Green Infrastructure Design Charrette Activity

Lesson Plan

Rhode Island Green & Resilient Infrastructure Project | *RI GRIP*

www.crc.uri.edu/projects_page/gi-coastal-ri

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THE UNIVERSITY OF RHODE ISLAND GRADUATE SCHOOL OF OCEANOGRAPHY | CRC COASTAL RESOURCES CENTER

Sea Grant Rhode Island

NATIONAL FISH AND WILDLIFE FOUNDATION NFWF

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Charrette

A meeting where stakeholders gather to share knowledge, solve problems, and map and design solutions. Charrettes help create buy-in from diverse stakeholders and the public.

Introduction

The coastal storms of the future are expected to be unique products of climate change, sea level rise, and storm surge. While climate change is global in scope, decision-making at the local level can increase the ability to adapt and remain resilient. Started in January of 2015, the Green and Resilient Infrastructure Planning (GRIP) project represents a joint effort by Rhode Island Sea Grant, the Coastal Resources Center, the Coastal Resources Management Council, municipal governments, NGOs, university affiliates, and other stakeholders to capitalize on green infrastructure (GI) opportunities in municipalities that experience issues with stormwater flooding in addition to coastal inundation resulting from surge, tides, and sea level rise. The pilot communities include Warwick, North Kingstown, and Newport.

The project team will work across departments and levels of government to create a site-specific GI design that meets the needs of each community. They will also work to build the capacity of local decision makers to incorporate GI as a guiding principle in comprehensive planning, hazard mitigation, capital improvement efforts, and other ventures. This guidance will include recommendations for improving state and local documents, policies, and procedures.

The four-hour charrette was developed to bring issue and design experts together with decision-makers and stakeholders to build individual and collective capacity for applying GI as a problem solving tool. In a relatively short amount of time, the audience will receive training on stormwater and coastal flooding problems and the common GI solutions to those problems. Attendees will then synthesize designs for local sites based on the training received and the collective expertise and creativity of prearranged, interdisciplinary teams.

Objectives

By the end of the four-hour charrette, participants will have:

- Collaborated within an interdisciplinary team to prepare a draft conceptual design to reduce impacts from stormwater and coastal inundation, while enhancing the public use of the local site.
- Applied GI techniques – those that mimic nature to address stormwater concerns - to meet the goals and constraints of the site
- Considered tradeoffs of different approaches

Audience

The charrette is mainly designed for decision makers and those involved in the siting, design, implementation, and maintenance of local stormwater management infrastructure and coastal planning and development. Those from NGOs or other groups having a stake in water quality or watershed management could also benefit. As such, the audience could include but is not limited to:

- Core Project Team – expertise in stormwater, coastal, habitats and ecology, planning, landscape architecture
- City staff – engineers, department of public works, planners, parks and recreation
- Elected/appointed officials – Mayor, City Council, Planning Board
- Representatives of neighborhood associations
- Business –Nursery and Landscape Industry
- Students – Landscape Architecture, Environment and Life Sciences

Methodology

The charrette is intended to build individual and collective capacity of attendees to use GI as a problem solving tool in coastal areas. As such, the event will balance both instruction and interactive activity. The charrette will end with a follow-up to synthesize lessons learned, answer any questions, and conclude with major takeaways. Facilitators and audience are expected to maintain communication following the event in order to ensure that deliverables are used and/or changed as projects evolve and more data is acquired and created.

Time

Four hours are required for this charrette, with the largest blocks of time dedicated to educating the audience and creating the participatory designs. With more time available, the design component and follow-up/conclusions portions might benefit.

Structure

The charrette is designed around four main sessions designed for implementation in a linear fashion. The first components are intended to build understanding in order to have an informed audience for the interactive component.

Session 1 – Indoor Walkabout of Site

Facilitator will provide PowerPoint presentation to examine the current site(s) and role within the community. The audience will discuss and prioritize local issues and confirm goals.

