Whatcom County Development Standards

CHAPTER 2:
STORMWATER MANAGEMENT

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SECTION 201 – EXEMPTIONS AND EXCEPTIONS

A. Exemptions

See Whatcom County Code (WCC) 20.80.631 and Stormwater Management Manual (SWM) Volume I Section 2.2 for projects and activities that are categorically exempt from the provisions of this Chapter. The development of a single family residence on a single parcel of record may be exempt from some provisions of this Chapter as determined by the Technical Administrator.

B. Exceptions

1. General. Exceptions to the provisions of this Chapter are possible, provided that the exception has been demonstrated, to the satisfaction of the Technical Administrator, to meet the following criteria:

    a. WCC 12.08.035(H), and

    b. Provides substantially equivalent environmental protection, and

    c. Accommodates the objectives of safety, function, and facility maintenance, based upon sound engineering judgment.

2. Processing. Exceptions are processed by the administrative variance procedure in WCC 12.08.035(H). Developers shall submit written exception requests to the Technical Administrator for consideration and decision. Exception requests shall cite (1) the specific provision(s) that apply, and (2) describe the alternative desired, together with the rationale/justification for said alternative.

SECTION 202 – REGULATORY AUTHORITY AND VESTING

A. Regulatory Authority

The State of Washington has enacted regulations and delegated powers to Whatcom County to control and regulate activities effecting stormwater management. These regulations and powers are set forth in:

RCW 36.70 Planning Enabling Act

RCW 36.70A Growth Management Planning

RCW 90.71 Puget Sound Water Quality Protection

The authority for this Chapter derives from WCC 12.08.035.

This Chapter augments WCC 20.80.630, 20.80.634, and 20.80.635. (Ord No 2016-045)

Given the above, all development, unless specifically exempted per Section 201(A), within Whatcom County that meets or exceeds the thresholds in WCC 20.80.630 is subject to this Chapter.

B. Vesting

Project permit vesting regulations are found in WCC Title 22 and the current Western Washington Phase II Municipal Stormwater Permit.

SECTION 203 – ADOPTED STANDARD DESIGN, WORKMANSHIP, AND MATERIALS

Except as otherwise provided in these Standards, stormwater drainage system design, workmanship, and materials shall be in accordance with the following[(1)]:

- Stormwater Management Manual for Western Washington, WA Department of Ecology
- WSDOT Hydraulics Manual
- WSDOT Highway Runoff Manual
- WSDOT/APWA *Standard Plans* library
- WSDOT/APWA *Standard Specifications for Road, Bridge and Municipal Construction*, together with their appropriate Amendments
- Those from other jurisdictions with prior Technical Administrator approval

(1) Some standards will require augmentation to be included in construction documents and for administrative review purposes.

SECTION 204 – DRAINAGE MANUAL ADMINISTRATOR AND TECHNICAL ADMINISTRATOR

A. Assignment

1. Drainage Manual Administrator. For the purposes of SWM Volume I Sections 2.7 and 2.8, the County Engineer is the "drainage manual administrator".

2. WCDS Chapter 2. The County Engineer is the Technical Administrator for WCDS Chapter 2.

B. Authority

The Technical Administrator's authority is limited to the provisions of the SWM and this Chapter.

C. Functions

The Technical Administrator reviews, enforces, and considers and decides requested exceptions to, both the administrative and the technical aspects of stormwater management standards.

D. Delegation

Per WCC 12.08.035.E, the Technical Administrator may delegate specific responsibilities to other individuals within the area of expertise or responsibility associated with that person's position. Such delegation, together with any conditions or limitations, shall be in writing, and may be for indefinite or for specific periods of time.

SECTION 205 – ADMINISTRATIVE REQUIREMENTS

A. Document Submittals Processing

The Technical Administrator will, for each submittal iteration, review the submittal for acceptability (i.e., that all required information, data, and attachments are present). If the Technical Administrator determines that the submittal is:

1. **Not-Acceptable**, the Technical Administrator will:

    a. Notify the submitter accordingly, noting detected deficiencies.

    b. Arrange to return the submittal to the submitter.

