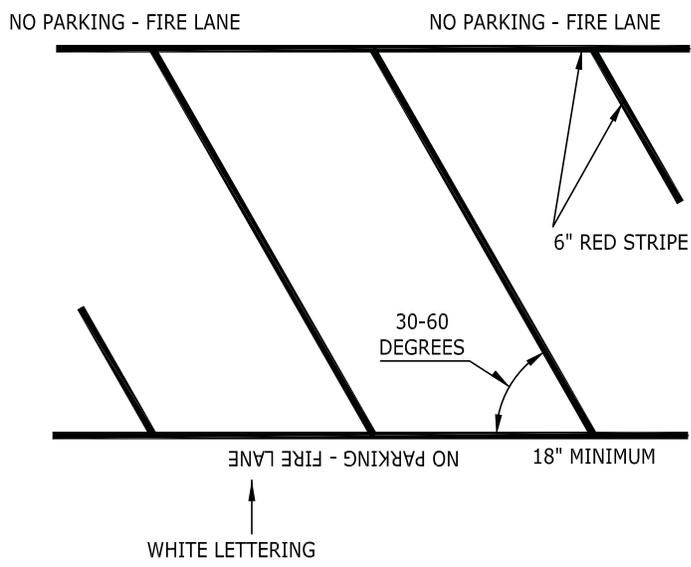
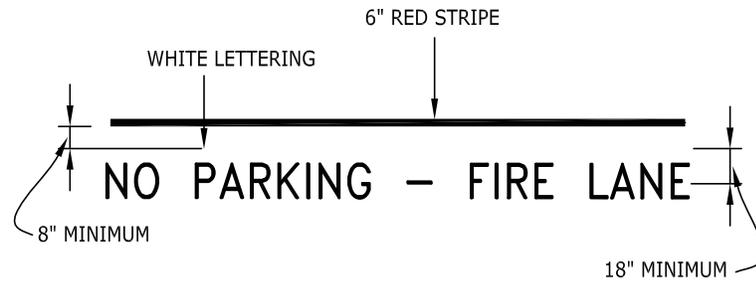
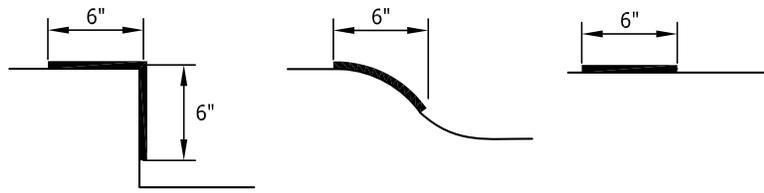
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**CITY OF KENT**  
ENGINEERING DEPARTMENT

**THERMOPLASTIC ARROWS,  
STOP BARS & ONLY LEGEND**

DESIGNED	DWH	SCALE	NONE	STANDARD PLAN
DRAWN	BB	DATE	-	
CHECKED				6-76
APPROVED			ENGINEER	



R8-31 R8-31L



R8-31D R8-31R

**TYPE 3:**

1. DIAGONAL RED STRIPING ACROSS THE WIDTH OF THE FIRE LANE SHALL BE USED WHEN REQUIRED BY THE FIRE CODE OFFICIAL. IT SHALL BE USED IN CONJUNCTION WITH A 6 INCH RED STRIPE SIMILAR TO TYPE 1. THE STRIPES SHALL RUN AT A 30 TO 60 DEGREE ANGLE AND SHALL BE PARALLEL WITH EACH OTHER. THE STRIPE SHALL BE A MINIMUM 6 INCHES IN WIDTH AND A MINIMUM OF 24 INCHES APART. LETTERING TO OCCUR AS WITH TYPE 1 MARKING.



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			<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
			<b>FIRE LANE MARKING</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN		
DRAWN <u>BB</u>	DATE <u>-</u>			
CHECKED _____	ENGINEER _____	<b>6-77</b>		
APPROVED _____				

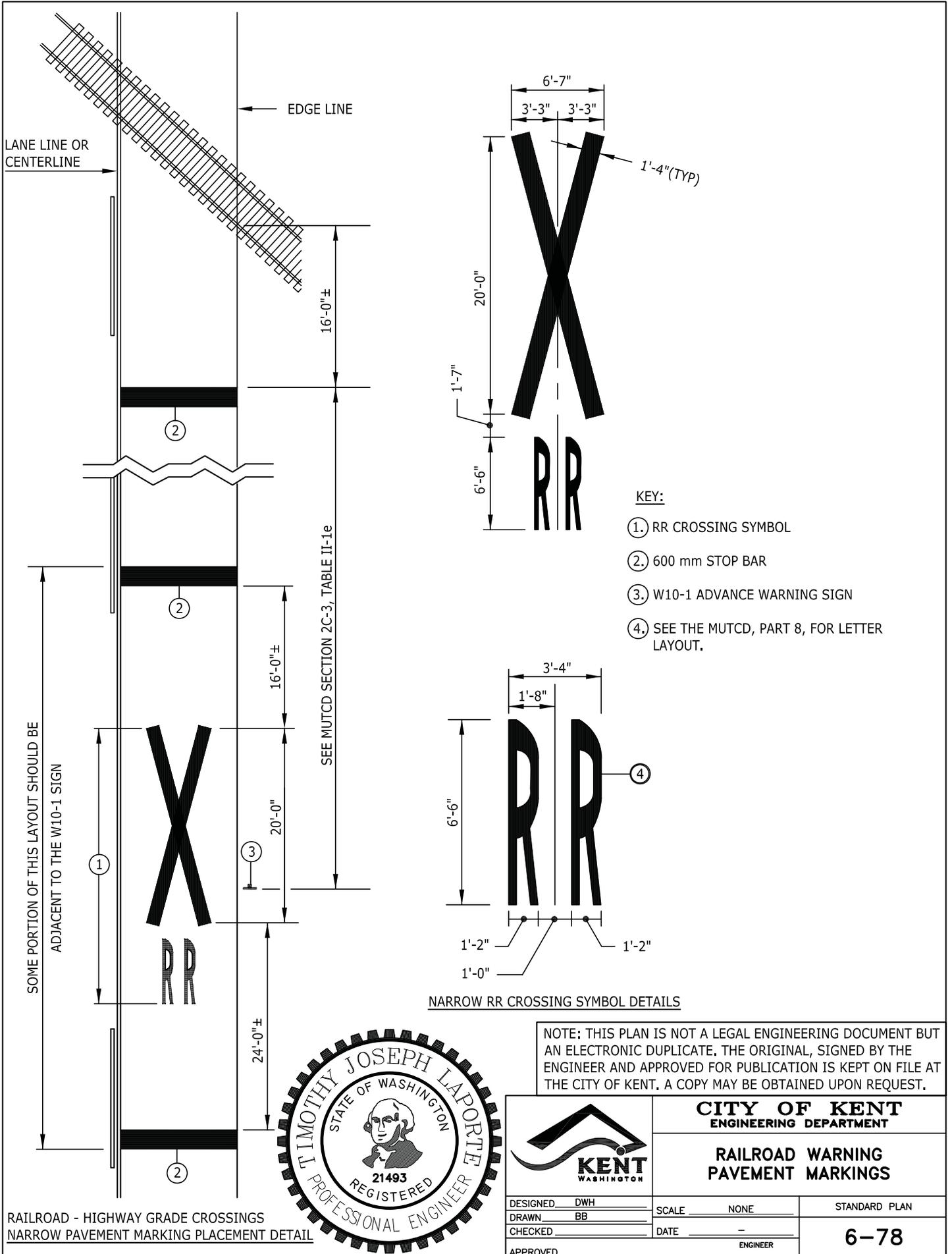
**NOTES:**

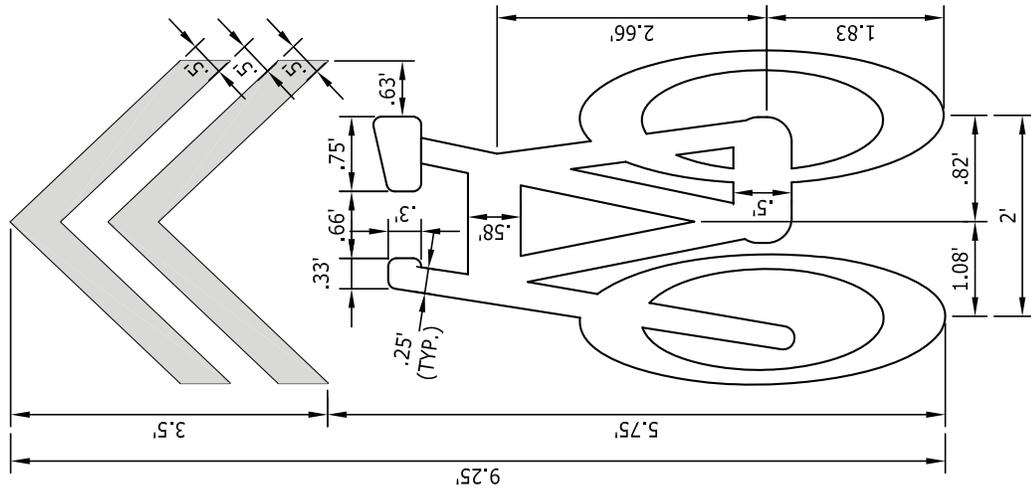
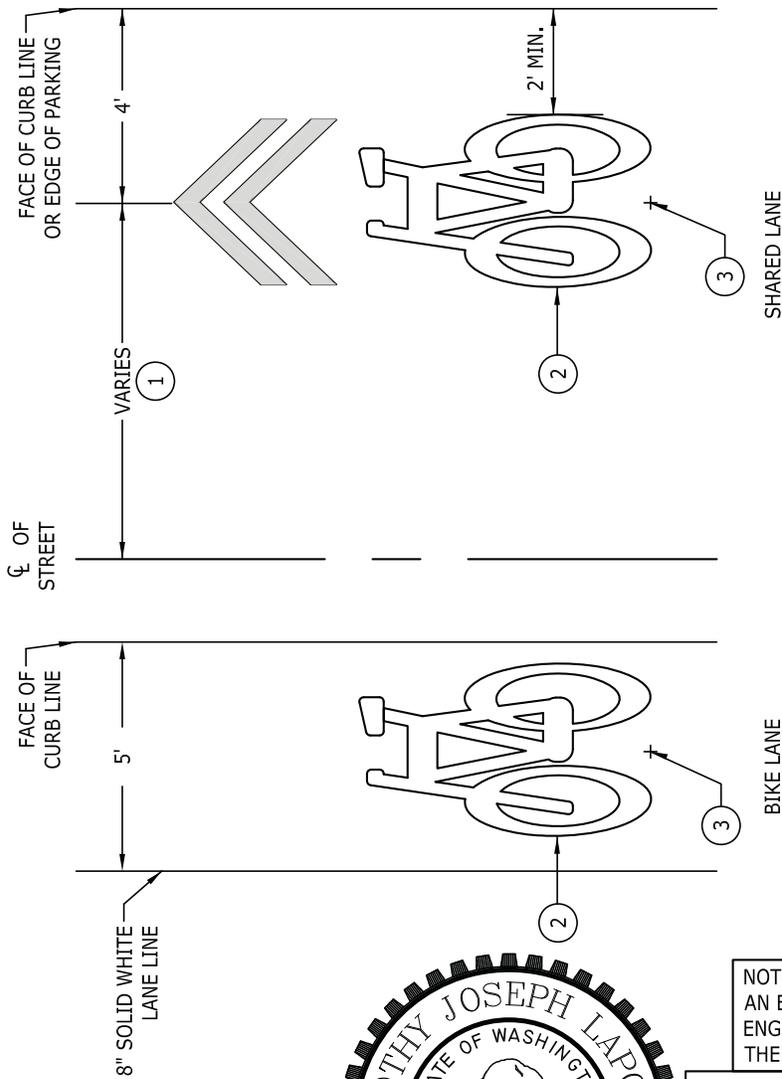
**TYPE 1:**

1. CURBS SHALL BE IDENTIFIED BY A 6 INCH RED PAINT STRIPE ON THE TOP AND SIDE.
2. ROLLED CURBS SHALL BE IDENTIFIED BY A 6 INCH RED PAINT STRIPE ON THE UPPER MOST PORTION OF THE CURB.
3. ROADS WITH NO CURBS SHALL BE IDENTIFIED BY A 6 INCH RED STRIPE.
4. THE WORDS "NO PARKING - FIRE LANE" SHALL BE 18 INCHES HIGH WHITE LETTERING WITH 3 INCH STROKE AND PLACED 8 INCHES AS MEASURED PERPENDICULAR TO THE RED STRIPE. IN MOST CASES, BOTH SIDES SHALL BE MARKED. WHERE LONG ROADS EXIST THE MARKING MAY ALTERNATE SIDES. MARKINGS WILL NOT EXCEED 50' APART.

**TYPE 2:**

1. IN ADDITION TO TYPE 1, HIGHWAY GRADE METAL (ALUMINUM) SIGNS SHALL BE LOCATED AT INTERVALS OR LOCATIONS AS DETERMINED BY THE FIRE CODE OFFICIAL. SIGNS SHALL BE MINIMUM 12" X 18" WITH RED LETTERS ON A WHITE BACKGROUND. POSTS SHALL BE PER 6-82 AND 6-83. THE BOTTOM OF THE SIGN SHALL BE A MINIMUM OF 7 FEET ABOVE THE CURB. SIGNS SHALL BE INSTALLED NOMINALLY PARALLEL TO THE ROAD, FACING THE DIRECTION OF TRAVEL. SIGNS WILL NOT EXCEED 150' APART.
2. WHERE SIGNS ARE ADJACENT TO BUILDINGS, THE FIRE CODE OFFICIAL MAY ALLOW THEM TO BE PLACED ON THE BUILDING OR STRUCTURE.
3. SEE STANDARD PLAN 6-83 FOR SIGN MOUNTING.



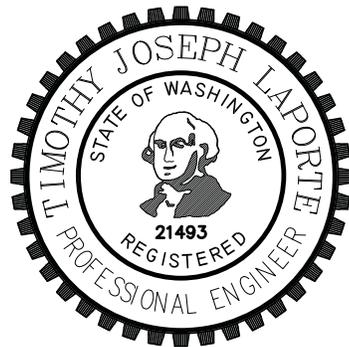


SHARED LANE MARKING

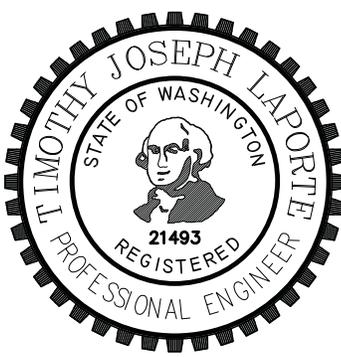
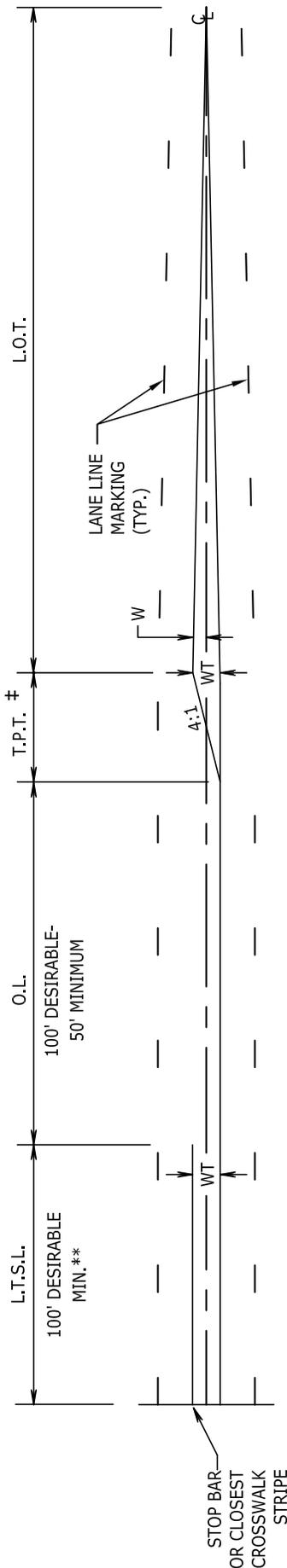
**NOTES:**

1. SEE ROADWAY CROSS SECTIONS STD. PLAN 6-2 TO 6-13.
2. WHITE SKID RESISTANT UNLESS OTHERWISE INDICATED ON CHANNELIZATION PLANS AND/OR IN THE SPECIAL PROVISIONS.
3. STATION REFERENCE LOCATION FOR CHANNELIZATION PLANS.
4. BIKE LANE AND SHARED LANE SIGNING SHALL BE PER THE MUTCD.
5. AT A MINIMUM BIKE PAVEMENT MARKINGS SHALL BE PLACED IMMEDIATELY AFTER EVERY INTERSECTION.

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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TYPICAL BIKE LANE MARKINGS</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-79</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED <u>-</u>	ENGINEER <u>-</u>		
APPROVED <u>-</u>			



- L.T.S.L. = LEFT TURN STORAGE LENGTH (FEET)
- O.L. = OPENING LENGTH (FEET)
- T.P.T. = TURN POCKET TRANSITION LENGTH (FEET)
- L.O.T. = LENGTH OF TAPER (FEET)
- W.T. = WIDTH OF TURNING LANE (FEET)
- R = RADIUS OF TRANSITION CURVE (FEET)
- S.L. = POSTED SPEED LIMIT (M.P.H.)
- W = WIDTH OF OFFSET

**NOTE:**  
 REFER TO STANDARD PLAN 6-73  
 FOR ADDITIONAL INFORMATION  
 ON LANE MARKINGS.

\*\*MAY BE REDUCED WITH APPROVAL  
 OF THE TRANSPORTATION ENGINEER.

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION IS KEPT ON FILE AT THE CITY OF KENT. A COPY MAY BE OBTAINED UPON REQUEST.



