

## Chapter 18

### Site Design Process

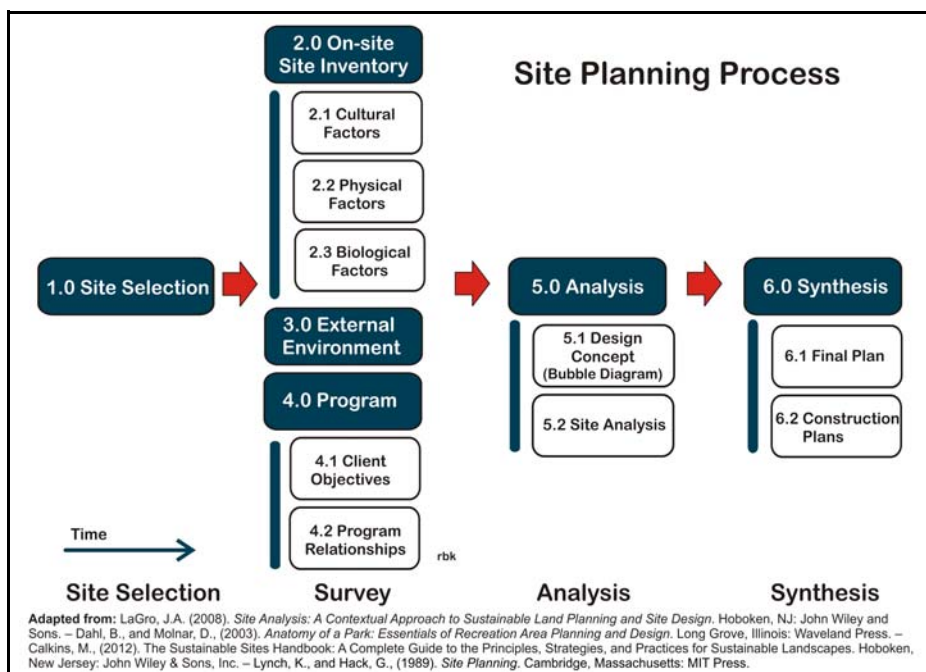
The previous chapter developed a master plan for a park or facility. For illustrative purposes, Brookside Gardens was used as its primary case study. The purpose of the master planning process is to develop a plan to implement the vision for the future park and facility. The plan implements the vision by developing a series of prioritized projects that are manageable and financially feasible which when completed implements the vision in the plan.

This chapter focuses on the site design process. The purpose of the site design process is to take the projects presented in the master plan and bring them to fruition. It takes the conceptually defined projects identified in the master plan, refines them, and develops them into construction documents for the site or facility. This chapter focuses on site development. The next chapter focuses on the development and construction of facilities. As with the last chapter, this chapter will use Brookside Gardens as the primary case study for illustrative purposes.

Overall, there is general agreement on the site design process (Calkins, 2012; Dahl and Molnar, 2003; Fogg, 2000; Fogg, 2001; LaGo, 2008; Lynch and Hack, 1989; Russ, 2002; Rutledge, 1986). Generally, the site design process is divided into three phases: *survey*, *analysis* and *synthesis* (i.e. design concept) phases (Figure 18.1). Obviously, site selection precedes the site development process. The model of the site planning process in Figure 18.1 reflects these three phases.

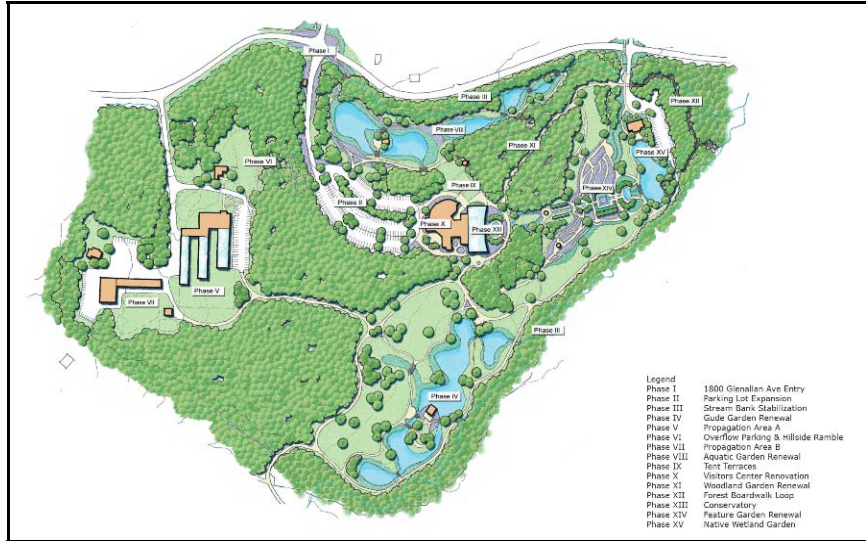
The following is a brief discussion regarding the universality of the approach delineated in Figure 18.1. Fogg (2000) utilized the basic three stage approach and added to it a regional planning component. A review outside of the park and recreation field reinforces the universality of the basic design process. In discussing sustainability (see Chapter 15), Calkins (2012) and LaGro (2008) utilize a similar model and essentially the same approach.

