

City of Mukilteo, Washington
Development Standards



Reference Documents:

August 6, 2012
Amending Resolution 2012-10

July 20, 2009
Amending Resolution 2009-15

July 7, 2008
Amending Resolution 2008-022

September 17, 2007
Amending Resolution 2007-14

December 12, 2001
Amending Resolution 2001-21

June 28, 1999
Resolution 99-02

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Introduction

The purpose of this document is to establish development standards related to the required infrastructure improvements and design criteria for development in the City of Mukilteo.

Development within the City of Mukilteo requires three (3) distinct review processes:

1. **Permit Review:** Review and approval of the site plan for compliance with the zoning code; review of the preliminary grading, storm drainage, roadway improvements, and temporary erosion and sedimentary control for general compliance with the development standards; and issuance of a threshold determination related to the State Environmental Policy Act;
2. **Civil Drawing and Plan Review:** Review and approval of the final construction drawings associated with an approved project in accordance with adopted development standards. A grading and right-of-way permit is issued with approval of the civil construction drawings; and
3. **Building Permit Review:** Review and approval of the building plans for compliance with the requirements of the Uniform Building Code, Uniform Fire Code, Uniform Plumbing Code, and Uniform Mechanical Code.

In accordance with the Mukilteo Municipal Code, private capital shall bear the burden of improving the abutting rights-of-way to mitigate impacts on City's street system. Rights-of-Way improvements shall be required for all development in the City as follows:

- Single-Family Residential Development: Street improvements shall only be required when new single-family residential units are constructed in accordance with the City's most recently adopted Development Standards. Single family residential remodels, alterations, additions, expansions; or the addition of extended family dwelling units approved through the conditional use permit process, regardless of size, shall not be required to construct any street improvements.
- Non-Conforming Uses and Buildings: Street improvements shall be required whenever a non-conforming use or building is expanded beyond the original footprint of the building, with the exception of non-conforming single family residential structures in single family residential zones.
- Commercial, Industrial, & Multi-Family Development: Street improvements shall be required of all new construction, additions to, or remodels (except for interior tenant improvements) of any commercial, industrial, or multi-family residential structures in accordance with the City's most recently adopted Development Standards.

Chapter 1

Administrative Procedures

PLAN REVIEW

Detailed plat documents and construction drawings, prepared by a Registered Professional Land Surveyor (PLS), and Registered Professional Engineer (PE), shall be submitted to the City for plan review and approval prior to the commencement of any construction. All plat documents and constructions drawings shall be signed and stamped by the applicant's PLS and PE, as applicable, prior to submittal for review.

Approval by the City does not relieve the applicant or the applicant's PLS or PE from the responsibility for ensuring that all facilities are safe and that the calculations, plans, specifications, construction and record/as-built drawings comply with normal engineering standards, the City's standards, and applicable federal, state and local laws and regulations.

All drawings, plans and specifications shall be prepared in accordance with:

- City of Mukilteo, Development Standards;
- City of Mukilteo Municipal Code;
- The 2005 Department of Ecology Stormwater Management Manual for Western Washington;
- The current version of the WSDOT/APWA Standard Specification for Roads, Bridges, and Municipal Construction as modified by the City's development regulations;
- The current version of the Manual for Uniform Traffic Control Devices; and
- The 2004, AASHTO, "A Policy on Geometric Design of Highways and Streets".

All work performed within the City of Mukilteo, whether by a private developer or by the City, shall be completed to the satisfaction of the City of Mukilteo and in accordance with the above mentioned standards.

Any revisions to approved construction drawings must be approved by the City before being implemented. Failure to receive the City's approval can result in removal or modification of construction at the contractors or developers expense to bring into conformance with approved plans.

PRECONSTRUCTION MEETINGS, PERMIT ISSUANCE, AND FEES

A preconstruction meeting will be required before issuance of permits and commencement of work. All applicable fees, as established by City Council Resolution, shall be paid at the time of permit issuance.

It is the responsibility of the developer, contractor, or their agents to notify the City in advance of the commencement of all authorized work.

INSPECTIONS

It is the responsibility of the developer, contractor or their agents to have an approved set of drawings and all necessary permits posted on the job site whenever work is being accomplished.

The City will have the authority to enforce these standards, as well as other referenced specifications and/or conditions. The City will appoint a project manager, engineers, and inspectors as necessary to inspect the work and will exercise such approval authority as provided by the Mukilteo Municipal Code.

All inspections, tests, measurements, or actions required to be performed to assure compliance with the applicable development standards of the project shall be performed at the developer's or contractor's expense. Failure to comply with the provisions of these standards may result in a stop work order, removal of the work accomplished, or other penalties as provided by the Mukilteo Municipal Code.

A project is considered final when record/as-built drawings, easements, securities, and maintenance agreements have been submitted to and approved by the City. Upon approval of all required document submittals, a certificate of occupancy will be issued by the City to the responsible person for the project.

PERFORMANCE GUARANTEES AND WARRANTIES

Security devices or other allowable securities shall be required by the City to guarantee the performance or maintenance of the required work, as follows:

Performance Security, at a rate of 150% of the cost of construction, shall be required prior to final project approval as a guarantee to the City that public improvements will be installed in a satisfactory manner.

When required private improvements cannot be completed prior to the issuance of an occupancy permit and/or other City approval, a performance security, at the rate of 150% of the costs of the required private improvements may be used, PROVIDED the City's Public Works Director and Planning Director determine that it is in the best interests of the City.

Construction/Maintenance Security, at a rate of fifteen percent (15%) of the construction costs for public improvements, landscaping, and drainage facilities, is required as a guarantee to the City that the required project improvements are warranted against defects in labor and materials for a period of two (2) years after the project been inspected, approved, and accepted by the City.

Critical Area Performance Security, at a rate of 150% of the total costs of, as required by the mitigation plan, the installation of plants and other critical area enhancements, is required to ensure the mitigation plan is fully implemented, including, but not limited to, the required monitoring and maintenance periods.

Critical Area Maintenance Security, at a rate of fifteen percent (15%) of the construction costs of the mitigation plan, landscaping, and drainage facilities installed within the critical area, is required as a guarantee to the City that the required mitigation improvements are warranted against defects in labor and materials for a period of three (3) years after the project has been inspected, approved, and accepted by the City.

Chapter 2

Flexibility Authorization

Certain required development standards may preclude development or proposals for redevelopment and reconstruction of existing transportation elements due to a variety of circumstances such as neighborhood characteristics, topography, and land uses. For this reason, the purpose of this chapter is to allow for administrative modifications to certain development standards in particular circumstances.

DEVIATION FROM ENGINEERING STANDARDS

Purpose. Deviation from the engineering standards is a mechanism to allow the City to grant an adjustment in the application of engineering standards where there are unique circumstances relating to the proposal.

Decision Criteria. The Director of Public Works may grant an engineering standards deviation only if the applicant demonstrates that the proposal meets all of the following criteria:

- The granting of such deviation will not be materially detrimental to the public welfare or injurious or create adverse impacts to the property or other property(s) and improvements in the vicinity and in the zone in which the subject property is situated;
- The authorization of such deviation will not adversely affect the implementation of the Comprehensive Plan adopted in accordance with State law;
- The proposal conforms to the intent and purpose of the Code;
- The proposal produces a compensating or comparable result which is in the public interest;
- The proposal meets the objectives of safety, function and maintainability based upon sound engineering judgment.
- Deviation from road standards must meet the objectives for fire protection.
- Deviations from drainage standards contained in the 2005 DOE Stormwater Management Manual, Title 13.12 MMC and these development standards must meet the objectives for appearance and environmental protection.
- Deviations from drainage standards contained in the 2005 DOE Stormwater Management Manual, Title 13.12 MMC and these development standards must be shown to be justified and required for the use and situation intended.
- Deviations from drainage standards for facilities that request use of emerging technologies, an experimental water quality facility or flow control facilities must meet these additional criteria:

- The new design is likely to meet the identified target pollutant removal goal or flow control performance based on limited data and theoretical consideration,
- Construction of the facility can, in practice, be successfully carried out;
- Maintenance considerations are included in the design, and costs are not excessive or are borne and reliably performed by the applicant or property owner.;

OPTION TO IMPLEMENT PERFORMANCE SECURITY

Where a benefit to the City would be realized through a reasonable delay in completion of certain development requirements, the City may elect to require the proponent to schedule such a delay and provide a performance surety for the required improvements, guaranteeing their installation within a period not to exceed one year, such surety shall be not less than 150% of the estimated cost of the improvements as approved by the Public Works and Planning Directors, or their designees.

The Directors shall consider the following factors when requiring a delay and a performance surety:

1. Where prolonged inclement weather prevents the successful installation of infrastructure improvements or landscaping;
2. Where the installation of the final lift of paving would be destroyed, damaged, or severely worn by heavy construction and delivery equipment. The Directors shall condition such a project to have the final lift of paving installed prior to Final Building Permit approval for a single family residence or Final Certificate of Occupancy for Multi-family or Commercial/Industrial projects; or
3. Where the delay of the installation of certain required improvements will ensure the successful completion of a project, and unforeseen circumstances that are not a result of the applicant's action or inaction may jeopardize the success of the project without such delay.

The following factors are not considered grounds for approving a performance surety:

- Factors that are within the control of the applicant and where any hardship created is due to the applicant's action or inaction.
- Financial hardships.

The option to implement a performance security for all required improvements prior to final plat approval or certificate of occupancy may only be approved by the Mukilteo City Council. All requests for delay of installation of all said improvements shall be limited to cases of extreme unusual circumstances; and will require the support of the Public Works Director and Planning Director prior to being taken before the City Council for consideration.

Chapter 3

Street Standards

The following standards shall be adhered to in the design and development of all streets within the City of Mukilteo:

GENERAL STREET DESIGN

Coordination and Compatibility with Adjacent Development: All development proposals shall be designed so they are coordinated with and compatible with adjoining development in terms of the following: street alignment; utility line location and size; and easements for utility lines and drainage facilities.

Conformity With Topography: When existing topography requires, the design of the project shall be such that the alignment and grade of streets conform to the site to the extent that desirable street grades can be secured and lots are located to provide the best building sites possible given the topography of the land or reasonable use provisions of the MMC.

STREET STANDARDS

The location, design and construction of all public streets shall comply with the following requirements:

Direct Access to Dedicated Street: All development proposals shall have direct access from at least one of its boundaries, to an existing improved dedicated street, or shall be required to improve their access to meet these standards including, but not be limited to:

- Dedication of right-of-way;
- Installation of street improvements such as paving, curb, gutter and sidewalk; and
- Upgrading existing street conditions to meet the minimum standards specified herein.

Street Layout:

- a. Streets shall be classified, designed and constructed to comply with the Comprehensive Plan and Transportation Plan of the City.
- b. When a development borders on or contains an existing or proposed major or secondary arterial or limited access highway or existing railroad right-of-way, development shall be designed as follows:
 - The rear portion of the lots shall abut the highway, major arterial, secondary arterial, or rail line;
 - Shall be separated by a buffer strip; and
 - Provide access onto a parallel local street connecting to another local street or collector street; or a local street shall be constructed parallel to the highway, major arterial or rail line with lots fronting on the opposite side and separated by a buffer.
- c. Proposed rights-of-way should be extended to the boundary lines of the proposed subdivision in order to provide for future development of adjacent tracts where

identified in the City of Mukilteo Comprehensive Plan unless prevented by natural conditions such as topography, or it is determined not to be necessary or desirable by the Public Works Director or designee.

- d. The use of curvilinear streets is encouraged in the design of street layout for residential subdivisions, versus grid patterned streets, to discourage through traffic and reduce conformity of lot appearance.
- e. The street pattern for subdivisions, short subdivisions, and development proposals should be designed to expedite traffic movement, reduce conflicts between various types of traffic movements, including pedestrian, and coordinate the location of proposed buildings, loading and parking facilities.
- f. All lots within a development must be designed to take direct access off of a public or private street. The creation of land locked parcels shall not be allowed.

Street Right-of-Way:

- a. The width of street right-of-way to be dedicated to the City shall comply with Table ‘A’. When a proposed subdivision, short subdivision, or development proposal is abutting an existing street or streets with a right-of-way of lesser width than specified, for the respective street classification, the developer shall be required as a condition of approval of the development to dedicate the additional right-of-way width. The City may require dedication of right-of-way in excess of the above standards in the following cases.
 - i. Where additional width is necessary to maintain continuity with the adjoining rights-of-way;
 - ii. Where additional width is necessary to maintain alignment with adjoining streets and sidewalks improvements;
 - iii. Where additional width is necessary to insure that streets intersect at close to right angles as is practical; and
 - iv. Where additional row is needed as outlined in the city’s comprehensive plan and/or transportation plan for new roads or expansion of existing roads.

Roadways:

Attached Tables “A” & “B” shall be used in the development of property and subdivisions.

**TABLE “A”
MINIMUM DESIGN STANDARDS**

	Principal Arterial	Minor Arterial	Urban Collector	Local Access	Private Street
Right-of-Way	80'	80'	80'	60'	3-6 Lots - 35' Wide Tract 7+ Lots - 40' Wide Tract
Travel Lanes	2-12' Travel Lanes 1-12' Turn Lane	2-12' Travel Lanes 1-12' Turn Lane	2-12' Travel Lanes 1-12' Turn Lane	2-11' Travel Lanes	2-10' Travel Lanes
Parking Lanes	None	None	None	2-8' Parking Lanes	8' One Side
Planter Strip	5' Wide - Both Sides	5' Wide - Both Sides	5' Wide - Both Sides	None	None
Sidewalk	6' Wide - Both Sides	6' Wide - Both Sides	6' Wide - Both Sides	5' Wide - Both Sides	3-6 Lots - None 7+ Lots - 5' Walkway one side
Curb & Gutter	2' Wide - Both Sides	2' Wide - Both Sides	2' Wide - Both Sides	1.5' Wide - Both Sides	None
Bike Lane	5' Wide - Both Sides	5' Wide - Both Sides	5' Wide - Both Sides	None	None
Gravel Shoulder	None	None	None	None	3' Both sides of street
Total Width of Improvements	72'	72'	72'	51'	3-6 Lots - 34' 7+ Lots - 39'

TABLE "B"
MINIMUM DESIGN STANDARDS

	Principal Arterial	Minor Arterial	Urban Collector	Local Access	Private Street
Asphalt Paving and Base Course	Minimum 3" compacted HMA 6" asphalt treated base course (ATB) 4" crushed surface top course	Minimum 2" compacted HMA 4" asphalt treated base course (ATB) 4" crushed surface base course	Minimum 2" compacted HMA 4" asphalt treated base course (ATB) 3" crushed surface base course	Minimum 2" compacted HMA 2" asphalt treated base course (ATB) 3" crushed surface base course 6" compacted gravel base	Minimum 2" compacted HMA 2" asphalt treated base course (ATB) 3" crushed surface base course 6" compacted gravel base
Curb and Gutter	City of Mukilteo Standard Plans	City of Mukilteo Standard Plans	City of Mukilteo Standard Plans	City of Mukilteo Standard Plans	None
Catch Basin/ Storm Drain	City of Mukilteo Standard Plans	City of Mukilteo Standard Plans	City of Mukilteo Standard Plans	City of Mukilteo Standard Plans	City of Mukilteo Standard Plans
Side Slope	Max.: 1.5v:1h	Max.: 1.5v:1h	Max.: 1.5v:1h	Max.: 1.5v:1h	Max.: 1.5v:1h
Sidewalk	City of Mukilteo Standard Plans	City of Mukilteo Standard Plans	City of Mukilteo Standard Plans	City of Mukilteo Standard Plans	None
Street Curves	Current AASHTO Standards for Geometric Design of Highways and Streets.	Current AASHTO Standards for Geometric Design of Highways and Streets.	Current AASHTO Standards for Geometric Design of Highways and Streets.	Current AASHTO Standards for Geometric Design of Highways and Streets.	Current AASHTO Standards for Geometric Design of Highways and Streets.
Min. Sight Distance	Current AASHTO Standards for Geometric Design of Highways and Streets.	Current AASHTO Standards for Geometric Design of Highways and Streets.	Current AASHTO Standards for Geometric Design of Highways and Streets.	Current AASHTO Standards for Geometric Design of Highways and Streets.	Current AASHTO Standards for Geometric Design of Highways and Streets.
Street Grades	9%-11% max., 0.30% min.	10% max., 0.30% min.	12%-14% max., 0.30% min.	15% max., 0.30% min.	20% max., 0.30% min.*

*Structures gaining access via fire apparatus access roads that exceed 15% in grade will be required to install an approved automatic sprinkler system that covers the entire structure. (2009 IFC, 503.2.7)

When a building meets the requirements for an Aerial Fire Apparatus access (IFC 2009 D105), the grade shall not exceed 10%.

NOTE: The standards contained above may be modified to include stricter standards, as determined by the Public Works Director based on traffic loads, soil conditions, and storm drainage requirements.

Street Naming and Numbers:

The building department shall assign addresses to new development at the time of building permit issuance or prior to plat map recording.

All new streets are to be named. At the time of application of a private street extension, or public street extension, the applicant shall submit a street name to the building department for review and approval. All private street names shall be approved prior to plat map recording.

Road Regulatory Signs: The exact location and type of all street and other signs related to subdivisions, short subdivisions, and development proposals shall be prepared by the applicant's engineer. The ordering, costs and installation of all signs associated with the development shall be the responsibility of the applicant. All sign proposals shall be subject to review and approval by the City's Public Works Director. All street signs shall conform to the adopted MUTCD standards for location, size and retro-reflectivity. All approved street signs shall be installed prior to the final construction inspections by the City of Mukilteo.

Cul-de-Sac Street - length: A cul-de-sac street is a roadway that serves more than one property owner and has only one intersection with the public road system. All cul-de-sac streets shall end with an approved turnaround. Approved turnarounds are shown in Figure 7. The length of a cul-de-sac is measured between the centerline of the intersecting street and the radius point of the cul-de-sac. The minimum length of a cul-de-sac street is two times the radius. The length of a cul-de-sac street shall be dependent upon the size of the lots, the spacing of the lots and/or difficult terrain.

Dead-end Streets: Dead-end streets will be allowed only where a future extension of the street would be necessary to serve adjacent properties when developed at a future date. When a dead end street is allowed, a temporary turn-around shall be provided. The maximum length of a dead end street shall be the same as the maximum length of a cul-de-sac street. Temporary turnarounds shall match the physical requirements for cul-de-sac streets, and shall be provided with a temporary easement allowing for maintenance. Traffic control devices will be required that are designed to advise the motoring public or the existence of the dead end and to mark the end of the street. Traffic control devices shall be approved by the Public Works Director.

Fire Apparatus Access Road. see IFC 2009 Section 503, Fire Apparatus Access Roads

Where Required. Fire apparatus access roads shall be provided and maintained in accordance with IFC 503.1.

Turn Around Areas: The required fire vehicle turn around areas shall meet the design requirements identified in Figure 7 of these standards. All turnarounds shall meet the design standards for the class of street they serve. See Table B.

Alleys: Alleys, should provide through access between City streets. In cases where this is not feasible, adequate turnarounds shall be provided. All new alleys in new development shall be private.

Alleys incorporate much of the design criteria used in designing local streets; however, there are some exceptions. The following is a list of alley design standards that differ from local street elements:

1. Alleys shall have a minimum width of twenty feet (20') of asphalt pavement unless otherwise approved by the Fire Marshal.
2. The pavement section for shall be consistent with a local street standard.
3. Curb and gutter, sidewalk, lighting, and landscaping are not required along alleys.
4. Alleys may be paved with inverted crown at centerline to convey storm water into catch basins located at low points in the invert.
5. Alleys shall connect to City streets via a commercial driveway apron.

The design requirements for alleys serving alley accessed lots shall be determined on a case-by-case basis depending upon the specific application. As a minimum these types of alleys shall meet the functional requirements of pedestrian, vehicular, and emergency access, with considerations for drainage, landscaping, and lighting.

Half Streets: A half street could be comprised of any one of the above street classifications. Half Streets require, at a minimum, the construction from one side of the street, including the curb & gutter, storm drainage, sidewalk and landscape strip, to the street centerline. Half streets will need to be constructed when a proposed new development or redevelopment of a property is located on a public street that is not currently built to City standards. Half street construction may also be required for property that abuts future streets proposed in the City's Comprehensive Plan.

When half street construction is required on an existing paved street, the design of the half street shall be consistent with the existing street conditions. This could require construction of more than half the street for safety and drainage reasons.

When half street construction is required on unpaved streets or unimproved areas, a minimum of twenty-four feet (24') of pavement will be required. In these cases, the street should be designed to provide drainage for the constructed portion of the street. Provisions shall be made to allow for extension of the storm drainage system to the undeveloped portion of the street for future construction.

The construction of a half street may require the dedication of additional right-of-way. If a half street does not connect at both ends to other streets, construction of a cul-de-sac, or other approved turn-around, will be required.

All proposed utilities located within the portion of the street being built, shall be installed during construction. Half street construction may also require the upgrading of existing utilities if said upgrading was necessary for the proposed development. All new utilities installed in association with new development shall be placed underground.

The unfinished side of the half street shall be finished with temporary curbing, shoulders, ditches and/or side slopes so as to assure proper drainage, bank stability, and traffic safety.

When half streets connect to an intersection, the intersection shall be designed and constructed for the full build-out of the street. The intersection design and construction shall extend at least fifty feet (50') from the travel way of the cross street.

Intersections: Street intersections shall comply with the following requirements:

- a. Streets should intersect as nearly as possible at right angles. Intersections of two streets at an angle of seventy-five (75) degrees or less and street jogs with centerline offsets of less than one hundred fifty (150) feet from the center of the intersection shall not be acceptable.
- b. All intersections shall have a minimum sight distance as required by MMC 17.20.060, Sight Distance Triangle.
- c. Street curb radii shall not be less than twenty-eight (28) feet.
- d. Intersections shall be designed with a maximum grade of two percent (2%) in the first thirty (30) feet back of the stop bar.
- e. Where any street intersection will involve earth banks or existing vegetation inside any lot corner that would create a traffic hazard by limiting visibility, the developer shall cut such ground and/or vegetation (including trees) in connection with the grading of the public right-of-way to extent deemed necessary to provide an adequate sight distance.

Street Construction, Reconstruction and Improvements: When a proposed is served by an existing street or streets which either has not been improved or has a substandard roadway in accordance with the preceding roadway standards, the subdivider shall be required to comply with the following provisions as a condition of approval of the applications.

- a. The full roadway abutting the subject property excluding the curb, gutter and sidewalk on the opposite side, shall be constructed, reconstructed or improved as specified by the standards and requirements of Table "A".
- b. When the Comprehensive Plan and Transportation Plan requires a collector or arterial street in a single family area, the developer may be required to construct such street.
- c. The owner of the subject property shall agree to accomplish such construction, reconstruction or improvement as a condition of project approval.

PRIVATE ROAD STANDARDS

Private roads shall be designed using the following design standards:

# of Lots Served	Access Tract	Minimum Pavement Width	Surfacing	Max. Road Length	Need for Fire Turn Around
Three to Six Lots	35 ft.	20 ft.	Paved ¹	See "Cul de Sac"- Above	Over 150 ft.
Seven or more Lots	40 ft.	28 ft.	Paved	See "Cul de Sac"- Above	Over 150 ft.

Notes:

1. Deviation from the above standards may be allowed if approved by the Public Works Director and Fire Marshal if involving special circumstances.
2. All tracts for private streets shall require the preparation and recording of a maintenance agreement establishing the ownership and maintenance responsibility of the street tract.
3. Additional roadway width will be required at fire hydrants as shown in Figure 7.

ACCESS TO STREETS - DRIVEWAYS

(Not Included on a State Highway System)

Access Provision. If a property has frontage on more than one street, access will be restricted to the street having the lowest classification. If property cannot be served by any access point meeting these standards, the designation of access point(s) should be based on traffic safety, operational needs, and conformance to as many of the requirements of these guidelines as possible. If necessary, access shall be limited to right turns only to provide for the safe and efficient movement of traffic.

Number of Access Points. One access point per parcel of property shall be permitted.

Sight Distance Requirements. Minimum sight distance requirements from access point to vehicles approaching on city street must be maintained. Minimum sight distance requirements shall be based on the average operating speed of vehicles approaching the access point, or in the case of low traffic volume streets, the posted speed limit shall be used. For level roadway conditions on two (2) lane city streets, this distance will vary from two hundred (200) lineal feet for twenty (20) mph to four hundred (400) lineal feet for forty (40) mph based on arterial street design.

Maximum Grades for Driveways. Design for construction of new driveways must consider the ultimate width of the City street(s) to which the driveway(s) will be connected. Consideration shall include the possibility of the existing street being widened to its maximum width based on the streets functional classification. In order to minimize the cost of driveway reconstruction should a City street be widened after the adoption of these standards, all driveways shall be designed to meet public right-of-way at a maximum grade of $\pm 5\%$. This grade shall not be exceeded for a distance of twenty

(20) feet from edge of pavement. The maximum grade for residential driveways beyond that point is $\pm 15\%$ without special approval by the Public Works Director. The maximum grade break on the driveway at the future edge of pavement for City street shall not exceed four percent (4%). Additional required grade breaks beyond this point shall be designed to prevent dragging of emergency service vehicle undercarriage and/or bumper.

Residential Driveway Spacing. The City shall not permit any curb cut, driveway or street opening to be located any closer than five (5) feet from a property corner for non-corner lots except for joint use driveways. Driveways for corner lots shall not be located within 30 feet of the property corner radius.

Residential Driveway Width.

The maximum street opening for single family residences shall be 30 feet, provided that the edge of the driveway is no closer than 5 feet from a property corner and the total width of the driveway shall not exceed fifty percent (50%) of the lot line length where the driveway enters the property. Circular driveways may be considered for approval by the Public Works Director provided that the lot has a minimum width of 75 feet, the total width of both drives shall not exceed 30 feet, and the residence is located on a street classified as “local”. The minimum residential driveway width shall be twelve (12) feet.

Deviations from the above residential driveway width standards may be considered by the public works director for duplex and ADU applications. A written deviation request shall be submitted to the public works director for consideration. Factors to be considered include, but are not limited to, the following; location and width of adjoining driveway cuts, the amount of required parking for the project, the width of the subject lot and the classification of the adjoining street.

Commercial Driveway Width.

The maximum street opening shall be thirty (30) feet for commercial, industrial and multi-family uses. A wider commercial driveway width may be approved by the Public Works Director where a substantial percentage of oversized vehicle traffic exists. In this case, the driveway should be sized to accommodate the largest vehicles. No commercial two-way driveways under thirty (30) feet shall be allowed on any major arterial or under twenty-four (24) feet on any collector or local access street. Where intersection openings are approved, the width shall be approved by the Public Works Director.

Driveway Radii Design. Radii design for driveways shall be ten (10) foot minimum for access to streets classified as local, fifteen (15) foot minimum for access to streets classified as collector and twenty (20) foot minimum for access to streets classified as major arterials. Commercial and industrial driveways shall have a minimum radius of twenty-eight (28) feet and shall be designed in accordance with the critical vehicle using three (3) center curved design procedures. No radius is required for depressed concrete curb design and construction.

FEDERALLY CLASSIFIED ROUTES

Urban Freeways and Expressway

- SR 526 (40th Ave. W. to Mukilteo city limits)

Urban Principal Arterials

- Hwy 525 aka Mukilteo Speedway (Mukilteo city limits to ferry terminal)
- Hwy 526 (SR 525 to 40th Ave. W.)
- Paine Field Boulevard
- 5th Street/Mukilteo Boulevard

Minor Arterials

- Beverly Park Road (Mukilteo city limits to SR525)

Urban Collectors

- 2nd Street (SR525 to Prospect Avenue)
- Prospect Avenue (2nd St. to 5th Street)
- Goat Trail Rd. (SR 525 to 8th Drive)
- Goat Trail Road (8th Dr. to 19th Street)
- 8th Drive (Goat Trail Road to Loveland Avenue)
- Loveland (8th Drive to 9th Street)
- 19th Street/70th Street SW (Goat Trail Road to 48th Avenue W)
- 48th Avenue West (70th Street SW/19th Street to 73rd Street SW)
- 73rd Street SW (48th Avenue W to 46th Avenue W)
- 46th Avenue West (73rd Street SW to 76th Street SW)
- 76th Street SW (Hwy 525 to 44th Avenue W)
- 44th Avenue W (76th Street SW to 92nd Street SW)
- 88th Street SW (44th Avenue W to 56th Place W)
- Harbour Pointe Boulevard SW (SR 525 to Harbour Reach Dr.)
- Harbour Pointe Boulevard SW (Harbour Reach Drive to Chennault Beach Road)
- Harbour Pointe Boulevard (Chennault Beach Road to SR525)
- Harbour Reach Drive (Chennault Beach Road to Harbour Pointe Boulevard)
- Chennault Beach Road (Hwy 525 to Harbour Reach Drive)
- Chennault Beach Rd. (Harbour Reach Drive to Central Drive)
- Chennault Beach Drive (Central Drive to Marine View Drive)
- Marine View Drive (Chennault Beach Road to 66th Pl. W.)

Proposed Urban Collectors

- 9th Street (Loveland Ave. to 44th Ave. W.)
- 44th Ave. W. (9th St. to 76th St. SW.)
- Harbour Reach Dr. Extension (Harbour Pointe Blvd. to Beverly Park Rd.)

Local Access

- All Streets not listed above.

STREET CROSS SECTIONS

- Figure 1** Principal Arterials
Minor Arterial
Urban Collector
- Figure 2** Local Access Streets
- Figure 3** Private Streets – 3 to 6 lots
- Figure 4** Private Streets – 7 or more lots
- Figure 5** Business District Streets
- Figure 6** General Street Classification Map
- Figure 7** Approved Turnaround Designs

FIGURE 1

MINIMUM STANDARD

PRINCIPAL ARTERIAL
MINOR ARTERIAL
URBAN COLLECTOR

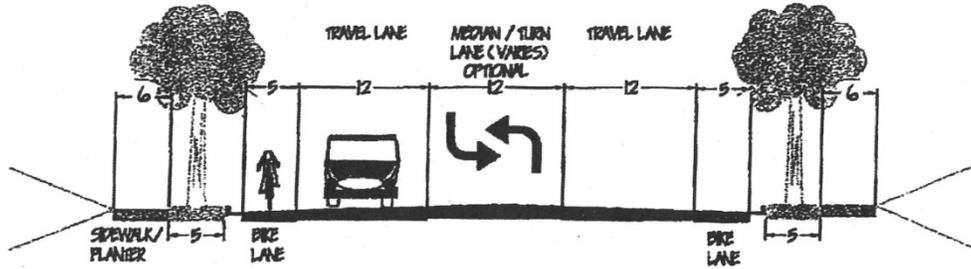


FIGURE 2

MINIMUM STANDARD

LOCAL ACCESS

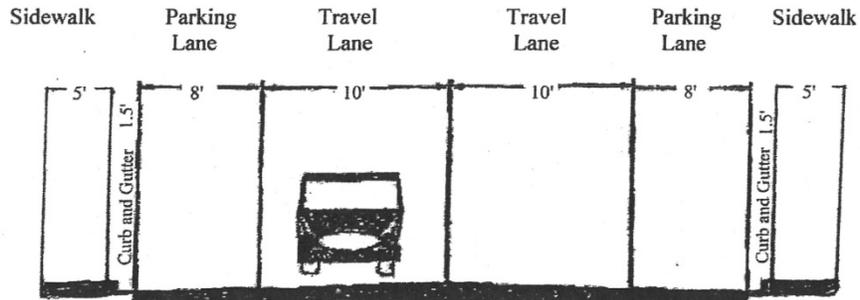


FIGURE 3

MINIMUM STANDARD

PRIVATE STREET
3 TO 6 LOTS

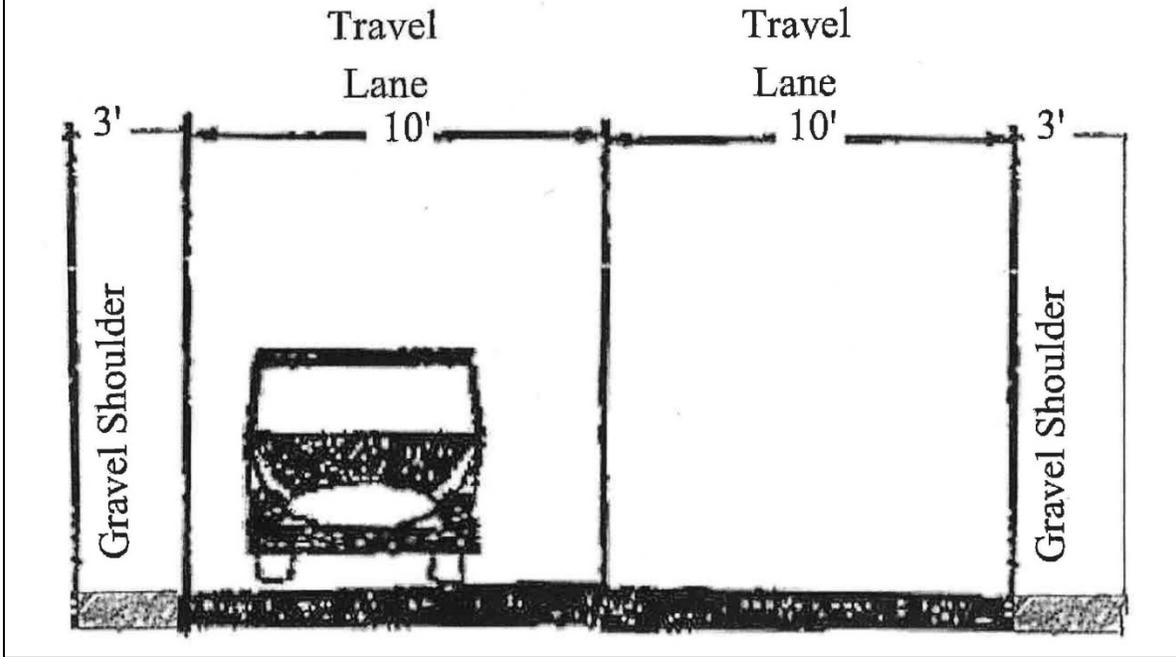


FIGURE 4

MINIMUM STANDARD

PRIVATE STREET
7 OR MORE LOTS

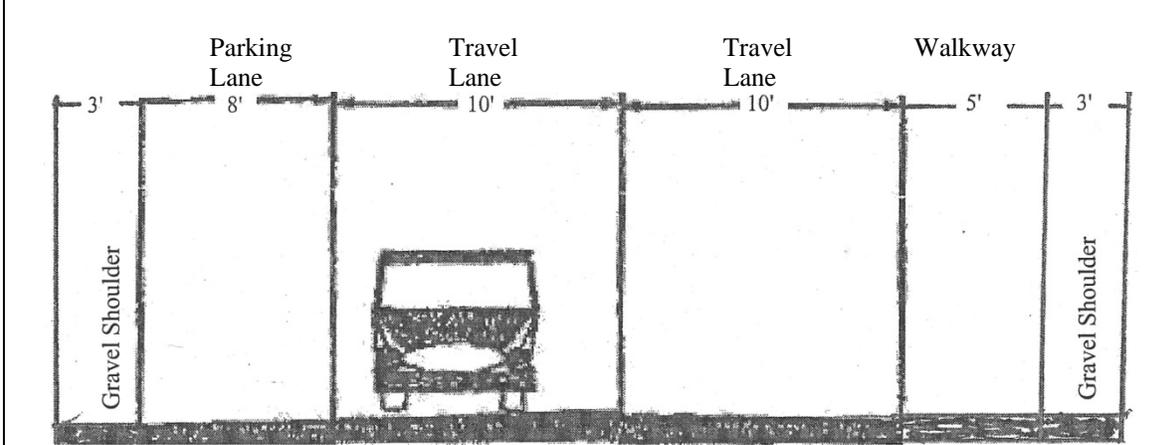


Figure 5

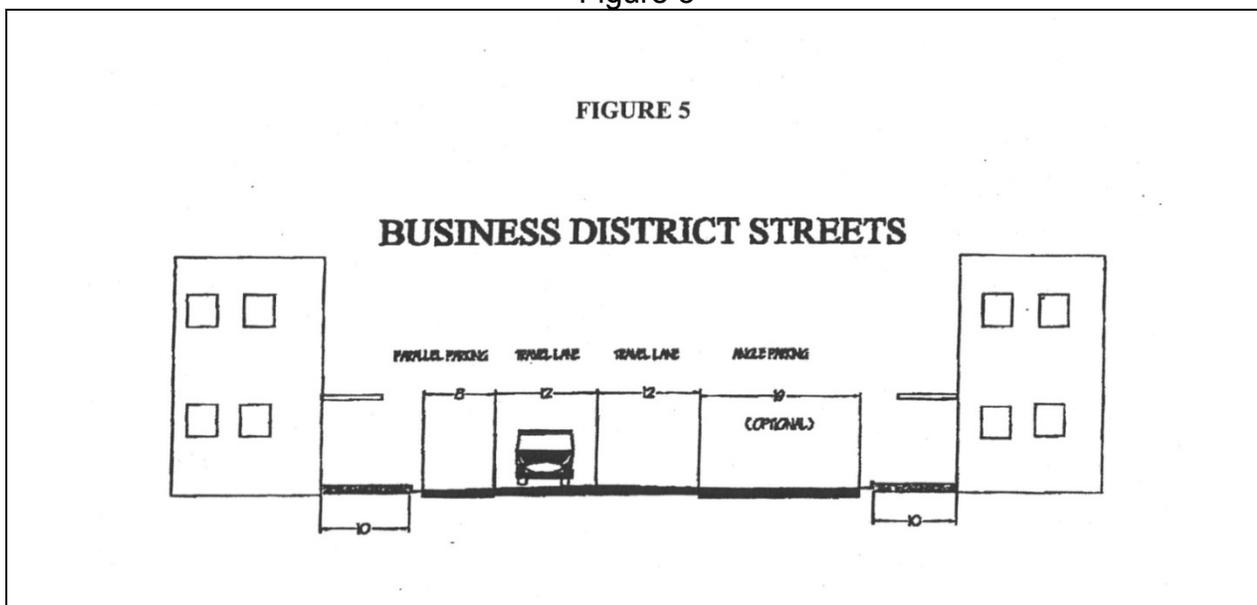


Figure 6

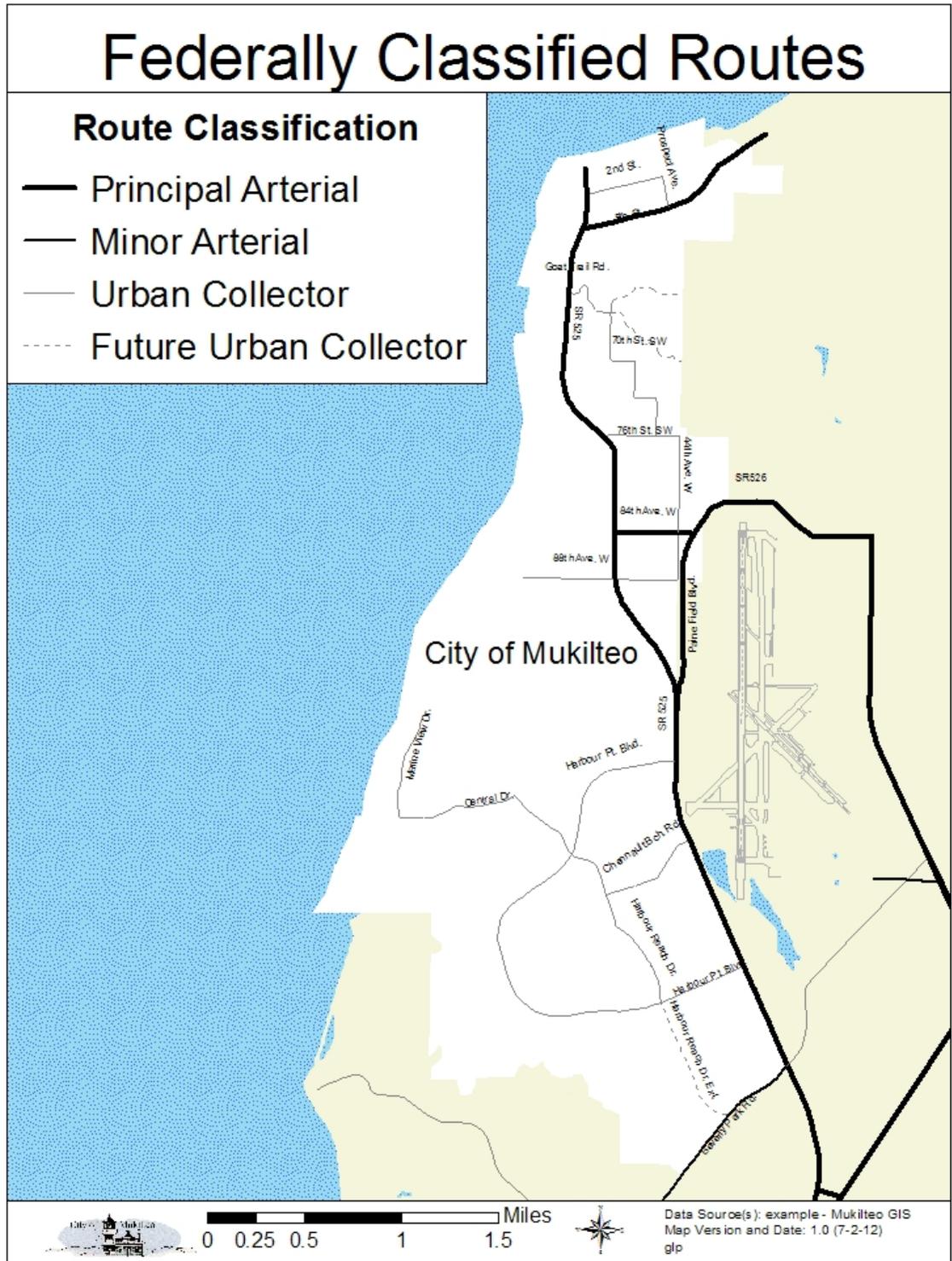
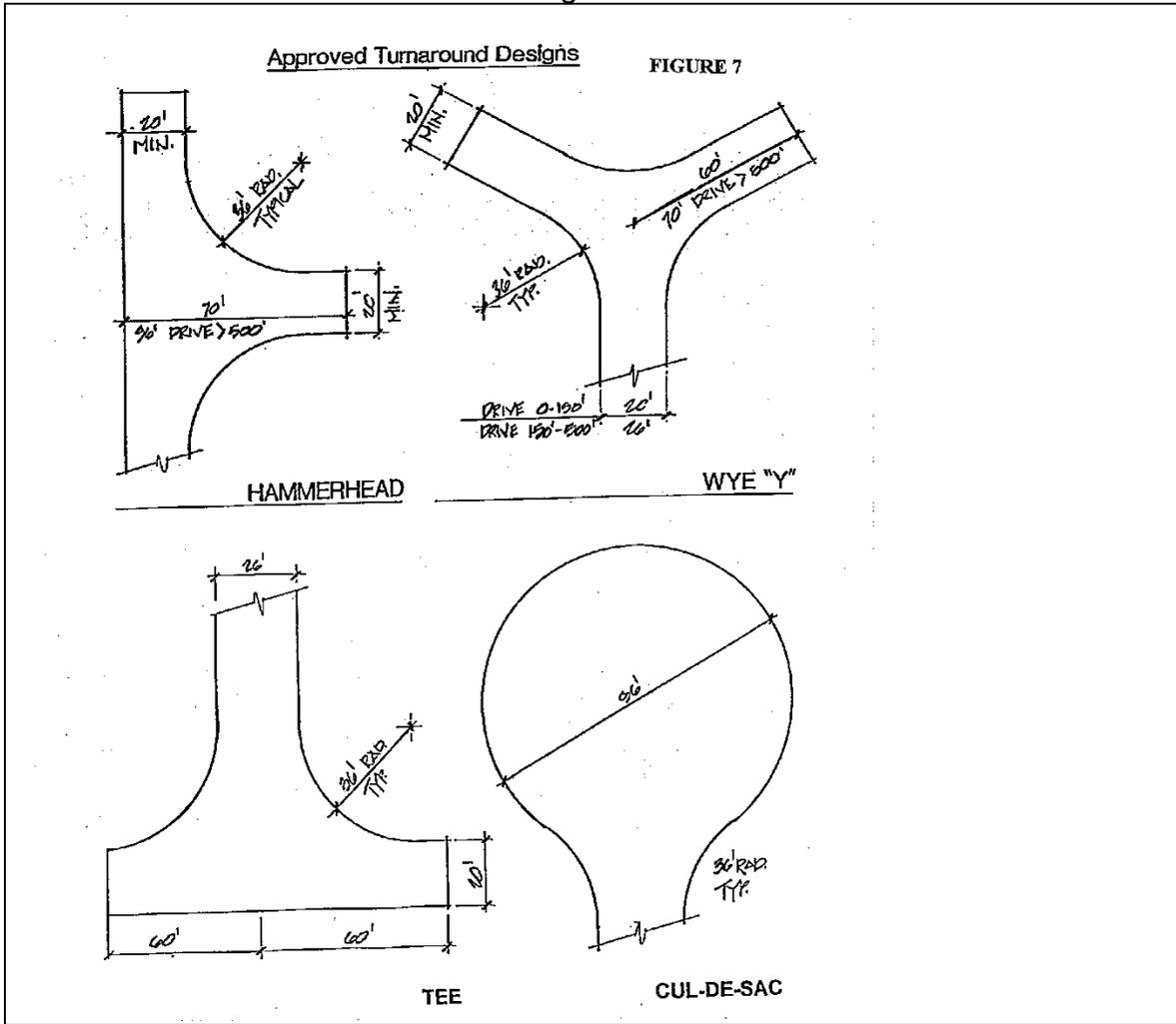


Figure 7



LIST OF DRAWINGS

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Chapter 4

Drainage and Erosion Control

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SECTION 1: STORM DRAINAGE DESIGN STANDARDS

PURPOSE

It is the purpose of this Chapter to implement the City of Mukilteo Surface Water Management Ordinance No. 1222, and to provide the Construction Standards and Specifications for Mukilteo Municipal Code (MMC) 13.12.

