

CHAPTER 2 DEVELOPMENT GUIDELINES

SECTION 2.0 ERRORS AND OMISSIONS

At the Director's discretion, any significant error or omission in the approved plans, or information used as a basis for approval, will constitute grounds for withdrawal of any permit approvals and/or stoppage of any or all of the permitted work. The Permittee shall show cause why such work should continue and make such changes in plans as required by the Director.

SECTION 2.1 PERMITS

Prior to beginning multifamily-residential, commercial, or industrial development, or development requiring construction of public infrastructure within the City, the Applicant shall submit a permit application, plans, and specifications to the Permit Center for review and approval by the Public Works Department.

Development design and construction shall meet all of the applicable standards, codes, and recommendations in specific reports, such as the geotechnical report, the traffic impact analysis, and the surface water Technical Information Report.

Depending on particular project elements, the Director may require submittals in addition to those described in this chapter.

Any significant changes to the approved plans or specifications of a permitted project require a REVISION submittal to the City for approval.

TYPE A SHORT-TERM NONPROFIT

Issued for 72 hours to nonprofit organizations for assemblies, bike races, block parties, parades, parking, processions, non-motorized vehicle races, street dances, street runs.

TYPE B SHORT-TERM PROFIT

Issued for 72 hours to for-profit entities for fairs, house moves, sales, street closure.

TYPE C CONSTRUCTION

Issued for 180 days for activities in the right-of-way and on private property. These activities include sewer, water, surface water, grading, street improvements, boring, culverts, curb cuts, paving, driveways,

fences, landscaping, painting/stripping, sidewalks, trenching, utility installation/repair, traffic signals and illumination.

TYPE C RIGHT-OF-WAY

Issued for 180 days for activities that will disturb the right-of-way, including boring, installation of culverts, curb cuts, and public facilities, paving, landscaping, and trenching.

TYPE C GRADING

Issued for 180 days for all grading activities occurring within the City limits except the following:

1. Excavation for construction of a structure permitted under the International Building Code;
2. Cemetery graves;
3. Refuse disposal sites controlled by other regulations;
4. Excavations for wells, or trenches for utilities;
5. Mining, quarrying, excavating, processing or stockpiling rock, sand, gravel, aggregate or clay controlled by other regulations, provided such operations do not affect the lateral support of, or significantly increase stresses in, soil on adjoining properties;
6. Exploratory excavations performed under the direction of a registered design professional, as long as this exploratory excavation does not constitute the beginning of construction of a building prior to obtaining a permit.

TYPE D LONG-TERM

Issued for periods greater than 72 hours for activities which do not disturb the right-of-way including: air rights, bus shelters, access to construction sites, loading zones, newspaper sales, recycling facilities, sales structures, sidewalk cafes, awnings, benches etc, underground rights, utility facilities, waste facilities.

TYPE E POTENTIAL DISTURBANCE

Issued for 180 days for activities having a potential to disturb the right-of-way, such as hauling 6 loaded vehicles/hr/8 hr day for 2 or more consecutive days, hauling hazardous waste as defined in the Revised Code of Washington, or surveying (other than for a Tukwila capital improvement project).

TYPE F BLANKET

Issued for 365 days to telecommunications and cable franchisee, and utilities for connections, repairs, and emergencies.

FLOOD ZONE

Any construction or development within any special flood hazard area, including manufactured homes, watercourse alteration, excavation, fill, requires a Flood Zone Control permit (FZCP). An FZCP grants approval to construct or develop within a special hazard area, a flood-prone area or the shoreline, but does not replace the need for additional permits such as a building permit or a Type C Construction permit.

A permit shall be obtained before construction or development begins within any area of special flood hazard established in TMC 16.52.050. The permit shall be for all structures including manufactured homes, and for all development including fill and other activities.

WATER METER – PERMANENT

Issued for domestic water supply of all new or reestablished services when sewer discharge rates are calculated based on water usage. Each individual building requires a separate water main tap. The fee includes a City-provided water meter.

WATER METER – WATER ONLY

Issued for a separate service from the main for water that will not discharge to the public sewer. The fee includes a City-provided water meter.

WATER METER – DEDUCT

Required to meter water that will not discharge to the public sewer. The Permittee provides, owns, installs, and maintains the meter. This meter is installed downstream of a permanent water meter. An example is landscape irrigation.

WATER METER – TEMPORARY

Required for use of public water, on a short-term basis, where a metered supply does not already exist. The Permittee rents the meter from the City. Examples include dust suppression during construction or water supply during hydroseeding.

SECTION 2.2 FEES

2.2.1 PERMIT

Public Works establishes and collects fees as set forth in the fee schedule adopted by the City Council. **Most of the permit fees are flat rates that are due when the permit is issued.** Type C permit fees are based on the estimated construction value of the public works elements in a project. For Type C permits, Public Works collects an *Application and Plan Review Fee* when the application is submitted and a *Permit Issuance and Inspection fee* when the permit is issued.

After the permit is issued, Public Works may assess additional fees for revisions and inspections and may adjust pavement mitigation fees. Any additional fees must be paid before the PUBLIC WORKS Final Inspection occurs.

Public Works charges 25% of the Total Plan Review Fee for each additional review, which is attributable to the Applicant's action or inaction. Each revision to approved plans is charged 25% of the Issuance and Inspection fee. Each re-inspection after the first two inspections is charged \$60.00/inspection per inspection item.

Refer to Public Works Bulletin for permit fee estimates.

2.2.2 PAVEMENT MITIGATION

The City calculates the square footage used to determine a mitigation fee according to the following:

- A. For repairs requiring an overlay, the City uses the total square feet of overlay.
- B. For pavement repair, the City uses the cut area plus two feet on each side of the cut.

Public Works may adjust this fee when the actual field measurements differ from the proposed measurements shown on the permit application. Any adjustment to the mitigation fees must be completed before the Public Works Final Inspection. Refer to Public Works Customer Assistance Bulletins for a more complete description of Pavement Mitigation fees.

2.2.3 TRANSPORTATION IMPACT FEES

Consistent with the Comprehensive Plan, the Six-year Transportation Plan and the Capital Improvement Plan, transportation impact fees help ensure that new development bears its proportionate fair share of

transportation facilities necessitated by the new development. The fee applies to any construction, reconstruction, conversion, structural alteration, relocation or enlargement of any structure that requires a building permit and generates any new PM peak hour trips. The transportation impact fee is charged to each development according to an impact fee schedule based on defined zones. The fees are assessed as part of the building permit and are due and payable when the permit is issued (TMC 9.48 and Ordinance 211).

2.2.4 INDEPENDENT REVIEW

Depending on the site conditions and design complexity, reports submitted to the City may receive independent review. The Applicant pays the review fee.

2.2.5 CONNECTION CHARGES

Some City water and sewer services have special connection charges. When these charges apply, the Applicant shall provide a legal description of the property to aid in calculating the charges.

2.2.6 CAPACITY CHARGES

King County Metro determines the sanitary sewer capacity charge based on the information provided on the Sewer Use Certification form. For new construction within the City's service area and for all tenant improvements within the city limits, the Applicant submits a completed Sewer Use Certification form. This form is available in Public Works. Upon completion of the project work, Public Works forwards the completed form to Metro.

2.2.7 OVERTIME FEES

Inspections that occur during non-regular business hours are subject to "after hours" inspection fees. The Director determines when these inspections are allowed. The fees are charged at the inspector's overtime-hourly rate and include vehicle, overhead, and expense charges.

2.2.8 SPECIAL BILLING FEES

The City shall charge for any work or services provided by Public Works, such as traffic control or utility relocation, which occurs under an Authorization for Special Billing or provided by Public Works as a response to infrastructure damage during construction.

SECTION 2.3 SUBMITTALS

2.3.1 PLANS

Plans submitted to Public Works for review and approval, except for single family residences that are not in or adjacent to a sensitive area and that do not trigger surface water drainage review, shall be prepared, signed, stamped, and dated by a Washington State registered Professional Engineer. These plans must be submitted to the City for plan review and approval prior to the commencement of any construction.

Public Works will review all submittals for compliance with these Standards. Plan approval does not relieve the Applicant, the Applicant's Engineer, or the Contractor from responsibility for ensuring that all facilities are safe and that calculations, plans, specifications, construction drawings, record drawings, and as-built information complies with normal engineering standards, these Standards, and applicable federal, state, and local laws and codes. Refer to Appendix C for a plan completeness checklist.

2.3.2 SPECIFICATIONS

Specifications shall be submitted with the plans, when the plans and notes do not adequately describe the proposed work and materials.

2.3.3 PLAN CHECKLIST

A completed Plan Checklist may be submitted with the plans. The engineer should use the Plan Checklist to ensure the plans meet the specific minimum requirements. A Plan Checklist is included as Appendix C.

2.3.4 EROSION PREVENTION AND SEDIMENT CONTROL PLAN

Any project that will clear, grade, or otherwise disturb a site must provide erosion prevention and sediment controls to prevent, as much as possible, sediment transportation offsite to downstream drainage facilities and water resources, or onto other properties.

The erosion prevention and sediment control plan shall meet or exceed the standards in the adopted *King County Surface Water Design Manual*.

2.3.5 POLLUTION PREVENTION PLAN

Any construction project that includes any of the following activities must provide best management practices to prevent pollution:

- A. Dewatering
- B. Paving
- C. Structure construction and painting
- D. Material delivery, use, or storage (soil, pesticides, herbicides, fertilizers, detergent, plaster, petroleum products, acids, lime, paints, solvents, curing compounds)
- E. Solid waste
- F. Hazardous waste
- G. Contaminated soils
- H. Concrete waste
- I. Sanitary/septic waste
- J. Vehicle or equipment cleaning, fueling, or maintenance

2.3.6 PROJECT SCHEDULE

The project schedule shall include the proposed sequence and expected start and end dates for all major activities. The schedule shall include installation of temporary and permanent erosion prevention and sediment control measures and schedules for monitoring, operation, and maintenance of these measures.

2.3.7 WORK IN RIGHT-OF-WAY

Required permit application submittals when proposing work within City right-of-way include the following (TMC 11.08):

- A. Applicant/Owner information
 - 1. Applicant name, address, phone number, email address
 - 2. Owner name, address, phone number (if not the Applicant)
- B. Activity Description
 - 1. Cut and fill volumes
 - 2. Location
 - 3. Proposed use
 - 4. Excavation method and areas, surface and subsurface
 - 5. Restoration method
 - 6. Start and end dates and expected duration
- C. Plans, profiles, cross sections
- D. Copy of franchise agreement, easement, encroachment permit, license or other legal authorization

- E. Document from Owner and Applicant saying they are in compliance
- F. Hold Harmless Agreement
- G. Traffic control plan
- H. City of Tukwila business license
- I. Copy of the contractor estimate or engineer estimate for the activity being permitted. Public Works will review and may adjust. Any fee adjustment will be made when the permit is issued
- J. Application fee
- K. Comprehensive general liability insurance with limits not less than \$2,000,000, naming City of Tukwila as additional insured
- L. Business automobile liability insurance with limits not less than \$1,000,000
- M. Contractor's pollution liability insurance, on an occurrence form, with limits not less than \$1,000,000 each occurrence and deductible not more than \$25,000
- N. Corporate surety bond, cash deposit or letter of credit for 150% of the value of the right-of-way work to be done, in order to guarantee faithful performance of the permitted work
- O. Maintenance Bond - Two years – minimum 10% of construction costs

2.3.8 TECHNICAL INFORMATION REPORT (SURFACE WATER)

The scope of drainage review varies with the project complexity and potential surface water impacts. Refer to the adopted *King County Surface Water Design Manual* to determine Technical Information Report and design requirements appropriate for the project.

2.3.9 GEOTECHNICAL REPORT

A geotechnical report helps determine if the proposal for a site is appropriate. A geotechnical report contains information used to design retaining walls, foundations, permeable pavements, hazardous waste facilities, and infiltration systems, such as trench drains, sand filters and septic drain fields. Geotechnical reports also supply information for settlement analysis, liquefaction, structural fill, and storm water design. The report shall meet the City's current sensitive area, Public Works, and Uniform Building Code requirements.

The City may require a geotechnical investigation and report based on the nature of the proposal. All of the following require a geotechnical investigation and report prepared by a Geotechnical Engineer.

- A. Unless waived by the Building Official:
 - 1. All new buildings except a residential structure that falls under the International Residential Code
 - 2. Any structure, including a rockery, that retains a surcharge
 - 3. Any retaining structure, including a rockery, that is over four feet above existing grade
 - 4. Grease interceptors that are 1000 gallons or larger
 - 5. Surface water retention/detention structures, including bioretention and permeable pavements
- B. Unless waived by the Department of Community Development Director:
 - 1. Any work on sites containing or adjacent to slopes that are 15% or steeper
 - 2. Grading that requires environmental review under the State Environmental Policy Act
- C. Unless waived by the Public Works Director
 - 1. Surface water infiltration, including bioretention and permeable pavements
 - 2. Riverbank Stability (Ordinance 2038)
 - 3. Hazardous Waste Facility Design

The reporting requirements for single-family permits may be waived, if a report for the site meeting the City of Tukwila's criteria has been filed less than five years before the date of application and the Geotechnical Engineer who signed the report prepares a written letter stating the report is still applicable to the site and currently proposed project. Similarly, reporting requirements may be waived for single-family permits if the applicant can demonstrate, to the City's satisfaction, that soil or groundwater conditions at or near the site pose little or no risk.

