BOABC – 2024 BCBC Lunch and Learn

Drainage and Storm Water Management – Part 9

August 22, 2024

Hosted by: Ken Kunka, AScT BCQ

Promoting Building Safety and Professionalism

Overview

Information presented today does not directly represent the opinions of the Building Officials Association.

This presentation is conceptual and for informal educational purposes only. The presenters and association takes no responsibility for application of any concepts or interpretations in this presentation to specific projects.
(it may ask more questions than provide answers)

The slides must not be considered complete or exhaustive. Code provisions have been generally represented and may not reflect all exceptions.

Rules of the Room

- Registration will be tracked
- Presentation is not recorded but PowerPoint will be posted
- Please use raise hand icon if you have a question or comment
- PUT IT in the CHAT
- Please mute your microphone
- You may need to turn off your camera
- Please follow up by email if you have specific question or example to share with the membership.
    - kkunka@boabc.org

Aug 22– Drainage and Storm Water

Today's Session

- What's New Update and Training
- Appeals and Technical Bulletins
- Drainage – Part 9
- Building Act – Local Authority
- Stormwater Management
- Q&A

- Out of scope rainwater harvesting

Lunch and Learns
CPD Eligibility: 1 point/presentation (Category A4). You will need to self report this point. Initial next to the presentation and then save it as a pdf to upload as proof. Previous Lunch and Learns can be found: https://boabc.org/cpd-opportunity-lunch-learn-webinars/

Poll Questions

Poll Question #1

What is your level of BOABC Qualification?

- Level 01 Building – 16%
- Level 02 Building – 11%
- Level 03 Building – 29%
- Level 01 Plumbing – 22%
- Level 02 Plumbing – 17%
- Other – 4%

Poll Question #2

What region are you from?

- Lower Mainland – 40%
- South Central Interior – 21%
- Kootenay – 6%
- Northwest – 6%
- Central North Interior – 2%
- Vancouver Island North – 19%
- Vancouver Island South – 5%

Heads Up

BOABC Exams will be down between Sept 3 - 6, 2024 and as of September 7, 2024, the exams will reflect the new code.

What's New – Bylaw Updates

Please join the Association for a Lunch & Learn on **August 29, 2024**, to hear about the development of new bylaws for the Association. (This Lunch & Learn is the rescheduled one from August 15, 2024).

Speakers will be:
- Trevor Welsh, President
- Tony Bartko, Treasurer & Secretary
- Tyler Wightman, Executive Director & Registrar

Developing new bylaws is identified as a key initiative in the 2024-27 Association Business Plan. During the Lunch and Learn, members will hear more about the reasons for reviewing the bylaws, the changes being considered, and how they can participate in the process.
The current bylaws are posted on the Association website if you wish to review ahead of time.
Registration: Click Here
CPD Eligibility: 1 point – Category A4 (automatically uploaded when you register)

What's New – Fire Safety Act

BRITISH COLUMBIA

Search Menu

Home / Public safety and emergency services / Public safety / Fire safety, standards and reporting / **Legislation and regulation**

MORE TOPICS

Fire safety, standards and reporting

- **Legislation and regulation**
  - Codes and bulletins
  - Fire Safety Act reference documents
- Standards and training
- Fire incident reporting
- Fire service awards
- Local assistant to the fire commissioner
- Contact Us

Legislation and regulations for fire safety

Last updated on August 1, 2024

Fire safety and prevention in B.C. is governed by the following legislation and regulations.

Legislation

As of August 1, 2024, the Fire Safety Act has replaced the Fire Services Act. With the Fire Safety Act the Office of the Fire Commissioner will be enabled to:

- Support local governments in the designation of inspectors and investigators
- Implement better processes for fire orders, evacuation orders and the appeal process
- Enable and augment the local authority to evacuate premises either in an emergency or for preventative reasons
- Collaborate with the Ministry of Housing in the adoption of the BC Fire Code
- Implement and manage a new administrative penalty enforcement framework

What's New – Fire Safety Act

Regulations

These regulations are under the Fire Safety Act:

- Fire Safety Regulation is the regulation that sets limitations for the specific sections of the Fire Safety Act, including:
  - Sets the maximum that can be recovered under Section 15 for securing evacuated premises by the local authority
  - Sets the maximum administrative penalty that can be issued for failure to provide information to a designated Inspector or Investigator performing their duties
  - Sets the maximums for a daily administrative penalty resulting from ongoing non-compliance.
- Fire Safety (Risk Analysis for Compliance Monitoring) Regulation
  - Supports any monitoring entities with setting up their required compliance monitoring systems based on a risk assessment. The risk assessment enhances the British Columbia Building Code and the BC Fire Code as it incorporates more factors that can affect the susceptibility of a premises to a fire hazard.

<u>Member Question</u>

Are there any possible conflicts with the Building Act if Fire Inspectors make comments on BC Code items?

https://www2.gov.bc.ca/gov/content/safety/public-safety/fire-safety/legislation-regulations-codes

2024 BC Code Appeals - Interpretations

Building and Plumbing Code Interpretations 2018

Search: drainage

Code Edition	Interpretation Number	Title	Date Approved	File
2018	18-0307	Requirements for Material Covering Foundation Drainage Pipe	13/02/2024	Download
2018	18-0293	Foundation Walls above Finished Ground Level	16/01/2024	Download
2018	18-0290	Location of Drainage Pipe for an Exterior Foundation Wall	16/01/2024	Download
2018	18-0283	Connection of Condensate Drains to a Drainage System	17/10/2023	Download
2018	18-0281	Testing of Drainage Pipes in a Storm Drainage System	17/10/2023	Download
2018	18-0279	Use of 90° Elbow to Join Two Soil-or-Waste Pipes	17/10/2023	Download
2018	18-0271	Floor Drain Requirements for a Basement	22/09/2023	Download
2018	18-0240	Connection of a Radon Vent to Plumbing System Vent	21/02/2023	Download
2018	18-0219	Multiple Transitions from ABS to PVC Piping in a Drainage System	22/11/2022	Download
2018	18-0209	Rainwater Leaders Connecting to a Dry Well	22/11/2022	Download
2018	18-0197	Vents for Oil Interceptors Connected to a Storm Drainage System	27/09/2022	Download
2018	18-0195	Polyethylene Piping Permitted Uses in a Drainage System	19/07/2022	Download
2018	18-0167	Hot Water Tank Pan Drain Connected to Storm Drainage	15/02/2022	Download
2018	18-0166	Protection of Foamed Plastic Insulation in the Crawl Space of a House	15/02/2022	Download

2024 BC Code Appeals - Interpretations

Interpretations – not binding

But do they need to?

9.26.18.2. Downspouts

Where downspouts are provided and are not connected to a sewer, extensions shall be provided to carry rainwater away from the building in a manner which will prevent soil erosion.

BC BUILDING CODE INTERPRETATION COMMITTEE

A joint committee with members representing

AIBC, EGBC, BOABC

File No: 18-0209 **INTERPRETATION** **Page 1 of 1**

Interpretation Date:	November 22, 2022
Building Code Edition:	BC Building Code 2018, Book II: Plumbing Systems (BCPC) and BC Building Code Book I: General
Subject:	Rainwater Leaders Connecting to a Dry Well
Keywords:	Rainwater Leaders, Dry Well
Building Code Reference(s):	2.1.2.2.(1), 9.14.5.3., 9.26.18.2.(1)

Question:

Can rainwater leaders drain to a dry well (rock pit) which is installed in accordance with Article 9.14.5.3.?

Interpretation:

Yes,

Sentence 2.1.2.2.(1) of the BC Plumbing Code states that "Except as provided in in Subsection 2.7.4., every storm drainage system shall be connected to a public storm sewer, a public combined sewer or a designated storm water disposal location."

A properly designed dry well would be considered a designated storm water disposal location and would also comply with the requirement of Sentence 9.26.18.2.(1).

2024 BC Code Appeals - Interpretations

Interpretations – not binding

Clarity on this interpretation is:

1) **What is a storm drainage system?**
2) **Is there a difference on internal and external system?**

To review in body of education session.

BC BUILDING CODE INTERPRETATION COMMITTEE
A joint committee with members representing
AIBC, EGBC, BOABC

File No: 18-0281 **INTERPRETATION** **Page 1 of 1**

Interpretation Date:	October 17, 2023
Building Code Edition:	BC Building Code 2018, Book II: Plumbing Systems (BCPC) and BC Building Code Book I: General
Subject:	Testing of Drainage Pipes in a Storm Drainage System
Keywords:	Storm Drainage System, Testing
Building Code Reference(s):	2.3.6.1.(1) of the BCPC

Question:

1. Does a storm drainage system require testing to conform with Sentence 2.3.6.1.(1)?
2. If the answer to Question 1 is yes, can the registered professional of record waive the requirement for the testing of an interior storm drainage system if they deem it unnecessary?

Interpretation:

1. Yes.

   Sentence 2.3.6.1.(1) clearly states that, except for an external leader, after a section of a drainage system or venting system has been roughed in, a water pressure test or an air pressure test shall be conducted. The term "drainage system" is a defined term which includes pipes that convey storm water.

2. No.

   There is no exclusion which permits the registered professional of record to waive the requirement for testing of drainage systems.

2024 BC Code – Technical Bulletins

BRITISH COLUMBIA
www.gov.bc.ca

Information Bulletin

Building and Safety Standards Branch
PO Box 9844 Stn Prov Govt
Victoria BC V8W 9T2
Email: building.safety@gov.bc.ca
Website: www.gov.bc.ca/buildingcodes

No. P24-01
May 27, 2024

British Columbia Building Code 2024 Book II (Plumbing Systems)

This bulletin provides information about the British Columbia Building Code 2024 Book II (Plumbing Systems) and new requirements for plumbing systems. "British Columbia Building Code Book II (Plumbing Systems) is the name given within the British Columbia Building Code Book I (General) and is to be used when referenced on drawings and related documents described in Division C within. The British Columbia Building Code Book II (Plumbing Systems) is commonly referred to as the British Columbia Plumbing Code 2024 (Plumbing Code). This edition applies to projects for which a building permit is applied for on or after March 8, 2024.