**KENT**  
WASHINGTON

**CITY OF KENT**  
ENGINEERING DEPARTMENT

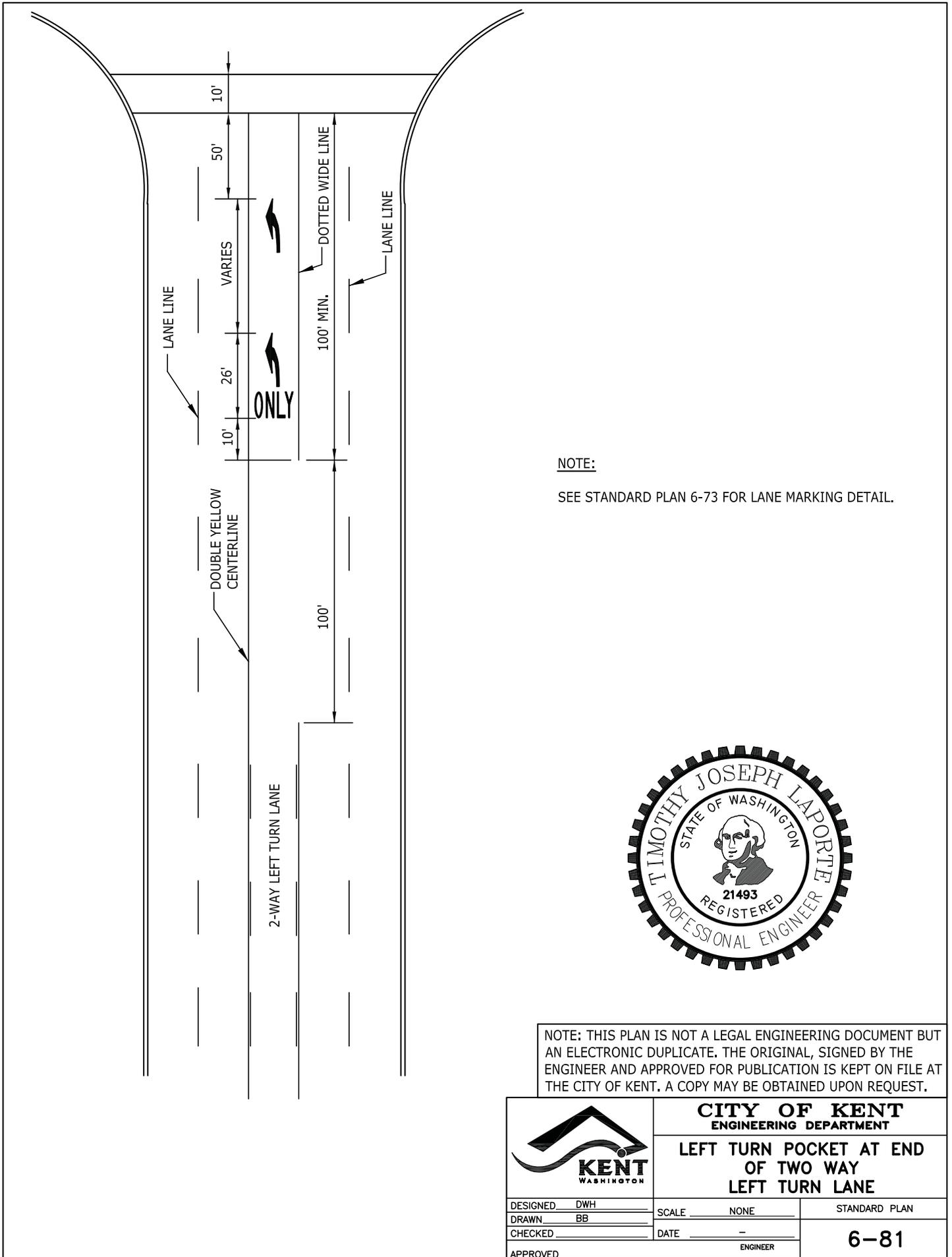
**SYMMETRICAL LEFT  
TURN POCKET**

DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-80</b>
CHECKED <u>-</u>	ENGINEER <u>-</u>	
APPROVED <u>-</u>		

ADDITIONAL LEFT TURN STORAGE FOR TRUCKS AT UNSIGNALIZED INTERSECTIONS					
L.T.S.L. REQ'D	% TRUCKS IN LEFT TURN MOVEMENT				
	10	20	30	40	50
100'	25'	25'	50'	50'	50'
150'	25'	25'	50'	75'	75'
200'	25'	50'	75'	100'	100'
	STORAGE LENGTH TO BE ADDED TO LEFT TURN STORAGE LENGTHS				

L.T.S.L.	LENGTH BASED UPON EXPECTED QUEUE LENGTH	
O.L.	OPENING TO BE 100' IN LIEU OF 102' UP TO 35 MPH, INCREASE 20' FOR EACH ADDITIONAL 5 MPH OF POSTED SPEED GREATER THAN 35 MPH	
S.L.	≤ 45 MPH	> 45 MPH
T.P.T. †	4 X W.T.	4 X W.T.
R.	150 FEET	300 FEET
L.O.T.	$\frac{W \times S.L. (2)}{60}$	W X S.L.
W.T.	12FT (MIN.)	12FT (MIN.)

† BASED ON W.T. = 12'

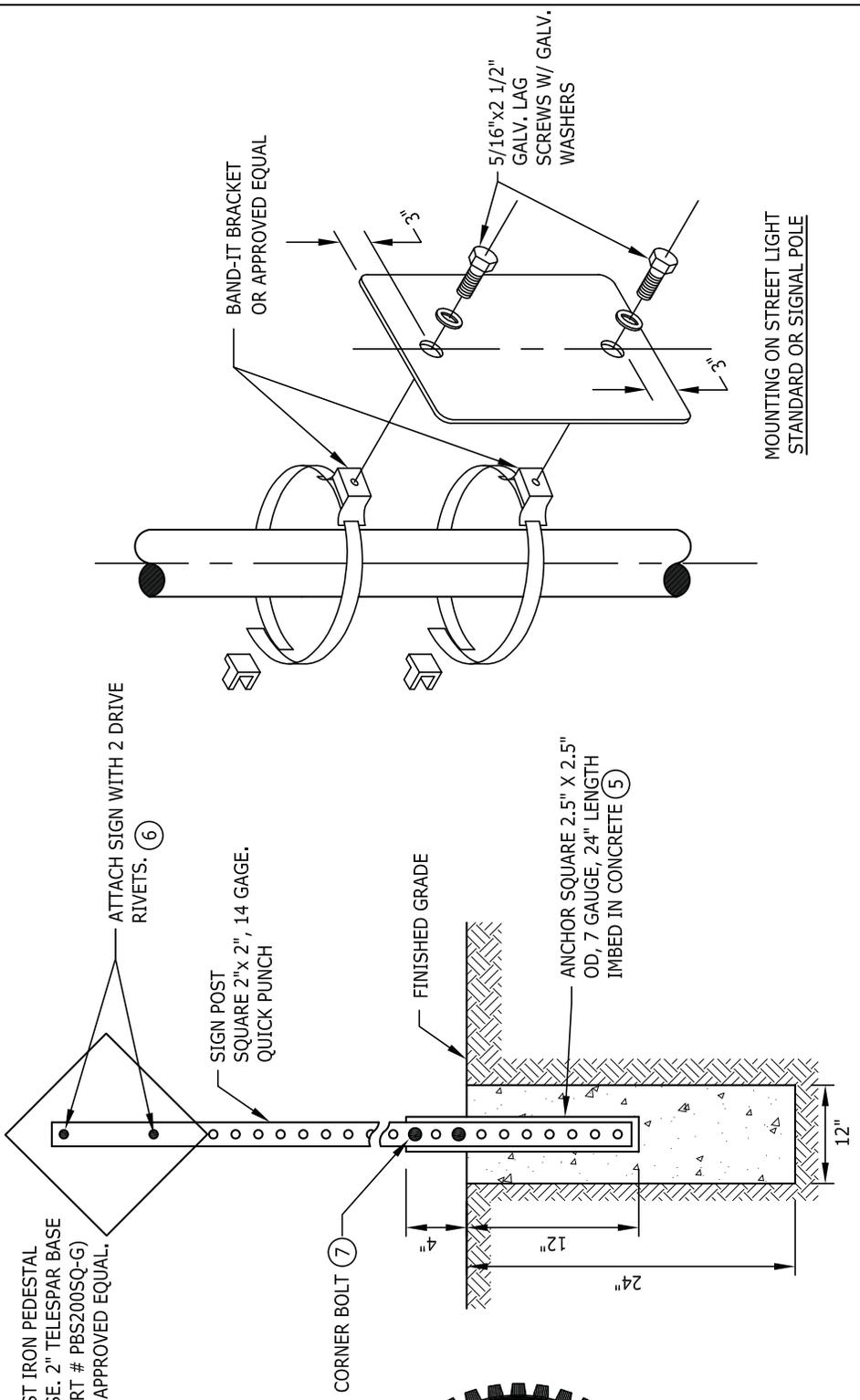


**NOTE:**  
SEE STANDARD PLAN 6-73 FOR LANE MARKING DETAIL.



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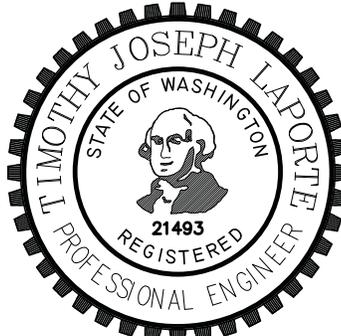
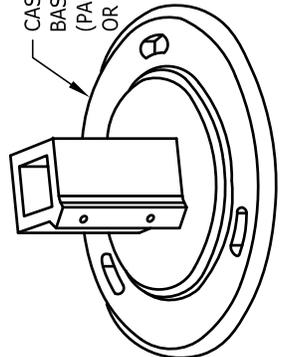
	<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
	<b>LEFT TURN POCKET AT END OF TWO WAY LEFT TURN LANE</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-81</b>
CHECKED _____	ENGINEER _____	
APPROVED _____		



MOUNTING ON STREET LIGHT STANDARD OR SIGNAL POLE

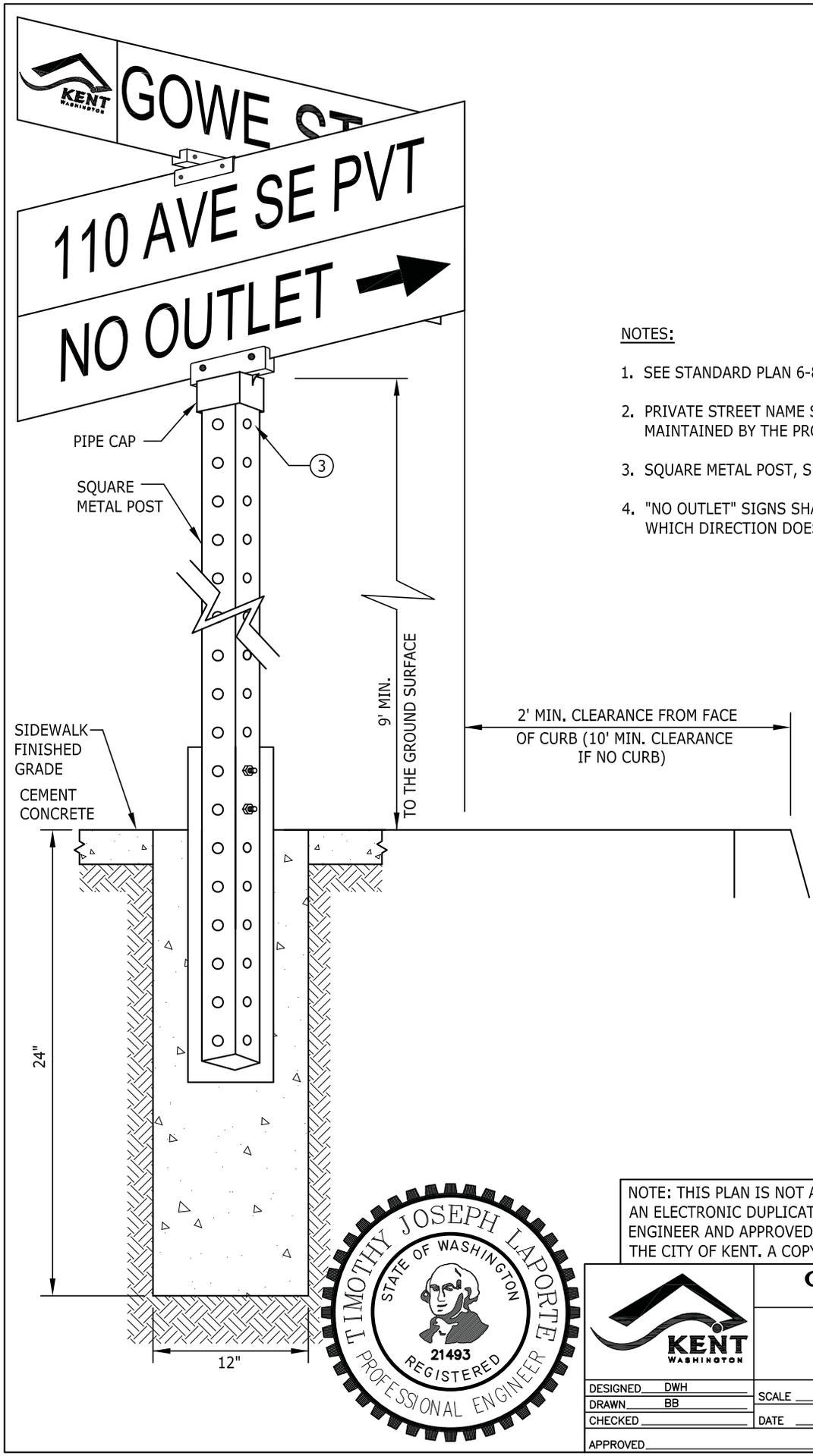
- 5. ANCHOR SHALL HAVE 4 7/16" HOLES EACH SIDE 2" FROM TOP END. FINISH SHALL BE ZINC HOT DIPPED GALVANIZED MATERIAL TO MEET ASTM A500 GRADE B.
- 6. DRIVE RIVETS TO BE TL3806 3/8" DIA.
- 7. CORNER BOLTS TO BE TL3806 3/8" DIA.
- 8. SEE STANDARD PLAN 6-84 FOR STREET NAME SIGN DETAILS.
- 9. PRIVATE STREET NAME SIGNS AND PRIVATE SIGN POSTS ARE MAINTAINED BY THE PROPERTY OWNERS.

- METAL POST NOTES:**
- 1. METAL POSTS SHALL BE TELESAR QUICK PUNCH POST OR 2" GALVANIZED STEEL PIPE OR 2" GALVANIZED STEEL PIPE.
  - 2. METAL STOP AND YIELD SIGN POSTS SHALL HAVE ALTERNATING 1' BANDS OF RED AND WHITE 3M DIAMOND GRADE SHEETING. ALL OTHER POSTS SHALL BE UNSHEETED.
  - 3. FOR IN-SIDEWALK INSTALLATIONS, CORE 4" DIAM. HOLE. ANCHOR LENGTH MAY BE DECREASED TO 12".
  - 4. POST SHALL BE ROLLED CARBON SHEET STEEL, ASTM 1011 GRADE 50 AND BE HOT DIPPED GALVANIZED AASHTO M-120 YIELD STRENGTH 60,000 PSI MIN. SQUARE POST SHALL HAVE 7/16" DIE-PUNCHED KNOCKOUTS ON 1" CENTERS FULL LENGTH, FOUR SIDES.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>SIGN INSTALLATION</b>	
DESIGNED: DWH	SCALE: NONE	STANDARD PLAN	
DRAWN: BB	DATE: -		
CHECKED: _____	ENGINEER	<b>6-82</b>	
APPROVED: _____			



**NOTES:**

1. SEE STANDARD PLAN 6-82 FOR STREET NAME SIGN DETAILS.
2. PRIVATE STREET NAME SIGNS AND PRIVATE SIGN POSTS ARE MAINTAINED BY THE PROPERTY OWNERS.
3. SQUARE METAL POST, SEE STANDARD PLAN 6-82.
4. "NO OUTLET" SIGNS SHALL HAVE AN ARROW SHOWING WHICH DIRECTION DOES NOT OUTLET.

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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>STREET NAME SIGN</b> <b>INSTALLATION</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>STANDARD PLAN</b>  <b>6-83</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



PUBLIC STREET NAME SIGNS



PRIVATE STREET NAME SIGN

MATERIALS:

GROUND-MOUNTED STREET NAME LETTERS AND NUMBERS SHALL BE REFLECTIVE WHITE, SERIES C AND THE HEIGHT GIVEN IN THE TABLE BELOW, UNLESS OTHERWISE SHOWN ON THE PLANS.

BACKGROUND:  
 GREEN, REFLECTIVE "VIP DIAMOND GRADE" (PUBLIC STREET).  
 BLUE, REFLECTIVE "VIP DIAMOND GRADE" (PRIVATE STREET).

SIGN MATERIAL:  
 0.080 GAUGE ALUMINUM SIGN BLANK.

ABBREVIATIONS:

STREET =	ST
AVENUE =	AVE
PLACE =	PL
WAY =	WAY OR WY
BOULEVARD =	BLVD
PARKWAY =	PKWY
LANE =	LN
COURT =	CT
DRIVE =	DR
ROAD =	RD
CIRCLE =	CIR

NUMBERS AND LETTERS:

SERIES C

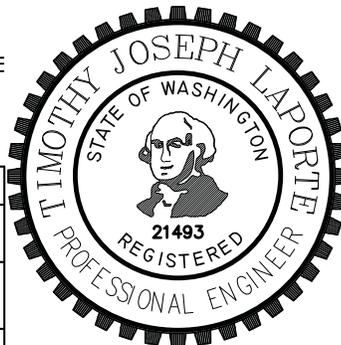
ON MULTI-LANE ROADWAYS OF WHERE THE POSTED SPEED IS 35 MPH OR GREATER, 6" LETTERS AND NUMBERS ARE REQUIRED.

NOTE:

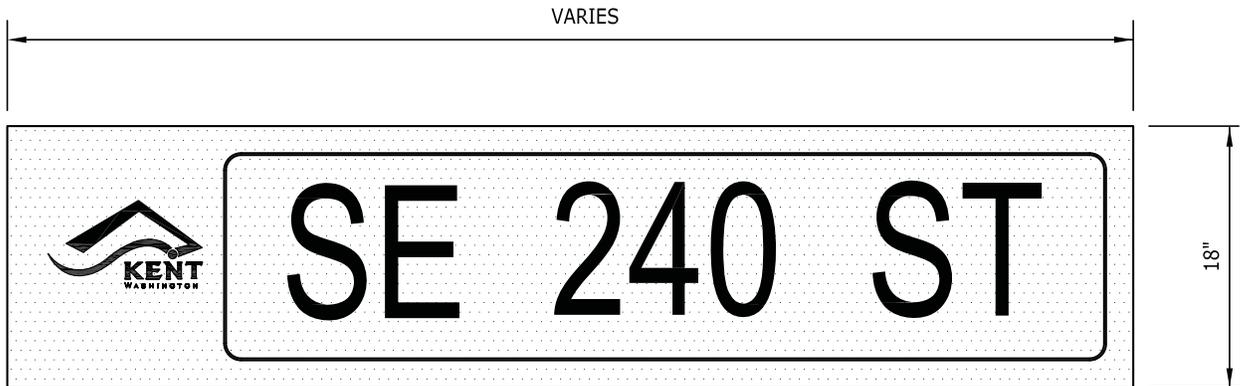
ALL STREET NAME SIGNS SHALL HAVE THE SAME LEGEND ON BOTH SIDES OF THE SIGN BLANK.