2.3.10 TRAFFIC CONTROL PLAN

Prior to beginning any activity which might affect City right-of-way, the Applicant/Permittee shall provide the City, for review and approval, a traffic control plan that meets MUTCD standards. The traffic control plan shall accurately reflect existing site conditions including accesses, channelization, sidewalks, bike/pedestrian paths, bus stops and such.

The Applicant must provide the location, address and description of expected traffic flow during the proposed work.

2.3.11 RIVERBANK STABILITY ANALYSIS

As part of the Flood Control Zone permit application, the Applicant must provide a riverbank stability analysis for projects adjacent to the Green/Duwamish River, whenever the natural riverbank is expected to provide bank protection for the life of the project. A geotechnical engineer must prepare the analysis. The geotechnical engineer must certify that the riverbank is stable for the lifetime of the proposed project.

The analysis scope will vary with the site conditions. All elevations shall use the same datum as the FZCP submittal. The analysis report shall include assessment of current conditions, conclusions, and construction recommendations. At a minimum, the report shall include:

- A. Site map showing location of riverbank cross-sections, structures, roads, drainage, wells, septic tanks, utilities, and other significant features at the project site.
- B. Riverbank cross-sections at intervals sufficient to provide accurate detail for analysis. Cross sections should show the top-of-bank, grade-breaks, toe-of-bank, and, whenever feasible, streambed geometry.
- C. Soil strength and erodability parameters, current slope stability and expected slope stability during rapid drawdown, including factors of safety. Provide possible failure modes and failure causes.
- D. Discussion of risk and possible environmental effects, both locally and downstream.
- E. Prevention measures, repair and monitoring requirements.

2.3.12 SANITARY SEWER

Your project may require submittal of any of the following:

- A. King County Sewer Use Certification form for new or modified facilities,
- B. South King County Health Department septic system approval for construction on a site having a septic tank,
- C. Copy of King County Industrial Waste Discharge approval for gas stations and some industrial operations that discharge to a sanitary sewer,

- D. Septic tank abandonment documentation,
- E. Copy of King County Department of Natural Resources approval for direct side sewer connection to interceptor lines.

2.3.13 FINANCIAL GUARANTEE

- A. For work in the right-of-way Applicant shall provide:
 - 1. A corporate surety bond, cash deposit or letter of credit for 150% of the value of the proposed right-of-way work, in order to guarantee faithful performance of the permitted work.
 - 2. A corporate surety bond, cash deposit or letter of credit for 10% (minimum) of the value of the right-of-way work, to guarantee workmanship and materials for two years following completion of work.
- B. For hauling, the applicant shall provide a \$2,000 financial guarantee to assure clean up and repair of any damage.
- C. For moving an oversize load, the applicant shall provide a \$5,000 financial guarantee to assure repair of any damage.
- D. For the Public Works part of a subdivision, short plat, or projects containing or abutting sensitive areas, the Owner shall provide a corporate surety bond, cash deposit or letter of credit for 150% of the total cost of the proposed work to guarantee performance of proposed work.
- E. For street lighting as part of subdivision, the Owner shall provide a two-year financial guarantee for 150% of the cost of the illumination for maintenance. (TMC 11.12.110)
- F. The Director may require a financial guarantee for 10% of the project costs for erosion prevention and sediment control on projects which clear more than 6000 square feet or contain or abut sensitive areas such as Class 2 or steeper slopes, wetlands, or critical drainage.

2.3.14 INSURANCE

- A. Permittee performing work within City right-of-way shall provide proof of the following insurance, showing the City as additional insured:
 - 1. Comprehensive general liability insurance with limits not less than \$2,000,000.

2. Business automobile liability insurance with limits not less than \$1,000,000.
 3. Contractor's pollution liability insurance, on an occurrence form, with limits not less than \$1,000,000 each occurrence and deductible not more than \$25,000.
- B. If the Director determines the nature of any work is such that it may create a hazard to human life, endanger adjoining property, street, street improvement, or any other public property, the Director may require the applicant to file a certificate of insurance. The Director, based on the nature of the risks involved, shall determine the amount of insurance.

2.3.15 HOLD HARMLESS

The Applicant shall complete a hold harmless agreement for activities in the right-of-way, for activities in or near a sensitive area, and for major deviation from City standards. Hold harmless agreements are available in Public Works.

2.3.16 EASEMENT(S)

The City reviews and approves all easements prior to recording with King County Records.

For easements granted to the City, the legal description(s) and exhibit(s) shall be prepared and stamped by a land surveyor, or professional engineer registered in Washington State. The easement document shall include the easement legal description and a site plan showing the easement location, and shall specify maintenance responsibility, when applicable. (TMC 11.12.050)

A. Utility

Water, sewer, drainage facilities, minimum 20 feet wide, generally, ten feet either side of the centerline of the facility. Additional width may be required to accommodate maintenance.

Utility easements adjacent to public right-of-way shall be ten feet wide.

B. Traffic

Where needed for purposes of traffic safety or access to schools, playgrounds, urban trails, shopping facilities, or other community facilities, public easements for bikeways or walkways, not less than ten feet in width, will be provided.

C. Levee access

All proposed development adjacent to the Green River shall, as part of their permit submittal, grant access and maintenance easements for existing or future dikes/levees and riverbanks along the Green River. The City, in cooperation with King County, shall determine these easement locations and widths.

D. Non-motorized easements

The easement shall be wide enough to include the trail plus at least two feet on each side.

2.3.17 PROPERTY DEDICATION

The City may require right-of-way dedication to incorporate necessary transportation improvements. Property shall be deeded to the City using a statutory warranty deed. The dedication must be accompanied by a Title report less than 6 months old and a completed excise tax affidavit.

2.3.18 MAINTENANCE AGREEMENT(S)

- A. Before Public Works final project approval, the Permittee/ Owner/ Contractor shall provide Maintenance Agreements, in recordable format, for common improvements such as access, utilities, surface water elements, and cul-de-sac landscape island.
- B. The Owner shall provide a maintenance agreement (and bond) for street lighting in subdivision. (TMC 11.12.110)

2.3.19 PERMITS FROM OTHER AGENCIES

It is the Applicant's responsibility to obtain permits from outside agencies such as WDFW, Department of Natural Resources, Corps of Engineers, Department of Ecology, Department of Health, WSDOT or FEMA. The Director requires proof of other required permits prior to issuing permit approval.

2.3.20 DEVELOPER AGREEMENT

The City and the Developer shall enter a Developer Agreement whenever required by the City. The Developer Agreement shall be written and signed before the permit is issued. The Developer Agreement should contain work descriptions and estimated costs. The Agreement should assign responsibilities for the work performance and shall provide an expiration date.

2.3.21 DEVELOPER REIMBURSEMENT AGREEMENT (LATECOMER AGREEMENT)

The City may enter into agreements with developers who have installed public improvements valued at \$50,000 or more, in order to provide for reimbursement of a fair prorated share by any real estate owners who have not contributed to the original cost of such facilities, and who subsequently connect to, or use the improvement. Such agreements shall be entered into at the time of, or prior to, issuance of a Certificate of Occupancy. The Public Works Department shall approve the prorated share based on construction cost provided by the Developer.

The developer is responsible for initiating, executing, and, after City approval, recording the latecomers agreement with the County. The agreement must include a list of those properties that will benefit from the improvement, a map outlining and designating these properties, legal descriptions as required by the City, backup data supporting the costs submitted, and an expiration date.

There are three acceptable methods for the determination of benefit: 1) gross parcel area, 2) property frontage, or 3) number of connections. The proponent will submit the format most appropriate to the nature of the project, as approved by the City. No credit will be given for open space, recreation areas, or undevelopable portions of the development proposal when calculating gross parcel area. The City will collect the latecomer's fee from property owners, which benefit from the improvements and will meet the Revised Code of Washington when disbursing payment to the developer.

SECTION 2.4 CONSTRUCTION

Contractor/Permittee shall perform all work in accordance with all federal, state, and local laws and shall be in accordance with approved plans, specifications, and permit conditions. The Permittee/Contractor shall maintain a set of approved plans, specifications, and associated permits on the job site. Permittee shall apply for a revision for any work proposed that is not according to approved plans and specifications, and permit conditions.

2.4.1 MATERIALS

Materials proposed for use in construction of publicly owned or publicly maintained utilities must be in conformance to approved material standards. Unapproved materials cannot be adequately evaluated within the plan review period.

2.4.2 PRECONSTRUCTION CONFERENCE

Prior to beginning any work, Permittee/Contractor shall contact the City's Inspector to arrange a preconstruction conference.

2.4.3 CONSTRUCTION ON EASEMENT

Construction on easement(s) shall be performed strictly in accordance with the easement provisions. The Permittee/Contractor shall make himself aware of all conditions pertaining to the easement agreement. No work shall be permitted in easement areas where City utilities may be located until specifically authorized by the City.

2.4.4 RIGHT-OF-WAY

A. Access

1. During construction and until permanent access is installed and approved, provide pedestrian/ADA and emergency access to any abutting public school, public building, urban trail, transit stop, or business.
2. Provide temporary sidewalk, curb ramp, or bike path, meeting the Director's approval, when construction blocks existing.
3. Maintain access to fire stations, fire hydrants, fire escapes, and fire fighting equipment. Do not place materials or obstructions within 15 feet of fire hydrants.

B. Monuments

1. Locate and protect survey monuments, property corners, bench marks, and other such.
2. All disturbed monuments shall be replaced by a Washington State licensed surveyor at the Owner's expense.

C. Drainage

1. Keep existing drainage features free of dirt and other debris.
2. Reroute flow when it is necessary to block or otherwise interrupt a drainage feature. (TMC11.08.220)

D. Cuts

1. Roadway crossings for utilities shall be by jacking, tunneling, or boring with "windows" or shafts 20 feet or more apart.
2. Crossing under State Highways and crossings involving railroads or other easements and rights-of-way will also require approval from the appropriate agency.

3. Newly constructed or recently overlaid streets shall not be open cut for three years. Open cuts are allowed on an exception basis and only when roadway conditions warrant or in cases of undue hardship.
4. All pavement cuts in right-of-way are subject to a pavement mitigation fee.
5. All pavement cuts in right-of-way must have a preapproved street and pavement restoration plan.

E. Restoration

Any disturbance of right-of-way or right-of-way facilities, including sidewalks and vegetation, shall be restored to current City standards. The City shall approve all backfill and pavement base. All damaged or broken pavement and other disturbed pavement shall be replaced with the same type and depth of pavement adjoining the disturbed area.

F. Restrictions

1. **From the third Thursday in November to the following January 2nd**, the Director restricts lane closures in the Tukwila Urban Center.
2. Maintain emergency, pedestrian, and vehicular access to buildings, trails, and transit at all times.
3. Keep all roadways free of dirt and debris using street sweepers. Use of water trucks for cleaning roadways requires preapproval from the Director.
4. Install and secure non-skid steel plates over any trench at any time work has stopped and the trench is left open. Place warning signs in locations adequate to warn drivers and bicyclists. Warning signs shall read "Motorcycles Use Extreme Caution" and "Caution Steel Plates Ahead".

2.4.5 TRENCH EXCAVATION

Construct per City of Tukwila standard detail WS-18 and WISHA/OSHA requirements and meet the erosion prevention and sediment control requirements.

- A. All trench excavation operations shall meet or exceed all applicable shoring laws for trenches.
- B. During excavation, divert any surface water and pump the trench as needed to keep the trench free of water. Store pumping

equipment near the trench excavation to ensure that these provisions are carried out.

Completely excavate boulders, rocks, roots, and other obstructions or excavate to the width of the trench, and to a depth of 6 inches below the bottom pipe grade.

- C. Use hand tools to:
 - 1. Finish the trench bottom in such a manner that the pipe will have a uniform slope along the entire length of the pipe.
 - 2. Excavate the bell holes enough to make up the joint.
- D. Extend trenching operations a maximum of 100 feet in advance of the pipe laying operation. For excavation greater than 100 feet, the Permittee must obtain written approval from the Director.
- E. Pipe Installation:
 - 1. **Pipe deflection is not allowed.**
 - 2. Imbed pipe in 5/8" crushed gravel.
 - 3. According to Standard Specifications and the manufacturer's recommendation.
 - 4. Install pipe cover and surface restoration as soon as possible following installation and testing of pipe.
 - 5. Mark all new pipes with 3M EMS 4" Extended Range Marker Balls (Model No. 140X-XR-ID). Use appropriate colors to match APWA utility locate color codes (<http://www.callbeforeyoudig.org/color.htm>).

2.4.6 STOP WORK ORDER

- A. Following written notice to the Permittee, the Director may suspend or revoke any permit for any of the following reasons:
 - 1. Changes in site runoff characteristics upon which the permit is granted.
 - 2. Construction not in accordance with the approved plans.
 - 3. Noncompliance with correction notice(s) or stop work order(s) issued for erosion or sediment controls.
 - 4. Immediate danger to a downstream area or adjacent property as determined by the Director.
- B. The Director may post a site with a "stop work" order directing that all construction activity cease immediately. The issuance of a "stop

work" order may include any "discretionary conditions" or "standard requirements" which must be fulfilled before work under the Permit may continue.

- C. No person shall continue or permit the continuance of work in an area covered by a "stop work" order, except work required to correct an imminent safety hazard as prescribed by the Director.
- D. The cost of any corrective measures shall be borne by the Permittee.