As represented by the



**Figure 18.1: Site Planning Process Model** – The site planning process is subdivided into three phases. These are the inventory (i.e. site inventory and program planning), analysis and synthesis phases. Source: author – [file:\DesignModel.jpg]

model, the site design process is fairly straightforward. First the site is selected. It can be one of the projects identified in the master plan or the entire site. The next phase is the inventory phase. The inventory phase included the onsite inventory, external environment, and program factors. The inventory process was already done as part of the master planning process and it can be used here also. The inventory phase is followed by the analysis phase where the elements in the inventory phase are analyzed to develop the basic site plan. The last phase is the synthesis or site plan. It can include construction ready documents.



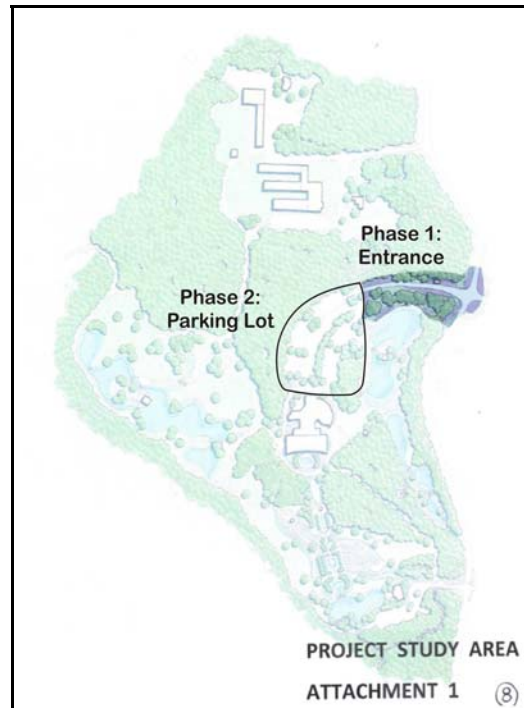
**Figure 18.2: Development Phases** – The 2004 revised master plan created 15 developmental phases. Source: 2004 Brookside Master Plan – [file:\BSGMP-010-Phases.jpg]

The facility design process is spoken of almost mystically. In a way it is. Some elements in the inventory phase stand out and rise to the top in importance. Other elements become of lesser importance and subside within the process. The objective is to maximize the resource’s contribution to the final design. It is an art as much as a science. It is a holistic process that integrates many of the principles discussed in this book to create an experience.

## Site Selection (1.0) (Assessment)

The first stage in the site design process is the selection of the site. If there is a master plan, logically, the site selected dovetails with it. The site selected may include one or more of the projects identified in the master plan. If there is no master plan, the site design process can work independently of a master plan. On smaller sites, the site selected often includes the entire park or facility.

Brookside Gardens revised their 2001 master plan in 2004. Because of funding considerations, the 2004 master plan recommended the development of their vision for Brookside be divided into fifteen phases or projects (Figure 18.2). The plan identified the Entrance Plan as the first project for completion. The second project focused on completion of the parking lot next to the visitor’s center. The entrance site location map shows the location of the



**Figure 18.3: Entrance Site Location Map** – The site location map for the entrance project shows the relationship of project to the overall site. Source: Evans (2008, p.8) – [file:\ENTR001p08.jpg]

project within the overall site (Figure 18.3). This diagram helps to provide context for the project within the overall park. As a footnote, funding resources changed and they completed both the entrance and parking lot projects together. The cost of both phases was discussed in the previous chapter on master planning. The parking lot section (Phase 2) is superimposed on Figure 18.2. Most of the discussion in this chapter including the blueprints focus on the entrance (Phase 1).

## On-Site Inventory (2.0)

The design process begins with inventorying the resource. The inventory consists of the same elements utilized in the master planning process. The factors are listed in Figure 18.4. Although the list of inventory elements will vary from user to user, there is a general consensus on the elements.

The purpose of the inventory process is to maximize the resource's contribution to the final plan and to the overall site or park. It is an inductive process where those factors that are important rise to the surface, and those which are of lesser importance subside in their coverage.

