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Bioretention Standards for Sustainable Stormwater Management

Presented at TRIECA March 21, 2018

Lynn Barber

Project Manager, Natural Resources

CSA Group

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Outline

- CSA Group
- NSC/CSA Standards Development Process
- Technical Committee in the Process
- NSC/CSA W200 Design of Bioretention Systems
- NSC/CSA W201 Construction of Bioretention Systems
- Current Status & Public Review
- Other CSA Water-related standards
- New Standards Projects

Canadian Standards Association

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CSA Group - Standards

Canadian Standards Association established 1919

54
Areas of technology

3,000
Standards and codes

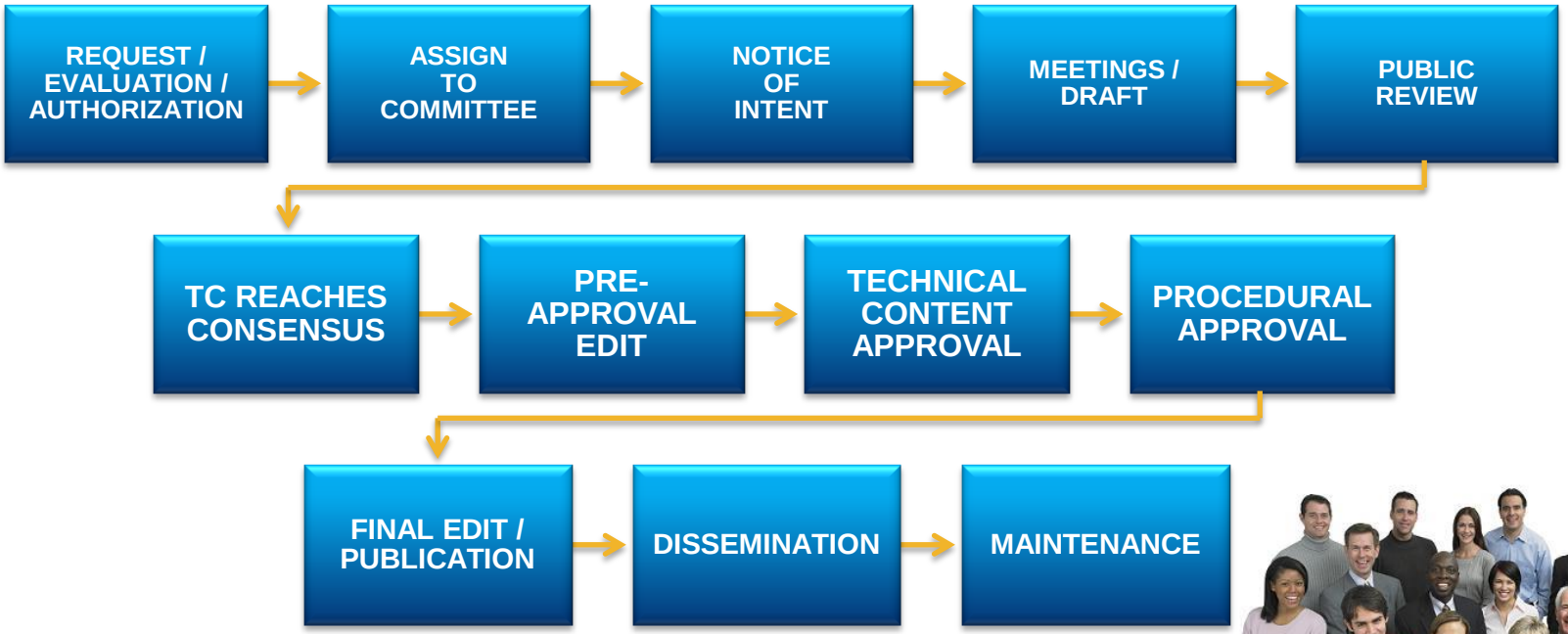
Over 9300
Expert committee members

NSC/CSA Standards Development Process

Consensus

Substantial Agreement by the Technical Committee – implies much more than a simple majority but not necessarily unanimity