2. **Acceptable**, the Technical Administrator will review the submittal for correctness (i.e., its contents are compliant with County codes and standards). If the Technical Administrator's review proves that the submittal is:

    a. **Incorrect**, the Technical Administrator will:

        i. Prepare a set of "red-lined" review documents (e.g., drawings, reports) noting comments, questions, and any deficiencies contained therein.

        ii. Notify the submitter accordingly.

        iii. Arrange to return the redlined submittal to the submitter for resubmission

    b. **Correct**, the Technical Administrator will:

        i. Initial and date the Whatcom County "Review Approval" stamp. Most current version of stamp is available on County website.

        ii. Notify the submitter accordingly, together with instructions regarding the number of approved copies the submitter shall provide to the County.

        iii. Arrange to return the stamped submittal to the submitter.

B. Construction

1. General

    a. The Stormwater Drainage System (SWDS) constructor shall install and construct all Temporary Erosion and Sediment Control (TESC) and permanent stormwater facilities in accordance with the County-approved drawings, specifications, and any Design Revisions.

2. Construction Engineer

    a. The Construction Engineer shall be a PE and designated by the Developer.

    b. The Construction Engineer shall act as the developer's agent during construction for all matters related to said construction.

    c. The Construction Engineer shall generally monitor (or arrange monitoring), inspect (or arrange inspection), test (or arrange testing) per the County-approved development documents, and approve all work.

    d. The Construction Engineer shall perform and/or arrange all other testing, inspection, and construction surveillance, which in the Construction Engineer's opinion is necessary to ensure that the SWDS is constructed in accordance with the County-approved drawings, specifications, and any Design Revisions.

3. Preconstruction Conference

    Following County approval of the drawings and prior to commencement of construction, the Developer, Contractor, Construction Engineer, County PWD Project Manager(s), CESCL (if applicable), and Technical Administrator (optional) will meet at a mutually agreed upon time and place to be coordinated by the Developer. The purpose of the meeting is to:

    a. Establish the individuals who will act as the Technical Administrator's representative, the Developer, the Construction Engineer, the Construction Surveyor, the Developer's Representative, and CESCL (if applicable).

    b. Review and clarify any Developer questions and concerns.

    c. Define all Developer required permits and bonding requirements, and provide necessary application forms to Developer.

    d. Review Developer's work sequence and schedule.

    e. Discuss traffic control measures to be implemented by Developer.

    f. Discuss temporary erosion control and water quality control measures to be implemented by the Developer.

    g. Review anticipated and/or potential testing to be performed in connection with the construction.

    h. Review anticipated and/or potential inspection to be performed by the Construction Engineer, and by the Technical Administrator.

    i. Review revisions to approved plans procedures and approval process.

j. Review construction survey requirements.

k. The County PWD Project Manager will arrange for the preparation and distribution of minutes for those in attendance.

4. Revisions to Approved Plans

Changes to the approved drawings and specifications shall require a County-approved Design Revision. The Developer shall authorize each proposed Design Revision. Before any Design Revision work may proceed, the Construction Engineer and the Technical Administrator must both formally approve the Design Revision. Minimum Design Revision requirements follow:

a. The Construction Engineer shall prepare and stamp it.

b. It shall contain a complete description of the nature of and reason for the proposed change.

c. It shall include appropriate drawings, details, and engineering analysis supporting the proposed change.

d. The Technical Administrator's representative shall transmit copies of County-approved Design Revision to the Developer and to the Construction Engineer.

5. Inspection

The Construction Engineer shall provide inspection to ensure that work complies with the County-approved drawings and/or specifications. The County reserves the right to access the site during construction and independently verify inspection. The Construction Engineer shall conduct general inspections they deem necessary and specific inspections which may include but not be limited to:

a. Upon installation of TESC stormwater facilities.

b. Upon completion of clearing activity.

c. Upon completion of construction surveys, and prior to installation of all structures, pipelines, and conveyance systems.

d. Upon completion of all earth excavation activity.

e. Upon completion of all structures and pipelines prior to backfilling.

f. Upon placement and compaction of structural fill or roadway base.

g. Upon installation of permanent erosion control vegetation.

h. Final inspection.