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SIGN	DIMENSIONS		
	A	B	C
STD.	8"	9"	6"
MAST ARM	14"	18"	12"



	<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
	<b>STREET NAME SIGNS</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-84</b>
CHECKED _____	ENGINEER _____	
APPROVED _____		



**MATERIALS:**

SIGN: GREEN, REFLECTIVE "3M DIAMOND GRADE VIP" (OR EQUIVALENT)

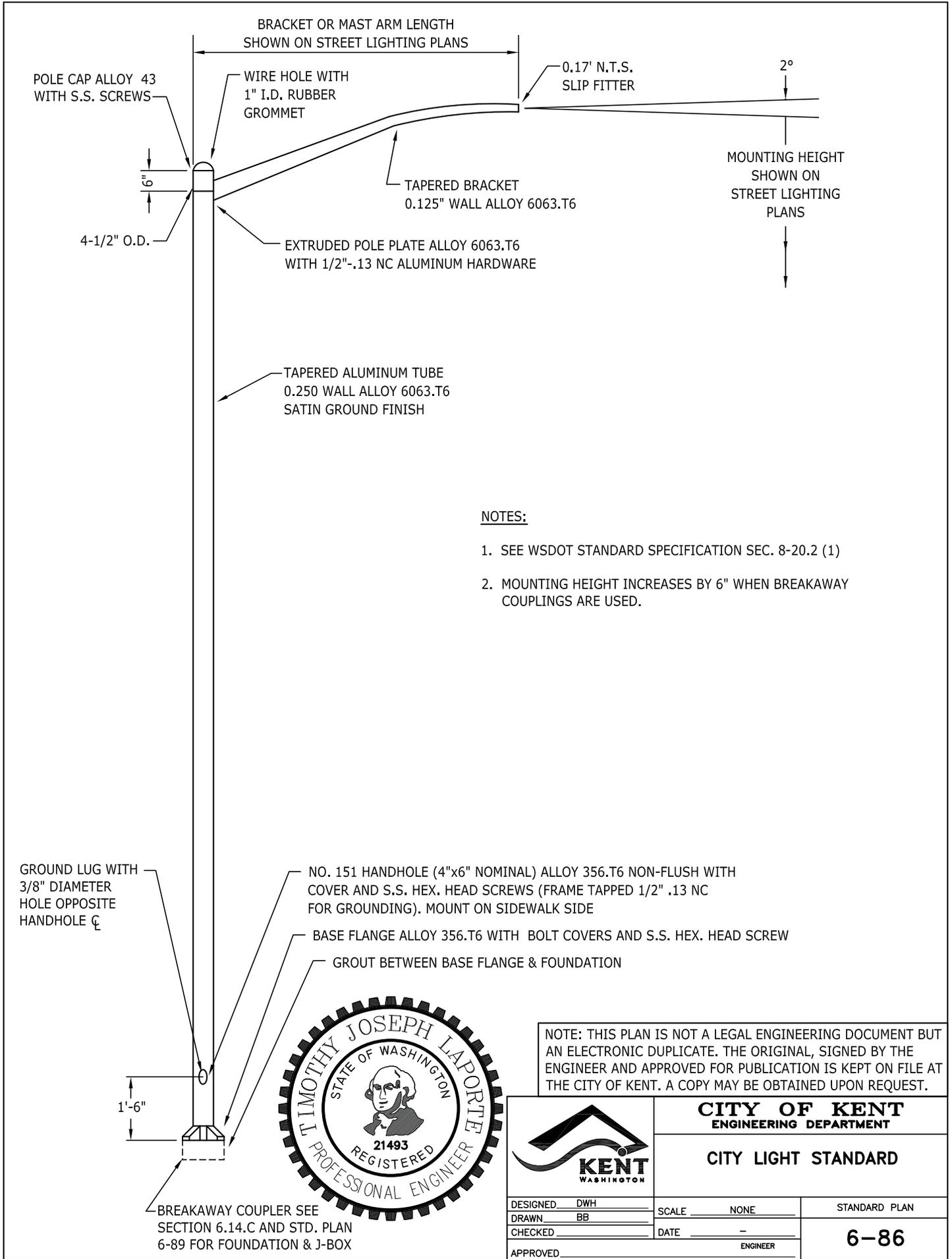
NUMBERS AND LETTERS: WHITE, 12" SER. C

BORDER: WHITE, 3/4" BONDER TAPE



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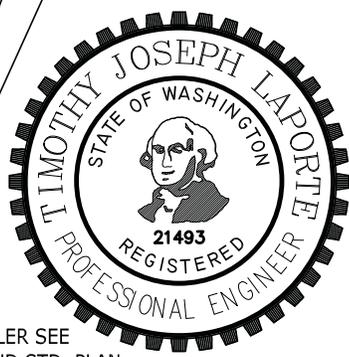
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>MAST ARM MOUNTED STREET NAME SIGN</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-85</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	DATE _____	<b>6-85</b>	
APPROVED _____	ENGINEER _____		



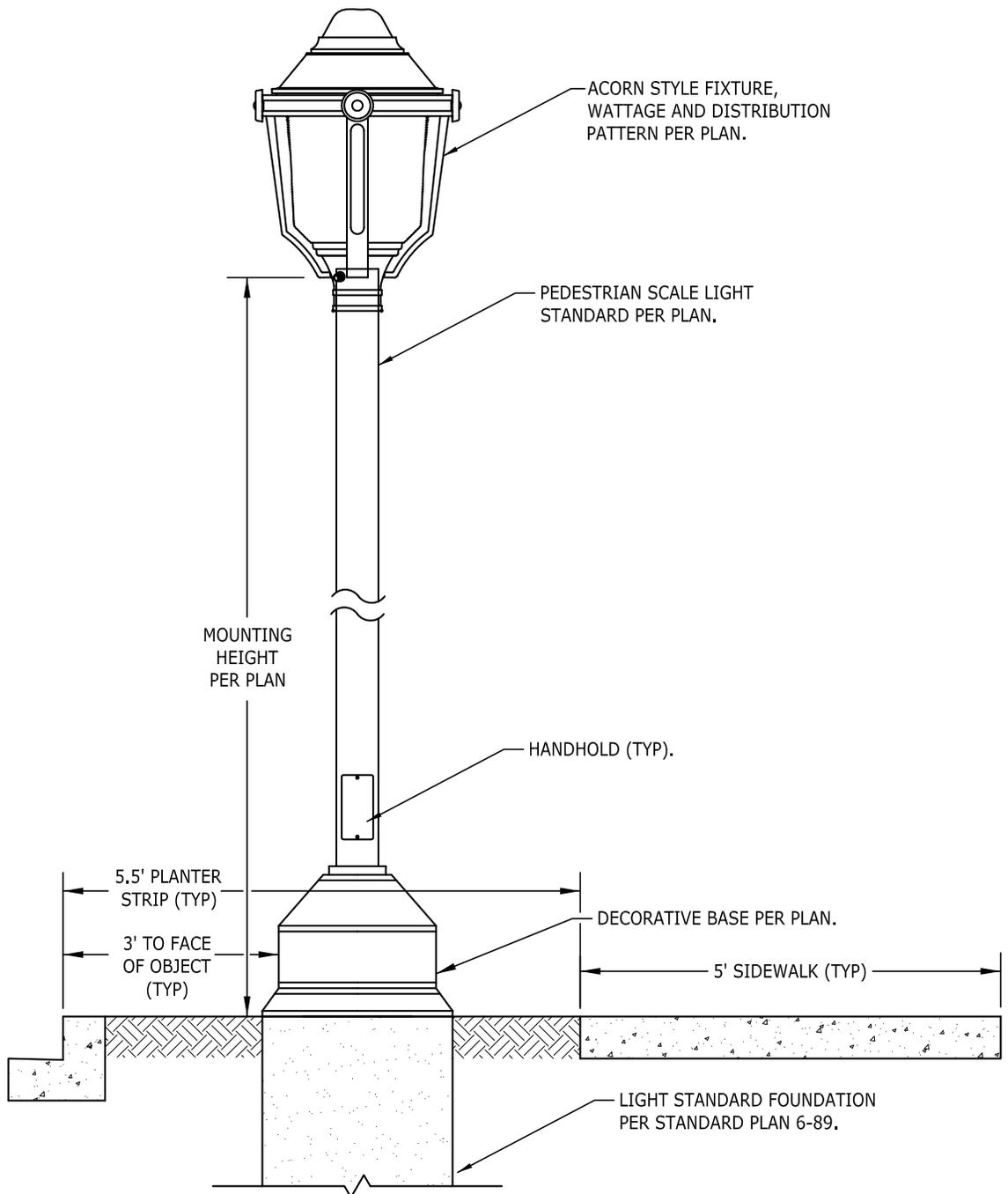
**NOTES:**

1. SEE WSDOT STANDARD SPECIFICATION SEC. 8-20.2 (1)
2. MOUNTING HEIGHT INCREASES BY 6" WHEN BREAKAWAY COUPLINGS ARE USED.

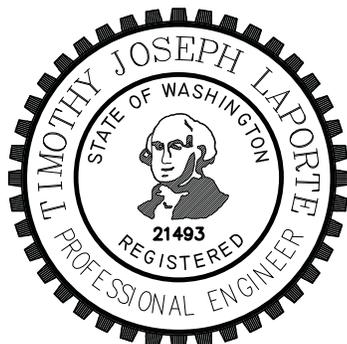
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>CITY LIGHT STANDARD</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED <u>-</u>	ENGINEER <u>-</u>	<b>6-86</b>	
APPROVED <u>-</u>			



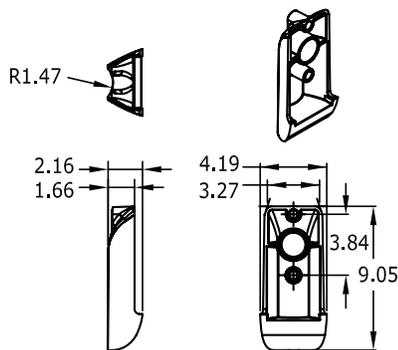
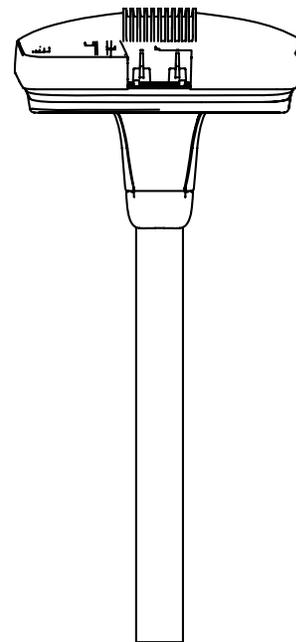
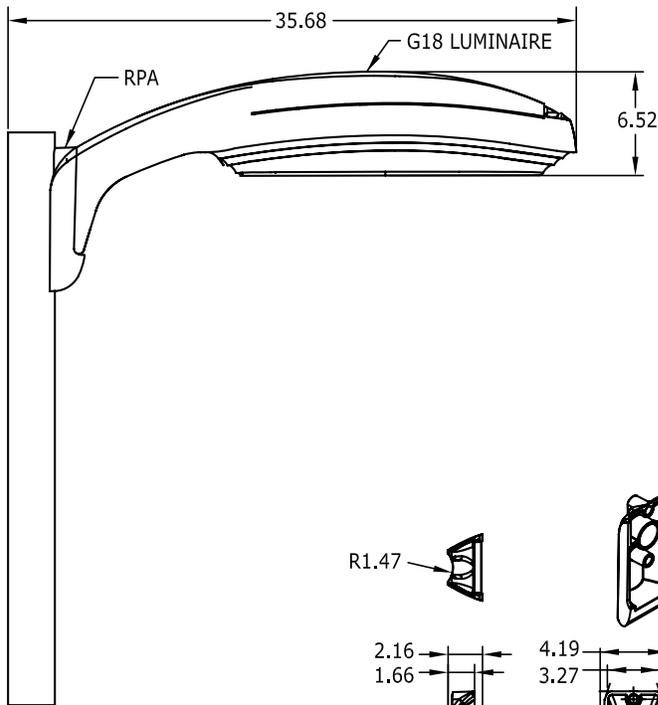
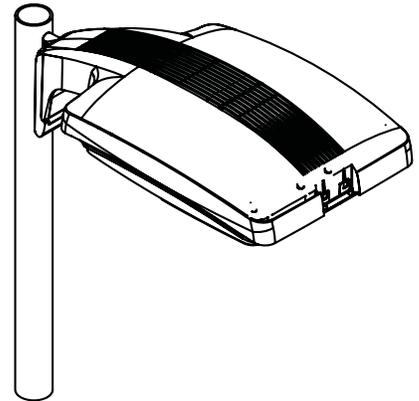
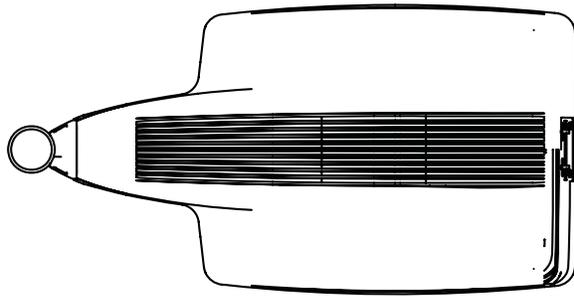
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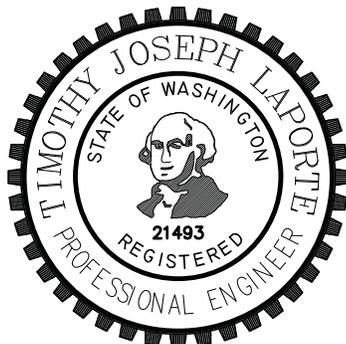
**CITY OF KENT**  
ENGINEERING DEPARTMENT

**CITY POST TOP FIXTURE  
LIGHT STANDARD**

DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	
CHECKED _____	ENGINEER _____	<b>6-87</b>
APPROVED _____		



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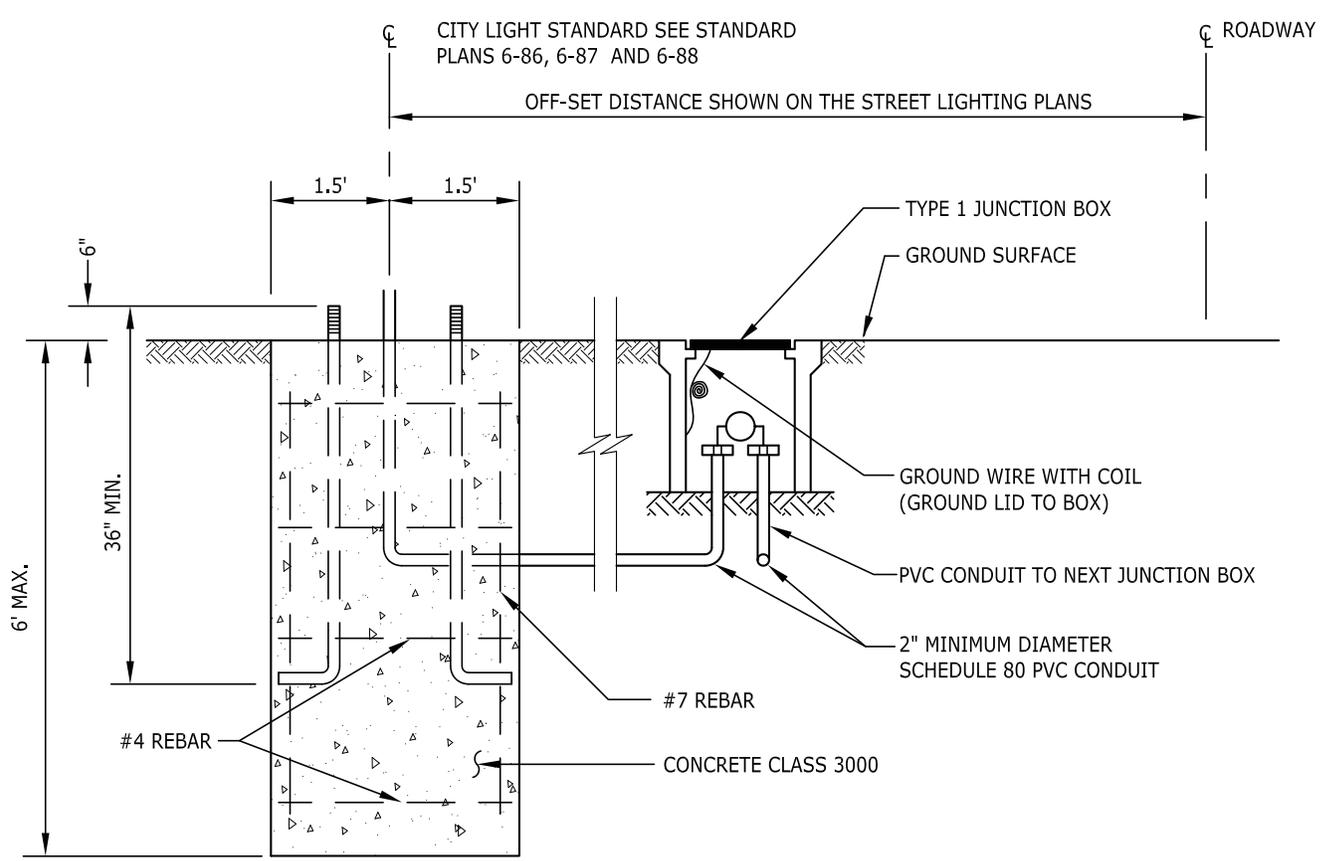
**CITY OF KENT**  
ENGINEERING DEPARTMENT

**CITY GULLWING FIXTURE**  
**LIGHT STANDARD**

DESIGNED DWH  
DRAWN BB  
CHECKED \_\_\_\_\_  
APPROVED \_\_\_\_\_

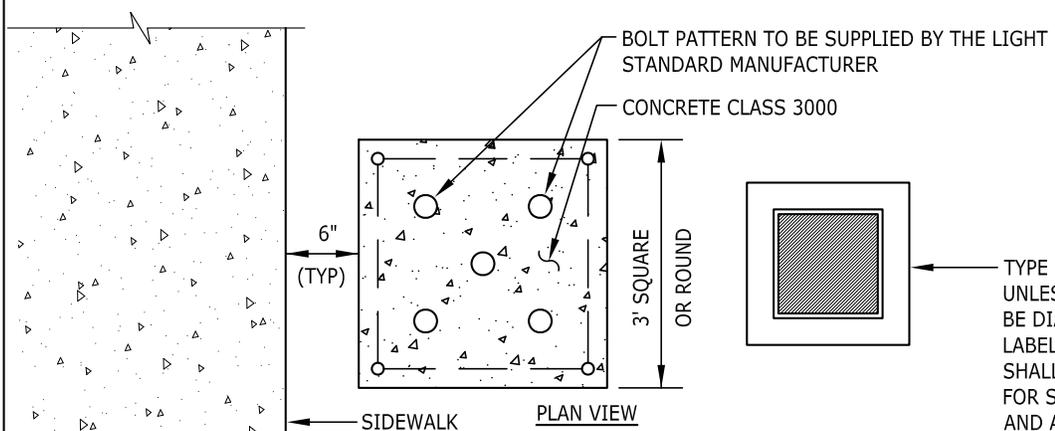
SCALE NONE  
DATE -  
ENGINEER

STANDARD PLAN  
**6-88**



PROFILE VIEW

INSTALL IN UNDISTURBED SOIL

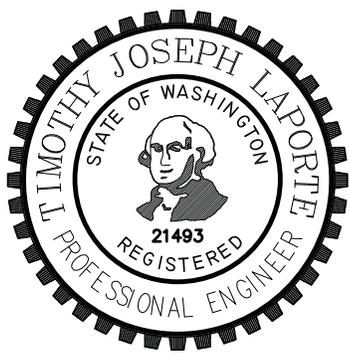


PLAN VIEW

TYPE I JUNCTION BOX - UNLESS OTHERWISE STATED ALL LIDS SHALL BE DIAMOND PLATE, GALVANIZED AND LABELED (TS, LT AND/OR COM). ALL LIDS SHALL BE TACK-WELDED AT TWO POINTS FOR SECURITY AFTER THE FINAL INSPECTION AND ACCEPTANCE.