It is expressly the purpose of this Chapter to provide for and promote the health, safety, and welfare of the general public through sound development policies and construction procedures which respect and preserve the City's watercourses; to minimize water quality degradation and control of sedimentation of creeks, streams, ponds, lakes, and other water bodies; to preserve and enhance the suitability of waters for contact recreation and fish habitat; to preserve and enhance the aesthetic quality of the waters; to maintain and protect valuable groundwater quantities, locations, and flow patterns; to ensure the safety of City roads and rights-of-way; and to decrease drainage-related damages to public and private property.

The Standards established by this Chapter are intended to represent the minimum design standards for the construction of storm drainage facilities, erosion control, and stream channel improvements. Compliance with these Standards does not relieve the designer of the responsibility to apply conservative and sound professional judgment to protect the health, safety, and welfare of the general public. Special site conditions and environmental constraints may require a greater level of protection than would normally be required under these Standards. The designer must apply these Standards bearing in mind these constraints.

APPLICABILITY

- A. All persons taking any of the following actions or applying for any of the following permits and/or approvals, shall, unless otherwise exempt, be required to submit for approval by the Public Works Director or Designee, a Site Plan with their application and/or request:
1. Creation or alteration of new or additional impervious surfaces.
 2. New development.
 3. Redevelopment.
 4. Building permit.
 5. Grading permit.
 6. Subdivision approval.
 7. Short subdivision approval.
 8. Commercial, industrial, or multifamily site plan approval.
 9. Planned unit development or Master Plan Development.
 10. Conditional use permits.
 11. Substantial development permit required under RCW 90.58 (Shoreline Management Act).
 12. Right-of-Way use.
 13. Logging, clearing, and other land disturbing activities.
 14. Contain, or be adjacent to, a floodplain, stream, lake, wetland or closed depression, or a critical area as defined by the Mukilteo Municipal Code.

Site Plan shall indicate the character of the existing site, topography, natural drainage features on or adjacent to the site, the location and dimensions of all impervious

surfaces, flow arrows indicating the direction of stormwater flows onsite, and any offsite flows entering the site, the proposed method of utilizing the existing drainage system.

- B. Commencement of construction, grading, or site alteration work under any of the permits or approvals listed in the subsection above shall not begin until such time as final approval of the Construction Stormwater Pollution Prevention Plan (SWPPP) has been granted by the Public Works Director or Designee.
- C. Guidance on preparing a Permanent Stormwater Control Plan – Water Quality System is contained in the adopted edition of the State Department of Ecology’s (D.O.E.) Stormwater Management Manual for Western Washington, which is the City’s adopted Technical Manual.
- D. Other agencies such as those listed below may require drainage review for a proposed project’s impact on surface and storm waters. The applicant should take care to note that these other agency drainage requirements are separate from, and in addition to, City of Mukilteo drainage requirements. The applicant will be responsible to coordinate joint agency drainage review, including resolution of any conflicting requirements between agencies.

<u>Agency</u>	<u>Permit/Approval</u>
Snohomish County Health District	On-Site Sewage Disposal and Well Permits
Washington State Department of Transportation	Developer/Local Agency Agreement
Washington State Department of Ecology	Short Term Water Quality Modification Approval
Washington State Dept. of Fish and Wildlife	Hydraulic Project Approval
Washington State Department of Ecology	Dam Safety Permit
United States Army Corps of Engineers	Section 10 Permit
United States Army Corps of Engineers	Section 404 Permit
Washington State Department of Ecology	Industrial Stormwater Permit
Washington State Department of Ecology	Construction Stormwater Permit
Washington State Department of Ecology	Underground Injection Control Permit
Department of Natural Resources	Aquatic Land Use Permit
Washington State Department of Ecology	401 Water Quality Permit

Refer to Volume I of the D.O.E Stormwater Management Manual for additional permit information.

EXEMPTIONS

- A. Stormwater facilities owned and maintained, or development undertaken by the Washington State Department of Transportation in state highway rights-of-way which are regulated by and meet the requirements of Chapter 173-270 WAC, the Puget Sound Highway Runoff Program, are exempted from the requirements of this Chapter.
- B. Commercial agriculture, including only those activities conducted on lands defined in RCW 84.34.020(2), and production of crops or livestock for wholesale trade.
- C. Forest practices regulated under Title 222 Washington Administrative Code, except for Class IV general forest practices, as defined in WAC 222-16-050, that are conversions from timber land to other uses.
- D. Activities not requiring machinery for construction or excavation and that are not subject to other environmental regulation are considered exempt from the provisions of this chapter.
- E. Requests for exemption shall be filed in writing with the Public Works Director or Designee, and shall adequately detail the basis for granting an exemption.

ILLCIT DISCHARGES

Illicit discharges to stormwater drainage systems are prohibited. Illicit shall mean all non-stormwater discharges to stormwater drainage systems that cause or contribute to a violation of State water quality, sediment quality, or groundwater quality standards, including but not limited to sanitary sewer connections, industrial process water, interior floor drains, car washing, and gray water systems.

STORM DRAINAGE DESIGN STANDARDS

A. Stormwater Management Design Manual.

The latest edition of the State Department of Ecology's Stormwater Management Manual for Western Washington, as the same may be issued or amended from time to time, is hereby adopted and incorporated by this reference, and is hereinafter referred to as the "Ecology Manual." Authority is hereby delegated to the director to adopt such administrative changes or amendments to the Ecology Manual as necessary or appropriate to conform to local circumstances; provided, that such changes and amendments shall be consistent with the purpose and intent of this chapter and in no case be less stringent than currently adopted standards. The director shall at all times maintain and make available for public inspection the Ecology Manual, as amended.

B. Minimum Requirements for New Development and Redevelopment.

Storm Drainage Design shall be in accordance with the minimum requirements for new and redeveloped sites as established in the adopted (D.O.E) Stormwater Management

Manual Chapter 2, Volume I (Minimum Requirements for New Development and Redevelopment). Total new and or redeveloped impervious surfaces shall be calculated as a total for the development, including areas onsite and within public right of way.

C. Stormwater Site Plans.

Minimum Site Plan submittals shall be in accordance with the adopted (D.O.E.)

Stormwater Management Manual Chapter 3, Volume I (Preparation of Stormwater Site Plans). Offsite analysis and mitigation shall be performed per Chapter 3, Volume I of the D.O.E. manual.

D. BMP and Facility Selection Process.

Selection of Facilities and BMP for Permanent Stormwater Control Plans shall be determined in accordance with the BMP and Facility Selection process per the adopted (D.O.E.) Stormwater Management Manual Chapter 4, Volume I (BMP and Facility selection process for Permanent Stormwater Control Plans).

E. Construction Stormwater Pollution Prevention.

Construction Stormwater Pollution Prevention Plans (SWPPP) shall be developed and designed in accordance with the adopted standard plans in this manual & the adopted (D.O.E) Stormwater Management Manual Chapter 3, Volume II on developing and implementing a Construction SWPPP. Each of the 12 elements must be included in the Construction SWPPP unless an element is determined to be not applicable to the project. The checklists in section 3.3 (D.O.E. manual) may be helpful in preparing the Construction SWPPP.

F. Basin Planning.

Adopted and implemented watershed-based plans may be used to modify any or all of the Minimum Requirements, provided that the level of protection for surface or ground water achieved by the basin plan will equal or exceed that which would be achieved by the Minimum Requirements in the absence of a basin plan. Basin plans shall evaluate and include, as necessary, retrofitting of Bumps for existing development and/or redevelopment in order to achieve watershed-wide pollutant reduction goals. Standards developed from basin plans shall not modify any of the above requirements until the basin plan is formally adopted and fully implemented by the City.

G. Water Quality Sensitive Areas.

Where the Public Works Director or Designee determines that the minimum requirements do not provide adequate protection of water quality sensitive areas, whether on site or within the drainage basin, more stringent controls shall be required to protect water quality. Stormwater treatment BMPs shall not be built within natural vegetated sensitive area buffers except for necessary conveyance systems as approved by the City Planner.

H. Conveyance System Design.

Closed drainage systems or culverts on a major stream or creek as determined by the

Public Works Director, or designee, shall be designed to convey flows from a one hundred year recurrence storm event. All other closed drainage systems shall be designed to convey flows from a twenty five year recurrence storm event, unless otherwise required by the Public Works Director or Designee.

I. Temporary Construction Entrance.

The temporary construction entrance should be cleared of all vegetation, roots, and other objectionable material. Any drainage facilities required because of washing should be constructed according to specifications in the plan. If wash racks are used, they should be installed according to manufacturer's recommendations. Construct stabilized construction entrance in accordance with Plan 4-040-014.

J. Oil Control Devices.

Sites shall evaluate the need for an oil control device in accordance with the adopted (D.O.E.) Stormwater Management Manual Chapter 4, Volume I (BMP and Facility Selection Process for Permanent Stormwater Control Plans). A Coalescing Plate Separator per standard plan 4-040-017 shall be required for Oil/Lube shops, Vehicle Repair, Wash Bays, Car Washes, and any other applications deemed necessary by the City Engineer. For Fueling Stations an Oil Stop Valve (OSV) such as the AFL/Clark OSV or approved equivalent shall be installed in a manhole or other approved structure prior to the Coalescing Plate Separator. The Oil Stop Valve uses a ballasted float set at a specific gravity between that of oil and water. When an oil spill occurs, the float loses buoyancy as the oil level increases until it finally shuts off the discharge port. The spill will then be confined within the structure and piping for removal and disposal by a hazardous waste hauler. Tees & Elbows will not be approved as an oil control device. Sites requiring oil control devices per the manual will be required to install a coalescing plate separator or storm filter type device for oil control and or additional controls deemed necessary by the City Engineer.

K. Debris and trash racks.

To be installed on inlet and outlet piping where trash removal is warranted. Construct and install in accordance with Standard Plans 4-040-006 and 4-040-007.

L. Discharge from Roof Drains.

Runoff from roofs and individual lots may be collected and discharged into the storm drainage system. Refer to Standard Plans 4-040-015 and 4-040-016 for details. Roof drains may also be infiltrated or dispersed in accordance with the adopted D.O.E Stormwater Management Manual, Volume III, Chapter 3 (Roof Downspout Controls). Roof drains shall not be connected to the sanitary sewer.

M. Storm Sewer Extension Required.

(1.) (The owner of any property which is not connected to the public storm drainage system shall be required to extend any storm drainage line which is within 200 feet of the property, and to connect to and use the same for all developed portions of the property, under any of the following circumstances:

- (a) As a condition of final approval of a subdivision;
- (b) As a condition of final approval of a short subdivision;
- (c) As a condition of final approval of a binding site plan for any mobile home park, condominium, planned unit development, industrial park, or shopping center.
- (d) As a condition of any building, grading, paving, or other development approval, including rezones or conditional use permits, which will have a significant adverse impact upon storm drainage; as determined by the Public Works Director or Designee.

(2.) The Public Works Director or Designee may waive the requirement of subsection (1) if it is found that the capacity or condition of the existing public storm drainage system is insufficient or inadequate to serve the subject property; or if it would cause a practical difficulty to require the connection of the subject property to the public storm drainage system by reason of circumstances which are unique to the property and not generally shared by other properties in the vicinity.

N. Extension for Full Lot Frontage (MMC 13.12.150)

Whenever a property owner desires to connect to the public storm drainage system, the property owner shall be required to extend the storm drainage lines for the full frontage of the lot which is being connected. If it can be shown that no future extensions beyond said lot will occur, a waiver may be obtained from the Public Works Director or Designee and the owner need only extend the line to the nearest point of connection on the lot.

O. Fencing

Detention ponds with side slopes steeper than 3:1 or with a maximum water depth greater than 3 feet shall require a powder or vinyl coated chain link perimeter fence.

Side slope averaging shall not be allowed. See Standard Plans 3-501-007 & 008.

During construction of drainage facilities and prior to installation of permanent perimeter fence, contractor shall ensure temporary fencing is in place around open

cut facilities while construction activities are not underway on said facility and/or at the end of each day until placement of permanent fencing is complete.

MANDATORY REQUIREMENTS FOR ALL STORM DRAINAGE IMPROVEMENTS

- A. Commencement of construction, grading or under any of the permits or approvals shall not begin until such time as final approval of the Construction Stormwater Pollution

Prevention Plan (SWPPP) has been granted by the Public Works Director or Designee.

- B. All engineering plans and specifications submitted for approval shall be stamped by a professional engineer registered in the State of Washington. All site improvement plans and the cover page of copies of the Drainage Report must be signed and dated by the professional engineer approving the design.
- C. All land boundary surveys used, and legal descriptions prepared, for preparing preliminary and engineering plans must be stamped by a professional land surveyor registered in the State of Washington. Topographic survey data and mapping prepared specifically for a proposed project may be performed by the professional engineer stamping the engineering plans as allowed by the Washington State Board of Registration for Professional Engineers and Land Surveyors.
- D. All retention/detention criteria shall be analyzed using the hydrograph methods and routing procedures included in the (D.O.E.) Stormwater Management Manual for Western Washington, or as approved by the Public Works Director or Designee.
- E. Open retention/detention facilities and infiltration facilities shall not be located in dedicated public road right-of-way areas unless specifically approved by the Public Works Director or Designee, or unless part of a Low Impact Development (LID) using approved LID facilities.
- F. Emergency overflow provisions shall be installed in such a manner as to direct waters away from all structures without causing failure of those structures. The impact of a system failure should be analyzed both in terms of on-site and off-site effects. The impacts may be to adjacent properties or to elements of the public drainage system or other private systems. Retention/detention and infiltration facility design must take into account overflows which may result from:
- (1.) Higher-intensity or longer-duration storms than the design storm.
 - (2.) Plugged orifices.
 - (3.) Inadequate storage due to sediment buildup.
 - (4.) Debris blockage.
 - (5.) Other reasons causing system failure.
- G. Maximum allowable release rates from stormwater detention systems shall be based upon the pre-development runoff from the site. The allowable release rate shall be determined as specified in the (D.O.E.) Stormwater Management Manual for Western Washington. The allowable release rate may be decreased on a case-by-case basis due to constraints in the drainage system downstream.

- H. All drainage system elements shall provide for adequate maintenance and accessibility at all times. No storm drainage system elements shall be located within ten feet of or underneath any structure and the system shall be designed to eliminate interference from underground utilities and from conditions which exceed design loads for any pipe or other structural elements.
- I. all aspects of public health and safety must be carefully reviewed in every drainage control system plan. Protective measures are often necessary and shall be required whenever deemed appropriate by the Public Works Director or Designee. The protective measures themselves shall be designed so as not to constitute hazards or nuisances.
- J. The designer should consider system reliability in terms of layout, specification of materials, methods of installation and the influence of other activities in the area both during and after construction.
- K. The frequency and difficulty of future maintenance should be minimized by thorough consideration of possible failures in the system during design and what would be required to correct the problem. Design adjustments to ease maintenance should be a major consideration.
- L. The designer should consider multiple use of elements of the drainage system. This multiple use may require compromise, but no adjustments to usual policies or standards will be made which would impact the system to the degree that risk of failure, impact of system failure or exposure of the general public to hazard is increased.
- M. The use of the site should be evaluated to determine if hazardous materials or other pollutants are likely to be present, and if extraordinary design considerations are necessary.
- N. The visual impact and other potential problems (mosquito breeding, smell, etc.) should be considered. Concerns will vary with the site environment, but aesthetics should always be of concern to the designer.
- O. Offsite improvements may be required if on-site controls are insufficient to mitigate impacts due to flooding, erosion, sedimentation, pollution, or habitat degradation.
- P. Roof drains shall not be connected to the sanitary sewer.
- Q. Developer shall meet all applicable federal, state, and local water quality standards prior to discharge to any wetland, stream, river, or lake.
- R. Surface water entering the subject property shall be received at the naturally occurring location, and surface water exiting the subject property shall be discharged at the natural location with adequate energy dissipaters to minimize downstream damage and with no diversion at any of these points.
- S. Where open ditch construction is used to handle drainage within the subject property, a minimum of 15 feet will be provided between any structures and the top of the bank of the defined channel.
 - (a.) In open channel work, the water surface elevation will be indicated on the plan and profile drawings. The configuration of the finished grades constituting the banks of the open channel will also be shown on the drawings.

- (b.) Proposed cross-section of the channel will be shown with stable side slopes. Side slopes will be no steeper than 3H:1V unless stabilized in some manner approved by the Public Works Director or Designee.
 - (c.) The 100-year water surface elevation of the design flow will be indicated on the cross-section.
- T. Where a closed system is used to handle drainage within the subject property, all structures will be a minimum 10 feet from the closed system.
 - U. The proposed measures for controlling runoff during construction shall include a statement indicating the proposed staging of all clearing, grading and building activities.
 - V. Drainage facilities shall be designed and constructed in accordance with City Standards and as directed by the Public Works Director or Designee.
 - W. Vegetation shall be established on areas disturbed or other locations on the site to protect watercourses from erosion, siltation or temperature increases.
 - X. Surface water exiting from the subject property shall have pollution control and oil separator devices installed at the discharge point from the subject property when draining parking lots of paved roadway surfaces or handling contaminated storm runoff.

LOW IMPACT DEVELOPMENT

For all Low Impact Development (LID) practices please refer to MMC 15.16. The purpose of the chapter is to permit design flexibility and provide performance criteria for LID. LID is a stormwater management and land development strategy utilized in site design and construction that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to mimic natural hydrologic functions. Implementation of LID benefits streams, lakes, and Puget Sound by moderating the impacts of stormwater runoff generated by the built environment. LID techniques may supplant or augment traditional, structural stormwater management solutions. Low impact best management practices (BMPs) are described in the current Low Impact Development Technical Guidance Manual for Puget Sound, published by the Puget Sound Action Team.

LID objectives are:

- (1.) To retain or restore native forest cover to capture, infiltrate, and evaporate all or a portion of the rainfall on a site;
- (2.) To confine development to the smallest possible footprint and minimize land disturbance and site grading;
- (3.) To preserve or restore the health and water-holding capacity of soils;
- (4.) To incorporate natural site features that promote stormwater infiltration;
- (5.) To minimize all impervious surfaces and especially those that drain to conventional piped conveyance;
- (6.) To manage stormwater through infiltration, bio-retention, and dispersion; and
- (7.) To manage stormwater runoff as close to its origin as possible in small, dispersed facilities.

ROADWAY DRAINAGE

A. General

- (1.) Designs: Drainage facilities shall be designed consistent with the City of Mukilteo Drainage and Erosion Control Design Standards and the (D.O.E.) Stormwater Management Manual for Western Washington, adopted edition. Structures shall be placed and constructed as shown in these Standard Plans. Roadway storm detention facilities shall be provided for all improvements to public roads exceeding 5000 sq. ft. of impervious surface. Roadway storm drainage facilities shall be provided for any and all road construction. Roadway storm drainage facilities shall be designed and constructed in such a manner as to provide opportunity for drainage of adjacent properties.
- (2.) Specifications: Materials, construction, and testing are specified in the WSDOT Standard Specifications. The City Engineer may amend, delete, or add Specifications or Standard Plans.
- (3.) Conflicts: Where technical conflicts may occur between this document and other Storm Drainage Design Standards, the City Engineer shall decide which document governs.

B. Storm Sewers and Culverts

- (1.) Minimum pipe size shall be 12-inch diameter. Eight-inch diameter may be permitted on cross street laterals to avoid utility conflict or meet shallow gradient.
- (2.) Driveway culverts shall conform to Standard Plan 4-080-003.
- (3.) The following pipes, specified in Section 9-05 of the WSDOT Standard Specifications are allowed: plain and reinforced concrete storm sewer pipe, aluminized Type 2 corrugated steel, steel spiral rib and corrugated steel with asphalt coating Type 1, spiral rib and corrugated aluminum, ductile iron, polyvinyl chloride (PVC), lined corrugated polyethylene (LCPE), smooth wall polyethylene (SWPE), and high density polyethylene (HDPE) pipe.
- (4.) LCPE pipe shall have a smooth interior wall meeting or exceeding Type III, Category 4 or 5, Grade P33 or P34, Class C per ASTM D1248, minimum cell Class ASTM D3350, 324420C. LCPE shall also meet or exceed the requirements of AASHTO M294, Type S. Pipe shall be placed in accordance with City Specifications.
- (5.) SWPE pipe with maximum SDR of 32.5, minimum cell Class ASTM D3350, 334434C and meeting City Specifications for ductile iron pipe with restrained mechanical joints may be used for outfalls on steep slopes.
- (6.) PVC pipe shall require the use of bedding material for flexible pipe specified in Section 9-03 of the WSDOT Standard Specifications.
- (7.) LCPE and SWPE shall be bedded on gravel backfill for pipe bedding as specified in Section 9-03 of the WSDOT Standard Specifications. Above ground installation of SWPE does not require pipe bedding.
- (8.) When required by the City Engineer, PVC, LCPE and SWPE shall be tested using the deflection test procedure described in Section 7-17.3(2)H of the WSDOT Standard Specifications. Pipe sections failing the mandrel test shall be

replaced, except that reshaping SWPE and LCPE sections to meet requirements may be allowed if the original deformation is less than 20 percent.

- (9.) Concrete pipe shall be rubber gasketed and metal pipe shall be gasketed and securely banded.
- (10.) Leak testing shall be conducted if required by the City Engineer.
- (11.) If the depth to the top of pipe exceeds eight feet, the City Engineer shall select the pipe material.
- (12.) Bevel the projecting ends of culverts within the right-of-way per Standard Plans 4-080-004 and 4-080-005.
- (13.) French drains shall be installed where it is desirable to intercept the ground
- (14.) water and transfer it off site. See Standard Plan 4-080-006.

C. Catch Basins and Junctions

- (1.) Catch basins shall be spaced no greater than 150 feet for road grades less than one percent, 200 feet for grades between one and three percent; and 300 feet for grades three percent and greater. Where the width of the tributary road surface exceeds 35 feet, the cross slope exceeds four percent, catch basin spacing analysis is required. The analysis must show the depth of water at the edge of the traveled way does not exceed 0.12 feet or extend more than five feet into the traveled way for the 10-year storm event, using flows generated by the rational formula.
- (2.) New catch basins shall be constructed and installed in conformance with Standard Plans 4-080-007 through 4-080-010, and 4-080-014.
- (3.) Connections to pipe systems may be made without placing a catch basin or manhole on the mainline provided all of the following conditions are met:
 - (a.) The mainline pipe is 48 inches or greater and at least two times the size of the connecting pipe.
 - (b.) All connections shall be performed in accordance with the manufacturer's recommendations. Standard shop fabricated tees, wyes and saddles shall be used. Concrete pipe connections shall be constructed in accordance with Standard Plan 4-080-011.
 - (c.) There shall be a catch basin or manhole on the connecting pipe within two to ten feet of the external wall of the main line. See Standard Plan 4-080-011.
 - (d.) Offset angle of connecting pipe to mainline, horizontally and vertically, shall be less than 45 degrees.
- (4.) Connections to an existing system shall avoid directing project runoff through downstream quality/quantity control facilities. Receiving systems may have separate conveyance facilities: one connecting to quality/quantity facilities and one by-passing them. Connection shall be to the bypass system where available.
- (5.) Use Type 2 catch basins where the depth to the invert of the pipe exceeds five feet or the nominal diameter of the pipe is greater than 18 inches.
- (6.) Manholes may be used in lieu of catch basins if they do not collect surface water. Manholes shall be constructed and installed in conformance with Standard Plans 4-080-012 through 4-080-014.

- (7.) Roof and yard drains, or other concentrated flow from adjacent property shall not discharge over the surface of roadways or sidewalks.
- (8.) Catch basins or manholes are required when joining differing types of pipes.
- (9.) Curb inlets shall be used to collect street runoff when catch basins are not used. See Standard Plan 4-080-015.

D. Frames, Grates, and Covers

- (1.) Unless otherwise specified, use vaned grates with standard frames in the traveled way, gutter, or shoulder. Vaned grates shall not be located within cross walks, (see Standard Plan 4-080-016).
- (2.) At sag vertical curves, or before intersections with a grade 3% or greater, use through curb inlet frames. Where through curb inlets cannot be used, three vaned inlets shall be used. One shall be located at the approximate low point and another on either side at 25 foot horizontal spacing, but not greater than 0.1 foot above the low point, (see Standard Plan 4-080-018).
- (3.) New & existing catch basins that do not or no longer collect runoff shall use or be replaced with locking frame and solid covers (See Standard Plans 4-080-022, 4-080-023 and 4-080-024).
- (4.) All storm drain covers and grates shall be locking. Manufacturer as approved by the City Engineer.
- (5.) Where vertical concrete curbs or extruded curbs are used, catch basin frames and grates shall be installed in accordance with Standard Plan 4-080-025.
- (6.) Slit drains may be used when approved by the City Engineer. At a minimum slit drains shall have catch basins at either end unless used as a driveway culvert. The maximum distance between catch basins along a slit drain shall be 50 feet.

E. Erosion Control.

Filter fabric fences shall be constructed of material designed specifically for erosion control. The fabric shall be composed of rot-proof woven or non-woven polymeric fibers and be free of chemical treatment or coating that may reduce permeability. The fabric shall meet the following test requirements: minimum 110 lbs. grab tensile strength per ASTM D-1682, minimum 40 lbs. puncture strength per ASTM D-751 Modified, and 20-100 Equivalent Opening Size (EOS) based on U.S. standard sieves. See Standard Plan 4-040-008.

ADDITIONAL INFORMATION REQUIRED

The requirements of this Chapter may be modified at the discretion of the Public Works Director or Designee when more information is deemed necessary for proper review.

INSPECTION - CONSTRUCTION

- A. All activities regulated by this Chapter shall be inspected by the City engineering department and/or the City planning department. Projects shall be inspected at various stages of the work to determine that adequate control is being exercised. Stages of work requiring inspection include, but are not limited to: Pre-construction, installation of BMPs, land-disturbing activities, installation of utilities, landscaping, retaining walls, and completion of project. When required by the Public Works Director or Designee, special inspection and/or testing shall be performed.

- B. At the time of approval of the Construction Stormwater Pollution Prevention Plan or Stormwater Site Plan for the subject property, a schedule for inspection to ensure proper review of construction and facilities will be established by the Public Works Director or Designee. The following inspections may be required as a minimum:
- (1.) Initial Inspection. Whenever work on the site preparation, grading, excavations, or fill is ready to be commenced, but in all cases prior thereto;
 - (2.) Rough Grading. When all rough grading has been completed;
 - (3.) Bury Inspection. Prior to burial of any underground drainage structure;
 - (4.) Finish Grading. When all work including installation of all drainage structures and other protective devices has been completed;
 - (5.) Planting. When erosion control planting shows active growth.
- In some circumstances not all of the above inspections may be necessary. It shall be the discretion of the Public Works Director or Designee to waive or combine any of the above inspections as dictated by conditions.
- C. A final inspection by the City will be required at the end of the 2 year maintenance bond period. The Developer will be responsible for repairing any deficiencies found as a result of the City inspection.
- D. Failure to comply with the provisions of these standards may result in enforcement pursuant to MMC Chapter 13.12.330.

MODIFICATION OF FACILITIES DURING CONSTRUCTION

The Engineer may require that the construction of drainage facilities and associated project designs be modified or redesigned if conditions occur or are discovered which were not considered or known at the time the permit or approval was issued, such as uncovering unexpected soil and/or water conditions, weather-generated problems, or undue materials shortages. Any such modifications made during the construction of drainage control facilities shall be shown on the final approved drainage plans, a revised copy of which shall be provided to the Engineer for filing as an as-built drawing. All engineered plans, modifications & as-builts are to be on the NAVD 88 Datum.

VARIANCES

- A. A person requesting a variance from the Standards of this Chapter shall file an application with the Public Works Director or Designee setting forth the location of the development, the owner of the property, the nature of the variance request, and the reason for the variance. An application fee established by the City Council shall accompany the application. The application fee shall be applied to all the costs and expenses incurred by the City in processing the application. In the event the filing fee is inadequate the City shall bill any additional costs to the applicant which shall be paid within 30 days and prior to the granting of any variance herein.
- B. When considering an application for variance, the Public Works Director or Designee shall evaluate the following factors:
- (1.) Sufficient capacity of downstream facilities under design conditions.
 - (2.) Maintenance of the integrity of the receiving waters.
 - (3.) Possibility of adverse effects of retention/detention.

- (4.) Utility of regional retention/detention facilities.
 - (5.) Capability of maintenance of the system.
 - (6.) Structural integrity of abutting foundations and structures.
 - (7.) That the health, safety, and welfare of the City is not adversely affected.
 - (8.) The variance provides equivalent environmental protection and is in the overriding public interest; and that the objectives of safety, function, environmental protection, and facility maintenance, based upon sound engineering, are fully met.
 - (9.) That there are specific physical circumstances or conditions affecting the property such that the strict application of these provisions would deprive the applicant of all reasonable use of the site in question, and every effort to find creative ways to meet the intent of the minimum standards has been made.
 - (10.) That the granting of the variance will not be detrimental to the public health, welfare, and safety, not injurious to other properties in the vicinity and/or downstream, and to the quality of the receiving waters.
 - (11.) The variance is the least possible variance that could be granted to comply with the intent of the Minimum Requirements.
- C. Requests for variances shall be filed in writing with the Public Works Director or Designee and shall adequately detail the basis for granting a variance.
 - D. The decision of the Public Works Director or Designee concerning a request for a variance shall be made in writing.
 - E. The decision of the Public Works Director or Designee may be appealed to the Hearing Examiner by filing written notice of appeal with the City Clerk within 10 days of service of the Public Works Director or Designee's decision.

ESTABLISHMENT OF REGIONAL FACILITIES

- A. In the event that public benefits would accrue due to modification of the Storm Drainage Plan for the subject property to better implement the recommendations of the City's comprehensive drainage plans, the Public Works Director or Designee may recommend that the City should assume some responsibility for the further design, construction, operation, and maintenance of drainage facilities receiving runoff from the subject property. Such decision shall be made concurrently with review and approval of the Storm Drainage Plan.
- B. In the event the City decides to assume responsibility for all or any portion of the design, construction, operation, and maintenance of the facilities, the applicant shall be required to contribute a pro rata share to the estimated cost of the facilities, provided that such share shall not exceed the estimated costs of improvements the applicant would otherwise have been required to install. The applicant may be required to supply additional information at the request of the Public Works Director or Designee to aid in determination by the City. Guidelines for implementing this section will be defined by the Public Works Director or Designee.

BONDS REQUIRED

- A. Performance Bond. The city engineer is authorized to require applicants constructing LID retention/detention/infiltration and/or other drainage treatment/abatement facilities to post a performance bond(s). Where such applicants have previously posted, or are required to post, other such bonds on the facility itself or on other construction related to the facility, such person may, with the permission of the city engineer and to the extent allowable by law combine all such bonds into a single bond, provided that at no time shall the amount thus bonded be less than the total amount which would have been required in the form of separate bonds, and provided further that such a bond shall on its face clearly delineate those separate bonds which it is intended to replace.
- B. Maintenance Bonds. After satisfactory completion of the facilities and release of the performance bond by the city, the applicant constructing the facility shall commence a two-year period of satisfactory maintenance of the facility. A maintenance bond to be used at the discretion of the city engineer, to correct deficiencies in said maintenance affecting public health, safety and welfare must be posted and maintained throughout the two-year maintenance period. The amount of the maintenance bond shall be fifteen percent of the construction cost of the drainage facilities. In addition, the maintenance bond shall cover the cost of design defects and/or failure in workmanship of the facilities throughout the two-year maintenance period.
- C. Liability Policy. The person constructing the facility shall maintain a liability policy in an amount to be determined by the City which shall name the City of Mukilteo as an additional insured and which shall protect the City from any liability for any accident, negligence, failure of the facility, of any other liability whatsoever, relating to the construction or maintenance of the facility. The liability policy shall be maintained for the duration of the facility by the owner of the facility, provided that in the case of facilities assumed by the City for maintenance, the liability policy shall be terminated when the City maintenance responsibility commences.

OPERATION AND MAINTENANCE REQUIREMENTS (PRIVATE SYSTEMS)

A. Maintenance Required. All stormwater facilities shall be maintained in accordance with the adopted D.O.E Stormwater Manual, the LID Technical Guidance Manual (for LID Sites), and the provisions provided herein. Systematic, routine preventive maintenance is preferred.

B. Minimum Standards.

The following are the minimum standards for the maintenance of stormwater facilities:

- (1.) It shall be the duty of the owner to maintain, repair and restore, at the owner's expense, all private stormwater and drainage systems located on the owner's property. Maintenance shall be performed in accordance with the minimum requirements of this Chapter and in accordance with any maintenance schedule adopted during the plan review process for constructing the facilities. The City shall be granted the right to conduct emergency maintenance as deemed necessary by the City Engineer. The City will be reimbursed by the private owner for any emergency maintenance costs incurred.
- (2.) No person shall cause or permit any drainage system located on the owner's property to be obstructed, filled, graded, or used for disposal of debris.
- (3.) Minimum requirements for the maintenance of stormwater facilities shall include but not be limited to the following:
 - (a.) Annual inspection.
 - (b.) Removing brush, vegetation, debris and other blockage.
 - (c.) Removing sediment, silts, sands and gravels.
 - (d.) Removing oils, grease, tars and other pollutants.
 - (e.) Repairing and replacing damaged facilities as required.
 - (f.) All other activities necessary to ensure the facilities are operating as designed.

C. Disposal of Waste From Maintenance Activities. Disposal of waste from maintenance activities shall be conducted in accordance with the minimum Functional Standards for Solid Waste Handling, Chapter 173-304 WAC, guidelines by the Washington State Department of Ecology for disposal of waste materials from stormwater maintenance activities, and where appropriate, the Dangerous Waste Regulations, Chapter 173-303 WAC.

D. Maintenance of Drainage Swales, Biofiltration Swales, and Ditches.

- (1.) Open drainage swales and ditches which are located on private property (and often located within public drainage easements) shall be cleaned, maintained, and protected in continuous compliance with the standards and specifications of the City. Responsibility for such work shall be borne by the owner of the underlying property; provided, that the City shall bear such responsibility for regional drainage ditches and facilities, as determined by the Director of the Department of Public Works, if the same are publicly owned or within public easements which are accessible to City personnel.
- (2.) Vegetated stormwater facilities, such as grassed swales and biofilters, shall be inspected semi-annually and mowed and replanted as required by the Public

Works Director or Designee. Clippings shall be removed and properly disposed of.

- (3.) No person shall cause or permit open drainage swales and ditches to be obstructed, filled, graded, or used for disposal of debris.
 - (4.) Upon receiving express approval from the Director of the Department of Public works, a property owner may convert a drainage swale or ditch into an enclosed drainage system. Such work shall be performed in compliance with the standards and specifications of the City and shall be subject to inspection and approval by the Department of Public Works. Culverts and drainage appurtenances installed by private owners may be conveyed to the City, at no cost, by a bill of sale.
- E. Authority. The Public Works Director or Designee shall have the authority to enforce this Chapter. The Public Works Director or Designee is authorized to develop an inspection program for stormwater facilities in the City of Mukilteo. Persons or occupants of the site shall allow any authorized representative of the Public Works Department access at all reasonable times to all parts of the premises for the purpose of inspection, sampling, and record examinations.
- F. Maintenance Inspection Program. Whenever implementing the provisions of the inspection program or whenever there is cause to believe that a violation has been or is being committed, the inspector is authorized to inspect during regular working hours and at other reasonable times all stormwater drainage systems within the City to determine compliance with the provisions of these regulations.

Procedures: Prior to making any inspections, the inspector shall present identification credentials, state the reason for the inspection, and request entry.

- (1.) If the property or any building or structure on the property is unoccupied, the inspector shall first make a reasonable effort to locate the owner or other person(s) having charge or control of the property or portions of the property and request entry.
 - (2.) If after reasonable effort, the inspector is unable to locate the owner or other person(s) having charge or control of the property, and has reason to believe the condition of the stormwater drainage system creates an imminent hazard to persons or property, the inspector may enter.
 - (3.) Unless entry is consented to by the owner or person(s) in control of the property or portion of the property or unless conditions are reasonably believed to exist which create imminent hazard, the inspector shall obtain a search warrant prior to entry, as authorized by the laws of the State of Washington.
 - (4.) The inspector may inspect the stormwater drainage system without obtaining a search warrant provided for in Subsection 3 above, provided the inspection can be conducted while remaining on public property or other property when permission to enter has been obtained.
- G. Inspection Schedule. The Public Works Director or Designee shall establish a master inspection and maintenance schedule to inspect appropriate stormwater facilities that are not owned by the City. Inspections shall be annual. Critical stormwater facilities may require a more frequent inspection schedule.

- H. Inspection and Maintenance Records. As existing stormwater facilities are encountered, they shall be added to the master inspection and maintenance schedule. Records of new stormwater facilities shall include the following:
- (1.) As-built plans and locations.
 - (2.) Findings of fact from any exemption granted by the local government.
 - (3.) Operation and maintenance requirements and records of inspection, maintenance actions and frequencies.
 - (4.) Engineering reports, as appropriate.
- I. Orders. The Engineer shall have the authority to issue an owner or person an order to maintain or repair a component of a stormwater facility BMP to bring it in compliance with this Chapter, and/or City regulations. The order shall include:
- (1.) A description of the specific nature, extent and time of the violation and the damage or potential damage that reasonably might occur.
 - (2.) A notice that the violations or the potential violations cease and desist and, in appropriate cases, the specific corrective actions to be taken.
 - (3.) A reasonable time to comply, depending on the circumstances.

OPERATION AND MAINTENANCE - ASSUMPTION BY CITY

The City may assume the operation and maintenance responsibility of retention/detention or other drainage treatment/abatement facilities according to City policy after the expiration of the two-year operation and maintenance period if:

- A. All of the requirements of this Chapter have been fully complied with.
- B. The facilities have been inspected and approved by the Engineer after two years of operation.
- C. All necessary easements entitling the City to properly operate and maintain the facility have been conveyed to the City and recorded with the Snohomish County Auditor.
- D. All drainage facilities including but not limited to ponds, vaults, CB's, Control Structures, shall be cleaned to a condition acceptable to the City prior to assumption.
- E. The developer has supplied to the City an accounting of capital, construction, and operation and maintenance expenses or other items, for the drainage facilities up to the end of the two-year period, for the purposes of establishing the basis for future bonding requirements for other developments.

ENFORCEMENT AND PENALTIES

General. Enforcement action shall be in accordance with Chapter 13.12.330 of the Mukilteo Municipal Code.

SECTION 2: EROSION CONTROL BEST MANAGEMENT PRACTICES (RESERVED)

APPENDIX A

Construction Plan Completeness Checklist

Project Name: _____

Construction Plan Examiner: _____

Date: _____

Review #: 1 2 3 4 5

NOTE: All materials submitted for review must use and comply with City of Mukilteo Development Standards (MDS), Mukilteo Municipal Code (MMC), the most recent adopted version of the Department of Ecology's Stormwater Management Manual for Western Washington (DOE-SWMM), and the Low Impact Development Technical Guidance Manual for Puget Sound (LID). Any deviations shall include a deviation request form. MMC and MDS can be found on line at <http://www.ci.mukilteo.wa.us>

FILE INVENTORY AND PLAN SUBMITTAL

Plans shall comply with the following reports and materials that are applicable:

- Preliminary Plat Map
- Hearing Examiner's Report & Related Correspondence (check for latest report)
- Preliminary Plat Approval Ordinance
- SEPA Checklist. Submittal shall contain: (check satisfied conditions, circle missing elements)
- A complete set of surveyed construction plans prepared by a licensed surveyor and stamped by a Professional Engineer. Plans need to include applicable information such as a Cover Sheet, Grading Plan, SWPPP, Drainage Plan, Signage and Striping Plan, Roads and Transportation Plans, and Construction Notes and Details.
- A Drainage Report
- A Geotechnical/Hydrogeotechnical Investigation Report
- A Sensitive Areas or Wetland Investigation Report

Note: Fees for review of construction plans will be charged as outlined in the City of Mukilteo Fee Schedule

GENERAL REQUIREMENTS FOR PLAN SETS

- Sheet size shall be 24" x 36" unless otherwise requested by the City of Mukilteo.
- Construction plan view shall be drawn to common engineering scale (maximum 1"=50')
- The ratio of the vertical to the horizontal scale shall be 1V:10H.
- All details and cross sections must have titles and identify scale. Details must reference a source.
- For each standard detail in the engineered construction drawings plan set, include the corresponding City of Mukilteo Standard Detail number from the MDS or other source. When possible, correlate the standard detail number to the plan view sheets.
- All details, cross sections, and profiles must be labeled and referenced out on their corresponding plans.
- Roads and general lot layout must conform to the approved preliminary plat map.

- Construction Plans must comply with Hearing Examiners Decision or Notice of Preliminary Approval.
- Notes and specifications are to be provided directly from MDS, WSDOT Standard Specifications, manufacturer specifications, LID specifications, and materials specifications, and are to be provided in their entirety. At a minimum, plan sets are to contain the following applicable notes from the MDS:
 - General Notes
 - Storm Drainage Notes
 - Site Grading & TESCP Notes
 - Temporary Gravel Construction Entrance Notes
 - Hydroseeding General Notes
 - Biofilter Swale Planting Notes
 - Stand Pipe & Sedimentation Pond Maintenance Notes
 - Maintenance of Silt Barrier Notes
 - Construction sequence and schedule

GENERAL REQUIREMENTS FOR ALL PLAN SHEETS

All sheets in the construction plans shall include the following information:

- a project title.
- a page title (For example: Site Plan, Drainage Plan...).
- a Title Block to contain Engineering Firm, Project name, Name of sheet, Sheet ___ of ___, located on right margin.
- a Professional Engineer's seal, signature, date of signature, and expiration date.
- ¼ Section, Section, Township and Range centered at top border on all sheets.
- an approval block for Engineering located in lower right corner.
- an approval Block for Fire Marshal on Water Plans or other applicable plans.
- an approval Block for Post Master on applicable plans.
- a note on all sheets that "The Contractor shall verify the location of all existing utilities prior to any construction. Agencies involved shall be notified within a reasonable time prior to the start of construction." Provide a prominent note "Call 1-800-424-5555 Before You Dig".
- a north arrow.
- an engineering scale on site plans shall not be more than 1" = 20' nor less than 1" = 50'.
- a complete legend for line types, hatches, and symbols on plans and profiles.