6. Testing

The Construction Engineer shall perform, or arrange the performance of, tests that the County-approved drawings and/or specifications require, as well as those tests that the Construction Engineer determines to be appropriate to ensure that the SWDS will perform in accordance with the design criteria and approved drawings and/or specifications. The County reserves the right to access the site during construction and independently verify testing.

7. Construction Surveys

All structures, pipelines, ponds and conveyance systems shall be constructed to line and grade from survey control stakes and monuments established by a PLS.

8. Construction Compliance Assurance

Following the final inspection and completion of all work, the Construction Engineer shall prepare and submit to the Technical Administrator correspondence stating the date of completion of construction, together with the following statement:

I hereby affirm that I have either inspected or arranged inspection, and either tested or arranged testing as required pursuant to Chapter 2 of the Whatcom County Development Standards, the permanent stormwater management system work shown on the drawing(s)
titled:_____
prepared by: _____
dated _____, 20___ , and that, in my professional opinion, the work is complete and is constructed in conformance with County-approved drawings, and/or specifications, and/or any Design Revisions.

[Construction Engineer's Executed Seal Here]

9. SWDS Constructed Cost Estimate

As a prerequisite to County approval of finished SWDS work, the Construction Engineer shall submit a constructed cost estimate to the Technical Administrator with the following statement:

I hereby affirm that I either prepared or supervised the preparation of this constructed cost estimate, and that it represents the cost to complete the items shown

thereon, all in conformance with County-approved drawings, and/or specifications, and/or Design Revisions.

[Construction Engineer's Executed Seal Here]

10. SWDS Performance Security

The Technical Administrator may require a developer to post a performance security to complete County-required improvements, to repair developer-inflicted damage, and/or to restore pre-existing conditions, out of county rights-of-way. Said security shall conform to WCDS Chapter 5, Section 509(B).

11. SWDS Warranty Security

As a prerequisite to County approval of finished SWDS work, unless waived by the Technical Administrator, the SWDS Developer at that time shall provide a monetarily-secured warranty document to the County that complies with the following conditions:

a. Acceptable Monetary Security Types. The County will accept the following types of monetary security:

i. Cash Deposits, and/or

ii. Assigned savings (example available through Public Works), and/or

iii. Bonds (example available through Public Works), and/or

iv. Letters of credit, and/or

v. Other monetary security types as the Technical Administrator may approve.

b. Warranty Document Form Approval. The warranty document shall be of a form that the Prosecuting Attorney's office approves.

c. Warranty Document Provisions. Warranty documents shall incorporate the following minimum provisions:

i. SWDS Developer General Responsibilities. The SWDS Developer is responsible for SWDS operation, inspection, maintenance, and repair during the warranty coverage time period in compliance with the requirements of the County-approved SWDS *Maintenance Plan* or the *Operations and Maintenance Manual*, and these Standards; and

ii. Warranty Coverage Time Period. The warranty coverage time period shall be in effect for two (2) years as of the date that the County receives final record drawings and provisions for the warranty document are in place. If no record drawings are required, the Technical Administrator shall determine the date that the two (2) year warranty coverage period begins; and

iii. Construction Cost Estimate. The construction engineer shall submit to the Technical Administrator a certified estimate of SWDS construction costs per Section 205.B(9) above; and

iv. Warranty Monetary Value. The warranty monetary value shall be equal to $5,000, or 10% of the County-approved SWDS certified construction cost estimate, whichever is greater; and

v. Section 205.C(2) below; and

vi. Section 205.C(3) below; and

vii. At the end of the warranty security period, the warranty security shall be released after:

- The warranty security holder submits acceptable correspondence stating that the SWDS has been properly maintained, along with completed inspection and maintenance logs, a request for County inspection of SWDS and release of the warranty security; and

- Upon receipt of acceptable correspondence, County staff performs a site inspection to verify the SWDS appears to have been adequately maintained, to the satisfaction of the Technical Administrator; and

- If adequately maintained to the satisfaction of the Technical Administrator, the County will issue appropriate documentation authorizing release of the warranty security

viii. The release of the warranty security shall be for the amount of the warranty security minus all costs attributed to the warranty security holder as set forth in Section 205.C(2) and 205.C(3) below.