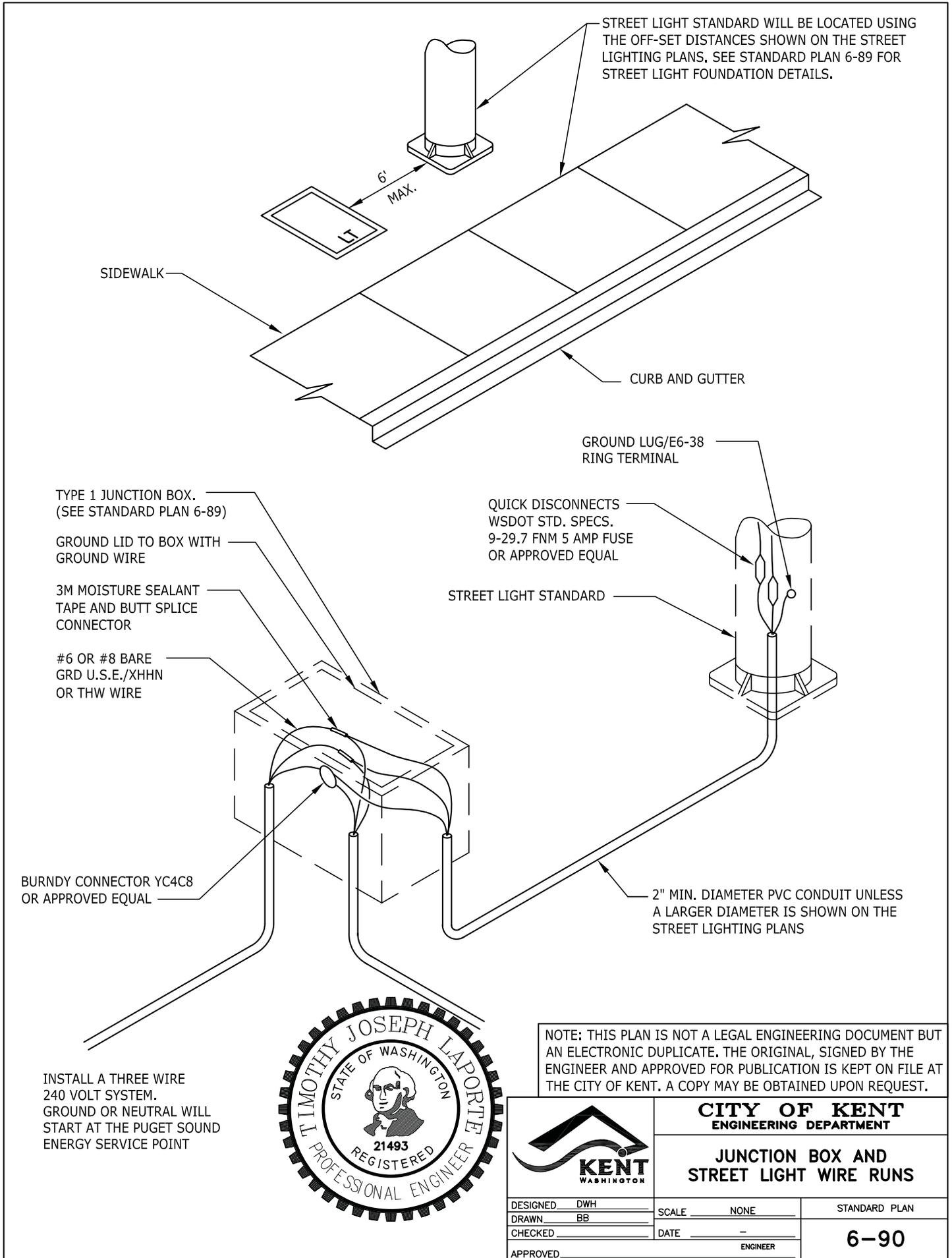
NOTES:

1. ALL MATERIALS AND WORK SHALL CONFORM TO THE CITY OF KENT AND THE STATE OF WASHINGTON DESIGN STANDARDS.
2. ALL LIDS SHALL BE TACK-WELDED AT TWO POINTS FOR SECURITY AFTER THE FINAL INSPECTION AND ACCEPTANCE.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>LIGHT STANDARD FOUNDATION AND JUNCTION BOX</b>	
DESIGNED: DWH	SCALE: NONE	STANDARD PLAN	
DRAWN: BB	DATE: -		
CHECKED: _____	ENGINEER	<b>6-89</b>	
APPROVED: _____			



TYPE 1 JUNCTION BOX.  
(SEE STANDARD PLAN 6-89)

GROUND LID TO BOX WITH  
GROUND WIRE

3M MOISTURE SEALANT  
TAPE AND BUTT SPLICE  
CONNECTOR

#6 OR #8 BARE  
GRD U.S.E./XHHN  
OR THW WIRE

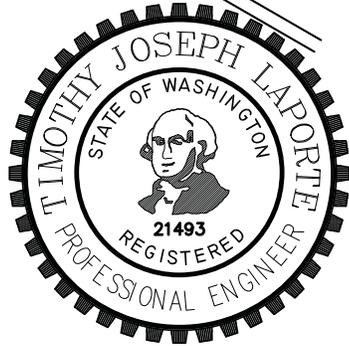
QUICK DISCONNECTS  
WSDOT STD. SPECS.  
9-29.7 FNM 5 AMP FUSE  
OR APPROVED EQUAL

BURNDY CONNECTOR YC4C8  
OR APPROVED EQUAL

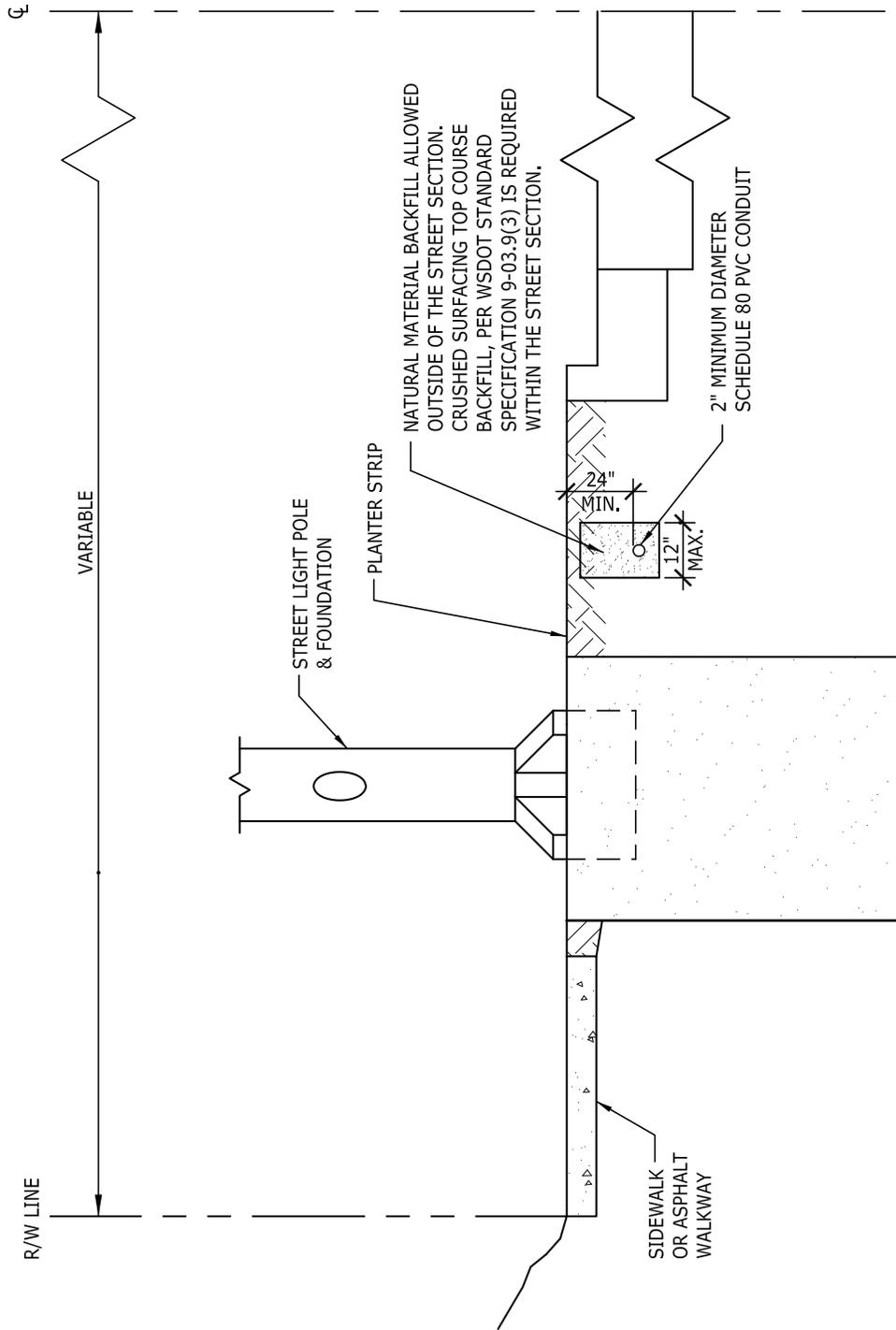
2" MIN. DIAMETER PVC CONDUIT UNLESS  
A LARGER DIAMETER IS SHOWN ON THE  
STREET LIGHTING PLANS

INSTALL A THREE WIRE  
240 VOLT SYSTEM.  
GROUND OR NEUTRAL WILL  
START AT THE PUGET SOUND  
ENERGY SERVICE POINT

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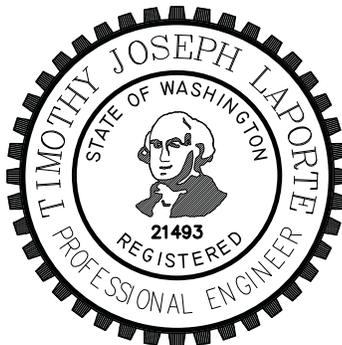


		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>JUNCTION BOX AND STREET LIGHT WIRE RUNS</b>	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED			
APPROVED			ENGINEER
			6-90



TYPICAL HALF ROADWAY SECTION

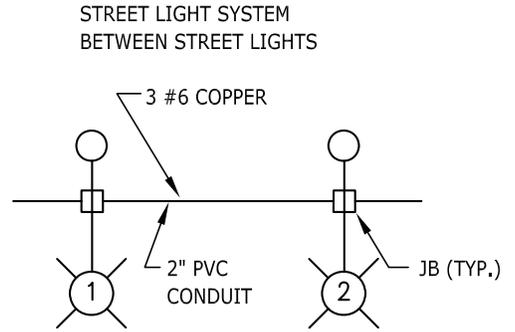
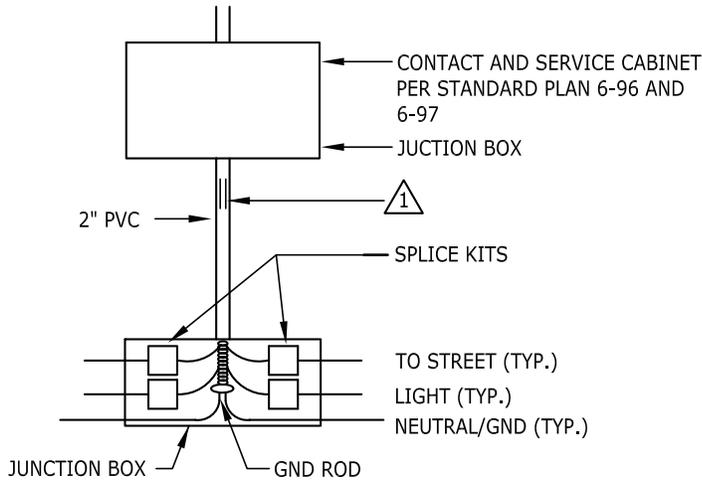
FOR STREET LIGHT CONDUIT ONLY



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	<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
	<b>STREET LIGHT TRENCH FOR CONDUIT RUNS</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-91</b>
CHECKED _____	ENGINEER _____	
APPROVED _____		

FROM P.S.E. VAULTS  
OR SERVICE POINTS  
(240 VOLT. SERVICE)



LUMINAIRE SCHEDULE FOR CONTACTOR CABINET @ _____ STA. CABINET # _____								
LUM. NO.		CIRCUIT NO.	STATION (OFFSET)	TYPE-DISTRIBUTION -WATT	IES DESIGN FILE	POLE HEIGHT	POLE TYPE	COMMENTS
1		A	12+73 (38 LT)	COBRAHEAD MC III 250 HPS		35'	DAVIT	
2		B	14+05 (30 RT)	SHOEBOX MC II 250 HPS		12.2 M	PEDESTRIAN	
3								

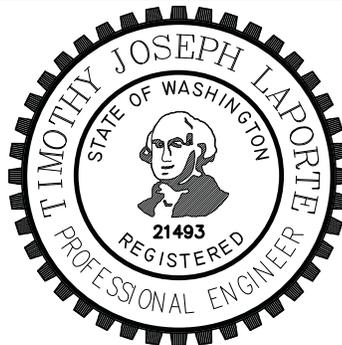
NOTE: ABOVE IS AN EXAMPLE

ILLUMINATION WIRE SCHEDULE			
RUN NO.		CONDUCTORS	CONDUIT
1		2#8 (ILL.), 2#8 (INT.), 1#8 GREEN (GROUND) (VARIES DEPENDING ON PROJECT)	0.17'
2			
3			

**NOTES:**

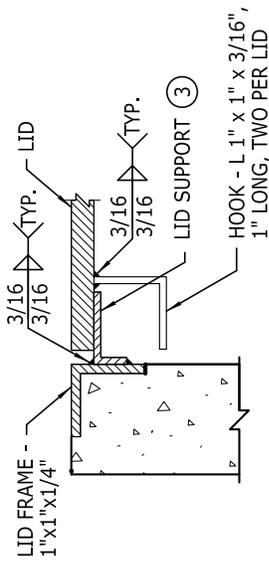
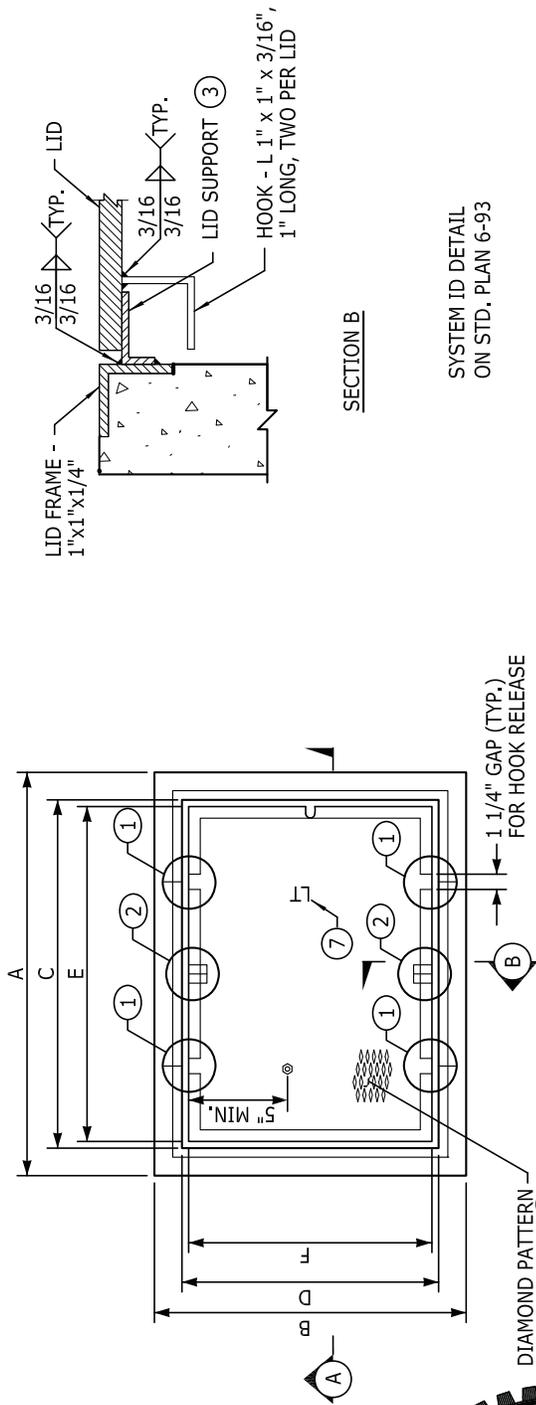
1. U.S.E. WIRE SHALL BE USED UNLESS WIRE SUBMITTED BY THE CONTRACTOR IS ACCEPTABLE FOR USE IN UNDERGROUND SYSTEMS.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SIZE THE BREAKER TO THE LOAD REQUIRED FOR ALL STREET LIGHTS.

INTC = INTERCONNECT CABLE  
ILL. = ILLUMINATION  
INT. = INTERSECTION ILLUMINATION



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>STREET LIGHT SCHEDULE</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____		<b>6-92</b>	



**SECTION B**

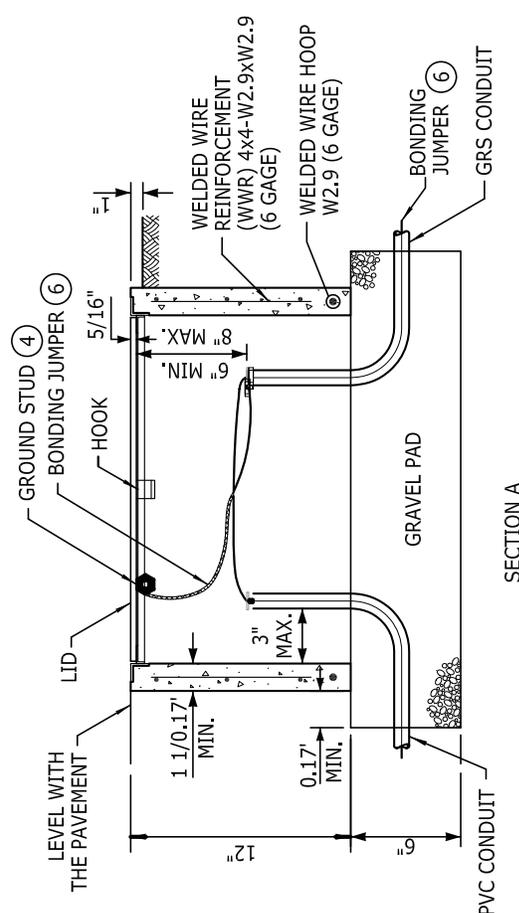
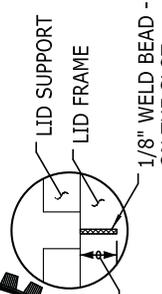
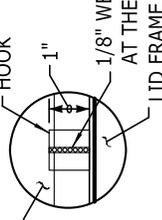
SYSTEM ID DETAIL  
ON STD. PLAN 6-93

JUNCTION BOX TABLE  
ON STD. PLAN 6-93

**NOTES:**

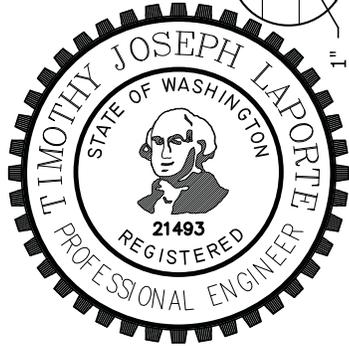
1. ALL BOX DIMENSIONS ARE APPROXIMATE. EXACT CONFIGURATIONS VARY AMONG MANUFACTURERS.
2. THE LID THICKNESSES ARE MINIMUM. THE DIAMOND PATTERN SHALL BE 28% MINIMUM OF OVERALL THICKNESS.
3. LID SUPPORT MEMBERS SHALL BE 3/16" MINIMUM THICK STEEL C, L, OR T SHAPE, WELDED TO THE FRAME.
4. A 1/4"-CONC. 3/4" S.S. GROUND STUD SHALL BE WELDED TO THE BOTTOM OF THE LID; INCLUDE S.S. NUT AND FLAT WASHER.
5. BOLTS AND NUTS SHALL BE LIBERALLY COATED WITH ANTI-SEIZE COMPOUND.
6. CONNECT A BONDING JUMPER TO STEEL CONDUIT BUSHING FOR GRS CONDUIT; CONNECT TO EQUIPMENT GROUNDING CONDUCTOR FOR PVC CONDUIT. BONDING JUMPER SHALL BE #8 MIN. 4' OF TINNED BRAIDED COPPER.
7. THE SYSTEM IDENTIFICATION LETTERS SHALL BE 1/8" LINE THICKNESS FORMED BY ENGRAVING, STAMPING, OR WITH A S.S. WELD BEAD. GRIND OFF DIAMOND PATTERN BEFORE FORMING LETTERS. SEE SYSTEM IDENTIFICATION DETAIL.
8. ALL LIDS SHALL BE GALVANIZED STEEL AND TACK-WELDED AT TWO POINTS FOR SECURITY AFTER THE FINAL INSPECTION AND ACCEPTANCE.