FYI - A Common Industry Challenge

Bridging the Gap: The Urgent Need for a New Generation of Inspectors and Plans Examiners

Wayne Snell

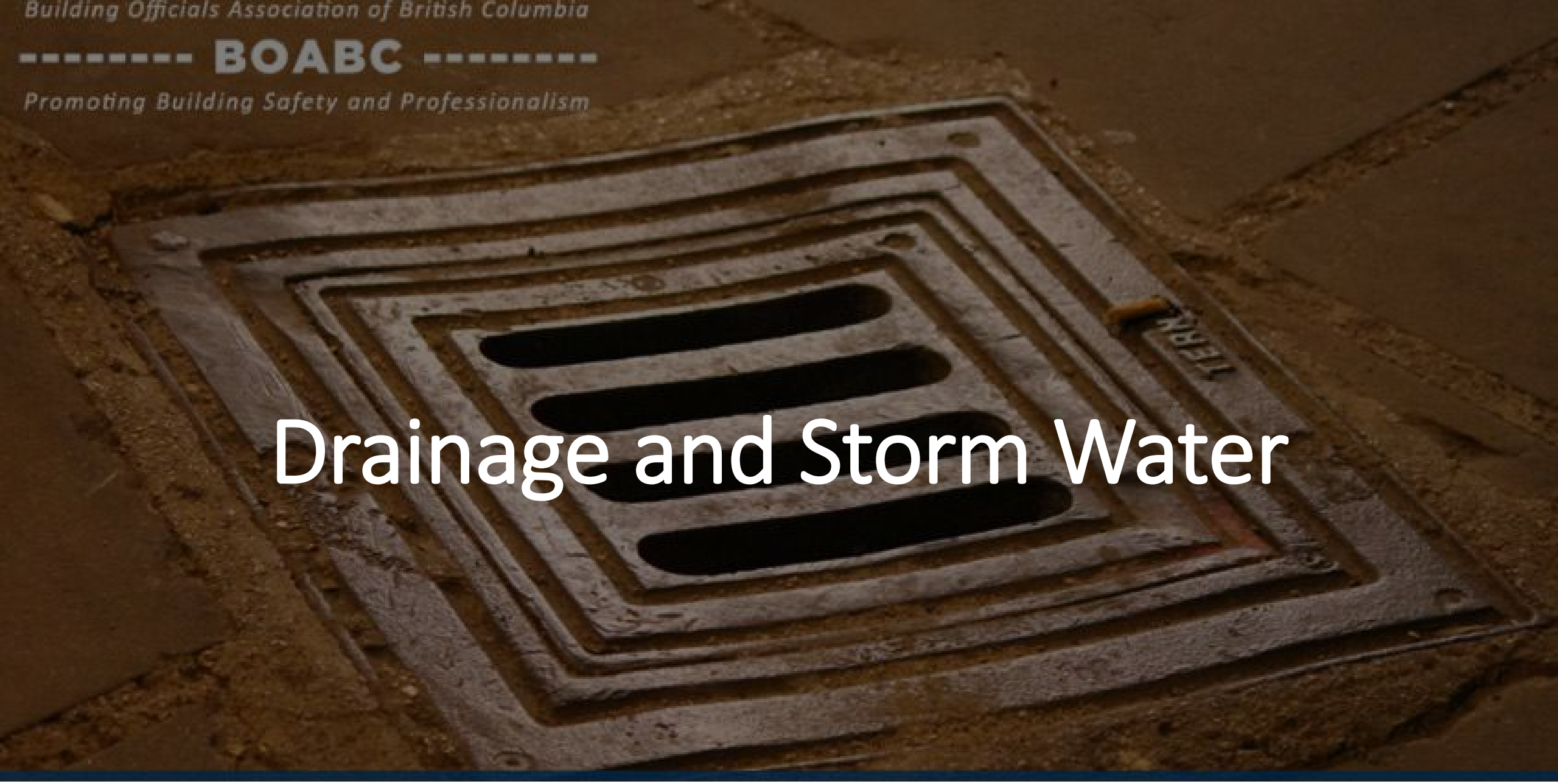
Read this article on LinkedIn to join the conversation

Read on LinkedIn

In today's rapidly evolving world, the construction and inspection industry faces a significant challenge: a shrinking pool of qualified inspectors and plan examiners. As seasoned professionals in the field retire, we are left with a glaring gap that is difficult to fill. This issue not only threatens the efficiency and safety of our communities but also underscores the urgent need for effective succession planning and innovative recruitment strategies.

Article Topics

- The Aging Workforce: A Looming Crisis
- The Recruitment Dilemma: Attracting New Talent
- Training and Development: Bridging the Knowledge Gap
- Succession Planning: Ensuring Continuity
- A Call to Action: Building the Future of the Inspection Industry

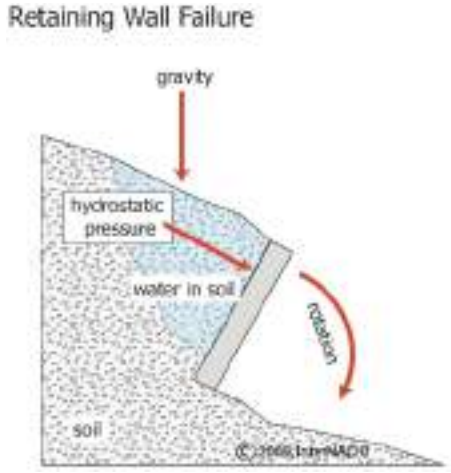


Drainage and Storm Water

Drainage Concerns

Improper drainage and storm water management can lead to significant issues including:

- Failure of foundation walls and retaining walls – hydrostatic pressure & loss of bearing capacity of soils
- Building envelope failures – improper roof drainage
- Wet foundation walls – health - mold and mildew
- Damage to neighbouring properties, structures and City infrastructure.



Foundation (drainage) repairs are one of the most expensive claims to repair.

Good Drainage

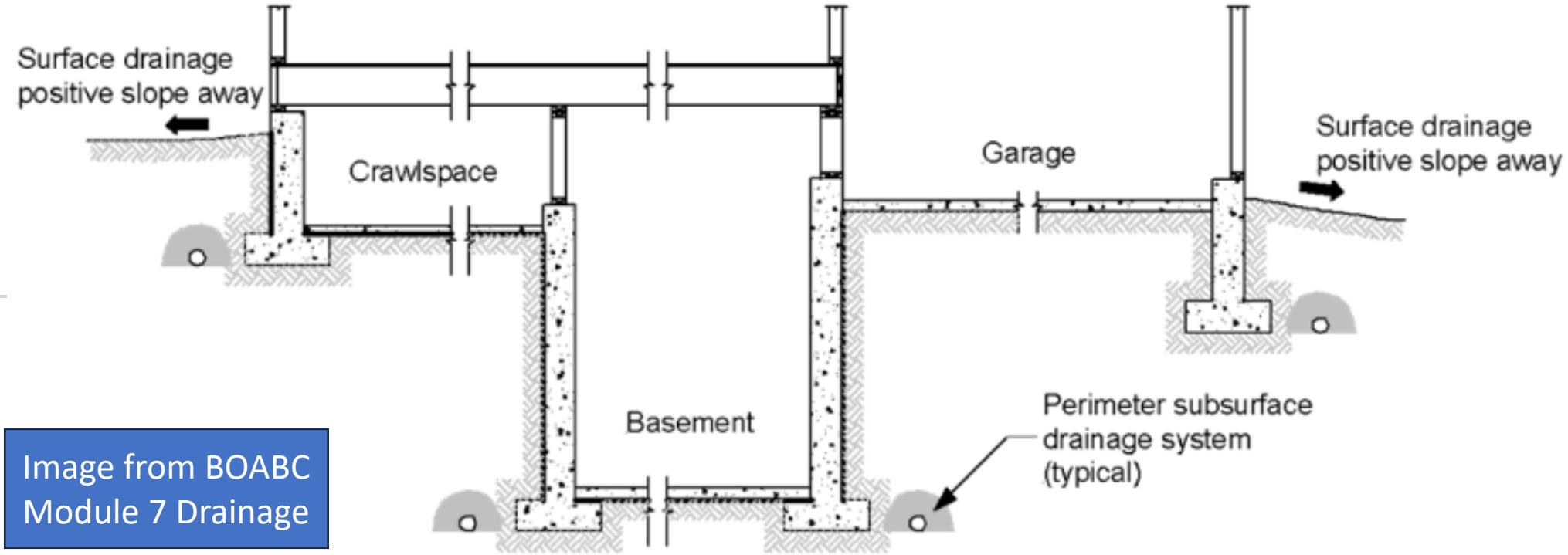


Image from BOABC Module 7 Drainage

(Un)Defined Terms

Dry well - Not defined

Downspout – is a Leader (NPCC) Leader means a pipe that is installed to carry storm water from a roof to a storm building drain or sewer or other place of disposal.

Drainage system (NPCC) means an assembly of pipes, fittings, fixtures, traps and appurtenances that is used to convey sewage, clear-water waste **or storm water** to a public sewer or a private sewage disposal system, **but does not include subsoil drainage pipes**. (See Figure A-1.4.1.2.(1)-F in Note A-1.4.1.2.(1).)

Plumbing systems (BCBC) - Plumbing system means a drainage system, a venting system and a water system or parts thereof.

*1.2.3.1. Personnel Performing Plumbing Work

Pyritic (soil) material – 9.14.2.1(2) – A-9.4.4.4.(1) Soil Movement.
Pyrite and pyrrhotite are minerals known as iron sulfides.
How do pyrite and pyrrhotite damage building foundations? | American Geosciences Institute

(Un)Defined Terms

Sump - Not defined

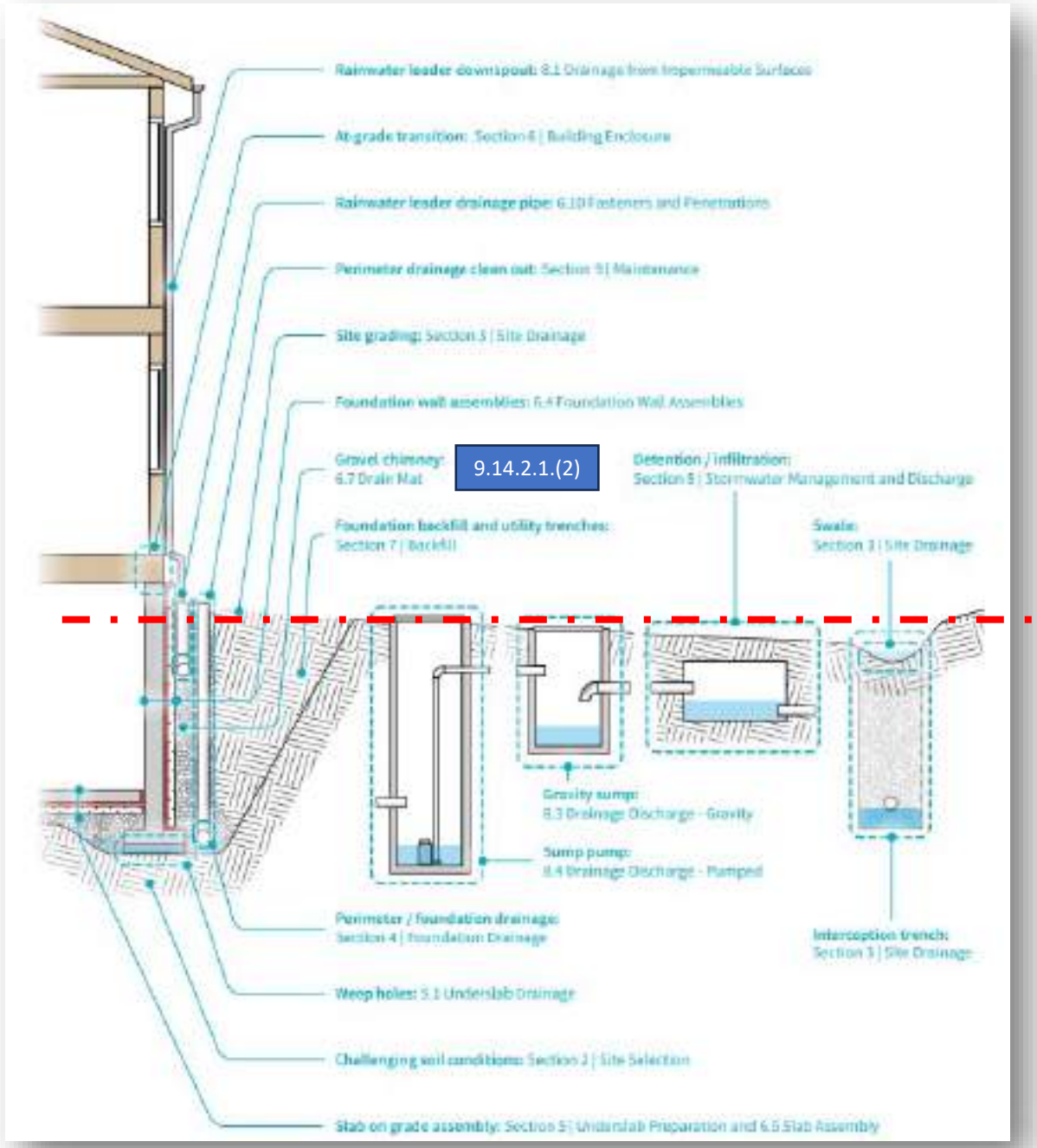
Storm building drain (NPCC) means a building drain that conducts storm water and is connected at its upstream end to a leader, sump or catch basin, and at its downstream end to a building sewer or a designated storm water disposal location. (no foundation drainage –see drainage systems)

Storm drainage system (NPCC) means a drainage system that conveys storm water.

