Site & Building Analysis

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* A maximum of 40 hours of core credit may be earned in this experience area.

exhibits

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Introduction

By completing the activities in this chapter, you will gain an understanding of the field activities involved in site and building analysis. The following information is taken from the NCARB IDP Guidelines:

Site and Building Analysis
Minimum Site and Building Analysis Experience: 80 Hours
Definition: Involves research and evaluation of a project’s context and may include site and building evaluation, land planning or design, and urban planning.

Tasks
At the completion of your internship, you should be able to:
- Develop or review master plan
- Establish requirements of site survey(s)
- Review site survey(s)
- Review geotechnical and hydrological conditions
- Evaluate and compare alternative sites
- Perform site analysis
- Assess environmental, social, and economic conditions related to project
- Document and evaluate existing conditions

Knowledge Of/Skill In
- Interpreting existing site/environmental conditions and data (e.g., topography, drainage, soils, local ecology environmental impact issues)
- Site planning (e.g., site selection, master planning)
- Regional impact on project (e.g., seismic, climate, transportation, economy, labor)
- Government and regulatory requirements (e.g., zoning, planning, design review)
- Community-based awareness (e.g., values, traditions, sociology, future objectives)
- Hazardous conditions and materials
- Facilities planning (e.g., building use, building conditions, systems conditions, infrastructure, space allocation)
- Site design
- Building design

resources

Download the current Intern Development Program (IDP) guidelines at www.ncarb.org/Experience-Through-Internships.aspx.


- Chapter 17.3 - Site Analysis

Narrative

A comprehensive site and environmental analysis is the foundation of good design. This is especially true in the twenty-first century, when energy scarcity and the transition to alternative energy sources offer prime design opportunities.

Site design begins with analysis of the site and environmental conditions, which yields information the architect can integrate into the project program and design solution. In many cases, when the natural attributes of a site are considered, the energy consumption of a building can be reduced considerably, the longevity of the building increased, and short-term and long-term facility costs reduced. To achieve these ideals is to approach sustainability in design.

A site reflects the environmental, economic, and social characteristics of its location within the natural and built landscape. The term “place-based design” refers to designs executed with an understanding of the site and the natural and built systems associated with it. The character of a site uniquely informs the function and expression of a building designed to stand on it. Put another way, the site analysis can be used to provide regional character and context to a design.

An in-depth and comprehensive site analysis helps the architect determine building footprint and form, building scale, building orientation, glazing location and size, and landscape design. It also makes possible development of a low maintenance/low energy use strategy for a project. Such a study begins with analyzing a larger area—the region in which the site is located. Regional environmental conditions, including ecology, biology, geologic history, anthropology, and climate, as well as legal and regulatory issues, provide information about the site that is essential to the building design process.

A building design informed by a rigorous site analysis has a number of advantages. Such a design is economically strong, works with nature, is unique to the region and neighborhood, takes advantage of the site’s microclimate, and addresses relevant legal and regulatory requirements.

Site Analysis Considerations

A project site is usually defined by a legal description furnished by the client. This description includes a survey fixing the size, legal corners, and existing conditions, such as vegetation, contours, existing infrastructure, and existing utilities of a property. A site, however, is much more than the legal description and project location. The survey, plat, and legal description describe the location of the property within the regulatory jurisdiction, but a tremendous amount of important information related to past use (or abuse) of the site is also critical to a site analysis.
A site is always more than dirt on which to build. It is a three-dimensional space, including the airspace, watershed, and geological strata of a site. An environmental analysis is intended to establish and illustrate the climatic and natural conditions that affect this space. A historic look at a project site determines how it was formed over time by local environmental forces and reveals historic uses of the site and surrounding area. Site characteristics that could affect building design include factors such as prevailing winds, presence of wetlands, frequency of flooding or drought, and types of soil.

Along with the architect’s analysis of a site’s environmental conditions, it is critical to be aware of regional conditions that may affect the site, the project, and the community. The importance of this awareness lies in the potential for the architect to include in the design solution a regional or community issue while solving their client’s programmatic needs. An example of such opportunity would be an area that floods and the design could include an area set aside to alleviate damage from flooding while developing a community open space. In such a case, the designer is acting as a steward of the community and showing political savvy.