GENERAL REQUIREMENTS FOR ALL SITE AND TOPOGRAPHIC INFORMATION

- Show onsite benchmark locations and provide descriptions.
- All property lines are to be shown with bearings, distances, and ties to controlling corners or subdivision corners.
- Show location, size and type of any existing or proposed structures, impervious areas, drainage facilities, wells, drain fields, drain field reserve areas, roads, pavement, striping, signs, easements, setbacks, and utilities on the site. Clearly differentiate between proposed and existing elements.
- Property lines are to be shown with bearings, distances, and ties to controlling corners or subdivision corners. Show existing and proposed drainage pattern(s), storm drainage and LID facilities (e. g. ditch lines, culverts, catch basins, french drains, surface drainage or sheet flow arrows). Clearly differentiate between proposed and existing.
- Show location of all property boundaries, easements, lakes, streams, creeks and structures on site and within 50 feet of site boundaries.
- Show location of all wetlands, sensitive areas, primary association areas for threatened and endangered species, and erosion hazardous areas and landslide areas on site and those within 100 feet of the site boundaries.

- Show location of all setbacks and buffers from critical areas, property lines, structures, and utilities.
- Show location of all existing and proposed native growth protection areas (NGPAs) or native growth easements (NGPAE) on the site.
- Show boundaries or limits of site disturbance, clearing, and grading.
- Show location of any off-site critical areas, and boundaries of areas which are affected by the construction.
- Map existing infiltration systems, rain gardens located within the distances of concern.
- Show location and type of all existing and proposed water quality and source control BMPs.
- Show location and type of existing and proposed water quality control facilities or measures such as detention ponds, rain gardens, roof gardens or other BMPs. Provide high water elevations for design of infiltration systems, if any.
- Grading setback details are to include 1/2 height of fill, 1/5 height of cut, 2' minimum.

COVER SHEET

- Provide a preliminary plat map that complies with requirements outlined in MMC 17.13
- Provide a Vicinity Map with north arrow and scale.
- Provide name, address and phone number of applicant or developer, engineer, architect, contractors, etc.
- Provide a legal description of site along with property tax account number(s) of subject property and adjacent properties.
- Provide a Sheet Index.
- Provide a horizontal and vertical datum or basis for elevation and the benchmark used for elevation control (NAD 83 and NAVD 88 datum only).

GRADING PLAN

- Provide cut volumes and fill volumes in cubic yards.
- Depict locations considered for cut and fill calculations.
- Provide finished floor elevations if applicable.
- Provide lot areas if applicable.

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

Note: The SWPPP will comply with all criteria outlined in Vol. 1, Ch. 3 of the DOE DOE-SWMM. For LID developments, the SWPPP will also comply with the LID Manual.

- Address all 12 Elements of the SWPPP.
- Show location and type of proposed measures (BMPs) for Temporary Erosion and Sedimentation Control (TESC) or SWPPP as contained in Vol. 2 of the DOE Stormwater Management Manual for Western Washington.
- Provide details and notes for erosion control.
- Show locations of temporary stockpiles.
- Show all construction BMPs and reference or provide standard details.
- Show construction site access.
- Show flow arrows or paths for stormwater control during construction.
- Protect drain inlets.
- Stabilize soils, slopes, channels and outlets.
- Control sources of pollution.
- Control dewatering (sites requiring dewatering will need to develop a dewatering plan).

DRAINAGE PLAN

Note: The Drainage Plan and stormwater design will comply with Chapter 4 of the MDS, Chapter 13 of the MMC, the DOE-SWMM, and the LID Manual.

- Provide spot elevations/flow arrows/contours for stormwater flow at post-development construction.
- Convey or control water from proposed and existing roads and/or adjacent properties.
- Show locations of emergency overflows and bypasses.
- Show roof drains and yard drains.
- Provide a 20' minimum drainage easement for open channel storm drainage facilities and closed storm drainage facilities.
- Provide a 15' minimum building setback line from the top of bank of a defined channel.
- Provide a 10' minimum building setback for closed drainage systems.
- If a drainage easement is to run along a lot line within a subdivision, the easement may straddle the lot line provided the drainage facilities can be located entirely along one lot.
- Access is to be provided for inspection and maintenance purposes for drainage structures that are to be located within an easement.
- No storm sewer pipe within a drainage easement shall have its centerline closer than 5' to a rear or side property line.
- Minimum storm sewer pipe diameter in right of way and between catch basins and/or manholes shall be 12".
- 24" pipe cover is preferred for storm drain systems. Alternative pipe material and City approval will be required for pipes with less than 24" of cover.
- Show all sizes, pipe materials and structures.
- Show direction of pipe flow.
- Show pipe's invert, slope, length, type, and catch basin grate elevation on plan view.
- Show existing and proposed storm drainage system profile(s) with pipe size, slope, catch basin type, location, station, rim and invert elevations.
- Provide energy dissipater at outfalls

STORMWATER SITE PLAN (DRAINAGE REPORT)

Note: The Stormwater Site Plan shall comply with Volume 1 of the DOE-SWMM.

- The Stormwater Site Plan will be submitted in the following format:
- Section 1 Introduction – Provide a project description, pertinent details, and proposed land uses.
- Section 2 Existing Site Conditions – Address subject matter outlined in Volume 1, Chapter 3.1.1 in the DOE-SWMM. Provide a figure that illustrates the subject matter.
- Section 3 Developed Site Conditions – Address subject matter outlined in Volume 1, Chapter 3.1.2 in the DOE-SWMM. Provide a figure that illustrates the subject matter.
- Section 4 Off Site Analysis – Address subject matter outlined in Volume 1, Chapter 3.1.3 in the DOE-SWMM. Provide a figure that illustrates the subject matter.
- Section 5 Minimum Requirements – Address all applicable Minimum Requirements in Volume 1, Chapter 2 of the DOE-SWMM. Show how you arrived at the requirements by including Figure 2.2 or 2.3.
- Section 6 Stormwater Control Plan – Address subject matter outlined in Volume 1, Chapter 3.1.5 in the DOE-SWMM. Discuss the following information:
 - Existing Site Hydrology
 - Developed Site Hydrology
 - Treatment and Flow Control Needed
 - Performance Standards and Goals per Volume 1, Chapter 4 of the DOE-SWMM for BMP and Facility Selection Process. Include Figure 4.1 from the DOE-SWMM showing your selection process.
 - Flow Control System
 - Water Quality System
 - Conveyance System Analysis.

- Section 7 SWPPP – Address all 12 Elements outlined in Volume 1, Chapter 3.1.6 and Volume 1, Chapter 2 of the DOE-SWMM.
- Section 8 Project Overview – Address subject matter outlined in Volume 1, Chapter 3.1.7 in the DOE-SWMM.
- Hydrologic Analysis and Flow Control Design shall be analyzed using the most recent version of the Western Washington Hydrology Model.
- Include all computer generated reports, sources, references, tables, graphs, aerials, maps, and calculations used for all design and analysis in appendices.

ROADS AND TRANSPORTATION PLAN

Note: Road and transportation design shall comply with Chapter 3 of the MDS.

- Travel and parking lane(s) must be labeled on the roadway sections.
- Provide typical roadway sections and identify street names and classifications.
- Provide road alignment with 100 foot stationing and stationing at PC's and PT's with bearing and distances on centerlines
- Provide right of way lines and widths for existing and proposed road and intersecting roads
- Provide channelization plan and match or tie into existing channelization.
- Provide a signalization plan.
- Provide street illumination per MDS (street illumination). PUD submittal may be required.
- Provide curve data with radius, delta, arc length, and tangent distance for all curves. These may be shown in a curve table.
- Show details for frontage improvements and overlays.
- Show limits of existing and proposed paving including grinds and overlays.
- Side slopes shall not be steeper than 4:1 and are to be designed per MDS (side slopes).
- All new residential access streets shall have traffic calming devices per MDS (traffic calming).
- Provide mailbox location and detail with Post Master approval per MDS (mail boxes).
- Rock facings over 4' in height are to be designed by a Geotechnical Engineer and are subject to approval by the Public Works Director or Designee.
- Road grades are to comply with MDS (arterial roads, residential access streets, commercial access streets).
- Minimum road grade is to be 0.5%.
- Grades are to be shown to 3 decimal places and as a percent.
- Vertical curves are to show elevations and stations of vertical PI(s), PC(s), PT(s), sag (low point) and crest (high point).
- Super elevation criteria/data is required to be shown for all roads greater than 25 MPH design speed.
- Include sight distance triangles at each roadway intersection. Sections (stopping sight distance) and (entering sight distance) of the MDS provide design standards for the sight distance triangles.

APPENDIX B

DEVELOPMENT STANDARD HANDOUT Trench Backfill and Restoration

A. Materials and workmanship shall be in conformance with the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction. Construction shall be in conformance with Standard Plans 3-703-001 through 3-703-003, with the details and conditions outlined in the Right-of-Way Use Permit, and with the following:

- (1) Trench restoration shall be accomplished with a patch or an overlay as required by the City Engineer.
- (2) If a patch is used, the trench limits shall be sawcut prior to final patch.
- (3) All trench and pavement cuts shall be made by sawcuts or by grinding. The sawcuts or grinding shall be a minimum of 1 foot outside the trench width or as directed by the city inspector.
- (4) If the Right-of-Way Use Permit requires an overlay, then the contractor may use a jackhammer or drum grinder for the cutting of the existing pavement.
- (5) Within the top 4 feet of trenching, backfill shall be crushed surfacing materials or a controlled-density fill.
- (6) If the existing material is determined by the City Inspector to be suitable for backfill and the trench is not perpendicular to a travel lane or driveway, the contractor may use the native material as long as the top 8 inches is crushed surfacing material.
- (7) Material used for backfill below 4 feet in depth must be approved by the City Inspector.
- (8) All trench backfill shall be compacted to 95% maximum density, as described in Section 2-03 of the Standard Specifications.
- (9) Backfill compaction shall be performed in 8-to 12-inch lifts. The compaction tests shall be performed in maximum increments of 2 feet. The test results shall be given to the City Inspector for review and approval prior to paving. Material testing will be required for trench backfill (native or imported), asphalt, and concrete. Testing shall be performed by a certified independent testing laboratory. The cost of testing is the responsibility of the franchise utility or contractor. The number of tests required shall be the same as for asphalt density testing, or as directed by the inspector.
- (10) Temporary restoration of trenches for overnight use shall be accomplished by using cold mix, asphalt-treated base (ATB), or steel plates. ATB used for temporary restoration may be dumped directly into the trench, bladed out, and rolled. After rolling, the trench must be filled flush with asphalt to provide a smooth riding surface.
- (11) ATB shall be placed to the compacted depth as shown on standard plans or as directed by the City Engineer. Asphalt cement shall be paving asphalt AR-4000W. Materials shall conform to Section 9-02.1(4) of the Standard Specifications.
- (12) Tack shall be emulsified asphalt grade CSS-1 as specified in Section 9-02.1(6) of the Standard Specifications and shall be applied to the existing pavement and edges of sawcuts as specified in Section 5-04 of the Standard Specifications.
- (13) Asphalt concrete Class B shall be placed on the prepared surface by an approved paving machine and shall be in accordance with the requirements of Section 5-04 of the Standard Specifications, except that longitudinal joints between successive layers of asphalt concrete shall be displaced laterally a minimum of 12 inches, unless otherwise approved by the Inspector. Fine and coarse aggregate shall be in accordance with Section 9-03.8 of the Standard Specifications. Asphalt concrete over 2 inches thick shall be placed in equal lifts not to exceed 2 inches each.

(14) Cuts for trenches in all street surfaces, walks, and driveways shall be either ground or sawcut. Ground joints shall be feathered and shimmed to provide a smooth surface. Feathering and shimming shall be accomplished by raking out the oversized aggregates from the class B mix. Surface smoothness shall conform to Section 5- 04.3(13) of the Standard Specifications. The paving shall be corrected by removal and repaving of the trench only.

(15) Compaction of all lifts of asphalt shall be at an average of 92% of maximum density as determined by WSDOT Test Method 705. The number of tests required per square foot of trenching shall be as follows:

- One test for less than 50 square feet of trenching area
 - Two tests for 50 to 100 square feet of trenching area
 - Three tests for 100-plus to 300 square feet of trenching area
 - One test for every 200 square feet over 300 square feet of trenching area or every 100 lineal feet of trench, if applicable
- Testing shall be performed by a certified independent testing laboratory. The cost of testing is the responsibility of the franchise utility or contractor. The testing is not intended to relieve the contractor from any liability for the trench restoration. It is intended to show the Inspector and the city that the restoration meets these specifications.

(16) All joints shall be sealed using paving asphalt AR4000W.

B. Whenever a new street is completed or an overlay of an existing street has been completed within five (5) years of a newly proposed cut, additional roadway restoration shall be required as determined by the Public Works Director or designee.

C. Asphalt patch depths will vary based upon the classification of the streets being trenched. The asphalt depths shall be shown on the Right-of-Way Use Permit and the work shall be performed as required by the attached details. The minimum paving depths for all trenching are:

- (1) 8 inches for arterial streets
- (2) 6 inches for local streets
- (3) 4 inches for driveway approaches and walkways

D. When trenching occurs within the street shoulder, the shoulder shall be restored to its original or better condition within 30 days of first opening the trench.

E. The final patch shall be completed within 30 days of the first opening the trench. This time frame may be adjusted if delays are due to inclement weather or other adverse conditions. Delay of final patch or overlay work must be approved by the City Engineer.

F. Any patch or overlay Downtown shall be permanent and completed as soon as possible. Hours of work on all arterials shall be limited to 8:30 AM to 2:30 PM or as determined by the Public Works Director or designee.

APPENDIX C

RECORD DRAWING CHECKLIST

This checklist is provided only as a guide for the Record Drawing review process. Refer to the RECORD DRAWING REQUIREMENTS Document for a detailed explanation of each step. If you have any questions in regards to this process, call the Engineering Department.

- A registered Professional Engineer or Professional Land Surveyor shall verify that installation of roads and utilities was in accordance with the approved construction plans. Any variance from the plans needs to be noted on the appropriate sheet with related design object changed to reflect the field survey.
- Prepare three Hard copies of the preliminary Record Drawings for review. Record Drawing submittals are to include all sheets or original approved construction drawings except the TESCP & City Standard Details. (See Hard Copy Format Requirements).
- Submit three folded Hard Copies of the preliminary Record Drawings for review to Public Works Engineering Division.
- Review Record Drawing submittal. If review of the preliminary Record Drawings reveals errors and/or omissions, the drawings (redlines and Digital copies) will be returned to the Engineer/Surveyor for corrections. The Engineer/Surveyor shall make all corrections in the digital copy, re-plot and resubmit the revised preliminary Record Drawings and redlines for re-review.

Upon approval of preliminary Record Drawings, the Engineer/Surveyor will be notified to proceed with the “Final Submittal”.

- The Final “Record Drawing” plan submittal shall bear the Professional Engineer/Professional Land Surveyor Stamp, Signature and Date and be reproduced on the following media:

Digital file on CD or DVD (without P.E./P.L.S. Stamp)

Full size MYLAR*

THREE sets of full size PRINTS, FOLDED.

*Sepia Mylars or Xerox type copies will not be accepted as a substitute for Mylar.

APPENDIX D

GENERAL NOTES

1. All work and materials shall be in accordance with current City of Mukilteo Standards and Specifications; the current edition of the Washington State Department of Transportation Standard Specifications for Road, Bridge, and Municipal Construction; and the adopted edition of the Washington State Department of Ecology Stormwater Management Manual for Western Washington.
2. All work within the plat and City right-of-way shall be subject to the inspection of the City engineer or designated representative.
3. Prior to any site construction including clearing/logging or grading, the site clearing limits shall be located and field identified by the project surveyor (or project engineer) as required by these plans. The project surveyor's name and phone number is _____.
4. The developer, contractor and project engineer is responsible for water quality as determined by the monitoring program established by the project engineer. The project engineer's name and phone number is _____.
5. Prior to any site work, the contractor shall contact the City of Mukilteo Community Development at 425-355-4141 X251 to schedule a preconstruction conference. Engineered as-built drawings in accordance with the current adopted International Building Code shall be required prior to final site approval.
6. The contractor shall be responsible for obtaining all permits for utility, road, and right-of-way construction. The contractor for this project is _____.
Contact person is _____, Phone _____, Mobile phone _____, emergency phone _____.
7. The Construction Stormwater Pollution Prevention (SWPP) facilities shall be constructed in accordance with the approved SWPP plans prior to any grading or extensive land clearing. These facilities must be satisfactorily maintained until construction and landscaping is completed and the potential for on-site erosion has passed. Sediment laden waters shall not enter the natural drainage system.
8. Noncompliance with the requirements for; erosion controls, water quality and clearing limits may result in revocation of; project permits, plan approval and bond foreclosures.
9. Trench backfill of new utilities and storm drainage facilities shall be compacted to 95% maximum density (modified proctor) under roadways and 90% maximum density (modified proctor) off roadways. Compaction shall be performed in accordance with Sections 7-08.3(3) and 2-03.3(14)C - Method B as defined in the current edition of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction.
10. The owner and contractor shall be responsible for locating and protecting all existing utilities prior to beginning construction. Location of utilities shown on construction plans are based on best records available and are subject to variation. For assistance in utility location, call 1-800-424-5555.
11. Prior to construction the owner and/or contractor shall notify the project engineer and the City engineer when conflicts exist between the plans and field conditions. Conflicts shall be resolved (including plan and profile revisions) and resubmitted for approval prior to proceeding with construction.
12. The contractor shall keep two sets of plans on site at all times for recording as-built information; one set shall be submitted to the project engineer, and one set shall be submitted to the City engineer at completion of construction and prior to final acceptance of work.

13. A grading permit issued pursuant to the current adopted International Building Code, and approval of the temporary erosion and sedimentation control plan shall be obtained from the Community Development Department prior to any on-site grading work not expressly exempt by the current adopted International Building Code.
14. Prior to commencement of framing, final drainage inspection and approval of the roof leader and positive footing systems shall be completed by the Building Department. Call 360-363-8100 to schedule the inspection.

STORM DRAINAGE NOTES

1. Prior to any site work including drainage, the contractor shall contact the City of Mukilteo Community Development at 425-263-8000 to schedule a pre-construction conference.
2. All pipe shall be placed on stable earth. If in the opinion of the City inspector, the existing trench foundation is unsatisfactory, then it shall be excavated below grade and backfilled with gravel bedding to support the pipe.
3. Backfill shall be placed equally on both sides of the pipe or pipe-arch in 6" average depth loose lifts. Maximum lift depth shall not exceed 9". Each lift shall be thoroughly compacted. Compacted lifts must extend at least one pipe diameter on each side of the pipe or to the side of the trench. Backfill over the pipe shall be performed in accordance with Sections 7-04.3(3) and 2-03.2(14)C - Method B and C of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction.
4. All grates located in the gutter flow line (inlet and catch basin) shall be depressed 0.1 feet below pavement level.
5. All catch basins are to be Type I unless otherwise approved by the City engineer or designated representative. The use and installation of inlets is not encouraged.
6. The contractor shall be responsible for adjusting all manhole, inlet and catch basin frames and grates to grade just prior to curb installation and/or paving.
7. All catch basins with a depth of 5 feet or greater to the flow line shall be Type II catch basins.
8. Vaned grates are required on all storm structures. All catch basins and manholes shall have locking lids. Rolled grates are not approved for use.
9. Polypropylene safety steps and ladder steps shall be provided in all manholes and shall be positioned correctly with the bolt areas on the rim.
10. Catch basin frames and grates shall be Olympic Foundry Model SM60, SM52, or SM44, locking type or equivalent. Model SM52 shall be referred to as a "Through Curb Inlet" on the plans.
11. Detention ponds with side slopes steeper than 3:1 or with a maximum water depth greater than 3 feet shall require a powder or vinyl coated chain link perimeter fence per standard plans 3-501-007 & 008. Side slope averaging shall not be allowed. All inlet and outfall pipes shall have a trash rack installed and a mortared riprap headwall. Refer to storm drainage note 18.
12. Prior to sidewalk construction; lot drainage systems, stub-outs and any behind sidewalk drains must be installed as required. Pipe shall be PVC 3034, or SDR-35. Stub-outs shall be marked with a 2" x 4" with 3 feet visible above grade and marked "storm". Locations of these installations shall be shown on the as-built construction plans submitted to the City.
13. Storm water retention/detention facilities, storm drainage pipe and catch basins shall be flushed and cleaned by the developer prior to; City of Mukilteo final acceptance of the project and; upon commencement and completion of the 2 year warranty period for the storm drainage system.
14. Unless otherwise noted, all storm sewer pipe shall be; (CP) non-reinforced concrete, ASTM C-14; (RCP) reinforced concrete for concrete pipe diameters 24" or greater, ASTM C-76; or (CMP) corrugated metal. CMP to be; galvanized steel with Treatment I

asphalt coating or better; or corrugated aluminum; or AASHTO M274-70 aluminized steel. All pipes shall be installed with rubber gaskets as per manufacturer's recommendations.

Coverage Requirements for 12" diameter pipe:

Backfill over pipe less than 12" requires RCP Class IV.

Backfill over pipe less than 24" requires RCP minimum.

Backfill over pipe greater than 24" requires 16 gage CMP minimum.

15. Corrugated Polyethylene Pipe (CPP):

A. All pipe shall be smooth interior. CPP shall be double-walled. All pipe shall meet AASHTO and ASTM specifications.

B. Upon request by the City inspector, all pipe runs shall pass the low pressure air test requirements of Section 7-04.3(1) E & F of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction. Pipe runs shall be tested with pipe loaded and compacted to finish grade.

C. Upon request by the City inspector, pipe shall be subject to mandrel testing (mandrel size = 90% of nominal pipe diameter).

D. Pipe shall be stored on site in shipping bunks on a flat level surface. This requirement will be strictly enforced; failure to comply may result in rejection of the pipe and/or future restriction on use of material.

E. Minimum depth of cover shall be 2 feet.

F. Couplings shall be integral bell and spigot or double bell separate couplings. Split couplings will not be allowed.

G. Backfill shall comply with Section 7-08.3(3) of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction modified as follows:

The second paragraph of Section 7-08.3(3) is deleted and replaced with the following:

The material used for backfilling around and to a point 1 foot above the top of the pipe shall be clean earth or sand, free from clay. Any gravel or stones included in the backfill shall pass through a 1 inch sieve.

16. All non-perforated metal pipe shall have neoprene gaskets at the joints. O-ring gaskets may be used for type-F coupling band.

17. Culvert ends shall be beveled to match side slopes. Field cutting of culvert ends is permitted when approved by the City engineer or designated representative.

18. All field cut culvert pipe shall be treated as required in the Standard Specifications or General Special Provisions.

SITE GRADING AND SWPPP NOTES

1. Noncompliance with the erosion control requirements, water quality requirements and clearing limits violations may result in revocation of project permits and plan approval and bond foreclosures.

2. Prior to any site construction, including clearing, logging or grading, the site clearing limits shall be located and field identified by the project surveyor (or project engineer) as required by these plans. The project surveyor's name and phone number is

3. The developer (or project engineer) is responsible for water quality as determined by the monitoring program established by the project engineer. The project engineer's name and phone number is

4. The Construction Stormwater Pollution Prevention facilities shall be constructed in accordance with the approved SWPPP prior to any grading or extensive land clearing. An inspection by the City of these facilities shall be arranged for by the contractor prior to any grading. These facilities must be satisfactorily maintained until construction and landscaping is completed and the potential for on-site erosion has passed.

5. All site work must be performed in accordance with the current City adopted International Building Code.
6. All earth work shall be performed in accordance with City Standards. A preconstruction soils investigation may be required to evaluate soils stability.
7. If cut and fill slopes exceed a maximum of two feet horizontal to one foot vertical, a rock or concrete retaining wall may be required. All rock retaining walls greater than four (4) feet in height are to be designed and certified by a professional engineer experienced in soil mechanics.
8. Stockpiles are to be located in safe areas and adequately protected by temporary seeding and mulching. Hydroseeding is preferred.
9. All structural fills shall be compacted to a minimum of 95% maximum density in the upper 4 feet & 90% maximum density below 4 feet as determined by modified proctor.
10. Prior to any site work pertaining to drainage, the contractor shall contact Community Development at 425-263-8000 to schedule a preconstruction conference.
11. Construction Stormwater Pollution Prevention measures shall be installed prior to any site work.
(See attached detailed drainage plan).
12. The surface of all slopes shall be compacted. This may be accomplished by over-building the slopes, then cutting back to final grades; or by compacting each lift as the slope is being constructed. All slopes shall be compacted by the end of each working day.
13. Upon completion of work, final reports must be submitted to the City in conformance with the current City adopted International Building Code.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

1. The temporary construction entrance should be cleared of all vegetation, roots, and other objectionable material. Any drainage facilities required because of washing should be constructed according to specifications in the plan. If wash racks are used, they should be installed according to manufactures specifications.
2. Gravel shall be crushed ballast rock, 8" to 12" in depth and installed to the specified dimensions at the entrance.
3. The gravel ballast rock shall be 4" to 8" in diameter and placed across the full width of the vehicular ingress and egress area. The length of entrance shall be a minimum of 100 feet.
4. If conditions on the site are such that most of the mud is not removed from vehicle tires by contact with the gravel, then the tires must be washed before vehicles enter onto a public road. Wash water must be carried away from the entrance to a settling area to remove sediment. A wash rack may also be used to make washing more convenient and effective.
5. The entrance shall be maintained in a condition which will prevent tracking or flow of mud onto public rights-of-way. This may require periodic top dressing with 2" stone, as conditions demand, and repair and/or clean out any structures used to trap sediment. All materials spilled, dropped, washed or tracked from vehicles onto roadway or into storm drains must be removed immediately.

HYDROSEEDING GENERAL NOTES

1. Construction Acceptance: Will be subject to a well-established ground cover that fulfills the requirements of the approved construction plans and City of Mukilteo Standards.
2. All disturbed areas such as retention facilities, roadway back slopes, etc., shall be seeded with a perennial ground cover grass to minimize erosion. Grass seeding will be done using an approved hydroseeder or as otherwise approved by the City of Mukilteo.

3. Preparation of Surface: All areas to be seeded shall be cultivated to the satisfaction of the City Inspector. This may be accomplished by disking, raking, harrowing, or other acceptable means.
4. Immediately following the finish grading, permanent vegetation shall be applied consistent with the design and maintenance standards for Temporary and Permanent Seeding in the City adopted Department of Ecology Stormwater Management Manual for Western Washington.
5. All hydroseeding firms shall have a printout of the application rate for each job readily available for inspection by the Construction Inspection Division of Community Development.
6. The City of Mukilteo Construction Inspection Division of Community Development shall be notified of potential hydroseeding prior to the commencement of same, to ensure compliance with these specifications.

MAINTENANCE OF SILTATION BARRIERS

1. Siltation barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Close attention shall be paid to the repair of damaged bales, end runs and undercutting beneath bales. Necessary repairs to barriers or replacement of bales shall be accomplished promptly. Sediment deposits should be removed after each rainfall. Sediment deposits must be removed when the sediment level reaches approximately one-half the siltation barrier height. Any sediment deposits remaining in place after the straw bale barrier is no longer required shall be dressed to conform to the existing grade, prepared and seeded.

STAND PIPE AND SEDIMENT POND MAINTENANCE

1. The embankment of the basin should be checked regularly to insure that it is structurally sound and has not been damaged by erosion or construction equipment. The emergency spillway should be checked regularly to insure that the lining is well established and erosion resistant. The siltation basin should be checked for sediment cleanout after each rainfall which produces runoff. When the sediment reaches the cleanout level, it shall be removed and properly disposed.

BIOFILTER SWALE PLANTING NOTES

1. Final engineering approval is contingent on swale inspection by the City of Mukilteo Construction Inspection Division of Community Development.
2. Inspection must be requested by calling the City of Mukilteo Community Development at 425-355-4141 X251 at least 24 hours prior to inspection date.
3. Erosion control seed mix or shingle-weave sod, as determined by the City Engineer or designated representative, shall be placed above the design water surface for the 6-month, 24-hour storm event. A minimum topsoil depth of 4" shall be placed within the swale. The topsoil surface shall be at design grade for the swale. An erosion control blanket shall cover the topsoil to prevent erosion of topsoil and seed mix until a well-defined ground cover is established. The wetted surface area as defined by the 6-month, 24-hour storm event shall be planted with wet tolerant plant species.
4. Recommended Seed Mix for Bioswales:

	% Weight	% Purity	% Germination
Tall or meadow fescue <i>Festuca arundinacea</i> or <i>Festuca elatior</i>	75-80	98	90
Seaside/Creeping bentgrass <i>Agrostis palustris</i>	10-15	92	85
Redtop bentgrass <i>Agrostis alba</i> or <i>Agrostis gigantea</i>	5-10	90	80

APPENDIX E

STORM WATER MANAGEMENT SUBMITTAL REQUIREMENTS

Most development within the City of Mukilteo that involves disruption of soils, or construction of buildings, streets, parking lots, etc., requires the issuance of a Clearing and Grading Permit. This packet contains material that will aid you in providing a complete application for this permit. Storm Water Management requirements are based on either the amount of soil being disrupted (grading, vegetation removal), or the amount of impervious surface that is created or replaced on a site (building footprint, concrete, asphalt or gravel parking, sidewalk, etc.).

Please follow the steps on the worksheets to determine the level of storm water management required for your project. Many applications will not need to use all information provided in this packet. If you need assistance in your determination, contact the engineering department at City Hall or call 425-263-8000.

STORM WATER MANAGEMENT REQUIREMENT CHECKLIST

Provide the following information as part of your submittal:

- Impervious surface calculation
- Storm water management requirement determination
- Storm water site plan and/or erosion control plan as stated on the applicable Requirements list I, II, or III
- Storm water management and erosion control acknowledgement form
- Attach a copy of General Construction Stormwater Pollution Prevention Plan (SWPPP) to Site Plan

IMPERVIOUS SURFACE CALCULATION

Impervious surface is a hard surface area that either prevents or retards the entry of water into the soil. The footprint of structures, sidewalks, concrete, asphalt and compact gravel areas are impervious surfaces.

The total square footage of impervious surface on your project site will determine the storm water management requirements and the storm water utility fees. Impervious surface calculations must include all the impervious area on your project site.

Provide detailed information about your project in the following table. Enter 0 in the sections that are not applicable to your project.

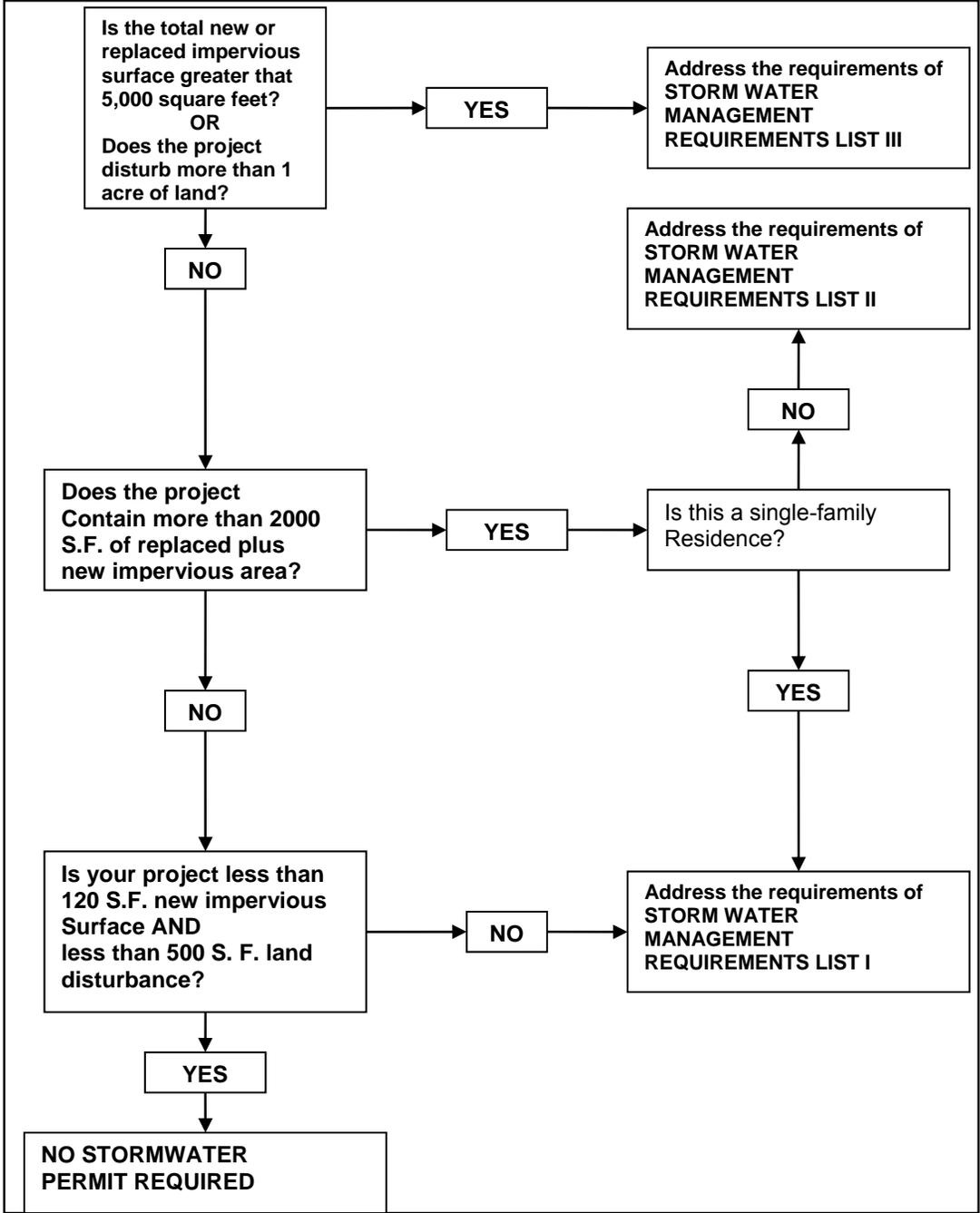
EXISTING	AREA (SQUARE FEET)
Structure	
Garage	
Sidewalks	
Porch(s)	
Gravel Drive/Parking	
Concrete or Asphalt Paving	
Pervious Paving*	
Others	
Total Existing Impervious	

PROPOSING	AREA (S.F.)	
	NEW	REPLACEMENT
Structure		
Garage		
Sidewalks		
Porch		
Gravel Drive/Parking		
Concrete or Asphalt		
Pervious Paving*		
Others		
SUBTOTAL		
TOTAL NEW OR REPLACED IMPERVIOUS SURFACE		

*Pervious paving is an engineered parking product that allows water to pass freely to the ground. It is suitable only in certain situations.

STORM WATER MANAGEMENT REQUIREMENT DETERMINATION

Follow the diagram using information from your impervious surface calculation. Your answers will determine the storm water management requirements list you will use.



STORM WATER MANAGEMENT REQUIREMENTS LIST I

Your project requires a simplified drainage plan. Provide the following information on your site plan:

- If project is a new single family or duplex residence, show connection to storm system or provide alternative management per Appendix E-2, On Site Water Management.
- Show clearing limits on plan and indicate how limits will be marked on property.
- Construction entrance location and silt fence (draw on site plan and attach standard plan sheet, copy in packet page 8).
- Attach General Construction Stormwater Pollution Prevention Plan (SWPPP) to site plan (copy in packet, page 7).

In addition, consider the following elements for your project:

- Sediment controls
- Stabilize soils
- Protect slopes
- Protect drain inlets
- Stabilize channels and outlets
- Control pollutants
- Control de-watering
- Maintain “Best Management Practices” (BMPs)
- Manage the project

STORM WATER MANAGEMENT REQUIREMENTS LIST II

Your project requires compliance with the following listed minimum requirements. For specific information, please refer to the 2005 edition of the Washington State Department of Ecology Storm Water Management Manual for Western Washington, or at

www.ecy.wa.gov/programs/wq/stormwater/manual.html

1. Preparation of Storm Water Site Plans

The following elements must be included with the site plan:

- Identification and analysis of existing site conditions
- Preliminary development layout with all proposed improvements and construction
- The Public Works Department may require off-site analysis
- Determination of applicable minimum requirements
- Proposed permanent storm water control plan
- Proposed construction storm water pollution prevention plan
- Complete storm water site plan

2. Construction Storm Water Pollution Prevention (SWPPP) Plan

See the attached requirements for “General Construction Storm Water Pollution Prevention.”

3. Source Control of Pollution

See Appendix E-1 for information about available source control BMPs

4. Preservation of Natural Drainage Systems and Outfalls

Natural drainage patterns shall be maintained, and discharges from the project site shall occur at the natural location, to the maximum extent practicable. The manner by which runoff is discharged from the project site must not cause a significant adverse impact to downstream receiving waters and down-gradient properties. All outfalls require energy dissipation.

Where no conveyance system exists at the adjacent down-gradient property line and the discharge was previously un-concentrated flow or significantly lower concentrated flow, you may need to obtain an easement or consider an engineered storm system to prevent impacts to downstream property.

State law does not allow the collection and discharge of storm water to adjacent property that may result in property damage.

5. On-Site Storm Water Management

Projects shall employ on-site Storm Water management BMPs to infiltrate, disperse, and retain storm water runoff on-site to the maximum extent feasible without causing flooding or erosion impacts.

Roof downspout control BMPs, and Dispersion and Soil Quality BMPs shall be required to reduce the hydrologic disruption of developed sites.

See Appendix E-2 for detailed information.

STORM WATER MANAGEMENT REQUIREMENTS LIST III

Your project requires compliance with the following minimum requirements. The plan must be designed by a licensed civil engineer. For specific information, please refer to the 2005 edition of the Washington State Department of Ecology [Storm Water Management Manual for Western Washington](#), or contact the engineering section of the Public Works Department at Mukilteo City Hall, at 425-263-8000

1. **Preparation of Storm Water Site Plans**
2. **Construction Storm Water Pollution Prevention (SWPPP)**
3. **Source Control of Pollution**
4. **Preservation of Natural Drainage Systems and Outfalls**
5. **On-site Storm Water Management**
6. **Runoff Treatment**
7. **Flow Control**
8. **Wetland Protection**
9. **Basin/Watershed Planning**
10. **Operation and Maintenance**

GENERAL CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

Purpose

To prevent the discharge of sediment and other pollutants to the maximum extent practicable from small construction projects.

Design and Installation

Plan and implement proper clearing and grading of the site. It is most important only to clear the areas needed, keeping exposed areas to a minimum. Phase clearing so that only those areas that are actively being worked are uncovered.

Note: Clearing limits shall be flagged on the lot or project area prior to initiating clearing.

- From October 1 through April 30, no soils shall remain exposed and un-worked for more than two days. From May 1 to September 30, no soils shall remain exposed and un-worked for more than seven days.
- Soil shall be managed in a manner that does not permanently compact or deteriorate the final soil and landscape system. If disturbance and/or compaction occurs, the impact must be corrected at the end of the construction activity. This shall include restoration of soil depth, soil quality, permeability, and percent organic matter. Construction practices must not cause damage to or compromise the design of permanent landscape or infiltration areas.
- Locate any soil piles away from drainage systems. Soil piles should be tarped or mulched until the soil is either used or removed. Piles should be situated so that sediment does not run into the street or adjoining yards.
- Backfill foundation walls as soon as possible and rough grade the lot. This will eliminate large soil mounds, which are highly erodible, and prepares the lot for temporary cover, which will further reduce erosion potential.
- Remove excess soil from the site as soon as possible after backfilling. This will eliminate any sediment loss from surplus fill.
- The construction entrance shall be stabilized where traffic will be leaving the construction site and traveling on paved roads or other paved surfaces.
- Provide for periodic street cleaning to remove any sediment that may have been tracked out. Sediment should be removed by shoveling or sweeping and carefully removed to a suitable disposal area where it will not be re-eroded. Street washing is prohibited without special permission from the City of Mukilteo.

APPENDIX E-1 SOURCE CONTROL BMPS

There are two categories of Source Control BMPs: operational and structural.

Operational Source Control BMPs are non-structural practices that prevent or reduce pollutants from entering stormwater. Examples include formation of a pollution prevention team, good housekeeping practices, preventive maintenance procedures, spill prevention and cleanup, employee training, inspections of pollutant sources, and record keeping. They can also include process changes, raw material/product changes, and recycling wastes.

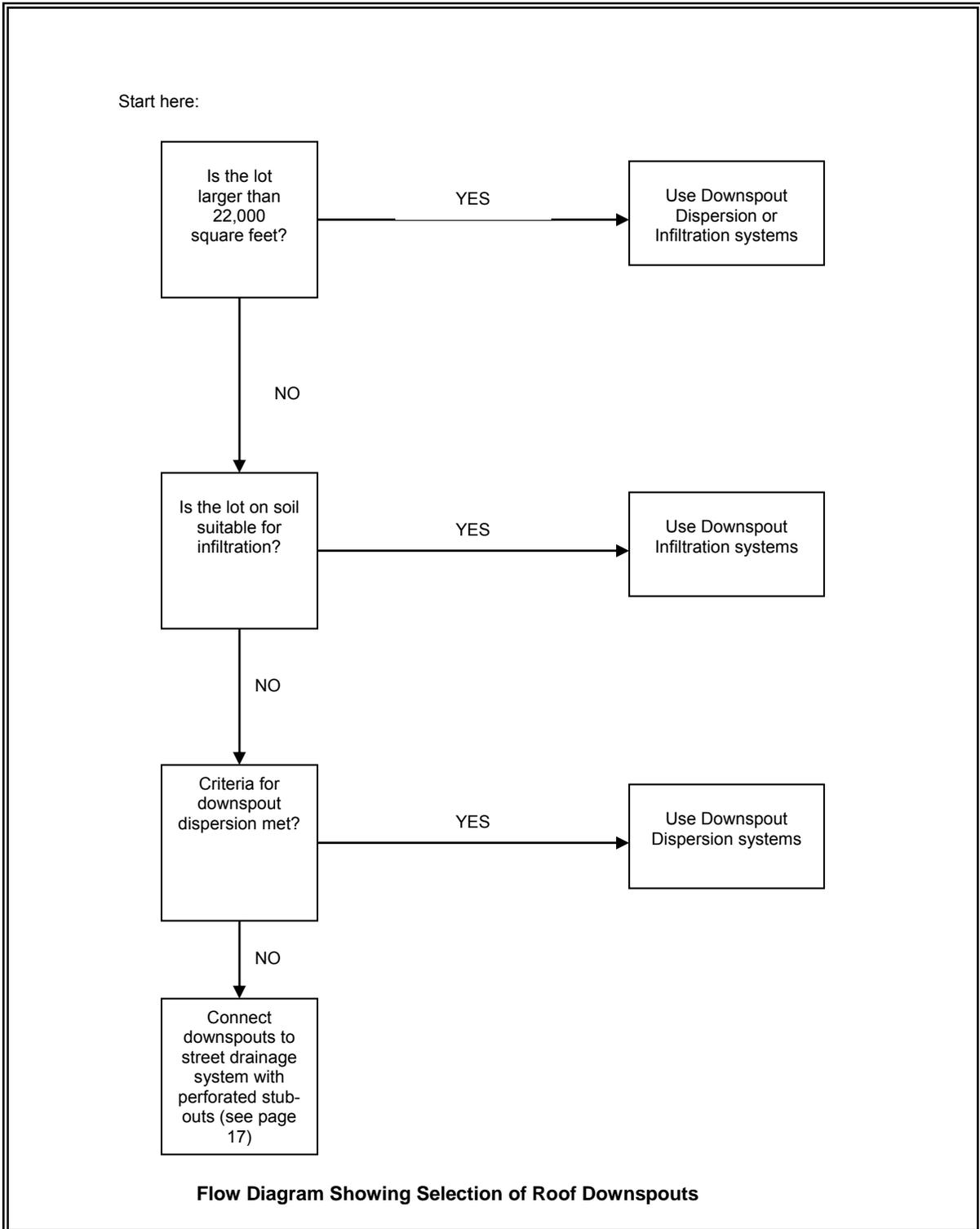
Operational Source Control BMPs are considered the most cost-effective pollutant minimization practices.

The following operational source control BMPs must be implemented at the commercial and industrial establishments listed in Appendix IV-A, where required by Ecology's Industrial General Permit or by local government ordinances.