2.4.7 INSPECTIONS

- A. All public infrastructure construction is to be done under the control and at the direction of the Public Works Director. Public Works supervises and inspects the design and installation of public improvements.
- B. For private development, Public Works approves permits and inspects the public works elements of the development.
- C. Field Inspections
 - 1. The Permittee shall schedule Public Works inspections at least 24-hours in advance. The inspections shall occur at completion of significant work segments, at intervals sufficient to confirm all work is performed in accordance with the plans and specifications, and at the project completion.
 - 2. Work covered prior to inspection will be uncovered at the expense of the Permittee.
 - 3. At a minimum, the Permittee shall request inspections for the following events:
 - a. Before backfilling, for compliance with all construction standards.
 - b. After placement of rock, for compaction and material quantity and quality verification.
 - c. Prior to the placement of any materials, which would preclude full and complete inspection of construction, which will be buried or covered.
 - d. At completion of sub-grade, for compaction and grade.
 - e. During and after placement of finish course for compaction and material (quantity and quality).

- f. After placement of forms and before pouring for line, grade, and compaction.
- g. All pressure testing, including air and water tests.

D. Sampling and Testing

- 1. Tests and material sampling for the purposes of determining compliance with the specifications shall be required at the Director's discretion. All costs incurred for testing or sampling, done at the Director's request, shall be the responsibility of the Permittee.
- 2. Determination of field density of compacted earth will be per ASTM D1557: "Modified Proctor."

E. Video Pipe Inspection

- 1. Prior to inspection and acceptance of any sanitary sewer and storm drainage pipes, all pipes and structures shall be cleaned and flushed. Any obstructions to flow within the system, (such as rubble, mortar and wedged debris), shall be removed at the nearest structure.
- 2. Cleaning and flushing of the pipes and structures shall be at the sole cost of the permittee.
- 3. Video Inspection: The permittee shall perform a complete video inspection of all 8-inch and larger pipes and associated appurtenances. The contractor shall provide to the City a digital video disk (DVD) audio-visual recording of these inspections. The DVD shall be formatted to allow real time fast forward and reverse review of the inspections. Individual structure-to-structure pipe runs shall be saved as separate files on DVD with file names relating to structures identifications numbers and plan set, or as approved by the City. All equipment and materials shall be compatible with existing City-owned equipment. It shall be the permittee's responsibility to confirm equipment compatibility and DVD file formats with the City prior to inspection. A Pan-And-Tilt Camera with the proper sized light head for the size of pipe being inspected shall be utilized by the Contractor at all times for televised inspection. The finished product shall be clear and have the proper amount of lighting to see any and all defects encountered during the inspection. Camera shall be equipped with a 1" reference ball at all times to aid with inspection of 8-inch diameter pipe. Pipe of 12-inch diameter or larger will require a 2" reference ball to aid with the inspection

At all times during the video inspection process, the City shall be present. The City shall be notified forty-eight (48) hours prior to any video inspection.

The Permittee shall bear all costs of video inspection and all costs incurred in correcting any deficiencies found during video inspection including the cost of additional television inspection that may be required by the City to verify the correction of said deficiency.

SECTION 2.5 FINAL PROJECT APPROVAL

2.5.1 WORK COMPLETION

Upon completion of all required project elements, the Permittee shall request a final inspection by contacting the Public Works Inspector. The permit process is complete upon sign-off of the issued permit(s) by the Director.

2.5.2 PERMANENT STABILIZATION

All disturbed areas must have permanent stabilization in place and functioning before the temporary erosion prevention and sediment control measures are removed.

2.5.3 FLOOD CERTIFICATE

Upon completion of construction and prior to Final Public Works Inspection, the Permittee shall provide Public Works with a completed Elevation Certificate for residential. For non-residential, Permittee shall provide a completed Flood-proof Certificate or Elevation Certificate.

2.5.4 FINANCIAL GUARANTEE

The owner/agent shall provide a two-year guarantee for the faithful performance of the operation and maintenance to improvements in the right-of-way or on City property. The guarantee shall be by a surety approved by the Director.

2.5.5 TURNOVER DOCUMENTS

The City requires Turnover Documents when a developer constructs public infrastructure as part of private development. The owner/agent

shall provide a complete set of turnover documents before Final Public Works Inspection. The Mayor's Office or the City Council must accept constructed infrastructure, when the value exceeds \$25,000. If the City does not accept the constructed infrastructure, the ownership and maintenance of the facilities remains the sole responsibility of the Developer.

2.5.6 RECORD DRAWINGS

All projects, except most single-family residences, require Record Drawings. Projects will not receive final approval from Public Works until a complete set of Record Drawings is submitted and approved. For public facilities and facilities installed in the right-of-way, the owner/agent shall provide record construction drawings at project closeout.

Record drawings shall accurately reflect design revisions that were made to the approved plans during construction. The record drawings shall locate all existing and abandoned utilities encountered during construction, but not shown on the approved plans.

A Washington State registered professional engineer of record shall approve the record drawings. As-built survey information provided on a record drawing shall be provided by a Professional Land Surveyor currently licensed in the State of Washington, who certifies that the as-built survey and revisions to the Record Drawings were performed under the surveyor's direction. Information from sources such as the contractor's red-lined drawings, for which the surveyor is not responsible, shall be clearly noted/identified on the face of the Record Drawings.

The owner/agent shall provide record drawings on 4.0 mil double matte mylar drafting film (**24" by 36"**) and in AutoCAD format and PDF on CD (or DVD). Each drawing, except for the digital file, shall bear the engineer and the surveyor stamps, signed and dated.

2.5.7 SURVEY DATUM

The drawing and all utility features shall be accurately located in Washington State Plane (grid) Coordinates, North Zone, using NAD 83/91 survey control and tied to at least two City of Tukwila Horizontal Control Monuments. Elevations shall be NAVD 88.

CHAPTER 4 STREETS

SECTION 4.0 GENERAL

4.0.1 TRANSPORTATION ELEMENT

All roadway design in the City shall meet the design guidelines and requirements in the Transportation Element of the Comprehensive Land Use Plan, other applicable subarea plans, and the Subdivision Code (TMC 17.20).

4.0.2 MANUFACTURING/INDUSTRIAL CENTER

For projects in the M/IC, provide driveway design and location per RS-30.

4.0.3 DEVELOPMENT SITES

A paved street surface shall serve all development sites. This street surface shall connect to an existing paved street surface. (TMC 11.12.060)

4.0.4 FRONTAGE IMPROVEMENTS

- A. The installation of street frontage improvements is required prior to issuance of a certificate of occupancy for new construction, other than single-family homes, or prior to final approval for subdivisions and 5-9 lot short plats and Planned Residential Developments. For additions and remodels to existing buildings, see TMC 11.12.070.
- B. Complete street frontage improvements shall be installed along the entire frontage of the property at the sole cost of the permittee as directed by the Director. Street frontage improvements may include curb, gutter, sidewalk, storm drainage, street lighting, traffic signal equipment, utility installation or relocation, landscaping strip, street trees and landscaping, irrigation, street widening, and channelization. Beyond the property frontage, the Permittee shall provide ramps from the new sidewalk or walkway to the exiting shoulder, and pavement and channelization tapering back to the existing pavement and channelization as needed for safety.
- C. When (due to site topography, city plans for improvement projects, or other similar reasons) the Director determines that street frontage improvements cannot or should not be constructed at the time of

building construction, the property owner shall, prior to issuance of the building permit, at the direction of the Director:

1. Pay to the City an amount equal to the property owner's cost of installing the required improvements prior to issuance of a building permit. The property owner shall provide documentation satisfactory to the Director that establishes the cost of the materials, labor, quantities; or
 2. Record an agreement which provides for these improvements to be installed by the property owner by a date acceptable to the Director; or
 3. Record an agreement to not protest a local improvement district to improve the street frontage.
- D. If, at a time subsequent to the issuance of a building permit, a local improvement district is established that includes the property for which the building permit was issued, the property may be considered in the compilation of the local improvement district assessment with the appropriate amount of costs of construction expended by the developer.
- E. The Director under either of the following conditions may waive the requirement for installation of frontage improvements:
1. If the exact location of the adjacent street frontage improvements cannot be determined at this time; or
 2. If the installation of the required improvement would cause significant adverse environmental impacts.
- F. Additions, alterations, repairs adding square footage to existing structure, or new accessory building:
1. Street improvements shall be constructed and shall be determined by the Director.
 2. Property owner costs shall be 10% or less of the total improvement cost.
 3. Director may waive.
- G. Additional structure(s) on private campus
1. Street improvements shall be constructed and shall be determined by the Director.
 2. Property owner costs shall be 10% or less of the total improvement cost.
- H. Additional structure(s) on Public campus

1. Street improvements shall be installed along entire frontage.
 2. Corner lots, etc. when cost does not dictate all frontage be improved, Director will determine which frontage will be improved.
- I. Single Family Residence (TMC 11.12.080)
1. In all cases install surface water drainage on all frontage.
 2. Abutting unpaved street, not a corner lot, requires a ½ street section of pavement or a No Protest LID for pavement and storm drainage.
 3. Abutting both paved and unpaved requires ½ street pavement and drainage on unpaved right-of-way.
 4. Contiguous to a parcel served by paved street requires ½ street and drainage frontage abutting existing paved right-of-way.
 5. Abutting a paved street surface requires complete minor pavement edge improvements.
- J. Landscaping, easement, access tracts (TMC 11.12.100)
- The following apply when there are frontage improvements:
1. Retain existing vegetation, and replace and replant existing vegetation that gets disturbed during development.
 2. Arterial street landscaping must include installation of ground cover in erosion areas and installation of trees per City standards.
 3. Abutting property owners maintain landscaping, unless City specifically accepts the responsibility.
 4. City may require removal of landscaping that encroaches on right-of-way.

4.0.5 RIGHTS-OF-WAY, EASEMENTS, AND IMPROVEMENTS

The developer shall dedicate right-of-way and grant easements for all public streets and non-motorized facilities needed to serve a proposed development. (TMC 11.12.050)

4.0.6 DEAD END STREET (TMC 17.20.030)

New public and private dead-end streets are not allowed, unless justification can be provided for their necessity. If new or necessary, they must terminate with a cul-de-sac and a landscaped island. The maximum cul-de-sac length allowed is 600', measured from the edge of

curb or edge of pavement at the connection to the end of the right-of-way at the cul-de-sac.

A hammerhead is allowed when the road is less than 200 feet and serves less than six lots. A temporary dead end can terminate with barricade(s). (TMC 11.12.170)

4.0.7 GRADE

The maximum grade for all roadways and driveways shall be fifteen percent (15%). Grades over 15% require approval of the Director and the Fire Department.

4.0.8 PARKING LOTS

All permanent parking lots shall be paved. Temporary lots can be gravel with paved driveway aprons if lot is paved within three (3) years of operating temporary lot.

4.0.9 BUS

Provide bus pullouts as required on principal arterials.

4.0.10 UTILITY RELOCATION

The developer shall relocate any utilities that must be relocated to accommodate street or other required improvements.

4.0.11 NON-MOTORIZED FACILITIES (TMC 11.12.150)

A. Pedestrian Systems

1. Internal pedestrian circulation systems shall be provided within and between existing, new and redeveloping commercial, multifamily and single family developments, activity centers, and existing frontage pedestrian systems.
2. Concrete sidewalks
 - a. Arterial street - on both sides.
 - b. Non-arterial street longer than 200 feet –both sides.
 - c. Non-arterial less than 200 feet – one side.
 - d. Public streets accessing existing or planned sidewalk, activity centers, parks, schools, neighborhoods, or public transit facilities – both sides.
 - e. Director may grant exception.

3. Pavement in lieu of concrete is acceptable when:
 - a. The facility is temporary.
 - b. Flexible pavement is required due to soils and topography.
 - c. The neighborhood character does not warrant concrete.

B. Bikeways and Walkways

1. Bikeways and walkways will be surfaced with asphalt concrete. Bikeways and walkways will be illuminated in accordance with the specifications set forth in this standard. Install posts or other facilities to prohibit the passage of motor vehicles through pedestrian easements.

C. Non-motorized easements

1. Following City approval, record with King County Records, an easement titled "City of Tukwila Non-motorized Public Easement".
2. The easement shall be the trail width plus 2 feet on each side (can vary). A designated bicycle route may require additional paved right-of-way.
3. The easement shall specify the maintenance requirements and designate responsible parties.

4.0.12 NEW STREETS

- A. Where a street is designated by the Land Use Comprehensive Plan and is within the boundaries of a development, the developer shall dedicate the entire right-of-way, and shall construct frontage improvement.
- B. Where a street designated in the Comprehensive Plan is adjacent to a boundary of a development, the developer shall dedicate the necessary right-of-way and shall construct frontage improvement.

4.0.13 HALF STREET

The construction of half-street improvements will be permitted only along the boundaries of a development. Pavement, at least twenty (20) feet in width or as required for that street classification (measured from curb face) will be provided, and an adequate right-of-way width may be dedicated.

4.0.14 ALLEYS

The Director may allow an alley at the rear of single-family residential, multifamily residential, commercial, or industrial property. An alley not required for fire suppression access, solid waste collection, or other public purposes may be privately owned. A private alley must conform to all improvement standards for public alleys, must be posted as a private alley and must meet all other provisions applicable to private streets. A dead-end on a public alley is prohibited.