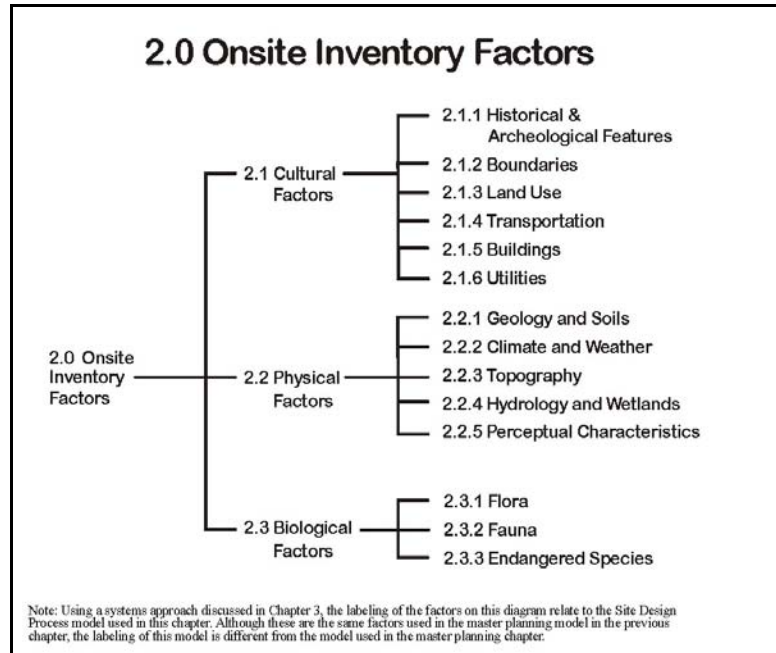
Unless the site project is the same as the overall site plan, the site project will focus on the inventory process within a portion of the overall park or facility. This means that the discussion of the inventory process for the project is viewed within the overall context of the park or facility. This is a potential difference from the inventory process used in the master planning process which focused on the entire site.

<b>Cultural Factors (2.1)

Relevant cultural features identified with the development of the master plan are identified and refined. Often, identifying existing utilities is important since it reduces construction costs involving facilities. The Entrance Plan for Brookside didn't differentiate between the cultural, physical and biological factors and simply listed problem areas. Cultural features in the Entrance Plan addressed items such as circulation, gatehouse, lighting, artwork, signage, and maintenance vehicle parking.

<b>Physical Factors (2.2)

In developing the site plan, topography is usually an important factor. Usually, USGS topographic maps use 20 foot contour intervals. A site plan will usually use two foot contour intervals. Depending on circumstances, one foot or five foot intervals may also be used. Regardless, one, two or five foot contour intervals cannot be inferred from the 20 foot contour intervals and will require surveying the site. For physical factors, the Brookside plan addressed streambank restoration and stormwater and wetlands (Figure 18.5). It used two foot contour intervals.



**Figure 18.4: Onsite Inventory Factors** – These are the same cultural, physical and biological factors used in the master plan inventory process. Source: author – [file:\MDL-InventoryFactors.jpg]

### <b>Biological Factors (2.3)</b>

Biological factors focus on the flora, fauna and endangered species. Under biological factors, the Brookside Entrance Plan addressed the planting program along the entrance, existing tree protection, and the deer control problem. A major issue with redesigning the entrance was camouflaging the deer fence. Also, it addressed the Natural Resource Inventory (NRI) and the Forest Conservation Plan (FCP). The Forest Conservation Plan seeks to retain a majority of the existing trees and to minimize the disruption to the existing trees. Although a lesser problem with the entrance, the ash tree blight is changing the canopy of forest which affects forest habitat.



**Figure 18.5: Streambank Restoration** – The Glenallan tributary looking west and the entrance bridge. Source: Evans (2008, p.2-2) – [file:\ENTR012p2-2.jpg]

## External Environment (3.0)

The external environment refers to the market discussed as part of the inventory process of the master planning process. It includes potential visitors, participants and users of the site and facility. Again, this component can utilize the inventory process from the master planning process. The components can gather this information directly through public hearings or focus groups, or indirectly through the secondary analysis of census data, zip codes and other secondary sources. Information gathered from the “stakeholders” can help mold the project for its eventual visitors, participants and users.

The Entrance Plan at Brookside has little focus on market considerations other than visitors will arrive at the visitors center by way of automobile or as a pedestrian. This is understandable. In contrast, if the project was renovating the visitor center, it will rely more on the market considerations and the needs of potential visitors, participants and users of the Gardens.

## Program (4.0)

The onsite inventory assesses the resource to determine its unique characteristics and how they can contribute to the program provided by the resource. Second, there needs to be visitors, users or participants visiting the site. Third, the owners, agency or developer seeks to deliver a program and experience. Together, the resource, facility and program deliver that experience. The key to this process are the *client’s objectives* (4.1) and the *program relationships* (4.2). In fact, the primary determinant in the entire process is usually the client and their objectives. These objectives and relationships may already exist or be proposed for development.