A site analysis that focuses on natural features can inform a design in ways that will improve energy efficiency and building longevity; reduce maintenance expenses; and improve the quality of life, sense of community, and health of the users and the environment. The knowledge gained from an in-depth environmental analysis of a site, when integrated into a building design, can help the architect solve the design program with lower mechanical and environmental costs. Building designs that work with natural site characteristics are typically less expensive to use and maintain and better for the environment. In addition, the increase in daylighting and natural ventilation provides better indoor air quality, which generally offers building occupants a better experience, increasing both their spirit and productivity.

The architect’s challenge, then, is to design a building that addresses the social, economic, and environmental considerations of the site at the same time it responds to the client’s program. To accomplish this requires the architect to understand these issues and create a solution that addresses them simultaneously. Pertinent considerations and their characteristics are explained in brief as follows:

**Building Location Options**
Identify possible locations on the site for entry and egress, parking, stormwater storage, sidewalks, and other necessary features early in the site design phase. Pedestrian and vehicular access points to the site, the context and scale of the existing neighborhood, view corridor protection; sense of entry/place, neighborhood character, connections to transit, and relation to civic amenities and open space can affect the location of a building on the site.

**Regulatory Restrictions**
Local, county, state, and federal requirements must be adhered to unless a variance is applied for and obtained. Such restrictive regulations typically
fix setbacks, height limits, lot coverage and landscaping, FARs (floor area ratios), parking, and fire protection requirements, as well as construction types and, in some cases, aesthetic issues. The architect, as an additional service, often applies for a variance to make it possible to fit a project better into the neighborhood or to address environmental issues such as solar access.

**Natural Conditions**
In sustainable design, the natural conditions of a site are an important factor in the project design. Natural conditions are the parts of the site and immediate surrounding that occur naturally, in other words, without human intervention. The natural site is a subset or microcosm of a region—biologically, ecologically, and climatically acting much like the region but with specific characteristics and microclimates. A regional environmental analysis shows long-term patterns of solar gain, wind, and precipitation, as well as soil and water movement, while a site-specific analysis reveals the context of a site and its specific connections to regional patterns. The regional climate informs a design about long-term issues, including natural dangers (high winds, seismic activity, drought and flooding, fire, insect infestation, etc.), sea level changes, air quality, water quality and quantity. Data about the microclimate, on the other hand, directly affects a project’s architectural form.

Other natural conditions of significance to the architect are existing and native vegetation and local soils and topography. Data on geology of the site and region is also useful. Learning and working with natural patterns is necessary for successful sustainable design.
Site & Building Analysis

constructed conditions
Two types of existing structures may affect building design. One is any infrastructure previously built on the site and the other is nearby structures that may affect a new building on the site.

Existing structures of concern include both those no longer in use and slated for demolition and those that will remain on the site, as in renovation or preservation of a historic structure. The architect can learn of past successful attempts at using the site from historic passively designed structures that have stood the test of time. By analyzing these, the architect can identify both successful and unsuccessful techniques and use them in working out the new design.

The urban scale or character of structures on adjoining sites can restrict what can be built on a site, as can the public nature of adjacent spaces such as a community square or other public amenity. Also important are not-yet-built structures that may affect the solar gain, view corridors, or air quality considerations on a site.

utilities
The existence and location of utilities on a site greatly affect a site plan and ultimately the building design. The cost required to put utilities underground, move them out of view or away from site access, or comply with ordinances can significantly affect a project budget.

environmental hazards
If a site has been built on previously, it may be contaminated in some way. There are many levels of contamination, the worst being a toxic condition that must, by law, be cleaned up before any other activity is permitted on the site. Cleaning this type of site (a brownfield), whether toxic or nontoxic, before construction can greatly benefit the surrounding neighborhood and region. Constructing projects in previously built areas is a recommended strategy for reducing sprawl and improving the quality of urban life.