4.0.15 SIGHT DISTANCE

Sight distance at intersections and right-of-way access points shall meet the most current edition of *AASHTO Policy on Geometric Design* and shall be clear of sight obstructions.

4.0.16 PAVEMENTS AND PERMEABLE PAVEMENTS

Where the terms "asphalt" and "concrete" are used in these standards as general descriptors of surfacing materials, the terms shall be understood to include both the impermeable and the permeable versions of the pavement.

Where a permeable pavement is proposed on a fire lane, the surface must be capable of supporting a live load of HS-25 (AASHTO Load Factor Design) and an outrigger load of 45,000 lbs applied to an area of 2 feet x 2 feet on 16-foot centers.

SECTION 4.1 PRIVATE STREETS (TMC 17.20.030.C(5))

- A. The City allows private streets when the street:
 - 1. Serves four or fewer lots,
 - 2. Is part of a Planned Residential Development, or
 - 3. Serves commercial or industrial facilities where no circulation continuity is necessary.
- B. Owner(s) must provide:
 - 1. Recorded covenant granting the City the right to fully use the private street for emergency access and public service vehicles.
 - 2. Recorded provision for the ownership and maintenance of the private street by the owners within the development.

3. Final site plans showing private streets must include an unconditional and irrevocable offer of dedication that may be accepted by the City Council at such time as the street is needed for development of contiguous property or for the protection of public health, safety and welfare. The design and improvement of any private street will be subject to all of the requirements prescribed by this document for public streets.
- C. Owner(s) must install and maintain a sign indicating the street is private.

SECTION 4.2 PUBLIC STREETS

Streets longer than 200 feet or streets that serve more than four lots shall be constructed to public street standards. See City of Tukwila standard detail RS-01.

4.2.1 GEOMETRIC DESIGN

On the plans, note the sight distance for horizontal and vertical curves, intersections, and access points. Setbacks shall meet the current edition of the AASHTO Policy on Geometric Design. (TMC 11.20.090)

4.2.2 ALIGNMENT AND CONNECTIONS

A. Alignment

1. Align proposed streets and other primary accesses with existing streets or accesses.
2. Relate alignments, where practical, to natural topography.
3. Select alignment to minimize grading and avoid excessive runoff.

B. Connections

1. Provide street connection to any existing public street or right-of-way "stub" abutting the proposed development.
2. Provide "stub" roads for connection to any adjacent undeveloped, or partially developed, contiguous land, and to any site officially designated for a public facility.
3. Locate a stub so that it allows for future block sizes consistent with the Land Use Comprehensive Plan.
4. Locate "stub" connections to other "stub" roads on adjacent and nearby property.

5. Install "Dead End" signage and barricades per the current edition of the MUTCD.

4.2.3 STREET INTERSECTIONS

- A. Primary points of access or street intersections with centerline offsets of less than one hundred fifty (150) feet will not be allowed unless the Director finds special conditions requiring a reduction. The intersection spacing requirements will not be used as criteria/justification to close existing streets.
- B. Unless required by street spacing standards, intersections on curves will be avoided.
- C. Right-of-way and curb radii will be provided at all intersections in accordance with the Land Use Comprehensive Plan and the Transportation Element. Curb radii will be the smallest necessary to achieve the goals at each intersection.
- D. Turning lanes and acceleration/deceleration lanes will be provided as required by the current edition of the AASHTO Policy on Geometric Design.

4.2.4 UNDERGROUND UTILITIES

- A. Where several utilities are planned or required in the same right-of-way corridor, joint trenches shall be used whenever possible.
- B. Where underground utilities are planned in the right-of-way corridor, utilities shall be placed under the paved portions of the right-of-way whenever possible.
- C. Where underground utilities are planned under an existing permeable pavement or an existing bioretention facility, the utility shall take measures to protect the utility trench from infiltration of stormwater, without compromising the function of the permeable pavement or the bioretention facility.
- D. Where a permeable pavement or a bioretention facility is planned over an existing underground utility, the developer shall protect the utility trench from infiltration of stormwater.
- B-E. All new electrical and communication facilities shall be underground per TMC 11.28.
- C-F. Undergrounding requirements for new facilities or rebuild, replacements and additions are described in TMC 11.28.070 and TMC 11.28.080.

4.2.5 ACCESS

- A. Pedestrian/ADA and emergency vehicle access will be provided to any abutting public school, public building, trail, or transit stop. (TMC 11.12.150)
- B. Development
 - 1. All development sites shall be served by a paved street surface that connects to an existing paved street surface. (TMC 11.12.060)
 - 2. Applicant may provide an access lane rather than a private street if the access serves four or fewer lots and is 200' or shorter. The access lane may be on an easement, shall be 20 feet wide and paved the full 20' width and will be owned and maintained by the property owners served by the lane.
 - 3. Provide more than one connection to the existing public street system for any development, or part thereof, of four acres or more. If not otherwise prohibited, each connection will be to a different collector or arterial street. Where the site includes only a single frontage of less than 400 feet, this requirement may be met by provision of one or more stub roads.

4.2.6 RIGHT-OF-WAY VEGETATION

- A. New vegetation must match or complement existing street vegetation or be approved by the Director.
- B. New vegetation in the Tukwila Urban Center must meet the adopted plan (refer to Ordinance No. 1276).
- C. Notify owners within 100 feet when removing or pruning vegetation that is 4-inch diameter or larger.
- D. No maple, Lombardy poplar, cottonwood, gum, or other trees with invasive root system. (TMC 11.20.070)
- E. Vegetation removed from right-of-way or damaged during construction shall be replaced with equivalent number, size, quality, and species. (TMC 11.20.110)
- F. The design shall include a plan for irrigation. Irrigation is required for two years following project acceptance.

SECTION 4.3 ILLUMINATION

4.3.1 GENERAL

- A. Required along all public streets, including new public streets in subdivisions and short subdivisions. (TMC 11.12.110)
- B. Required at the intersection of a public and a private street.
- C. Not required along a private street. (TMC 11.12.110)
- D. All wiring, conduit and power connections, new or relocated, shall be underground.
- E. For a new subdivision, Developer assumes maintenance and power cost until the development is 50% or more occupied. (TMC 11.12.010.c)
- F. Developer designs to City standards, installs new lighting, and relocates existing lighting along development frontage.
- G. Provide calculations using ALADAN found under "Roadways" at the General Electric website.

4.3.2 MATERIALS

- A. New installations shall use cut-off optics. Additions to existing street lighting systems shall match the existing fixtures.
- B. Luminaires - Hubbel or General Electric (GE).
- C. Wattage per City of Tukwila standard detail RS-24.

GE	Cutoff # MDCL	SOAZZFC32F
	Drop Lens # MDRL	SOAZZRMS32F

HUBBEL	Cutoff # RLCD	S38032035FOM53
	Drop Lens # RLGD	S38072035FOM53

- D. Junction Boxes – per Standard Specifications and Standard Plans; (see J-40.30-00 and J-40.10-00), with galvanized lids and frames and 48" bond straps between the traffic bearing lid and frame.
- E. Conduit - 2-inch
 - 1. Most applications - schedule 40 polyvinyl chloride (PVC) with bell ends, unless capped for non-use.

2. Roadway application - schedule 40 polyvinyl chloride (PVC) with bell ends, unless capped for non-use.
- F. Circuit conductors – all conductors shall be stranded copper sized per current NEC. All grounds will be green #8 AWG stranded copper.
- G. Pole wiring - #10 AWG pole and bracket cable.
- H. Fuse kits - Homac #SLK-M or SEC #1791-SF.
- I. Fuses - FMN-5.
- J. Putty tape - Scotchcast electrical insulation.
- K. Electrical tape - 3M Super 33 or better.
- L. Photocell.
- M. Shorting cap.

4.3.3 INSTALLATION

- A. J-boxes - Install so the top of the box is at grade and positioned so that all conduits are 4 inches from the inside walls. Fill with clean drainage gravel, leaving at least 6 inches of free space between the conduit and the top of the box.
- B. Wire splice.
 1. Two-wire splices - Crimp the butt splice with 4-inch minimum length of thick-walled shrink tube.
 2. Three or more wire splices – Use split bolt and cover with one wrap of electrical tape, followed by one wrap of Scotchcast electrical insulation putty tape and two wraps of 3M Super 33 or better electrical tape.
- C. Install one photocell per lighting system and shorting caps on remaining luminaires.

SECTION 4.4 TRAFFIC SIGNALS

4.4.1 GENERAL

- A. A licensed engineer experienced in traffic signal design shall prepare all traffic signal design and modifications. The Director or designee shall approve all traffic signal system equipment submittals. The City shall be the sole judge of any materials to be considered equal or better.

- B. When a proposed street or driveway design will interfere with existing traffic signal facilities, the developer shall modify or relocate the signal. (TMC 11.12.160)

4.4.2 MATERIALS

- A. All new or revised traffic signal systems shall include, but not be limited to the following minimum requirements:
 1. Current Tukwila design ITS signal cabinet, controller and all peripherals.
 2. Controller foundation shall be a modified Standard Plan J-6C.
 3. PTZ traffic monitoring camera.
 4. Battery backup power system.
 5. System interconnection to the City's traffic operations fiber-optic network.
 6. All signal heads and visors shall be powder-coated green. Back plates shall be louvered and powder coated black.
 7. All vehicular signal indications will be 12" tinted LED modules meeting the current ITE specifications and be manufactured by either Dialight, GE or pre-approved equivalent.
 8. All pedestrian signal indications will be countdown type LED modules meeting the current ITE specifications and be manufactured by Dialight, GE or pre-approved equivalent.
 9. All vehicle detection shall be performed by use of an induction loop system unless approved by the Director.
 10. All pedestrian push buttons shall comply with Standard Plan J-5 until the City of Tukwila standard detail RS-23 is revised.
 11. All emergency preemption devices and cabling will be current model "Opticom" brand.
 12. All new or modified signal poles shall have aluminum terminal cabinets installed.
 13. Meet current ADA requirements.
 14. Meet current Tukwila signing and marking standards.
- B. Submit catalog cuts and material data sheets to the City for review and approval. The City will be the sole judge of a product being approved as equal or better.

4.4.3 INSTALLATION

Install detector cable from preemption detector to controller with no splices.

SECTION 4.5 VEHICLE DETECTOR LOOPS

4.5.1 MATERIALS

- A. Loop wire per Standard Specification Section 9-29.3.
- B. Lead-in cable per Standard Specification Section 9-29.3.
- C. Wire
 - 1. Loop wire - # 12 USE stranded copper conductor Class B, with chemically cross-linked polyethylene type RHH-RHW, thickness of code.
 - 2. Shielded loop lead-in wire - #18 stranded tinned copper, twisted pair, 2 conductor cable with polyethylene insulation, conductor cabled, and shall have aluminum polyester foil shield furnished in 100% coverage, stranded tinned-copper drain wire and an overall chrome-vinyl jacket.
- D. Wire splice kits - 3M vinyl mastic pads Model #2200 (or #2210 rolls) except for Federally funded projects - Scotchcast Model 82 epoxy splice kit.
- E. Loop sealant - Crafc0, Specialty Asphalt, or Albina Asphalt, meeting ASTM D312 Type 4.
- F. Mastic Pads - 3M 2200.
- G. Use Standard Plan J-8b, c & d for guidance.

4.5.2 INSTALLATION

- A. Vehicle Detection Loops
 - 1. Proper installation of vehicle detection loops is vital to performance of the controller. Never install loops during rainy weather or when pavement is wet. Close traffic lane(s) during loop installation. Permittee shall not allow traffic across the work area until the Director approves the work.
 - 2. Make just enough saw cuts and cut only the amount of wire that can be installed before the end of that working day.
 - 3. Install loops after grinding the surface pavement or prior to paving final lift of asphalt.

4. Test loops before filling saw cuts with sealant. See Section 4.3 for testing specifics.

B. Splices

1. Install a continuous piece of loop wire to the J-box. Shielded loop lead-in wire shall be continuous from the controller to the junction box closet to the loop where it is spliced to the loop wire.
2. Connect all splices and underground induction loop circuits inside the junction boxes. The only splice allowed in the induction circuit shall be the shielded cable to loop wire splice.
3. Splices shall be crimped, soldered and insulated with 3M 2200 Mastic Pads.
4. Tag all loop lead-in wire at the splice point and at the controller with a small permanent band bearing loop designation.

C. Saw Cuts

1. Remove sharp protrusions and clean all saw cuts using a high-pressure washer followed by drying with 100-psi minimum air pressure.
2. Make all saw cuts in the top course of pavement a full 1/4-inch wide and 2 inches deep. Make cuts in the base course a minimum of 1 inch deep. Make the saw cut at least 1-1/2 inches deep for installations having three or more turns of wire. Do not cut through the pavement to the subgrade.
3. For square cuts, hand chisel the corners.
4. Gradually transition the last 12 to 18 inches of the lead-in cut to a full depth cut where conduit stubs out under the curb and gutter.

D. Loops

1. Install the wiring using a blunt-nosed wooden wedge.
2. Do not kink or fold-back the wiring.
3. Lay the detector loop wire in the clockwise direction being careful not to pull the wire. Lay the wire loosely around any corners.
4. Install 3 turns for loops that will be hooked up in series, and 4 turns for loops that will be operating as a single loop.
5. Place a tag on the start end of the wire for later identification.