- Assign one or more individuals to be responsible for stormwater pollution control. Hold regular meetings to review the overall operation of the BMPs. Establish responsibilities for inspections, operation and maintenance, and availability for emergency situations. Train all team members in the operation, maintenance and inspections of BMPs, and reporting procedures.
- Promptly contain and clean up solid and liquid pollutant leaks and spills including oils, solvents, fuels, and dust from manufacturing operations on any exposed soil, vegetation, or paved area.
- Sweep paved material handling and storage areas regularly as needed, for the collection and disposal of dust and debris that could contaminate stormwater. Do not hose down pollutants from any area to the ground, storm drain, conveyance ditch, or receiving water unless necessary for dust control purposes to meet air quality regulations and unless the pollutants are conveyed to a treatment system approved by the local jurisdiction.
- Clean oils, debris, sludge, etc. from all BMP systems regularly, including catch basins, settling/detention basins, oil/water separators, boomed areas, and conveyance systems, to prevent the contamination of stormwater. Refer to Appendix IV-D R.3 for references to assist in determining if a waste must be handled as hazardous waste.
- Promptly repair or replace all substantially cracked or otherwise damaged paved secondary containment, high-intensity parking and any other drainage areas, which are subjected to pollutant material leaks or spills.
- Promptly repair or replace all leaking connections, pipes, hoses, valves, etc. which can contaminate stormwater.

Operational and structural BMPs that are designed to address specific types of pollutant sources are presented in Stormwater Management Manual for Western Washington (DOE Stormwater Manual), Volume IV, Chapter 2, section 2.

APPENDIX E-2 INFORMATION ON ON-SITE WATER MANAGEMENT



Roof Downspout Controls

Roof downspout controls are simple pre-engineered designs for infiltrating and/or dispersing runoff from roof areas for the purposes of limiting development impacts.

Selection of Roof Downspout Controls

Where roof downspout controls are planned, the following three types must be considered in the order of preference shown below.

1. Downspout infiltration systems
2. Downspout dispersion systems
3. Downspout perforated stub-out connections

1. Downspout Infiltration Systems

Downspout infiltration systems are trench or drywell designs intended only for use in infiltrating runoff from roof downspout drains. They are not designed to directly infiltrate runoff from pollutant-generating impervious surfaces. Please check the soils map attached. If your project site is in a shaded area, you may be able to use infiltration.

No erosion or flooding of downstream properties may result.

Runoff discharged towards landslide hazard areas must be evaluated by a professional engineer with geotechnical expertise or a qualified geologist. Downspout dispersion systems may not be placed on or above slopes greater than 20% or above erosion hazard areas without evaluation by a professional engineer with geotechnical expertise or qualified geologist and jurisdiction approval.

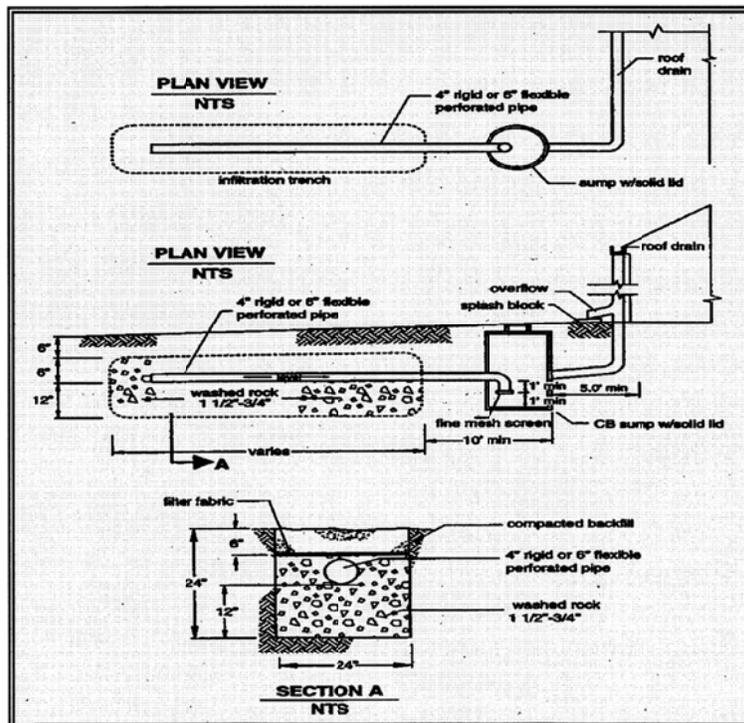
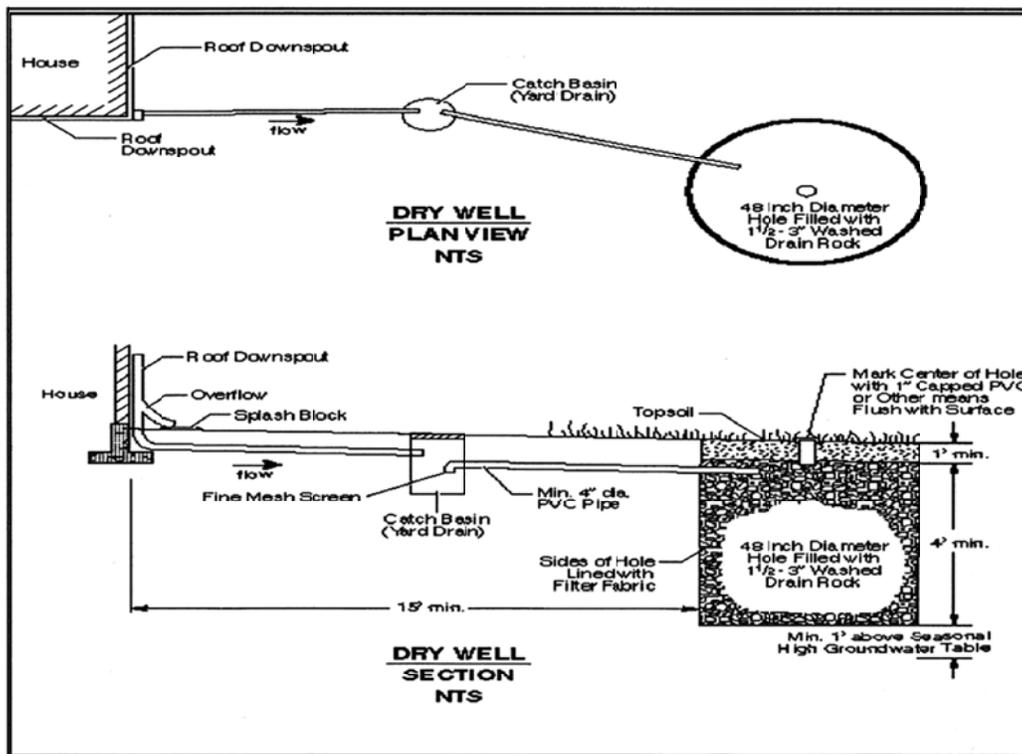
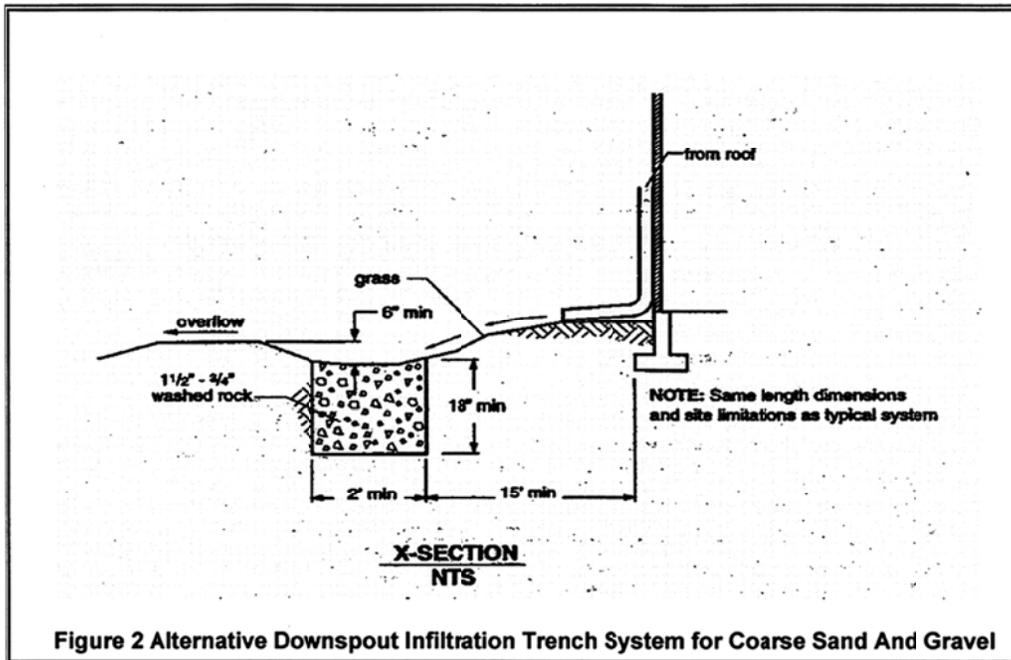


Figure 1 Typical Downspout Infiltration Trench



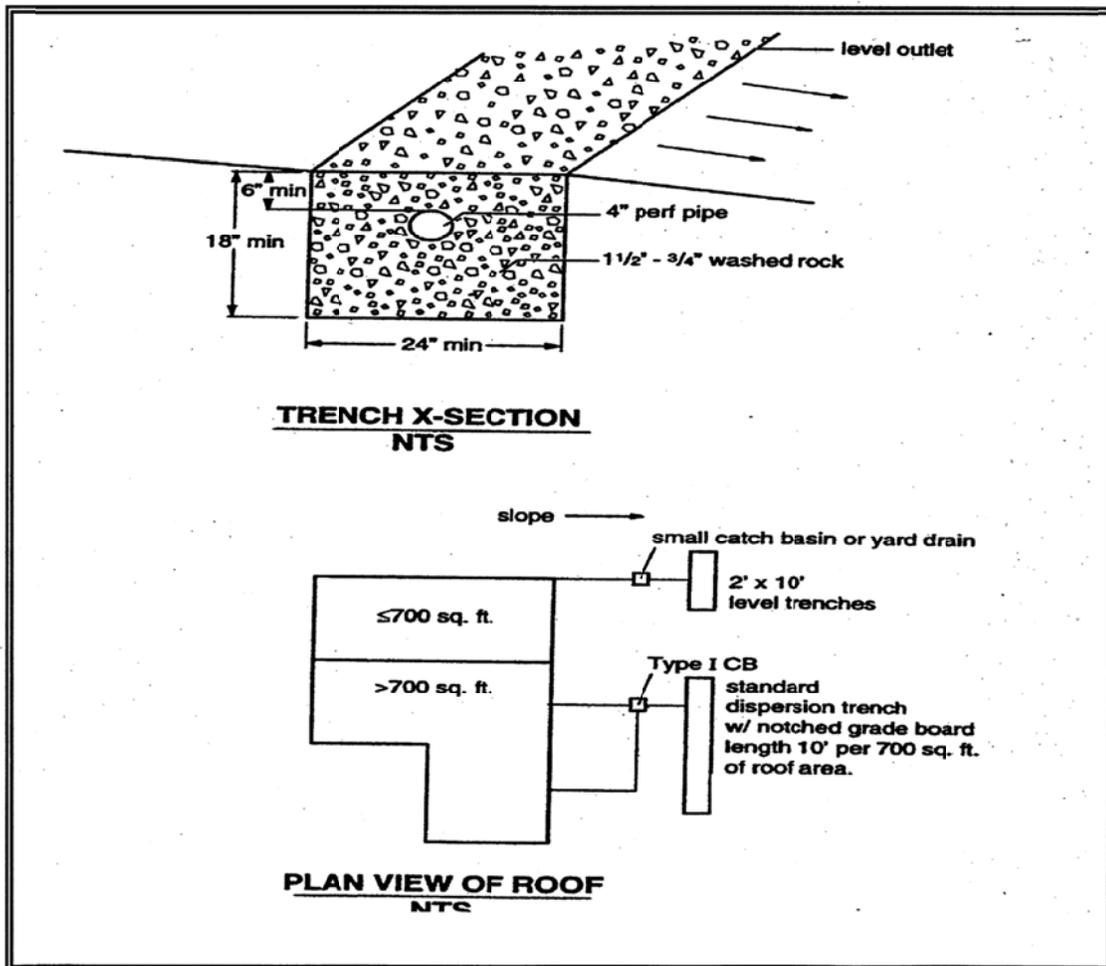
2. Downspout Dispersion Systems

Downspout dispersion systems are splash blocks or gravel-filled trenches, which serve to spread roof runoff over vegetated pervious areas. Dispersion attenuates peak flows by slowing entry of the runoff into the conveyance system, allows for some infiltration, and provides some water quality benefits.

1. A vegetated flow path of at least 50 feet should be maintained between the discharge

- point and any property line, structure, steep slope, stream, wetland, lake, or other impervious surface. Sensitive area buffers may count toward flow path lengths.
2. A maximum of 700 square feet of roof area may drain to each splash block or standard dispersion trench.
 3. A trench with a notched grade board may be used for larger areas.
 4. No erosion or flooding of downstream properties may result.
 5. Runoff discharged towards landslide hazard areas must be evaluated by a professional engineer with geotechnical expertise or a qualified geologist. Downspout dispersion systems may not be placed on or above slopes greater than 20% or above erosion hazard areas without evaluation by a professional engineer with geotechnical expertise or qualified geologist and jurisdiction approval.

Figure 4 Typical Downspout Dispersion Trench



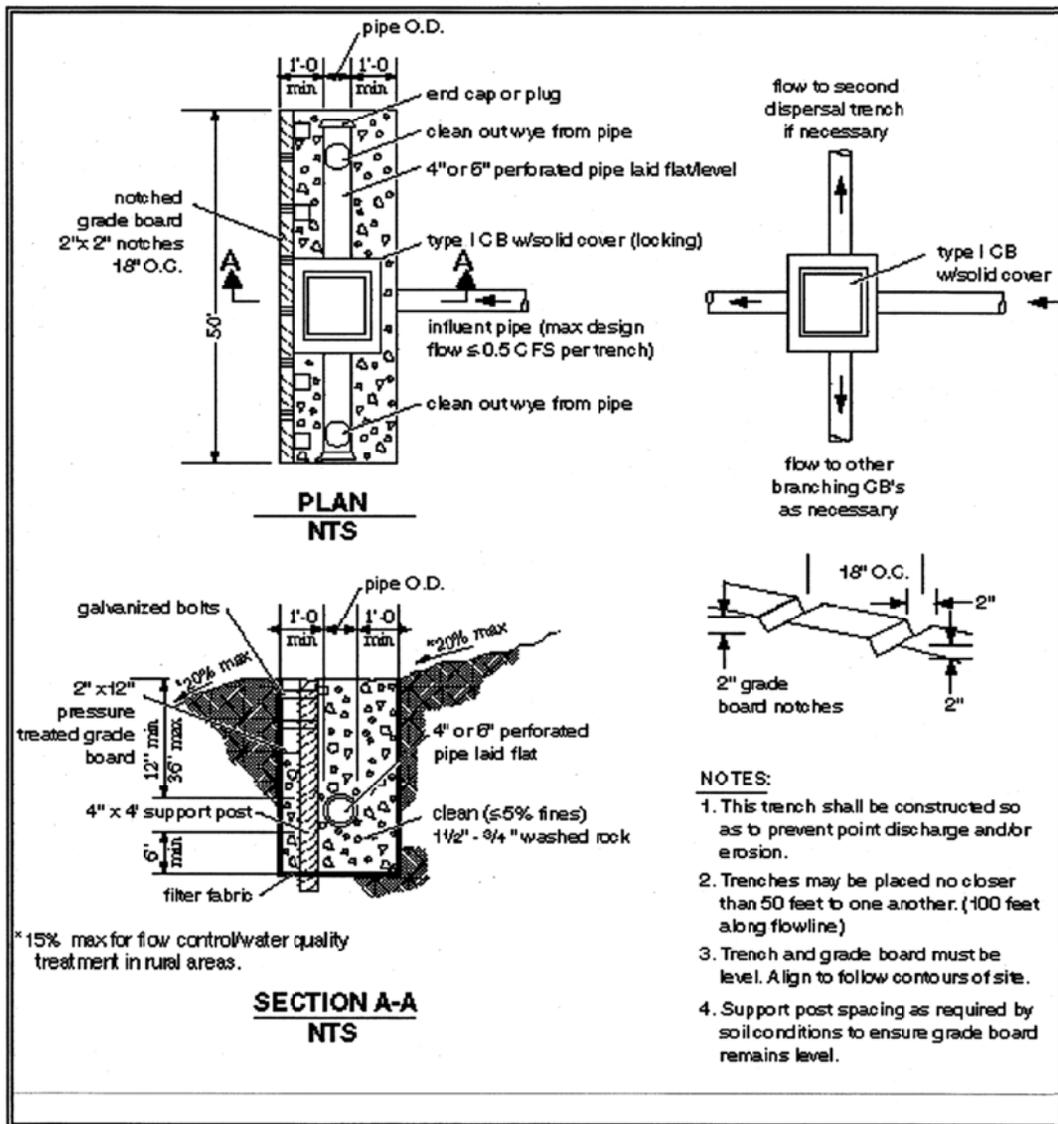


Figure 5 Standard Dispersion Trench with Notched Grade Board

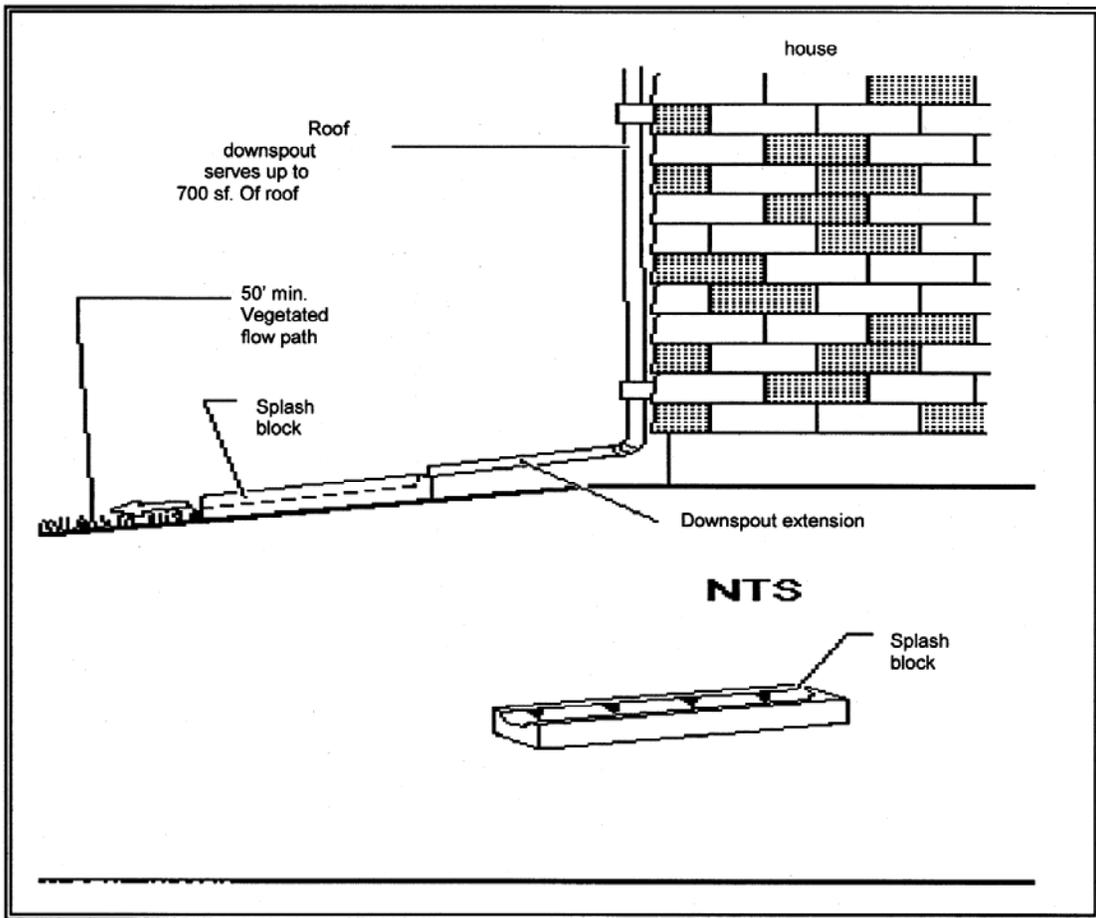


Figure 6 Typical Downspout Splashblock Dispersion

3. Perforated Stub-Out Connections

A *perforated stub-out connection* is a length of perforated pipe within a gravel-filled trench that is placed between roof downspouts and a stub-out to the local drainage system. Figure 7 illustrates a perforated stub-out connection. These systems are intended to provide some infiltration during drier months. During the wet winter months, they may provide little or no flow control. Perforated stub-outs are not appropriate when the seasonal water table is <1 foot below trench bottom.

In single-family subdivision projects subject to Minimum Requirement #7 for flow control (see Volume I), perforated stub-out connections may be used only when downspout infiltration or dispersion is not feasible.

Location of the connection should be selected to allow a maximum amount of runoff to infiltrate into the ground (ideally a dry location on the site that is relatively well drained). To facilitate maintenance, the perforated pipe portion of the system should not be located under impervious or heavily compacted (e.g., driveways and parking areas) surfaces.

Perforated stub-out connections should consist of at least 10 feet of perforated pipe per

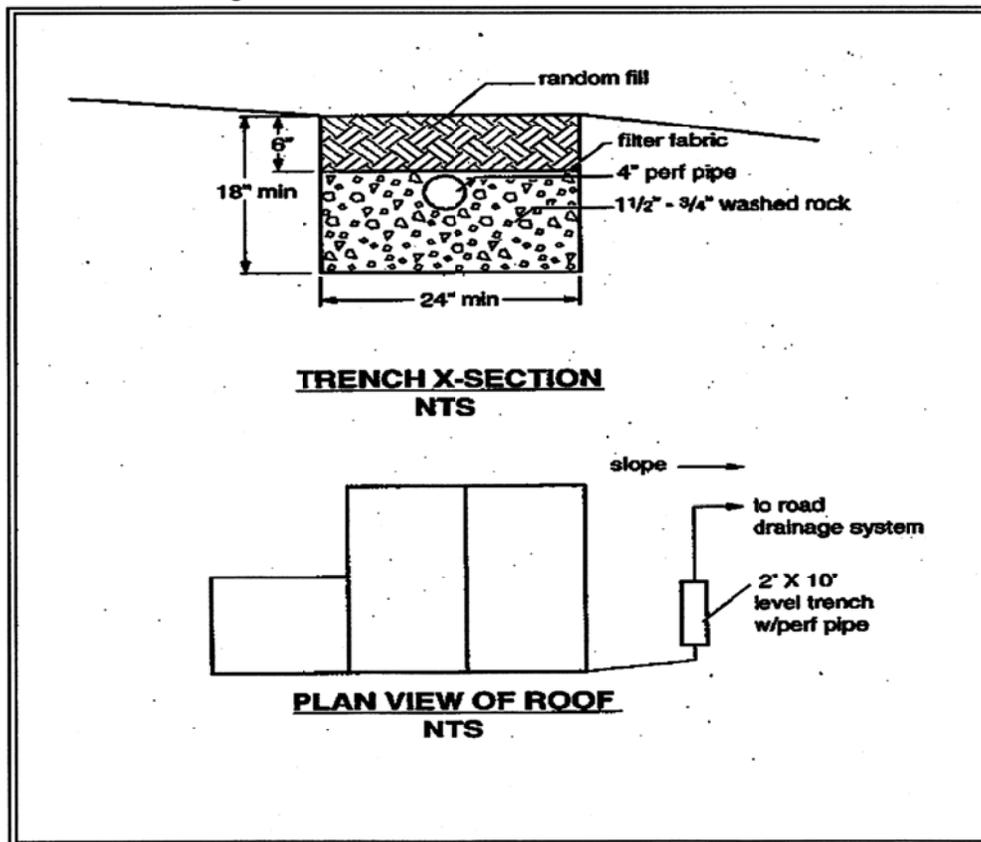
5,000 square feet of roof area laid in a level, 2-foot wide trench backfilled with washed drain rock. The drain rock should extend to a depth of at least 8 inches below the bottom of the pipe and should cover the pipe. The pipe should be laid level and the rock trench covered with filter fabric and 6 inches of fill (see Figure 7).

Setbacks are the same as for infiltration trenches.

Potential runoff discharge towards a landslide hazard area must be evaluated by a professional engineer with geotechnical expertise or a qualified geologist. The perforated portion of the pipe may not be placed on or above slopes greater than 20% or above erosion hazard areas without evaluation by a professional engineer with geotechnical expertise or qualified geologist and jurisdiction approval.

For sites with septic systems, the perforated portion of the pipe must be down gradient of the drainfield primary and reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.

Figure 7 Perforated Stub-Out Connection



APPENDIX E-3 DOWNSPOUT DISPERSION SYSTEMS CRITERIA I

Downspout dispersion must be used in all subdivision single-family lots, which meet one of the following criteria:

- Lots greater than or equal to 22,000 square feet where downspout infiltration is not being provided.
- Lots smaller than 22,000 square feet where soils are not suitable for downspout infiltration and where the following design criteria below can be met.
 1. Downspout trenches designed as shown in Figure 4 on page 70 should be used for all downspout dispersion applications except where splash blocks are allowed below.
 2. Splash blocks shown in Figure 6 on page 15 may be used for downspouts discharging to a *vegetated flowpath* at least 50 feet in length as measured from the downspout to the downstream property line, structure, steep slope, stream, wetland, or other impervious surface. Sensitive area buffers may count toward flowpath lengths.
 3. If the vegetated flowpath (measured as defined above) is less than 25 feet on a subdivision single family lot, a perforated stub-out connection per Section 3.1.3 may be used in lieu of downspout dispersion. A perforated stub-out may also be used where implementation of downspout dispersion might cause erosion or flooding problems, either on site or on adjacent lots. This provision might be appropriate, for example, for lots constructed on steep hills where downspout discharge could be cumulative and might pose a potential hazard for lower lying lots, or where dispersed flows could create problems for adjacent offsite lots. Perforated stub-outs are not appropriate when the seasonal water table is <1 foot below trench bottom.
 4. For sites with septic systems, the discharge point of all dispersion systems must be down gradient of the drainfield. This requirement may be waived if site topography clearly prohibits flows from intersecting the drainfield.

APPENDIX F FORMS

Erosion Control Acknowledge Form and Supplement to Small Parcel Stormwater Site Plan

Stormwater Permit Application

SWPPP Short Form - Reserved



11930 Cyrus Way, Mukilteo, WA 98275
 Phone: (425) 263-8000
 City Hall Fax: (425) 212-2068

City of Mukilteo Engineering Permit Application

Application Type - Mark all those that apply:

- Clearing & Grading (Land Surface Modification) Right-of-Way Stormwater

General Permit Information:

PROJECT NAME: _____

PROJECT ADDRESS: _____

CONTRACTOR Applicant

Name _____

Address _____

City/State/Zip _____

24 Hour Phone _____ FAX _____

State License # _____

Mukilteo License # _____

PROPERTY OWNER Applicant

Name _____

Address _____

City/State/Zip _____

Phone _____ FAX _____

E-mail Address _____

PRIMARY CONTACT Applicant

Name _____

Address _____

City/State/Zip _____

Phone _____ FAX _____

E-mail Address _____

PARCEL NUMBER(S)

LEGAL DESCRIPTION

PROJECT DESCRIPTION

TOTAL SITE AREA (SQ. FEET)

IMPERVIOUS AREA (See pg. 2 calculations sheet)

EXISTING _____

REMOVE _____

REPLACED _____

TOTAL IMPERVIOUS _____

Clearing & Grading (Land Surface Modifications):

Total area of land surface modification: _____

Type & amount of vegetation to be removed:

- Evergreen Trees: _____
- Deciduous Trees: _____
- Shrubs / Lawn: _____
- Invasive(s): _____
- Other: _____

Method of land disturbance: Hand Clearing Machine

Amount of Cubic Yards Outside of the Building Footprint to be:

- Re-Graded on Site: _____
- Exported: _____
- Imported to Site: _____
- Other: _____

Destination of Exported Material: _____

Maximum Height of Fill: _____ Maximum Depth of Cut: _____

Square Footage of Area to be Covered by Impervious Surface: _____

Identify any stream, surface water, drainage course, or wetlands on or within 200 feet of the property:

Right-of-Way:

Type of work being performed in City right-of-way:

- Stormwater
- Frontage Improvements
- Driveway:
- Natural Gas
- Sewer
- Water
- Telephone
- Power
- Cable
- Other: _____

Stormwater:

Complete the Stormwater Management Requirement Checklist below: YES NO

IMPERVIOUS SURFACE CALCULATION

Impervious surface is a hard surface area that either prevents or retards the entry of water into the soil. The footprint of structures, sidewalks, concrete, asphalt and compact gravel areas are an impervious surface.

The total square footage of impervious surface on your project site will determine the storm water management requirements and the storm water utility fees. Impervious surface calculations must include all the impervious area on your project site.

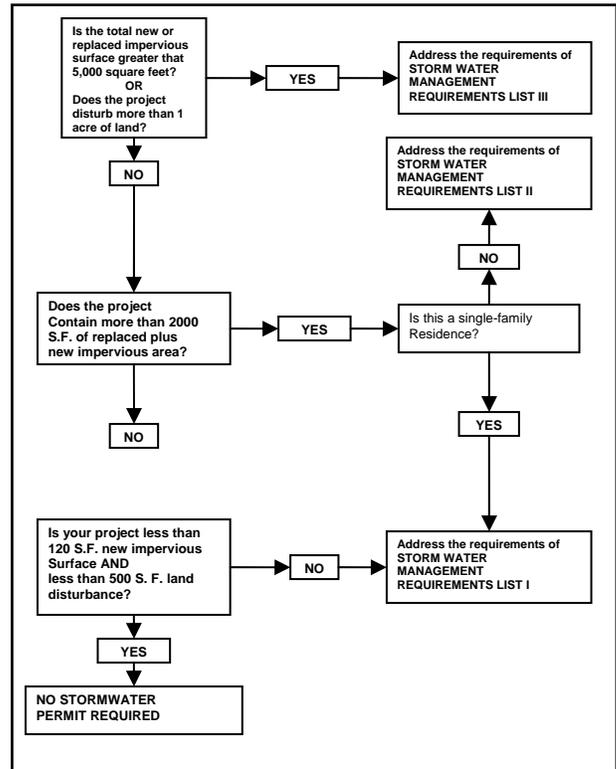
Provide detailed information about your project he following table. Enter 0 in the sections that are not applicable to your project

STORM WATER MANAGEMENT REQUIREMENT DETERMINATION

Follow the diagram using information from your impervious surface calculation. Your answers will determine the storm water management requirements list you will use.

EXISTING	AREA (SQUARE FEET)
Structure	
Garage	
Sidewalks	
Porch(s)	
Gravel Drive/Parking	
Concrete or Asphalt Paving	
Pervious Paving*	
Others	
Total Existing Impervious Surface	

PROPOSING	AREA(S.F.)	
	NEW	REPLACEMENT
Structure		
Garage		
Sidewalks		
Porch		
Gravel Drive/Parking		
Concrete or Asphalt Paving		
Pervious Paving*		
Others		
SUBTOTAL		
TOTAL NEW OR REPLACED IMPERVIOUS SURFACE		



*Pervious paving is an engineered parking product that allows water to pass freely to the ground. It is suitable only in certain situations.

Other:

Anticipated Start Date: _____ Anticipated Completion Date: _____

A Department of Ecology NPDES Permit is required for all projects of an acre or larger. Will your project require such a permit? Yes No

A Forest Practice Permit is required for all projects removing and selling timber from the property site. Will your project require such a permit? Yes No

A Hydraulic Permit from the Department of Fish and Wildlife and / or a CORP Permit from the Corp of Engineers are required for all fill or work within, over, or under a stream or wetland. Will your project require such a permit? Yes No

All State and / or Federal Permits shall be obtained and a copy provided to the City of Mukilteo prior to issuance of the City of Mukilteo Engineering Permit.

Construction shall be in accordance with the current APWA/WSDOT standard specifications; except as specifically superseded by the approved plans or special conditions of the permit. The following conditions or restrictions must be followed:

Should any damage be done to the road(s) during the time of construction and installation or in the maintenance and/or operation of said FACILITIES, the road(s) shall be restored by the Permittee(s), their successors or assigns, to as good a condition as it was before such damage occurred. Should the grade, width or location of the road(s) be changed or altered in any way so as to require the removal of said FACILITIES the Permittee(s), their successors or assigns, shall forthwith move and relocate said FACILITIES without any redress against the City.

The permittee shall indemnify, defend and hold harmless the City, its officers, agents and employees, from and against any and all claims, losses or liability, including attorneys fees, arising from injury or death to persons or damage to property occasioned by the construction, installation, operation, location, maintenance, or any other cause related to the improvement for which this permit is granted. With respect to this permit and as to claims against the City, its officers, agents and employees, the permittee expressly waives its immunity under Title 51 of the Revised Code of Washington, the Industrial Insurance Act, for injuries to any employees the permittee may have, and agrees that the obligation to indemnify, defend and hold harmless provided for in this paragraph extend to any claim brought by or on behalf of any employee of the permittee. This waiver has been mutually negotiated by the parties as part of the permitting process and is given, as is the indemnification agreement contained within this paragraph, as consideration for issuance of a right-of-way use permit by the City. This paragraph shall not apply to any damage or injury resulting from the sole negligence of the City, its agents or employees. To the extent any of the damages or injuries referenced by this paragraph were caused by or resulted from the concurrent negligence of the City, its agents or employees, this obligation to indemnify, defend and hold harmless is valid and enforceable only to the extent of the negligence of the permittee, its officers, agents or employees, if any.

The acceptance of the conditions upon which this permit is granted shall be evidenced by the beginning of the installation of said FACILITIES as set forth herein.

I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS PERMIT APPLICATION IN ITS ENTIRETY AND KNOW THE SAME TO BE TRUE AND CORRECT. I AGREE TO COMPLY WITH ALL CONDITIONS, CITY ORDINANCES AND STATE / FEDERAL LAWS REGULATING ACTIVITIES COVERED BY THIS PERMIT APPLICATION. I ALSO ACKNOWLEDGE THAT IT IS MY RESPONSIBILITY TO MAINTAIN PUBLIC STREET FREE OF DIRT AND DEBRIS.

Applicant Signature

Date

ENGINEERING APPLICATION CHECKLIST

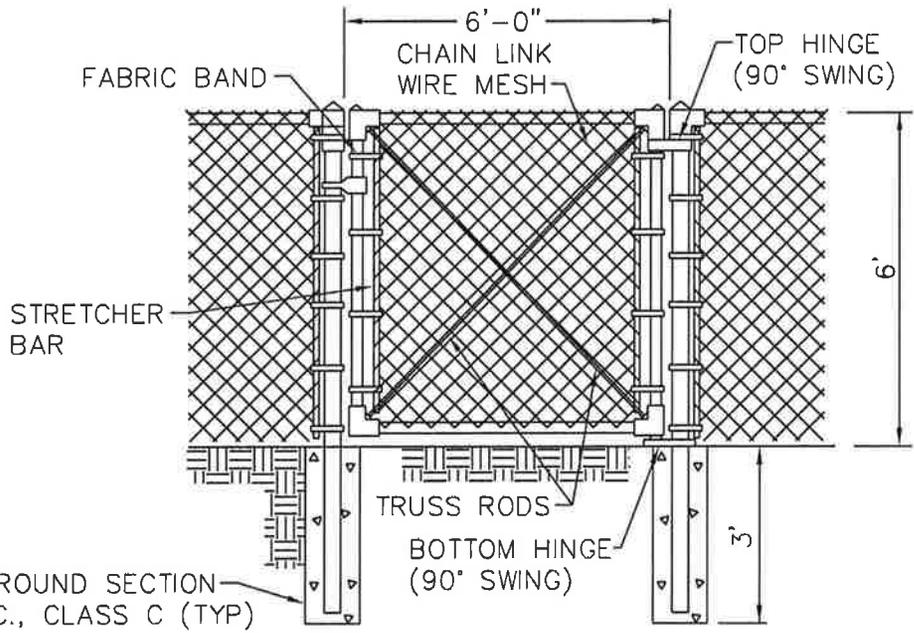
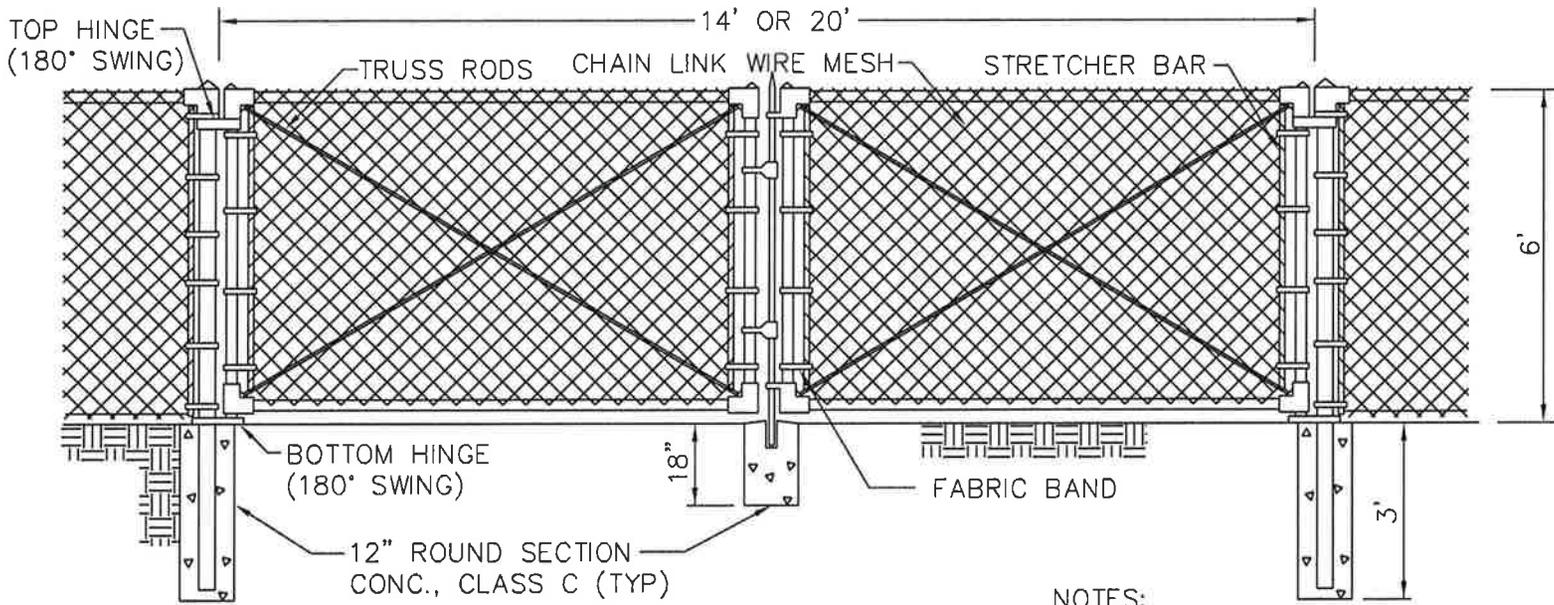
Provide the following information as part of your submittal:

- Scaled drawings
- Impervious surface calculation
- Storm water management requirement determination
- Storm water site plan and/or erosion control plan as stated on the applicable requirements list I, II, or III
- Storm water management and erosion control acknowledgement form
- Attach a copy of General Construction Stormwater Pollution Prevention Plan (SWPPP) to site plan

APPENDIX G STANDARD PLANS

STANDARD PLANS LIST

Plan Title	Plan Number
Chain Link Fence	3-501-007
Chain Link Gates	3-501-008
Flow restrictor/Oil Pollution Debris Control Device Tee Type (Frop-T) Installation	4-040-002
Frop-T Shear Gate Detail	4-040-003
Flow restrictor/Oil Pollution Debris Control Device Tee Type (Frop-B) Installation	4-040-004
Infiltration System Detail	4-040-005
Debris Cage	4-040-006
Trash Rack	4-040-007
Silt Fence Detail	4-040-008
Straw Bale Checks	4-040-009
Interceptor Swale Detail	4-040-010
Rock Lined Drainage Swale	4-040-011
Grass Lined Swale	4-040-012
Spacing Between Rock Check Dams	4-040-013
Construction Entrance	4-040-014
Individual Lot & Roof Drain Plan Details	4-040-015
Lot and Roof Drain Plan – Multi-lots	4-040-016
Standard Coalescing Plate Separator	4-040-017
Ditch Sections	4-080-001
Rock Lined Shoulder Ditches & Curbed or Turnpike Shoulders	4-080-002
Shoulder & Ditch Section – Driveway	4-080-003
Beveled End Pipe Section	4-080-004
Rock Headwall Detail	4-080-005
French Drain	4-080-006
Catch Basin Type-1 (18" Max. Pipe Dia.)	4-080-007
Catch Basin Type 1-L (18"-28" Pipe Dia.)	4-080-008
Catch Basin Type 2 – 48", 54", 72", 96"	4-080-009
Catch Basin Installation Detail Type 1 & 1L	4-080-010
Field Tapping of Concrete Pipe	4-080-011
Manhole Type 4	4-080-012
Offset Corrugated Manhole	4-080-013
Catch Basin & Manhole Details	4-080-014
Curb Inlet	4-080-015
Vaned Grate	4-080-016
Standard Grate	4-080-017
Thru-Curb Inlet Frame & Grate With Vertical Curb Installation	4-080-018
Locking Manhole Frame Detail	4-080-022
Locking Manhole Cover Detail	4-080-023
Solid Cover	4-080-024
Standard Frame with Vertical or Extruded Curb Installation	4-080-025



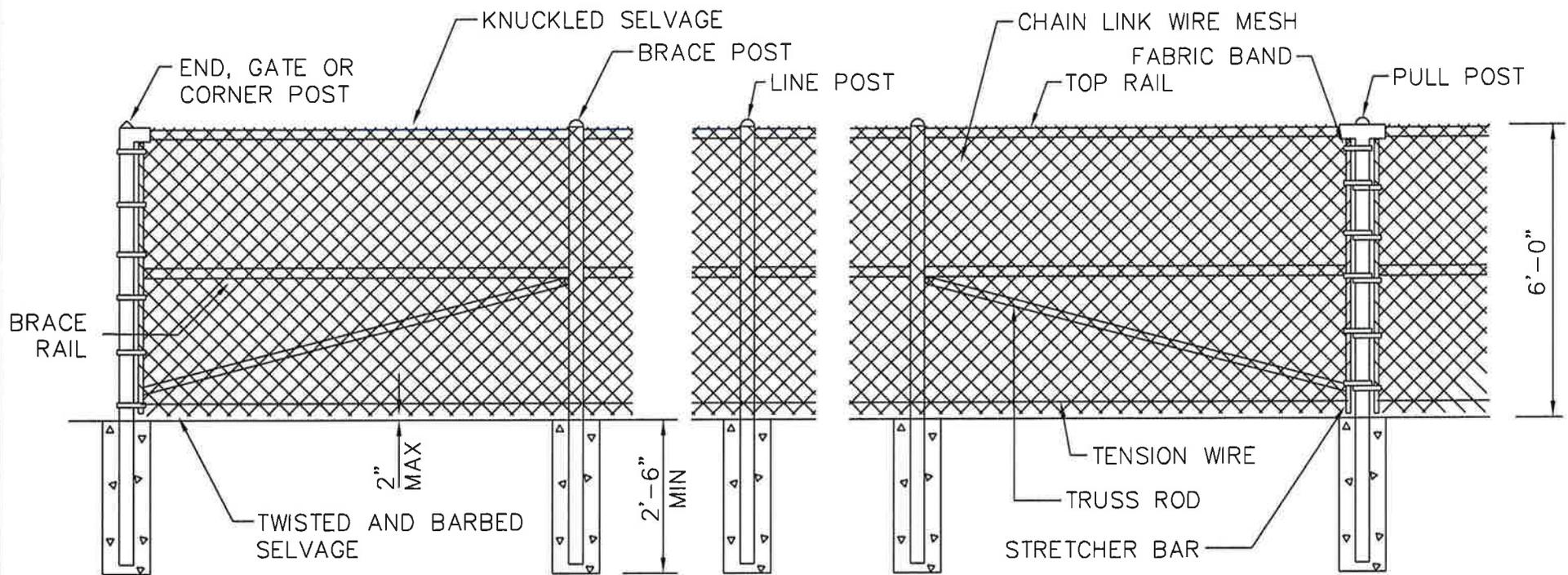
NOTES:

1. FENCE FABRIC SHALL BE SECURED TO GATE FRAMES WITH KNUCKLED SELVAGE ALONG TOP EDGE.
2. MINIMUM POST LENGTH: 8'-8"
3. PROVIDE LOCKING MECHANISM (PADLOCK BY CITY)
4. BARBED WIRE TO BE PLACED ON TOP AS DIRECTED.
5. ALL CHAIN LINK SHALL BE BLACK VINYL OR POWDER COATED

APPROVED BY *Lawrence Waters* JUL 2009
 MUKILTEO CITY ENGINEER DATE



CHAIN LINK GATES



NOTES:

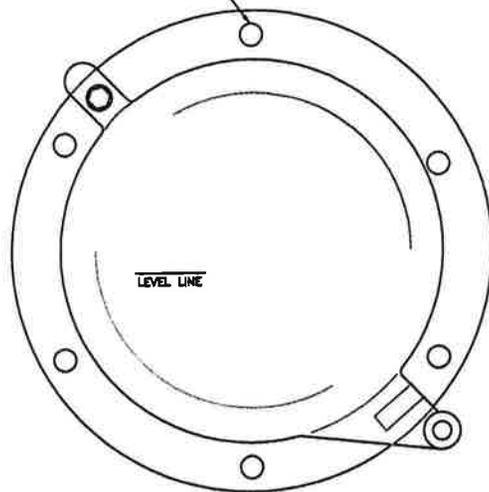
1. MATERIAL SHALL BE SCHEDULE 40
2. WIRE MESH SHALL BE 9 GAUGE WIRE
3. BARBED WIRE TO BE PLACED ON TOP AS DIRECTED
4. WOOD SLATS MAY BE REQUIRED
5. SCHEDULE 40 IS REQUIRED FOR ALL POSTS FOR FUTURE SLATES AND WIND SHEAR.
6. TENSION WIRE SHALL BE 7 GAUGE
7. ALL CHAIN LINK FENCE SHALL BE BLACK VINYL OR POWDER COATED

APPROVED BY
Lawrence Waters JUL 2009
 MUKILTEO CITY ENGINEER DATE

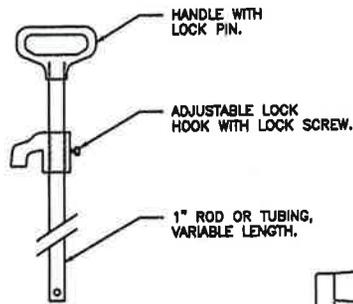


CHAIN LINK FENCE

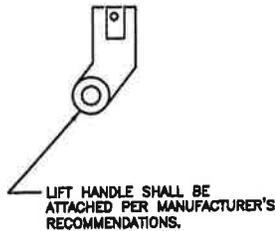
SIX EVENLY SPACED HOLES ON 10 3/8" BOLT CIRCLE FOR BOLTING TO FLANGE CONNECTION.