When the environmental hazards of a site are not addressed properly in the site design, it is more likely that a constructed project will have a negative effect on neighboring property. For instance, dangerous slopes and inadequately designed setbacks and stormwater controls could lead to flooding across property boundaries.

Natural disasters such as earthquakes, windstorms, flooding, drought, and fires should be addressed in the site plan analysis. The information and knowledge from the analysis carried into the design phase will inspire the design to contribute to the protection from and mitigation of such disasters.

consultant input
The complexity of building today often requires architects to bring consultants onto the design team early in the design process. Consultants who might contribute to site analysis would be soil engineers, ecologists, alternative energy specialists, waste management experts, green design professionals, landscape architects, and historic preservation architects, among others.

resources

Site Analysis & Research Tasks
Research and illustrate the following conditions:
- Precipitation
- Prevailing winds
- Solar patterns. Determine summer and winter solstice dates to establish the location of the sun for light and heat on the longest and shortest days of the year.
- Temperature and humidity
- Hazards (e.g., hurricanes, windstorms, flooding, drought, earthquakes, etc.

Identify topographical features:
- Ground- and surface water conditions and issues (natural and historical)
- Access and orientation
- Vegetation
- Potential slope problems or opportunities
- Geologic conditions that might affect structural design

Identify geotechnical issues:
- Soil and rock type
- Seismic activity
- Environmental hazards
- Locate existing utilities.
- Types
- Location
- Size

Investigate site context:
- Immediate surroundings
- Cultural factors
- Historical experience
- Economic concerns

Continued on page 44.
Community Interests
Today, establishing community consensus is part of virtually every architecture project. NIMBYism (Not In My BackYard) is a challenge that must be addressed with considerable creative thought in most projects today. Zoning and building codes stem from a desire to protect the community. Preservation of neighborhoods and environmental quality can be a critical concern in site and environmental analysis.

Jurisdictional Input
Determining which jurisdictions have responsibility for a project site may require considerable research, especially as this can vary depending on the scale of a project. Agencies representing local, state, and federal issues such as protection of the water supply, sewage management, air quality, aviation flight patterns, concurrency (requirement for supporting infrastructure to be in place concurrent with new development), traffic, and open space may all have some jurisdiction over the site plan and project design. Having their requirements overlaid on the site plan from the beginning of a project is an excellent way to ensure the regulations will be addressed.

Alternative Site Selection
As an additional service, a client may ask for analysis of an alternate site(s) for a project. The architect would prepare an in depth analysis of the alternate site(s) and a comparison evaluation of all the sites considered.

The Site Analysis Process
Although segments of a site and environmental analysis may become part of project demolition and site plan documents, acquiring information for these documents is not the main purpose of site analysis. Rather, the products of this process are intended to help designers become aware of legal and natural conditions and opportunities present on the site. This information is useful both for developing the design and illustrating present site considerations to clients.

Seven basic steps lead to the creation of this first sketch and analysis. (These can be added to or simplified through experience.)

1. Briefly review the design program and write down the most important project requirements. Next, answer questions about the size of the project, height restrictions, setbacks, parking requirements, and other regulations and restrictions that inform the design process. In this process, you may also question, “What does this project want to do; what are the opportunities and challenges?

2. Visit the site. Arrive by transit, bike, foot, and car, comparing what you learned about the site from each method of approach. Visit at different times of day. The site visit can reveal a uniqueness that will inspire expression in the design. Of all the site considerations, the characteristics of the site are the most important and basic to sustainable design.

3. Take considerations and characteristics previously listed, and research the specifics of the site.

4. Make a preliminary assessment of the site as it relates to the project. Answer questions: What opportunities present at the site match the human comfort needs of the occupants? What site characteristics may conflict with these needs, such as glare from other buildings, traffic congestion, excessive noise, heat or pollution from adjacent buildings or sites, opportunities for daylight and passive heating? Analysis of the character and context of the community helps set the project scale, entry and egress locations, and connection to the neighboring community, among others.