C. Post Construction Completion

1. SWDS Maintenance

   SWM Volume V Section 4.6 provisions apply regarding SWDS maintenance. In case of conflict with any WCDS, the SWM provision shall prevail. The following provisions also apply regarding SWDS maintenance:

   a. Financial Responsibility. Regardless of the existence of an active warranty security as described in Section 205.B(10) above, and absent any formal agreements with the County that might state otherwise, SWDS owners are financially responsible for the post-construction operation, inspection, maintenance, and repair of their respective SWDSs. SWDS owners shall operate, inspect, maintain, and repair their SWDSs in compliance with the requirements of the County-approved SWDS *Maintenance Plan* or the *Operations and Maintenance Manual*, and these Standards. Financial responsibility includes reimbursing the County for its costs to perform routine inspections to verify compliance, as described in said *Maintenance Plan* or the *Operations and Maintenance Manual*, and these Standards.

   b. Maintenance Responsibility Transfers. At the discretion of the County Executive, or their designee, the County may assume maintenance responsibility of a privately owned SWDS with appropriate provisions (e.g., easement existence, cost recovery) on a case by case basis.

2. SWDS Inspections

   The County has the authority to inspect SWDSs during regular working hours and at other reasonable times to determine compliance with the provisions of the corresponding SWDS *Maintenance Plan* or the *Operations and Maintenance Manual*, and these Standards. The person or persons designated in the SWDS *Maintenance Plan* or *the Operations and Maintenance Manual* as having inspection responsibility shall maintain appropriate records of all inspection and maintenance activities. These records shall be made available to County officials on request for review for compliance. If the County, upon SWDS inspection, finds operating deficiencies or water quality violations, the County will first make a reasonable effort to locate the SWDS owner(s), and if a warranty security bond, as described in Section 205.B(10) above, is active, to also notify the bond surety, and the County will request correction of the situation. If the operating deficiencies or water quality violations remain uncorrected after reasonable elapsed time, the County may notify the Washington State Department of Ecology for enforcement action, and/or, upon prior notification to any Warranty Security originator, the County may perform corrective measures, which will be at the SWDS owner's expense, or as recourse against an active warranty security.

3. SWDS Emergency Repairs

The County may perform emergency repairs to the SWDS without prior notice to or approval from, the SWDS owner, if it determines that said repairs are necessary to alleviate an immediate danger to public health, safety, or welfare. Furthermore, if the County performs emergency repairs, the SWDS owner(s) at the time that the County determines that a public hazard exists, will reimburse the County its repair costs that resulted from faulty, materials, workmanship, and/or maintenance.

SECTION 206 – TECHNICAL REQUIREMENTS

A. Stormwater Erosion and Sediment Control

See SWM Volumes I and II

B. Stormwater Conveyance

1. General

    a. Stormwater conveyance systems (SWCS) shall convey the design storm event.

    b. Whatcom County reserves the right to require that any existing elements of development activity, which are to be retained and/or are proposed to be re-used in the completion of said development activity, be inspected/reviewed by a licensed engineer for an opinion as to the current condition, residual service life and applicability for re-use in the completion of said development activity.

2. SWCS Types:

    a. Open. Exposed along its length to the sky, e.g., ditches, swales, gutters (including along curbs), channels, dikes, troughs, and spillways. This is the County-preferred, but not mandatory, system choice.

    b. Closed. Not exposed along its length to the sky, e.g., pipes, culverts, conduits, and spillways.

3. SWCS Peak Flow Capacity Determination (Hydrologic) and Physical Sizing (Hydraulic) Methodologies. The County generally accepts the following methodologies, when utilized as intended, for conveyance system peak flow capacity determination, and then for conveyance system physical sizing purposes. Engineers may propose other methodologies, with justification, to the Technical Administrator for consideration and decision:

    a. **Hydrologic**. The following four methods can determine SWCS peak flow capacity:

        i. TR-55/SBUH Method. The Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service (SCS)) TR-55 method or the SBUH method if storage facilities are ignored. Antecedent moisture condition shall be 3. This method may be referenced in NRCS Publication 210-VI-TR-55, Second Edition (June 1986).

        ii. Continuous Hydrologic Modeling Method. This method may be used if a 15-minute time step is utilized. Models include HSPF, Western

Washington Hydrology Model (WWHM), and MGS Flood. Model input and utilization shall comply with guidance found in the SWM.

iii. Rational. The Rational Method may be used if:

- The drainage sub-basin area is less than 10 acres for a single calculation, and
- The time of concentration is less than 60 minutes.

b. **Hydraulic.** The following methods can physically size the SWCS:

i. Sizing. The Uniform Flow Analysis and/or Backwater Analysis methods may be used to size SWCS for land use planning purposes. Use a Backwater Analysis for the final SWCS design when the design depth of flow is greater than 90% of the pipe inside diameter or as directed by the Technical Administrator.