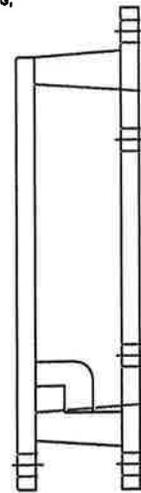
FRONT



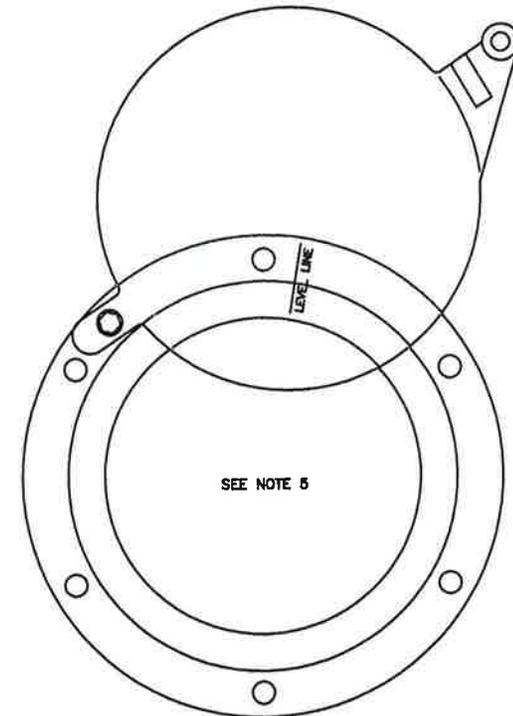
LIFT HANDLE



LIFT HANDLE SHALL BE ATTACHED PER MANUFACTURER'S RECOMMENDATIONS.



SIDE



MAXIMUM OPENING OF GATE

NOTES:

1. SHEAR GATE SHALL BE ALUMINUM ALLOY PER ASTM B-26-ZG-32a OR CAST IRON ASTM A48 CLASS 30B AS REQUIRED.
2. GATE SHALL BE 8" DIAM. UNLESS OTHERWISE SPECIFIED.
3. GATE SHALL BE JOINED TO TEE SECTION BY BOLTING (THROUGH FLANGE), WELDING, OR OTHER SECURE MEANS.
4. LIFT ROD: AS SPECIFIED BY MFR. WITH HANDLE EXTENDING TO WITHIN ONE FOOT OF COVER AND ADJUSTABLE HOOK LOCK FASTENED TO FRAME OR UPPER HANDHOLD.
5. GATE SHALL NOT OPEN BEYOND THE CLEAR OPENING BY LIMITED HINGE MOVEMENT, STOP TAB, OR SOME OTHER DEVICE.
6. NEOPRENE RUBBER GASKET REQUIRED BETWEEN RISER MOUNTING FLANGE AND GATE FLANGE.
7. MATING SURFACES OF LID AND BODY TO BE MACHINED FOR PROPER FIT.
8. FLANGE MOUNTING BOLTS SHALL BE 3/8" DIAM. STAINLESS STEEL.
9. ALTERNATE CLEANOUT/SHEAR GATES TO THE DESIGN SHOWN ARE ACCEPTABLE, PROVIDED THEY MEET THE MATERIAL SPECIFICATIONS ABOVE AND HAVE A SIX BOLT, 10 3/8" BOLT CIRCLE FOR BOLTING TO THE FLANGE CONNECTION.

APPROVED BY

Lawrence Waters JUL 2009

MUKILTEO CITY ENGINEER

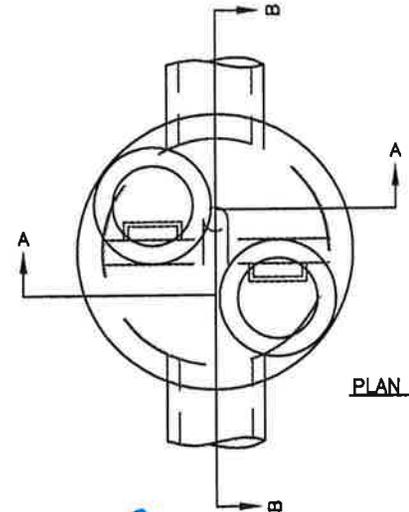
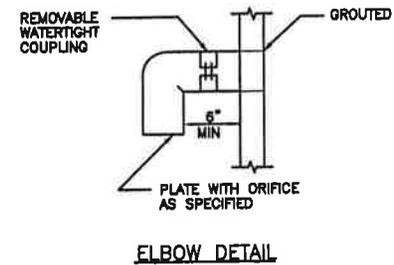
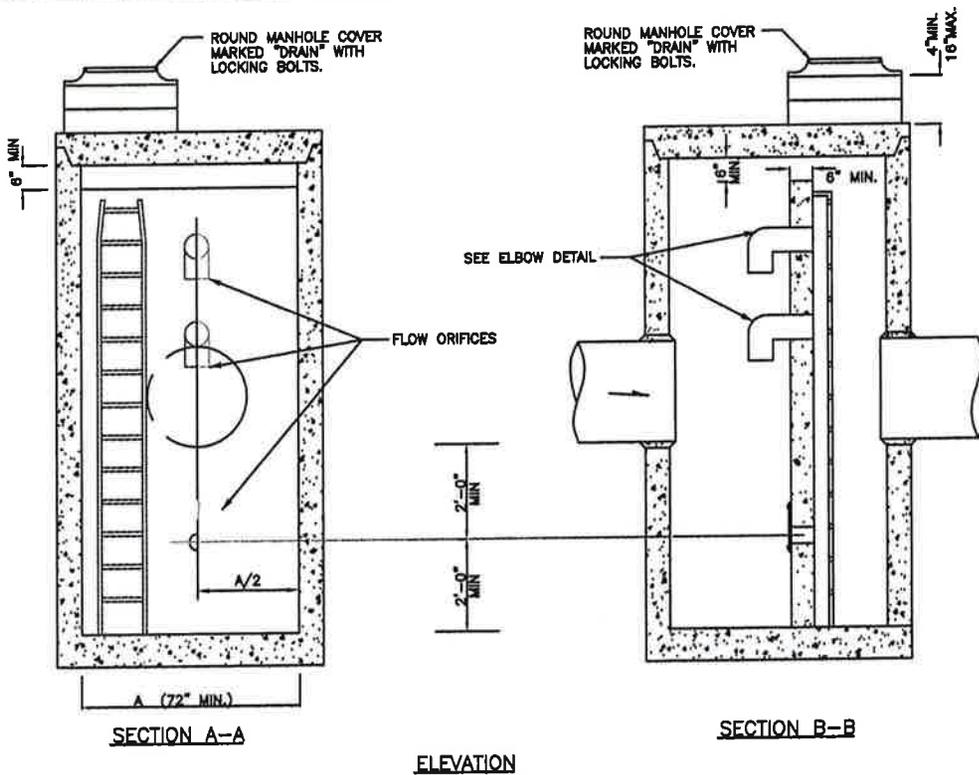
DATE



FROP-T SHEAR GATE
DETAIL

CITY OF MUKILTEO

STANDARD PLAN 4-040-003



NOTES:

1. PIPE SIZE, SLOPES AND ALL ELEVATIONS: PER PLANS.
2. OUTLET CAPACITY: NOT LESS THAN COMBINED INLETS.
3. CATCH BASIN: TYPE 2, TO BE CONSTRUCTED IN ACCORDANCE WITH DWG. NO. 4-080-009 AND AASHTO M199 UNLESS OTHERWISE SPECIFIED
4. COVERS: ROUND, SOLID MARKED "DRAIN," WITH LOCKING BOLTS
5. ORIFICES: SIZED AND LOCATED AS REQUIRED, WITH LOWEST ORIFICE MINIMUM 2' FROM BASE
6. BAFFLE WALL SHALL HAVE #4 BAR AT 12" SPACING EACH WAY.
7. PRECAST BAFFLE WALL SHALL BE KEYED AND GROUTED IN PLACE.
8. BOTTOM ORIFICE PLATE TO BE 1/4" MIN. GALVANIZED STEEL AND ATTACHED WITH 1/2" STAINLESS STEEL BOLTS. OMIT ORIFICE PLATE IF ONLY FOR OIL SEPARATION.
9. UPPER FLOW ORIFICE SHALL BE ALUMINUM, ALUMINIZED STEEL OR GALVANIZED STEEL. SEE DWG. NO. 4-040-002. GALVANIZED STEEL SHALL HAVE TREATMENT 1.

APPROVED BY

Lawrence Waters

JUL 2009

MUKILTEO CITY ENGINEER

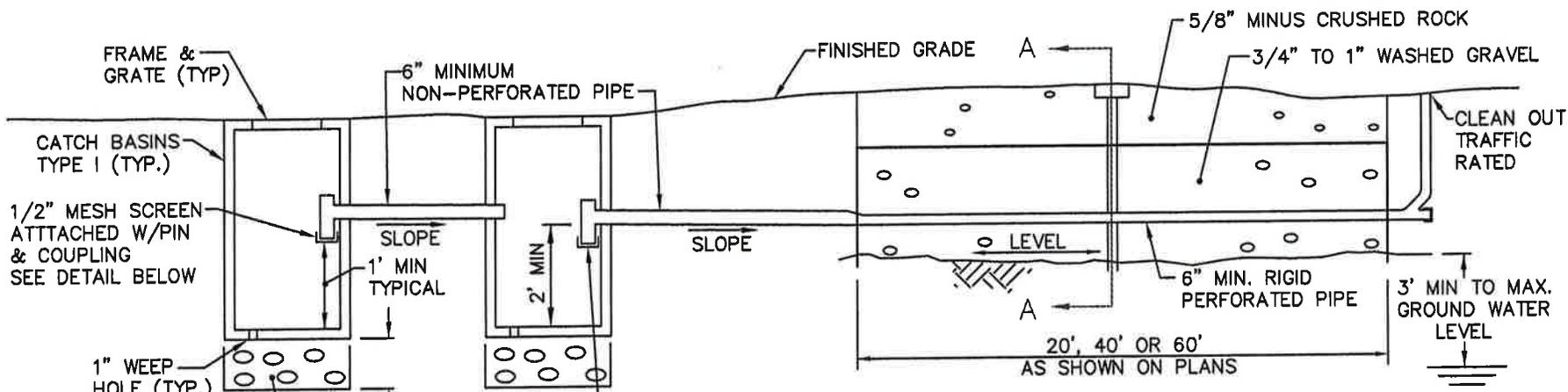
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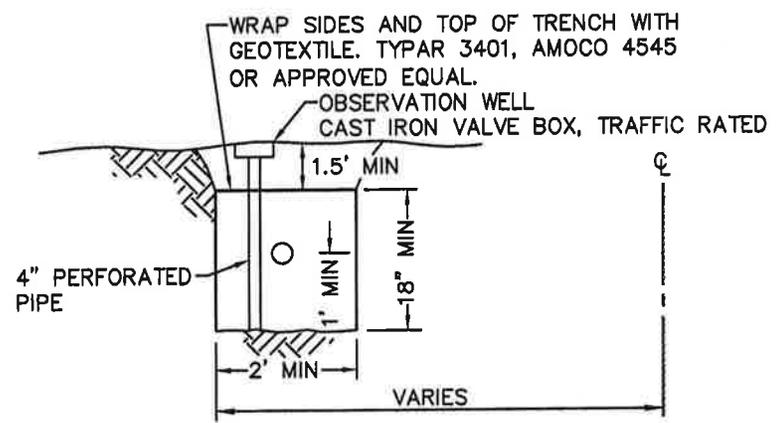
FLOW RESTRICTOR/OIL POLLUTION
DEBRIS CONTROL DEVICE
BAFFLE TYPE (FROP-B)

CITY OF MUKILTEO

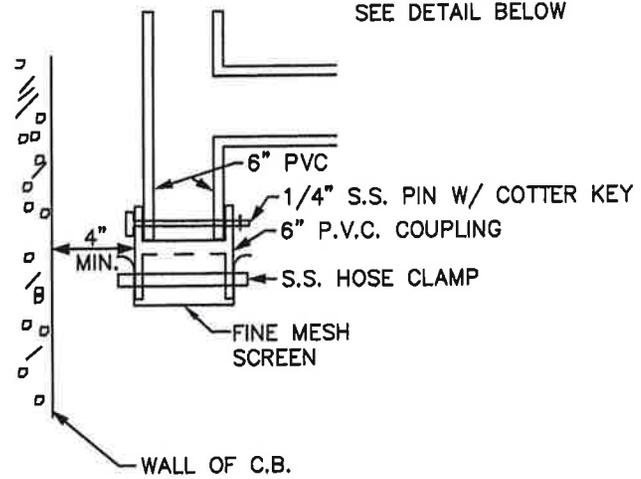
STANDARD PLAN 4-040-004



PROFILE
N.T.S.



SECTION A-A
N.T.S.



SCREEN CONNECTION DETAIL
N.T.S.

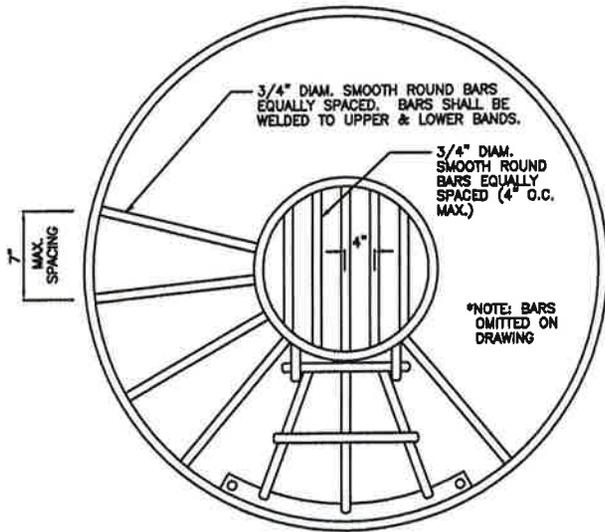
APPROVED BY *Lawrence H. Waters* JUL 2009
 MUKILTEO CITY ENGINEER DATE



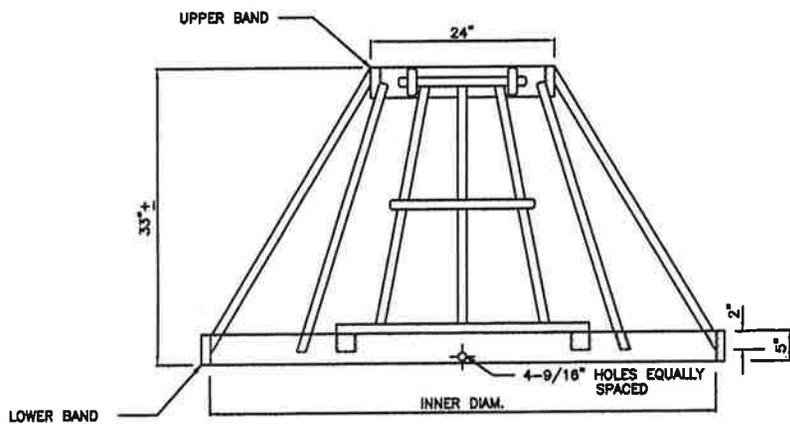
CITY OF MUKILTEO

INFILTRATION SYSTEM
DETAIL

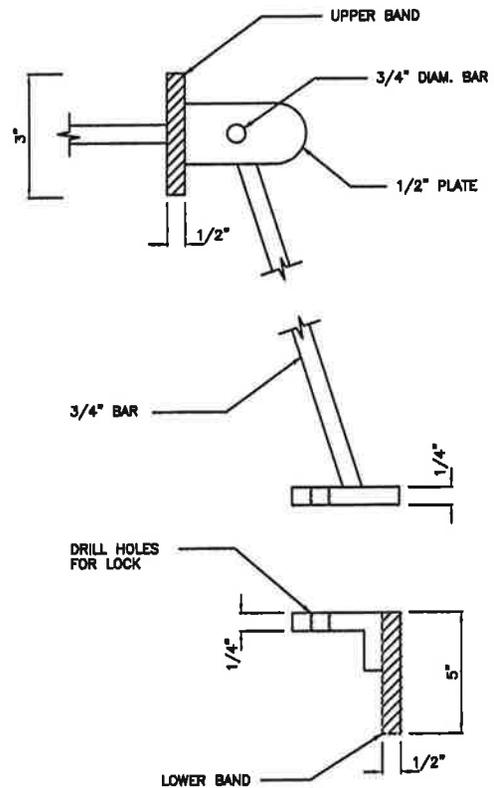
STANDARD PLAN 4-040-005



PLAN



ELEVATION



ENTRY GATE DETAIL

NOTES:

1. ALL STEEL IN PLATES, BARS AND BANDS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36.
2. DEBRIS CAGE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 (AASHTO M111).

CB	INNER DIAM.
48"	58"
54"	65"
60"	72"
72"	86"
96"	114"

APPROVED BY

Lawrence H. Waters JUL 2009

MUKILTEO CITY ENGINEER

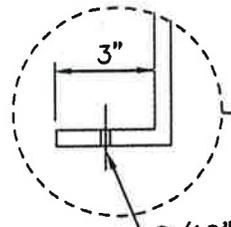
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DEBRIS CAGE

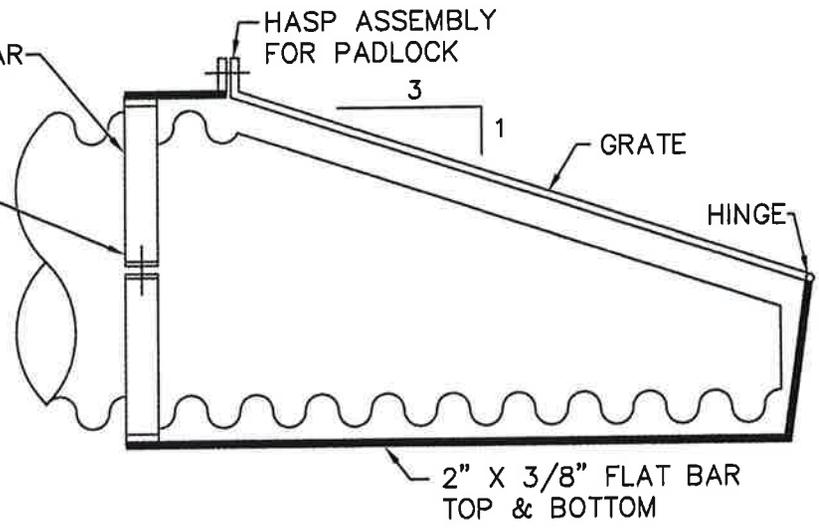
CITY OF MUKILTEO

STANDARD PLAN 4-040-006



2x1/4" FLAT BAR

9/16" BOLT HOLE (TYP.)
FASTEN WITH 1/2" NUTS
AND BOLTS



HASP ASSEMBLY
FOR PADLOCK

3

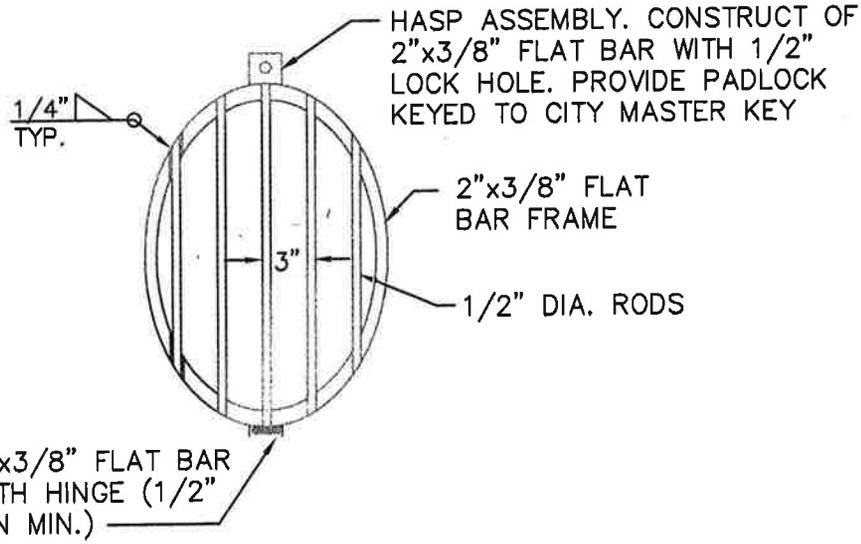
1

GRATE

HINGE

2" X 3/8" FLAT BAR
TOP & BOTTOM

LONGITUDINAL PROFILE



HASP ASSEMBLY. CONSTRUCT OF
2"x3/8" FLAT BAR WITH 1/2"
LOCK HOLE. PROVIDE PADLOCK
KEYED TO CITY MASTER KEY

1/4"
TYP.

2"x3/8" FLAT
BAR FRAME

3"

1/2" DIA. RODS

2"x3/8" FLAT BAR
WITH HINGE (1/2"
PIN MIN.)

END VIEW

NOTES:

INSTALL AT INLETS AND OUTLETS OF ALL STORM
PIPE 18 INCHES AND GREATER AND AT INLETS OF
ALL STORM PIPE SMALLER THAN 18 INCHES.

CONTRACTOR TO PROVIDE SHOP DRAWINGS PRIOR
TO FABRICATION. SHOP FABRICATE.

CONSTRUCTION SHALL BE ALL STEEL. HOT DIP
GALVANIZE AFTER FABRICATION.

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2009

MUKILTEO CITY ENGINEER

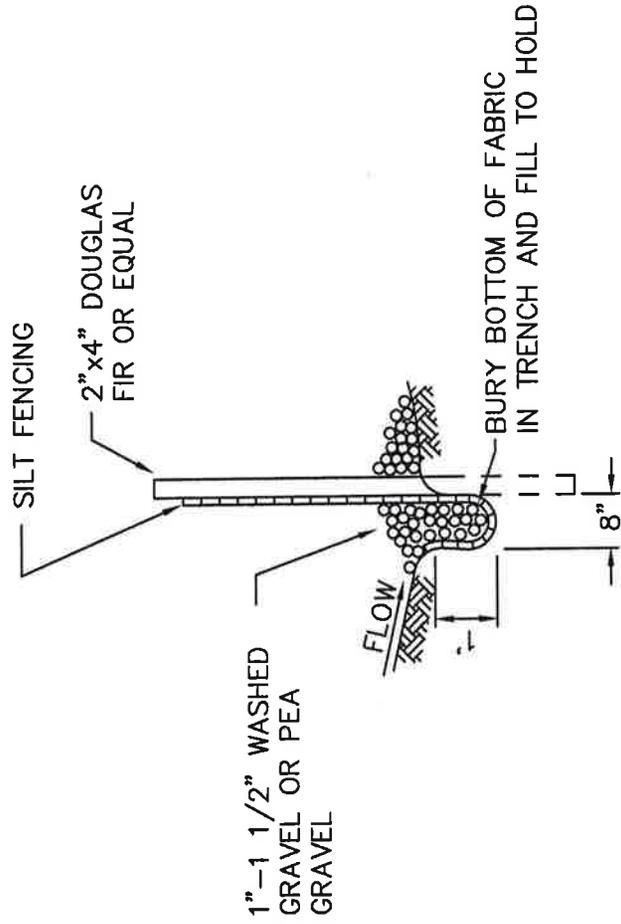
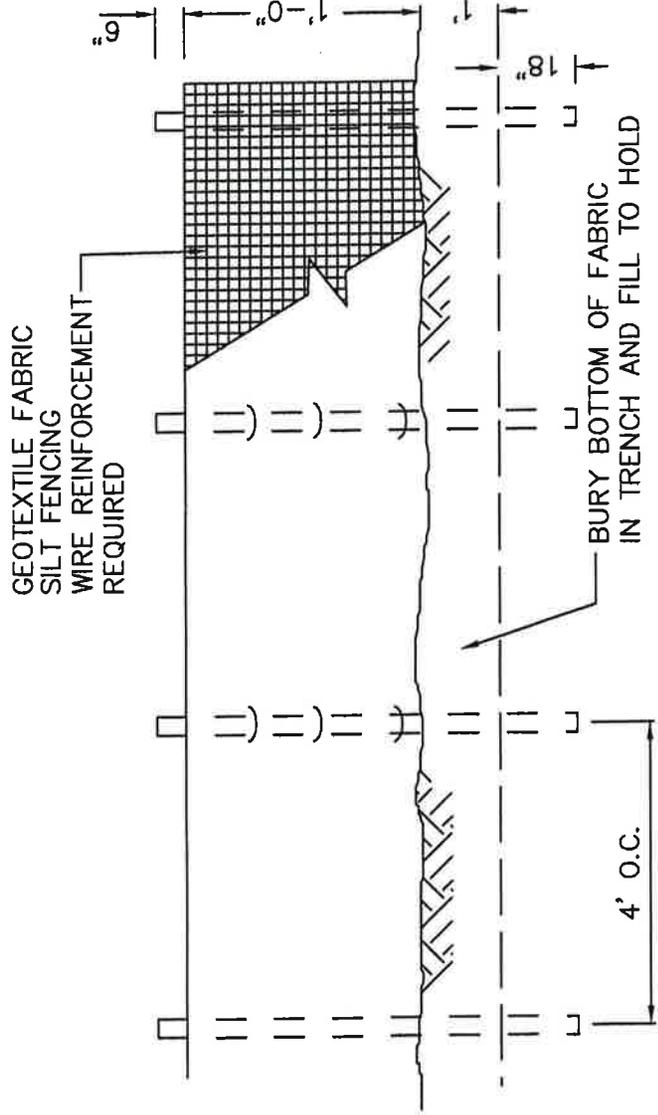
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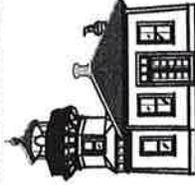
TRASH RACK

CITY OF MUKILTEO

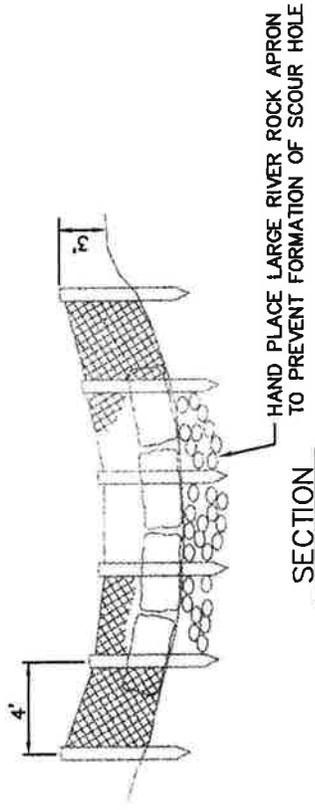
STANDARD PLAN 4-040-007



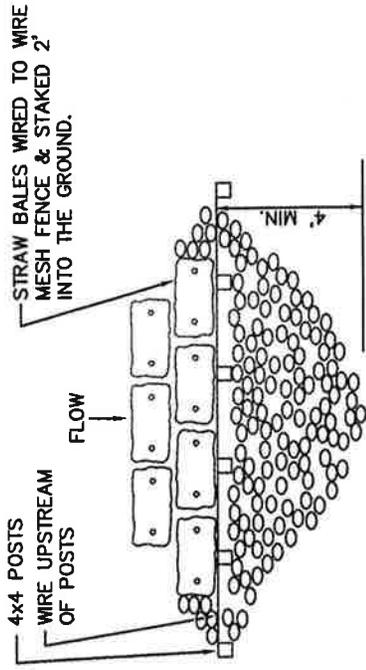
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MUKILTEO CITY ENGINEER DATE



SILT FENCE DETAIL



SECTION



PLAN

STRAW BALE CHECKS

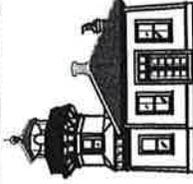
N.T.S.

NOTE:

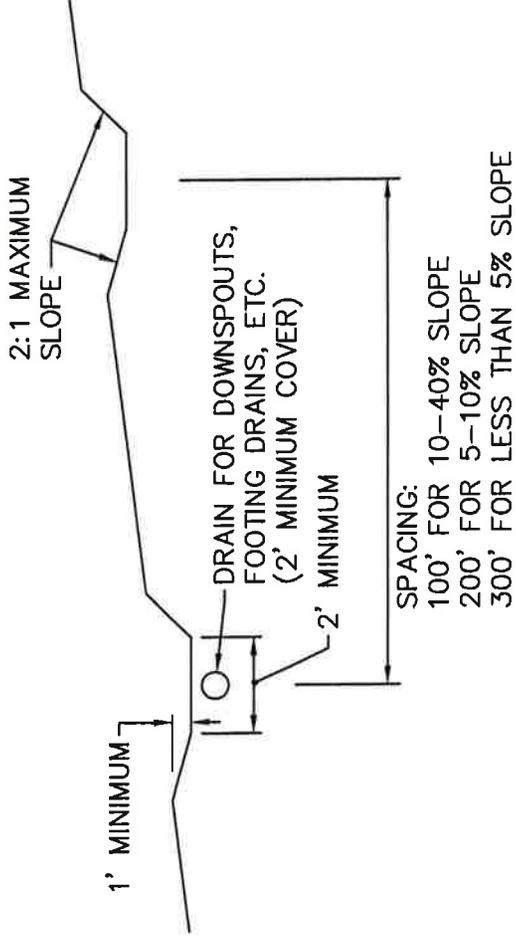
STRAW/HAY BALE CHECKS WILL BE TEMPORARILY INSTALLED ACROSS EXISTING DRAINAGEWAYS TO COLLECT AND STORE RUNOFF AND SEDIMENT PRIOR TO DISCHARGE. STRAW/HAY BALE CHECKS WILL BE INSTALLED IN DRAINAGEWAYS, BEFORE ANY UPSLOPE GRADING, OR CONSTRUCTION ACTIVITIES, COMMENCE. STRAW/HAY BALE CHECKS WILL BE CONSTRUCTED TO THE FOLLOWING GENERAL SPECIFICATIONS:

1. STRAW/HAY BALES SHALL BE LAID PERPENDICULAR TO FLOW, TIGHTLY ABUTTED, STACKED SECURELY IN PLACE WITH AT LEAST TWO STAKES PER BALE, AND KEYED INTO THE GROUND 6 TO 8 INCHES.
2. STRAW/HAY BALE CHECKS SHALL BE CONSTRUCTED TO A SUFFICIENT WIDTH TO RETARD RUNOFF AND TRAP SEDIMENT.
3. STRAW/HAY BALE CHECKS SHALL BE LOCATED AT 100 FOOT INTERVALS TO PROVIDE MAXIMUM CAPACITY FOR TRAPPING SEDIMENT, AS WELL AS GREATEST EASE OF CLEANOUT AND DISPOSAL OF TRAPPED SEDIMENTS.
4. STRAW BALE CHECKS SHALL BE MAINTAINED IN SATISFACTORY CONDITION UNTIL SUCH TIME THAT CLEARING AND/OR CONSTRUCTION IS COMPLETED AND PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL.

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 MUKILTEO CITY ENGINEER DATE



STRAW BALE CHECKS
 DETAIL



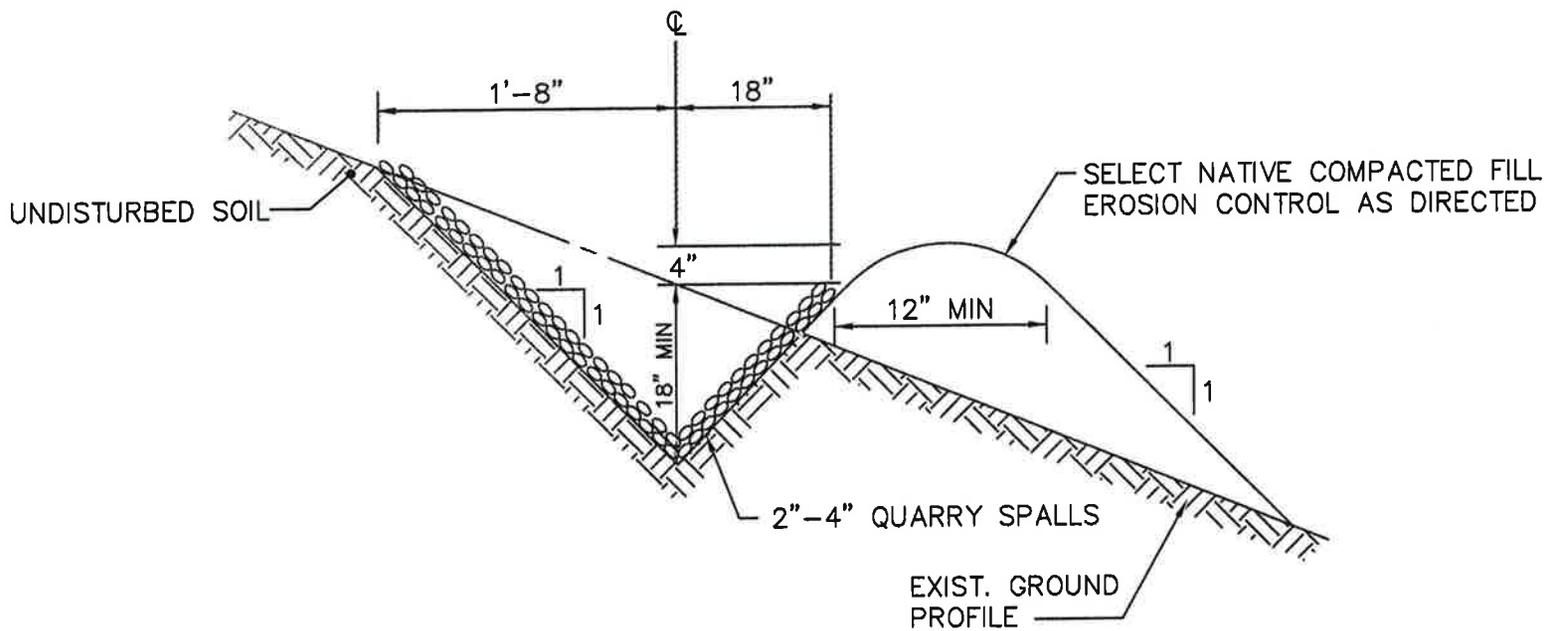
MAINTENANCE STANDARDS

1. DAMAGE RESULTING FROM RUNOFF OR CONSTRUCTION ACTIVITY SHALL BE REPAIRED IMMEDIATELY
2. IF THE FACILITIES DO NOT REGULARLY RETAIN STORM RUNOFF, THE CAPACITY AND/OR FREQUENCY OF THE DIKES/ SWALES SHALL BE INCREASED
3. MAINTENANCE TO BE PERFORMED BY PROPERTY OWNER

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INTERCEPTOR SWALE
DETAIL



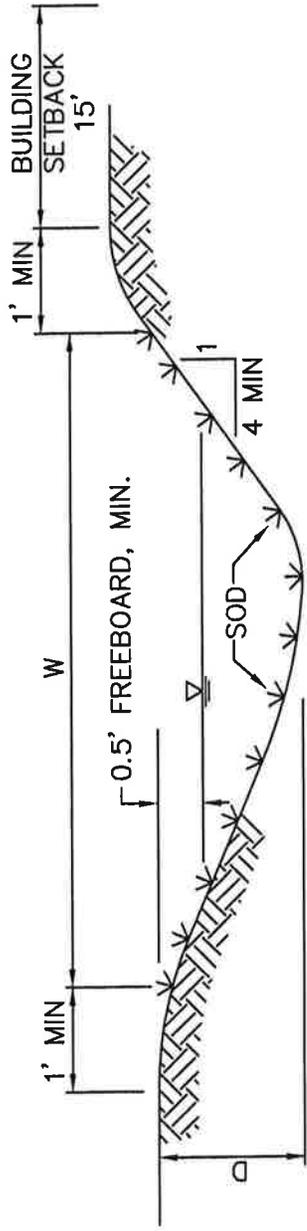
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MUKILTEO CITY ENGINEER _____ DATE _____



ROCK LINED
DRAINAGE SWALE

CITY OF MUKILTEO STANDARD PLAN 4-040-011



NOTE:

2. SOD SHALL BE STAPLED IN PLACE.
3. ROUND ALL CORNERS FOR EASE OF MOWING
4. MAXIMUM DESIGN VELOCITY SHALL BE 4 FPS. VELOCITY MAY BE CONTROLLED BY CHECK DAMS OR OTHER DEVICES.
5. LOCATE ALL SEDIMENT TRAPS FOR EASE OF MAINTENANCE.
6. DURING CONSTRUCTION AND MAINTENANCE PERIOD REMOVE SEDIMENT WHEN A MAXIMUM OF 6 INCHES IS DEPOSITED AT ANY POINT.
7. MATRIX-TYPE SOIL REINFORCEMENT MAY BE SUBSTITUTED ON PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.