5. Analyze the site in more detail, and establish a site analysis plan if further research is necessary.
6. Evaluate the site in relationship to opportunities and conflicts. One way to organize this study would be through evaluation of the following relationships:

- **Building to site.** How does the climate relate to the comfort zones—temperature, air movement, humidity—of the building. How much precipitation is common? What types of vegetation does the soil easily support with the least maintenance? What is the relationship of the site geology to structural building issues? Does the thermal comfort required in the building correlate to the site’s thermal conditions; if so how can the site’s climate be used to reduce the cost of mechanically assisted comfort?

- **Site to site.** How does the site relate to its immediate surroundings? The context, scale, territorial view corridors, materials and construction methods, geometric relationships, neighborhood character, and proportion are all defined in the site and environmental analysis. Microclimates are also revealed in the “site-to-site” analysis. Existing and natural vegetation types, along with soil and water retention characteristics, affect temperature, air movement, and humidity on the site. Shading by vegetation and neighboring buildings affects solar gain, prevailing breezes, and daylighting.

- **Site to region.** The relationship between the site and its regional environment or climate, as well as the urban, agricultural, and natural character, is part of the site analysis. Cultural and economic considerations are determined in this analysis, as well as the climate characteristics of the bioregional system that have formed the general attributes of the place.

7. Prepare a report of findings that includes drawings and text discussing the criteria mentioned in Site Analysis Considerations. Once an architect has the results of site analysis in hand, he or she must determine how to incorporate this information into the design solution. Begin by considering this question: “How do these conditions affect the building program and how can design improve the site, the neighborhood, and the region in an economically and ecologically viable way?”

**Written by Daniel Williams, FAIA**
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Architectural Examples
Design Responses Informed and Inspired By The Site Analysis

The projects on the following pages illustrate architecture that was informed by strong site and environmental analysis. These award-winning architecture projects include both building designs and regional planning designs. Listed for each project are design responses to these opportunities.
Architectural Example 1

Edificio Malecon

Architect: HOK
Location: Buenos Aires

This 125,000-square-foot office building was built on a reclaimed brownfield site (its garage within the foundations of a 19th century warehouse) at Puerto Madero, a redevelopment area in Buenos Aires, Argentina. The building was developed as a long narrow slab to minimize solar gain from the roof. The broad northern face, the primary solar exposure, is shaped to track the sun and is fully screened with deep sunshades that virtually eliminate direct solar radiation during peak cooling months. The south face, which reflects the geometry of the northern façade, is equipped with the same high-performance curtainwall system as the other facades, minimizing solar gain. A “green roof” helps insulate the 40,000-square-foot podium from solar radiation and manages stormwater runoff. Open floor plates and raised floors provide flexibility for multi-tenant office or alternative future uses.

Design elements attributable to the site and environmental analysis:

• Thin plate (narrow cross-section) for 100% daylighting
• Urban infill
• Urban design context
• Brownfield development
• Creation of urban edge
• Stormwater reclamation

resources

Browse the internet for more photos and information about Edificio Malecon.
Keywords: HOK, Edificio Malecon, brownfield site, redevelopment, solar gain, solar exposure, high-performance building, sunshades, open floor plan, urban infill, urban edge, stormwater reclamation.

HOK, Edificio Malecon: www.hok.com/design/type/tall-buildings/edificio-malecon
Architectural Example 2

**Fisher Pavilion**

**Architect:** Miller+Hull  
**Location:** City Center, Seattle, Washington

Fisher Pavilion is one of the first buildings in Seattle to be designed and constructed under the city policy requiring all public facilities costing more than $5 million to achieve a LEED Silver Rating. “Burying” the building and the use of a high mass (10 feet of concrete) roof decrease envelope loads on the building, resulting in extensive energy and heating savings.

Design opportunities resulting from site and environmental analysis:
- Thermal mass cooling and heating
- Rooftop plaza
- Daylighting for 85% of the building
- Creation of a new urban infill square as an amenity
- Natural ventilation
- Maximized solar heat gain
- Connected interior/exterior space
- Transit parking drop off

resources

Browse the internet for more photos and information about Fisher Pavilion.  
**Keywords to consider:** Fisher Pavilion, Miller+Hull, City Center, Seattle, LEED certification, city policy, building envelope, thermal mass, urban infill, natural ventilation.