**TOP VIEW**

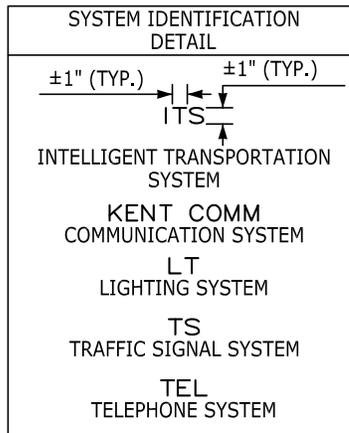


**SECTION A**

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION IS KEPT ON FILE AT THE CITY OF KENT. A COPY MAY BE OBTAINED UPON REQUEST.



		<b>CITY OF KENT</b>	
		ENGINEERING DEPARTMENT	
<b>STANDARD JUNCTION BOX</b>		<b>TYPES 1 &amp; 2</b>	
<b>SHEET 1 OF 2</b>			
DESIGNED: <u>DWH</u>	SCALE: <u>NONE</u>	STANDARD PLAN	
DRAWN: <u>BB</u>	DATE: <u>-</u>		
CHECKED: <u>-</u>	ENGINEER: <u>-</u>		
APPROVED: <u>-</u>		<b>6-93</b>	



SYSTEM ID DETAIL FOR SHEET 1

JUNCTION BOX DIMENSION TABLE			
MARK	ITEM	BOX TYPE	
		TYPE 1	TYPE 2
A	OUTSIDE LENGTH OF JUNCTION BOX	22"	33"
B	OUTSIDE WIDTH OF JUNCTION BOX	17"	22 1/2"
C	INSIDE LENGTH OF JUNCTION BOX	18"-19"	29"-30"
D	INSIDE WIDTH OF JUNCTION BOX	13"-14"	18 1/2" 19 1/2"
E	LID LENGTH	17 5/8"	28 5/8"
F	LID WIDTH	12 5/8"	18 1/8"
CAPACITY - CONDUIT DIAMETER		6"	12"

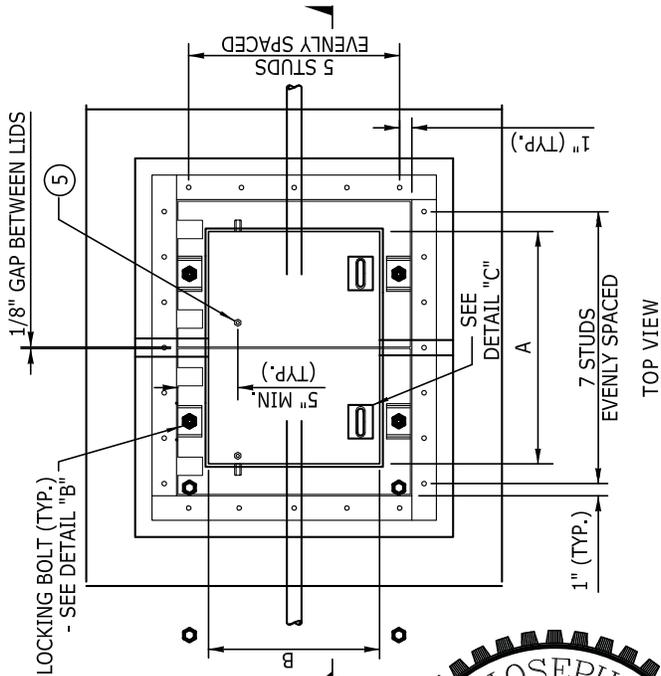
JUNCTION BOX TABLE FOR SHEET 1

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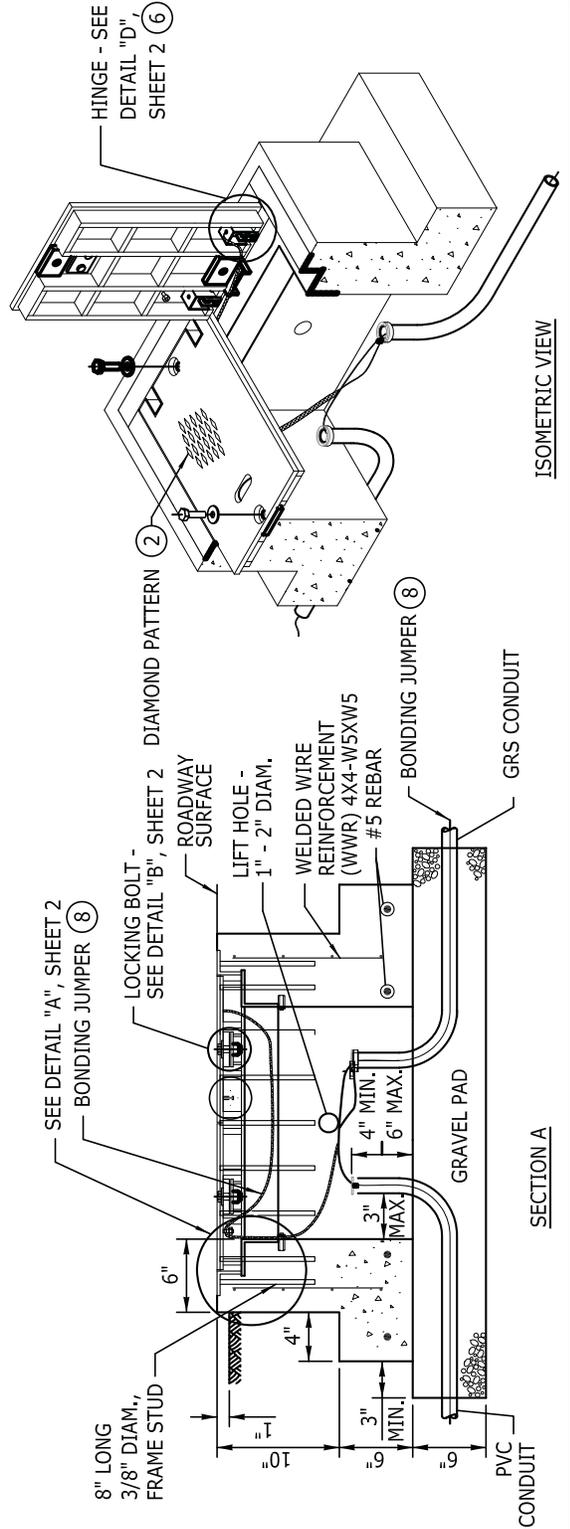
	<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
	<b>STANDARD JUNCTION BOX</b> TYPES 1 & 2 SHEET 2 OF 2	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-93</b>
CHECKED _____	ENGINEER _____	
APPROVED _____		

**NOTES:**

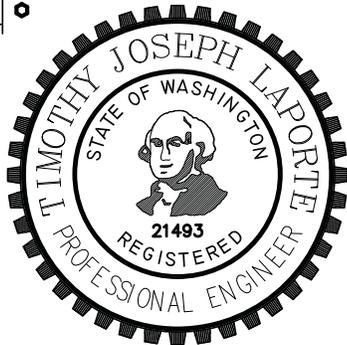
1. ALL BOX DIMENSIONS ARE APPROXIMATE. EXACT CONFIGURATIONS VARY AMONG MANUFACTURERS.
2. ALL LID THICKNESSES ARE MINIMUM. THE DIAMOND PATTERN SHALL BE 3/32" MINIMUM THICK.
3. LID STIFFENER PLATES SHALL BEAR ON FRAME. MILL TO BEARING SEAT AND PERIMETER BAR FOR FULL EVEN CONTACT AFTER FABRICATION OF FRAME AND LID. LID AND FRAME UNITS WITH UNEVEN BEARING WILL BE REJECTED.
4. THE INSTALLED LID AND FRAME SHALL FIT WITH FULL EVEN CONTACT AROUND THE PERIMETER OF A JUNCTION BOX AFTER INSTALLATION. CARE SHALL BE TAKEN TO PREVENT DEBRIS ACCUMULATION ON THE CONTACT SURFACES.
5. A 1/4-CONC 3/4" S.S. GROUND STUD SHALL BE WELDED TO THE BOTTOM OF EACH LID; INCLUDE S.S. NUT AND FLAT WASHER.
6. THE HINGES SHALL ALLOW THE LIDS TO OPEN 180°.
7. BOLTS AND NUTS SHALL BE LIBERALLY COATED WITH ANTI-SEIZE COMPOUND.
8. CONNECT A BONDING JUMPER TO STEEL CONDUIT BUSHING FOR GRS CONDUIT; CONNECT TO EQUIPMENT GROUNDING CONDUCTOR FOR PVC CONDUIT. AS AN ALTERNATIVE, THE BONDING JUMPER SHALL BE ATTACHED TO THE FRONT FACE OF THE HINGE POCKET WITH A 5/16-CONC 3/4" BOLT, S.S. NUT, AND FLAT WASHER. BONDING JUMPER SHALL BE #8 MIN. 4' OF TINNED BRAIDED COPPER.
9. THE SYSTEM IDENTIFICATION LETTERS SHALL BE 1/8" LINE THICKNESS FORMED BY ENGRAVING, STAMPING, OR WITH A S.S. WELD BEAD. GRIND OFF DIAMOND PATTERN BEFORE FORMING LETTERS. SEE SYSTEM IDENTIFICATION DETAIL.
10. A 1% TOLERANCE IS ALLOWED FOR ALL DIMENSIONS.
11. SEE THE STANDARD SPECIFICATIONS FOR CLASS OF CONCRETE.
12. ALL LIDS SHALL BE GALVANIZED STEEL AND TACK WELDED AT TWO POINTS FOR SECURITY AFTER THE FINAL INSPECTION AND ACCEPTANCE.



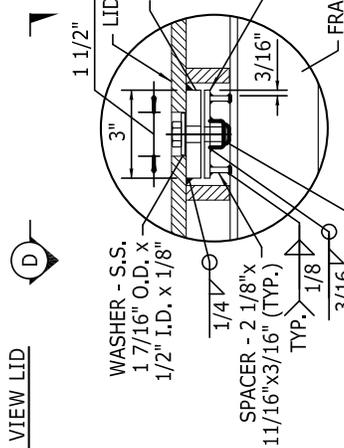
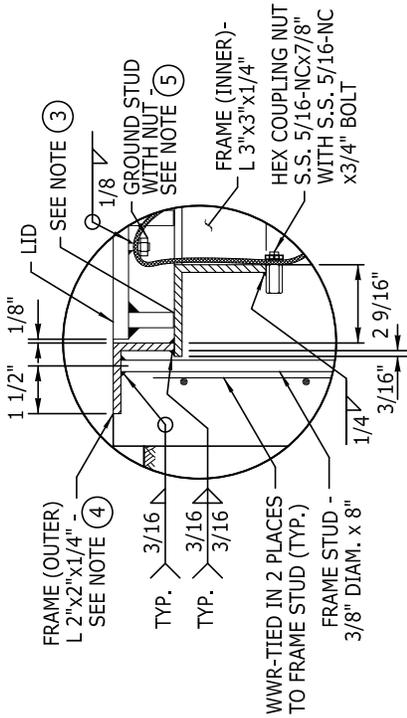
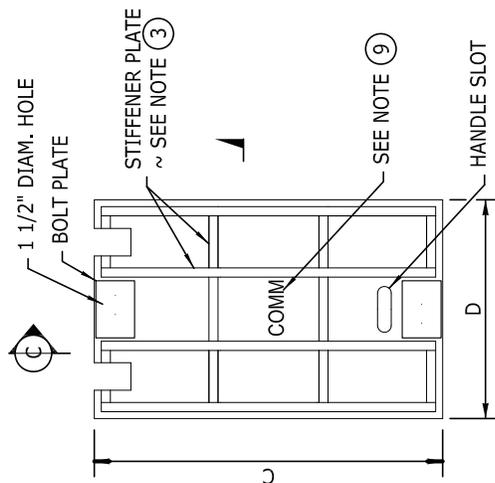
SEE JUNCTION BOX TABLE ON STANDARD PLAN 6-93 SHEET 2 OF 2



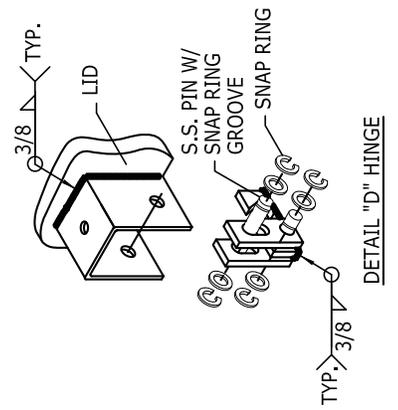
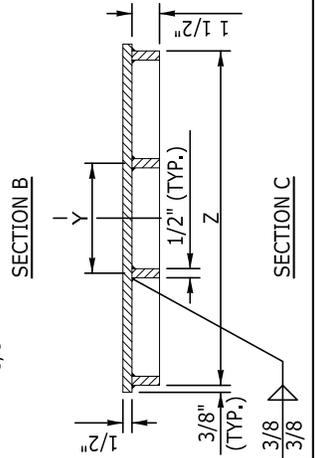
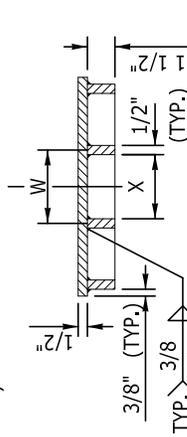
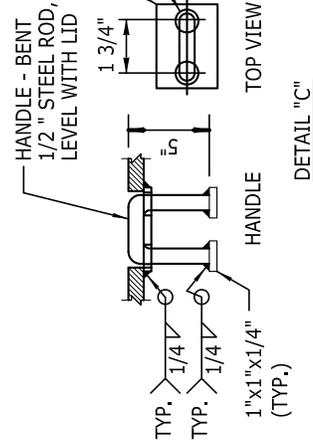
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT <b>HEAVY DUTY JUNCTION BOX TYPES 4, 5 &amp; 6</b> SHEET 1 OF 2	
DRAWN BB	DATE -	<b>6-94</b>	
CHECKED	ENGINEER		
APPROVED			

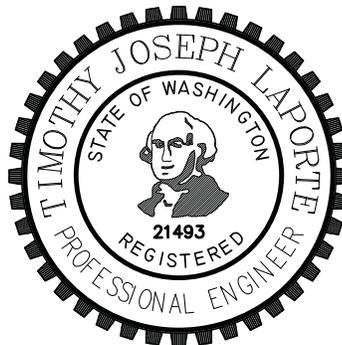


LOCK NUT W/ NYLON INSERT S.S. 1/2\"/>



SEE SYSTEMS ID  
DETAIL ON SHEET 3

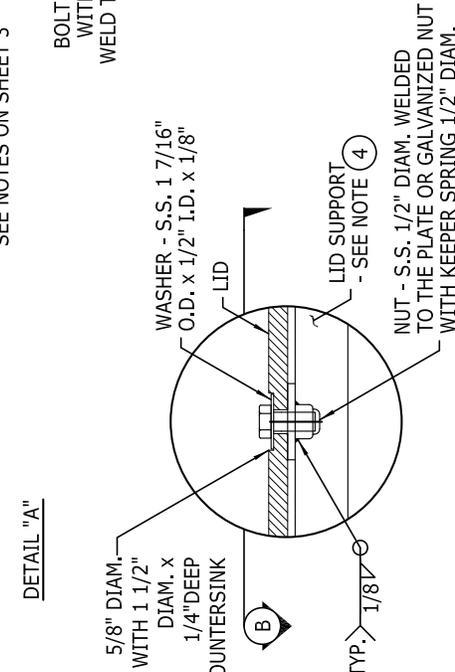
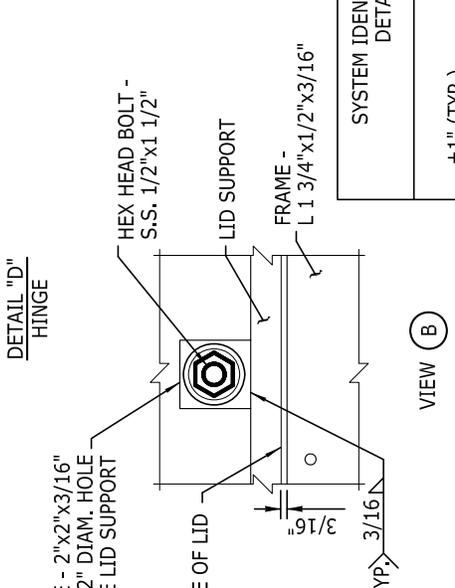
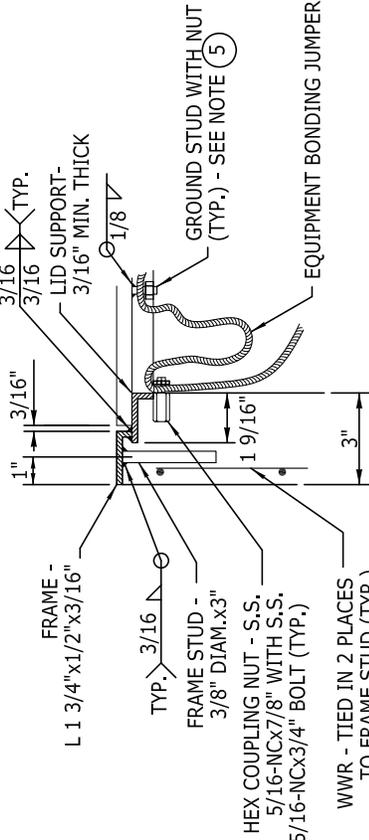
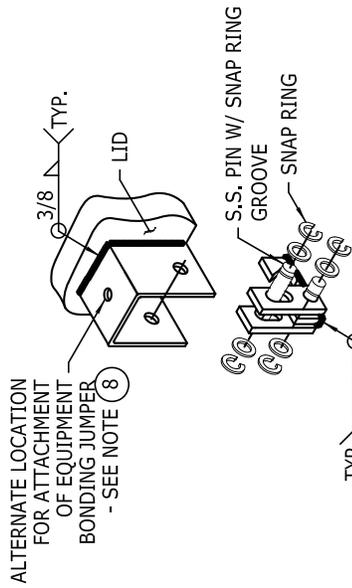
SEE NOTES SHEET 1



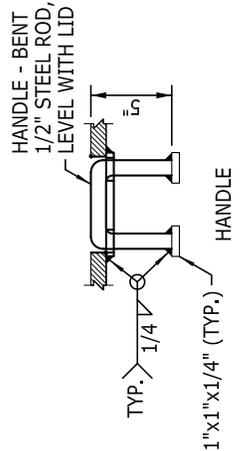
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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT <b>HEAVY DUTY JUNCTION</b> <b>BOX TYPES 4, 5 &amp; 6</b> SHEET 2 OF 2	
DRAWN BB	DATE	<b>6-94</b>	
CHECKED	ENGINEER		
APPROVED			





