Summary of Survey Results
RI Stormwater Design and Installation Standards Manual:
LID for Linear Transportation Projects: Using the RI Stormwater Standards Manual to Design Green Streets
July 13, 2011

Fifty four persons attended this workshop and a total of 36 attendees answered and turned in this survey. All of the averages for the questions 4-8 ranked above 4 (on scale of 1 – 5) indicating that for the most part people found the workshop relevant and useful, they planned on sharing the information and felt that they had learned something meaningful. Many participants gave thoughtful answers to question 9-13 as well.

Demographics:

<table>
<thead>
<tr>
<th>Affiliation</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Sector</td>
<td>38.8%</td>
<td>14</td>
</tr>
<tr>
<td>Municipal</td>
<td>8.3%</td>
<td>3</td>
</tr>
<tr>
<td>RIDOT</td>
<td>47.2%</td>
<td>17</td>
</tr>
<tr>
<td>Other MS4</td>
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<td>0</td>
</tr>
<tr>
<td>Other State/Federal</td>
<td>5.5%</td>
<td>2</td>
</tr>
<tr>
<td>Nonprofit</td>
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<td>0</td>
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<tr>
<td>Other</td>
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<td>0</td>
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Questions 4-8:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Strongly Agree</th>
<th>Mean</th>
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<tbody>
<tr>
<td>4. This workshop was relevant</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>11</td>
<td>20</td>
<td>4.39</td>
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<td>and practical for my work.</td>
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<td>5. I will be able to use</td>
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<td>0</td>
<td>15</td>
<td>13</td>
<td>0</td>
<td>4.14</td>
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<td>what I learned in this workshop.</td>
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<tr>
<td>6. The exercises were useful.</td>
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<td>1</td>
<td>5</td>
<td>21</td>
<td>9</td>
<td>4.06</td>
</tr>
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<td>7. I plan to share the</td>
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<td>0</td>
<td>4</td>
<td>16</td>
<td>16</td>
<td>4.33</td>
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<td>information I learned with</td>
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<tr>
<td>others.</td>
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<td>8. I feel better prepared to</td>
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<td>0</td>
<td>10</td>
<td>14</td>
<td>12</td>
<td>4.06</td>
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<td>use the new standards.</td>
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</table>
9. What was the most useful part of the program?

33 people answered this question. 16 people answered that the case studies and specific examples were the most useful part of the program. Many of these people mentioned that this was because the case studies were relevant to their work and 2 mentioned that they thought it was useful that the workshop overall pertained to the whole audience and that everyone was on the same page. 2 people mentioned in particular that the Q&A and discussion between audience members was helpful. 6 people also mentioned that the workshop improved their overall understanding and clarification of the manual. 6 people mentioned that information about development, design, and maintenance was most useful and 4 of those people mentioned linear design in particular.

Actual Responses:
- Design Examples and the Q&A related to them
- Although I’ve been present for many of the other workshops, all portions were helpful; particularly because of the fact that it was being conveyed to personnel who deal w/ highway/road projects.
- 3 samples
- The examples shown in the afternoon (to some extent) and the discussions in afternoon
- I learned something new
- Exercises and discussion initiated by audience
- It gave me some understanding of the new regulations in the manual
- General gain of knowledge regarding the new regs
- Walk through changes and new permitting process
- Examples of road projects- afternoon session
- Gaining a basic understanding of linear LID and the effect it will have in the design and maintenance process.
- Cases studies and learning how to use the manual for projects
- Roadway construction examples and the calcs at end of class
• All. I gained a better understanding of the new Requirements for Highway/Bridge Projects.