Architectural Example 3

Kahn/Williams HAUS

Architect: Daniel Williams Architect
Location: Seattle, Washington

This urban infill site provides a working neighborhood, transit, civic amenities, walkable shopping, open space for recreation, and regional view corridors.

The site is a steep slope with a small area (4200 sf). Due to the site orientation, it was determined the structure should be open from the east to the southwest corner.

The requirement to build into the hill suggested use of a cube (the most static form), which also creates the most volume for the least exterior skin.

The site and environmental analysis established:

- Correct angles for seasonal light and heat penetration
- Required orientation of spaces in the plan to access daylight and territorial views
- Solar patterns to inform window design and detail
- Possibilities for earth cooling and heating (thermal mass 61º F)
- Maximize south (solar) yard.
- Possibilities for reuse of existing structure and demolition rubble
- Living roof recovery, cleanup, and storage of rainwater for irrigation and gravity-fed toilet flushing

resources

Browse the internet for more photos and information about Kahn/Williams HAUS.
Keywords to consider: Kahn/Williams HAUS, Daniel Williams Architect, DWA design, urban infill, walkable design, site orientation, daylight, solar patterns, thermal mass, building reuse, living roof, rainwater storage.

DWA Design, Kahn/Williams HAUS: www.dwa-design.com/architecture/KW_HAUS
Architectural Example 4

Steinhude Sea Recreation Facility

Architect: Randall Stout Architects of Los Angeles, CA
Location: Steinhude, Germany

Design objectives informed by the site and environmental analysis:

Energy self-sufficiency:
- photovoltaic panels
- solar hot water collectors
- a seed-oil fueled cogeneration micro turbine
- daylighting
- natural ventilation
- passive solar design
- building automation
- high-performance materials

These systems provide complete lighting and power needs for the building while recharging a fleet of eight photovoltaic-powered boats. They also produce excess electricity to sell back to the utility grid. Other sustainability practices incorporated into the design include graywater and harvested water systems, green materials, and waste reduction.

resources

Browse the internet for more photos and information about Steinhude Sea Recreation Facility.
Keywords to consider: Steinhude Sea Recreation Facility, Randall Stout Architects, photovoltaic panels, solar hot water collectors, passive solar design, high-performance buildings, sustainability practices, graywater, rainwater harvesting.

Randall Stout Architects, Steinhude Sea Recreation Facility: www.stoutarc.com
Architectural/Urban Design Example 5

Sea Ranch Condos

Architect: Moore, Lyndon, Turnbull, Whitaker Architects
Landscape Architects: Halprin Associates
Location: Sea Ranch, California

Sea Ranch by Moore Turnbull Architects is a good example of a well-planned, well-designed project stemming from a well analyzed site with powerful environmental conditions.

Beach sand in wind shadow is an ecological example in this project. The energy organizes the sand (form/structure). Here, the massing of the small plant creates protection from the strong winds. This knowledge can inform the design of a coastal community that experiences gale force winds.

Elements informed by site analysis:
- High wind forces inspired a tight-knit urban form
- Architectural urban forms composed of exterior spaces
- Interconnected trails to protect the community from strong winds
- Use of local materials

resources

Browse the internet for more photos and information about Sea Ranch Condos.
Keywords to consider: Sea Ranch Condos, Turnbull Griffin Haesloop Architects, site analysis, wind shadow, massing, wind protection, local materials.

Turnbull Griffin Haesloop Architects, Sea Ranch Condos: www.tgharchitects.com/aboutus/history/condos/
Architectural/Urban Design Example 6

Bahama Village
Architect: Daniel Williams with Harrison Rue
Location: Key West, Florida

Bahama Village, the oldest African-American village in the U.S., located in Key West, Florida, was subjected to landfill that severely damaged the conch population, its economic base. A goal of this urban design solution was to reconnect the natural resources with the future of the village.

