



## **WATER RESOURCES/WATER SERVICES** **LOW IMPACT DEVELOPMENT MODULES**

This bulletin is issued to provide clarity to both the development community and City of Calgary staff related to the design procedures to be followed when designing Low Impact Development (LID) features.

The City of Calgary, in a joint effort with various watershed stakeholders has developed stormwater flow rate, runoff volume control and water quality targets for all watersheds in the Calgary region. LID will be an integral part of The City's stormwater management approach to achieve primary objectives in watershed protection, namely: protecting public safety, preventing flood damage, improving watershed health, preventing further stream degradation, and facilitating sustainable growth.

LID is a combination of best management practices strategies and a wide variety of holistic site design techniques in stormwater management. The City has made great progress in providing tools for LID design including the Source Control Practices (SCP) Handbook produced in 2007, SCP Checklists (2008), SCP Fact Sheets (2009), and the Water Balance Spreadsheet for the City of Calgary that was released in 2011. These efforts to create tools and technical support programs to assist stormwater professionals are ongoing.

Water Resources/Water Services is leading a corporate effort to create Low Impact Development Technical Guidelines; created to reflect The City's local policies and practices while also considering its unique climatic (e.g., chinooks) and geographic conditions. Uniform guidelines provide a straightforward analysis and design approach; hence, will promote consistency among submittals and build a better approval process for both applicants and reviewers.

The main components of the Technical Guidelines are the required design, construction, inspection, and operation and maintenance elements for the Source Control Practices currently accepted by The City, namely: bioretention, bioswale, absorbent landscaping, green roof, stormwater capture and reuse, rainwater harvesting, and permeable pavements. These practices, in combination with the geotechnical and hydro-geological aspects that are essential in the analysis and design of infiltration-type practices are grouped into six different modules. These modules are intended to be combined into a comprehensive LID Manual. This Manual, in turn, will become in time an integral part of the City of Calgary Stormwater Management & Design Manual.

While completion of the other modules is still in progress, we are pleased to release the following modules for use by industry and City staff:

- Module 1- Geotechnical and Hydro-geological Considerations
- Module 3- Green Roof

These two modules are available at the Water Resources - Development Approvals' website, see <http://www.calgary.ca/UEP/Water/Pages/Specifications/Submission-for-approval-/Development-Approvals-Submissions.aspx>

Please note that, while the modules were prepared using the best literature, resources and research reports available to date, the field of LID is still evolving. As such, there may be applications that are not yet covered by the Guidelines and therefore will require assessment on a case-by-case basis. In addition, given the evolutionary nature of LID, Water Resources recognizes that there will be a transitional period and therefore will be flexible where possible in the implementation of the LID modules, and is open to constructive alternatives provided that the intent of the modules is met to Water Resources' satisfaction. We also welcome any feedback to continually improve future releases of the modules and LID Guidelines.

Training sessions pertaining to the rollout of all modules will be organized within the next year. In addition, Water Resources intends to embark on a second phase of the LID Manual which is to provide worked-out examples and standard details and drawings of an integrated subdivision / private site developed using the LID principles laid out in the six modules.

For any questions or comments related to the above, please contact either Bert van Duin, Drainage Technical Lead at (403) 268-6449 or at [bert.vanduin@calgary.ca](mailto:bert.vanduin@calgary.ca) or May Cayanan, Project Engineer at (403) 268-3298 or at [may.cayanan@calgary.ca](mailto:may.cayanan@calgary.ca).