• Basic intro to new requirements

• The exercises were the most useful part of the program. Made it easier to understand the procedure

• I found the review of the structure of the storm water manual to be most helpful; I certainly have a better handle on it

• Case studies and also the fact that all of the presentation were specifically tailored to the audience

• Case studies

• Case study exercises

• Presentation of an actual 70% (or 10%?) project that applied the new Stormwater Standards to a 90% project

• Infiltration practices

• In-depth discussion of roadway-appropriate BMPs, with focus on linear (Channels, Bio-retention) treatment BMPs

• Examples

• Practical Applications

• Cases studies 2&3

• Descriptions of applications of linear LID features, Specifically Rich’s “Acceptable water quality BMP’s” presentation

• Clarification of DOT development/redev. Projects and applicable thresholds

• Talking about actual engineering projects and how they were evaluated using LID

• The overview of the manual

• Case studies


- Case studies
- Focus on linear roadways

10. What was the least useful part of the program?

27 people answered this question and 6 of them answered with nothing or n/a. 3 people thought there was too much discussion of the manual while 2 thought that there wasn’t enough. 2 people mentioned that discussion of the LUHPPLs was not useful. 2 mentioned that there was too much review and repetitive information, especially in the beginning of the workshop, and 2 mentioned that there was not enough discussion about implementing the requirements in actual projects. Some of the more complicated and insightful answers are bolded.

**Actual Responses:**
- All good
- Discussion of BMP’s not typically applicable to or appropriate for linear roadway projects (WVTS)
- Erosion and sediment control discussion
- Review of QPA application
- Ambiguities regarding LUHPPLs of onus for properties draining to MS4
- Case Studies
- Review of where to find practices in the manual
- n/a
- Too much time reviewing manual. Prerequisite of knowledge of manual, i.e. attendance of workshop, would be helpful to eliminate time spent reviewing
- Overall it was pretty good
- Porous pavement, permeable pavers
- Don’t agree with philosophy of replacing sidewalk (ie IR project) being an erodible surface. If, during construction, you only replace small sections of sidewalk at one time (not all dug up at once) you would have <10,000 SF of erodible surface. This should not qualify as redevelopment- we are adding much more expense to taxpayers in RI. More government red tape.
• All Great!

• Some of the requirements will be difficult to implement

• The information about private development (eg Parking lots, etc)

• Too many unknowns, parameters

• None

• More time on Min. Standards would have been nice (prob would have occurred if we didn’t talk about LUHPPLs!)

• Overall was very good- Maybe we need to include a bridge project in the case studies. Also, more discussion of maintenance requirements integrated into design and construction.

• Some of the requirements seem unrealistic and instructors don’t have good answers when questions are raised

• n/a

• going over the manual set-up

• morning review session- mostly all repeat
• all good

• The steps on how to use the new manual was relatively quick

• Probably just the portion on slides that showed the eleven MSMS (just because I’ve worked with them) However, I understand why it was conducted because of the number of people having their initial exposure to manual

12. How do you plan to use the information presented today, and is there anything you will do differently?

29 people answered this question. 14 answered that they would use the information they learned while working on present and future designing and planning projects. 2 mentioned that it would give them broader outlook on environmental issues when designing and planning. 5 mentioned it would affect their work in managing or reviewing projects. 3 will inform their coworkers and 2 will use the information to better inform consultants. Many people also mentioned how they
would specifically use the information when designing, planning, reviewing and consulting.

**Actual Responses:**
- **DOT Projects**
  - For design purposes and planning
  - I will use the information on site design projects
  - Planning and design of SW mgmt/BMPs for DOT projects, preparation of SW mgmt. Plans and permit apps to DEM.CRMC
  - Retrofits for DOT projects
  - Apply to current projects
  - Will apply new stormwater regulations to roadway design projects
  - Site design; underground infiltration chambers
  - Definitely more knowledgeable to how to apply the stormwater standards and various tools to consider
  - Work on other options for difficult sites
  - Inform others within the section
  - Apply restrictions to projects that I manage, can point consultants in right direction w/ design b/c I have a better idea of the requirements
  - Reviewing projects
  - Develop more templates for DOT/MS4/Consultant use
  - I will be able to ensure that design elements conform w/ the manual
  - Will probably not have much use for this information given my position but it is good to know what is being done to address this issue
  - Assist in review of treatment options
• I would have to ensure that the projects I manage meet the new criteria and/or provide necessary mitigation

• Applying the new standards where necessary; using the checklist in appendix A for design projects

• This will assist all my road design team members

• Will incorporate into design projects as required

• Determine scope of new projects based on funding available and time allotted in TIP

• I manage bridge design projects. Design and permit submissions will have to reflect the new regs