CSA Standards Development Process



15-18 months

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Role of Technical Committee

W1003 Green Infrastructure for Stormwater Management Technical Committee

Bioretention Standards Development Committees

TECHNICAL COMMITTEE

W1003 GREEN INFRASTRUCTURE FOR STORMWATER MANAGEMENT

Chair
Bert van Duin

Vice Chair
Martin Bouchard Valentine

TECHNICAL SUB COMMITTEES

TSC Design of Bioretention Systems

Chair
Gilles Rivard

Vice Chair
Laurel Morgan

TSC Construction of Bioretention Systems

Chair
Ken Clogg-Wright

Vice Chair
Kate Northcott /Sean James

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NSC/CSA W200 Design of Bioretention Systems

W200 Design of Bioretention Systems - Scope

Bioretention Systems in scope

- Bioretention with and without an underdrain;
- Biofilters (impermeable liner)
- Bioretention planters and bioretention bump-outs (curb extensions)

Bioretention Systems out of scope

- bioswales;
- tree trenches or pits
- rain gardens

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W200 Design of Bioretention Systems - content

- Roles and Responsibilities
- Site Planning, Criteria and Constraints
- Cold Climate Suitability
- Typical Performance and Design Criteria
- Background Investigations
- Bioretention Design
- O&M Considerations for Design
- Documentation

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W200 Design of Bioretention Systems

Key Points of discussion

- Project leads
- Definitions e.g. infiltration vs. percolation vs. hydraulic conductivity
- Approach to design and system sizing
- Plant-related requirements and recommendations
- Bioretention Media recommendations

NSC/CSA W201 Construction of Bioretention Systems

W201 Construction of Bioretention Systems - scope

This standard covers requirements and recommendations for construction activities specific to bioretention systems.

It does not cover standard construction practices

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W201 Construction of Bioretention Systems - content

- Roles and Responsibilities
- Contract Documentation
- Construction Sequencing
- Erosion and Sediment Control for Bioretention Systems
- Material supply and Handling
- Installation Considerations
- Landscape Materials and Maintenance
- Construction Warranty Maintenance
- Assumption Protocols

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W201 Construction of Bioretention Systems

Key topics of discussion

- Erosion and Sediment Control
- Soil media mixing and placement
- Soil media testing and laboratory analysis
- Lab accreditation

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TOP 3 BENEFITS OF THESE BIORETENTION STANDARDS

- **Feedback from the Green Infrastructure for Stormwater Management Technical Committee members:**
- Consistent terminology and nomenclature
- Consistent design and construction methodologies
- Consistent testing methodologies for materials and installations

- Consistency across all of Canada will make exchange of information and expertise easier, thus improving the quality of bioretention installations

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Current Status: Public Review