4. Flow velocity. Stormwater pipes shall be designed to ensure a minimum flow velocity of three feet per second (3 fps) when the pipe is flowing full.

5. Design Storms

a. Conveyance systems shall be designed with sufficient capacity to convey and contain (at a minimum) the 25-year, un-mitigated (un-detained), peak flow without system surcharging, assuming the developed condition for onsite tributary areas and existing conditions for any offsite tributary areas.

b. These systems shall further be designed to preclude adverse impacts to adjacent and downstream properties in the 100-year peak flow assuming developed condition for on-site tributary areas and existing, un-mitigated (un-detained) conditions for any offsite tributary areas. Surcharging or overflow associated with up to the 100 year peak flow shall be contained within an on-site drainage easement, tract, or covenant.

c. Piped systems traversing slopes steeper than 15% and with greater than 20 feet of elevation drop, or that are within a geologically hazardous area, shall be designed with sufficient capacity to convey and contain (at minimum) the 100-year peak flow, assuming the maximum developed condition (per current zoning regulation) for onsite tributary areas and existing, un-mitigated (un-detained) conditions for any offsite tributary areas.

6. Downstream Analysis. For the purposes of this Chapter, development projects that discharge stormwater offsite shall submit a downstream analysis as described in SWM Volume I Section 2.6.2.

7. Open Systems. Open systems shall meet the following requirements:

    a. Include one (1) foot minimum freeboard from the design flow elevation to the top of banks.

    b. Stabilized with a County-approved grass seed mix.

    c. Max flow velocity 5 fps, unless otherwise armored.

    d. Side slopes at maximum 3:1

    e. Where feasible, open systems shall be located along or adjacent to property lines.

C. Additional Design Parameters

Proposed project designs that will use existing and/or new SWCS shall satisfy the following parameters for project-affected SWCS as outlined in Table 206-1 below.

Table 206 - 1 - Design Parameters

If the Project-Affected SWCS Type is				Then the Applicable Design Parameters are:
Existing		New		
Open	Closed	Open	Closed	
X	X	X	X	Per Section 203
X	X	X	X	For project-affected existing roadways, preserve existing roadway cross-section(s).(1)
X	X	X	X	The SWCS shall remain/be readily accessible for maintenance.(1)
		X X	X X	For below grade SWCS: • Accommodate IBC provisions regarding SWCS and structures separation.(1) • SWCS that parallel property lines shall be at least five feet away from said property line(s).
		X	X	For new roadways and driveways, accommodate vested WCDS roadway and driveway cross-section criteria and details.(1)
X				The SWCS type shall remain "open" where feasible.
		X	X	For County-maintained SWCS that run over private property, or SWCSs that cross and/or benefit multiple private properties, provide maintenance easements as follows: • Minimum 10' wide on one side and 5' wide on the other from the SWCS width itself. • Minimum 5' wide on both sides of the SWCS centerline.(2)