Session 2 – GI as a Solution

Facilitator will provide PowerPoint presentation to discuss definition and application of GI in coastal settings. The audience will provide feedback on their understanding of and experience with using GI, and relevant case studies will be explored.

Session 3 – Interactive Team Design
This session will include a working lunch. Predetermined interdisciplinary teams will work to achieve site goals by creating designs that incorporate GI as a guiding concept. They will consider trade-offs of design choices and consider site constraints, design life, and maintenance costs.

Session 4 – Debrief and Conclude
Audience will compare and contrast their own team's choices/ideas with the designs of other teams. The charrette will conclude with a facilitator answering new questions that developed during the design process. Next steps will be discussed regarding packaging the deliverables, acquiring or creating additional data, and any other future developments.

Materials

Equipment

- Easel
- Large post-it style (sticky) flip charts
- Easel Markers
- Masking tape
- Name Tags
- Colored Sharpies
- Table tent for each group
- Big Tables
- Computer(s)
- Projector
- Laser pointer
- Extension Cord(s)
- Power strip
- Camera(s)
- Coffee, Lunch

Exercise Materials

- Instructions for design exercise
- Design pieces
- Legend for design pieces
- Scissors
- Scotch tape
- Colored pencils
- Plain white paper
- Graph paper (imperial)
- Adhesive putty
- Thin sharpies
- Engineer scales
- Printed and laminated airphotos to scale
- Clear paper/tracing paper, size of map

Handouts & Printouts

- Sign-in sheet
- Evaluation forms
- Handouts on site issues and goals
- Handouts of GI techniques
- Reference note book
- Map poster on board
- List of team breakout

Session Plans/Agenda

A basic schedule of the day is provided below, along with more detailed session plans.

Preparation

- Charrette facilitators must determine core team to educate audience and manage design component of the charrette (e.g. local planner, landscape architect, engineer, stormwater/LID expert, external charrette leader (extension specialist (CRC equivalent))
- Determine wider audience (e.g., muni staff in departments of planning, public works, mayor's office, etc.; State staff from departments of environment and resource management; waterfront business owners; heads of boards and commissions; NGOs, other stakeholders)
- Group audience for design component—determine multidisciplinary teams before charrette to ensure expertise, experience, responsibility, and affiliation in each design team is sufficient and balanced
- Create the following components:
  - ✓ Sign in sheet
  - ✓ Handouts on site issues and goals
  - ✓ Handouts on facets of GI and techniques, applications of GI
  - ✓ Printed maps, online map links, scaled and laminated aerial photos
  - ✓ Instructions for design exercise
  - ✓ Design pieces, legend
  - ✓ Final evaluation forms

Basic 4-hour schedule

Time	Agenda
15 min	**Welcome** • Introductions/Icebreakers • Overview of day
30 min	**Session 1** • Indoor walkabout of local site(s): - Discuss existing role and uses of site(s) - Discuss existing stormwater, coastal, other issues at site(s) • Prioritize issues and discuss goals
30 min	**Session 2** • Review GI definition, techniques, case studies • Discuss potential GI applications at local site(s)
35 min	**Session 3** • Create interactive group designs incorporating GI to achieve site goals - Consider: stormwater/coastal issues, spatial dimensions, use of space, regulations, maintenance, co-benefits, etc.
85 min	**LUNCH** Continue Session 3 during working lunch
30 min	**Session 4** • Discuss individual group renderings, unique ideas/options • Consider common design themes, challenges etc. • Discuss next steps, needs moving forward—resources, data, public feedback, etc.
15 min	**Evaluation** • Summary thoughts • Complete evaluation forms • Provide any other feedback/takeaways/lessons learned
	Adjourn