<b>Client Objectives (4.1)</b>. The client’s objectives are usually one of the most important determinants in determining the program delivered. The client refers to the owner, agency or developer of the site. It

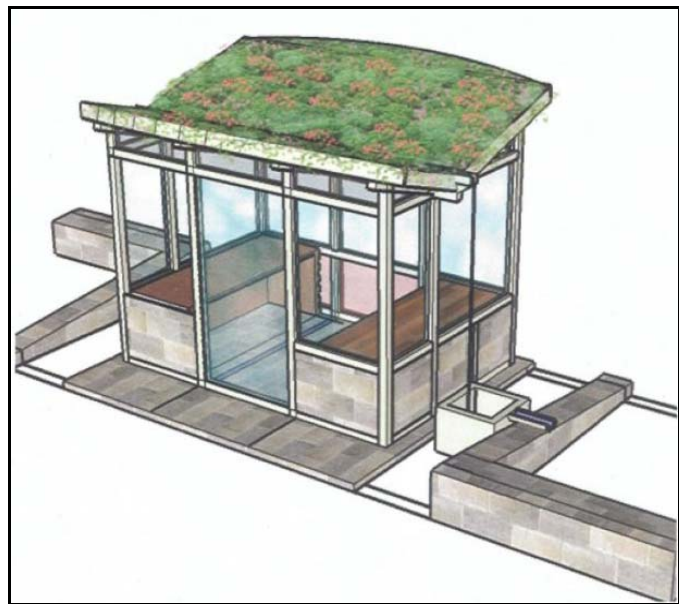
includes public and private interests. The client and their objectives can be very diverse. For example, Disney purchased 43 square miles of orange groves in the vicinity of Orlando, Florida with the express purpose of converting the orange groves into a theme park. Disney had a specific outcome in mind for the site design process.

In contrast Brookside Gardens is an existing park. Its gardens, facilities and mission are already there. Also, it is a public agency. For them and the Maryland National Capital Park and Planning Commission, it is more of a process of refinement and the enhancement of the existing resources in an effort to deliver its programs. After fifty years of operation Disney World essentially faces the same issues and problems as Brookside. It is an issue of discontinuing one feature and introducing a new feature or ride. It too is into the refinement of its existing site. In both cases, the program is driven by the owners or agency and their missions.

<b>**Program Relationships (4.2).**

– Program relationships refer to the location of the activities and program on the resource. Brookside Gardens addressed their program relationships in the master plan (see Chapter 16 and Figure 16.3). The program relationships are reflected in the initial five phases in the original 2001 Master Plan. Some of the major program areas include the Conservatory, aquatic gardens, visitors center, Guden Gardens (Japanese teahouse), and the propagation and maintenance area.

The entrance reflects the programmatic theme of one of the more popular programs offered by Brookside Gardens, “Wings of Butterflies.” Discussed in Chapter 11, a thematic transition was attempted with the entrance. The gatehouse roof captures the theme with its angled green roof that seeks to mimic the wings of a butterfly (Figure 18.6). It can be argued whether visitors will recognize the connection between the angle of the roof and a butterfly. Regardless, the planners should be lauded for the design concept because they were thinking thematically.



**Figure 18.6: Gatehouse** – The architect’s rendering of the gatehouse. Note the green roof is designed to simulate a butterfly and the highly popular “Wings of Flight” event which features thousands of butterflies. Source: Evans (2008, p.11) – [file:\ENTR008p3-3.jpg]

## Analysis (5.0)

The analysis phase seeks to integrate the relationships between the different interacting inventory factors analyzed during the inventory phase. Decisions are made regarding these relationships and how they will affect the final design. Consideration needs to be paid regarding how the project relates to the overall site or park also. The entrance plan at Brookside is developed as part of the overall plan and its relationship to the park and visitor’s center is important to consider. It is during the analysis phase that the site design plan begins to take shape.

The analysis phase is subdivided into the *design concepts* (5.1) and *site analysis* (5.2) phases. *Design concepts* focus on the relationships between major elements. Where applicable, it utilizes bubble diagrams and it looks at flow and circulation patterns. *Site analysis* focuses on “constraints” or problems identified

with the site and with opportunities presented by the site.

It is important to consider the entrance to Brookside Gardens in the context of the overall gardens. From a design concept perspective it connects visitors entering from outside the property with the visitor center. It is important because it is the first experience that visitors have when entering the gardens. It is tone setting for their overall experience.

For Brookside Gardens, the site analysis phase was conducted in terms of “constraints” and “opportunities.” The entrance plan project gives Brookside Gardens the opportunity to correct several design flaws associated with its current entrance as well as to develop a thematic transition into the Gardens. Compare the current entrance in Figure 18.7 with the proposed entrance (see Figure 18.11) and determine if the new entrance potentially achieves the goal of being more inviting to visitors.