Storm sewer (NPCC) means a sewer that conveys storm water.

Storm water (NPCC) means water that is discharged from a surface as a result of rainfall or snowfall.

Swale/Ditch (not defined) - A low-lying tract of land designed to be marshy or wet. Often designed as infiltration basins to manage water run-off.



Code References

9.14.6.5. Downspouts

1) Downspouts shall conform to Article 9.26.18.2.

9.26.18. Roof Drains and Downspouts

9.26.18.1. Roof Drains

When roof drains are provided they shall conform to Part 7.

Part 7 - 1) This Part applies to the design, construction, extension, alteration, renewal or repair of plumbing systems.

Part 5

Section 5.6. Precipitation

Section 5.7. Surface and Ground Water

Part 9 – 9.14 Drainage

9.14.1. Scope - subsurface drainage and to surface drainage

9.14.2. Foundation Drainage

9.14.3. Drainage Tile and Pipe (9.16.3.1.)

9.14.4. Granular Drainage Layer

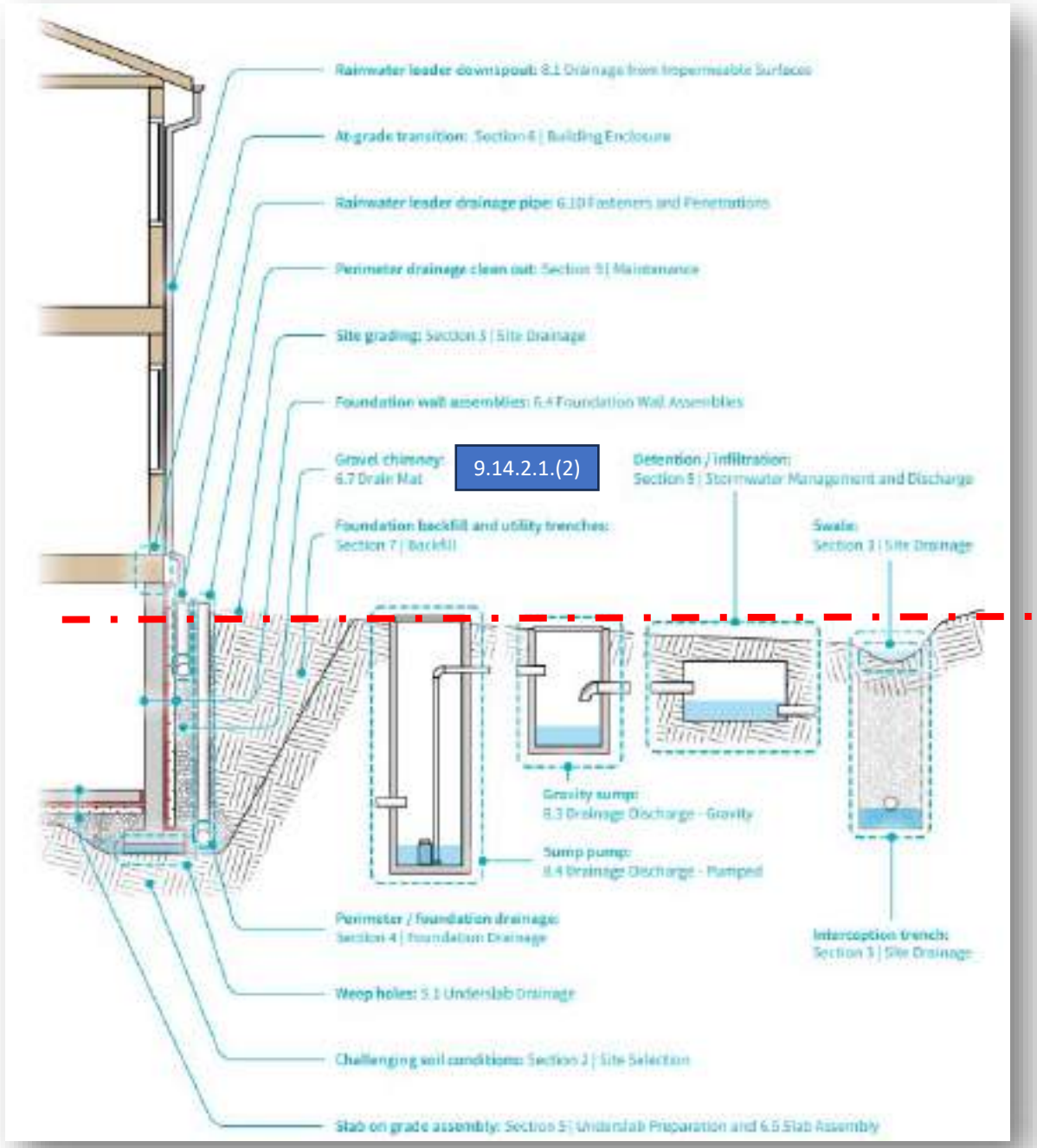
9.14.5. Drainage Disposal

9.14.6. Surface Drainage

9.16.3.1. – Control of Water Ingress

Image from BC Housing - Builder Guide to Site and Foundation Drainage

Builder Guide to Site and Foundation Drainage (bchousing.org)



Grey Areas

9.26.18. Roof Drains and Downspouts

9.26.18.1. Roof Drains

When roof drains are provided they shall conform to Part 7.

Part 7 - Is this reviewed only by a Plumbing 01 or 02?

Part 9 – 9.14 Drainage

Is this reviewed by a Building Official 01,02 or 03?

9.14.2.1. Foundation Wall Drainage

1) Unless it can be shown to be unnecessary, the bottom of every exterior foundation wall…….

Who determines?

Grey Areas

BC BUILDING CODE INTERPRETATION COMMITTEE
AIBC, APEGBC, BOABC, POABC

File No: 98-0116 **INTERPRETATION** **Page 1 of 1**

Interpretation Date:	October, 27, 2004
Building Code Edition:	BC Building Code 1998
Subject:	Foundation Drain Tile
Keywords:	Drain Tiles, Foundations
Building Code Reference(s):	9.14.2.1. (1) 9.14.3.3. (1) 9.26.18.1. (1) 9.26.18.2. (1) 9.14.6 Appeal #1345

Question:

Is foundation drain tile required where a building is constructed with the floor slab above outside grade ?

Interpretation:

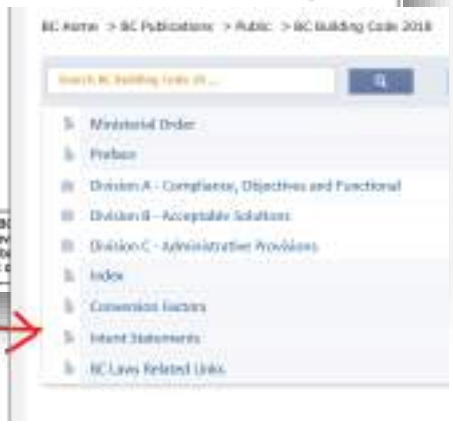
NO -- With the underside of the floor slab located at or above the outside finished grade the potential of hydrostatic pressure under the slab would be eliminated and therefore in compliance with Sentence 9.14.2.1. (1) without foundation drain tiles.

Where a slab is located below outside grade Sentence 9.14.3.3. (1) alleviates potential hydrostatic pressure by installing foundation drains with the top of the pipe at or below the underside of the floor level.

This is subject to the roof being drained in accordance with Sentences 9.26.18.1.(1) and 9.26.18.2.(1). to ensure no ground water can accumulate at the building edge. Surface drainage must also be considered in accordance with Article 9.14.6.

R. J. Light, Committee Chair

The views expressed are the consensus of the joint committee of AIBC, APEGBC, BOABC, POABC Interpretation Committee. The purpose of the committee is to encourage uniform prev... should not be considered as the official interpretation of legislated requirements b... Interpretation rests with the local Authority Having Jurisdiction. The views of the joint c...



9.14.2.1. Foundation Wall Drainage

1) Unless it can be shown to be unnecessary, the bottom of every exterior foundation wall…….

Who determines?

In some cases your local jurisdiction may rely solely on an Engineer to assess (sub-division covenant) or may have a policy/bylaw in place to determine if necessary.

In some regions, soil conditions may be free draining, or the type of project (slab on grade) may not warrant the perimeter drainage

There have been some interpretations over the years that may require additional reviews – one area of potential growing concern is ground water related to bearing capacity. Note 2015 NBC Intent statement

Intent 2:
To limit the probability of excessive moisture loading on the soil immediately beneath the footings, which could lead to saturation and a reduction in the soil's bearing pressure, which could lead to compromised integrity of supporting soils, which could lead to failure of the foundation, which could lead to harm to persons.

Minimum Code – Drainage Disposal

9.14.1.1. Application

1) This Section applies to subsurface drainage and to surface drainage.

9.14.5.1. Drainage Disposal

1) Foundation drains shall drain to a sewer, drainage ditch or dry well.

9.14.5.2. Sump Pits

1) Where a sump pit is provided it shall be…

Drywell is an undefined term – BCBC & NPCC
Sump is an undefined term – BCBC & NPCC

9.14.4. Granular Drainage Layer
9.14.4.3. Grading

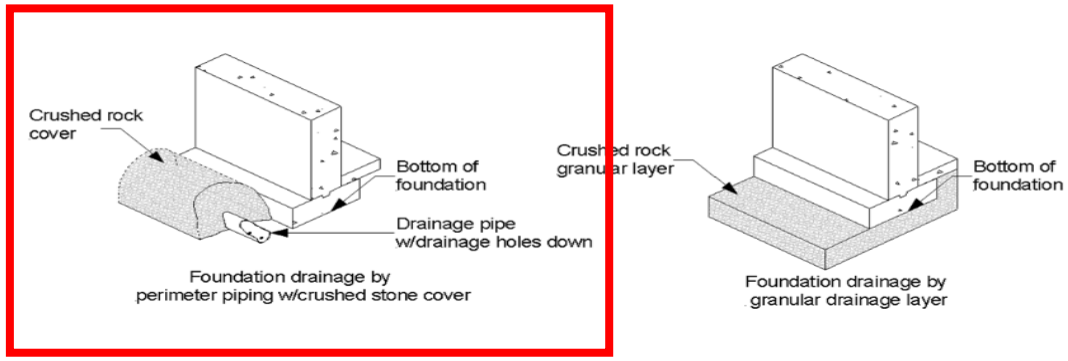
1) The bottom of an excavation drained by a granular layer shall be graded so that the entire area described in Article 9.14.4.2. is drained to a sump conforming to Article 9.14.5.2.