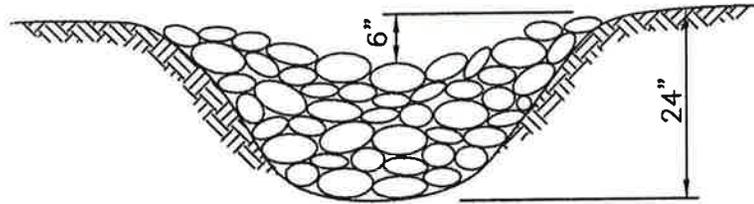
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MUKILTEO CITY ENGINEER DATE

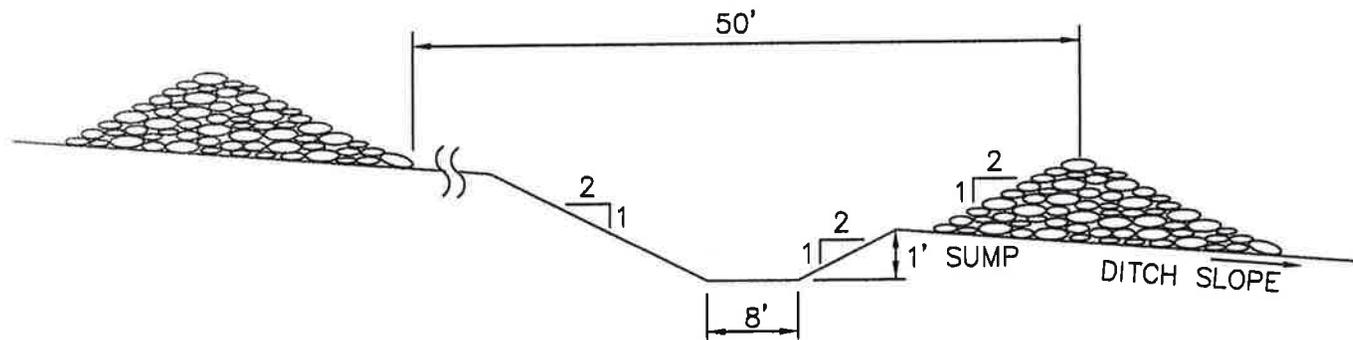


GRASS LINED SWALE

CITY OF MUKILTEO STANDARD PLAN 4-040-012



ROCK CHECK DAM
NTS



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MUKILTEO CITY ENGINEER

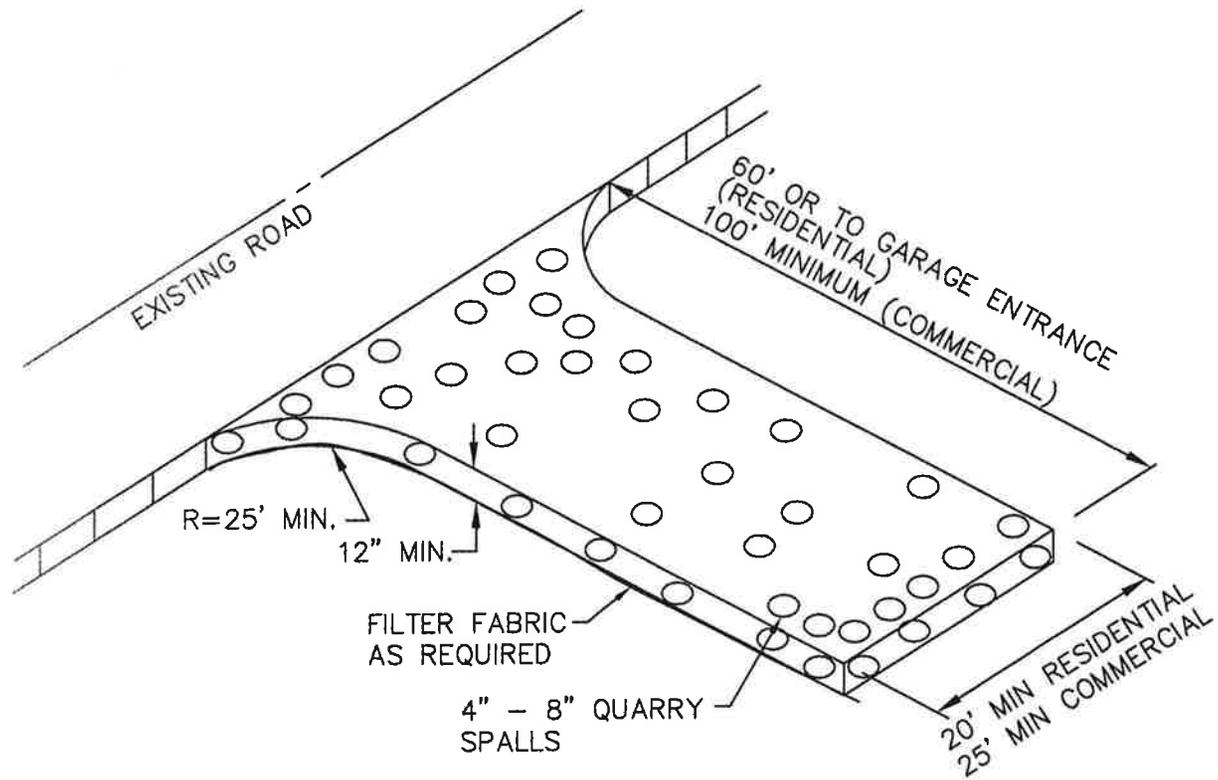
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SPACING BETWEEN ROCK
CHECK DAMS

CITY OF MUKILTEO

STANDARD PLAN 4-040-013



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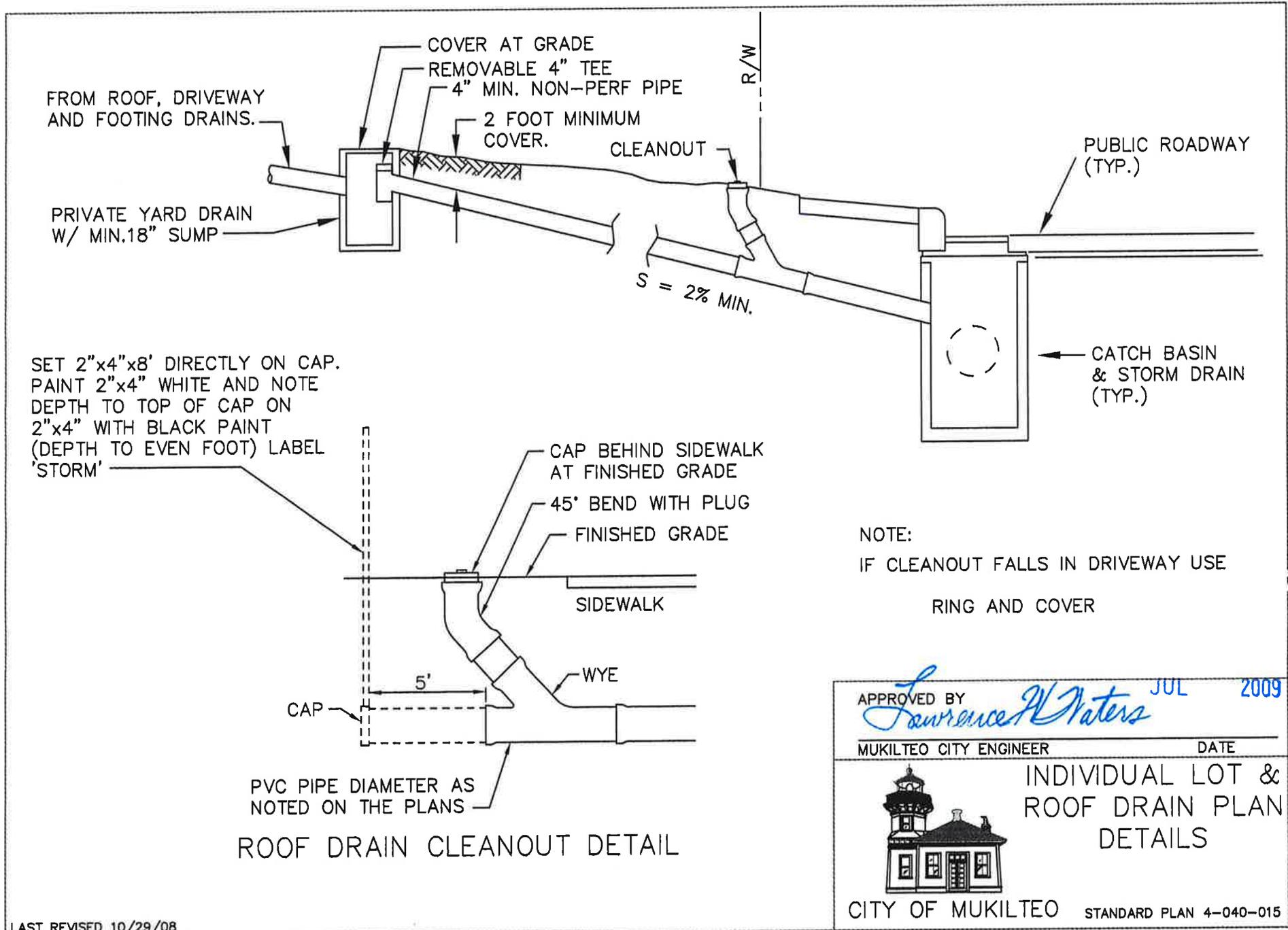
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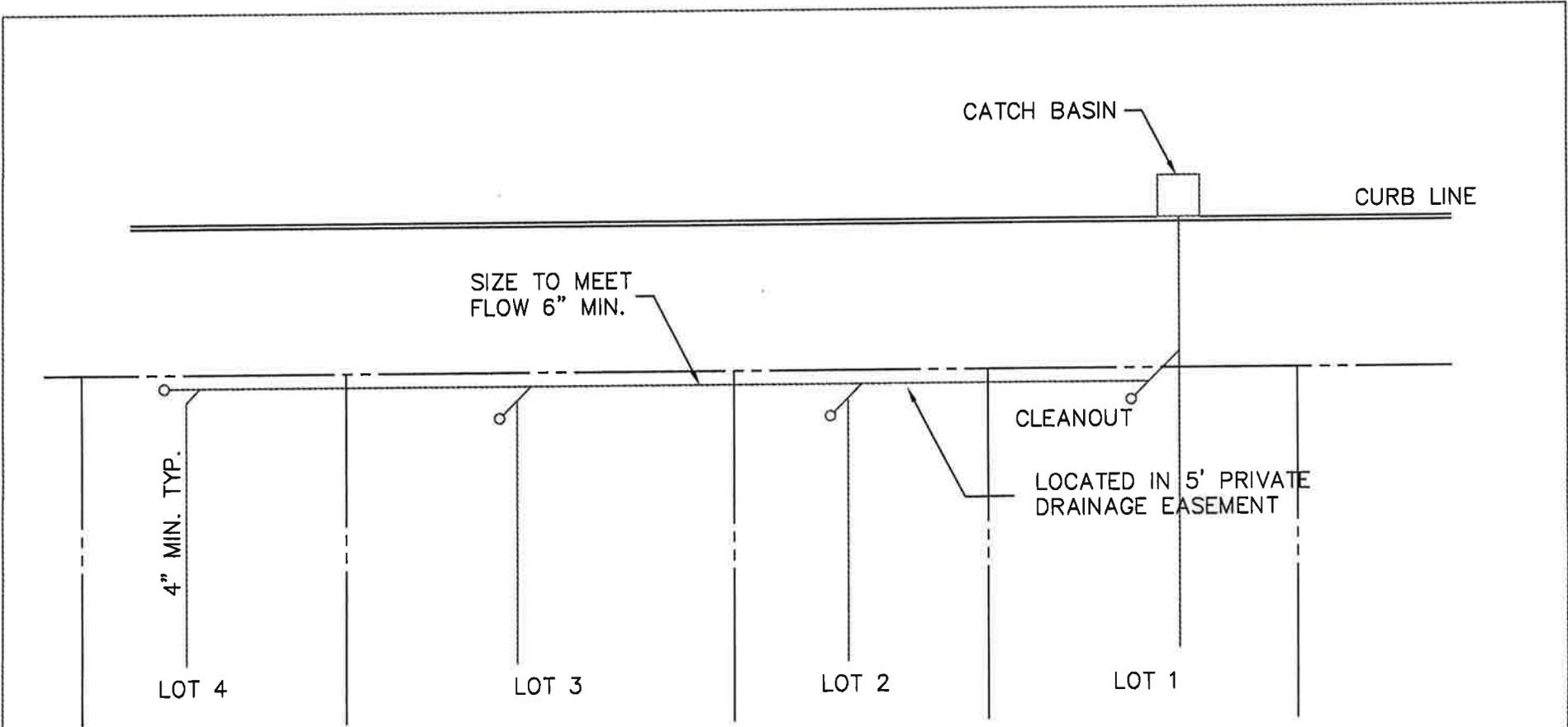


STABILIZED CONSTRUCTION
ENTRANCE

CITY OF MUKILTEO

STANDARD PLAN 4-040-014

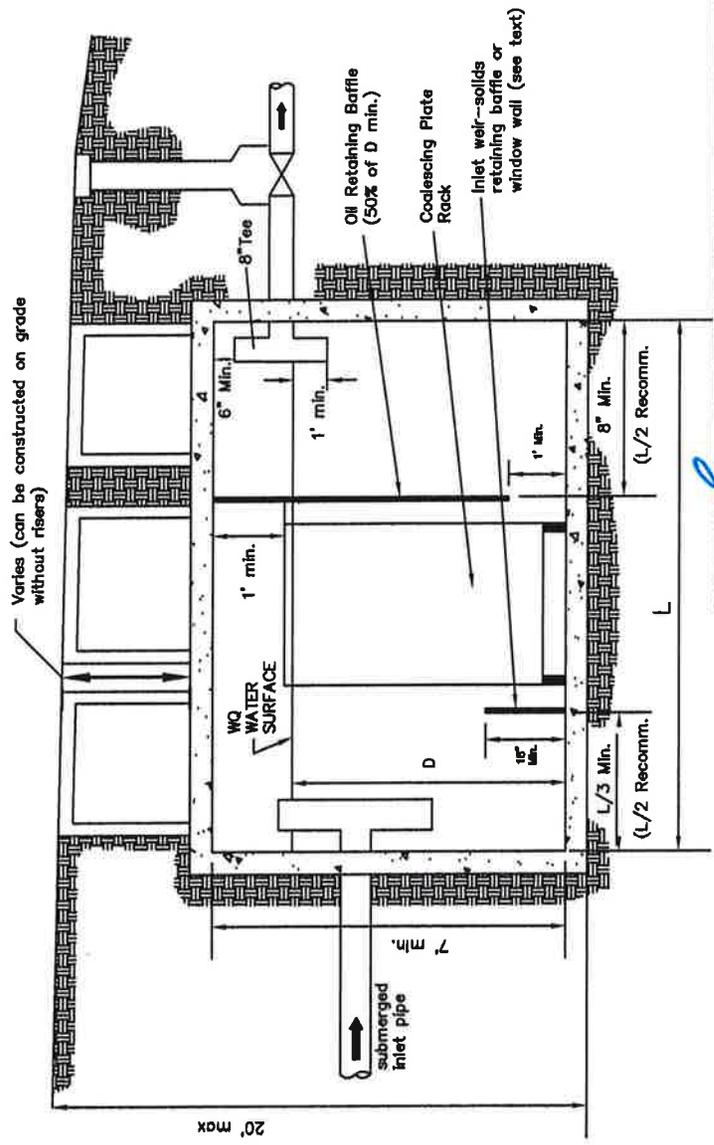
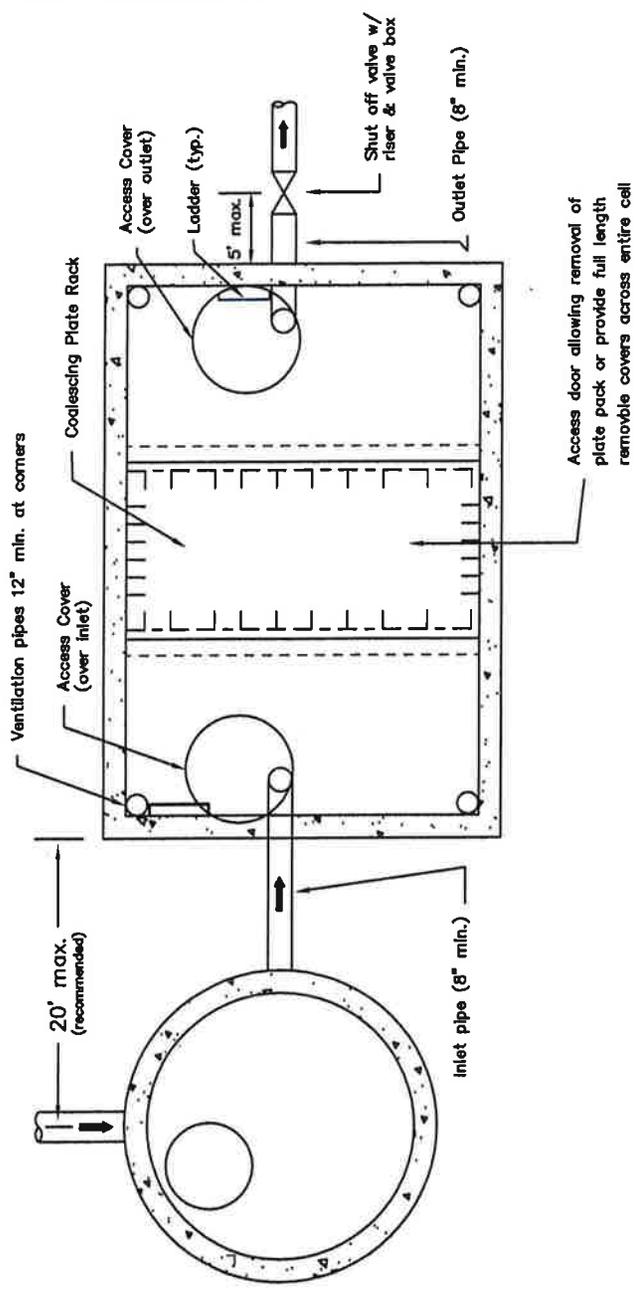




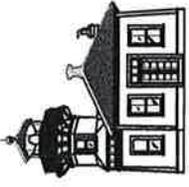
NOTE: YARD DRAINS TO BE LOCATED ON THE LOWER ELEVATION OF THE LOT.

APPROVED BY		<i>Lawrence Waters</i> JUL 2009	
MUKILTEO CITY ENGINEER		DATE	
		LOT AND ROOF DRAIN PLAN MULTI-LOTS	
		CITY OF MUKILTEO STANDARD PLAN 4-040-016	

PLAN VIEW

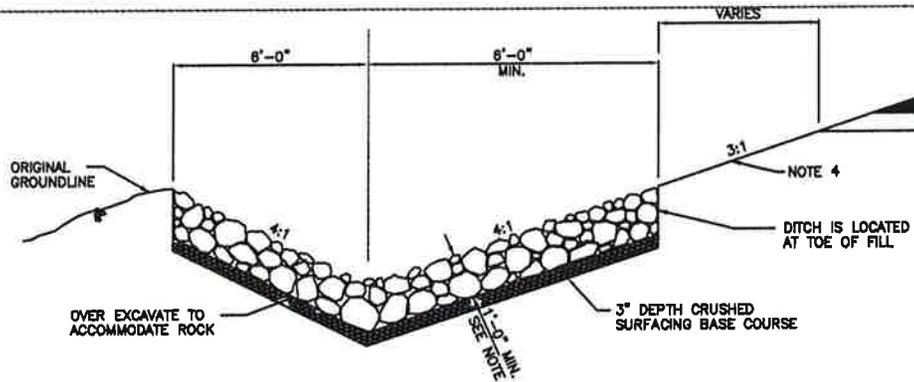


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 MUKILTEO CITY ENGINEER DATE

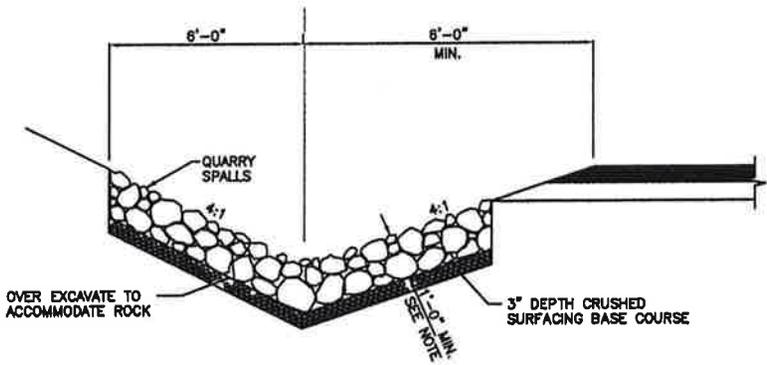


STANDARD COALESCING
 PLATE SEPARATOR

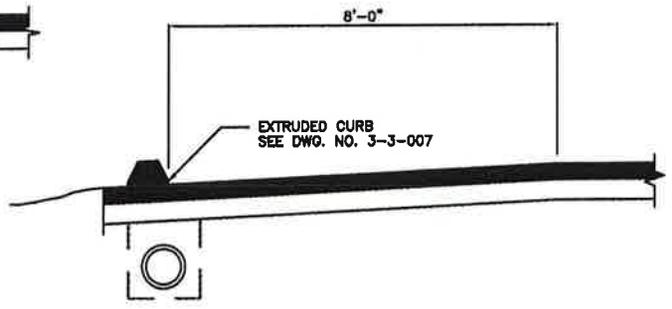
CITY OF MUKILTEO STANDARD PLAN 4-040-017



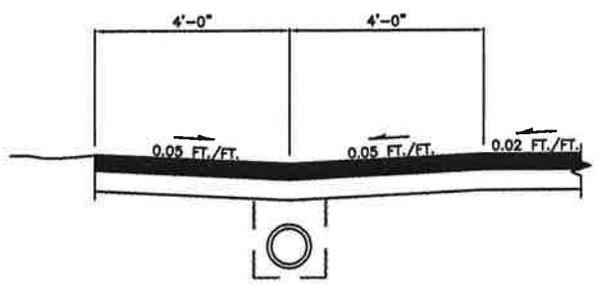
ROCK-LINED SHOULDER DITCH
IN FILL SECTION



ROCK-LINED SHOULDER DITCH
IN CUT SECTION



CURBED SHOULDER



TURNPIKE SHOULDER

NOTES FOR ROCK LINED DITCHES

1. DEEPER ROCK FILL MAY BE SPECIFIED.
2. USE FOR FINISH ROAD GRADES - 0.5% TO 9%
3. FOR SLOPES GREATER THAN 7% PROTECT SLOPE WITH ROCK
FOR SLOPES LESS THAN 7% PLACE CRUSHED ROCK OR HYDROSEED.

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MUKILTEO CITY ENGINEER

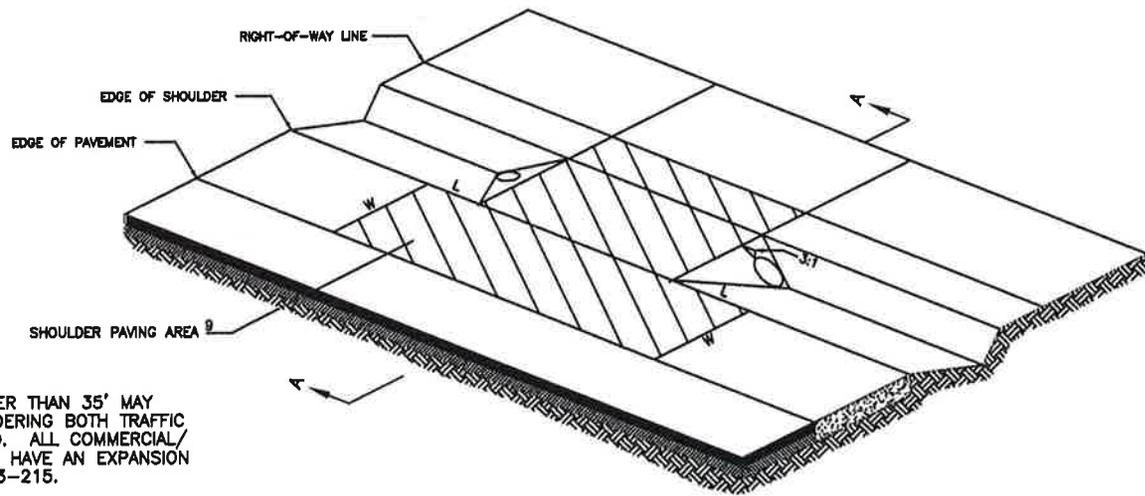
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ROCK LINED SHOULDER
DITCHES & CURBED OR
TURNPIKE SHOULDERS

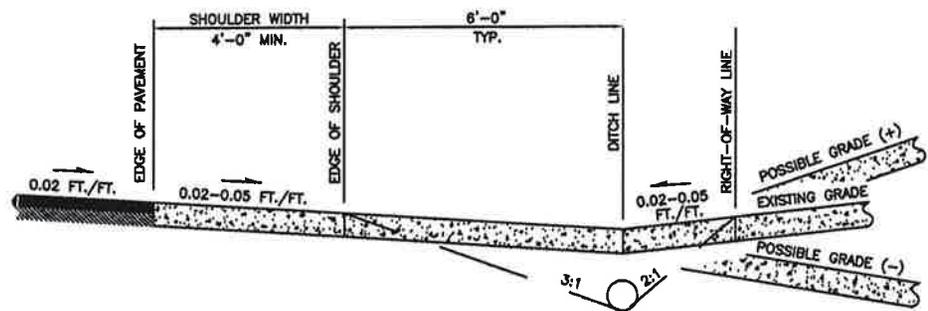
CITY OF MUKILTEO

STANDARD PLAN 4-080-002



NOTES:

1. COMMERCIAL/INDUSTRIAL DRIVEWAYS WIDER THAN 35' MAY BE APPROVED BY THE ENGINEER CONSIDERING BOTH TRAFFIC SAFETY AND THE ACTIVITY BEING SERVED. ALL COMMERCIAL/INDUSTRIAL CONCRETE DRIVEWAYS SHALL HAVE AN EXPANSION JOINT LOCATED MID-WIDTH. SEE SEC. 3-215.
2. PIPE SHALL BE:
 - A. SIZED TO CONVEY COMPUTED STORM WATER RUNOFF, AND
 - B. MIN. 12" DIAM., AND
 - C. EQUAL TO OR LARGER THAN EXISTING PIPES WITHIN 500' UPSTREAM.
3. EXPOSED PIPE ENDS SHALL BE BEVELED TO MATCH THE SLOPE FACE AND PROJECT NO MORE THAN 2" BEYOND SLOPE SURFACE. PROJECTING HEADWALLS ARE NOT ACCEPTABLE.
4. CONCRETE PIPE SHALL HAVE MIN. COVER OF 6" TO FINISH GRADE. ALL OTHER TYPES OF PIPE SHALL HAVE MIN. 24" COVER.
5. PIPE SHALL BE INSTALLED IN A STRAIGHT UNIFORM ALIGNMENT AT A MIN. 0.5% SLOPE (0.5 FT. PER 100 FT.) WITH THE DOWNSTREAM END LOWER THAN THE UPSTREAM END.
6. PIPE MAY BE OMITTED IF ROADSIDE DITCH DOES NOT EXIST AND DRIVEWAY DOES NOT BLOCK NATURAL FLOW.
7. DRIVEWAY SLOPE SHALL MATCH TO BACK EDGE OF SHOULDER, BUT SHOULDER SLOPE AND EDGE OF SHOULDER SHALL NOT BE ALTERED AS A RESULT OF DRIVEWAY CONSTRUCTION.
8. PAVED DRIVEWAYS SHALL BE PAVED THROUGH RIGHT-OF-WAY WITH A.C. OR B.S.T., BUT NOT P.C.C.
9. GRAVEL DRIVEWAYS SHALL BE PAVED BETWEEN THE EDGE OF PAVEMENT AND R/W WITH A.C. OR B.S.T. ONLY WITH DIMENSIONS L=W.



SECTION A-A

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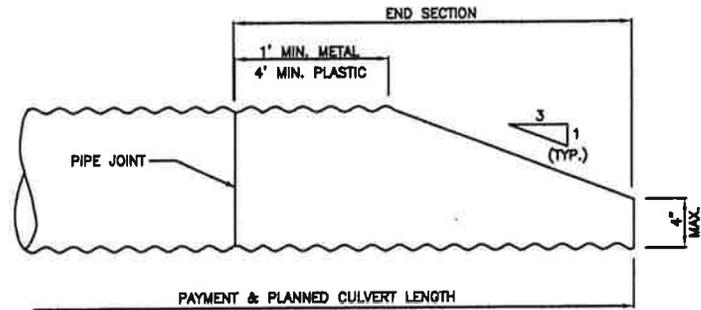
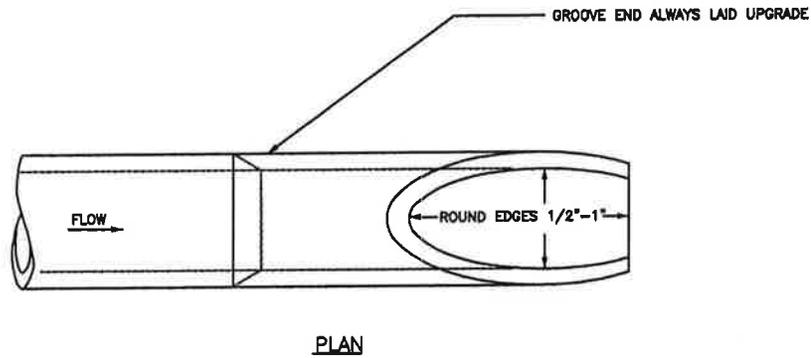
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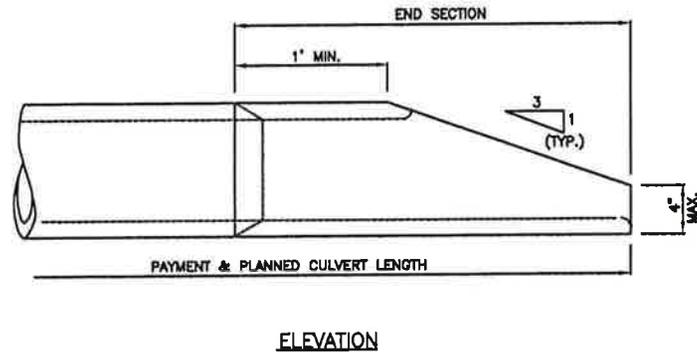
SHOULDER & DITCH
SECTION DRIVEWAY

CITY OF MUKILTEO

STANDARD PLAN 4-080-003



METAL & PLASTIC PIPE



CONCRETE PIPE

NOTE:

SIDE SLOPE SHALL BE WARPED TO MATCH THE BEVELED PIPE END. WHEN CULVERT IS ON SKEW, BEVELED END SHALL BE ROTATED TO CONFORM TO SLOPE. IF SLOPE DIFFERS FROM 3:1, PIPE SHALL BE BEVELED TO MATCH SLOPE.

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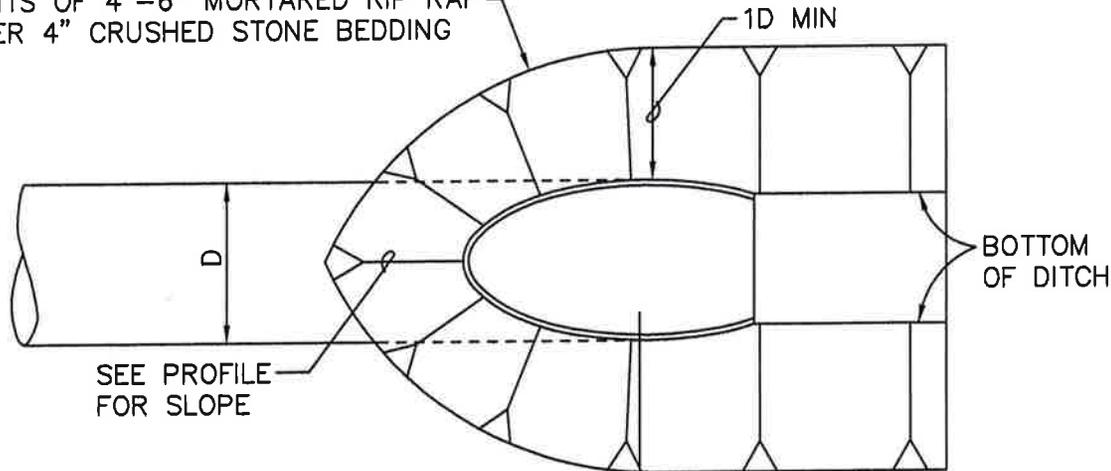


BEVELED END
PIPE SECTION

CITY OF MUKILTEO

STANDARD PLAN 4-080-004

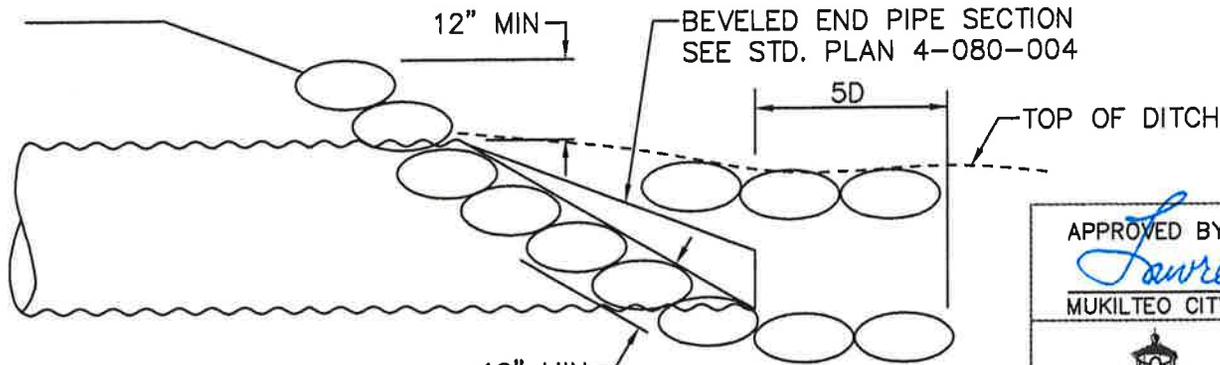
LIMITS OF 4"-6" MORTARED RIP RAP
OVER 4" CRUSHED STONE BEDDING



SEE PROFILE
FOR SLOPE

MATCH SIDE SLOPE
OF DITCH - 1 1/2:1 MAX
TYPICAL BOTH SIDES

PLAN



PROFILE

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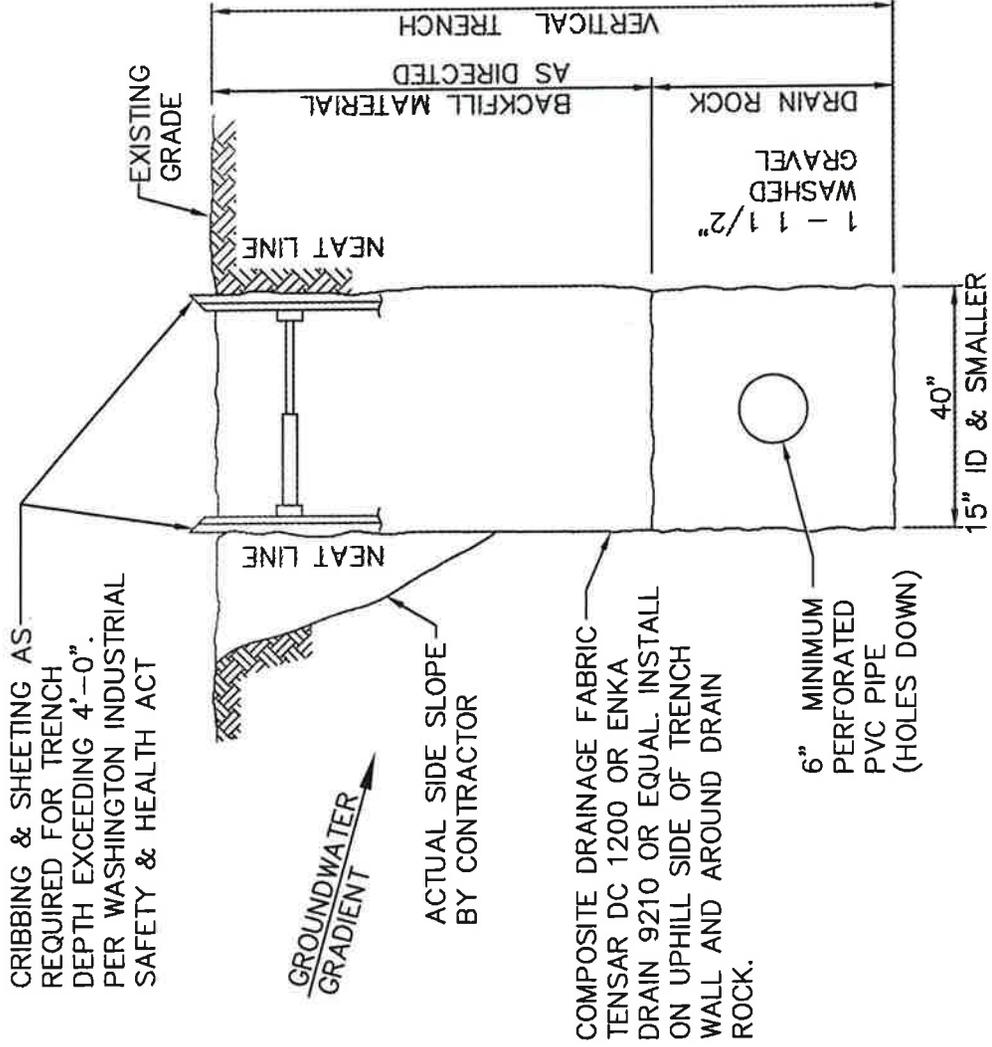
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ROCK HEADWALL
DETAIL

CITY OF MUKILTEO

STANDARD PLAN 4-080-005



CRIBBING & SHEETING AS
 REQUIRED FOR TRENCH
 DEPTH EXCEEDING 4'-0".
 PER WASHINGTON INDUSTRIAL
 SAFETY & HEALTH ACT

GROUNDWATER
 GRADIENT

ACTUAL SIDE SLOPE
 BY CONTRACTOR

COMPOSITE DRAINAGE FABRIC
 TENSAR DC 1200 OR ENKA
 DRAIN 9210 OR EQUAL. INSTALL
 ON UPHILL SIDE OF TRENCH
 WALL AND AROUND DRAIN
 ROCK.

6" MINIMUM
 PERFORATED
 PVC PIPE
 (HOLES DOWN)

15" ID & SMALLER
 40"

NEAT LINE
 EXISTING GRADE
 BACKFILL MATERIAL
 AS DIRECTED
 DRAIN ROCK
 1 - 1 1/2"
 WASHED
 GRAVEL
 VERTICAL TRENCH

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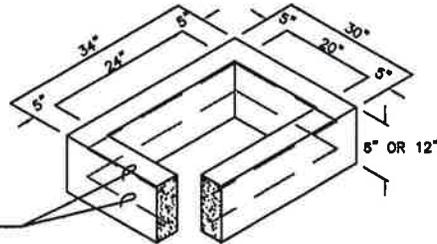
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FRENCH DRAIN

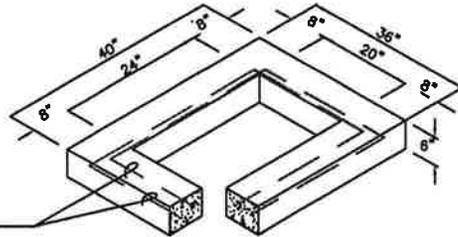


FRAME AND GRATE
SEE SEC. 4-080E AND
APPLICABLE DWGS.



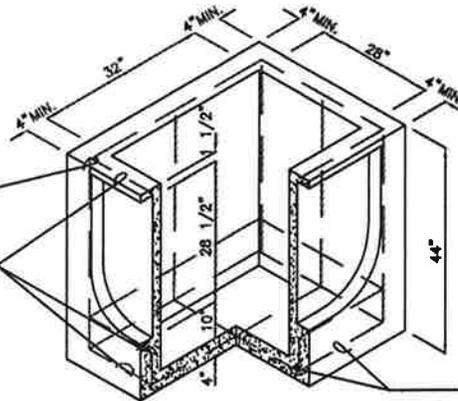
RISER SECTION

1 #3 BAR HOOP FOR 6"
2 #3 BAR HOOP FOR 12"



6" REDUCING SECTION

2 #3 BAR HOOP



PRECAST BASE SECTION
(MEASUREMENT AT THE TOP
OF THE BASE)

#3 BAR EACH CORNER

#3 BAR EACH SIDE

#3 BAR EACH WAY

NOTES:

1. CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M 199) & C890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA STANDARD SPECIFICATIONS.
2. AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MIN. AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A497 (AASHTO M 221). WIRE FABRIC SHALL NOT BE PLACED IN KNOCKOUTS.
3. ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MIN. ALL PIPE SHALL BE INSTALLED IN FACTORY PROVIDED KNOCKOUTS. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF WALL IS LEFT INTACT.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAM. PLUS CATCH BASIN WALL THICKNESS.
6. KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAX. DIAM. OF 28". KNOCKOUTS MAY BE EITHER ROUND OR "D" SHAPE.
7. THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2"/FT.
8. CATCH BASIN FRAME AND GRATE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-62ID. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
9. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.
10. MAX. DEPTH FROM FINISHED GRADE TO PIPE INVERT SHALL BE 5'-0".
11. EDGE OF REDUCING SECTION OR BRICK SHALL NOT BE MORE THAN 2" FROM VERTICAL EDGE OF CATCH BASIN WALL.
12. MINIMUM 4" ADJUSTMENT SECTION BETWEEN BOTTOM OF GRATE AND TOP OF BASE SECTION.

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JUL 2009

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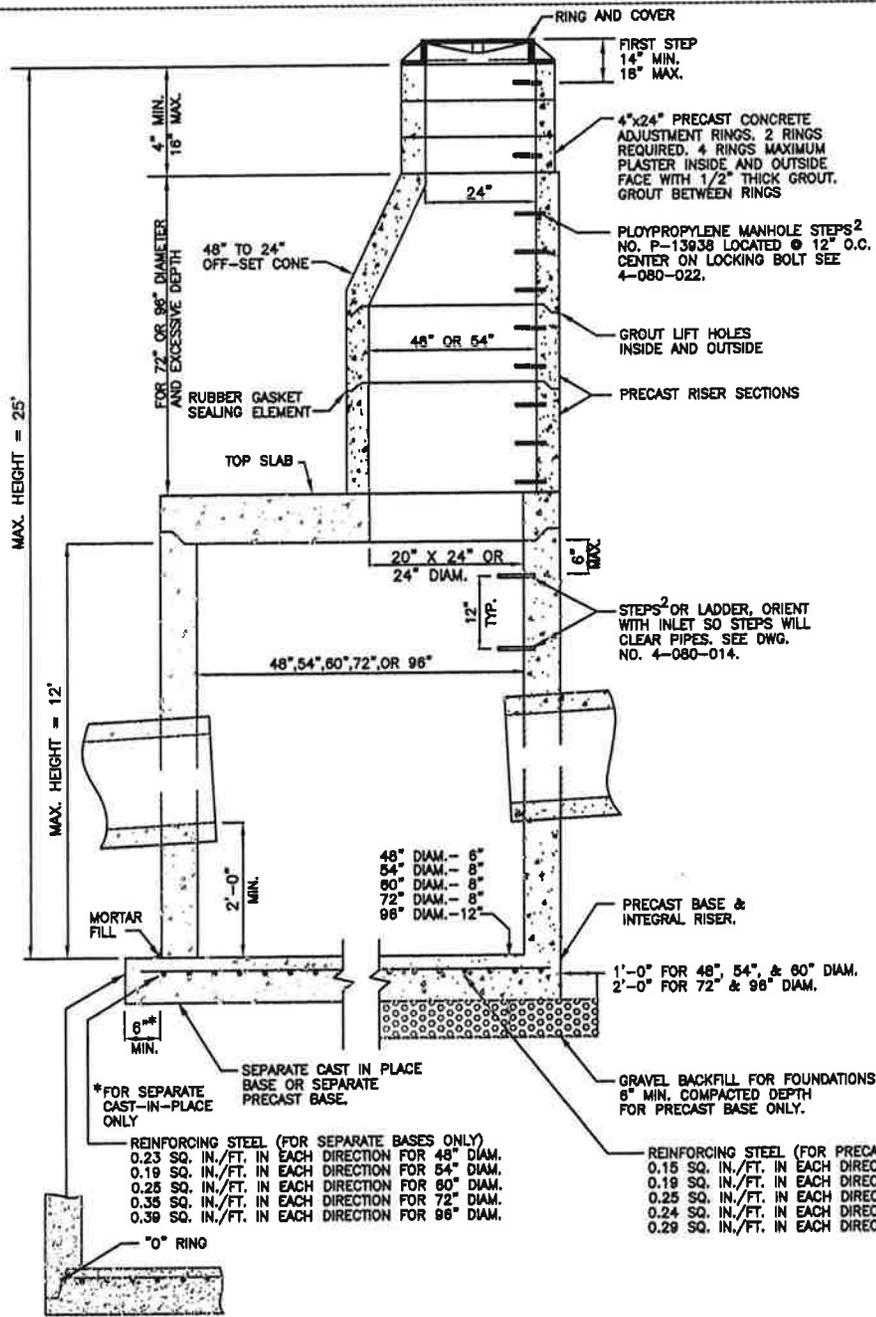
DATE



CATCH BASIN
TYPE 1-L
(18"-28" DIA.)

CITY OF MUKILTEO

STANDARD PLAN 4-080-008



NOTES:

1. CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M199) AND ASTM C890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA STANDARD SPECIFICATIONS.
2. HANDHOLDS IN ADJUSTMENT SECTION SHALL HAVE 3" MIN. CLEARANCE. STEPS IN CATCH BASIN SHALL HAVE 6" MIN. CLEARANCE. SEE DWG. NO. 4-080-014, CATCH BASIN DETAILS. HANDHOLDS SHALL BE PLACED IN ALTERNATING GRADE RINGS OR LEVELING BRICK COURSE WITH A MIN. OF ONE HANDHOLD BETWEEN THE LAST STEP AND TOP OF THE MANHOLE.
3. ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000. ALL PRECAST CONCRETE SHALL BE CLASS 4000.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE WALL THICKNESS OF 2" MIN. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF WALL IS LEFT INTACT. PIPES SHALL BE INSTALLED ONLY IN FACTORY KNOCKOUTS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. KNOCKOUT OR CUTOUT HOLE SIZE SHALL EQUAL PIPE OUTER DIAM. PLUS CATCH BASIN WALL THICKNESS. MAX. HOLE SIZE SHALL BE 36" FOR 48" CATCH BASIN, 42" FOR 54" C.B., 48" FOR 60" C.B., 60" FOR 72" C.B., 84" FOR 96" C.B. MIN. DISTANCE BETWEEN HOLES SHALL BE 8" FOR 48", 54", AND 60" C.B.; 12" FOR 72" AND 96" C.B.
6. CATCH BASIN FRAMES AND GRATES OR COVERS SHALL BE IN ACCORDANCE WITH SEC. 4-080(D) AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
7. ALL BASE REINFORCING STEEL SHALL HAVE A MIN. YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH 1" MIN. CLEARANCE.
8. MIN. SOIL BEARING VALUE SHALL EQUAL 3,300 POUNDS PER SQUARE FOOT.
9. FOR DETAILS SHOWING LADDER, STEPS, HANDRAILS AND TOP SLABS, SEE DWG. NO. 4-080-014.
10. SEE THE WSDOT/APWA STANDARD SPECIFICATIONS SEC. 1 FOR JOINT REQUIREMENTS.