6. Remove all slack from the wiring prior to sealant application.

E. Sealant

1. Seal saw-cuts with sealant before exposure to traffic.
2. Install loop sealant by pressure injection. During installation, avoid creating air bubbles or foam in the sealant.

4.5.3 TESTING

Perform all four of the following tests on each detector loop. Perform the tests in the presence of a City representative. Record the test results and submit to the Director. Perform all tests at the amplifier location after the loop is completely installed. If any of the installations fail to pass all tests, the Permittee shall repair the loop or lead-in cable and retest (tests A-D).

1. Test A - Measure the DC resistance between the two lead-in cable wires using a volt ohmmeter. The resistance shall be 5 ohms or less.
2. Test B - Prior to connection to grounding, perform a megohm meter test at 500 volts DC between the lead-in cable shield and grounding. The resistance shall equal or exceed 50 megaohms.
3. Test C - Perform a meggar test between the loop circuit and grounding. The resistance shall equal or exceed 50 megaohms.
4. Test D - Perform an induction test on each induction loop. A Type 1 loop passes if the inductance level is equal to or greater than 150 microhenries. A Type 2 loop passes if the inductance level is equal to or greater than 75 microhenries.

SECTION 4.6 SIGNS AND MARKINGS

The Director determines the type, size, and location of signs and markings in the right-of-way. Signs shall meet the URBAN AREAS criteria in the MUTCD and meet the criteria in TMC 11.24 Placement of Signs or Banners.

4.6.1 MATERIALS

A. Markings

1. All pavement markings shall comply with the MUTCD , Standard Plans and the Standard Specifications, unless otherwise specified herein, or if waived by the City Engineer.

2. All arrows shall be per Standard Plan Numbers M-24.20-01 for high speed roadways (over 45 mph) and M-24.40-01 for low speed roadways (under 40 mph).
3. All traffic signalized intersections that include bicycle lanes must include the bicycle detector pavement marking per the Guide for the Development of Bicycle Facilities, AASHTO, 1999. (<http://www.wsdot.wa.gov/bike/pdf/bikebook.pdf>)
4. All bike lanes shall include markings per Standard Plan M-9.50-01.
5. Profiled and embossed plastic lines per Standard Plan M-20.20-01 may be used in place of type 1 traffic buttons per Tukwila standard detail RS-13, provided that both ends are marked by type 2 reflectors.

B. Street Signs

Refer to City of Tukwila standard detail RS-10 for Street Name Signs.

C. Other Signs

1. Posts:
 - a. Round posts are not allowed.
 - b. In areas with frontage improvements, treated wood 4" X 4", using 5/16" x 2-1/2" galvanized or stainless lag screws and flat washers.
 - c. In other areas, galvanized u-channel posts using galvanized or stainless 5/16" x 1-1/2" bolts, nuts, flat and lock washers.

2. Signs:
 - a. Street markers shall have white lettering and border on a green background. The sign shall be six inches high and shall have 4-inch letters.
 - b. Stop and regulatory signs shall be High Intensity Prismatic reflective sheeting, or City Engineer approved equivalent.
 - c. Regulatory signs shall have a border.
 - d. Other Signs.

4.6.2 INSTALLATION

A. Street Signs

The Developer shall install all street signs on public right-of-way (including street name signs, warning signs, and regulatory signs).

B. Other Signs

1. Posts:

- a. Do not backfill holes with concrete.
- b. In soil, dig hole at least 30" deep. Backfill to the top using 5/8" angular crushed rock.
- c. On a raised island or in asphalt or concrete, dig a hole that is at least two feet in diameter, and at least 30 inches deep. Back fill to top of hole using 5/8" angular, crushed rock.
- d. For street markers, install at intersection.

2. Mount:

- a. Primary signs so that there are seven feet from the ground to the bottom of the sign.
- b. Secondary signs on the same post so there is at least six feet from the ground to the bottom of the sign.
- c. Object markers and large single or double arrows so there is at least four to five feet from the ground to the bottom of the sign.
- d. Opposing chevrons or signs for both directions on same post, if they are clearly visible from both directions.
- e. Street markers on top of post using a metal bracket.
- f. On street light poles using stainless bands and mounting hardware.
- g. So that posts do not show above the sign, except when installing a street marker bracket.

SECTION 4.7 STREET STANDARD DETAILS

RS-01	Typical Roadway Section
RS-02	Turn Around – Cul-de-sac and Hammerhead
RS-03	Pavement Restoration
RS-04	Bollard
RS-05	Steel Pipe Railing
RS-06	Mailbox Installation
RS-07	Street Monument w/ Frame and Cover
RS-08-A	Residential Driveway Alternate 1
RS-08-B	Residential Driveway Alternate 2
RS-08-C	Residential Driveway Alternate 3
RS-09	Commercial Driveway
RS-10	Street Name Sign
RS-11	Sidewalk
RS-12	Curb Ramp
RS-13	Raised Pavement Marker
RS-14	Typical Sign Installation
RS-15	Street Opening
RS-16	Left Turn - Noncontinuous
RS-17	Left Turn- Two-way Left
RS-18	<i>[Under Revision – refer to Section 4.4.2]</i>
RS-19	Crosswalk – Design and Placement
RS-20	Street Light Pole – 30’ to 40’ Mounting Height
RS-21	Residential Street Light Pole – 30’ to 40’ Mounting Height
RS-22	<i>[Deleted – see section 4.4.2]</i>
RS-23	<i>[Under Revision – refer to section 4.4.2]</i>
RS-24	Street Light Design Guidelines
RS-25	Luminaire Foundation – Sidewalk Application
RS-26	Ground Rod Box
RS-27	Curb and Gutter – Catch Basin Surround
RS-28	Induction Loop – Vehicle Detectors
RS-29	Traffic Signal – Controller Cabinet
RS-30	M/IC Driveway Design and Location
RS-31	Utility Adjustment
RS-32	Work Zone Plan – Centerline Work
RS-33	Work Zone Plan – Surveying

TBD Residential Driveway Alternate 4, Ribbon Driveway

TBD Inlet to Bioretention Curb Extension

TBD Trench Drain and Outlet from Bioretention Curb Extension

TBD Sidewalk, Reverse Slope

APPENDIX A DEFINITIONS

DEFINITIONS AND ACRONYMS

These definitions are for use with these Standards. Unless specifically defined below, words or phrases used in this ordinance shall be interpreted to give them the meaning they have in common usage and to give this ordinance its most reasonable application.

AASHTO - American Association of State Highway and Transportation Officials.

ACCESS - means the safe, adequate, and usable ingress/egress (entrance/exit) to a property or use.

ACTUAL ELEVATION - means the elevation in relationship to mean sea level.

ADVERSE IMPACT - means any deleterious effect on waters or wetlands, including their quality, quantity, surface area, species composition, aesthetics or usefulness for human or natural uses which are or may potentially be harmful or injurious to human health, welfare, safety or property, to biological productivity, diversity, or stability or which unreasonably interferes with the enjoyment of life or property, including outdoor recreation.

AGRICULTURAL LAND MANAGEMENT PRACTICES - means those methods and procedures used in the cultivation of land in order to further crop production and conservation of related soil and water resources.

AIA - American Institute of Architecture.

ANNUAL AVERAGE DAILY TRAFFIC (AADT) - means daily traffic that is averaged over one calendar year.

APPLICANT - means any person, governmental agency, or other entity that executes the necessary forms to procure official approval of a project or a permit to carry out construction of a project.

STANDARD SPECIFICATIONS - means the current edition of the standard specifications for municipal public works construction prepared by the Washington State Chapter of the American Public Works Association and the Washington State Department of Transportation, as adopted by the City of Tukwila.

ASTM - American Standards for Testing Materials.

AVERAGE DAILY TRAFFIC (ADT) - means the average number of vehicles passing a specified point during a 24-hour period.

AWWA - American Water Works Association.

BACKFLOW - means a flow of water or other liquids, gases or solids from any source back into the customer's plumbing system or the water purveyor's distribution system.

BACKFLOW PREVENTION DEVICE - means a device, approved by the State Department of Health and by the American Water Works Association, used to counteract back pressure or prevent back-siphoning into the distribution system of a public water supply.

BASE FLOOD ELEVATION - means the flood having a one-percent chance of being equaled or exceeded in any given year. Also referred to as the 100-year flood.

BASEMENT - means any area of the building having its floor subgrade (below ground) on all sides.

BEST AVAILABLE INFORMATION - means in the absence of official flood insurance rate map data, the City can use data from federal, state, or other sources provided this data has either been generated using technically defensible methods or is based on reasonable historical analysis and experience.

BIORETENTION – means a stormwater best management practice consisting of a shallow landscaped depression designed to temporarily store and promote infiltration of stormwater runoff. Bioretention may take the form of a cell, swale, or planter.

BOLLARD - means a post used to prevent vehicle access.

BOND/SURETY - means a surety bond, cash deposit, escrow account, any assignment of funds, irrevocable letter of credit, or other means acceptable to the Director to guarantee acceptable performance, execution, and completion of the work, in accordance with the project's approved plans and in accordance with all applicable governmental requirements.

CBD - Central Business District.

CDF - Controlled density fill.

CFR -Code of Federal Regulations.

CITY - means the City of Tukwila or the City Council of Tukwila.

CLEARING - means the removal of vegetation from a site by physical, mechanical, chemical, or other means. This does not mean landscape maintenance or pruning consistent with accepted horticultural practices that do not impair the health or survival of trees and vegetation.

COMPREHENSIVE PLAN - means a plan adopted by the City Council to guide the physical growth and improvement of the City and urban growth management area, including any future amendments and revision.

CONVEYANCE SYSTEM - means natural and man-made drainage features that collect, contain, and convey surface water. Natural drainage features include swales, streams, rivers, lakes, and wetlands. Man-made features include gutters, ditches, pipes, and detention/retention facilities.

CRITICAL DRAINAGE AREA - means any drainage basin having erosion, flooding or water quality issues as documented in the Comprehensive Surface Water Management Plan or drainage basin studies.

CRITICAL FACILITY - means any structure for which even a slight chance of flooding is too great, such as schools, nursing homes, hospitals, police, fire and emergency response installations, and installations which produce, use, or store hazardous materials or hazardous waste.

CROSS-CONNECTION - means any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains or may contain contaminated water, sewage, or other wastes or liquids of unknown or unsafe quality, which may be capable of imparting contamination to a public water supply.

DEDICATION - means the deliberate appropriating of land by an owner(s) for any general and public uses, reserving to themselves no other rights than such as are compatible with the full exercise and enjoyment of the public uses to which the property is to be devoted. The intent to dedicate will be evidenced presentation of a deed.

DETENTION STRUCTURE - means a permanent structure designed to store runoff and discharge storage at controlled rates.

DEVELOP LAND - means to change the runoff characteristics of a parcel of land.

DEVELOPER - means the applicant for a development permit, his successors, and/or assignees.

DEVELOPER AGREEMENT - means an agreement between the City and the Developer, which contains work descriptions, estimated costs, responsibilities for the work performance and an expiration date.

DEVELOPER REIMBURSEMENT AGREEMENT - means an agreement between the City and a developer, who installed public improvements. The agreement provides for reimbursement of a fair prorated share by any real estate owners who have not contributed to the original cost of such facilities, and who subsequently connect to, or use the improvement.

DEVELOPMENT - means any man-made change of improved or unimproved real estate; the construction, reconstruction, conversion, structural alteration, relocation, or enlargement of any structure; any mining, excavation, landfill, clearing, or land disturbance; or any use or extension of the use of land.

DIRECTOR - means the Director of the Public Works Department or designee, including the City Engineer and City inspectors.

DNR - Department of Natural Resources.

DOE - State Department of Ecology.

DOH - State Department of Health.

EASEMENT - means interest in land which does not include any rights of possession. A right of one owner of land to make lawful and beneficial use of the land of another created by an express or implied agreement.

ELEVATED BUILDING - means for flood insurance purposes, a non-basement building which has its lowest elevated floor raised above ground level by foundation walls, shear walls, post, piers, pilings, or columns.

ENGINEER, GEOTECHNICAL - means a practicing, professional civil engineer registered with the State of Washington, who has knowledge and practice of geotechnical engineering.

ENGINEER, PROFESSIONAL - means an engineer, registered in Washington State.

ENGINEER, SOILS - means Geotechnical Engineer.

ENGINEERING GEOLOGIST - means a geologist certified by the State as experienced and knowledgeable in engineering geology.

ENGINEERING GEOLOGY - means the application of geologic knowledge in the investigation and evaluation of naturally occurring rock and soil for use in the design of civil works.

ENGINEERING, GEOTECHNICAL - means the application of soil mechanics in the investigation, evaluation, and design of civil works involving the use of earth materials and the inspection or testing of the construction thereof.

ESC - Erosion prevention and sediment control.

FBFM - Flood boundary/floodway map.

FEMA - Federal Emergency Management Agency.

FIRE MAIN - means a water line, at least 6 inch diameter, serving fire hydrants or fire protection systems.

FIRM - Flood Insurance Rate Map.

FLOOD INSURANCE RATE MAP (FIRM) - means the official map on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the City.

FLOOD INSURANCE STUDY - means the official report and documents provided by the Federal Insurance Administration that includes flood profiles, the flood boundary-floodway map, and the water surface elevation of the base flood.

FLOOD OR FLOODING - means a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters, and/or the unusual and rapid accumulation of runoff of surface waters from any source.

