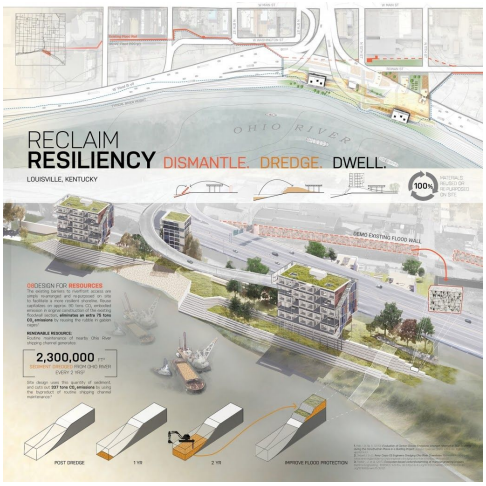
AIA
COTE Top Ten

ASSIGNMENT BRIEF #4
Water



Measure 4: DESIGN FOR WATER

Sustainable design conserves water and protects and improves water quality.

Narrative: How does the design manage stormwater?
How does the design conserve potable water? How is the project innovative in the way that it uses and treats water?

Suggested Graphic: Diagram representing how water arrives onto the site, how it is used or reclaimed, and how it leaves the site.

Metric: Percent of storm water that is managed onsite: (2 year, 24-hour event. Use supplied spreadsheet in competition website to calculate)

ASSIGNMENT: (Option: research teams)

1. Establish estimates of water supply and demand and determine what percentage of the project's water demand could be met with rainfall.
    a. Calculate average annual rainfall on the proposed building roof area using weather data available at https://www.weather.gov/. Calculate in gallons.
    b. List required plumbing fixtures using program information and the ICC Plumbing Code https://up.codes/viewer/california/ca-plumbing-code-2019/chapter/4/plumbing-fixtures-and-fixture-fittings#422.0
    c. Calculate total predicted annual water consumption using USGBC water efficiency tables Indoor Water Use Reduction
    d. Compare available water supply to predicted water demand - potable and non-potable - and create a graphic to express the balance.
    e. If demand is larger than supply, identify possible additional alternative water sources - groundwater, surface water, condensation, and other unique sources.

2. Calculate stormwater volume on the site area from a 2-year, 24-hour storm event using NOAA rainfall data https://hdsc.nws.noaa.gov/hdsc/pfds/, and locate proportionate areas of detention.Use the provided spreadsheet from ACSA https://www.acsa-arch.org/wp-content/uploads/2019/11/Stormwater-Management-Spreadsheet.xlsx

For Final Presentation:

3. Create a Sankey/distribution diagram of water sources and consumption on site.
4. In less than 100 words, describe how the design finds restorative balance within the natural water cycle.
    a. How does the design manage stormwater?
    b. How does the design conserve potable water?
    c. How is the project innovative in the way that it uses and treats water?

DELIVERABLES:

- **Water Supply/Demand Graphic** that reflects alternative water sources, low-flow plumbing fixture consumption, and stormwater release.
- **Biome Map** with conceptual location of proposed structure(s).
- **Narrative on Design for Water** (<100 words

SUBMITTAL:

Submit as PDF via university interface (Blackboard, Canvas, Edmodo, Google…) using the following NAAB file format:

COURSENO_INSTRUCTOR_yourlastname_yourfirstname_ASSIGNMENT04_YEARTERM

DUE:

Resources:

Niemelä Jari. Urban Ecology: Patterns, Processes, and Applications. University Press, 2014.

https://books.google.com/books/about/Urban_Ecology.html?id=0_qtm_GsQt4C

ACSA AIA COTE Top Ten Studio Guide
https://www.acsa-arch.org/competitions/2021-cote-competition/studio-guide/#tools

Associated NAAB Content:

Program Criteria

PC.2 Design—How the program instills in students the role of the design process in shaping the built environment and conveys the methods by which design processes integrate multiple factors, in different settings and scales of development, from buildings to cities.

PC.3 Ecological Knowledge and Responsibility—How the program instills in students a holistic understanding of the dynamic between built and natural environments, enabling future architects to mitigate climate change responsibly by leveraging ecological, advanced building performance, adaptation, and resilience principles in their work and advocacy activities.

PC.4 History and Theory—How the program ensures that students understand the histories and theories of architecture and urbanism, framed by diverse social, cultural, economic, and political forces, nationally and globally.

PC.5 Research and Innovation—How the program prepares students to engage and participate in architectural research to test and evaluate innovations in the field.

PC.8 Social Equity and Inclusion—How the program furthers and deepens students' understanding of diverse cultural and social contexts and helps them translate that understanding into built environments that equitably support and include people of different backgrounds, resources, and abilities.

Student Criteria

SC.1 Health, Safety, and Welfare in the Built Environment—How the program ensures that students understand the impact of the built environment on human health, safety, and welfare at multiple scales, from buildings to cities.

SC.2 Professional Practice—How the program ensures that students understand professional ethics, the regulatory requirements, the fundamental business processes relevant to architecture practice in the United States, and the forces influencing change in these subjects.

SC.3 Regulatory Context—How the program ensures that students understand the fundamental principles of life safety, land use, and current laws and regulations that apply to buildings and sites in the United States, and the evaluative process architects use to comply with those laws and regulations as part of a project.

SC.4 Technical Knowledge—How the program ensures that students understand the established and emerging systems, technologies, and assemblies of building construction, and

the methods and criteria architects use to assess those technologies against the design, economics, and performance objectives of projects.

Illustration Credit COTE Top Ten Winner 2020

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