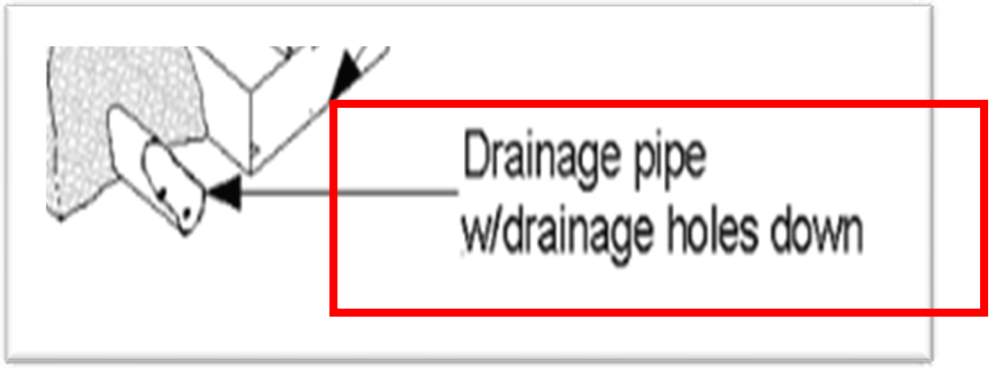
Therefore, there does not seem to be a Code requirement for a sump in a typical drain tile install application (prior to sewer or drywell)

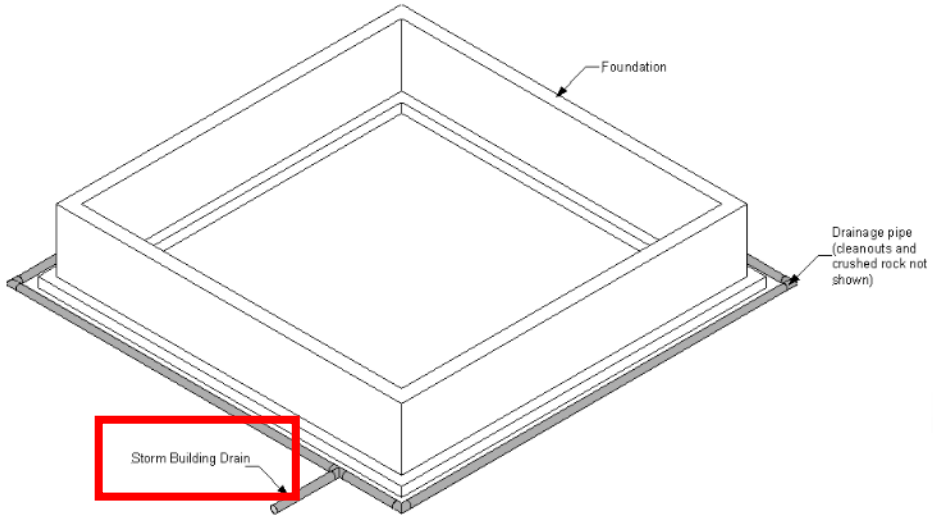
9.14.6.4. Catch Basin

1) Where runoff water from a driveway is likely to accumulate or enter a garage, a catch basin shall be installed to provide adequate drainage. (but not a sump or a drywell?)

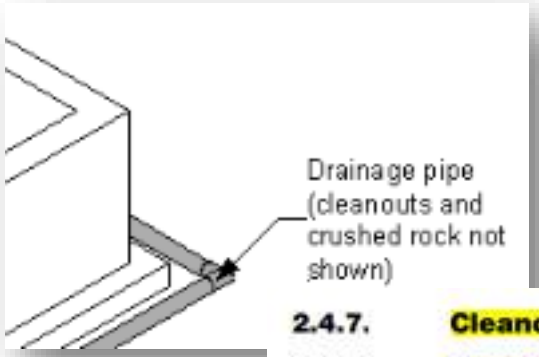
9.14.3. Drainage Pipes







Storm Building Drain - Is this the correct terminology?
How about after a sump?



Are cleanouts required for drainage systems?

2.4.7. Cleanouts

2.4.7.1. Cleanouts for Drainage Systems

1) *Sanitary drainage systems* and *storm drainage systems* shall be provided with *cleanouts* that will permit cleaning of the entire system.

3) Internal *leaders* shall be provided with a *cleanout* fitting at the bottom of the *leader* or not more than 3 m upstream from the bottom of the *leader*.

POLL QUESTION - Materials

What is the most common drain tile and drain pipe foundation drainage materials?

Material Standards

a) ASTM C4, "Standard Specification for Clay Drain Tile and Perforated Clay Drain Tile“ – 1%

b) ASTM C412M, "Standard Specification for Concrete Drain Tile“ – 0%

c) ASTM C444M, "Standard Specification for Perforated Concrete Pipe“ – 1%

d) ASTM C700, "Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated“ – 0%

e) BNQ 3624-115, "Polyethylene (PE) Pipe and Fittings for Soil and Foundation Drainage,“ – 33%

f) CSA B182.1, "Plastic drain and sewer pipe and pipe fittings" or – 64%

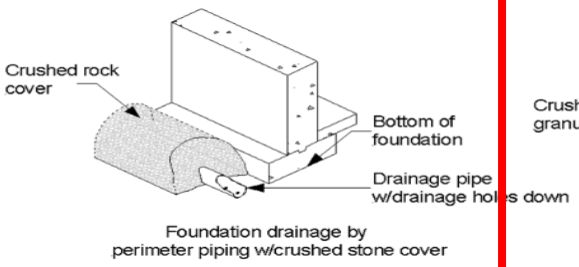
g) CAN/CSA-G401, "Corrugated steel pipe products.“ – 1%

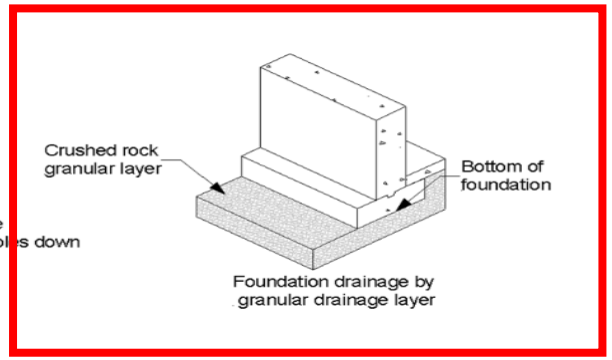
What does “big-o” fall under??

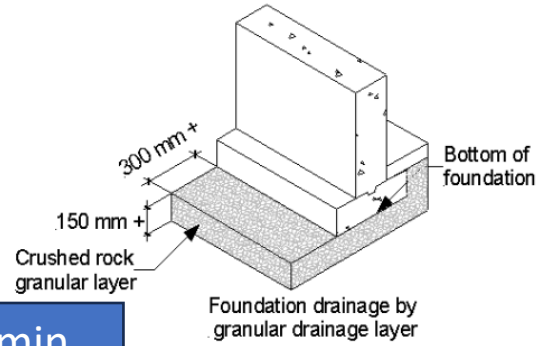
POLL QUESTION - Multiple Answers

9.14.4. Drainage Layer

9.14.4. Granular Drainage Layer
9.14.5. Drainage Disposal







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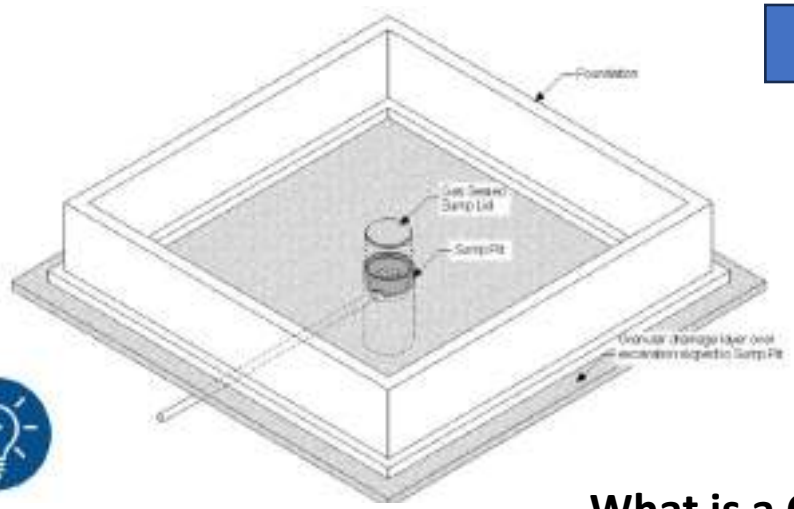


Important note: In all situations with a high water table, the services of a competent designer should be engaged.

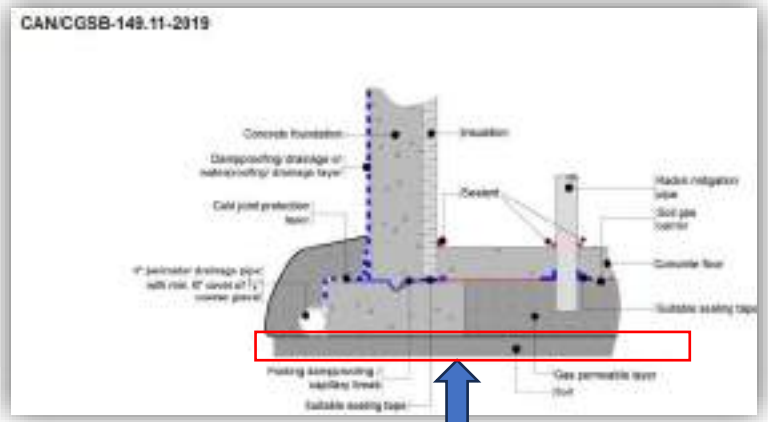
What is a Competent Designer? Engineer?
Structural, Geotechnical, Civil?