Ideas developed from information in the site analysis:

• Increase human comfort by improving orientation to prevailing breezes for passive cooling.
• Reconstitute the cisterns for irrigation and potable water use.
• Restore economic and environmental benefits of reclamation of conch farm.
• Reuse existing materials.
• Job incubation—train local residents as carpenters to protect and restore cultural and economic future of the community.
• Create land use zoning changes and tax breaks to preserve 150-year-old village.
• Increase density with rear cottage zoning, improving the value of the property while bringing income to residents.
• Re-create beach zone and habitat

resources

Browse the internet for more photos and information about Bahama Village.
Keywords to consider: Bahama Village, Daniel Williams Architect, Harrison Rue Architect, Key West, landfill development, natural resources, prevailing breezes, passive cooling, cistern irrigation, potable water, reclamation, land use zoning.
Architectural/Urban Design Example 7

Anacostia River
Architects and Planners: USGSA & Congress for the New Urbanism
Location: District of Columbia

The program for this design included the following:

- Develop affordable housing.
- Foster economic development.
- Improve environmental stewardship.

The site and environmental analysis suggested these possibilities:

- Reconstruct the creeks to manage storm water and create urban parks.
- Reclaim wetlands along river banks.
- Supports walkable neighborhoods by extending public transit to the riverfront.
- Create public recreational space where the urban space meets the river’s edge.
- Integrate demonstrations of water purification technology at the Navy Museum.
- Remove sewage–storm water combined outfall.

resources

Browse the internet for more photos and information about Anacostia River.
Keywords to consider: Anacostia River, USGSA, Congress for the New Urbanism, affordable housing, economic development, environmental stewardship, storm water management, wetlands, water purification.

Anacostia River: www.anacostia.net
notes

Take brief notes while reading the narrative and list key resources you used to complete the activities. Note discussion outcomes from meetings with your supervisor, mentor, or consultants. When finalizing the activity documentation (PDF), include your notes and the Emerging Professional’s Companion activity description.
Urban Farm
Supplemental Experience for eight (8) Core IDP Hours

“Long life - loose fit” refers to creating versatile designs in which the building is connected to the site in a symbiotic manner. Consider the following attributes of earth: The ability to support building loads, nutrient composition, ability to hold water, vegetation compatibility, and capability to support crops.

In this scenario, you are retrofitting an existing apartment building in an urban nontoxic brownfield neighborhood in San Diego, California. Your client wants to grow vegetables and edible crops on close to 100 percent of the site, including the building footprint.

Activity - Core

Write a proposal describing how you will accomplish your client’s goal. Use sketch site plan to illustrate proposal. Be sure to address:

• Where will potential cost arise/appear?
• How can costs be mitigated?
• Can gravity be used distribute water for irrigation and gravity water reuse?
• Is it possible for water be stored within the building and on the site?

Share your work with your IDP supervisor or mentor and make suggested changes. Document the final version as a PDF.
Water Management - Before and After

Supplemental Experience for eight (8) Core IDP Hours

Parking lots can create huge heat islands and large areas of impervious surface, increasing flooding while decreasing groundwater recharge. What options can mitigate site impact?

Activity - Core

Identify a project that has a site of at least ten acres. If your office does not have any large-site projects, use a project from another firm. Using the topographic plan, sketch the natural gravity flow of water over the site. Then, using a site plan with the building intervention, sketch the new flow of water over the site. Respond to the following issues:

• Creating natural irrigation
• Creating surface and ground water storage areas
• Roof water collection
• Water system integration

Summarize the specific changes parking lots will create on the site, considering issues such as these:

• Increased erosion and flooding
• Increased impervious surface
• Degraded water runoff
• Microclimate heat gains and heat island effects
• Costly infrastructure for underground water storage

How would you combine parking requirements and storm water control? What can be done to accommodate a 100-year storm (10" in 24 hours)?

Describe any missed opportunities in the project plans for natural conservation or preservation. Using both economic and environmental criteria, explain in a narrative how you would convince the client that incorporating pervious pavement, water storage, parking, and open space on the site could be a win-win, environmentally and economically.