As part of this process, five problem areas or “constraints” were identified by the architect. These included the

narrow shoulder between the road and stream, the wide vehicle bridge that creates an uncontrolled expanse of impervious paving, a low-lying boggy which is challenging for visitors, an unattractive deer fence, and an open lawn at the road edge which encourages parking on the side of the road. When designing the entrance, the architect needed to address each of these issues.

Design opportunities identified by the architect included designing a new pedestrian entry and path to the visitor center, redesigning the entry to enhance large vehicles, including plants on both sides of the intersection at the entrance, and redesigning portions of the entrance to hide the deer fence. Many of these points are identified by the architect with the Site Analysis Plan (Figure 18.8) and the Opportunities and Constraints Plan (Figure 18.9).



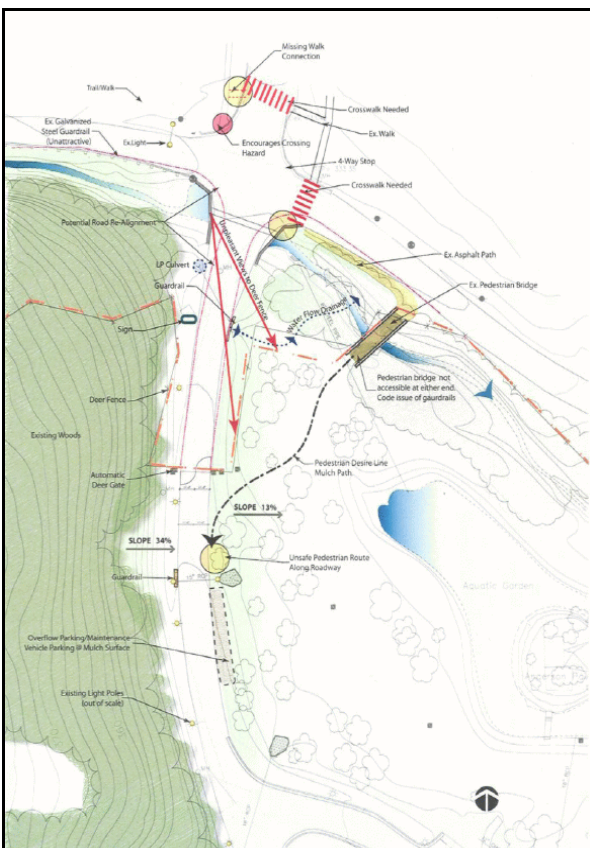
**Figure 18.7: Current Entrance** – A photo of the current entrance before construction. The image suggests a gated or enclosed area. The reconstruction of the entrance allows the designers to improve several design flaws associated with the entrance. Source: Evans (2008, p.2-4) – [file:\ENTR005p2-4.jpg]

## Synthesis (6.0) (Final Plan)

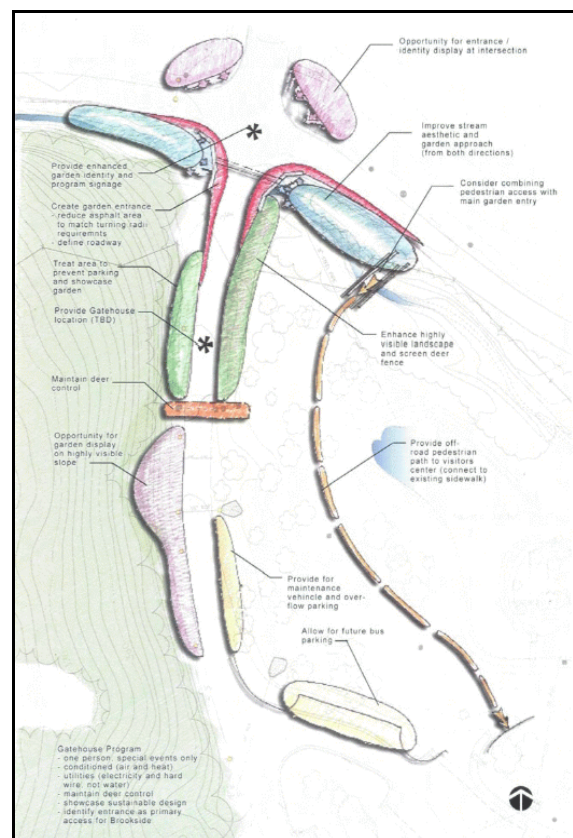
The *final plan* (6.1) is a detailed plan that identifies all of the major features and their location. It is drawn to scale and may include construction drawings (Figure 18.10). It is the synthesis of all the inventory factors and their analysis during the analysis phase. It synthesizes the elements into a plan that is designed to deliver the desired experience. It is the culmination of the planning process.

“Walk” the Facility Site Plan for the entrance in Figure 18.10. First, drive into the entrance past the island and the gatehouse to the parking lot. The drive is fairly straightforward. Enter as a pedestrian. Cross the bridge and follow the path to the junction. Follow the path to the right toward the parking lot and toward to the visitor center. Ask yourself if the separation of the path from the drive and automobiles is a good design feature?