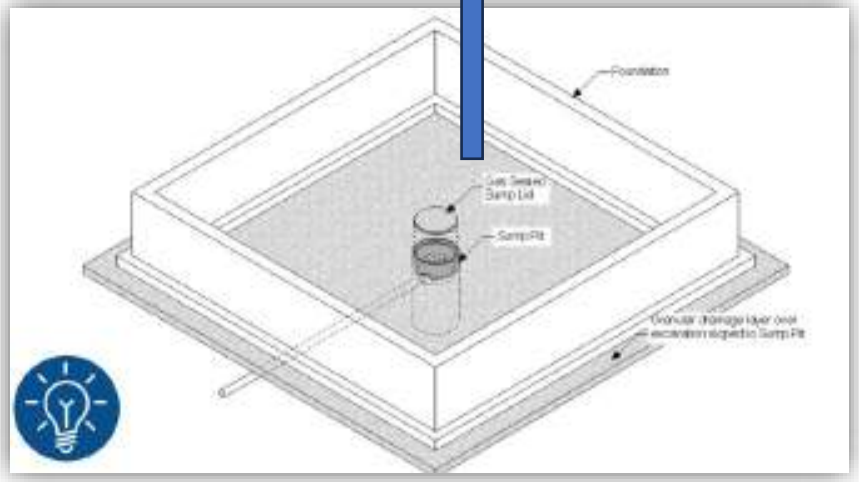
How much fill before an Engineer?

9.15.3.2. Support of Footings
1) Footings shall rest on undisturbed soil, rock or compacted granular fill.

9.14.4.4. Wet Site Conditions
1) Where because of wet site conditions soil becomes mixed with the granular drainage material, sufficient additional granular material shall be provided so that the top 125 mm are kept free of soil.

Don’t confuse - Drainage w/ Radon Layer





Rough-in for a Subfloor Depressurization System
(See Note A-9.13.4.3.)
1) Floors-on-ground shall accommodate the future installation of a subfloor depressurization system by installing a radon vent pipe, and a contiguous gas permeable layer between the air barrier system and the ground consisting of
a) a material or materials that allow effective depressurization of that space (see Sentence 9.16.2.1.(1)), or (Required Installation of Granular Material)
b) not less than 100 mm of coarse clean granular material containing not more than 10% of material that would pass a 4 mm sieve.

9.14.4.1. Typed of Granular Material
1) Granular material used to drain the bottom of a foundation shall consist of a continuous layer of crushed stone or other coarse clean granular material containing
a) not more than 10% of material that will pass a 4 mm sieve, and
b) no pyritic material in a concentration that will damage the building to a degree that would adversely affect its stability or the performance of assemblies (see Note A-9.4.4.4.(1)).

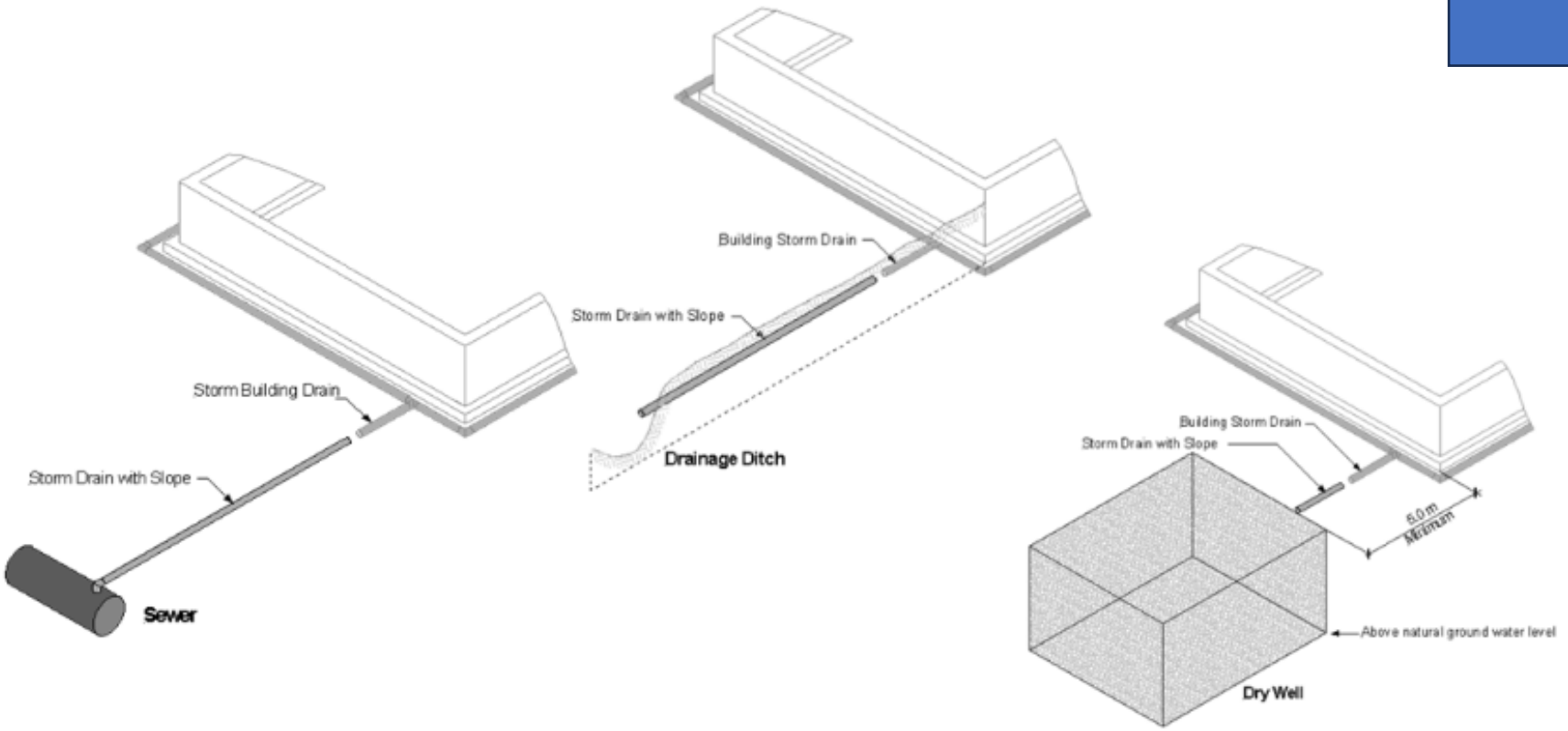
Image from ….

9.14.5.Drainage Disposal

9.14.5.1. Drainage Disposal

1) Foundation drains shall **drain to a sewer**, **drainage ditch** or **dry well.**

Foundation Drain means…..
Storm Building Drain?



Who sizes a “drywell”?

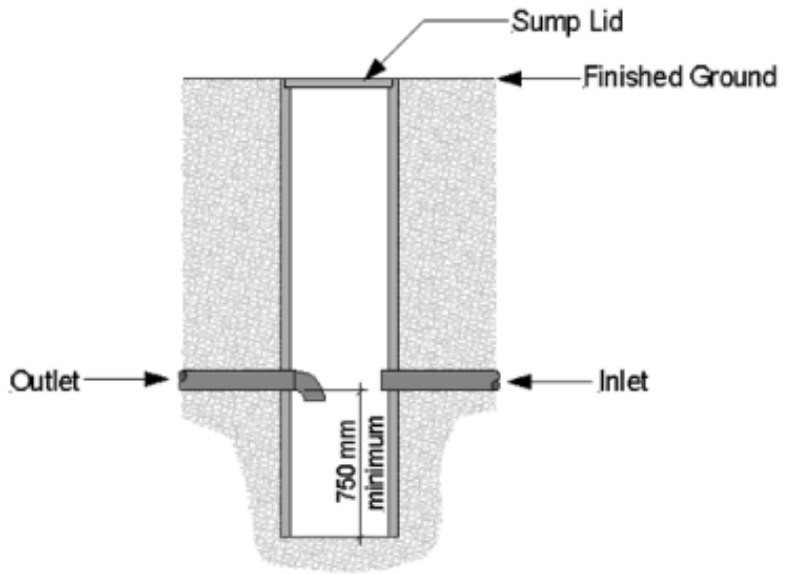
POLL QUESTION - SUMPS

Other than for a drainage layer or non-gravity system, does your community require a Sump prior to entering a:

1) Storm Sewer – 55%
2) Drywell – roof – 2%
3) Drywell – Fdn – 2%
4) Unknown – 42%

Is this by:

1) Code interpretation – Policy? – 15%
2) Bylaw? – 41%
3) Not sure – 44%



Sump installed outside the building

POLL QUESTION - two questions

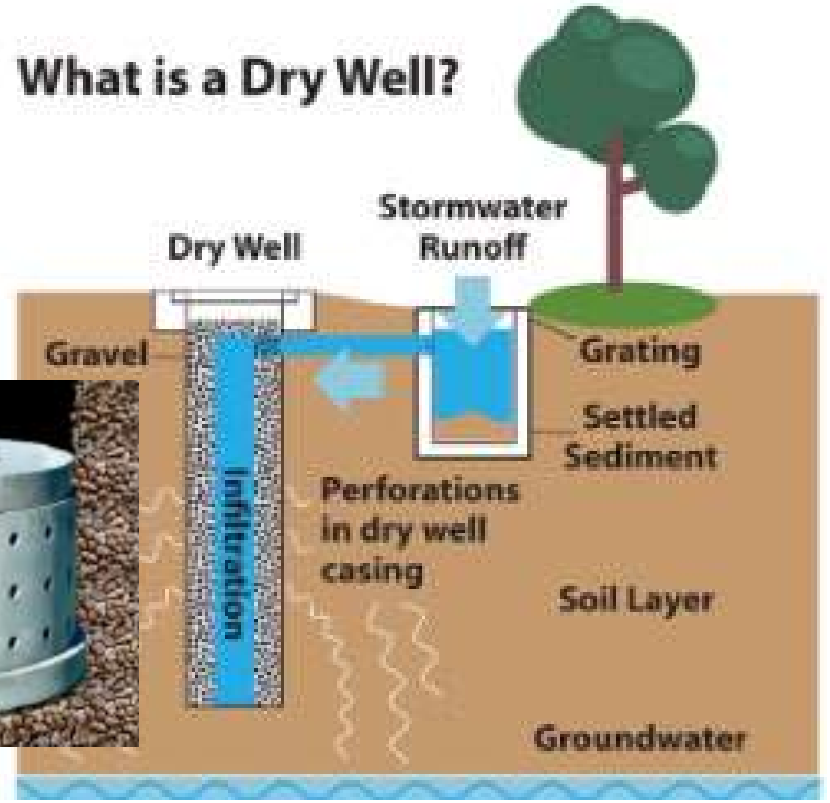
POLL QUESTION - What is a Drywell?

There is no defined term for a drywell within the BCBC or NPCC

- **A – 17%**
- **B – 8%**
- **both? – 75%**

A

B



POLL QUESTION

Sump Pits and Drywells

Function and Objective Statements

9.14.5.2. Sump Pits	
(1)	(a), (b) [F60, F61 - OH1.1, OH1.3] (c) [F40 - OH1.1] [F52 - OH1.2]
	(a), (b) [F60, F61 - OS2.1, OS2.3] (c) [F52 - OS2.3]
	(a), (b) [F60, F61 - OP2.3, OP2.4] (c) [F52 - OP2.3]
	(c) [F30 - OS3.1]
(2)	(a) [F30 - OS3.1]
	(b) [F40 - OH1.1]
(3)	[F60 - OH1.1, OH1.2, OH1.3]
	[F60 - OS2.1, OS2.2, OS2.3]
	[F60 - OP2.1, OP2.2, OP2.3]

9.14.5.3. Dry Wells	
(1)	[F60 - OH1.1, OH1.2, OH1.3]
	[F60 - OS2.1, OS2.2, OS2.3]
	[F60 - OP2.1, OP2.2, OP2.3]
(2)	[F60 - OH1.1, OH1.2, OH1.3]
	[F60 - OS2.1, OS2.2, OS2.3]
	[F60 - OP2.1, OP2.2, OP2.3]

F30 - To minimize the risk of injury to persons as a result of tripping, slipping, falling, contact, drowning or collision**.**

F40 - To limit the level of contaminants

F52 - To maintain appropriate relative humidity.