Current Status - Standards Development Process

April 2017 — **June 2017**

REQUEST / EVALUATION / AUTHORIZATION → ASSIGN TO COMMITTEE → NOTICE OF INTENT → MEETINGS / DRAFT → PUBLIC REVIEW

TC REACHES CONSENSUS → PRE-APPROVAL EDIT → TECHNICAL CONTENT APPROVAL → PROCEDURAL APPROVAL

FINAL EDIT / PUBLICATION → DISSEMINATION → MAINTENANCE

October 2018

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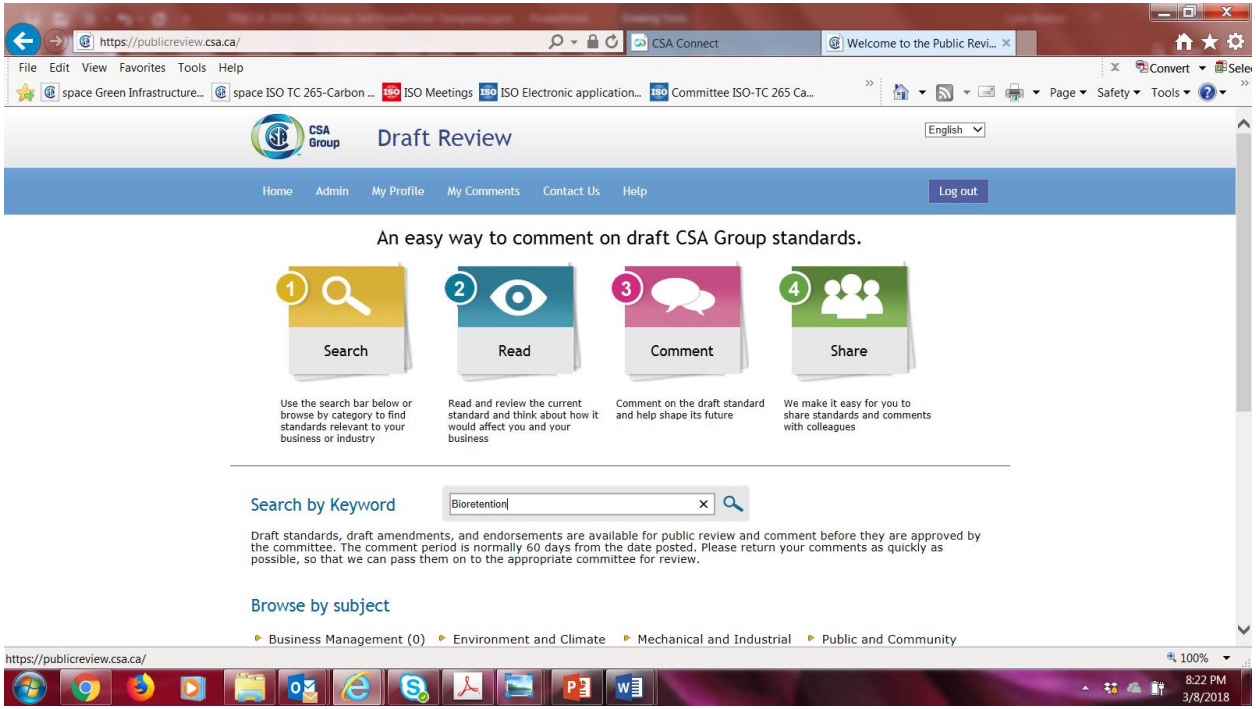
PUBLIC REVIEW

- W201 Construction of Bioretention Systems now posted for public review until **April 23, 2018**
- https://publicreview.csa.ca/