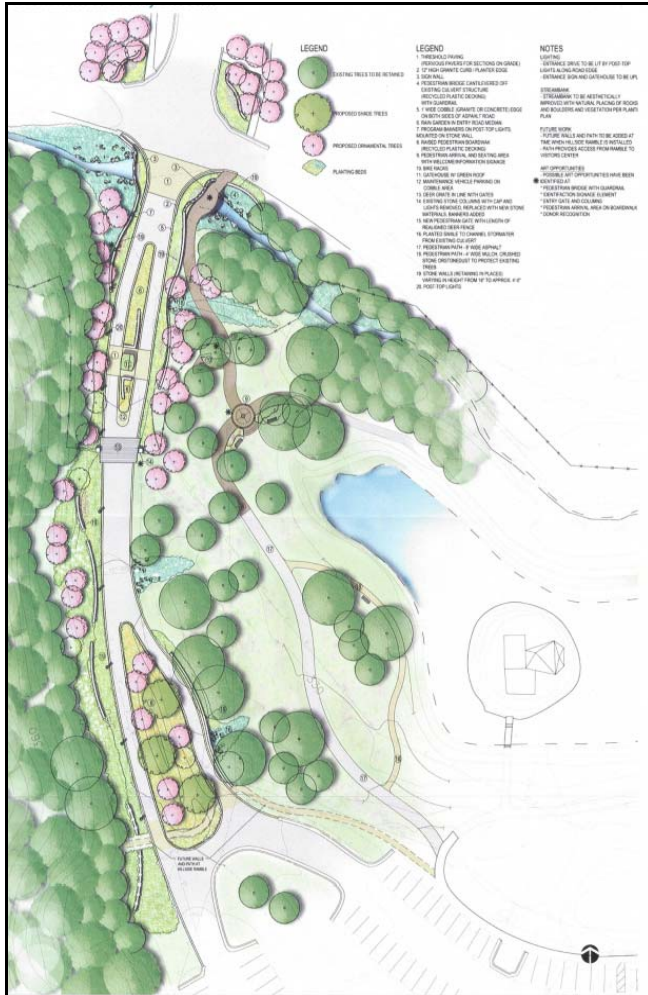
As part of the facility plan, the architect provided simulations of the entrance (Figure 18.11). Simulations are useful for communicating a vision to the public that may not be used to reading architectural drawings. Compare the architect’s rendering of the entrance in Figure 18.11 with the walk through in the previous paragraph. Next, compare the simulation with the original entrance pictured in Figure 18.6 and determine if the new entrance is an improvement and whether it provides a better experience.



**Figure 18.8: Site Analysis Plan** – The Site Analysis Plan identifies the constraints and opportunities associated with the site plan for the entrance. Source: Evans (2008, p.2-4) – [file:\ENTR006p2-4.jpg]



**Figure 18.9: Opportunities and Constraints Plan** – Caption: This plan identifies the constraints and opportunities associated with the entrance plan. Source: Evans (2008, p.2-6) – [file:\ENTR007p2-6.jpg]



**Figure 18.10: Facility Site Plan** The Facility Site Plan is a detailed plan. It identifies all of the major features. The drawing is to scale. Source: Evans (2008, p.3-6) – [file:\ENTR008p3-6.jpg]



**Figure 18.11: Architect's Rendering of the Entrance** – Simulations are useful for interpreting the architects vision of what is being constructed. This is the architects rendering of the newly constructed entrance with the gatehouse. Source: Evans (2008, p.11) – [file:\ENTR003p11.jpg]



## Construction Plans (Anatomy of a Blue Print) (6.2)

If the final plan involves construction, *construction plans* may be included as part of the synthesis phase. Detailed blueprints for the Brookside Gardens Entrance were generated (Figure 18.12). They interpret the final design plan into construction plans for the contractors who actually construct the entrance.