FLOOD PLAIN - means any land area susceptible to flooding from any source.

FLOOD PRONE - means any land area susceptible to flooding, not shown on FIRMs, designated as flood-prone by the Director, using best available information.

FLOOD PROOFING - means any combination of structural and non-structural additions, changes, or adjustments to nonresidential structures, which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures, or their contents. For flood proofed nonresidential buildings, FEMA bases flood insurance premiums on rates that are one foot

below the flood-proofed level. For example, a building flood proofed to the base flood level will be rated as one foot below that level.

FLOOD ZONE - means any area designated as special flood hazard or flood prone, or any area within the shoreline per Tukwila Municipal Code.

FLOODWAY - means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

FLOW ATTENUATION - means detaining or retaining runoff to reduce the peak discharge.

FRONTAGE IMPROVEMENTS - means all of the street pavement, curb, gutter, sidewalk, transit bus shelters, bus pullouts, storm drainage, water and sewer utilities, power and communications cable undergrounding, street trees and street lighting, located within any public right-of-way abutting the property boundary of a development.

FZCP - Flood Zone Control Permit.

GRADING - means any act by which soil is cleared, stripped, stockpiled, excavated, scarified, filled, or any combination thereof.

HALF STREET - means a street constructed utilizing at least half the regular width of the right-of-way and permitted as an interim facility pending construction of the other half.

HDPE - high-density polyethylene.

HEALTH OFFICER - means the Director of the South King County Department of Public Health or his duly authorized representative.

HIGH USE SITE - means a commercial or industrial site that (1) has an expected average daily traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area, (2) is subject to petroleum storage or transfer in excess of 1,500 gallon per year, not including delivered heating oil, or (3) is subject to use, storage, or maintenance of a fleet of 25 or more diesel vehicles that are over 10 tons net weight (trucks, buses, trains, heavy equipment). Also included is any road intersection with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements.

IMPERVIOUS SURFACE - means any surface that cannot be effectively and easily penetrated by water; a hard surface that either prevents or restricts the entry of water into the soil mantle or causes water to run off the surface in greater quantities or at an increased flow rate compared to natural conditions prior to development. Impervious surfaces include roof tops, paved areas, gravel roads, packed earthen surfaces, oiled surfaces, and macadam. Open, uncovered flood control, or water quality facilities are not considered impervious surfaces.

IMPROVEMENTS - means any improvement to public, real, or personal property, including but not limited to, installation of streets, roads, pedestrian/bike facilities, streetlights; landscape features; sewer and waterlines; bridge structures; storm drainage facilities; and traffic control devices.

INFILTRATION - means the passage or movement of water into the soil subsurface.

INTERCEPTOR - means a sewer that receives flow from a number of main or trunk sewers, force mains, etc.

KCSWDM - the adopted King County Surface Water Design Manual.

LEEVE - means a man-made structure, designed and constructed in accordance with sound engineering practices to contain, control, or divert water flow for protection from flooding.

LEVEL III CERTIFICATION - means a National Institute For Certification in Engineering Technologies, fire protection engineering technology certificate of competency, to design and install fire protection systems including underground backflow prevention devices and associated thrust blocking.

LOCAL IMPROVEMENT - means a public improvement provided to a specific area benefiting that area and usually paid for by a special assessment for the benefit of property owners.

LOWEST FLOOR (flood control definition) - means the lowest floor of the lowest enclosed area (including basement). If an unfinished or flood resistant enclosure is used solely for vehicle parking, building access, or storage, if this enclosure is in an area other than a basement, and if this enclosure is built so that the structure meets the applicable non-elevation design requirements for nonresidential construction, the enclosure is not considered the structure's lowest floor.

MANUFACTURED HOME (flood control definition) - means a structure, transportable in one or more sections, built on a permanent chassis and designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include a "recreational vehicle."

MANUFACTURED HOME PARK OR SUBDIVISION (flood control definition) - means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

MANUFACTURED HOME PARK OR SUBDIVISION, EXISTING - means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before 1981, the effective date of the Tukwila's original floodplain management regulations.

MANUFACTURED HOME PARK OR SUBDIVISION, EXPANSION TO AN EXISTING - means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed, including the

installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads.

MEAN SEA LEVEL (flood control definition) - means the National Geodetic Vertical Datum (NGVD) of 1929 to which the base flood elevations shown on the Flood Insurance Rate Map are referenced.

METER - means a water measuring device approved by the Director.

METER, DEDUCT - means a meter for water supply that does not discharge to the public sewer. The Permittee provides, owns, installs, and maintains the meter. This meter is installed downstream of a permanent water meter. An example is landscape irrigation.

METER, PERMANENT - means meter for domestic water supply of all new or reestablished services when sewer discharge rates are calculated based on water usage. Each individual building requires a separate water main tap. The Permittee pays for a City-provided water meter.

METER, TEMPORARY - means a water meter rented from the City for use of public water, on a short term basis, where a metered supply does not already exist. The Permittee rents the meter from the City. Examples include dust suppression during construction or water supply during hydroseeding.

METER, WATER ONLY - Required for a separate service from the main that will not discharge to the public sewer. The Permittee pays for a City-provided water meter.

MULTIFAMILY - means, in reference to development, the construction of a building or buildings to house two or more families living independently of each other.

MUTCD - Manual on Uniform Traffic Control Devices.

NAD - means North American Datum, horizontal, of 1983/1991.

NAVD - means North American Vertical Datum.

NEW CONSTRUCTION (flood control definition) - means structures for which the "start of construction" commenced on or after 1981, the effective date of Tukwila's original floodplain management regulations.

NEW MANUFACTURED HOME PARK OR SUBDIVISION - means a manufactured home park or subdivision for which the construction of facilities, including streets, utilities, concrete pads, is completed on or after 1988, the effective date of Tukwila's original floodplain management regulations.

NFIP - National Flood Insurance Program.

NGVD - National Geodetic Vertical Datum of 1929.

NICET - National Institute for Certification in Engineering Fundamentals.

NPDES - National Pollutant Discharge Elimination System.

OSHA - Occupational Safety and Health Administration.

PERFORMANCE GUARANTEE - means a financial guarantee in a form acceptable to the City Attorney, ensuring all improvements, facilities, or work will be

completed in compliance with regulations, and approved plans and specifications.

PERMEABLE PAVEMENT – means a pervious concrete, porous asphalt, permeable pavers or other forms of pervious or porous paving material intended to allow passage of water through the pavement section. It often includes an aggregate base that provides structural support and acts as a stormwater reservoir.

PERMITTEE - means any person, governmental agency, or other entity that is performing, or plans to perform, permitted work within the City.

PLANS - means the plans, profiles, cross sections, elevations, details, and supplementary specifications, signed by a licensed professional engineer and approved by the Director, showing the location, character, dimensions, and details of the work to be performed.

POLLUTION - means contamination or other alteration of the physical, chemical, or biological properties of waters of the state that will or is likely to create a nuisance or render waters harmful, detrimental, or injurious 1) to public health, safety, or welfare, or 2) to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or 3) to livestock, wild animals, birds, fish, or other aquatic life. Contamination includes discharge of any liquid, gas, or solid, radioactive or other substance. Alteration includes temperature, taste, color, turbidity, or odor.

PROJECT - means activity encompassing all phases of the work to be performed and is synonymous to the term "improvement" or "work."

PW - means Public Works Department.

RECREATIONAL VEHICLE - means a vehicle which is:

- (a) Built on a single chassis;
- (b) 400 square feet or less when measured at the largest horizontal projections;
- (c) Designed to be self-propelled or permanently towable by a light duty truck; and,
- (d) Designed primarily for use as temporary living quarters for recreational, camping, travel, or seasonal use.

REDEVELOPMENT PROJECT - means a project that adds, replaces, or alters exterior impervious surface on a site that already has 35% or impervious surface.

RETENTION STRUCTURE - means a permanent structure that provides for the storage of runoff by means of a permanent pool of water.

RIGHT-OF-WAY - means (1) a strip of land acquired by reservation, dedication, forced dedication, prescription, or condemnation and intended to be occupied by a road, crosswalk, railroad, electric transmission lines, oil or gas pipeline, water line, sanitary sewer, storm sewer, or other similar public

accesses or public uses; and (2) the right of one to pass over the property of another.

ROAD - means street.

RPPA - Reduced pressure principle assembly (formerly Reduced Pressure Backflow Assembly).

SAO - Sensitive Areas Overlay.

SEDIMENT - means soils or other materials transported or deposited by the action of wind, water, ice, or gravity.

SENSITIVE AREA - means wetland, watercourse, landslide hazard area, or abandoned coal mine as designated or defined by the City's Sensitive Areas Ordinance.

SENSITIVE AREA, CLASS 2 - means an area where landslide potential is moderate, including areas sloping between 20% and 40%, and which are underlain by relatively permeable soils.

SENSITIVE AREA, CLASS 3 - means an area where landslide potential is high, including areas sloping between 20% and 40%, and which are underlain by relatively impermeable soils or by bedrock, and which also include all areas sloping more steeply than 40%.

SENSITIVE AREA, CLASS 4 - means areas, where landslide potential is very high, which include sloping areas with mapable zones of groundwater seepage, and which also include existing mapable landslide deposits regardless of slope.

SEPA - State Environmental Policy Act.

SEWER, LATERAL - means the portion of the sewer line extending from the City's main to the building, having no other common sewers discharging into it. A lateral sewer is operated and maintained by the property owner. Sometimes called a side sewer.

SEWER, MAIN or TRUNK - means a sewer that receives flow from one or more mains.

SEWER, MAIN EXTENSION - means the portion of the sewer line extending for more than 150 feet from the City's main. Lateral sewer connections are made to the sewer main extension.

SEWER, PRIVATE - means that portion of the system located on private property where no easements are granted to the City. Private sewers include gravity laterals, building sewers, and sewer collection systems internal to developments; such as, apartment complexes, condominiums, townhouses, shopping centers, commercial office parks, mobile home parks, etc. A private sewer includes the portion of the lateral between the property line and sewer main. Maintenance of a private sewer will be the responsibility of the property owner(s).

SEWER, PUBLIC - means that portion of the system located within rights-of-way or easements (excluding laterals) and is operated and maintained by the City.

SEWER, STUB - means sewer, lateral.

SHALLOW FLOODING AREA - means a designated AO, or AH zone on the Flood Insurance Rate Map (FIRM). The base flood depths range from one to three feet; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and, velocity flow may be evident. AO is characterized as sheet flow and AH indicates ponding.

SIDEWALK - a paved, surfaced, or leveled area, paralleling and usually separated from the street and normally used as a pedestrian walkway.

SITE - means any tract, lot, or parcel of land, or combination of tracts, lots, or parcels of land which are in one ownership, or are contiguous and in diverse ownership, where development is to be performed as a part of a unit, subdivision, or project.

SITE PLAN - means the development plan for one or more lots on which is shown the existing and proposed conditions of the lot, topography, vegetation, drainage, flood plains, walkways; means of ingress and egress; circulation; utility services; structures and buildings; signs and lighting; berms, buffers, and screening devices; surrounding development; and any other information that reasonably may be required in order that an informed decision can be made by the reviewing authority.

SPECIAL FLOOD HAZARD AREA - means the land in the flood plain subject to a one-percent or greater chance of flooding in any given year. Also called the 100-year flood elevation or the base flood elevation. These areas are designated on Flood Insurance Rate Maps (FIRMs) using the letters A or V. Special flood hazard areas include flood prone areas designated by the City.

STABILIZATION - means the prevention of soil movement by any various vegetative and/or structural means.

STANDARDS - means the City of Tukwila *Development Guidelines and Design and Construction Standards*.

START OF CONSTRUCTION - includes, for flood insurance purposes, substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement occurred within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor,

or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

STORM DRAINAGE PLAN - means a set of drawings and documents submitted as a prerequisite to obtaining a development permit. The plan contains all of the information and specifications pertaining to surface water management onsite and offsite.

STREET, ARTERIAL - means a street that connects access streets to higher classifications.

STREET, CUL-DE-SAC - means a street with a single common ingress and egress and with a circular turnaround at the end.

STREET FRONTAGE - means either the area between any lot lines that intersect, and the area of a lot that directly abuts the boundary of a public or private street right-of-way.

STREET, PRIVATE - means a street, built to City standards, but is not owned, nor maintained by the City. A private street is a street the City or other governmental entity has not accepted for ownership or maintenance. This does not include private access road as defined in the Subdivision code.

STREET, PUBLIC - means a public right-of-way, usually containing improved facilities for transportation and utilities. A public street is a publicly owned and maintained street that serves more than four lots or is longer than 200 feet.

STRUCTURE (flood control definition) - means, for flood plain management, a manufactured home or a walled and roofed building, including a gas or liquid storage tank, that is principally above ground. Structure, for insurance purposes, means a manufactured home, or a walled and roofed building, except a gas or liquid storage tank, that is principally above ground. (CFR 59.1)

SUBSTANTIAL DAMAGE - means damage of any origin sustained by a structure whereby the cost of restoring the structure to it's before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

SUBSTANTIAL IMPROVEMENT (flood control definition) - means any repair, reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the assessed value of the structure either:

1. Before the improvement or repair is started, or
2. Before damage occurred, if the structure is being restored.

For the purposes of this definition, "substantial improvement" occurs when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure.