If the Project-Affected SWCS Type is				Then the Applicable Design Parameters are:
Existing		New		
Open	Closed	Open	Closed	
			X	SWCS minimum pipe diameter[3]: • Pipes that connect inlet structures to main storm drains via catchbasins or manholes: 8" (maximum pipe length: 50') • Pipes other than paragraph above pipes: 12" • Public road culverts: 18" • Driveway culverts within public right-of-way: 12"
			X X X	
			X	Install a SWCS access structure (e.g., catchbasin, inlet, manhole) at all changes in SWCS: • Alignment, and • Material, and When the corresponding curb line slope (%) is: / The maximum SWCS access structure spacing[4] (feet) shall be: < 1 — 150 1 – 3 — 200 > 3 — 300
	X		X	For new inlet structures without sumps that connect to a mainline catchbasin, maximum separation distance is 50 feet.
			X	For SWCS access structures that do not function as a stormwater inlet, incorporate solid covers.
			X	For SWCS access structures that are located on, or immediately downstream from, gutter line grades that exceed 6%, incorporate vaned grate covers.
			X	For vertical curb and gutter integrated SWCS access structures where "conditions" limit the effectiveness of a flat surface, incorporate a through-curb ductile iron inlet frame and grate at the SWCS access structure inlet. "Condition" examples are: • Road grades exceeding 10%, and • Where clogging from falling leafs or other debris is likely, especially in sag vertical curves.
			X	For publicly maintained SWCS access structures that: • Are not readily visible from the roadway, and/or • Function as flow restrictor/oil pollution (FROP) control devices, incorporate locking bolts on covers and grates.
			X	Catchbasin (or manhole) diameter shall be determined by pipe orientation at the junction structure. A plan view of the junction structure, drawn to scale, will be required when more than four pipes enter the structure on the same plane, or if angles of approach and clearance between pipes are of concern. The plan view (and sections if necessary) must

<table>
<tr><th colspan="4">If the Project-Affected SWCS Type is</th><th rowspan="3">Then the Applicable Design Parameters are:</th></tr>
<tr><th colspan="2">Existing</th><th colspan="2">New</th></tr>
<tr><th>Open</th><th>Closed</th><th>Open</th><th>Closed</th></tr>
<tr><td></td><td></td><td></td><td></td><td>ensure a minimum distance (of solid concrete wall) between pipe openings of 8 inches for 48-inch and 54-inch catch basins and 12 inches for 72-inch and 96-inch catch basins.</td></tr>
<tr><td></td><td></td><td></td><td>X</td><td>For inlets to SWCS, incorporate catchbasins within 50 feet of said inlet to facilitate silt and debris removal.</td></tr>
<tr><td></td><td></td><td></td><td>X</td><td>Subject to Technical Administrator approval, SWCS designers may propose SWCS access structure materials other than reinforced concrete, provided that specifications are available to control quality, and acceptable user experience with the product can be shown.</td></tr>
<tr><td></td><td>X</td><td></td><td>X</td><td>For SWCS gradients > 15%, analyze and ensure structural stability.</td></tr>
<tr><td></td><td></td><td></td><td>X</td><td>SWCS minimum cover depth per WCDS 512.</td></tr>
<tr><td></td><td></td><td></td><td>X</td><td>SWCS allowable[5] pipe materials:
<table><tr><th>Material[6]</th><th>Public Road Right-of-Ways</th><th>Private Property</th></tr><tr><td>PCCP</td><td>X[7]</td><td>X</td></tr><tr><td>Class 50 or 52 DIP</td><td>X</td><td>X</td></tr><tr><td>RPCCP</td><td>X</td><td>X</td></tr><tr><td>Smooth interior wall CHDPEP</td><td>X</td><td>X</td></tr><tr><td>SDR 35 or thicker PVCSP per ASTM D3034</td><td>X</td><td>X</td></tr><tr><td>HDPE</td><td>X</td><td>X</td></tr><tr><td>Galvanized steel CMP</td><td></td><td>X</td></tr><tr><td>Galvanized steel SRP</td><td></td><td>X</td></tr><tr><td>Aluminum CMP</td><td></td><td>X</td></tr><tr><td>Single wall CHDPEP</td><td></td><td>X</td></tr></table></td></tr>
<tr><td></td><td></td><td></td><td>X</td><td>Do not provide debris barriers on culverts and stormwater pipe inlets and/or outlets unless the Technical Administrator dictates otherwise, which will depend on site specific conditions.</td></tr>
<tr><td></td><td>X</td><td></td><td>X</td><td>Inlets (except spacing, see above) per WSDOT/APWA *Standard Plans* library and WSDOT/APWA *Standard Specifications for Road, Bridge and Municipal Construction*.</td></tr>
</table>

If the Project-Affected SWCS Type is				Then the Applicable Design Parameters are:
Existing		New		
Open	Closed	Open	Closed	
	X		X	Catchbasins and manholes (except spacing, see above) per WSDOT/APWA *Standard Plans* library and WSDOT/APWA *Standard Specifications for Road, Bridge and Municipal Construction*.
	X		X	Structures located within pedestrian facilities shall be ADA compliant.