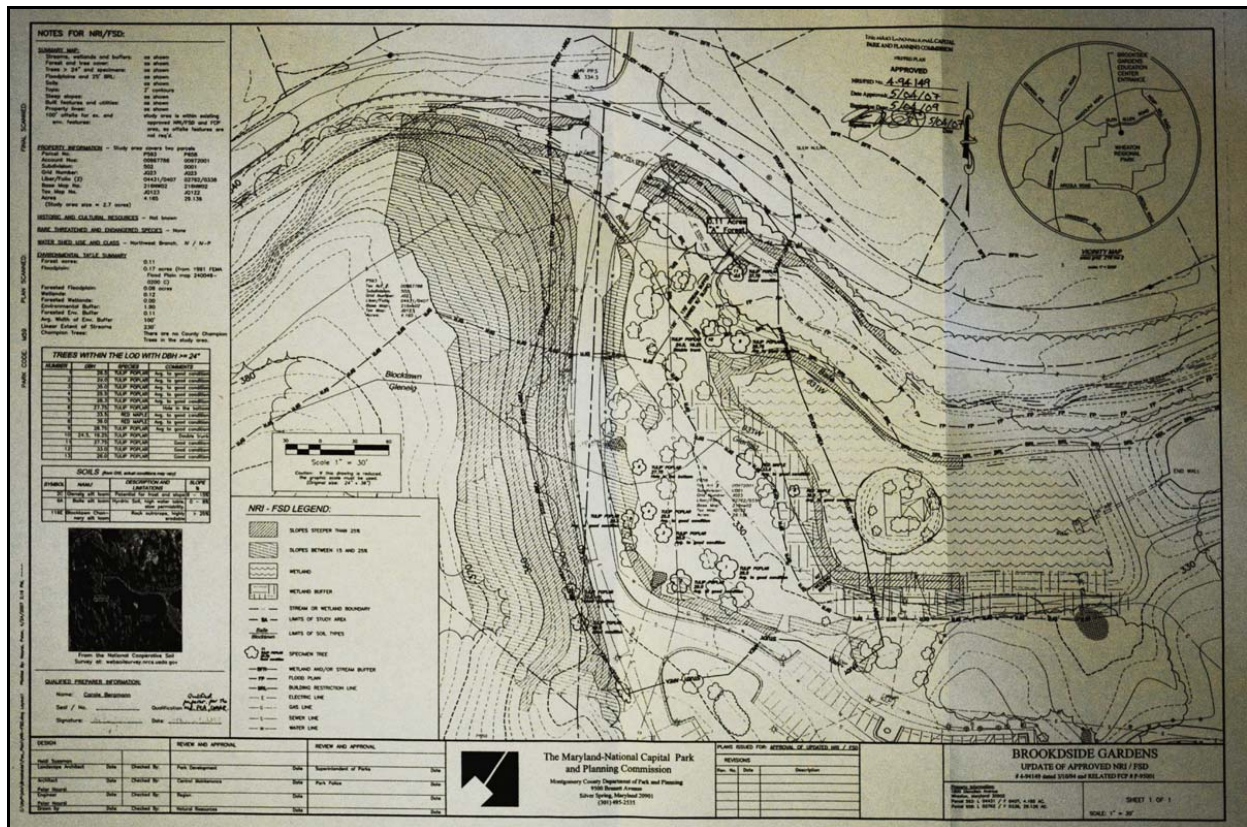


Figure 18.12: Construction Plans – If actual construction will occur, construction plans or detailed blueprints will be generated. Source: Evans (2008) – [file:\ENTR003p11.jpg]

An anatomy of a blue print is provided in this chapter and the next chapter on facilities (Figure 18.13). Its purpose is to provide a sense of orientation to the components found on a blue print. As might be expected, there is a lot in common between the two plans. However, their focus is very different. The Brookside Gardens entrance is a landscape design and it focuses on soils, trees and other site considerations. The following sections are the items listed in Figure 18.13. The items show general location. Note that their location on the blue print as well as their content will vary greatly with architects and contractors.