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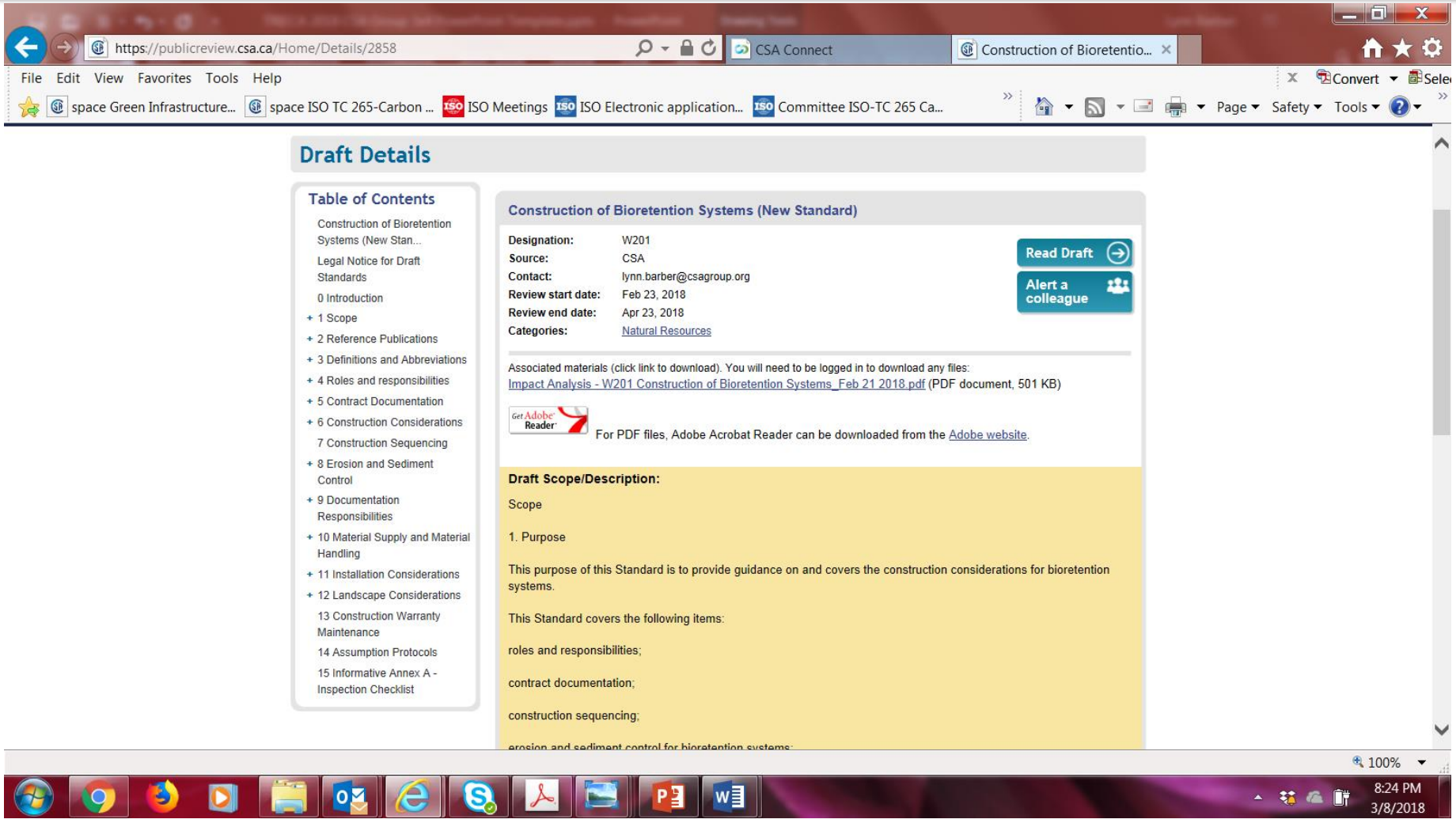