F60 - To control the accumulation and pressure of water on and in the ground.

F61 - To resist the ingress of precipitation, water or moisture from the exterior or from the ground.

9.14.6.Surface Drainage

9.14.6. Drainage Disposal

9.14.6.1. Surface Drainage

Think about settlement of back fill over time.

9.14.6.2. Drainage away from wells or septic disposal beds

High risk of cross connection! Walkerton tragedy

Compromises on-site wastewater systems

9.14.6.3 Window wells

What is the best way to deal with drainage? Footing?

9.14.6.4 Catch basin

Is a CB also considered a Sump?

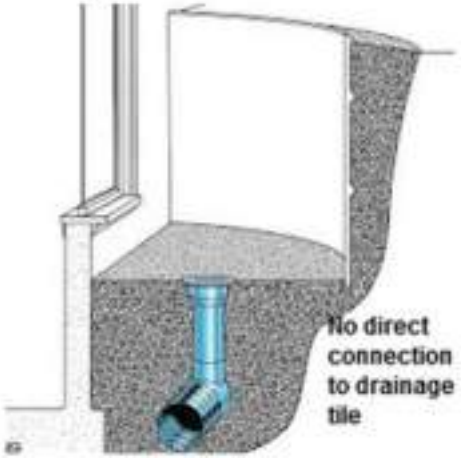
9.14.6.5. Downspouts

A downspout is a rainwater leader?

National Pluming Code of Canada – Downspouts see Leaders

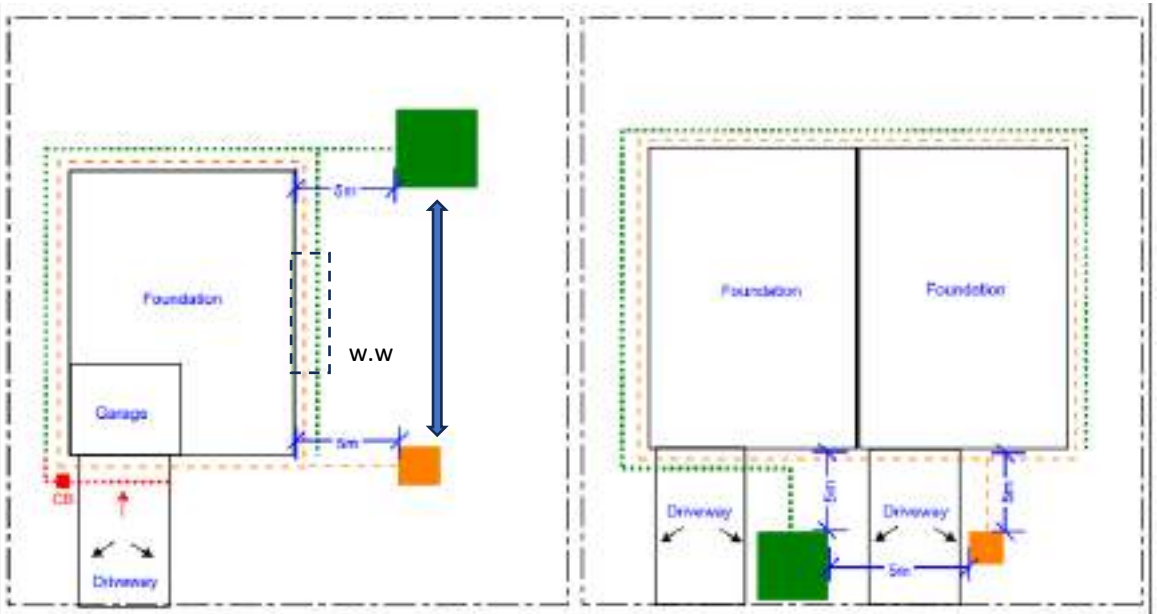
How should you size?

Watch well clearances



What if a trench drain is installed in a garage?

Can that drain to the foundation or roof drainage system?



9.14.2.1. Foundation Wall Drainage

1) Unless it can be shown to be unnecessary, the bottom of every exterior *foundation* wall shall be drained by drainage tile or pipe laid around the exterior of the *foundation* in conformance with Subsection 9.14.3. or by a layer of gravel or crushed *rock* in conformance with Subsection 9.14.4.

9.14.5.3. Dry Wells

1) Dry wells may be used only where located in areas where the natural *groundwater level* is below the bottom of the dry well.

2) Dry wells shall be not less than 5 m from the *building foundation* and located so that drainage is away from the *building*.

2.3.6.1. Tests and Inspection of Drainage or Venting Systems

1) Except in the case of an external *leader*, after a section of a drainage piping or a venting system has been roughed in, and before any *fixture* is installed on piping is covered, a water pressure test or an air pressure test shall be conducted.

9.14.6.4. Catch Basin

1) Where runoff water from a driveway is likely to accumulate or enter a garage, a catch basin shall be installed to provide adequate drainage.

NOTE:

All on-site drainage plans or designs are required to be submitted with any proposed drawings or documents for application of a Building Permit.

Driveways are require to be graded to direct surface drainage on-site.

A registered professional is required to design dry wells.

A separate dry well for the subsurface drainage (foundation drainage) is still required when an off-site storm service provided so a surcharge in the surface drainage will not back flow to the subsurface drainage.

Any part that is shown to be unnecessary by a register professional on record is required to be documented in field reviews

PLEASE NOTE: These drawings have been created for the specific topic noted and should not be considered as a complete detail meeting all BCBC or BCPC requirements.

PURPOSE: On-site drainage requirements for residential lots.	APP/REV	PAGE
CODE REFERENCE(S): **9.14.2.1., 9.14.5.3., 9.14.6.4. 2018 BCBC & 2.3.6.1. 2018 BCPC**	2023-08-11	01

On-site Disposal

Is there a limit to how close two drywells can be?

- 5meters?

Are there any requirements for distances to neighbouring properties?

What about retaining walls? Drainage and distances.

Is a Catch Basin a Sump?

Is it best to drain a Window Well to the footing level?

Is this a Storm Water Management System? BC Plumbing Code? Likely not

When is an Engineer required – and what type?

On-site Disposal

Post Occupancy examples

2024 BC Code Appeals – Interp No.18-0281

Interpretations – not binding

Clarity on this interpretation is:

1) **What is a storm drainage system?**
2) **Is there a difference on internal and external system?**

To review in body of education session.

BC BUILDING CODE INTERPRETATION COMMITTEE
A joint committee with members representing
AIBC, EGBC, BOABC

File No: 18-0281 **INTERPRETATION** **Page 1 of 1**

Interpretation Date:	October 17, 2023
Building Code Edition:	BC Building Code 2018, Book II: Plumbing Systems (BCPC) and BC Building Code Book I: General
Subject:	Testing of Drainage Pipes in a Storm Drainage System
Keywords:	Storm Drainage System, Testing
Building Code Reference(s):	2.3.6.1.(1) of the BCPC

Question:

1. Does a storm drainage system require testing to conform with Sentence 2.3.6.1.(1)?
2. If the answer to Question 1 is yes, can the registered professional of record waive the requirement for the testing of an interior storm drainage system if they deem it unnecessary?

Interpretation:

1. Yes.

   Sentence 2.3.6.1.(1) clearly states that, except for an external leader, after a section of a drainage system or venting system has been roughed in, a water pressure test or an air pressure test shall be conducted. The term "drainage system" is a defined term which includes pipes that convey storm water.

2. No.

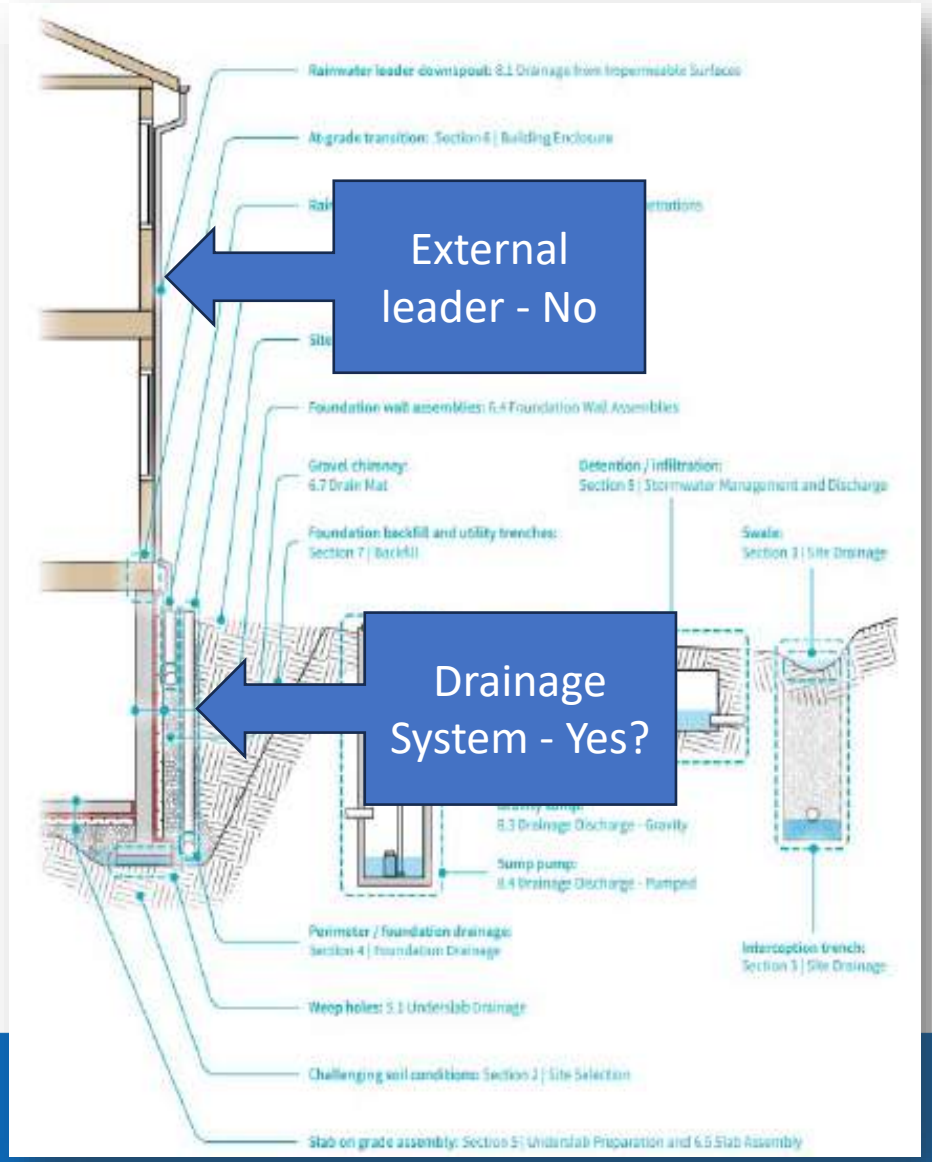
   There is no exclusion which permits the registered professional of record to waive the requirement for testing of drainage systems.