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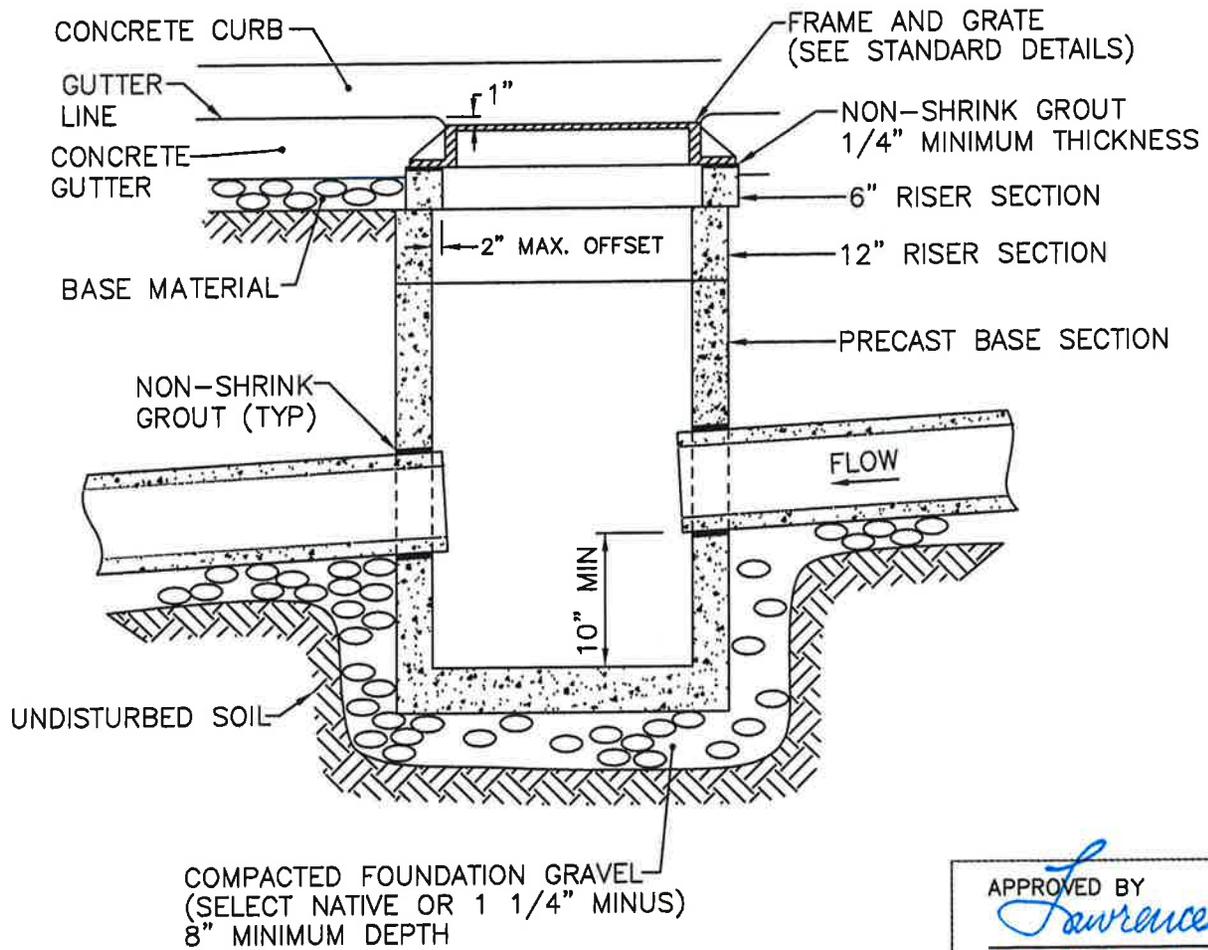
MUKILTEO CITY ENGINEER

DATE

CATCH BASIN TYPE 2
48", 54", 72", 96"



CITY OF MUKILTEO STANDARD PLAN 4-080-009

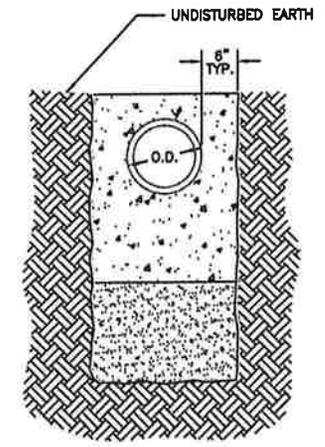
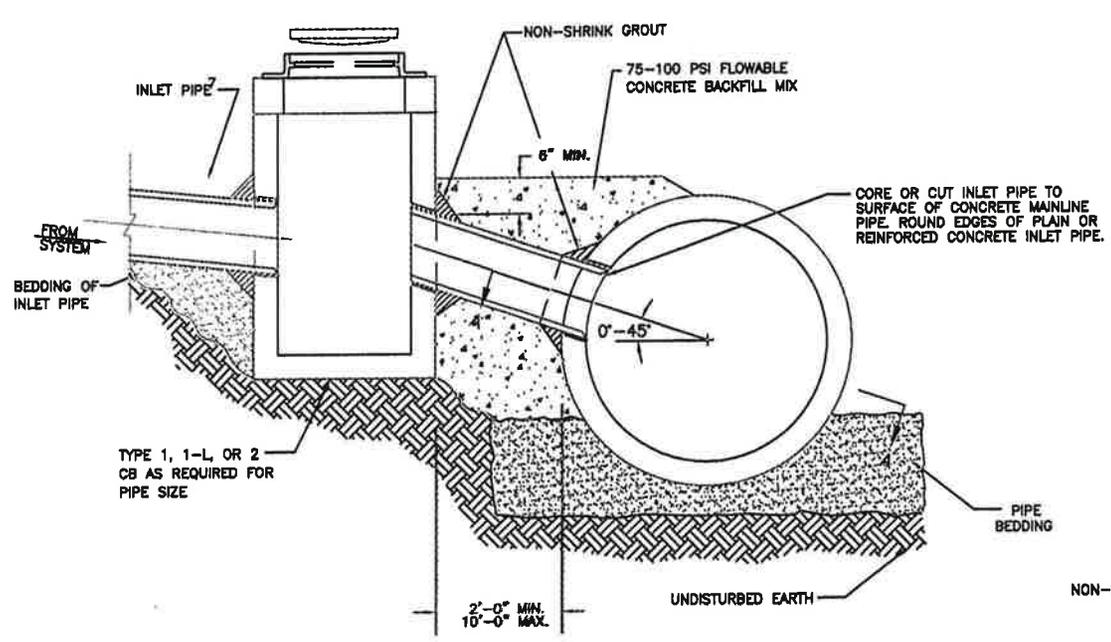


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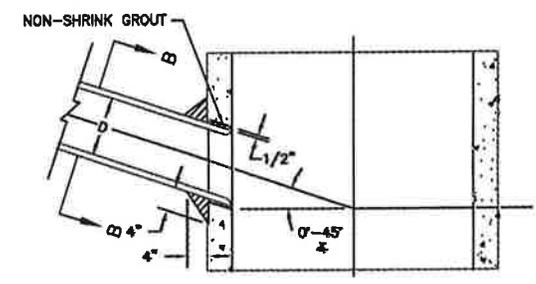


CATCH BASIN
 INSTALLATION DETAIL
 TYPE 1 & 1L

CITY OF MUKILTEO STANDARD PLAN 4-080-010



SECTION B-B



SECTION A-A

NOTES:

1. "D", THE INSIDE DIAM. OF THE INLET PIPE, SHALL BE 24" OR LESS. FOR LARGER VALUES OF "D", USE AN APPROVED STRUCTURE.
2. IN NO CASE SHALL THE OUTSIDE DIAM. OF THE INLET PIPE EXCEED ONE-HALF THE INSIDE DIAM. OF THE MAIN STORM SEWER.
3. C OF INLET PIPE SHALL BE ON RADIUS OF MAIN STORM DRAIN.
4. THE MIN. OPENING INTO THE EXISTING STORM DRAIN SHALL BE THE OUTSIDE DIAM. OF THE INLET PIPE PLUS 1 IN.
5. IF \angle IS GREATER THAN 45° FIELD TAPPING IS NOT ALLOWED.

APPROVED BY

Lawrence Waters JUL 2009

MUKILTEO CITY ENGINEER

DATE



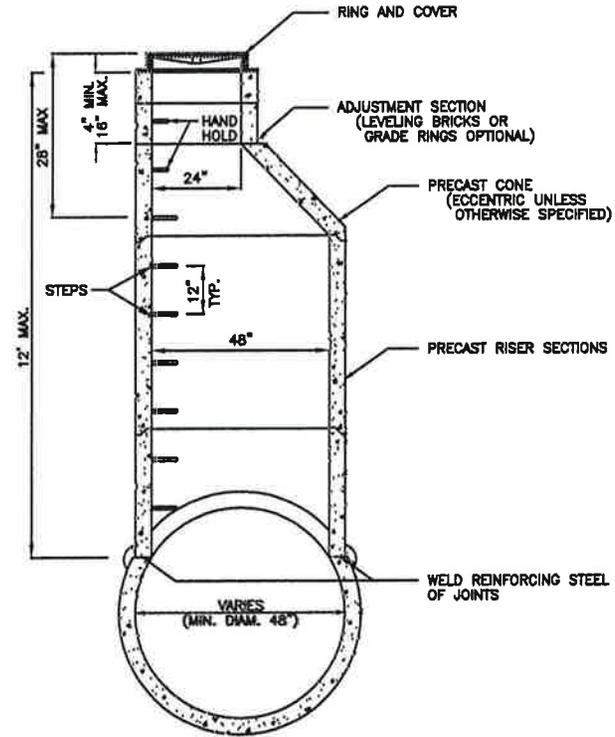
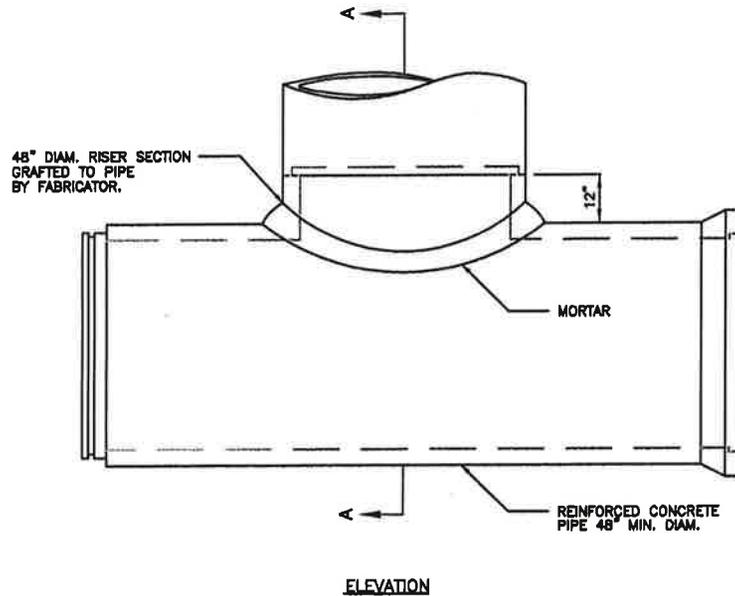
CITY OF MUKILTEO

FIELD TAPPING
OF CONCRETE PIPE

STANDARD PLAN 4-080-011

NOTES:

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M199 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA STANDARD SPECIFICATIONS.
2. HANDHOLDS IN ADJUSTMENT SECTION SHALL HAVE 3" MIN. CLEARANCE. STEPS IN MANHOLE SHALL HAVE 6" MIN. CLEARANCE. SEE DWG. NO. 4-080-014, "MANHOLE DETAILS."
3. MANHOLE RINGS AND COVERS SHALL BE IN ACCORDANCE WITH SEC. 4-080(D) AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
4. ALL PRECAST CONCRETE SHALL BE CLASS 4000.
5. FOR DETAILS SHOWING GRADE RING, LADDER, STEPS, HANDHOLDS, AND TOP SLABS, SEE DWG. NO. 4-080-014, "MANHOLE DETAILS".
6. NOT FOR USE IN TRAFFIC BEARING AREAS.



SECTION A-A

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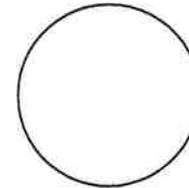
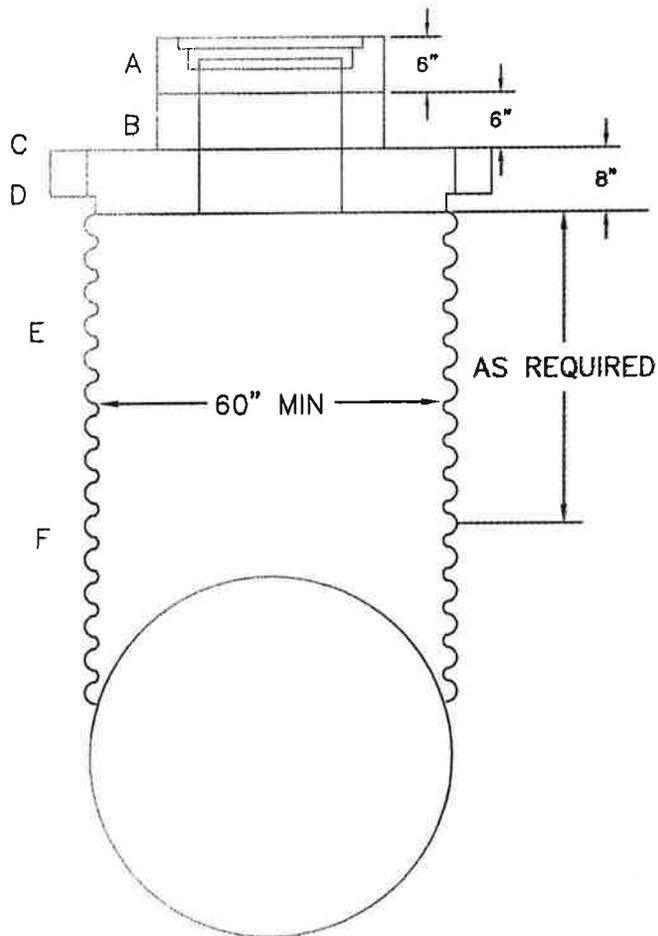
MANHOLE TYPE 4

CITY OF MUKILTEO

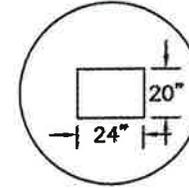
STANDARD PLAN 4-080-012

- A. CONCRETE TOP SLAB: SHORT ADJUSTMENT SECTION WITH DUCTILE IRON FRAME AND GRATE, PER STDS.
- B. CONCRETE 6" ADJUSTMENT SECTION AS REQUIRED.
- C. CONCRETE REDUCING FLAT SLAB: UNITS "M", "N", "P", OR "R", AS REQUIRED BY PLANS.
- D. OPTIONAL STEEL LID FOR HS20 LOAD.
- E. RISER: 10 GAUGE 54" HELICAL OR ANULAR CORRUGATED PIPE IN HEIGHTS AS REQUIRED. FOR HEIGHTS GREATER THAN 4' USE PRE FABRICATED LADDER PER APWA STANDARD PLAN B-13.
- F. CORRUGATED PIPE 60" AND GREATER IN DIAMETER WITH GAUGE AND SIZE AS REQUIRED ON PLAN.

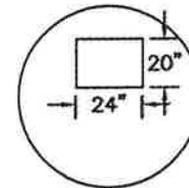
NOTE: ALL METAL PARTS AND SURFACES MUST BE MADE OF CORROSION RESISTANT MATERIAL OR ASPHALT COATED GALVANIZED, TREATMENT #1 OR BETTER; COMPLETE CORROSION PROTECTION MUST BE ASSURED.



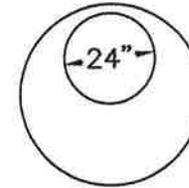
UNIT "M"



UNIT "N"



UNIT "P"



UNIT "R"

NOTE:
NOT FOR PUBLIC
ROADWAY CONSTRUCTION

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DATE

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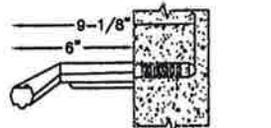
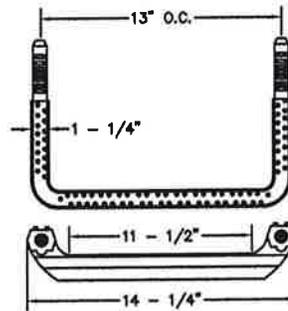
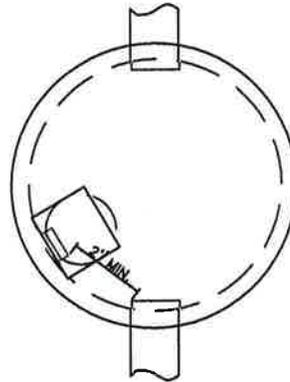
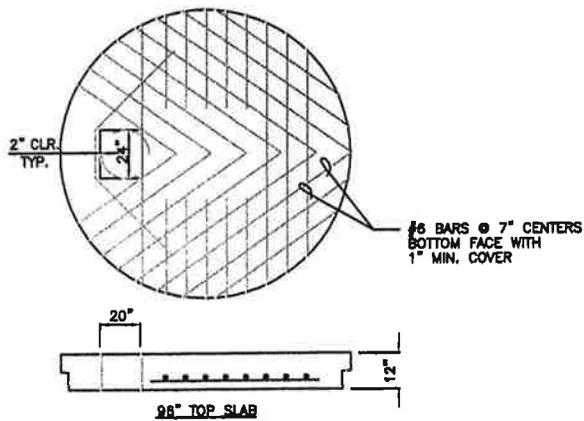
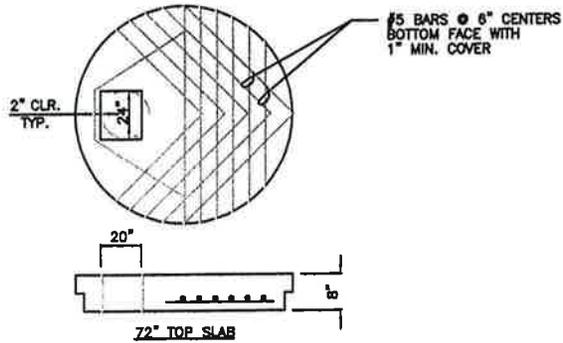
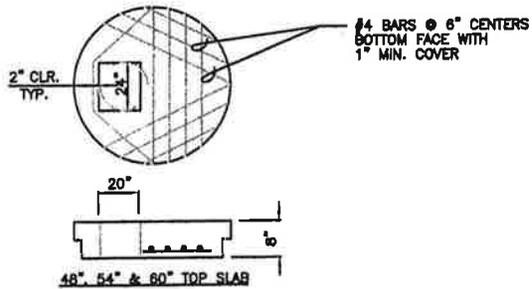
DATE



OFFSET CORRUGATED
MANHOLE

CITY OF MUKILTEO

STANDARD PLAN 4-080-013

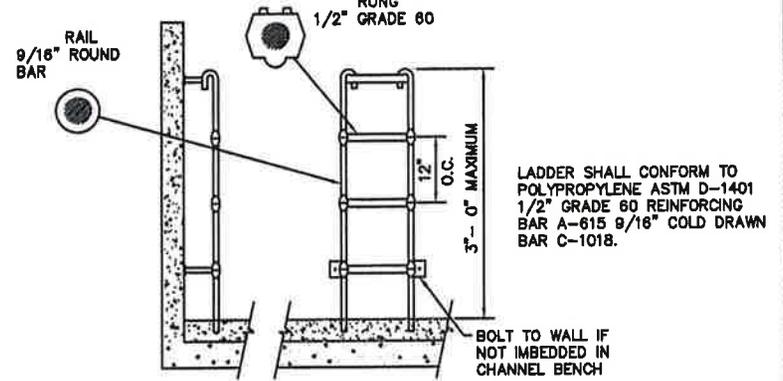


POLYPROPYLENE STEP, LANE
NO. P-13938 OR EQUAL

POLYPROPYLENE MANHOLE STEPS

NOTES:

1. PROPRIETARY CATCH BASIN HANDHOLDS AND STEPS ARE ACCEPTABLE, PROVIDED THAT THEY CONFORM TO SEC. R, ASTM C478, AASHTO M-199 AND MEET ALL WISHA REQUIREMENTS.
2. CATCH BASIN STEP/HANDHOLD LEGS SHALL BE PARALLEL OR APPROXIMATELY RADIAL AT THE OPTION OF THE MANUFACTURER, EXCEPT THAT ALL STEPS IN ANY CATCH BASIN SHALL BE SIMILAR. PENETRATION OF OUTER WALL BY A LEG IS PROHIBITED.
3. SLAB OPENING MAY BE 24" X 20" OR 24" DIAM.
4. AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MIN. AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A497.
5. LADDERS OR STEPS SHALL EXTEND TO WITHIN 16" OF BOTTOM OF CATCH BASIN.
6. HANGING LADDERS SHALL BE PERMANENTLY FASTENED AT TOP BY HANGING ON STEP AND BY BOLTING OR EMBEDDING IN CONCRETE. EACH SHALL BE EMBEDDED AT BOTTOM IN BASE.
7. ADDITIONAL SAFETY FEATURES MAY BE REQUIRED IN VERY DEEP OR UNUSUAL STRUCTURES.



POLYPROPYLENE LADDER

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Lawrence Waters JUL 2009
MUKILTEO CITY ENGINEER DATE



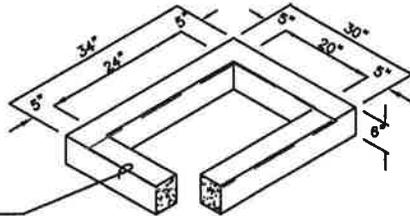
CITY OF MUKILTEO

CATCH BASIN &
MANHOLE DETAILS

STANDARD PLAN 4-080-014

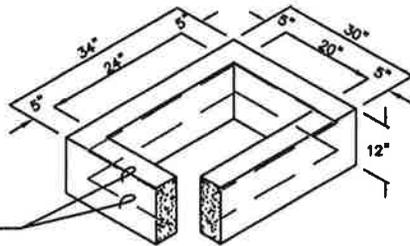


FRAME AND GRATE
SEE SEC. 4-080E AND
APPLICABLE DWGS.



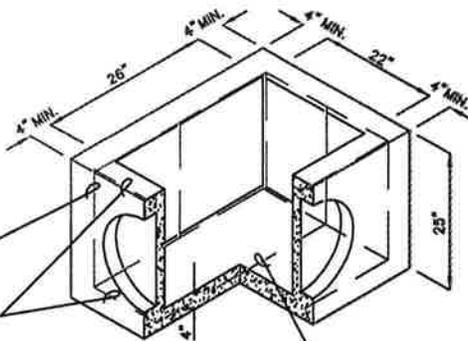
6" RISER SECTION

1 #3 BAR HOOP



12" RISER SECTION

2 #3 BAR HOOPS



PRECAST BASE SECTION
(MEASUREMENT AT THE TOP
OF THE BASE)

#3 BAR EACH CORNER

#3 BAR EACH SIDE
TOP & BOTTOM

1-#3 BAR ACROSS BOTTOM

NOTES:

1. CURB INLET TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 & C890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE STANDARD SPECIFICATIONS.
2. AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MIN. AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A497. WIRE FABRIC SHALL NOT BE PLACED IN KNOCKOUTS.
3. ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MIN. ALL PIPE SHALL BE INSTALLED IN FACTORY PROVIDED KNOCKOUTS. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF WALL IS LEFT INTACT.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAM. PLUS CURB INLET WALL THICKNESS.
6. ROUND KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAX. DIAM. OF 17".
7. THE MAX. DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS 5'-0".
8. THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2"/FT.
9. CONCRETE INLET FRAME AND GRATES SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-62ID. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY OTHER COVER POSITION.
10. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.
11. MAXIMUM DIAMETER OUTLET 8", MUST BE DIRECTLY CONNECTED TO CATCH BASIN.

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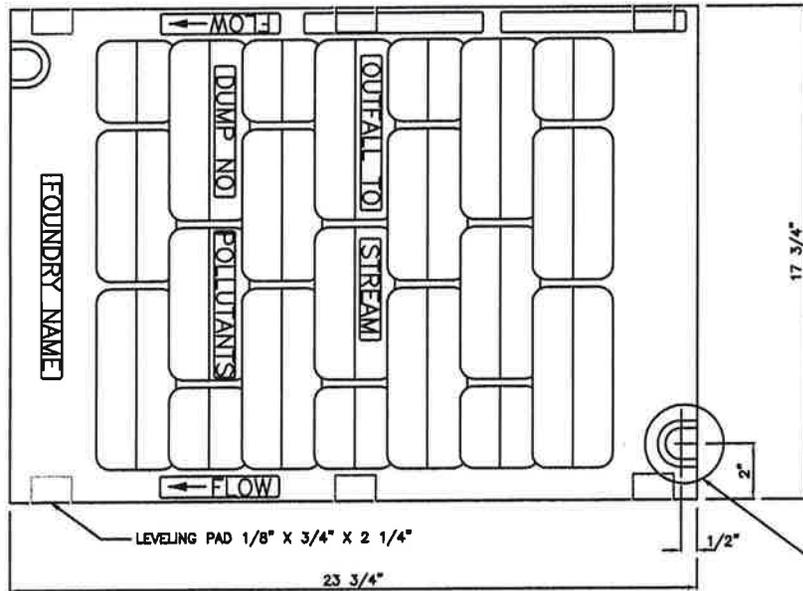
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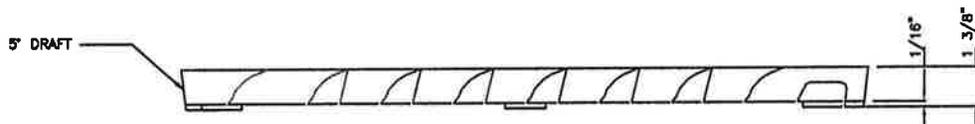
CURB INLET

CITY OF MUKILTEO

STANDARD PLAN 4-080-015



PLAN



ELEVATION

NOTES:

1. SELF-LOCK VANED GRATE MANUFACTURER SUBJECT TO APPROVAL BY ENGINEER.
2. USE WITH TWO LOCKING BOLTS 5/8"-11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) CAP SCREWS 2" LONG. NOTE SLOT DETAIL.
3. MATERIAL IS DUCTILE IRON ASTM A536 GRADE 80-55-06.
4. "OUTFALL TO STREAM DUMP NO POLLUTANTS" MAY BE LOCATED ON BORDER AREA.
6. SEE STANDARD PLAN 4-080-025 FOR FRAME.
7. SHALL BE USED ON ALL ROADS WITH SLOPES EQUAL TO OR GREATER THAN 3%.

FOR SLOT DETAIL SEE DWG. NO. 4-080-010

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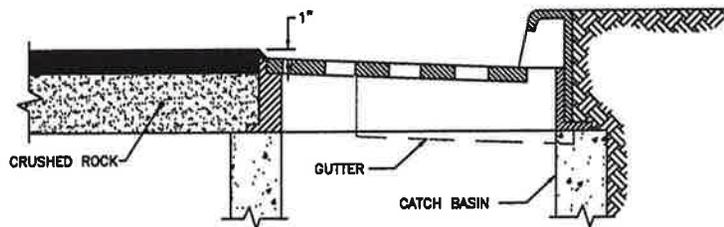
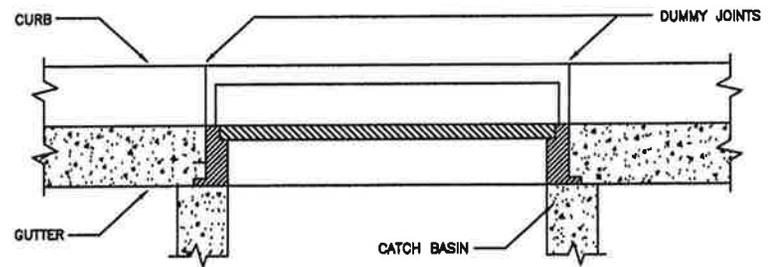
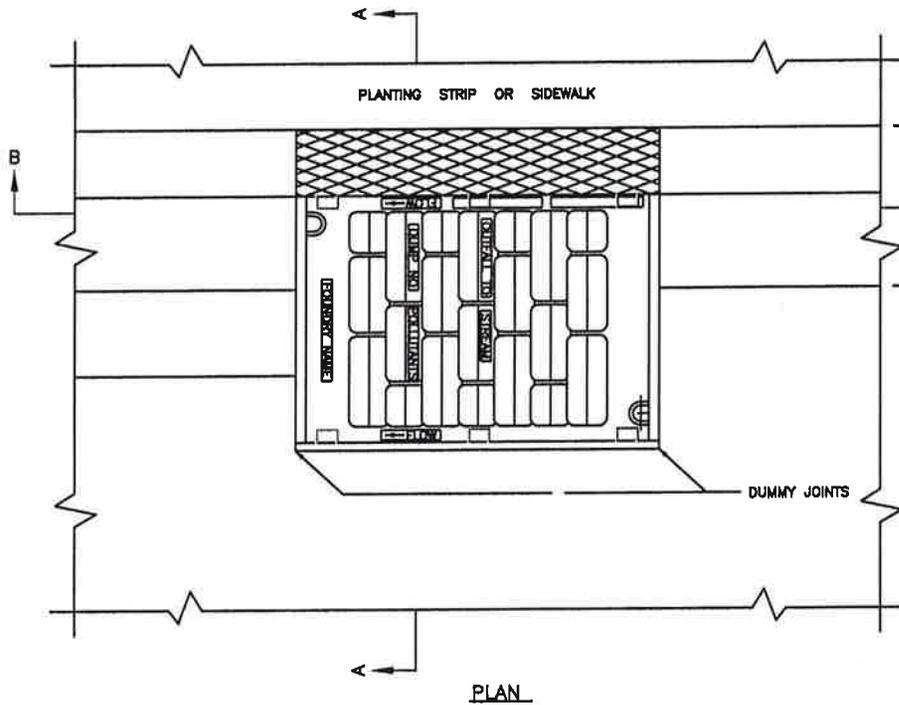
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VANED GRATE

CITY OF MUKILTEO

STANDARD PLAN 4-080-016



PLAN

SECTION A-A

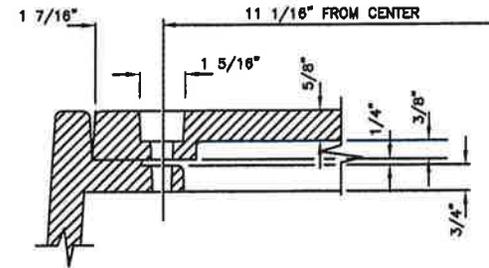
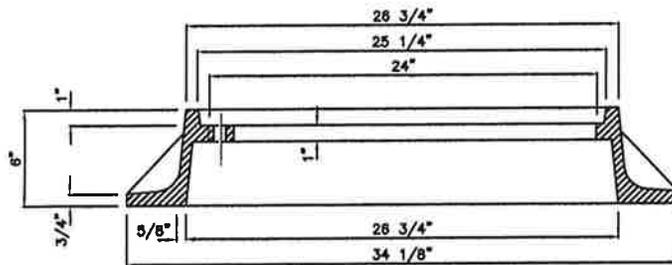
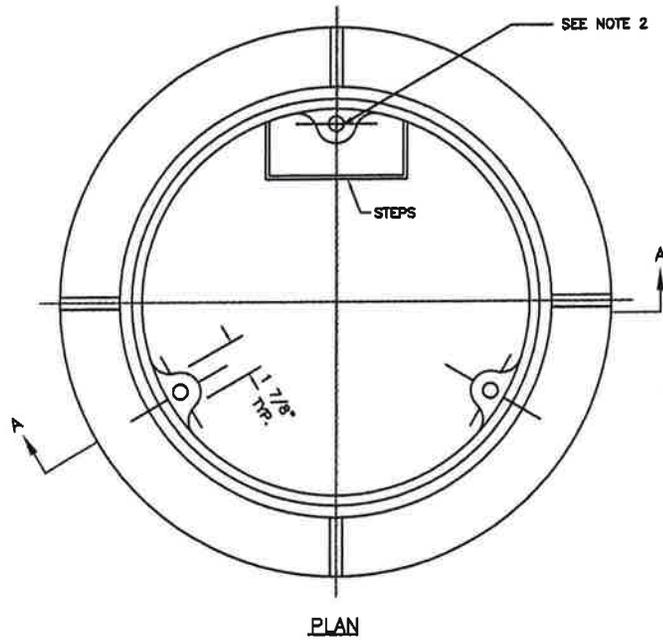
SECTION B-B

- NOTES:
1. SET TO GRADE AND CONSTRUCT ROAD AND GUTTER TO BE FLUSH WITH FRAME.

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 MUKILTEO CITY ENGINEER DATE



THRU-CURB INLET FRAME
 & GRATE W/ VERTICAL
 CURB INSTALLATION



BOLT-DOWN DETAIL

NOTES:

1. MATERIAL IS CAST IRON ASTM A48 CLASS 30.
2. DRILL AND TAP THREE 5/8"-11 NC HOLES THROUGH FRAME AT 120° AND 11 1/16" RADIUS.
4. FOR INSTALLATION SEE 4-080-009

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JUL - 2009

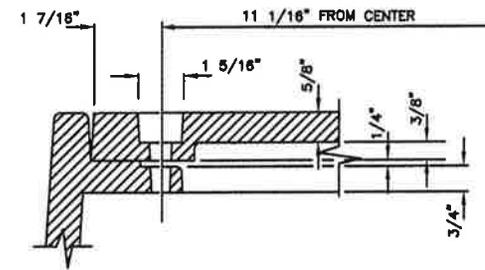
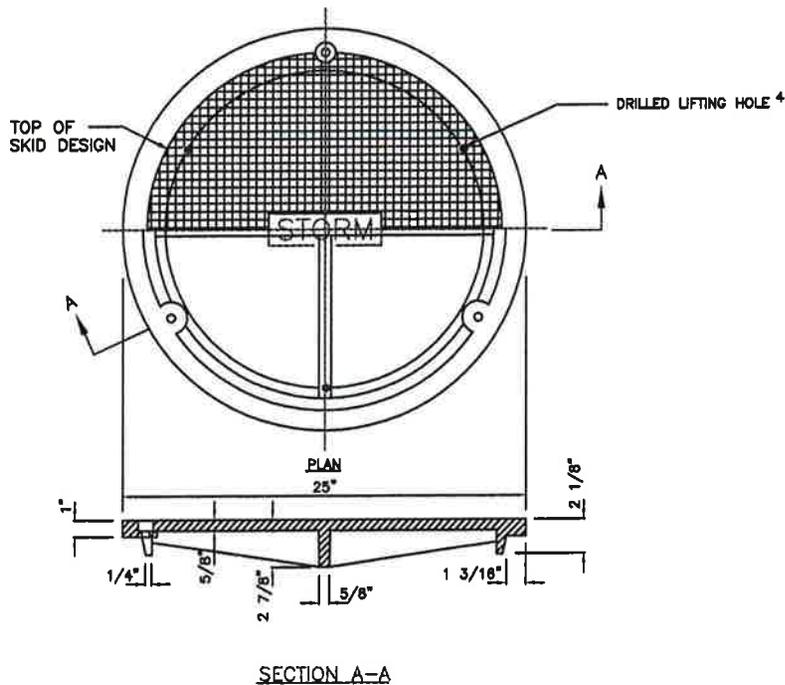
MUKILTEO CITY ENGINEER

DATE

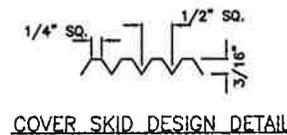


LOCKING
MANHOLE FRAME
DETAIL

CITY OF MUKILTEO STANDARD PLAN 4-080-022



BOLT-DOWN DETAIL



COVER SKID DESIGN DETAIL

NOTES:

1. USE WITH THREE LOCKING BOLTS 5/8"-11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) CAP SCREWS 2" LONG. DRILL HOLES SPACED 120° AT 11 1/16" RADIUS.
2. MATERIAL IS DUCTILE IRON ASTM A536 GRADE 80-55-06
4. DRILL THREE 1 INCH HOLES SPACED AT 120° AND 9 1/2" RADIUS.
5. FOR INSTALLATION SEE 4-080-009

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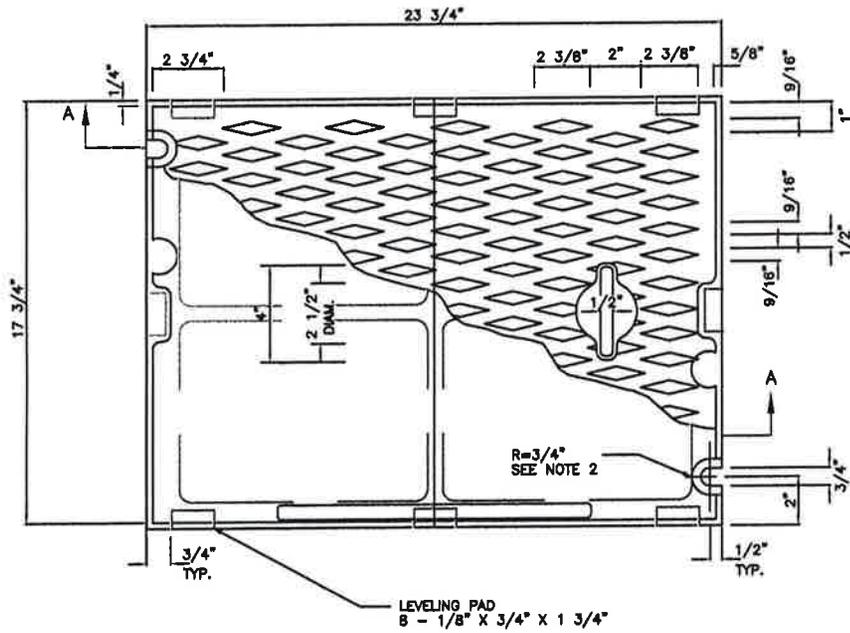
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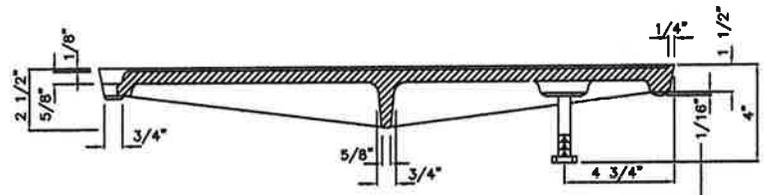
LOCKING MANHOLE
COVER DETAIL

CITY OF MUKILTEO

STANDARD PLAN 4-080-023



PLAN COVER



SECTION A-A

NOTES:

1. USE WITH FRAME (DWG. NO. 4-080-025) DRILLED AND TAPPED FOR LOCKING BOLTS.
2. USE WITH TWO LOCKING BOLTS 5/8"-11 NC STAINLESS STEEL TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) CAP SCREWS, 2" LONG.
3. MATERIAL IS CAST IRON PER ASTM A48 CLASS 30.
- 4.
5. RAISED WORDING "DRAIN" OR "STORM" ON ALL COVERS.

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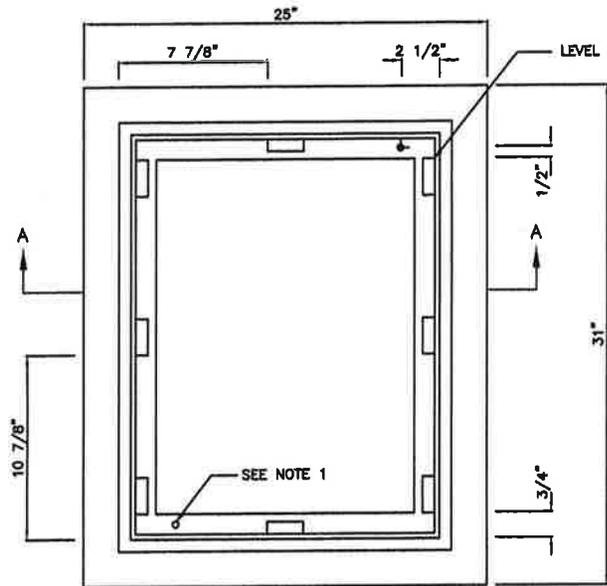
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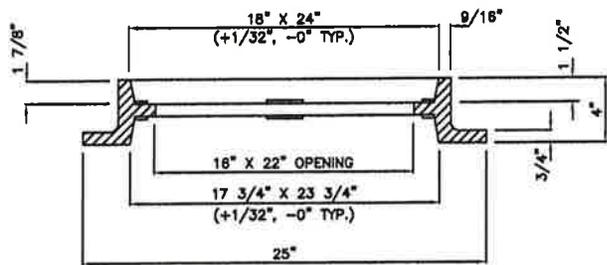
SOLID COVER

CITY OF MUKILTEO

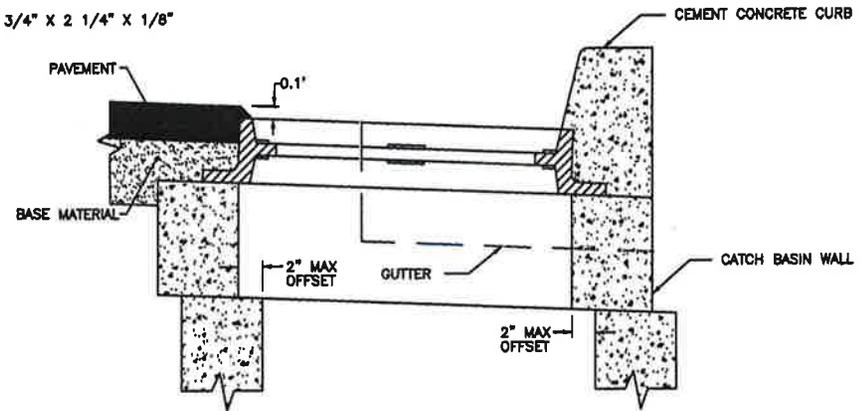
STANDARD PLAN 4-080-024



PLAN

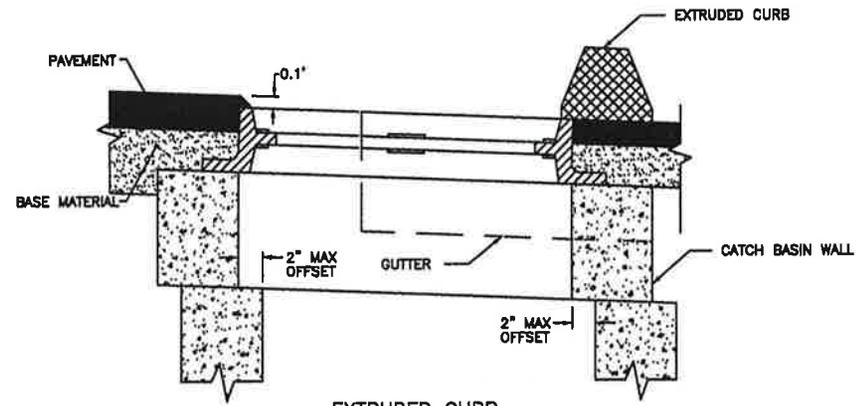


SECTION A-A



VERTICAL CURB

SEE NOTE 4



EXTRUDED CURB

SEE NOTE 4

NOTES:

1. DRILL AND TAP FOR, AND PROVIDE, TWO LOCKING BOLTS 5/8"-11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) CAP SCREWS 2" LONG WHEN USED WITH SOLID COVER (DWG. NO. 4-080-024).
2. FRAME MATERIAL IS CAST IRON PER ASTM A48 CLASS 30.
3. SET FRAME TO GRADE AND CONSTRUCT ROAD AND GUTTER TO BE FLUSH WITH FRAME.

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MUKILTEO CITY ENGINEER

DATE



CITY OF MUKILTEO

STANDARD FRAME W/
VERTICAL OR EXTRUDED
CURB INSTALLATION

APPENDIX H - STORMWATER SITE PLAN SUBMITTAL CHECKLIST

Project Name: _____

Address: _____

Parcel No. _____

The Submittal Requirements Checklist is intended to aid the design engineer in preparing a Storm water Site Plan. All items included in the following checklist must be addressed as part of any storm water site plan. The City recommends the design engineer follow the order and structure of the checklist to facilitate review, which in turn will expedite permit issuance.

Chapter 1 — Project Overview

The project overview is intended to be a summary of detailed information contained in the body of the Stormwater Site Plan.

- Identify other permits required (e.g. DOE Construction permit, forest practices permit, hydraulic permits, Army Corps 404 permits, wetlands, etc.).
- Identify the project location (including address, legal description, and parcel number).
- Brief description of project to include the following:
 - Current and proposed condition/land-use
 - Size of parcel
 - Acreage developed, redeveloped, replaced or converted by the project
 - Current assessed value and cost of proposed improvements (for redevelopment projects)
 - Watershed
 - Proposed flow control improvements
 - Proposed runoff treatment improvements
 - Proposed conveyance improvements
 - Proposed discharge location and improvements
 - Downstream condition, impacts and problem
 - Locations of surface water run-on to the property
 - Reference appropriate Sections/Chapters/Appendices of the document for detailed descriptions.

Chapter 2— Existing Condition Summary

The Existing Condition Summary is intended to provide a complete understanding of the project site and must be based on thorough site research and investigation.