Share your work with your IDP supervisor or mentor and make suggested changes. Document the final version as a PDF.
Using Wetlands for Storm Water Treatment
Supplemental Experience for eight (8) Core IDP Hours

In this scenario, your client wants to fill in wetlands on a site and put storm water treatment below grade in a concrete holding vault. “It’s easier and my engineer has done it before,” he says.

The county is in danger of losing its supply of groundwater, the regional storage for potable water, as well as the supply to the rivers. Local rivers are becoming contaminated with the polluted, reduced groundwater flow. You bring up the issue of retaining the wetlands to your client, and he again says, “No!”

Activity - Core

Use a project in your firm or your mentor’s firm involving wetlands on the site. Design a plan that provides two alternate locations for storm water management to discuss with your client. Indicate buildable area on each site scheme.

Write a narrative persuading your client on the new site plan’s benefits: mitigate major disturbances or leave the wetlands untouched.

Share your work with your IDP supervisor or mentor and make suggested changes. Document the final version as a PDF.
Quality of Life

Supplemental Experience for eight (8) Elective IDP Hours

Consider attributes of quality of life: shelter, clean air, water, hygiene, security, human scale, thermal comfort, and food.

Activity – Elective

Write a description and illustrate (in plan, section, or diagram) your favorite “places:” one urban setting and one rural/natural setting. Describe similarities and differences using the following considerations:

- Sunlight
- Comfort
- Temperature
- Breezes
- Humidity
- Scale and proportion
- Color and material
- Orientation

Using a current project or other, prepare a short report demonstrating the natural characteristics of “place” as part of your design. Do site considerations in your design go beyond the feel of the “place” (e.g., comfort attained by passively heating or cooling)?

Share your work with your IDP supervisor or mentor and make suggested changes. Document the final version as a PDF.
Water is the most critical of renewable resources. Supply comes from precipitation, such as rain and snow. A critical aspect of this limited resource is storage for use when the supply is reduced, as in drought. Designers can emulate natural conditions such as surface water (lakes, ponds, creeks), underground storage (aquifers, ground water), and soil mechanics.

In this scenario, a potential client wants to build a new town along an existing rail line in New Mexico. New Mexico is blessed with lots of sun but little precipitation. The site has many amenities and opportunities—beauty, views, clean air—but only seven inches of precipitation per year. The local water agency is about to stop all construction that consumes more water than falls on the site. This is key to getting the client to feel comfortable with your ability to understand and solve the water issue.

Geographic locations often effect the original design intent. For example, rainwater may not be an abundant resource in New Mexico, but sunlight is abundant. For your project sketch plans best orientation for maximizing passive and active solar use. Write a report on why you chose to adjust the project in this way, and explain the proposed methods of water storage and reuse. Are there other resources you recommend that can power the town?

Share your work with your IDP supervisor or mentor and make suggested changes. Document the final version as a PDF.
Saving Wetlands

*Supplemental Experience for eight (8) Elective IDP Hours*

In this scenario, an analysis finds that wetlands make up twenty percent of a site in Madison, Wisconsin. You and a firm principal want to save this unique part of the site. The owner likes the idea but asks, “What about mosquitoes?”

**Activity – Elective**

Respond to the client’s concerns about mosquitoes and build a case for preserving the wetlands. Through plan sketch diagrams and a narrative address the following:

- What issue might arise if the wetlands are not saved? Is mitigation required?
- Outline three different approaches to the mosquito problem, while solving storm water storages.
- What is your firm’s liability if the client’s concern about mosquitoes turns out to be well-founded? Discuss a testing period, fixes if necessary, and additional consultant costs.
- What other site features could impact your design, are they positive or negative?

Share your work with your IDP supervisor or mentor and make suggested changes. Document the final version as a PDF.
Creating a Mission Statement

Supplemental Experience for eight (8) Elective IDP Hours

Several stakeholders are affected by every project. The neighborhood ecology and biology, the water quality and quantity, future residents, and the client and your future clients will all be affected by each project.

In any project, degradation of natural resources is often unnecessary. Degradation is usually caused by the belief that the structure can only be economical if every last square foot of a site is utilized. To paraphrase Buckminster Fuller, pollution is an artifact of bad design.