• It will defiantly change the way things are done. It seems to add more environmental issues that will need to be addressed in projects

• View projects more holistically

• Will share with my town engineer and town planning department

• Less municipal roadway reconstruction projects

• The template mentioned and used by the consultants is something that should be helpful in review

• Future project reviews

13. What topics would you like to see addressed in future training?

21 people answered this question. Many answers were unique and specific, and all of the longer ones are bolded and would be helpful to read individually. 6 people mentioned that some more practical examples would be useful especially in dealing with specific problems. One person mentioned a follow up workshop in order to discuss problems that had been faced using the new regulations and how they have been dealt with. 4 people mentioned maintenance as a concern, for example how to maintain, who is responsible for it, and how much it may cost. 2 people mentioned that they would like appendix A available in an editable version, such as MSword. A couple people mentioned concerns about preparation for construction as well as regulations and who takes responsibility for different areas of approval and construction. One person added some extra general comments about his concerns regarding cost and he did not seem to have a sufficient understanding of why these regulations are important for environmental issues.
Actual Responses (municipal officials):

- More practical application of how to deal w/ regs on projects
  - Also included some General comments:
    - The community is broke. These regs will make all projects more expensive and time consuming and will greatly increase the overall cost of building/maintain our infrastructure. And at what increase of environ. Protection when there already exists a ton of regs?
    - The groups whose activities these regs govern should have been an integral part of all the regs development
    - Was consideration given to the added cost these regs will add to doing business in RI by private entities? RI is a depressed area even compared with the broke nation and these regs will make it worse- and at what gain for the environment?

- Resolve conflicts between agencies (i.e. RIDOT, DEM, EPA, etc)

- Draft or sample language to align municipal development regs, zoning & stormwater ordinances w/ new stormwater regs

- When does this apply? New sewer lines? Utilities? Will municipality get some input if, say, RIDOT came through and changed drainage of road through town? Who will be responsible for drainage?

(All Others: mostly engineers, some landscape architects and others)

- Clarification for terms in stormwater manual such as disturbed area, erodible soil, etc. (They were in this training but not necessarily planned)

- Maintenance for cost estimates

- Example of more projects and solutions for permitting in Rhode Island

- Please make appendix A available in a format that can be filled out or edited (work doc or pdf with form fields)

- More emphasis /case study of highway applications

- Follow up with some “lessons learned’ once the new regulations have been applied to more projects

- Useful item: appendix A as a word document
• Some discussion by RIDEM about how the stormwater treatment requirements may be met on a watershed (as defined by receiving water body or resource area) basis, rather than on an individual subwatershed/BMP basis, would be helpful. This is particularly applicable to linear projects which often have multiple subwatershed/BMPs in a given watershed.

• Address pre-construction and during initial land development best recommendations to prevent sedimentation flow or sheet flow soil stabilization—by a contractor. Usually the first major rain storm tells a contractor where to apply stabilization control. So, preventative measures or BMP’s to prepare a site for major soil/land development would be helpful.

• Maintenance issues and training

• More discussion of the requirements of standard 7 and specific differences between the info required on Appendix G and the SWAPP. How to put together the O&M plan, who needs to be signing off on the plans-specifically for DOT. (Design section cannot direct the work of maintenance Division)

• Maintenance Inspection, Costs, implications, feasibility, How to review O&M plans.

• More in depth about projects that only have <10,000 sq ft of sidewalk removal. Answers to question about sidewalk slop and QPAs to be implemented into project

• Answers regarding drainage and the physical alteration permit process

• Existing commercial sites: how will they be monitored to ensure their drainage runoff complies with new stormwater manual. Many sites currently drain onto state right of way. During Constriction: is there a fine in place to charge contractor daily fee for not being in compliance with SWPPP? This would be more effective tool to make sure contractor complies with erosion controls.

• Afternoon session-example projects more in line w/typical projects. For example, cold plane and overlay with sidewalks and flushing ex. Drainage system in urban area/ Recycling projects etc. Director of DOT and chief engineer should attend to understand extra cost/time required for permitting/design. Discussion on field? Changes made during construction

• Some of the questions on details on STDs may occur as reviews of these projects progress. A forum to address these on a similar meeting situation would be helpful.