- Describe, discuss and identify the following for the project site:
 - Topography
 - Land use and ground cover
 - Natural and man-made drainage patterns
 - Points of entry and exit for existing drainage to and from the site
 - Any known historical drainage problems such as flooding, erosion, etc.
 - Existing utilities (storm, water, sewer)

Project Name: _____

- Areas with high potential for erosion and sediment deposition
- Locations of sensitive and critical areas (i.e. vegetative buffers, wetlands, steep slopes, floodplains, geologic hazard areas, streams, creeks, ponds, ravines, springs, etc.).
- Existing fuel tanks
- Groundwater wells on-site and within 100 feet of site
- Septic systems on-site and/or within 100 feet of the site
- Identify difficult site conditions.
- Identify any specific requirements included in a basin plan for the area.
- Include references to relevant reports such as basin plans, flood studies, groundwater studies, wetland designations, sensitive area designations, environmental impact statements, environmental checklists, lake restoration plans, water quality reports, etc. Where such reports additional conditions on the Proponent, state these conditions and describe any proposed mitigation measures.
- Grading Plan per requirements.
- A soil report to identify the following:
 - Soil types
 - Hydrologic soil group classification
 - Groundwater elevation
 - Presence of perched aquifers, aquitards and confined aquifers
 - Location of test pits
 - Infiltration rates determined per the requirements of Volume 3 (where applicable)
 - Discussion of critical areas or geologic hazards where present
- Soil reports should be contained in Appendix A of the report or as a separate document.
- Describe the 100-year flood hazard zone.

Chapter 3—Off-Site Analysis

The City requires a qualitative discussion of the off-site upstream and downstream system for all projects that add 5,000 square feet or more of new impervious surface, or that convert ¾ acres of pervious surfaces to lawn or landscaped areas, or convert 2.5 acres of forested area to pasture. Detailed calculations will be contained in Appendix B of the report. Volume 1, Chapter 2.6.2 describes the Off-site Analysis. In addition, a list of elements to be included is provided as follows.

Qualitative Analysis

- Review all available plans, studies, maps pertaining to the off-site study area.
- Investigate the drainage system ¼ mile downstream from the project by site visit, including the following items:
 - Problems reported or observed during the resource review
 - Existing/potential constrictions or capacity deficiencies in the drainage system
 - Existing/potential flooding problems
 - Existing/potential overtopping, scouring, bank sloughing, or sedimentation
 - Significant destruction of aquatic habitat (e.g., siltation, stream incision)
 - Existing public and private easements through the project site and their corresponding widths
 - Qualitative data on features such as land use, impervious surface, topography, soils, presence of streams, and wetlands
 - Information on pipe sizes, channel characteristics and drainage structures
 - Verification of tributary drainage areas

Project Name: _____

- Date and weather at the time of the inspection
- Describe the drainage system and its existing and predicted problems through observations, reports, and hydraulic modeling (as necessary). Describe all existing or potential problems as listed above (e.g. pooling water or erosion). The following information shall be provided for each existing or potential problem:
 - Magnitude of or damage caused by the problem
 - General frequency and duration
 - Return frequency of storm or flow when the problem occurs (may require quantitative analysis)
 - Water elevation when the problem occurs
 - Names and concerns of the parties involved
 - Current mitigation of the problem
 - Possible cause of the problem
 - Whether the project is likely to aggravate the problem or create a new one
 - Properly include off-site areas in drainage calculations.

Chapter 4— Permanent Stormwater Control Plan

Chapter 4 will contain the information used to select, size and locate permanent stormwater control

BMP5 for the project site.

Pre-Developed Site Hydrology

- Provide a list of assumptions and site parameters for the pre-developed condition.
- Identify all sub-basins within, or flowing through, the site. Use consistent labeling for all sub-basins throughout figures, calculations and text.
- For each sub-basin, identify current land use, acreage, hydrologic soil group and land use to be modeled under pre-developed conditions.
- Provide justification for land uses other than forest.
- Summarize output data from the pre-developed condition.
- Include completed hydrologic calculations in Appendix C of the report.
- For WWHM models, provide model files electronically.

Developed Site Hydrology

- Provide a list of assumptions and site parameters for the developed condition.
- Identify all sub-basins within, or flowing through, the site. Use consistent labeling for all sub-basins throughout figures, calculations and text.
- For each sub-basin, identify current land use, acreage, hydrologic soil group and land use to be modeled under developed conditions.
- Summarize output data from the developed condition.
- Include completed hydrologic calculations in Appendix C of the report.

Performance Goals and Standards

- Indicate total acreage of impervious surfaces, pollution-generating impervious surfaces and pollution-generating pervious surfaces for each Threshold Discharge Area (TDA).
- Include applicable decision chart (Figure 2.2, Figure 2.3, Table 2.1, or Table 2.2) with Treatment and flow control requirements clearly marked and supported.

Project Name: _____

- Include applicable decision chart (Table 2.2) with flow control requirements clearly marked and supported. If flow control facilities are required, indicate that they are required.
- State conclusions from decision and flow charts.

Example Table

Threshold Discharge Area ID:	
Total pollution generating pervious surface (PGPS)	acres
Total pollution generating impervious surface ((PGIS)	acres
Native vegetation converted to lawn/landscape	acres
Total effective impervious surface	acres
Increase in 100-year storm peak	cfs

Flow Control System (where required)

- Identify sizing system used.
- Summarize model results.
- Describe proposed flow control system and appurtenances, including size, type and characteristics of storage facility and control structure.
- Provide a drawing of the flow control facility and its appurtenances, including:
- Include Hydraulic Analysis Worksheet, calculations, and computer printouts (including stage storage tables) for the flow control system to be included in Appendix C of the report.

Water Quality System (where required)

- Identify the sizing method used.
- Summarize model results.
- Identify treatment methods used, including size, type and characteristics of treatment facility and appurtenances.
- Provide a drawing of the treatment facility and its appurtenances, including:
 - Dimensions
 - Inlet/outlet sizes and elevations
 - Location of the facility on the project site
 - Appurtenances/fittings
- Calculations for the water quality design storm and facility sizing calculations must be included in Appendix D of the report.
- Where appropriate, include manufacturer’s specifications in Appendix D of the report.

Conveyance System Analysis and Design

- Illustrate the proposed conveyance system on a project site plan.
- Identify pipe sizes, types and slopes.
- Describe capacities, design flows and velocities for each reach.
- Include conveyance calculations in Appendix E of the report.

Chapter 5— Discussion of Minimum Requirements

Chapter 5 is intended as a checklist for the applicant and reviewer to verify that the applicable Minimum Requirements have been met within the project submittal.

Project Name: _____

- Include applicable flowcharts for determining minimum requirements (Figure 2.2 or Figure 2.3) with decision path clearly marked.
- List the minimum requirements that apply to the project.

- Discuss how the project satisfies each minimum requirement.
- Indicate where in the project documentation each minimum requirement is satisfied.

Chapter 6—Operation and Maintenance Manual

The Operation and Maintenance Manual may be included in the Stormwater Site Plan, however it shall be written with the intention of becoming a stand-alone document for the project owner once the project is complete. The Operation and Maintenance Manual must include:

- A narrative description of the on-site storm system.
- An 11 x 17 inch map of the site, with the locations of the treatment, detention, infiltration, etc. facilities prominently noted. This is needed to enable the Operation and Maintenance manual to be a stand-alone document.
- The person or organization responsible for maintenance of the on-site storm system, including the phone number and current responsible party.
- Where the Operation and Maintenance manual is to be kept. Note that it must be made available to the City for inspection.
- A description of each flow control and treatment facility, including what it does and how it works. Include any manufacturer’s documentation.
- A description of all maintenance tasks and the frequency of each task for each flow control and treatment facility. Include any manufacturer’s recommendations.
- A sample maintenance activity log indicating emergency and routine actions to be taken.

Chapter 7— Construction Stormwater Pollution Prevention Plan

Short-Form — Please refer to Mukilteo Development Standards — Appendix F for a Construction SWPPP short-form, or

Formal/Long-Form — Please refer to Mukilteo Development Standards — Appendix H for “Developing a Construction Stormwater Pollution Prevention Plan” and complete checklist.

Appendices

- Appendix A — Operations and Maintenance Manual
- Appendix B — Construction Stormwater Pollution Prevention Plan
- Appendix C — Submittal Requirements Checklist
- Appendix D — Hydraulic Analysis Worksheet
- Appendix E — Other reports, as required

Required Drawings

Project drawings shall be provided as required in Chapter 4, and shall include the following:

- Vicinity Map
- Site Map and Grading Plan
- Basin Map
- Storm Plan and Profile
- Erosion Control Plan
- Detail Sheets

Reviewer

Date

Review # 1 2 3 4

APPENDIX I - DEVELOPING A CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

This document provides an overview of the important components of, and the process for, developing and implementing a Construction Stormwater Pollution Prevention Plan (SWPPP).

2.1 General Requirements and Guidelines

The Construction SWPPP is a document that describes the potential for pollution problems on a construction project. The Construction SWPPP explains and illustrates the measures to be taken on the construction site to control those problems.

All sites are required to comply with elements #1-#12.

Unless located in a critical area, a SWPPP is not required for projects that:

- Add or replace less than 2000 square feet of impervious surface, or,
- Disturb less than 7000 square feet of land.

The Construction Stormwater Pollution Prevention Plan Short Form (Appendix F) may be used for projects that:

Add or replace between 2000 square feet and 5000 square feet of impervious surface, or,
Disturb between 7000 square feet and 1 acre.

A complete SWPPP is required for projects that:

Add or replace 5000 square feet or greater of impervious surface, or,
Disturb greater than 1 acre.

The Construction SWPPP shall be prepared as a separate stand-alone document. Keep the Construction SWPPP on the construction site or within reasonable access to the site for construction and inspection personnel. As site work progresses, the plan must be modified to reflect changing site conditions, subject to the rules for plan modification by the City.

Include all 12 elements described in Volume 2, Chapter 1 in the Construction SWPPP unless an element is determined not to be applicable to the project and the exemption is justified in the narrative.

2.1.1 BMP Standards and Specifications

Chapter 3 of this volume contains standards and specifications for the BMPs referred to in this chapter. Wherever any of these BMPs are to be employed on a site, clearly reference the specific title and number of the BMP in the narrative and mark it on the drawings.

Where appropriate BMPs do not exist, experimental practices may be considered or minor modifications to standard practices may be employed. Such practices must be approved by the City before implementation.

2.1.2 General Principles

The following general principles should be applied to the development of any Construction SWPPP.

- Retain the duff layer, native topsoil, and natural vegetation in an undisturbed state to the maximum extent practicable.
- Prevent pollutant release. Select source control BMPs as a first line of defense. Prevent erosion rather than treat turbid runoff.
- Select BMPs depending on site characteristics (topography, drainage, soil type, ground cover, and critical areas) and the construction plan.
- Divert runoff away from exposed areas wherever possible. Keep clean water clean.
- Limit the extent of clearing operations and phase construction operations.
- Before reseeding a disturbed soil area, amend all soils with compost wherever topsoil has been removed.
- Incorporate natural drainage features whenever possible, using adequate buffers and protecting areas where flow enters the drainage system.
- Minimize slope length and steepness.
- Reduce runoff velocities to prevent channel erosion.
- Prevent the tracking of sediment off-site.
- Select appropriate BMPs for the control of pollutants in addition to sediment.
- Be realistic about the limitations of BMPs specified and the operation and maintenance of those BMPs. Anticipate what may go wrong, how you can prevent it from happening, and what will need to be done to fix it.

2.2 Step-by-Step Procedure

There are three basic steps in producing a Construction SWPPP:

- Step 1 - Data Collection
- Step 2 - Data Analysis
- Step 3 - Construction SWPPP Development and Implementation

Steps 1 and 2, described in more detail below, are intended for projects that must complete a full SWPPP. Smaller projects below the thresholds indicated in Section 2.1 may prepare a short form Construction SWPPP, consisting of a checklist and a plan view (see Appendix F, Chapter 4, Mukilteo Development Standards).

2.2.1 Step 1 – Data Collection

Evaluate existing site conditions and gather information that will help develop the most effective Construction SWPPP. The information gathered should be explained in the narrative and shown on the drawings. Appendix A provides standard notes required on the drawing.

- **Topography** - Prepare a topographic drawing of the site to show the existing contour elevations at intervals of 1 to 5 feet depending upon the slope of the terrain.
- **Drainage** - Locate and clearly mark existing drainage ditches, swales and patterns on the drawing, including existing storm drain pipe systems. Mark location of site run-on and runoff on drawing.
- **Soils** - Identify and label soil type(s) and erodibility (low, medium, high). A geotechnical investigation may be required since published soils information in the City is very limited. Regardless of the availability of published soils information, the project proponent is responsible for characterizing site soils for erosive potential.
- **Ground Cover** - Label existing vegetation on the drawing. Show such features as tree clusters, grassy areas, and unique or sensitive vegetation. Unique vegetation may include

existing trees above a given diameter. The City of Tacoma encourages tree preservation where possible. In addition, indicate existing denuded or exposed soil areas.

- **Critical Areas** - Delineate critical areas adjacent to or within the site on the drawing. Such features as steep slopes, streams, floodplains, lakes, wetlands, sole source aquifers, and geologic hazard areas, etc., should be shown. Delineate setbacks and buffer limits for these features on the drawings. Other related jurisdictional boundaries such as Shorelines Management and the Federal Emergency Management Agency (FEMA) base floodplain should also be shown on the drawings.
- **Adjacent Areas** - Identify existing buildings, roads, and facilities adjacent to or within the project site on the drawings. Identify existing and proposed utility locations, construction clearing limits, and erosion and sediment control BMPs on the drawings.
- **Existing Encumbrances** - Identify wells, existing and abandoned septic drain fields, utilities, easements, and site constraints.
- **Precipitation Records** - Determine the average monthly rainfall and rainfall intensity for the required design storm events.

2.2.2 Step 2 – Data Analysis

Consider the data collected in Step 1 to visualize potential problems and limitations of the site. Determine those areas that have critical erosion hazards. The following are some important factors to consider in data analysis:

- **Topography** - The primary topographic considerations are slope steepness and slope length. The longer and steeper the slope, the greater the erosion potential. Erosion potential should be determined by a qualified engineer, soil professional, or certified erosion control specialist. Measures to decrease erosion potential shall be considered.
- **Drainage** - Natural drainage patterns that consist of overland flow, swales, and depressions should be used to convey runoff through the site to avoid construction of an artificial drainage system. Man-made ditches and waterways will become part of the erosion problem if they are not properly stabilized. Care should be taken to ensure that increased runoff from the site will not erode or flood the existing natural drainage system. Possible sites for temporary surface water retention and detention should be considered at this point.
- Direct construction site runoff away from saturated soil areas where groundwater may be encountered and critical areas where drainage will concentrate. Preserve natural drainage patterns on the site.
- **Soils** - Evaluate soil properties such as surface and subsurface runoff characteristics, depth to impermeable layer, depth to seasonal groundwater table, permeability, shrink-swell potential, texture, settle ability, and erodibility. Develop the Construction SWPPP based on known soil characteristics. Infiltration sites should be properly protected from clay and silt which will reduce infiltration capacities.
- **Ground Cover** - Ground cover is the most important factor in terms of preventing erosion. Existing vegetation that can be saved will prevent erosion better than constructed BMPs. Trees and other vegetation protect the soil structure. Disturb as little of the site as required to construct proposed improvements. If the existing vegetation cannot be saved, consider such practices as phasing of construction, temporary seeding, and mulching. Phasing of construction involves stabilizing one part of the site before disturbing another. In this way, the entire site is not disturbed at once.

- **Critical Areas** - Critical areas may include flood hazard areas, mine hazard areas, slide hazard areas, sole source aquifers, wetlands, stream banks, fish-bearing streams, and other water bodies. Any critical areas within or adjacent to the development shall be a key consideration on land development decisions. Critical areas and their buffers shall be delineated on the drawings and clearly flagged in the field. Critical areas identified by the City of Tacoma are available on the City's GovMe website. Orange plastic fencing may be more useful than flagging to assure that equipment operators stay out of critical areas. Only unavoidable work should take place within critical areas and their buffers. Such unavoidable work will require special BMPs, permit restrictions, and mitigation plans.
- **Adjacent Areas** - An analysis of adjacent properties should focus on areas upslope and down slope from the construction project. Water bodies that will receive direct runoff from the site are a major concern. Investigate and identify run-on to the site. The types, values, and sensitivities of and risks to downstream resources, such as private property, stormwater facilities, public infrastructure, or aquatic systems, should be evaluated. Develop a plan to route run-on around areas disturbed by construction. Erosion and sediment controls should be selected accordingly.
- **Precipitation Records** - Refer to Volume 3 to determine the required rainfall records and the method of analysis for design of BMPs.
- **Timing of the Project** - An important consideration in selecting BMPs is the timing and duration of the project. Projects that will proceed during the wet season and projects that will last through several seasons must take all necessary precautions to remain in compliance with the water quality standards.

2.2.3 Step 3 – Construction SWPPP Development and Analysis

The Construction SWPPP consists of two parts: a narrative and the drawings. This section describes the contents of the narrative and the drawings. The Department of Ecology has prepared a SWPPP template that offers a quick and convenient means for developing a SWPPP for development and redevelopment projects in the City of Mukilteo. This template can be found on Ecology's website at:

<http://www.ecy.wa.gov/programs/wq/stormwater/construction/>

2.2.3.1 Construction SWPPP Narrative

The following topic headings shall be used, at a minimum, when preparing the Construction SWPPP narrative.

- **Project Description** – Describe the nature and purpose of the construction project. Include the total size of the area, any increase in existing impervious area; the total area expected to be disturbed by clearing, grading, excavation or other construction activities, including off-site borrow and fill areas; and the volumes of grading, cut and fill that are proposed.

- **Existing Site Conditions** – Describe the existing topography, vegetation, and drainage (including run-on and runoff). Include a description of any structures or development on the parcel including the area of existing impervious surfaces.
- **Adjacent Areas** – Describe adjacent areas, including streams, lakes, wetlands, residential areas, and roads that might be affected by the construction project. Provide a description of the downstream drainage leading from the site to the receiving body of water.
- **Critical Areas** – Describe areas on or adjacent to the site that are classified as critical areas. Critical areas that receive runoff from the site shall be described up to ¼ mile away. The distance may be increased by the City if special downstream critical areas exist. Describe special requirements for working near or within these areas. Critical areas identified by the City of Tacoma are available on the City’s govME website. Critical areas not identified on the website still require consideration.
- **Soils** – Describe the soils on the site, giving such information as soil names, mapping unit, erodibility, settle ability, permeability, depth, texture, and soil structure.
- **Potential Erosion Problem Areas** – Describe areas on the site that have potential erosion problems.
- **Construction Stormwater Pollution Prevention Elements** – Describe how the Construction SWPPP addresses each of the 12 required elements. Include the type and location of BMPs used to satisfy the required element. If an element is not applicable to a project, provide a written justification for why it is not necessary.
- **Construction Phasing** – Describe the intended sequence and timing of construction activities.
- **Construction Schedule** – Describe the construction schedule. If the schedule extends into the wet season, describe what activities will continue during the wet season and how the transport of sediment from the construction site to receiving waters will be prevented.
- **Financial/Ownership Responsibilities** – Describe ownership and obligations for the project. Include bond forms and other evidence of financial responsibility for environmental liabilities associated with construction.
- **Engineering Calculations** – Attach any calculations made for the design of BMPs such as sediment ponds, diversions, and waterways, as well as calculations for runoff and stormwater detention design (if applicable). Engineering calculations must bear the signature and stamp of an engineer licensed in the state of Washington. Provide references for all variables used and clearly state any assumptions.

2.2.3.2 Erosion and Sediment Control Drawings

At a minimum, provide the following information and drawings as part of the Construction SWPPP erosion and sediment control plans. Include notes addressing construction phasing and scheduling on the drawings.

In addition, identify a responsible, certified erosion and sediment control lead (CESCL) as required. Include the CESCL's telephone number and/or pager numbers on drawings.

- **General** – Provide a map with enough detail to identify the location of the construction site; and roads and waters of the state within one mile of the site. Include the site address, parcel number and any applicable street names/labels. Also include any pertinent notes related to erosion and sediment control.
- **Site Plan** – Provide a site map(s) showing the following features. The site map requirements may be met using multiple plan sheets for ease of legibility.
 - A legal description of the property boundaries or an illustration of property lines (including distances) in the drawings.
 - Project limits, including limits of construction and areas to remain undisturbed
 - North arrow
 - Existing structures and roads, if present
 - Boundaries of soil types with labels
 - Areas of potential erosion problems
 - Points where surface water runs on and off the site

 - Any on-site and adjacent surface waters, critical areas, their buffers, FEMA base flood boundaries, and Shoreline Management boundaries.
 - Existing contours, drainage pipes and ditches/swales, and drainage basins, and the direction of flow for the different drainage areas.
 - Final, and interim as appropriate, contours, drainage basins, and the direction of stormwater flow during and upon completion of construction.
 - Areas of soil disturbance, including all areas affected by clearing, grading, and excavation.
 - Locations where stormwater discharges to surface waters or the City system during and upon completion of construction.
 - Existing unique or valuable vegetation and the vegetation that is to be preserved.
 - Cut and fill slopes indicating top and bottom of slope catch lines.
 - Stockpile, waste storage, and vehicle storage/maintenance areas.
 - Total cut and fill quantities and the method of disposal for excess material.
 - All existing and proposed utilities and any associated easements.
 - Proposed structures including roads and parking areas.
- **Conveyance Systems** – Show on the site map(s) the following temporary and permanent onsite and offsite conveyance features:
 - Locations for swales, interceptor trenches, or ditches.
 - Drainage pipes, ditches, or cut-off trenches associated with erosion and sediment control and stormwater management.
 - Temporary and permanent pipe inverts and minimum slopes and cover.
 - Grades, dimensions, and direction of flow in all ditches and swales, culverts, and pipes.
 - Details for bypassing offsite runoff or run-on around disturbed areas.
 - Locations and outlets of any dewatering systems.
- **Location of Detention BMPs** – Show on the site map the locations of surface water detention BMPs.

- **Erosion and Sediment Control (ESC) Facilities** – Show on the site map all major structural and nonstructural ESC BMPs, including:
 - The location of sediment pond(s), pipes and structures.
 - Dimension pond berm widths and inside and outside pond slopes.
 - The trap/pond storage required and the depth, length, and width dimensions.
 - Typical section views through pond and outlet structure.
 - Typical details of gravel cone and standpipe, and/or other filtering devices.
 - Stabilization technique details for inlets and outlets.
 - Control/restrictor device location and details.
 - Stabilization practices for berms, slopes, and disturbed areas.
 - Rock specifications and detail for rock check dam, if used.
 - Spacing for rock check dams as required.
 - Front and side sections of typical rock check dams.
 - The location, detail, and specification for silt fence.
 - The construction entrance location and a detail.

- **Detailed Drawings** – Any structural practices used that are not referenced in this manual should be explained and illustrated with detailed drawings.

- **Other Pollutant Control BMPs** – Indicate on the site map the location of BMPs to be used for the control of pollutants other than sediment.

- **Monitoring Locations** – Indicate on the site map the water quality sampling locations, if required by the City or the Department of Ecology. Sampling stations shall be located in accordance with applicable permit requirements.

2.3 Construction SWPPP Checklists

The following checklists provide a tool to the applicant to determine if all the major items are included in the Construction SWPPP. The checklist will be used by reviewers to determine that SWPPPs meet all requirements and are complete. Applicants are encouraged to complete and submit this form with their application.

Construction Stormwater Pollution Prevention Plan Checklist

Project Name: _____

Address: _____

Parcel No: _____

Section I – Construction SWPPP Narrative

1. Construction Stormwater Pollution Prevention Elements

- a. Describe how each of the Construction Stormwater Pollution Prevention Elements has been addressed through the Construction SWPPP.
- b. Identify the type and location of BMPs used to satisfy the required element.
- c. Written justification identifying the reason an element is not applicable to the proposal.

12 Required Elements – Construction Stormwater Pollution Prevention Plan

- 1. Mark Clearing Limits.
- 2. Establish Construction Access.
- 3. Control Flow Rates.
- 4. Install Sediment Controls.
- 5. Stabilize Soils.
- 6. Protect Slopes.
- 7. Protect Drain Inlets.
- 8. Stabilize Channels and Outlets.
- 9. Control Pollutants.
- 10. Control De-Watering.
- 11. Maintain BMPs.
- 12. Manage the Project.

2. Project Description

- a. Total project area.
- b. Total proposed impervious area.
- c. Total proposed area to be disturbed, including off-site borrow and fill areas.
- d. Total volumes of proposed cut and fill.

3. Existing Site Conditions

- a. Description of existing topography.
- b. Description of the existing vegetation.
- c. Description of the existing drainage.

4. Adjacent Areas

- I. Description of adjacent areas which may be affected by site disturbance.
 - a. Streams
 - b. Lakes
 - c. Wetlands
 - d. Residential Areas
 - e. Roads
 - f. Other

Construction Stormwater Pollution Prevention Plan Checklist

Project Name: _____

- II. Description of the downstream drainage path leading from the site to the receiving body of water. (Minimum distance of 400 yards.)

5. Critical Areas

- a. Description of critical areas that are on or adjacent to the site.
 b. Description of special requirements for working in or near critical areas.

6. Soils

- Description of on-site soils.
- a. Soil name(s)
 - b. Soil mapping unit
 - c. Erodibility
 - d. Settle ability
 - e. Permeability
 - f. Depth
 - g. Texture
 - h. Soil Structure

7. Erosion Problem Areas

- Description of potential erosion problems on site.

8. Construction Phasing

- a. Construction sequence.
 b. Construction phasing (if proposed).

9. Construction Schedule

- I. Provide a proposed construction schedule.
- II. Wet Season Construction Activities.
- a. Proposed wet season construction activities.
 - b. Proposed wet season construction restraints for environmentally sensitive/critical areas.

10. Financial/Ownership Responsibilities

- a. Identify the property owner responsible for the initiation of bonds and/or other financial securities.
- b. Describe bonds and/or other evidence of financial responsibility for liability associated with erosion and sedimentation.

11. Engineering Calculations

1. Provide Design Calculations.
- a. Sediment Ponds/Traps
 - b. Diversions
 - c. Waterways
 - d. Runoff/Stormwater Detention Calculations

Construction Stormwater Pollution Prevention Plan Checklist

Project Name: _____

Section II – Erosion and Sediment Control Plans

1. General

- a. Vicinity Map.
- b. Erosion and Sediment Control Notes.

2. Site Plan

- a. Legal description of subject property.
- b. North Arrow.
- c. Indicate boundaries of existing vegetation, e.g. tree lines, pasture areas, etc.
- d. Identify and label areas of potential erosion problems.
- e. Identify any on-site or adjacent surface waters, critical areas and associated buffers.
- f. Identify FEMA base flood boundaries and Shoreline Management boundaries (if applicable).
- g. Show existing and proposed contours.
- h. Indicate drainage basins and direction of flow for individual drainage areas.
- i. Label final grade contours and identify developed condition drainage basins.
- j. Delineate areas that are to be cleared and graded.
- k. Show all cut and fill slopes indicating top and bottom of slope catch lines.

3. Conveyance Systems

- a. Designate locations for swales, interceptor trenches, or ditches.
- b. Show all temporary and permanent drainage pipes, ditches, or cut-off trenches required for erosion and sediment control.
- c. Provide minimum slope and cover for all temporary pipes or call out pipe inverts.
- d. Show grades, dimensions, and direction of flow in all ditches, swales, culverts and pipes.
- e. Provide details for bypassing off-site runoff around disturbed areas.
- f. Indicate locations and outlets of any dewatering systems.

4. Location of Detention BMPs

- a. Identify location of detention BMPs.

5. Erosion and Sediment Control Facilities

- a. Show the locations of sediment trap(s), pond(s), pipes and structures.
- b. Dimension pond berm widths and inside and outside pond slopes.
- c. Indicate the trap/pond storage required and the depth, length, and width dimensions.
- d. Provide typical section views through pond and outlet structure.
- e. Provide typical details of gravel cone and standpipe, and/or other filtering devices.
- f. Detail stabilization techniques for outlet/inlet.
- g. Detail control/restrictor device location and details.
- h. Specify mulch and/or recommended cover of berms and slopes.
- i. Provide rock specifications and detail for rock check dam(s), if applicable.
- j. Specify spacing for rock check dams as required.
- k. Provide front and side sections of typical rock check dams.
- l. Indicate the locations and provide details and specifications for silt fabric.
- m. Locate the construction entrance and provide a detail.

Construction Stormwater Pollution Prevention Plan Checklist

Project Name: _____

6. Detailed Drawings

- a. Any structural practices used that are not referenced in the Ecology Manual should be explained and illustrated with detailed drawings.

7. Other Pollutant BMPs

- a. Indicate on the site plan the location of BMPs to be used for the control of pollutants other than sediment, e.g. concrete wash water.

8. Monitoring Locations

- a. Indicate on the site plan the water quality sampling locations to be used for monitoring water quality on the construction site, if applicable.

Reviewer

Date

Review # 1 2 3 4

Chapter 5

Clearing, Grading, and Erosion Control

Reserved Section

Chapter 6

Water and Sewer Connection Requirements

WATER SERVICE:

Water service to be provided to the proposed subdivision or development proposal shall comply with the following requirements:

- a. The subdivider or developer, at his own expense, shall either connect to or extend an existing district water line to provide domestic water and fire protection for the subdivision or development proposal. All water main extensions shall be approved by the appropriate water district. If the subdivision is within three hundred (300) feet of the district's water main which is shown on the District's Comprehensive Water Plan to be extended to serve the proposed development, the subdivider or developer shall extend the water line and shall not utilize any lines available from a private water district.
- b. Upon connection to an extension of an adequate water line to serve the subdivision or development proposal, the subdivider shall install adequate water facilities to serve each individual lot subject to standards and approval of the Public Works Director, Snohomish County Health Department and appropriate Water District. All water mains shall be a minimum of eight (8) inches in diameter and may be larger based upon the District's Comprehensive Water Plan or as determined by the Public Works Director and appropriate water district. The subdivider or developer shall pay for the oversizing of water lines in excess of eight (8) inches. Extension of water lines by the subdivider may not be subject to recovery. When water lines are provided within the City right-of-way, stub-outs shall be provided to serve all lots in accordance with standards established by the appropriate Water District.
- c. Easements for water shall comply with the respective utility codes and shall be a minimum of fifteen (15) feet wide to allow for initial installation and perpetual access for maintenance, construction and operation.
- d. Fire hydrants shall be required for all subdivision, short subdivision, and development proposals in accordance with the requirements of the Uniform Fire Code, the City Fire Chief and the appropriate Water District.
- e. The subdivider or developer shall provide the district a bill of sale for all public water lines installed in the public right-of-way and an easement which the district is expected to maintain.

SEWER SERVICE:

- a. The subdivider or developer, at his own expense, shall connect to the Sewer District's sewer system in order to provide sanitary sewer service to each lot within the proposed subdivision or to the development proposal. All sewer facilities to be extended and installed shall meet the appropriate Sewer District's standards related to design and installation and shall be approved and inspected by the Sewer District and Snohomish County Health District. The subdivider shall be required to connect to the district's sewer system at his own cost in the manner approved by the appropriate Sewer District.

- b. Easements for sewer shall comply with the respective utility codes and shall be a minimum of fifteen (15) feet wide to allow for initial installation and perpetual access for maintenance, construction and operation.
- c. For all property located within the Utility Local Improvement District (ULID) 90-1 assessment boundary a fee in lieu of assessment, in the amount of one equivalent residential unit (ERU), increased at the rate equal to the City's weighted cost of capital for the preceding calendar year from the date the assessment roll was confirmed (02/03/92) will be required for each additional site developed. The fee shall be calculated by the Engineering Department and paid prior to final plat approval.

Chapter 7

Subdivision Design Controls

The following regulations and improvements shall apply to all subdivisions and short subdivisions. Hereafter, the term subdivision as used in this chapter shall mean both subdivisions of five (5) or more lots, and short subdivisions of two (2) to four (4) lots.

CONFORMANCE TO APPLICABLE RULES AND REGULATIONS

All subdivisions shall comply with the following laws, rules, regulations and guidelines that exist at the time of submitting the preliminary plat and shall be exempt from any subsequent amendments to all such regulations provided the final plat is approved within the time period specified by MMC 16.12 or otherwise provided for by State Law.

- a. City of Mukilteo Zoning Ordinance, Transportation Plan, Shoreline Management Program and Building Codes.
- b. State Environment Policy Act and Guidelines adopted by the City.
- c. The adopted Comprehensive Plan for the City of Mukilteo, adopted water, sewer and storm drainage plans, and adopted Capital Improvement Program for the City. If a conflict arises between an adopted plan and a City ordinance, the plan shall prevail, if it is more restrictive, unless otherwise specified by City Council.
- d. Design and development standards prepared by the Public Works Director and adopted by resolution by the City Council.
- e. Regulations and rules of the Snohomish County Health Department, State Highway Department, Fish and Game Department, Sewer District, Water District, and any other affected county and state departments.

REQUIRED IMPROVEMENTS

Approval of the final plat is subject to either installation of improvements hereinafter designed or, with an acceptable form of surety that said improvements will be installed. The Public Works Director shall be responsible for approving all plans and specifications of the required improvements prior to installation, assuring adequate inspection of construction and for issuing a certificate of completion upon the acceptable completion of the work.

Civil Improvements: The following improvements are required in all subdivisions:

- paved streets within the subdivision;
- reconstruction of existing streets abutting and providing direct access to the subdivision or a commitment to upgrade such at a later date;
- paved alleys, if required;
- sidewalks;
- curbs;
- gutters;
- water supply with water service to each lot;
- sanitary sewer facilities with sewer service to each lot;
- fire hydrants;
- street lighting,
- storm drainage collection and disposal facilities;

- street identification and safety signs;
- reference monuments; and
- utility and communication wires placed underground, except electric utility substations, pad mounted transformers, terminal pedestals, switching facilities, voltage of fifteen (15) kilovolts or more, and temporary extensions for construction purposes only.

Permanent Control Monuments. The subdivider shall have his Registered Land Surveyor install or supervise the installation of permanent control reference monuments at each and every controlling corner on the boundaries of the parcel of land being subdivided. Monuments shall be installed below the street surface and within approved survey monument casings set to grade.

Survey of Subdivision. A survey of the subdivision shall be made by or under the supervision of a Registered Land Surveyor prior to the submittal of the final plat.

Title Report. A title report shall be required for all subdivision plats for the entire parcel being subdivided.

Approval of County Health District. The applicant shall provide a letter from the County Health District offices concerning the adequacy of the method of sewage disposal and source of water supply.

Warranty Surety. The subdivider shall provide adequate surety to guarantee that all required improvements will be installed and that all required improvements installed are free from defects in labor and materials. The life of the Surety shall be for two (2) years after the date of conveyance to the City.

Payment of Taxes and Delinquent Assessments. The applicant shall pay all taxes and delinquent assessments for the property being subdivided as of the approval date of this subdivision.

Record Drawing. The applicant shall have a Licensed Civil Engineer prepare and supervise the preparation of record drawings to be reviewed, approved and signed by the Public Works Director, upon the satisfactory installation of the required improvements.

Required Dedications and Reservation. The subdivider shall dedicate to the City of Mukilteo all rights-of-way for public streets within and adjacent to the subdivision.

Park Impact Mitigation: All subdivisions shall demonstrate compliance with MMC 17.85, Park Impact Mitigation, prior to the recording of the final plat.

Protection of Critical Areas: Subdivisions which are located totally or partially, in designated environmentally sensitive areas shall be subject to the requirements of MMC 17.52, Critical Areas.

SUGGESTED IMPROVEMENTS

The subdivider may install or provide the following suggested improvements in accordance with the requirements of this section.

- Street trees may be planted within the proposed street right-of-way subject to the approval of the Public Works Director related to location and species.
- Subdivision identification signs may be installed provided the following conditions are met: compliance with the Zoning Code; are located at the major entrance to the

subdivision; shall be located on private property with an appropriate easement; and shall be maintained by either the subdivider, the homeowners association or private property upon which the sign is located.

BLOCK DESIGN:

Block layouts shall meet the following requirements:

- a. Blocks shall have sufficient width to provide for two (2) tiers of lots of appropriate depths. Exceptions to this prescribed block width shall be permitted in blocks adjacent to major streets, railroads, waterways, or involving unique site conditions that make this requirement impractical. Subject to the approval of the Public Works Director.
- b. The lengths, widths, and shapes of blocks shall be such as are appropriate for the locality; type of development contemplated; zoning requirements for convenient access; control and safety of street traffic, and the limitations and opportunities of the terrain.
- c. Block lengths in residential areas should not exceed eighteen hundred (1800) feet and shall not be less than four hundred (400) feet in length. Whenever practicable, blocks along arterials and collector streets shall not be less than one thousand (1000) feet in length. Block length and width for commercial and industrial subdivisions shall be on an appropriate size to serve such development subject to the approval of the Public Works Director.
- d. Long block development may require the reservation of an easement through the block to accommodate utilities, drainage facilities or pedestrian traffic. Pedestrian or crosswalks, not less than ten (10) feet wide, may be required through the center of blocks more than eight hundred (800) feet long where deemed essential by the Public Works Director and Police Chief to provide circulation or access to schools, playgrounds, shopping centers, transportation or other community facilities.

LOT DESIGN:

Lots to be created within the proposed subdivision shall comply with the following requirements:

- a. All lots created by a subdivision shall meet the standards specified by Chapter 17, Zoning, of the Mukilteo Municipal Code; PROVIDED, that when site conditions or locations of existing structures do not allow the normal frontage requirements, the Planning Director may allow the lot frontage on either a public street or private street to be less than the requirement imposed by the zoning code so long as the approved frontage is at least thirty (30) feet.
- b. Lot width for irregular lots shall be based upon the average width of the lot.
- c. In general, lot lines shall be at right angles to street lines (or radial to curvilinear streets) unless a variation approved by the Public Works Director will result in a better street or lot plan.
- d. Lots having frontage on two (2) streets shall be avoided whenever possible.
- e. Dimensions of corner lots shall be large enough to allow for the required setback lines as defined by the district regulations of the area in which it is zoned.

- f. Lots on street intersections shall have corner radii of not less than fifteen (15) feet at the property line and a curb radius of twenty-five (25) feet.
- g. Corner lots shall be graded to provide sufficient sight clearance at intersections.
- h. Lots fronting on SR525, SR526, and 5th Street shall be restricted to one access; PROVIDED, that the Public Works Director may approve one additional access is extenuating circumstances exist and will not constitute a public safety hazard.

MONUMENTS

Monuments shall be placed at all street intersections, boundary angle points, points of curbs in the paved portion of the roadway and at such intermediate points as shall be required by the Public Works Director. All monuments shall be set between six (6) inches and one (1) foot below official finished street grades and in paved streets shall be enclosed in a standard monument case. Monuments shall be placed in an offset position from the centerline of the street at the discretion of the Public Works Director. All lots and blocks corners shall be set with iron at least eighteen (18) inches in length.

BRIDGES AND CULVERTS

Bridges and culverts shall be designed and installed according to standards established by the Public Works Director. The need for such improvements shall be established by the Public Works Director with all costs being paid for by the subdivider or developer. Bridges and culverts shall meet the regulations outlined in MMC 17.52, Critical Areas.

Chapter 8

Landscape Installation Specifications

Reserved Section

APPENDIX DEFINITIONS

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

ACTION- a decision made by the review authority(s) on a project permit, site plan, or clearing and grading application, including appropriate findings, environmental determination, and conditions of approval, where applicable.

AFFECTED PARTY - any individual, partnership, corporation, association, or public or private organization of any character, significantly affected by or interested in an action before the review authority, including any party in a contested case.

ALLEY - a public or private way, at the rear or side of property, permanently reserved as a means of vehicular or pedestrian access to a property.

APPLICANT - owner(s) or lessee(s) of property, including their agent(s) who submit an application for development. This may also include persons who have contracted to purchase property contingent upon acquiring the necessary permits.

APPROVAL AUTHORITY - the designated staff, Board, Commission or Hearing Examiner by the Mayor of the City of Mukilteo.

AVERAGE DAILY TRAFFIC or ADT - the average number of vehicles passing a specified point during a 24 -hour period. Annual average daily traffic (AADT) denotes that daily traffic that is averaged over one calendar year.

BUILDING SEWER or SIDE SEWER - will be that portion of the line beginning two feet outside the outer foundation wall of the structure to the sanitary sewer main (same as "Lateral").

CLEARING - the construction or 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 - a plan adopted by the City Council to guide the physical growth and improvement of the City, including any future amendments and revisions.

DEDICATION - 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 by the owner by the presentment for filing a final plat, short plat, or binding site plan that shows the dedication thereon. Acceptance by the public will be evidenced by written approval issued by the City of such document for filing with the County Auditor.

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

DEVELOPMENT - all development proposals, including rezones; subdivisions; short subdivision; binding site plans; commercial, industrial and multifamily applications; conditional use permits; clearing and grading applications; and building permits with the exception of structures under one hundred twenty (120) square feet in size.

EASEMENT -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.

ENGINEER - any Washington State Licensed Professional Engineer who represents the developer.

ERU – equivalent residential unit equals the impervious area divided by 2,500 square feet.

FRONTAGE IMPROVEMENTS - all of the street pavement, curb, gutter, sidewalk, transit buss shelter, bus pullouts, storm drainage, water and sewer utilities, power and communication cable undergrounding, streets and street lighting, as specified by these Standards, located within any public right-of-way abutting the property boundary of the development.

GRADING - any excavating or filling of earth material or any combination thereof.

HALF STREET - street constructed along a edge of development utilizing at least half the regular width of the right-of-way and permitted as an interim facility pending construction of the other half of the street by the adjacent owner.

IMPERVIOUS SURFACE - any surface that cannot be effectively and easily penetrated by water.

IMPROVEMENTS - any act that improves the value of public, real and personal property, or that is necessary as a condition of development, including but not limited to: streets and roads comply with the development standards and specification adopted by the City; public utility and pedestrian facilities; streetlights; landscape features; sewer and water lines; bridge structure; storm drainage facilities; and traffic control devices as are required to be installed as a part of subdivisions, binding site plans, or commercial development.

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

LATERAL - that private portion of the sewer line extending from the City’s main to the building (i.e., the building sewer) that has no other common sewer discharging into it, and is operated and maintained by the property owner.

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

MMC - Mukilteo Municipal Code

PATH - a meandering, asphaltic walkway adjacent to a road.

PLAN REVIEWER - the engineering plan review of the City of Mukilteo.

PROJECT - general term encompassing all phases of work to be performed and is synonymous to the term “improvement” or “work”.

PUBLIC SEWER - will be portion of the system located within rights-of-way or easements (excluding laterals) and is operated and maintained by the appropriate sewer district.

PUBLIC STREET - publicly owned and maintained street.

REVIEW AUTHORITY - a person, committee, commission, or Council responsible for review and final action on a land use or development permit.

RIGHT-OF-WAY - (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 storm sewer, and other similar public accesses or public uses; and (2) generally, the right of one to pass over the property of another.

ROAD - used interchangeable with street.

SECURITY DEVICE (i.e.: BOND) - a financial guarantee in a form acceptable to the City to ensure all improvements, facilities, or work required by these Standards will be completed and maintained in compliance with the City’s ordinances, regulations, and approved plans and specifications.

SEWER MAIN OR TRUNK - will be a sewer that received flow from one of more mains.

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

STREET - used interchangeable with road. A public right-of-way, usually containing improved facilities for transportation and utilities.

STREET, ARTERIAL - an arterial street proved an efficient direct route for long-distance travel within the region and different parts of the City. Traffic on arterials is given preference at intersection, and some access control may be considered in order to maintain capacity to carry high volumes of traffic.

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

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

STREET, LOCAL ACCESS - a street that provides access to abutting land uses and serves to carry local traffic to a collector.

STREET, MAJOR COLLECTOR - a street that provides connections between the arterial and concentrations of residential and commercial land uses. The amount of through traffic less than an arterial, and there is more service to abutting land uses. Traffic flow is given preference to lesser streets.

STREETS, NEIGHBORHOOD COLLECTOR - a street that distributes and collects traffic within a neighborhood and provide a connection to an arterial or major collector. Neighborhood collectors serve local traffic, provide access to abutting land uses, and do not carry through traffic. Their design is compatible with residential and commercial neighborhood centers.

STREET, PRIVATE - a street that has not been accepted for maintenance and public ownership by the City of Mukilteo or other governmental entity. This does not include private driveway or access easements.

SURVEYOR - any Washington State Licensed Professional Land Surveyor who represents the owners.

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

UTILITY - 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.