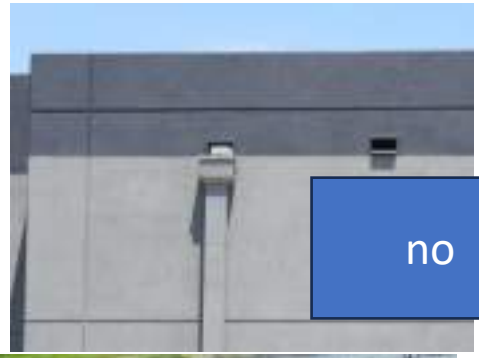
2024 BC Code Appeals – Interp No. 18-0281

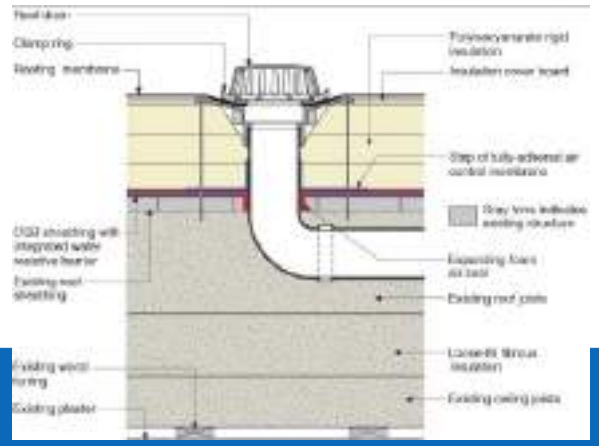
Does a storm drainage system require testing to conform to 2.3.6.1.(1).

1) Yes - required

To review in body of education session.







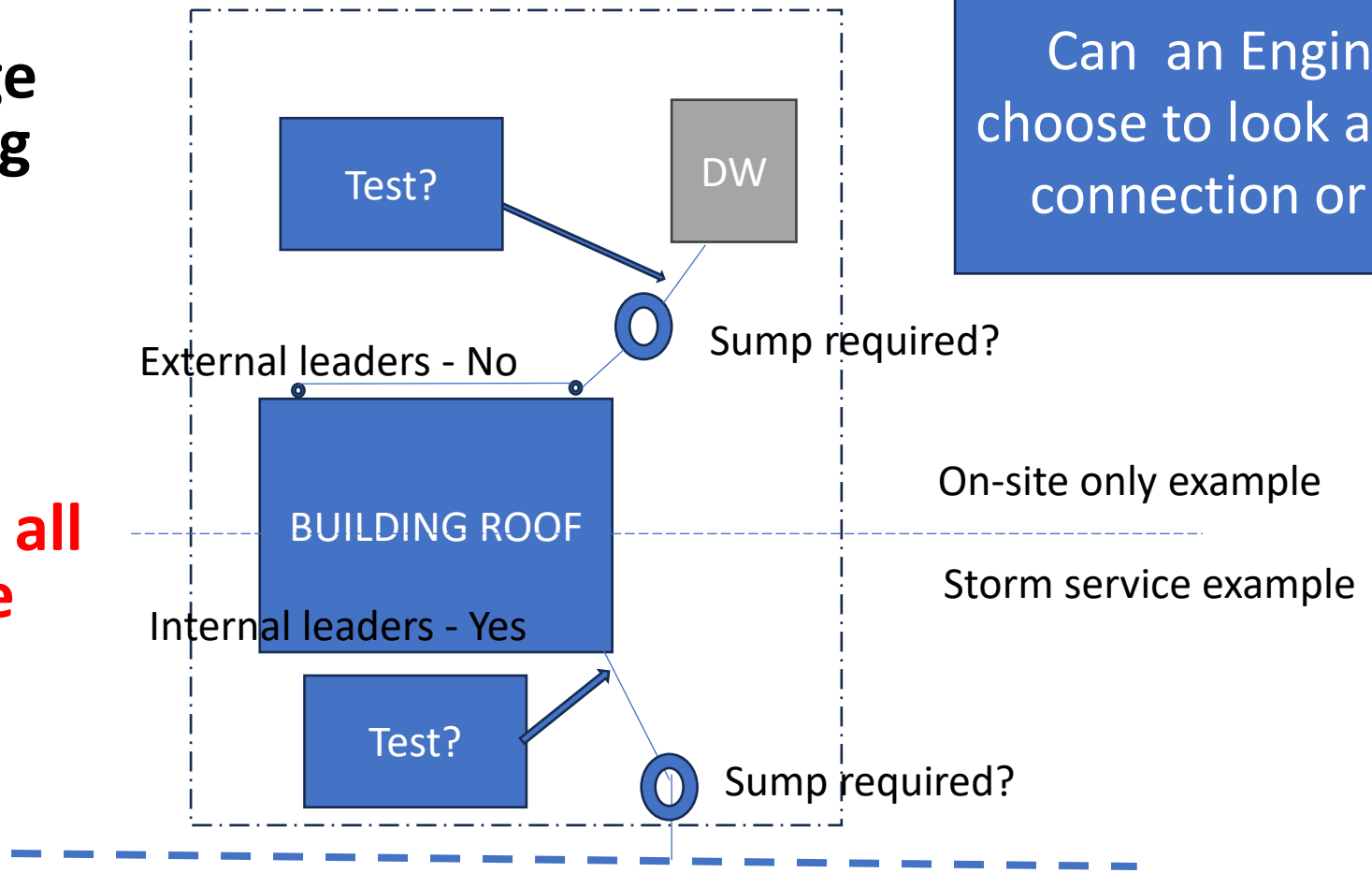
2024 BC Code Appeals – Interp No. 18-0281

Does a storm drainage system require testing to conform to 2.3.6.1.(1).?

1) Yes - required

2) Can an Engineer choose not to review all of the storm drainage system?

- NO – but do they?



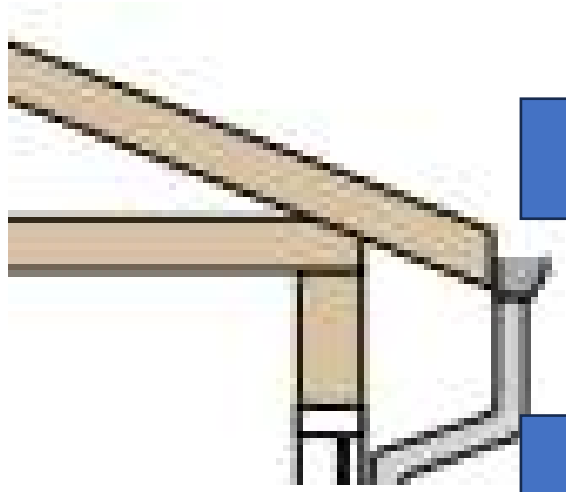
Can an Engineer only choose to look at the storm connection or drywell?

Minimum Code – Part 9 – Roof Drainage

9.26.18. Roof Drains and Downspouts

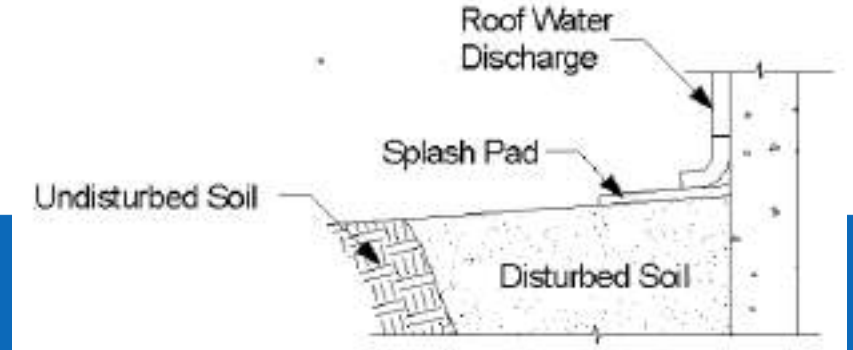
9.26.18.1. Roof Drains

1) When roof drains are provided they shall conform to Part 7.



9.26.18.2. Downspouts

1) Where downspouts are provided and are not connected to a sewer, extensions shall be provided to carry rainwater away from the building in a manner which will prevent soil erosion.



Minimum Code – Part 9 – Roof Drainage

Part 7

7.1.1.2. Application

1) This Part applies to the design, construction, extension, alteration, renewal or repair of plumbing systems.

7.1.2. Conformance

1) Every plumbing system shall be designed and installed in conformance with the British Columbia Building Code Book II (Plumbing Systems), that being the National Plumbing Code of Canada.

Plumbing system means a drainage system, a venting system and a water system or parts thereof.

Drainage system

- Not defined BCBC
- Not defined (non-sanitary) – NPC

Rainwater undefined BCBC

Minimum NBCC – Roof Drainage

Part 7

7.1.1.2. Application

1) This Part applies to the design, construction, extension, alteration, renewal or repair of plumbing systems.

7.1.2. Conformance

1) Every plumbing system shall be designed and installed in conformance with the British Columbia Building Code Book II (Plumbing Systems), that being the National Plumbing Code of Canada.

Plumbing system means a drainage system, a venting system and a water system or parts thereof.

Drainage system

- Not defined BCBC
- Not defined (non-sanitary) - NPC

When Engineers are required

Letters of Assurance

Geotechnical?

- Bearing capacity maintained? Fdn drainage


GEOTECHNICAL — Temporary
7.1 Excavation
7.2 Shoring
7.3 Underpinning
7.4 Temporary construction dewatering

GEOTECHNICAL — Permanent
8.1 Bearing capacity of the soil
8.2 Geotechnical aspects of deep foundations
8.3 Compaction of engineered fill
8.4 Structural considerations of soil, including slope stability and seismic loading
8.5 Backfill
8.6 Permanent dewatering
8.7 Permanent underpinning

- Typically, a Geotech is hesitant in signing for plumbing.

Plumbing? (Civil?)

PLUMBING

4.1	Roof *drainage systems*
4.2	Site and foundation *drainage systems*
4.3	*Plumbing systems* and devices
4.4	Continuity of *fire separations* at plumbing penetrations
4.5	Functional testing of plumbing related fire emergency systems and devices
4.6	Maintenance manuals for *plumbing systems*
4.7	Structural capacity of plumbing components, including anchorage and seismic restraint
4.8	Review of all applicable shop drawings
4.9	Plumbing systems, Part 10 – ASHRAE, NECB or Energy Step Code requirements
4.10	Plumbing systems, testing, confirmation or both as per Part 10 requirements

BC BUILDING CODE INTERPRETATION COMMITTEE
A joint committee with members representing
AIBC, EGBC, BOABC

File No: 18-0164 **INTERPRETATION** **Page 1 of 1**

Interpretation Date:	June 14, 2022
Building Code Edition:	BC Building Code 2018
Subject:	Soil Replacement for Stormwater Management
Keywords:	Soil, replacement, stormwater, letters of assurance
Building Code Reference(s):	Division C Article 2.2.7.3.