In this scenario, you have created a mission statement for your firm that encompasses good design, economics, and ecological stewardship. While explaining your mission statement to a new client, she commented, “Use it on your next project. We are filling in the wetlands—too much hassle for me.” This project is critical to your startup as a professional. How will you approach this dilemma?

Activity - Elective

Develop a mission statement mentioned in the scenario. Create a narrative responding to the client, keeping in mind this project will be a boost to your professional career. Explain the ethical dilemma you face and respond to the following:

• Are there any alternatives to suggest working with wetlands?
• How does filling in the wetlands affect neighborhood, ecology and biology, and future residents?
• Are there benefits to having wetlands near the property? What are the drawbacks?
• If her position does not change will you accept this job, why or why not?
• If you accept this job will your firm have to change its mission statement?

Share your work with your IDP supervisor or mentor and make suggested changes. Document the final version as a PDF.
Sustainable Site Determination
Credit Option 1: Development Density - OR - Credit Option 2: Community Connectivity
Supplemental Experience for eight (8) Elective IDP Hours

Current thinking about sustainability design issues includes the practice of reducing “urban sprawl” by limiting greenfield development and focusing development in existing urban fabric or brownfields. Greenfields are defined as sites that have not been previously developed or built on and could support open space, habitat or agriculture. Brownfields are abandoned or underused sites available for reuse.

LEED 2009 Sustainable Sites Credit 2, “Development Density and Community Connectivity,” requires that one of two options (Density or Connectivity) be met by performing an analysis and calculations outlined in the USGBC LEED 2009 Reference Guide for Green Building Design and Construction.

Activity - Elective

Please reference the following source:

In sketch form, select a completed project that is located in an urban area. A multiple story building on an urban infill site is preferable. The area density (floor area to site area) is more important than the type of occupancy. Select one of the following two credit options to study and report on. Respond to all requirements listed in the LEED reference guide.

Provide a response to the following questions in your sketches: Which option did you choose and why? Will your project receive this LEED credit as a sustainable site? If not, what changes would have to be made to the project to receive the credit? Could your project meet the requirements of both options? If you picked option 2, community connectivity, how many of the required community services are present?

Credit Option 1: Development Density
- Provide a site vicinity plan showing the project site and the surrounding sites and buildings. Sketches, block diagrams, maps and aerial photos are all acceptable for this purpose. Draw the density boundary on the drawing or note the drawing scale.
- Record the project site area and building area in square feet.
- Within the density radius, list all buildings and include their respective site and building areas.

-OR-

Credit Option 2: Community Connectivity
- Provide a site vicinity plan showing the project site, the ½ mile community radius and the locations of the of the community services surrounding the project site. Sketches, block diagrams, maps and aerial photos are all acceptable for this purpose. Draw either the ½ mile radius on the drawing or note the drawing scale.
- Record the project site area and building area in square feet.
- Within the ½ mile radius, list all community services and include their name and type of business.

Share your work with your IDP supervisor or mentor and make suggested changes. Document the final version as a PDF.
Machu Picchu survived as a working community for hundreds of years using only energy and resources found on or near the site. Research and find site plans, images, and other graphic documentation that will help you understand the theories behind the community form and design of Machu Picchu or other ancient cities.

Activity - Elective

Prepare a short summary of your findings. Answer following questions:

- What lessons about community design can be learned from ancient builders? (Before you research the answer, write down three ideas based on your intuition.)
- What design principles are at work in your city or town that parallel those of Machu Picchu?
- Describe three design principles in your city or hometown that are different from those used at Machu Picchu or other ancient cities.
- What site design principles do you see in a current project that parallel those of Machu Picchu and what benefits do they provide to the site and its users?

Share your work with your IDP supervisor or mentor and make suggested changes. Document the final version as a PDF.
notes

Take brief notes while reading the narrative and list key resources you used to complete the activities. Note discussion outcomes from meetings with your supervisor, mentor, or consultants. When finalizing the activity documentation (PDF), include your notes and the Emerging Professional’s Companion activity description.