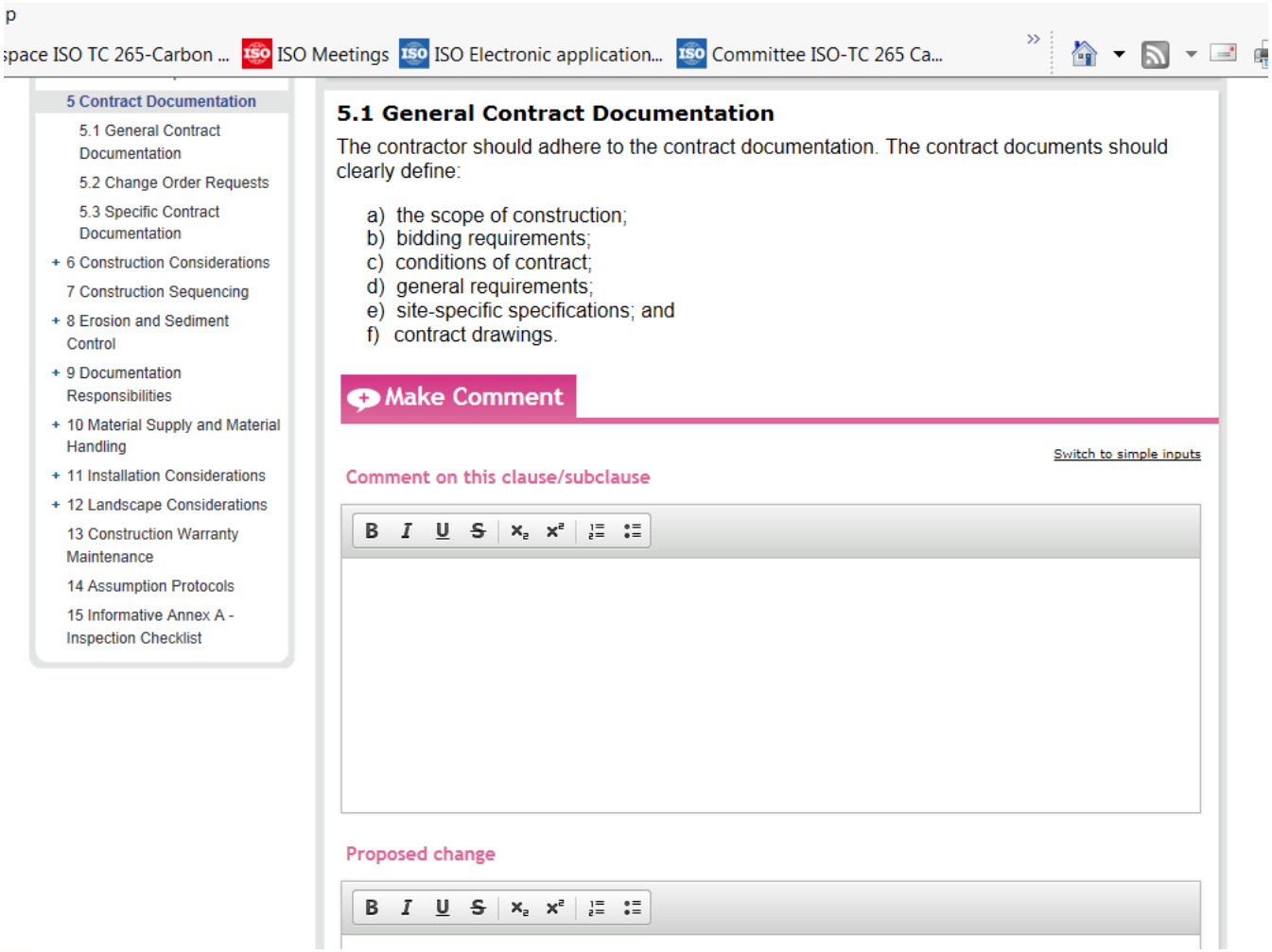
PUBLIC REVIEW