"Substantial improvement" does not include:

1. Any improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which is solely necessary to assure safe living conditions, nor
2. Any alteration of a structure listed on the national Registry of Historic Places or a state inventory of historic places.

SURVEYOR - means any Washington State licensed professional land surveyor.

TMC - Tukwila Municipal Code.

TRAFFIC IMPACT ANALYSIS - means a report analyzing anticipated roadway conditions with and without proposed development, including an analysis of mitigation measure and a calculation of fair share financial contributions.

TYPICAL - means the guidelines that shall be followed unless the Director approves a variation.

UTILITY - means a company providing public service including, but not limited to, gas, oil, electric power, street lighting, telephone, telegraph, water, sanitary sewer, storm drainage, solid waste, or cable television, whether or not such company is privately owned or owned by a governmental entity.

VACATION - means the process by which public right-of-way becomes private property.

VARIANCE - means a grant of relief by the City for activities that would otherwise be prohibited by the TMC.

WAC - Washington Administrative Code.

WDFW - Washington Department of Fish and Wildlife

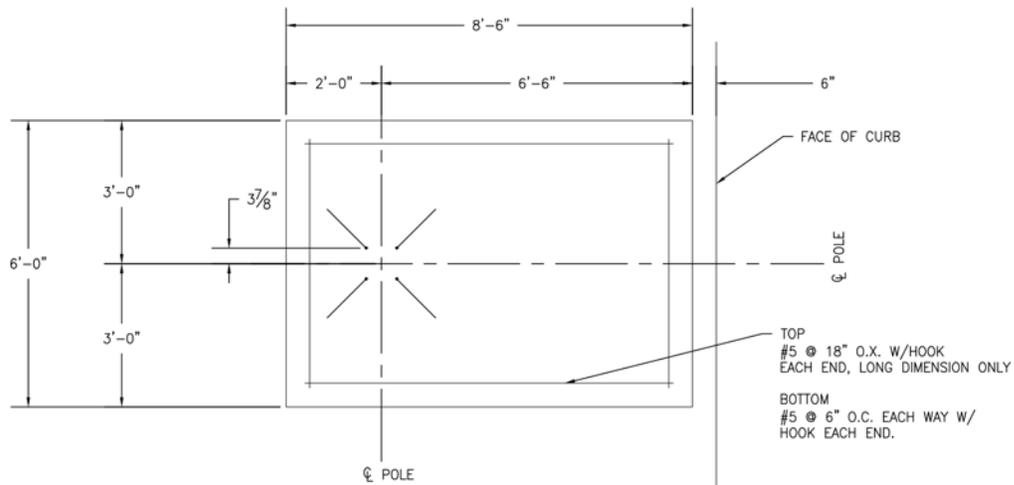
WISHA - Washington Industrial Safety and Health Administration.

WSDOT - Washington State Department of Transportation.

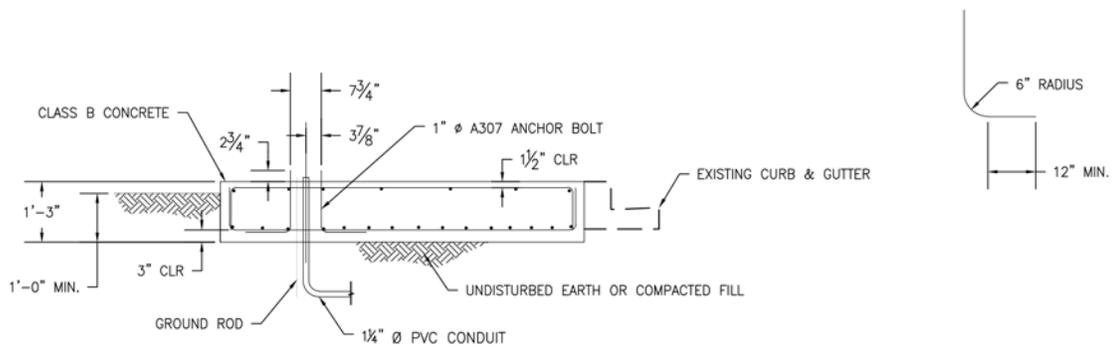
ZONE "A" - means a zone on the Flood Insurance Rate Map (FIRM) where flooding is known to occur, but no flood elevation has been determined.

ZONE "AH" - means a zone on the Flood Insurance Rate Map (FIRM) characterized by base flood depths from one to three feet; having no clearly defined channel or having an unpredictable and indeterminate channel, where velocity flow may be evident. AH indicates ponding.

ZONE "AE" - means a zone on the Flood Insurance Rate Map (FIRM) where base flood elevations are determined and are shown on the map.



FOUNDATION PLAN



FOUNDATION SECTION

NOTES:

1. THE FOUNDATION SHOWN IS SPECIFICALLY DESIGNED FOR A "HAPCO TYPE" ALUMINUM POLE UP TO 30' MOUNTING HEIGHT AND 8' MAST ARM.
2. CONCRETE FOR FOUNDATION SHALL BE CLASS B, 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. USE OF PERVIOUS CONCRETE IS PROHIBITED WITHIN FOUNDATION.
3. REINFORCING STEEL SHALL CONFORM TO MINIMUM REQUIREMENTS OF ASTM A615 GRADE 60.
4. CONTACT CITY OF TUKWILA FOR SECONDARY VOLTAGE AND GROUND WIRE CONNECTION.
5. FOR SERVICE CONNECTION, CONTACT PROVIDER AT LEAST TWO WORKING DAYS IN ADVANCE.
6. ALL PERMANENT CONDUCTORS SHALL BE COPPER. ALL ELECTRICAL WORKMANSHIP AND MATERIALS SHALL CONFORM TO NATIONAL ELECTRICAL CODE REQUIREMENTS.

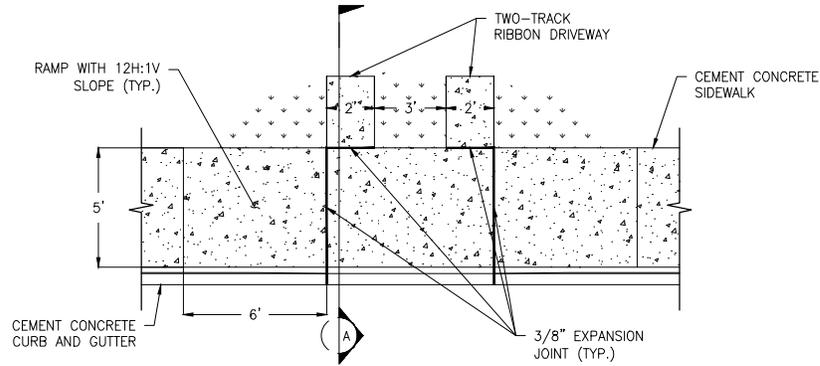
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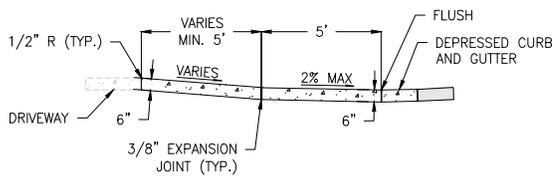


**City of
Tukwila**

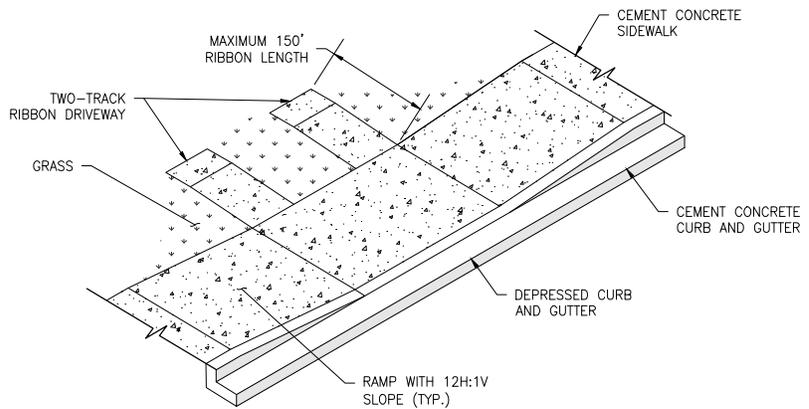
LUMINAIRE	
SHEET:	RS-25
REVISION #1:	LAST REVISION:
APPROVAL:	



PLAN VIEW
CEMENT CONCRETE DRIVEWAY RIBBON ENTRANCE



SECTION A



RIBBON - ISOMETRIC VIEW

NOTES:

1. THIS ALTERNATE SHOULD BE USED ONLY AFTER STUDYING CLOSENESS OF DRIVEWAYS, DRAINAGE, TOPOGRAPHY, DRIVEWAY GRADES, ETC.
2. CONCRETE SHALL BE CLASS 4000.
3. INSPECTION REQUIRED BEFORE PLACING CONCRETE. AT LEAST 24 HOUR NOTICE MUST BE GIVEN TO TUKWILA PUBLIC WORKS DEPARTMENT.
4. ALL DRIVEWAY APRONS SHALL BE A MINIMUM OF 6" THICK.
5. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH APA/WSDOT PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE CITY OF TUKWILA.
6. AN ASPHALT APRON MAY BE USED IN AREAS WHERE NO CURB EXISTS.
7. REMOVAL OF EXISTING CONCRETE CURB, GUTTER OR SIDEWALK SHALL BE SAW CUT TO THE NEXT CONSTRUCTION JOINT.

NOT TO SCALE



City of
Tukwila

RIBBON RESIDENTIAL DRIVEWAY

TBD

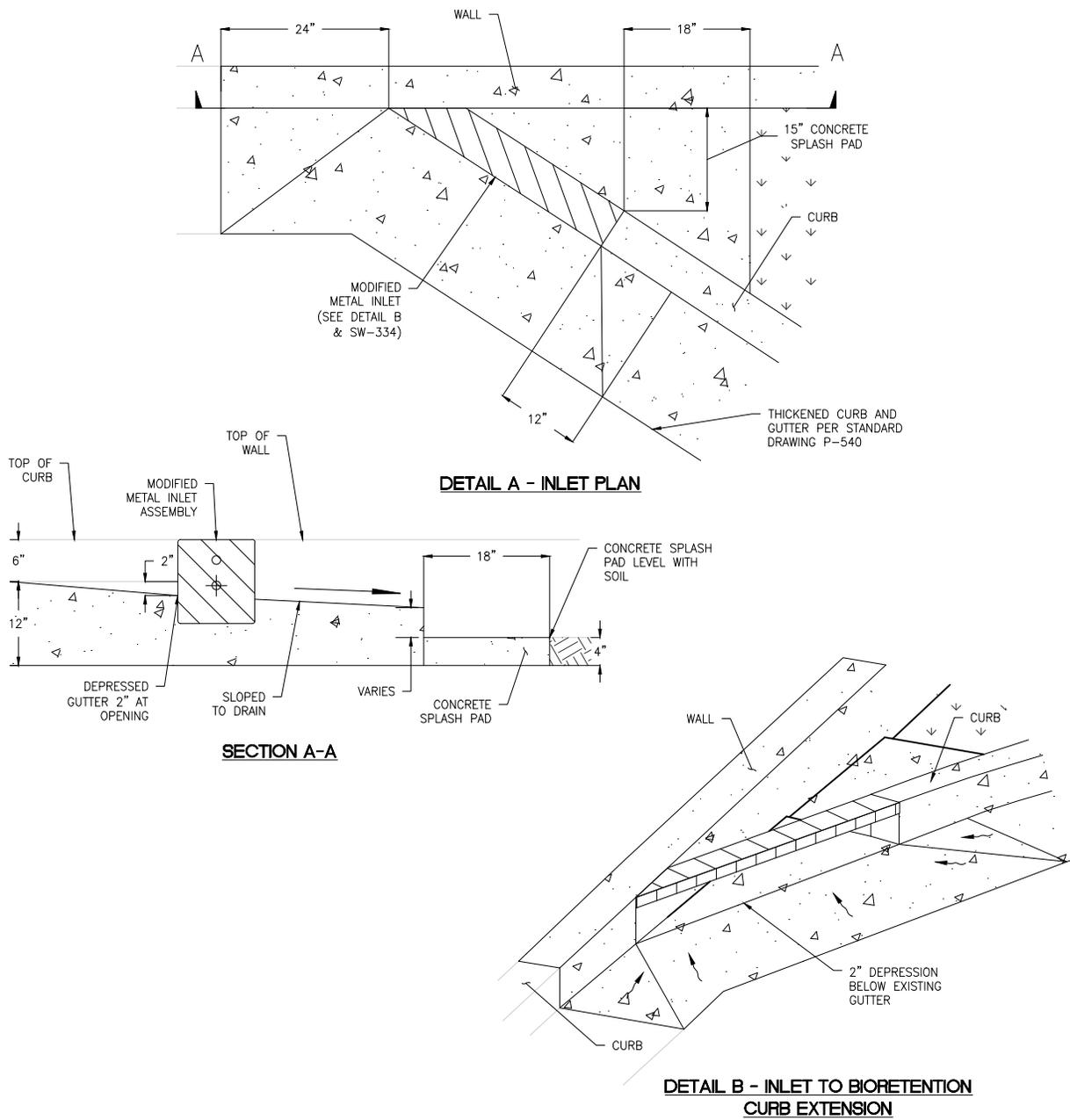
SHEET:

REVISION #1:

LAST REVISION:

APPROVAL:

PATH: K:\project\32600\32634\CADD\CADD\Drawg\CAD Details.dwg PLOT DATE: 7/15/16



NOTES:

1. ADDITIONAL CONCRETE INLETS, CAN BE ADDED IF NECESSARY (PREFERABLY IMMEDIATELY DOWNSTREAM OF EACH CHECK DAM TO MINIMIZE POTENTIAL BACKFLOW).
2. SAWCUT BEYOND FACILITY AND TRANSITION EXISTING CURB TO NEW CURB AND GUTTER AT 1" PER FOOT AS NECESSARY.
3. INLET MAY BE MODIFIED TO MAXIMIZE FLOW ENTRY TO STORMWATER FACILITY.
4. MODIFY INLET AND OUTLET DESIGN AS NEEDED FOR SITE.
5. ENSURE OUTLET NOTCH ELEVATION IS 2" BELOW LOWEST INLETS AND SIDEWALK NOTCHES.
6. CONCRETE SPLASH PAD REQUIRED AT ALL INLETS.