DETAIL "B"  
LOCKING BOLT  
ONLY FOR TYPE 7



SYSTEM IDENTIFICATION DETAIL	
±1" (TYP.)	ITS
±1" (TYP.)	INTELLIGENT TRANSPORTATION SYSTEM
	KENT COMMUNICATION SYSTEM
	LT LIGHTING SYSTEM
	TS TRAFFIC SIGNAL SYSTEM
	TEL TELEPHONE SYSTEM



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	<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
	<b>LIGHT DUTY JUNCTION BOX TYPES 7 &amp; 8</b> SHEET 2 OF 3	
DESIGNED: DWH	SCALE: NONE	STANDARD PLAN
DRAWN: BB	DATE: -	
CHECKED: _____	ENGINEER	
APPROVED: _____		<b>6-95</b>

NOTES:

- ①. JUNCTION BOXES TYPE 7 AND TYPE 8 ARE IDENTICAL EXCEPT FOR THE ADDITION OF LOCKING BOLTS ON THE TYPE 8.
2. ALL BOX DIMENSIONS ARE APPROXIMATE. EXACT CONFIGURATIONS VARY AMONG MANUFACTURERS.
- ③. ALL LID THICKNESSES ARE MINIMUM. THE DIAMOND PATTERN SHALL BE 3/32" MINIMUM THICK.
- ④. LID SUPPORT MEMBERS SHALL BE 3/16" MIN. THICK STEEL C, L, OR T SHAPE, WELDED TO THE FRAME. EXACT CONFIGURATIONS VARY AMONG MANUFACTURERS.
- ⑤. A 1/4-COINC 3/4" S.S. GROUND STUD SHALL BE WELDED TO THE BOTTOM OF EACH LID; INCLUDE S.S. NUT AND FLAT WASHER.
- ⑥. THE HINGES SHALL ALLOW THE LIDS TO OPEN 180°.
7. BOLTS AND NUTS SHALL BE LIBERALLY COATED WITH ANTI-SEIZE COMPOUND.
- ⑧. CONNECT AN EQUIPMENT BONDING JUMPER TO STEEL CONDUIT BUSHING FOR GRS CONDUIT; CONNECT TO EQUIPMENT GROUNDING CONDUCTOR FOR PVC CONDUIT. AS AN ALTERNATIVE TO THE GROUND STUD CONNECTION, THE EQUIPMENT BONDING JUMPER SHALL BE ATTACHED TO THE FRONT FACE OF THE HINGE POCKET WITH A 5/16-COINC 3/4" S.S. BOLT, NUT, AND FLAT WASHER. EQUIPMENT BONDING JUMPER SHALL BE #8 MIN. 4' OF TINNED BRAIDED COPPER.
9. THE SYSTEM IDENTIFICATION LETTERS SHALL BE 1/8" LINE THICKNESS FORMED BY ENGRAVING, STAMPING, OR WITH A S.S. WELD BEAD. GRIND OFF DIAMOND PATTERN BEFORE FORMING LETTERS.SEE SYSTEM IDENTIFICATION DETAIL.
- ⑩. CAPACITY - CONDUIT DIAMETER = 24"
11. ALL LIDS SHALL BE GALVANIZED STEEL AND TACK WELDED AT TWO POINTS FOR SECURITY AFTER FINAL INSPECTION AND ACCEPTANCE.



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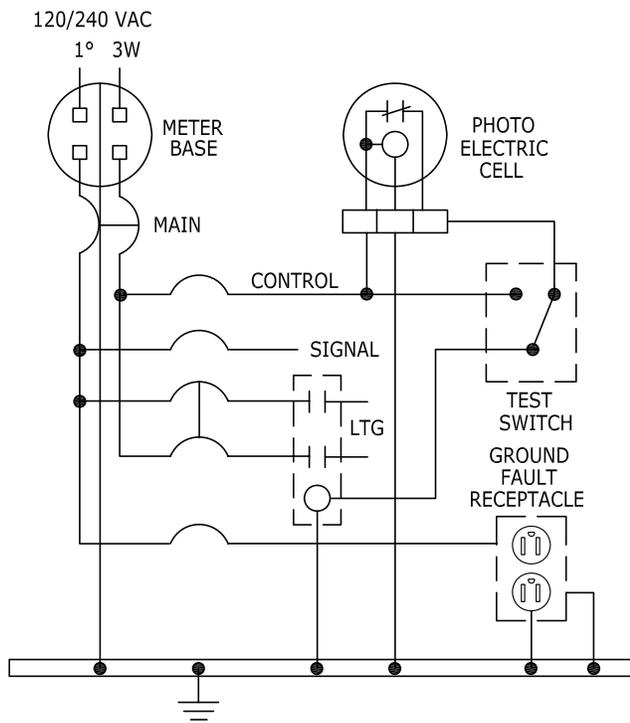
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>LIGHT DUTY JUNCTION BOX TYPES 7 &amp; 8</b> SHEET 3 OF 3	
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	<b>6-95</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED <u>DMW</u>	ENGINEER	STANDARD PLAN	
APPROVED _____			

**COMPONENT SCHEDULE**

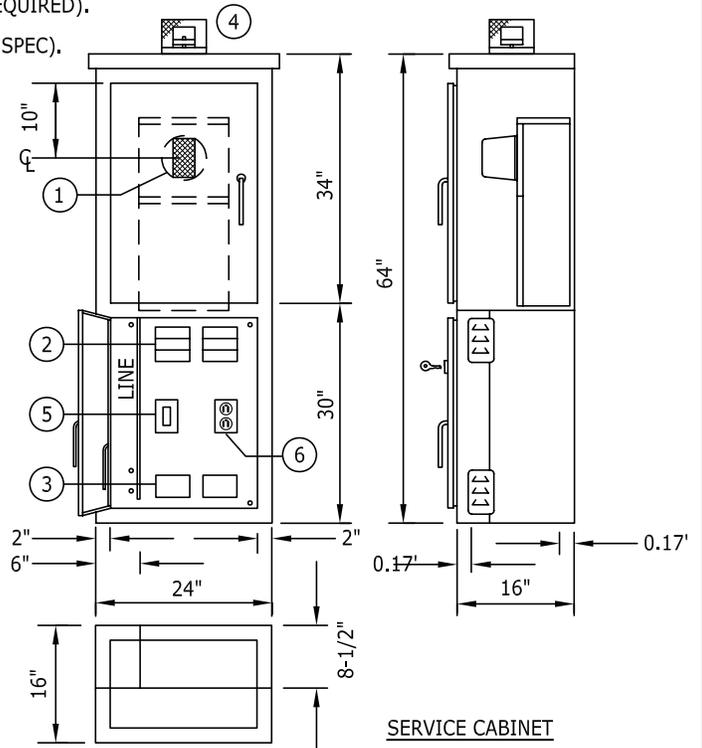
- ① METERBASE: 100 AMP (150 AMP IF NEEDED), 4 JAW SAFETY SOCKET, AW #114TB, WITH 5TH JAW AT 9:00 POSITION (CONTRACTOR TO VERIFY WITH SERVING UTILITY).
- ② PANELBOARD: 120/240 VAC, 100 AMP (150 AMP IF NEEDED), 1 PHASE, 3 WIRE, COPPER BUS, 12 CKT 100 AMP MAIN BREAKER, WESTINGHOUSE BAB2100, 2 POLE WESTINGHOUSE BAB BOLT-ON BRANCH BREAKERS:  
 4-20/2 ILLUMINATION BRANCH;  
 1-40/1 SIGNAL BRANCH;  
 1-20/1 GROUND FAULT RECEPTACLE & CONTROL BRANCH.
- ③ CONTACTOR: LIGHTING RATED, 30 AMP, 4 POLE, 120 VAC COIL, (AS REQUIRED).
- ④ PHOTO ELECTRIC CELL: 1800VA, 120 VAC, ALR #SST-IES (PER WSDOT SPEC).
- ⑤ PHOTO-CELL BYPASS SWITCH, SPDT, 15 AMP, 277 VAC.
- ⑥ GROUND FAULT RECEPTACLE, 120 VAC, DUPLEX, 20A

CABINET: NEMA 3R, PADMOUNT, 1/8" ALUMINUM CONSTRUCTION, 2 SCREENED AND GASKETED VENTS

DOORS: HEAVY DUTY CONCEALED HINGES (LIFT-OFF TYPE)  
 STAINLESS STEEL VAULT HANDLES, PADLOCKABLE METER DOOR  
 BEST BLUE CONSTRUCTION LOCK ON DISTRIBUTION DOOR  
 POLISHED WIRE GLASS WINDOW IN METER DOOR  
 CLOSED CELL NEOPRENE GASKET, CARD HOLDER  
 FINISH: POLYESTER POWDER COAT, NONE OUTSIDE, WHITE INSIDE



**ONE-LINE DIAGRAM**



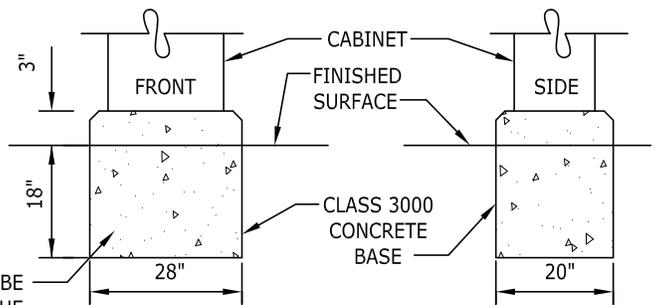
**SERVICE CABINET**

SKYLINE CABINET SERIES 47700-KM-100 OR APPROVED EQUAL BY TESCOR BROWNFIELD.

METERING SECTION CLEARANCES & EQUIPMENT PER PSE & EUSERC

UL LISTED PER STANDARD #508

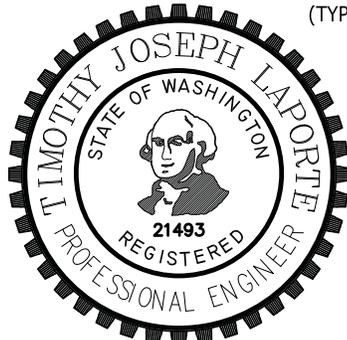
SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT



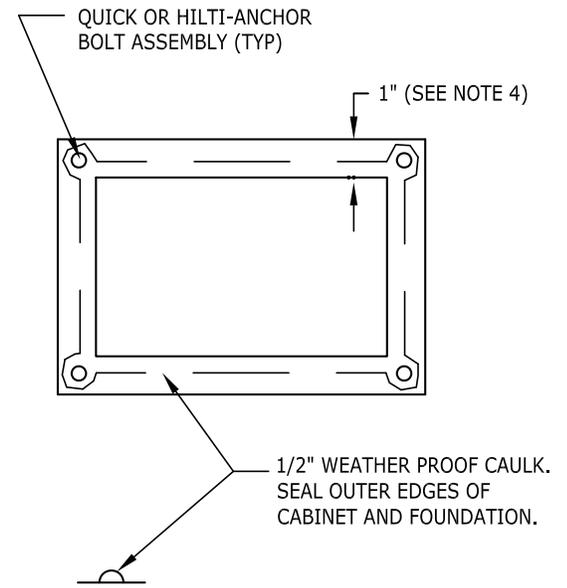
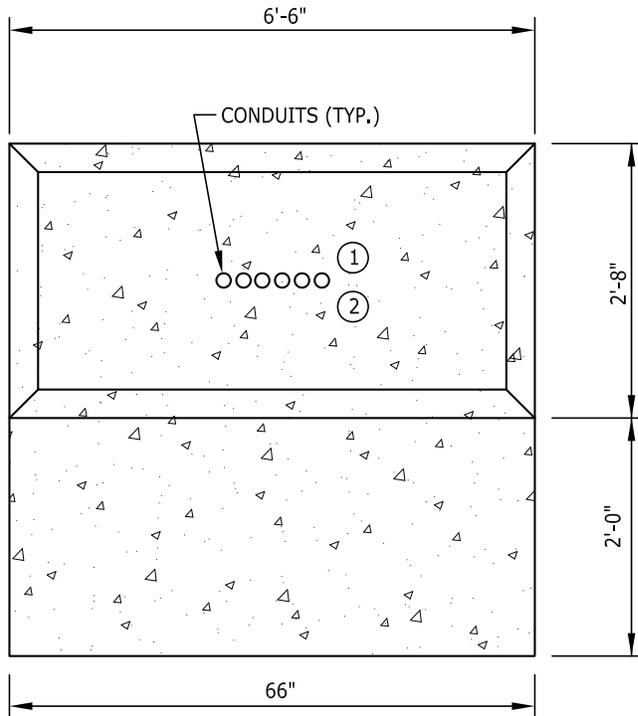
**CONCRETE BASE**

CONDUITS TO BE INSTALLED WITHIN THE CONCRETE PEDESTAL TO SERVE THE CABINETS (TYP)

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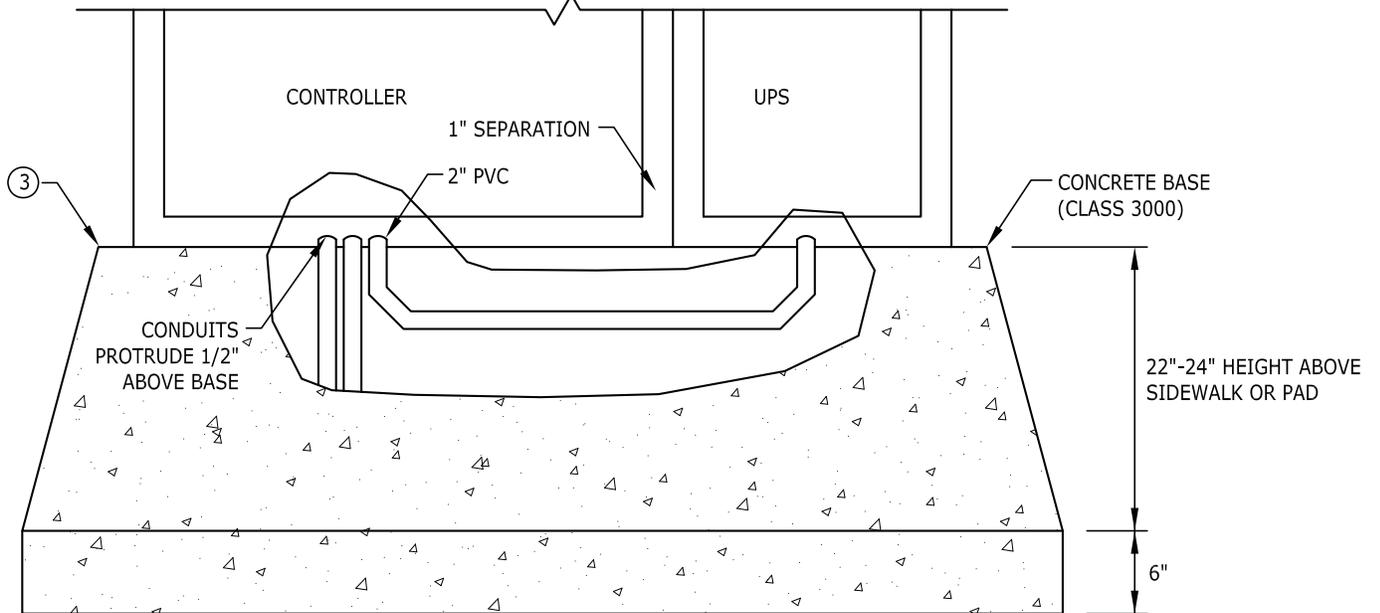
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>SERVICE CABINET, CONCRETE BASE AND ONE LINE DIAGRAM</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____	<b>6-96</b>	
APPROVED _____			



BOTTOM VIEW OF CABINET

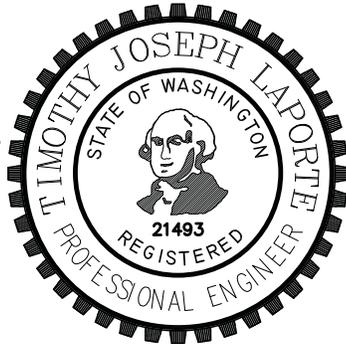
TOP VIEW OF BASE

CONTROLLER DOOR OPENS TOWARD SIDEWALK, UPS DOOR TO RIGHT



NOTES:

- ①. PAINT TOP OF BASE SILVER.
- ②. DRAIN HOLE SHALL NOT BE INSTALLED.
- ③. THE TOP OF THE BASE SHALL BE FLAT AND LEVEL.
- 4. TOP OF BASE IS 1" WIDER THAN CONTROLLER CABINET ON ALL FOUR SIDES.