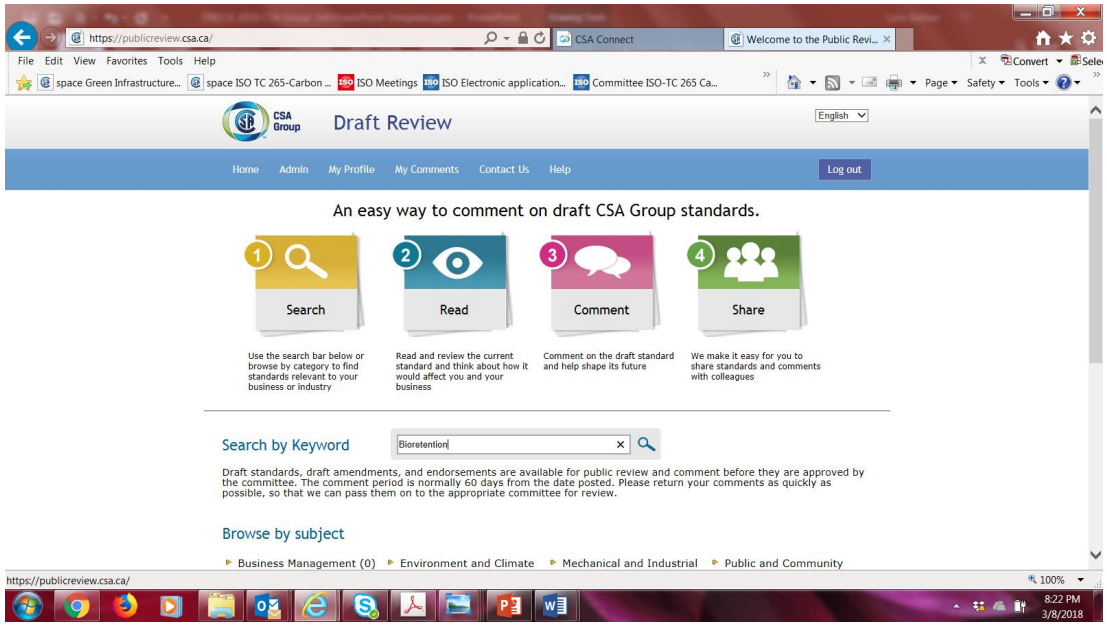
Comment


p
space ISO TC 265-Carbon ...
ISO Meetings
ISO Electronic application...
Committee ISO-TC 265 Ca...
5 Contract Documentation
5.1 General Contract Documentation
5.2 Change Order Requests
5.3 Specific Contract Documentation
+ 6 Construction Considerations
7 Construction Sequencing
+ 8 Erosion and Sediment Control
+ 9 Documentation Responsibilities
+ 10 Material Supply and Material Handling
+ 11 Installation Considerations
+ 12 Landscape Considerations
13 Construction Warranty Maintenance
14 Assumption Protocols
15 Informative Annex A - Inspection Checklist
5.1 General Contract Documentation
The contractor should adhere to the contract documentation. The contract documents should clearly define:
a) the scope of construction;
b) bidding requirements;
c) conditions of contract;
d) general requirements;
e) site-specific specifications; and
f) contract drawings.
Make Comment
Switch to simple inputs
Comment on this clause/subclause
Proposed change

PUBLIC REVIEW DESIGN STANDARD

- COMING SOON!

- AVAILABLE THE WEEK OF MARCH 26, 2018 for a 60 day review at https://publicreview.csa.ca/



Other CSA Water-Related Standards

Water-Related Standards

- **CSA B184 SERIES - Polymeric subsurface stormwater management structures**
- **CSA/ICC B805 - Rainwater Harvesting Systems** (to be published)
- **CSA Z800 Basement Flooding –** *under development*
- **CSA W200 Design of Bioretention Systems –** *under development*
- **CSA W201 Construction of Bioretention Systems –** *under development*
- **CSA W202 Erosion and Sediment Control: Inspection and Monitoring-** *under development*
- **CSA W203 Planning, Design, O&M Wastewater Treatment in the North using Lagoons and Wetlands** *under development*

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New Standards Projects

NEW NATIONAL STANDARDS OF CANADA PROJECTS

- **Updated IDF Guidelines**

  mid 2019

  Paul Steenhof paul.steenhof@csagroup.org

- **Flood Resilient Design for New Residential Communities**

  late 2019

  Lynn Barber lynn.barber@csagroup.org

- **Erosion Protection for Northern Infrastructure**

  early 2020

  Brian Zupancic brian.zupancic@csagroup.org

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Consider getting involved

- **Feedback from the Green Infrastructure for Stormwater Management Technical Committee members:**

- ***"It's definitely work, but it is quite gratifying to give back and influence how stormwater management will evolve in Canada."***

- ***"It's a great opportunity to interact with peers from across all of Canada (and the US)."***

- ***"It's been fascinating to discuss the different approaches in use: e.g., the water balance approaches used in Western Canada vs. the simplified, initial capture approaches used in Ontario and Quebec. I learned a lot from these discussions."***

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Thank you!!

Any questions?

Lynn Barber

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