

Ecological Restoration Project Final Design Report Guidelines

The purpose of the design report is to summarize the proposed project and make clear the concepts and details that may not be apparent in the design plans and specifications. The design report acts as a contextual supplement to the plans and specifications. The design report is a description of the proposed project in narrative form rather than plan form and a tool to brief new staff members who may not be familiar with the project. Upon submittal to the Philadelphia Water Department (PWD), this design report will be used as guidance for construction staff, training purposes, and as a record of what was learned during the design process.

As this report will be submitted for projects ranging in scale, scope and complexity, the length of the report will vary. The recommended length is approximately five to seven single-spaced pages, not including figures and appendices. The report is to be thorough but concise. The design report should address any of the following prompts that are relevant to the project:

People and Agencies Involved

- List all stakeholders in this project, including regulatory agencies that have had a role in the design process. Describe the role of each stakeholder and why are they involved in the project.
- List critical staff members that assisted in your firm's submittal of this project. Include names, titles, and contact information of project managers and lead engineers. Include any major staff turnover during project timeline.
- Address the role of subcontractors in your design process, including environmental testing and survey.
- Detail the partner roles of other firms or entities in the design process and which project design objectives they handled.

Site Conditions

- Describe site history. Include:
 - Current and previous owners of the site.
 - Any historic landmarks or items of preservation value.
 - Any knowledge of previous land and waterway usage in the surrounding area (mills, farms, factories, residential developments, etc.).
- Describe the existing physical conditions of the site. Describe in detail the stream condition, damage or risks to infrastructure or assets.
- Describe existing environmental conditions and risks of the site, including flow data.
- Describe the project scope with respect to real estate, existing easements, nearby roads, and other rights of way.
- Describe existing major utilities surrounding the site. If a component of the project involves rerouting or removing utilities, include details of ownership, easements, and existing maintenance plans.
- Describe existing access to site. Also discuss how additional access may be required to complete the project, and any closures of previous access.
- Due to the dynamic nature of urban streams, describe any observations of how the site has changed since design work began:
 - Describe any major failures of existing structures.
 - Describe the trajectory of the ecological issues being addressed through the project.

- Describe any major weather events that significantly changed the morphology of the site.
- Describe any new design constraints that were not apparent at the onset of the project.

Design and Planned Improvements

- Describe critical success factors for the project.
- Discuss the iterations of the design. Discuss why alternatives originally devised were not chosen for the final design.
- If design objectives were not met, describe project impacts due to constraints. Address any other pertinent constraints on the design and applicable regulations.
- Describe project timeline and include delays encountered during the design process. List any major external delays to the design process. Include those due to regulatory agencies, historical preservation, extreme weather events, etc.
- Describe how you foresee the future of the project site design, including any future problems or warnings PWD should be aware of.
 - For example, if the proposed project is a short-term solution, give some ideas of how the project may need to be converted to a long-term solution, as well as maintenance and monitoring advice. If the project is a more long-term solution, detail how long you foresee your design performing adequately and when you advise maintenance and monitoring to take place.

Assumptions, Survey, Testing, and Calculations

- Describe any underlying assumptions made during design, including models used and inherent assumptions made by design software.
 - Describe the channel forming flow used in the design and how it was calculated.
 - Describe the design storm used in the sizing of the wetland.
 - Describe what rock sizing or bank stabilization methods were used.
- Detail the survey process:
 - When the survey occurred.
 - Describe the limits of the survey conducted. Identify benchmarks and datum.
 - Detail any issues that may impact confidence in the survey data.
- Describe proposed environmental testing process:
 - When the testing occurred.
 - What tests were conducted.
 - Detail any issues that may impact confidence in the testing data.
 - Any applicable results returned and how they affected the design.
- Discuss pre- and post-construction model calculations in general statements.

Construction

- Briefly summarize the proposed construction sequence.
- Detail locations of proposed construction easements and their owners.
- Identify any components of the construction sequence that require extra attention to detail, especially associated with specialized construction equipment.

Impacts on the Public

- Detail any impacts to the public caused by this project, and the coordination with the public necessitated by the restrictions.

- For example: parking access, street and trail closures, detours, utility impairments, etc.
- Describe efforts to protect surrounding infrastructure and assets.
- Discuss any considerations for emergency access to the site and how the proposed project will impact emergency travel surrounding the site.

Cost & Timeline

- Provide estimated cost breakdown for various phases and aspects of the project.
- Discuss cost impacts of the project permits.
- Include your estimates of construction cost generally, and identify the design elements comprising the largest percentage of the total cost.
- Include considerations for maintenance and adaptive management.