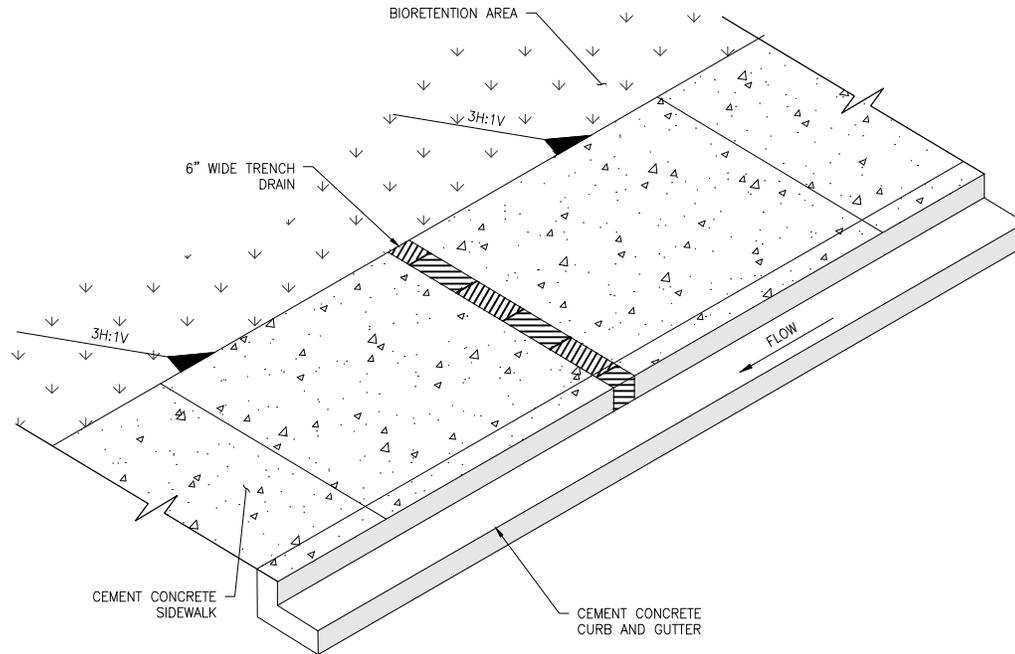
NOT TO SCALE



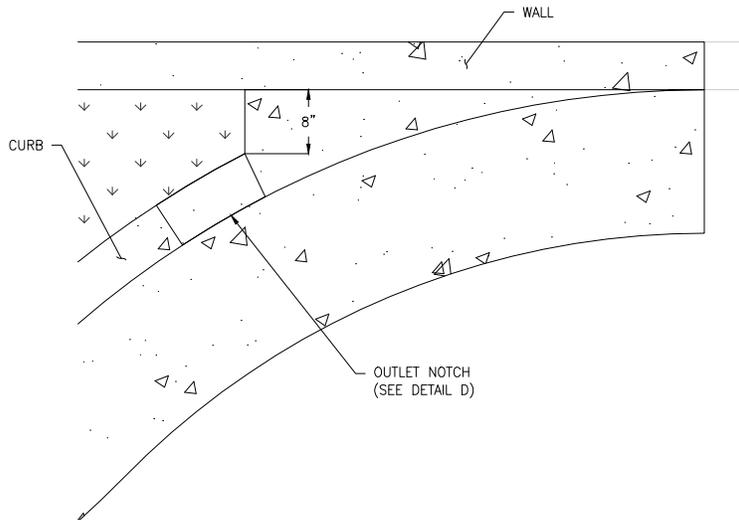
**City of
Tukwila**

INLET TO BIORETENTION CURB EXTENSION	
TBD	
SHEET:	
REVISION #1:	LAST REVISION:
APPROVAL:	

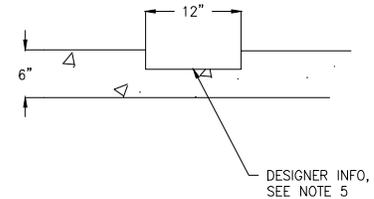
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DETAIL A - BIORETENTION TRENCH DRAIN DETAIL



DETAIL B - OUTLET FROM BIORETENTION CURB EXTENSION



DETAIL C - OUTLET NOTCH SECTION VIEW

NOTES:

1. SAWCUT BEYOND FACILITY AND TRANSITION EXISTING CURB TO NEW CURB AND GUTTER AT 1" PER FOOT AS NECESSARY.
2. MODIFY INLET AND OUTLET DESIGN AS NEEDED FOR SITE.
3. ENSURE OUTLET NOTCH ELEVATION IS 2" BELOW LOWEST INLETS AND SIDEWALK NOTCHES.
4. CONCRETE SPLASH PAD REQUIRED AT ALL INLETS.

NOT TO SCALE



**City of
Tukwila**

TRENCH DRAIN INLET AND OUTLET FROM BIORETENTION CURB EXTENSION

TBD

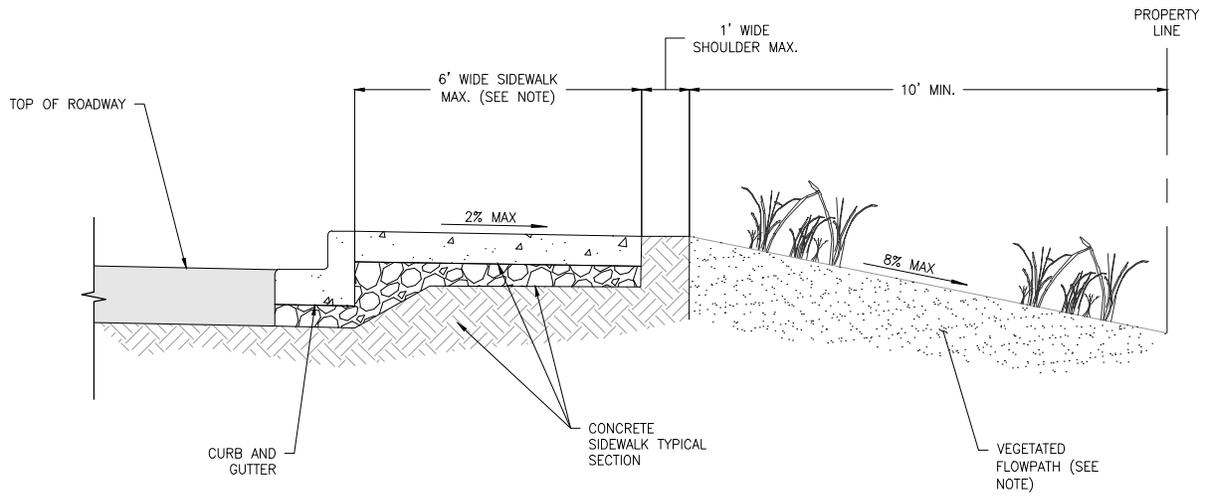
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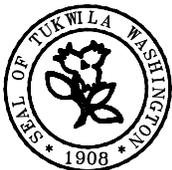


NOTES:

1. THE EDGE OF THE SIDEWALK AND THE GROUND ADJACENT TO OR IMMEDIATELY BELOW THE EDGE MUST BE EITHER LEVEL OR SLOPED SUCH THAT THE DIRECTION OF SHEET FLOW IS PERPENDICULAR TO THE EDGE OR NO MORE THAN 45 DEGREES FROM PERPENDICULAR.
2. A "VEGETATED FLOWPATH SEGMENT" OF AT LEAST 10 FEET IN LENGTH MUST BE AVAILABLE ALONG THE FLOWPATH THAT RUNOFF WOULD FOLLOW UPON DISCHARGE FROM THE SIDEWALK. VEGETATED FLOW PATH MUST MEET CRITERIA OF 2016 KING COUNTY SWDM C.2.41.
3. SIDEWALK LONGITUDINAL SLOPE SHALL BE 10% MAXIMUM.

NOT TO SCALE

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**City of
Tukwila**

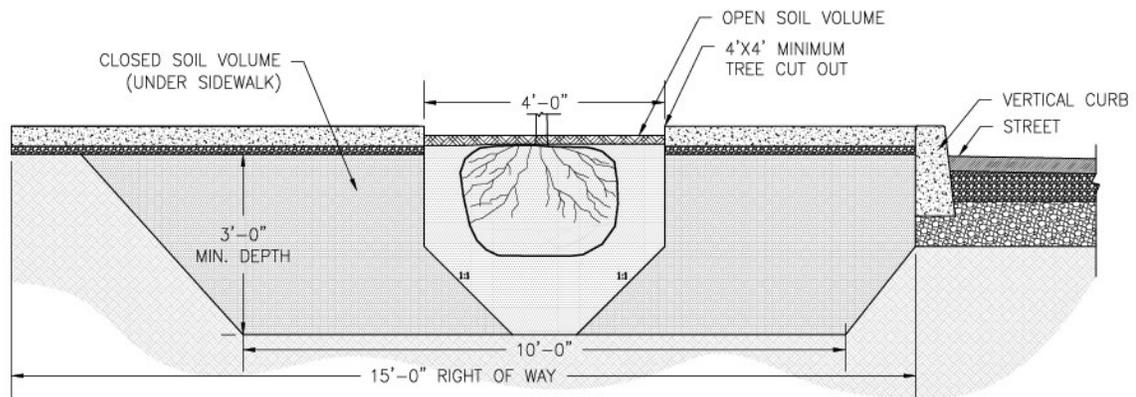
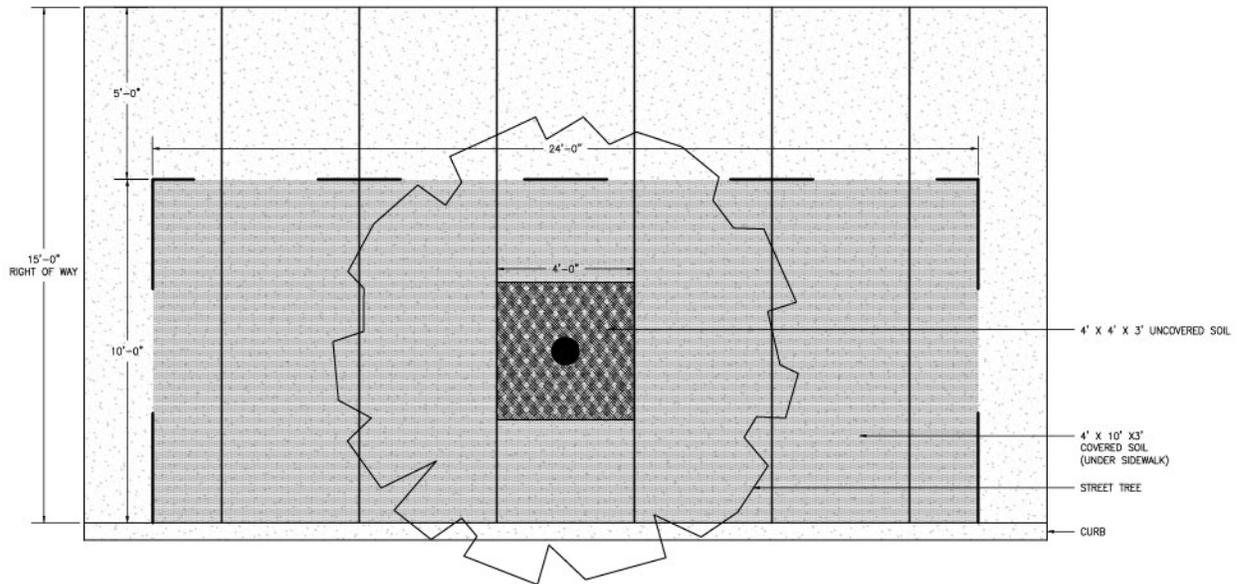
REVERSE SLOPE SIDEWALK

SHEET: TBD

REVISION #1:

LAST REVISION:

APPROVAL:



TOTAL SOIL VOLUME CALCULATION FOR TYPICAL STREET TREE:

OPEN SOIL VOLUME = 4' X 4' X 3' = 48 CUBIC FEET

CLOSED SOIL VOLUME = 24' X 10' X 3' = 720 CUBIC FEET

TOTAL SOIL VOLUME = 768 CUBIC FEET (750 C.F. MIN. REQUIRED)

NOT TO SCALE



**City of
Tukwila**

SOIL VOLUME CALCULATION, TYP. STREET TREE

SHEET: TBD

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APPROVAL:

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