Question:

If a project includes replacement of existing soil as part of a stormwater management system, is Letter of Assurance from a registered professional of record required for this work?

Interpretation:

No

The design of stormwater management systems is considered to be engineering work and must be undertaken by a registered professional of record, but it is not regulated by the building code. Letters of Assurance Schedules B and C-B are not the appropriate assurance mechanism.

Refer to Version 6.1 of the Guide to Letters of Assurance which was recently published on February 11, 2022.

Section 21 of the Guide discusses the application of Letters of Assurance to civil works. The Working Group that developed the Guide made recommendations to the Building and Safety Standards Branch that the Letters of Assurance should be amended to include the Civil Engineering discipline. The Guide would be updated to define the roles of civil engineers more clearly in the design of projects including stormwater management systems.

Design of Drywells

Who is responsible to design?

- Designer or builder?
- Building Official/City Eng
- Engineer – Geotech? Civil?

Are they required to show calculations?

Should the piping to drywell also be designed and tested prior to covering?

Where does it note it in the Code?

- **Policy?**
- **Bylaw?**

If designed by Engineer then what should be part of the "field review:

- Drywell size – material
- Piping?
- Tested?

Test and Inspections

Building Act – Local Authority

3.1 Unrestricted Matters

Unrestricted matters are matters regulated in the B.C. Building Code (or other provincial building regulations) for which local governments will have authority to set their own technical building requirements in bylaws.

However, under section 10 of the Community Charter, as is the case with all municipal bylaws, local governments cannot set building requirements that are inconsistent with existing provincial building regulations unless specific permission has been given to exercise discretion.

This means that an individual complying with building requirements set by local governments must still be in compliance with the requirements in provincial building regulations.

Building Act – Unrestricted Matters

Unrestricted matters are enacted through the Building Act General Regulation and will be unrestricted for one of three reasons:

1. Physical Location or Local Circumstance: The matter relates to a specific physical location or local circumstance that local governments are best situated to regulate.

2. Other Statutory Authorities to Achieve Primarily Non-Building Code Objectives: These are matters for which a local government has statutory authority to achieve certain non-Building Code objectives and the enacted technical building requirement is incidental to achieving that objective.

3. Temporary Unrestriction to Address a Regulatory Gap: These are matters that could be the subject of either new or revised B.C. Building Code requirements or a local authority variation request. Temporary unrestriction of these matters ensures that there is no gap in regulation while the Province develops new Code requirements or determines the outcome of a variation request, even if this process was not completed by the end of the transition period in December 2017. Once provincial requirements have been developed for a matter, it will be removed from the unrestricted list and only the provincial requirements will be enforceable.

Building Act – Unrestricted Matters

3.2 List of Unrestricted Matters

The following is the list of matters that are unrestricted over the long term. The Province will advise stakeholders if other matters are added in future.

Please see the Building Act General Regulation for the most current information.

1. Fire Access Route Design
2. Matters that Fall Under Local Governments' Land Use and Planning Authority
    2.1 Development permit areas
3. District Energy Systems and Connections
4. Protection of Designated Heritage Properties
5. Solid Waste Management – New December 2019
6. Water Meters – New December 2019

Building Act – Unrestricted Matters

3.3 List of Temporarily Unrestricted Matters

The following is the list of matters that are temporarily unrestricted.
Temporary unrestriction ensures there is no gap in regulation
while the Province develops provincial requirements or assesses a request for variation.

Once that work is complete, these matters will be removed from the unrestricted list and only those requirements enacted by the Province will have legal force.
(does anyone know when this will happen?)

Building Act – Unrestricted Matters

3.3 List of Temporarily Unrestricted Matters

1. Transmission of Sound into a Building from External Sources
2. In-building Radio Repeaters
3. Firefighting Water Supply (Fire-Flow Demand)
4. Plumbing Infrastructure – New December 2019
5. Exterior Design and Finish of Buildings in Relation to Wildfire Hazard within a Development Permit Area.
6. Flood Construction Level Requirements – December 2019 Revision

Building Act – Unrestricted Matters

3.3 List of Temporarily Unrestricted Matters

4. Plumbing Infrastructure – New December 2019

In developments where a building contains multiple uses or dwelling units, or where there is more than one building in the same development, the plumbing infrastructure by service type (water, fire service, storm sewer and sanitary sewer) may be shared.

University campuses like Simon Fraser University are examples of where shared servicing may be found. In these types of developments, the B.C. Building Code does not adequately address plumbing infrastructure and if strictly adhered to, the Code can require oversized pipes…….

……This authority is only intended for developments where the plumbing infrastructure is shared or for sites with constraints requiring unique plumbing solutions. The local building requirements may be inconsistent with the Code and may reference other standards such as the Master Municipal Construction Documents. This discretion does not extend to the plumbing inside of a building beyond its service connection, as the Code will still apply.

In the future, the Code may be expanded to address plumbing infrastructure in developments where infrastructure is shared. In the interim, local authorities are best positioned to determine local building requirements.

Codes and Local Authority

The Community Charter authorizes local governments to make statutory laws or bylaws for our municipality regulating construction, noise, signs, lawn watering, land-use, and much more. Council enacts bylaws that are created, interpreted, and administered by several local government departments. The Building-Plumbing Official promotes, facilitates, and enforces general compliance with bylaws that pertain to the health, safety, and welfare of the community.

A Policy, whether a department or Council/Board approved, is a process outline or clarification that ensures consistency related to an interpretation of code or process. However, a policy cannot regulate construction (MIABC) – it is only done via a bylaw.

POLL QUESTION - Minimum required

Part 9 Buildings - AHJ

1. Does your local government require roof drains/gutters and downspouts for all buildings?

- Yes – 42%
- Depends – 7%
- No – 45%
- Not sure – 6%

2. Can leaders go to splash pads?

- Yes – all – 48%
- Depends – 31%
- No – 13%
- Not sure – 7%

3. Does your LG have a requirement for when an Engineer would be required for "simple" part 9 buildings when it comes to drainage systems?

- Yes – bylaw – 36%
- Yes – policy – 17%
- No – 29%
- Not sure – 18%

Drainage & Storm Water Management Info

[Builder Guide to Site and Foundation Drainage (bchousing.org)]

Note – minimum code vs best practice.

[PP Guidelines - Geotechnical Engineering Services for Building Projects V2.1 (egbc.ca)]

- Geotechnical Engineer of Record (GER) The GER is responsible for aspects of item 4.2 in coordination with and depending on the engagement of other discipline Registered Professionals of Record as noted below, if neither a Mechanical Engineer of Record (MER) nor a Civil Engineer of Record (CER) is engaged on the project
- Permanent dewatering

[Local government stormwater infrastructure - Province of British Columbia]

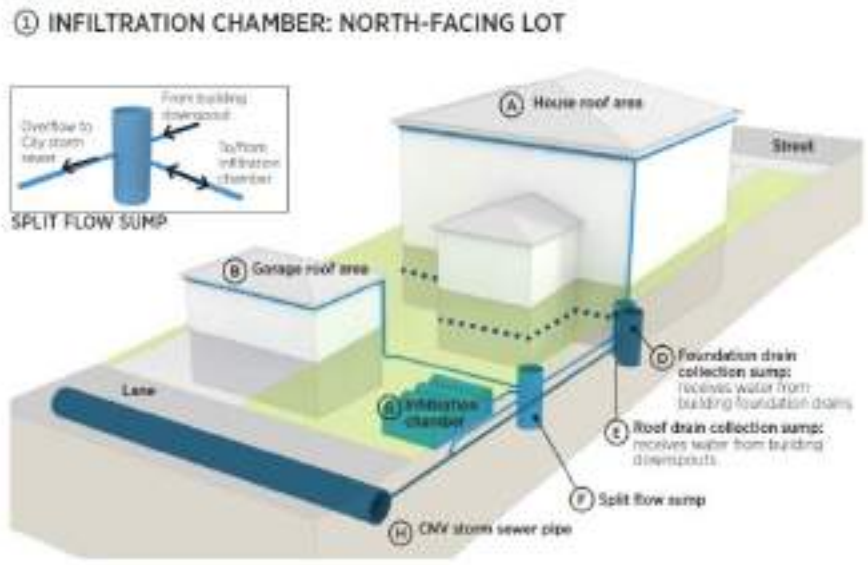
[Stormwater Planning: A Guide Book for British Columbia (gov.bc.ca)]

What is a Storm Water management system?

In relation to low density housing, we are typically not dealing with storm drainage management systems. (National Plumbing Code)

- Possible exceptions under bylaw when dealing with multiple buildings on a single lot – missing middle development.
- Typically designed by a professional

However, some local governments have established robust solutions to deal with drainage issues.



[Stormwater Management Guidelines for Single Family & Duplex Developments (cnv.org)]

[Stormwater | CRD]

Next Lunch and Learn – September

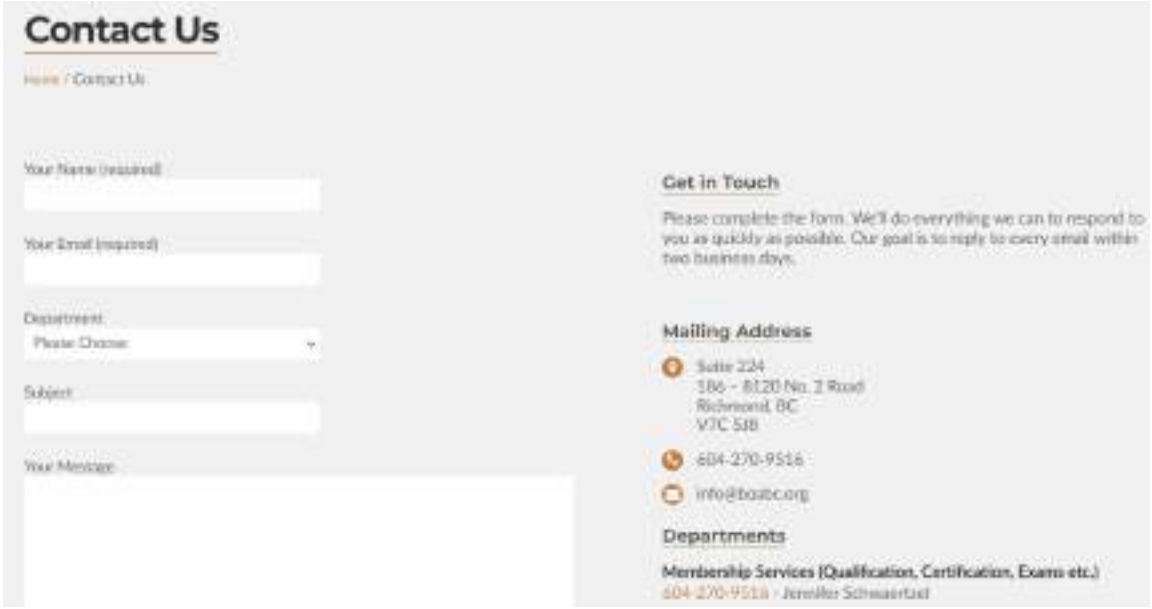
September 19, 2024

No topic yet.

Please forward any suggestions to kkunka@boabc.org.

Participant survey to follow.

Questions - Contact Us



Webinar survey to follow.