Detailed agenda

Timing	Content	Facilitator/Presenter, (Roles)
20 min before start time	**Registration and Coffee** • Attendees sign in, receive group designation (e.g. red, blue, green; 1, 2, 3) • Attendees sit at group table, socialize over coffee	Core Team
15 min	**Welcome and introductions** • Introductions of core team, participants—name, affiliation - Ice breaker question (e.g. "Define GI for coastal environment in your own words") • Explain objectives, goals, agenda for charrette • Discuss local project timeline –where we are now and where we are going, impetus for charrette	Charrette Leader
30 min	**Session 1: Existing Conditions** Indoor Walkabout—PowerPoint presentation, discussion, participants take notes for use later during group design 1. Examine current site(s), role for users in community—garner feedback from participants 2. Discuss stormwater, coastal flooding, other issues at site(s)—garner feedback - Prioritize issues in order of importance and/or addressability within community 3. Confirm goals for site—incorporate participant feedback - Share drafts, examples of any designs already in progress 4. Summarize with photos linking issues and goals at site(s)	Engineer or Planner Planner Engineer Engineer Charrette Leader
30 min	**Session 2: Green Infrastructure as a Solution** Consider GI application—PowerPoint presentation, discussion, provide handout with pictures of each approach for participants to take notes 1. Review GI definition , what makes GI unique in coastal areas 2. Discuss GI techniques, case studies - Garner feedback from participants on their experience, knowledge, examples 3. Discuss prospective GI applications at local site(s)	Stormwater Expert
35 min	**Session 3: Interactive Team Design** Interdisciplinary teams of participants experiment with site maps and scaled GI design components to address stormwater, coastal flooding, and other issues while also working to maintain or increase local use of space—all while considering site goals and constraints **Part 1**	Core Team Member

Timing	Content	Facilitator/Presenter, (Roles)
	Before Beginning (5 min) • *Confirm design groupings* • *Reiterate site goals* • *Review instructions for design process—PPt or flipchart* Warm-up discussion to introduce design exercise and answer related questions (30 min) 1. Examine basemap and scaled design materials – participants become familiar with group members, design pieces, different design applications 2. Review design pieces—option to create your own components 3. Review objectives, options – If options limited, could have each group focus on different aspects/solutions, or could have group undertake entire site to see overlap and differences of final designs (case-by-case) 4. Brainstorm design ideas for your site 5. Debrief – clarifying questions, challenges—debrief is more about the design exercise than the site itself	
15 min	**LUNCH break** • Remind participants to return to group tables for working lunch	
50 min	**Session 3: Interactive Team Design (Continued)—Working Lunch** **Part 2** 1. Delegate who will be time keeper, presenter, note taker, etc. for design exercise 2. Establish ground rules for your site—Review issues and goals, confirm most appropriate design considerations/ constraints for the site you are looking at and begin assembling design 3. Each group should consider physical (watershed and coastal) characteristics, human use, aesthetics, and function to support goals of prospective project. Consider regulatory and maintenance, short-term/long-term, design life 4. Consider tradeoffs of different approaches related to local use, cost, co-benefits, maintenance, regulatory factors, etc.—now and in future. 5. Stick design pieces to base map with adhesive, take photos	Core Team Member (Core Team Members answer questions, share ideas, and take notes while design teams in action)
20 min	Bring groups together to discuss and critique each team's design • Group 1 presents, Group 2 presents, etc. • What is similar? Different? BEST?	CRC facilitates, speaker for design group presents

Timing	Content	Facilitator/Presenter, (Roles)
30 min	**Session 4: Discussion– discussion of priorities, tradeoffs, design life** 1. Debrief on the charrette process—Was this fun, informative, challenging? What did you learn? Any surprises? 2. Debrief on deliverables—Considering the different designs, discuss similarities, differences, priorities, etc. 3. What are the guidelines to give stormwater experts, landscape architects, engineers, etc. 4. Are there changes to regulations/policies or practices for the City of Warwick (standard operating procedures or maintenance) 5. Next steps moving forward	Charrette Leader, Core Team Member (One facilitates, one takes notes on flip chart)
5 min	**Evaluation** • Expert reactions and summary thoughts	Stormwater Expert
5 min	• Complete evaluation form • Garner any additional feedback	Core Team Member
5 min	Thank you	Charrette Leader
	Adjourn	