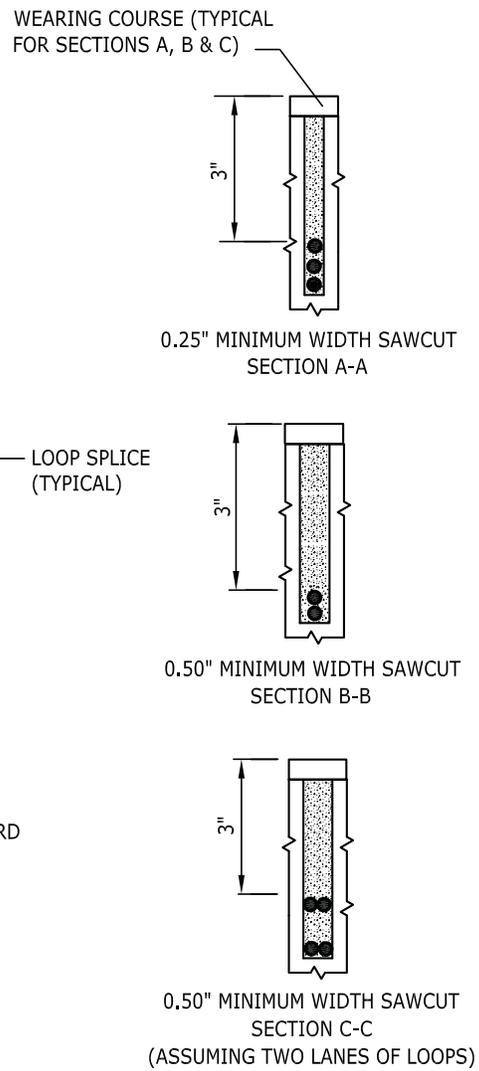
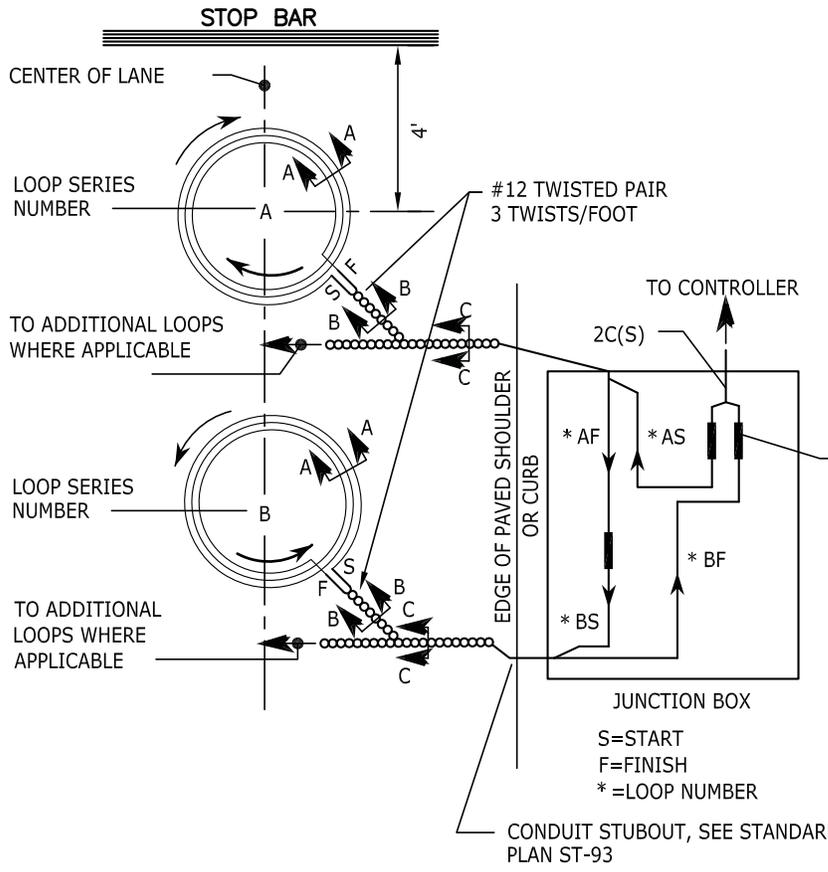
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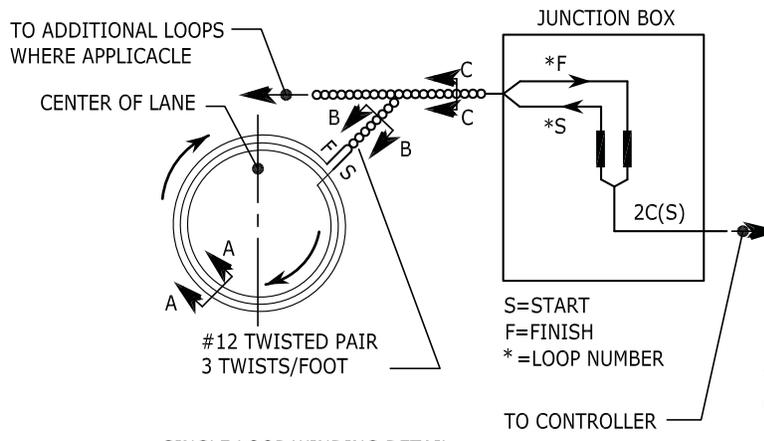
**CITY OF KENT**  
ENGINEERING DEPARTMENT

**TRAFFIC SIGNAL CONTROLLER  
CABINET BASE**

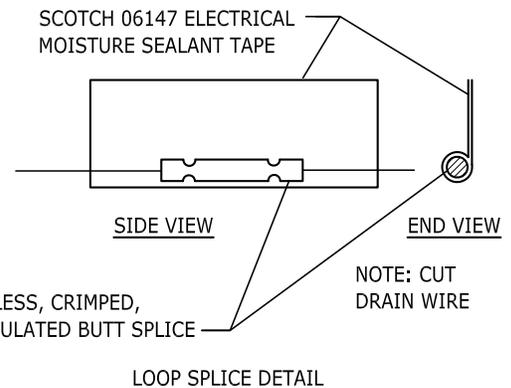
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-97</b>
CHECKED _____	ENGINEER _____	
APPROVED _____		



STOP BAR LOOP WINDING DETAIL



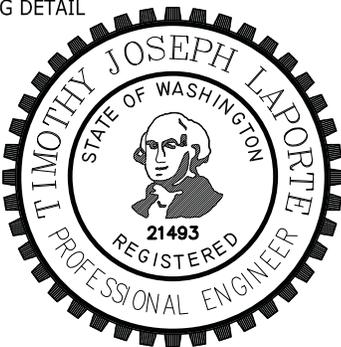
SINGLE LOOP WINDING DETAIL



LOOP SPLICE DETAIL

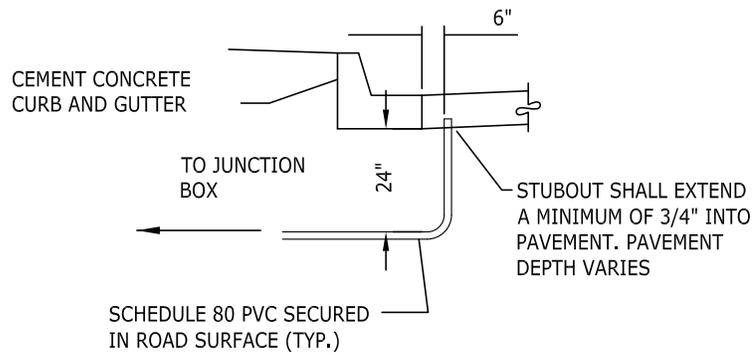
**NOTES:**

1. SEE KENT STANDARD PLAN 6-99 FOR CONDUIT STUBOUT DETAIL AND INDUCTION LOOP INSTALLATION NOTES.
2. SEE KENT STANDARD PLAN 6-100 FOR INDUCTION LOOP PLACEMENT DETAIL.



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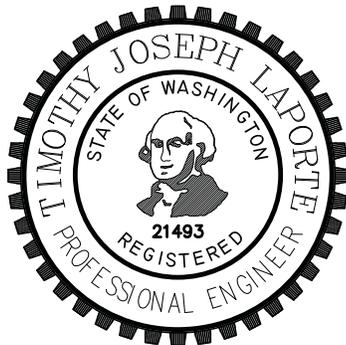
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN  <b>6-98</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			



CONDUIT STUBOUT DETAIL

INDUCTION LOOP INSTALLATION NOTES:

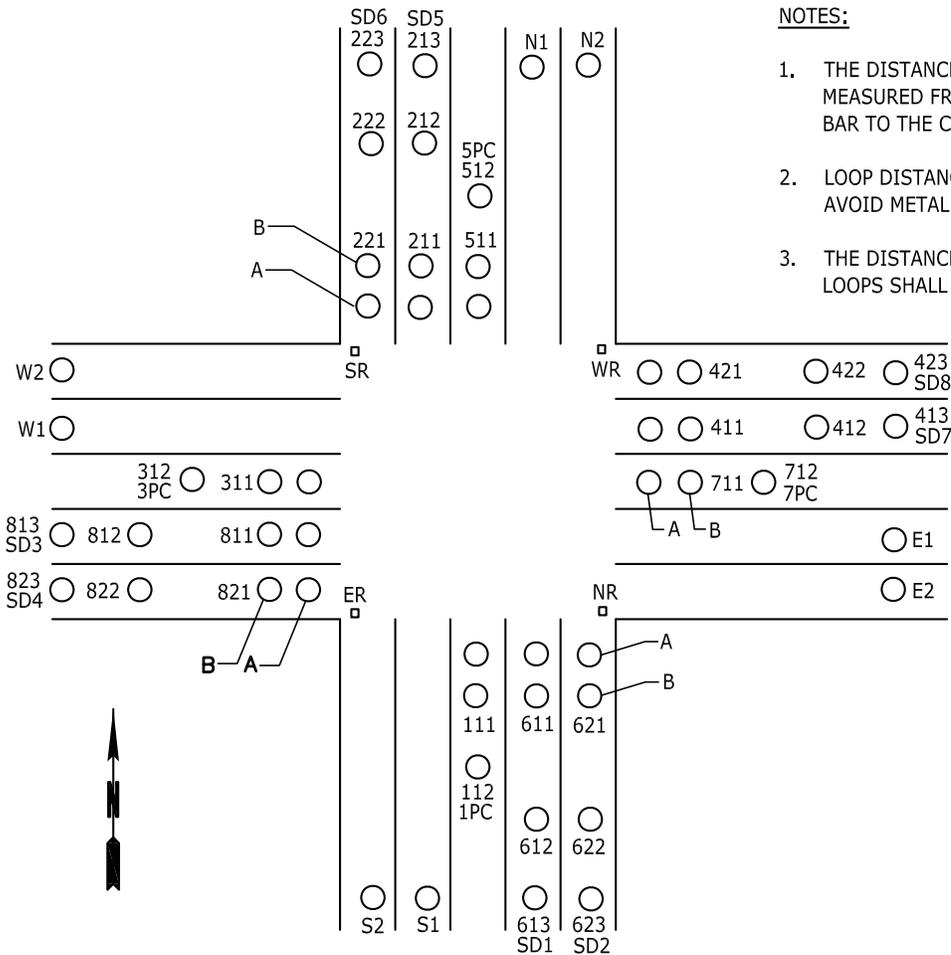
1. CONDUIT USED FOR STUB-OUTS SHALL BE SCHEDULE 80 PVC CONDUIT, MINIMUM SIZE 2 INCHES.
2. ALL LOOPS SHALL BE WOUND WITH THREE TURNS OF NO. 12 AWG STRANDED COPPER WIRE, CLASS B, WITH CHEMICALLY CROSS LINKED POLYETHYLENE TYPE USE INSULATION OF CODE THICKNESS.
3. BACKER ROD WILL NOT BE USED WITH CITY OF KENT LOOP INSTALLATIONS.
4. LEAD-IN WIRES: FOUR PAIR MAXIMUM PER SAWCUT.
5. EXTEND SAWCUT SUFFICIENT LENGTH TO PROVIDE FULL SAWCUT DEPTH AROUND CORNERS.
6. LOOPS SHALL BE INSTALLED PRIOR TO FINAL LIFT IF NEW PAVEMENT IS INSTALLED.
7. ALL LOOPS SHALL HAVE IDENTIFYING LABELS ON THEIR LEADS SHOWING LOOP NUMBER AND S (START) OR F (FINISH).
8. SEE STANDARD PLAN 6-98 FOR INDUCTION LOOP DETAILS AND STANDARD PLAN 6-100 FOR INDUCTION LOOP PLACEMENT.
9. WHEN SAWING LEAD-IN SLOT IN THE ROADWAY, CONTINUE THE SAW CUT APPROXIMATELY ONE INCH BEYOND THE SEAM WITH THE CONCRETE GUTTER A DEPTH OF APPROXIMATELY ONE INCH TO PERMANENTLY MARK THE LOCATION OF THE STUBOUT. IF NO GUTTER IS PRESENT, CONTACT THE ENGINEER FOR AN ALTERNATIVE METHOD OF MARKING THE STUBOUT LOCATION.
10. ALL LOOPS AND HOME-RUN WIRING SHALL BE PLACED A MINIMUM OF 2 FEET AWAY FROM ANY AND ALL METAL CASTINGS OR VALVE BOXES EXCEPT TERMINATING HANDHOLES OR JUNCTION BOXES.



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>INDUCTION LOOP INSTALLATION NOTES</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-99</b>	
CHECKED _____	ENGINEER _____		
APPROVED _____			

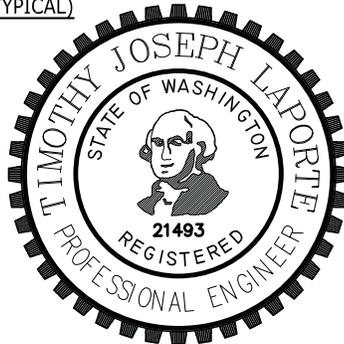
LOOP PLACEMENT				
POSTED SPEED LIMIT	STOP BAR LOOP	LEFT TURN LANE ADVANCE LOOP (SINGLE)	THROUGH LANE MID LOOP (SINGLE)	THROUGH LANE ADVANCE LOOP (SINGLE)
25 MPH	4 FT.	104 FT.	(NONE)	144 FT.
30 MPH	4 FT.	104 FT.	(NONE)	164 FT.
35 MPH	4 FT.	104 FT.	209 FT.	274 FT.
40 MPH	4 FT.	104 FT.	239 FT.	309 FT.
45 MPH	4 FT.	104 FT.	274 FT.	354 FT.
50 MPH	4 FT.	104 FT.	304 FT.	394 FT.



**NOTES:**

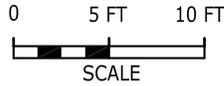
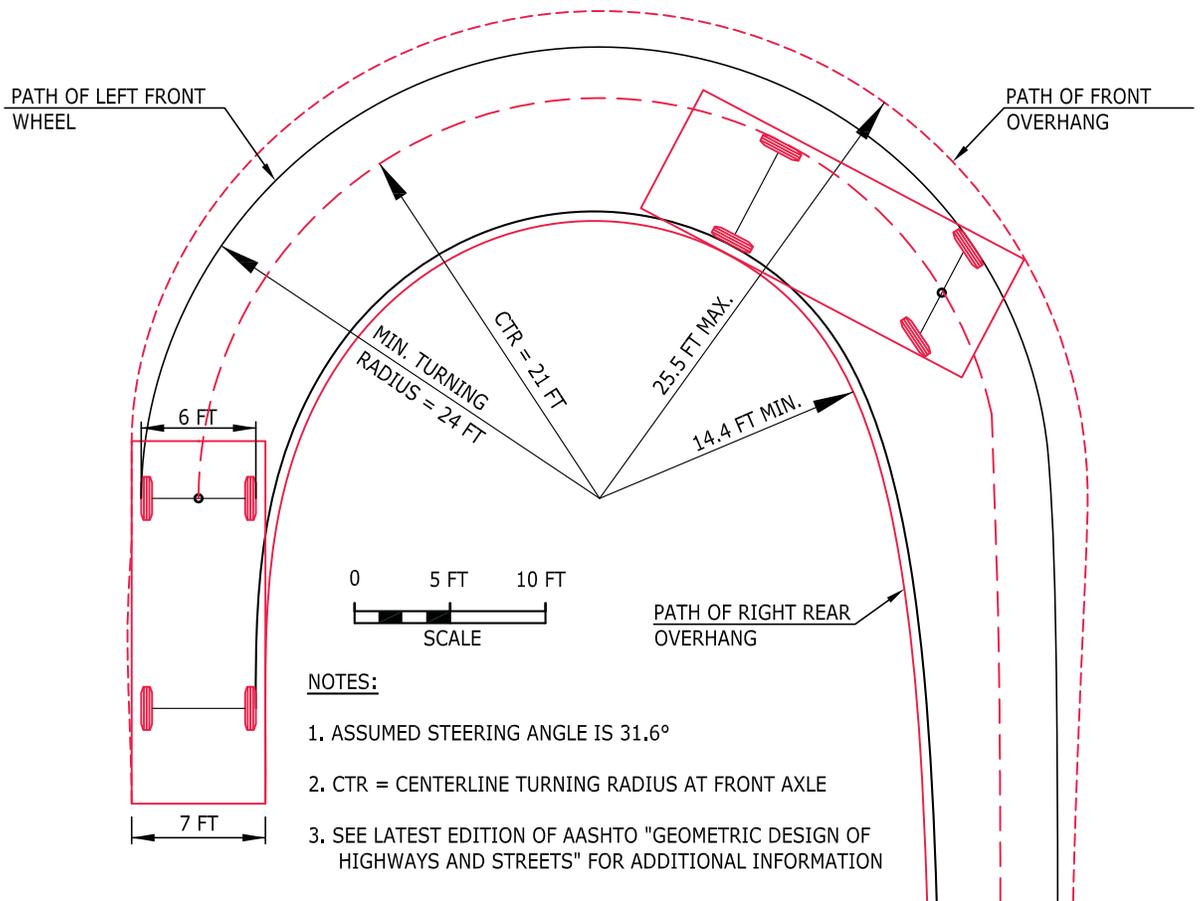
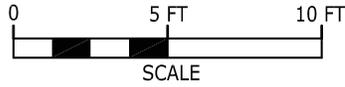
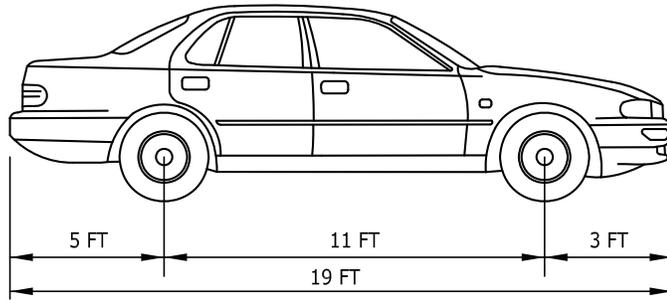
1. THE DISTANCES SHOWN IN THIS TABLE ARE MEASURED FROM THE NEAR EDGE OF THE STOP BAR TO THE CENTER OF THE INDUCTION LOOP.
2. LOOP DISTANCES MAY BE ADJUSTED  $\pm 2$  FEET TO AVOID METAL CASTINGS.
3. THE DISTANCE BETWEEN "A" LOOPS AND "B" LOOPS SHALL BE 16 FEET CENTER-TO-CENTER.