(1) The designer shall provide a statement in the design documents that confirms this parameter.
(2) The County may require wider easements for deep systems, large pipe, unstable soil situations, or other special circumstances. Locate stormwater easements within a single lot or tract, except where the system may involve additional properties, or unless otherwise County approved.
(3) The design shall include velocity computations, which shall be between 3 fps and 10 fps in any given culvert, unless a minimum diameter provision otherwise controls. The Technical Administrator has the authority to approve exceptions from the aforementioned parameters with appropriate engineered mitigation.
(4) Maximum spacing of inlets or catch basin structures may also be determined by an engineering analysis of gutter flow and inlet capacity.
(5) Subject to Technical Administrator approval, other pipe materials and methods, such as cast-in-place PCCP, are allowable provided that conditions make it feasible, recognized specifications are available to control quality, and acceptable user experience with the product can be shown.
(6) Per WSDOT/APWA
(7) Driveway culverts only.

D. Lake Whatcom Watershed Phosphorus (P) Loading and Abatement Factors

Section Reserved

SECTION 207 – ENFORCEMENT AND PENALTIES

The purpose of this section is to ensure that regulations and standards relating to construction activities are followed. Failure to comply with these Standards will be cause for withholding or withdrawing approval of permits or plans, forfeiture of security, and/or other penalties as provided by law. This section shall conform to WCDS Chapter 5, Section 514.

SECTION 208 – DEFINITIONS AND ACRONYMS

A. Chapter 2 Definitions

Completed	County has approved work
Developer	Any owner, or the owner's authorized agent, of a proposed land, utility, building, or other development activity
Development	Per WCC 20.97
Feasible	Practical and cost effective
Finished	Developer or developer's agent has finished work, County approval pends
Roadway	Per WCDS 515
All others:	See SWM Glossary

B. Standard Abbreviations and Acronyms

APWA	American Public Works Association
ADA	Americans with Disabilities Act
CESCL	Certified Erosion and Sediment Control Lead
CMP	Corrugated Metal Pipe
CHDPEP	Corrugated High Density Polyethylene Pipe
CSWPPP	Construction Stormwater Pollution Prevention Plan
DIP	Ductile Iron Pipe
DCGE	Declaration of Covenant & Grant of Easement
fps	feet per second
HDPEP	High Density Polyethylene Pipe
HSPF	Hydrological Simulation Program-Fortran
IBC	International Building Code
NRCS	Natural Resources Conservation Service
PCCP	Portland Cement Concrete Pipe
PE	Washington State registered Professional Engineer
PLS	Washington State registered Professional Land Surveyor
PVCSP	Polyvinyl Chloride Sewer Pipe
PWD	Public Works Department
RPCCP	Reinforced PCCP
RCW	Revised Code of Washington
SBUH	Santa Barbara Urban Hydrograph SWCS analysis method
SRP	Spiral Rib Pipe
SSP	Stormwater Site Plan
SWCS	Stormwater Conveyance System
SWDS	Stormwater Drainage System
SWM	Washington State Department of Ecology Stormwater Management Manual for Western Washington
TAC	Whatcom County Development Standards Technical Advisory Committee
TESC	Temporary Erosion and Sediment Control
TR-55	NRCS (formerly the Soil Conservation Service) TR-55 SWCS analysis method
WAC	Washington Administrative Code
WCC	Whatcom County Code
WCDS	Whatcom County Development Standards
WWHM	Western Washington Hydrology Model
WSBRPELS	Washington State Board of Registration for Professional Engineers and Land Surveyors
WSDOT	Washington State Department of Transportation

APPENDICES

A. **Preliminary Stormwater Proposal Form**

B. **Stormwater Plans Checklist**

C. **Contact Engineering Services for these Forms:**

- DECLARATION OF COVENANT AND GRANT OF EASEMENT
- STORMWATER MAINTENANCE WARRANTY (BOND OR ASSIGNMENT OF SAVINGS)