LOOP IDENTIFICATION SCHEMATIC (TYPICAL)



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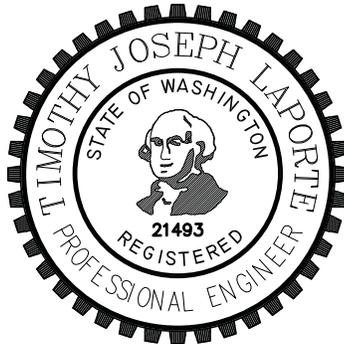
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>INDUCTION LOOP PLACEMENT</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-100</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____	STANDARD PLAN	
APPROVED _____			



**NOTES:**

1. ASSUMED STEERING ANGLE IS 31.6°
2. CTR = CENTERLINE TURNING RADIUS AT FRONT AXLE
3. SEE LATEST EDITION OF AASHTO "GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" FOR ADDITIONAL INFORMATION

**MINIMUM TURNING PATH FOR PASSENGER CAR (P) DESIGN VEHICLE**



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**CITY OF KENT**  
ENGINEERING DEPARTMENT

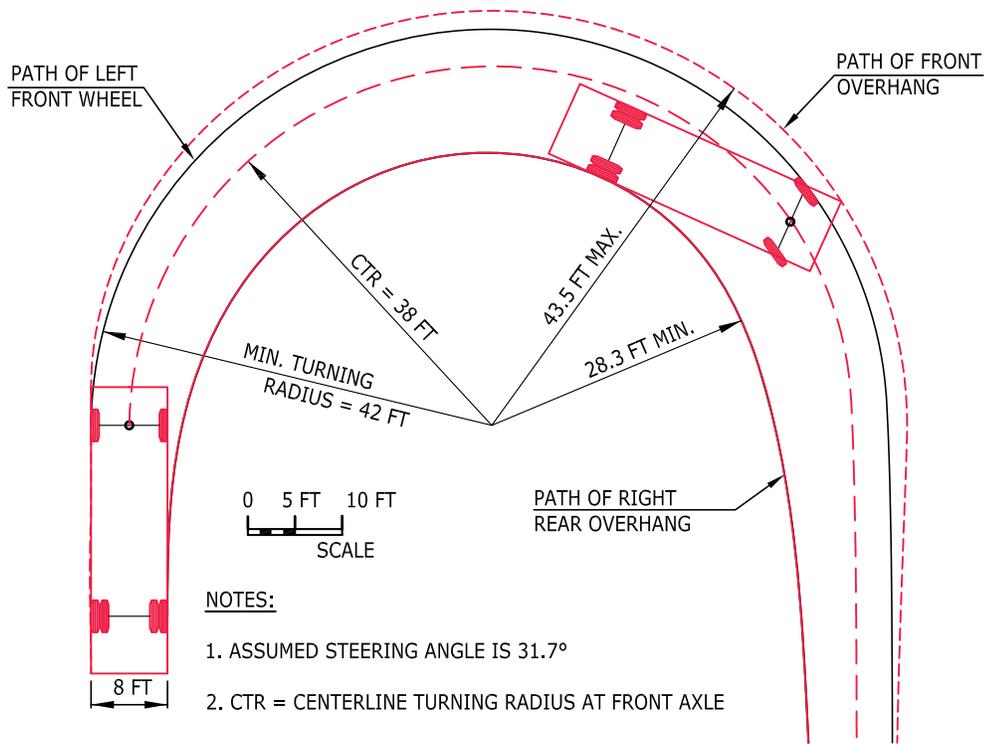
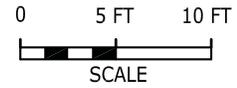
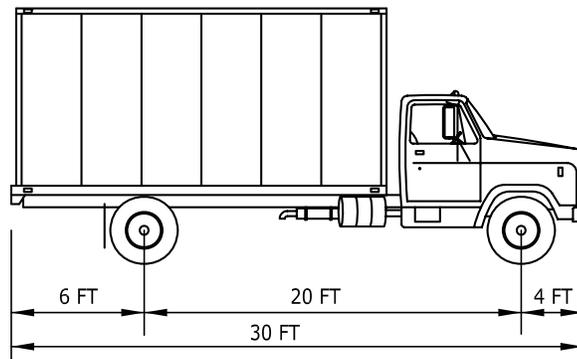
**TURNING TEMPLATE**  
**AASHTO TYPE P VEHICLE**

DESIGNED DWH  
DRAWN BB  
CHECKED \_\_\_\_\_  
APPROVED \_\_\_\_\_

SCALE NONE  
DATE -  
ENGINEER \_\_\_\_\_

STANDARD PLAN

**6-101**



**NOTES:**

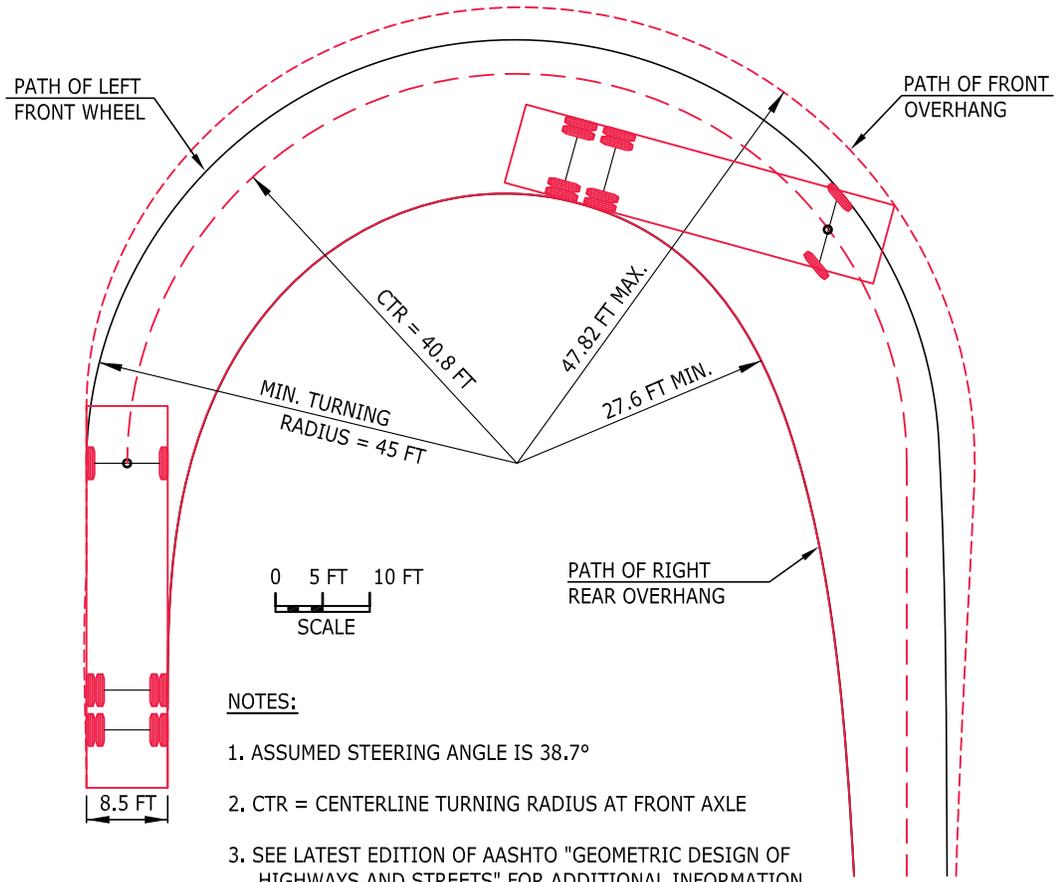
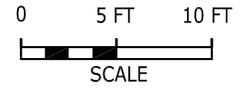
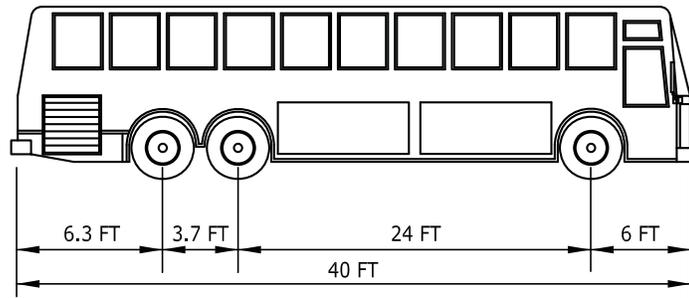
1. ASSUMED STEERING ANGLE IS 31.7°
2. CTR = CENTERLINE TURNING RADIUS AT FRONT AXLE
3. SEE LATEST EDITION OF AASHTO "GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" FOR ADDITIONAL INFORMATION

MINIMUM TURNING PATH FOR SINGLE-UNIT (SU) TRUCK DESIGN VEHICLE



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TURNING TEMPLATE</b> AASHTO TYPE SU VEHICLE	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED			
APPROVED			ENGINEER
			<b>6-102</b>



**NOTES:**

1. ASSUMED STEERING ANGLE IS 38.7°
2. CTR = CENTERLINE TURNING RADIUS AT FRONT AXLE
3. SEE LATEST EDITION OF AASHTO "GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" FOR ADDITIONAL INFORMATION

DESIGN VEHICLE TURNING PATH BUS



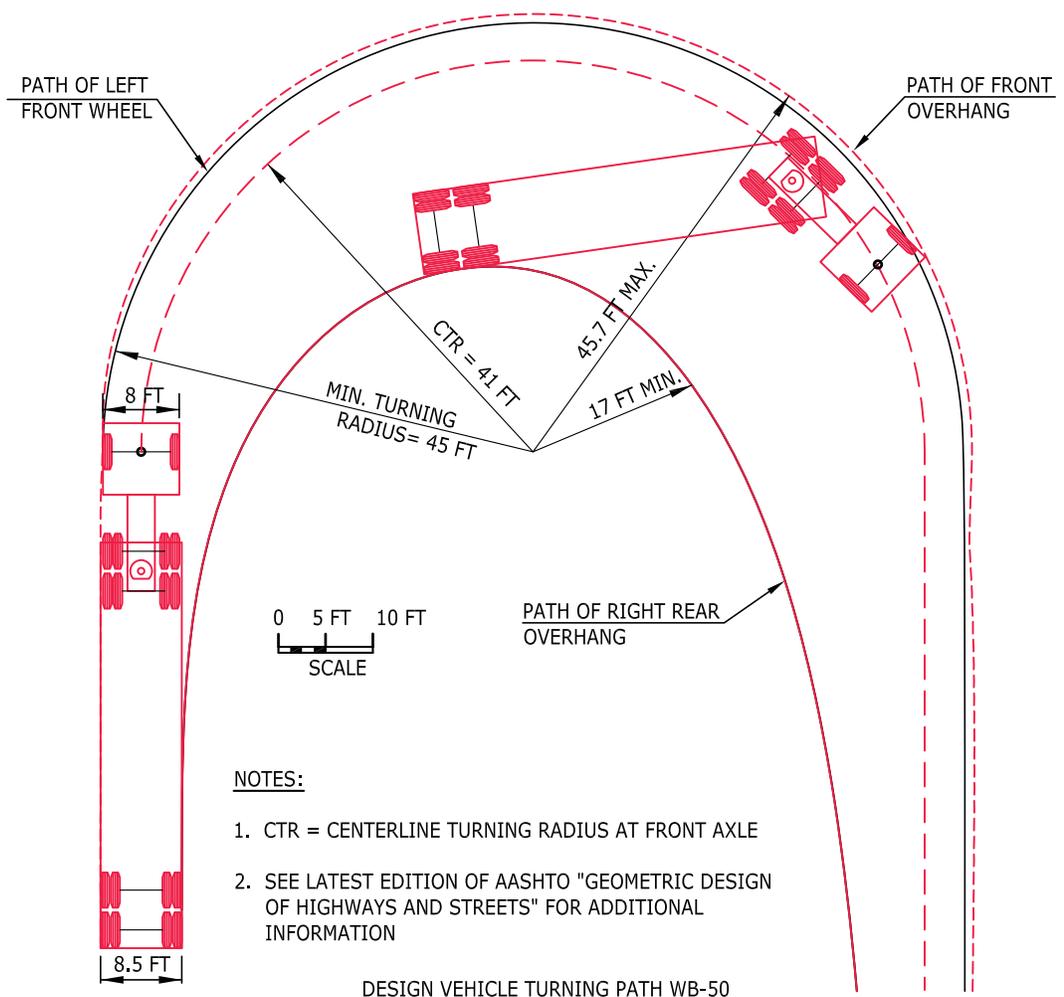
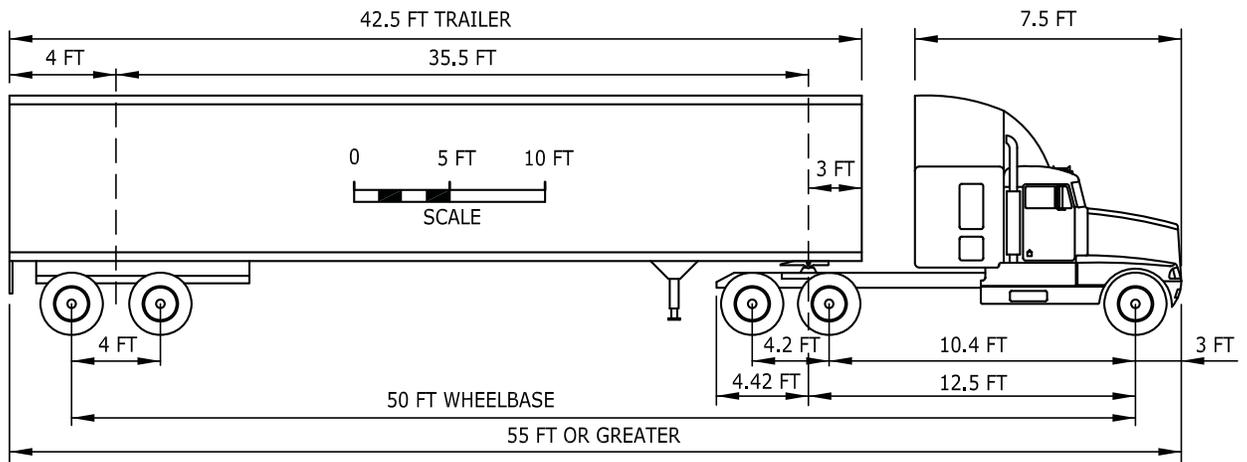
NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION IS KEPT ON FILE AT THE CITY OF KENT. A COPY MAY BE OBTAINED UPON REQUEST.



**CITY OF KENT**  
ENGINEERING DEPARTMENT

**TURNING TEMPLATE AASHTO  
TYPE BUS-40 VEHICLE**

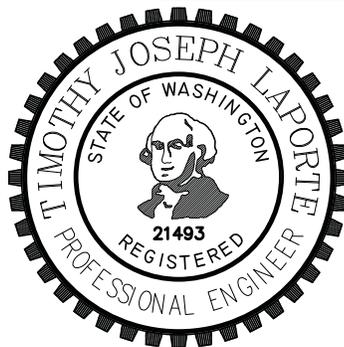
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE <u>-</u>	<b>6-103</b>
CHECKED _____	ENGINEER _____	
APPROVED _____		



**NOTES:**

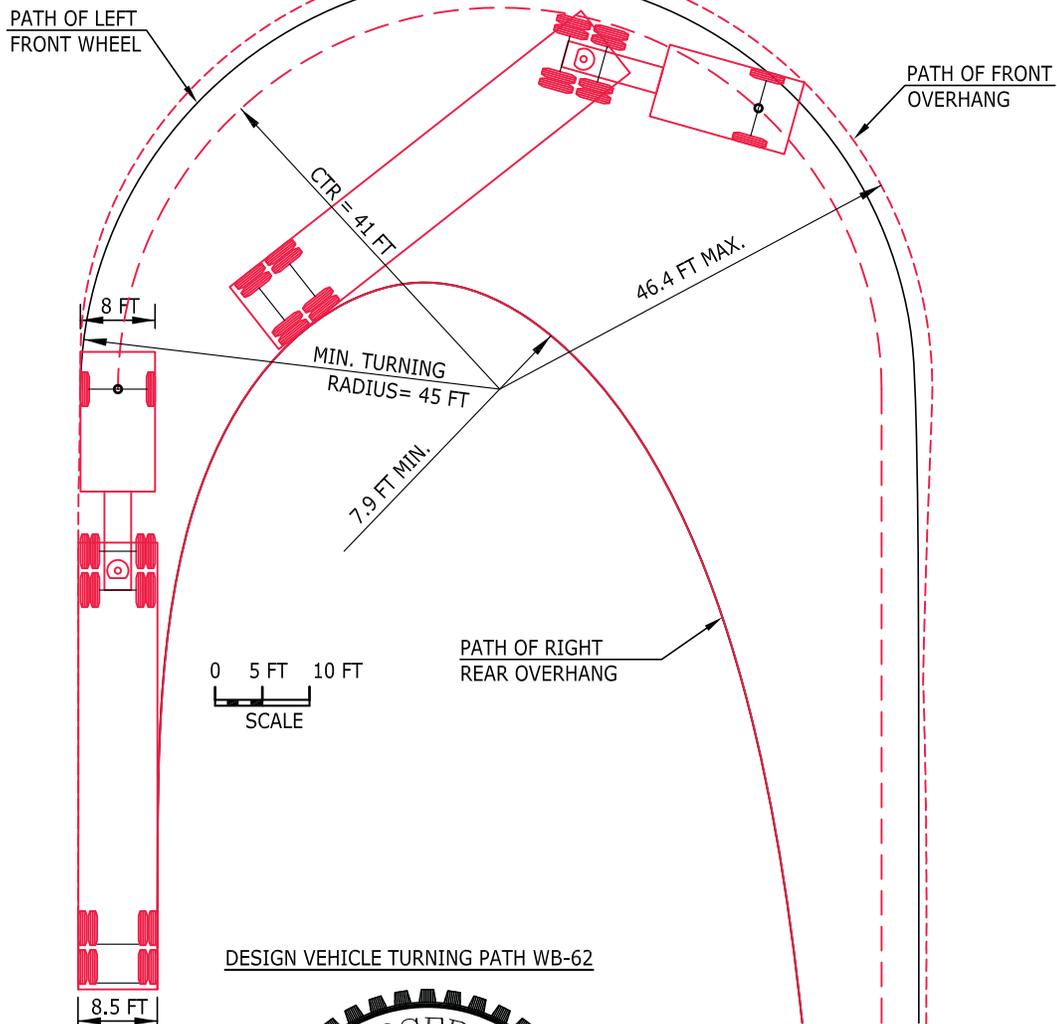
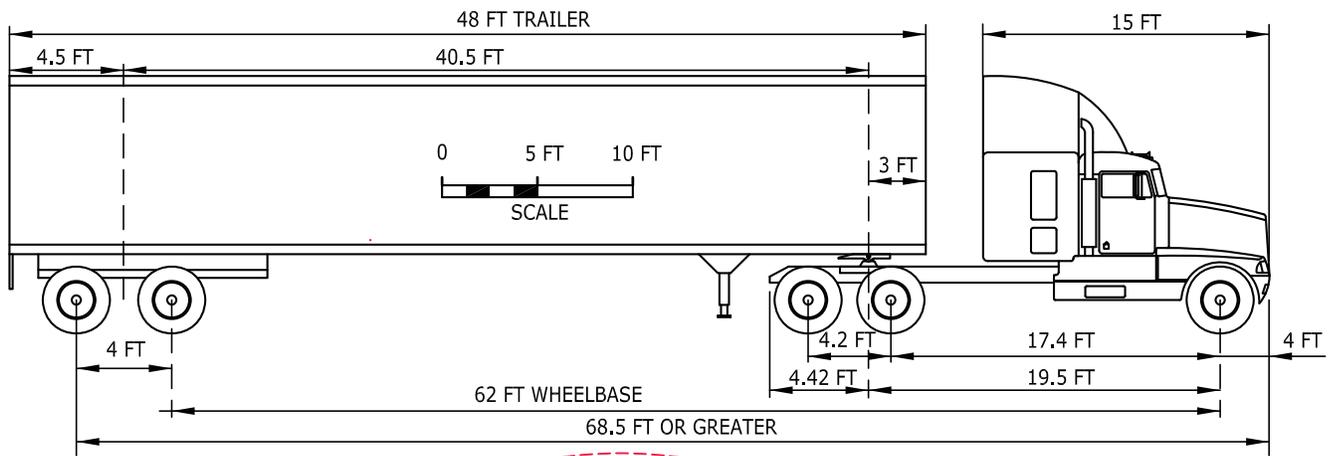
1. CTR = CENTERLINE TURNING RADIUS AT FRONT AXLE
2. SEE LATEST EDITION OF AASHTO "GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" FOR ADDITIONAL INFORMATION

DESIGN VEHICLE TURNING PATH WB-50



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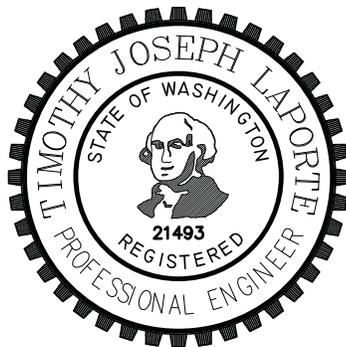
		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TURNING TEMPLATE AASHTO</b> TYPE WB-50 VEHICLE	
DESIGNED	DWH	SCALE	NONE
DRAWN	BB	DATE	-
CHECKED			
APPROVED			ENGINEER
			<b>6-104</b>



DESIGN VEHICLE TURNING PATH WB-62

**NOTES:**

1. ASSUMED STEERING ANGLE IS 28.4°
2. ASSUMED TRACTOR/TRAILER ANGLE IS 65°
3. CTR = CENTERLINE TURNING RADIUS AT FRONT AXLE
4. SEE LATEST EDITION OF AASHTO "GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" FOR ADDITIONAL INFORMATION



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		<b>CITY OF KENT</b> ENGINEERING DEPARTMENT	
		<b>TURNING TEMPLATE AASHTO TYPE WB-62 VEHICLE</b>	
DESIGNED <u>DWH</u>	SCALE <u>NONE</u>	<b>6-105</b>	
DRAWN <u>BB</u>	DATE <u>-</u>		
CHECKED _____	ENGINEER _____		
APPROVED _____			