# Anatomy of a Blue Print (Brookside Gardens Entrance)

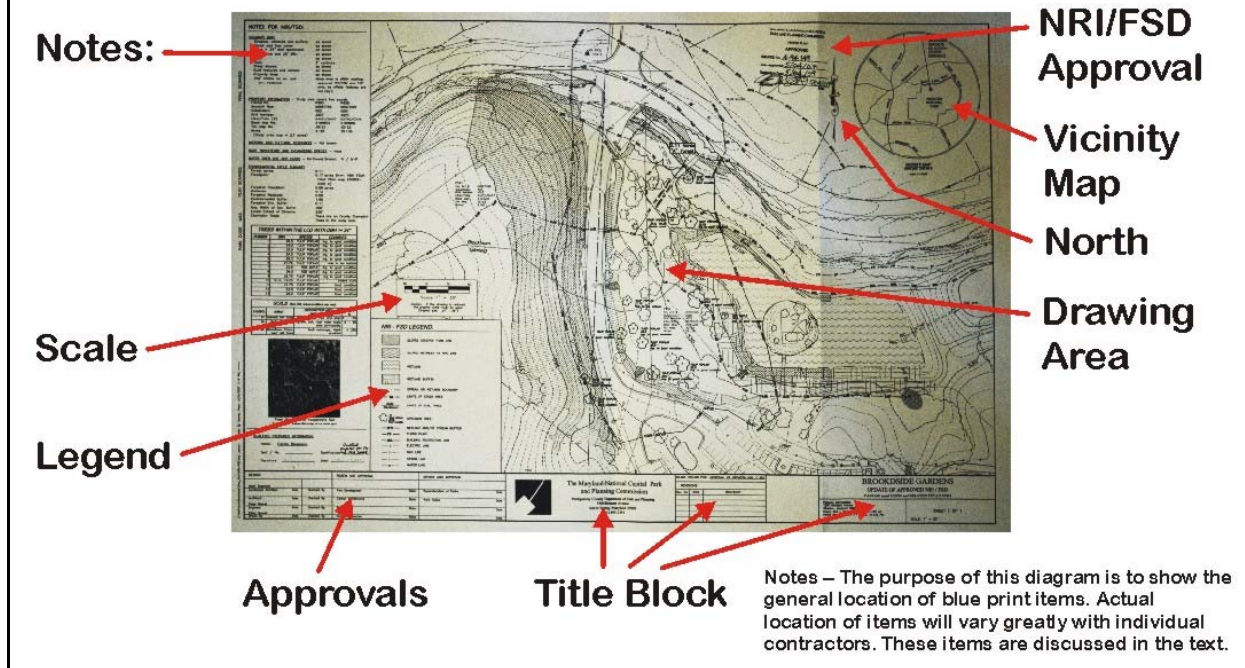


Figure 18.13: Anatomy of a Blue Print – Brookside Gardens Entrance – Major components of a blue print. Source: Author; MNCPPC – [file:\fig1713-BluePrintAnatomy.jpg]

<b>Drawing Area.</b> The drawing area contains the construction plans or architects drawings for the facility site plan (see Figure 18.10). These are detailed plans that can be used by contractors. At this level of detail, contour lines are usually in two foot intervals. This is in contrast to the standard USGS 20 foot intervals.

<b>Title Block.</b> The title block indicates the title of the drawing (Brookside Gardens Update of Approved NRI/FSD), the owner or for whom the drawing is being completed (MNCPPC) and who is completing the drawing (MNCPPC) (Figure 18.14). NRI and FCP stand for The Natural Resource Inventory and the Forest Conservation Plan respectively. The Forest Conservation

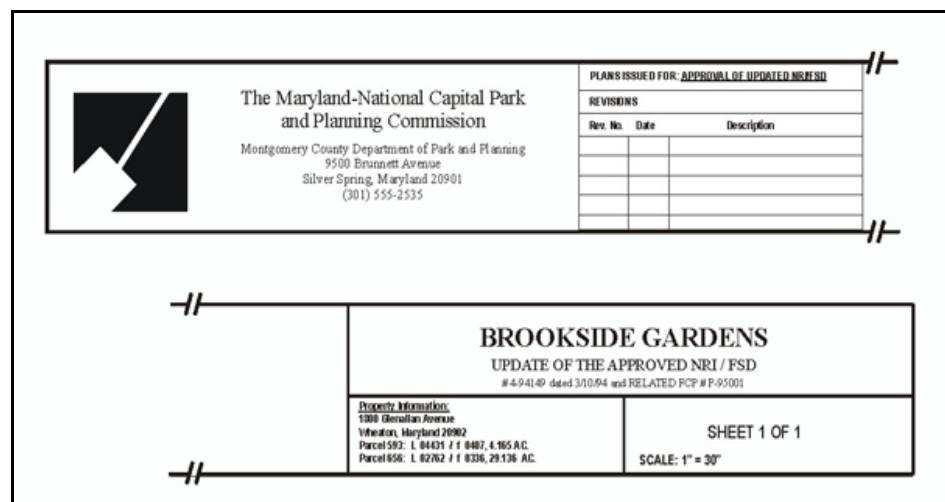


Figure 18.14: Title Block – Brookside Gardens Entrance – Source: MNCPPC – [file:\BP-TitleBlock.jpg]

Plan seeks to retain a majority of the existing trees and to minimize the disruption to the existing trees. If

there are multiple blue prints, it notes which sheet it is. In addition, it may include revisions. By general convention, the title block it is usually found in the bottom right portion of the blue print.

<b>Drawing Index. The drawing index is a coded list of drawings (not shown). Often this may be included as a portion of the Title Block. It is equivalent to a table of contents. The title box indicates that this is "SHEET 1 OF 1." Since there is only one blue print for the entrance project, there is no need for a drawing index.

<b>Schedule. When there are multiple tasks required and certain tasks need to be completed before other tasks, a schedule may be included. The entrance did not have a schedule of activities included with it.

DESIGN		REVIEW AND APPROVAL		REVIEW AND APPROVAL	
Landscape Architect	Date	Checked By:	Park Development	Date	Superintendent of Parks
Architect	Date	Checked By:	Central Maintenance	Date	Park Police
Engineer	Date	Checked By:	Region	Date	
Drawn by	Date	Checked By:	Natural Resources	Date	

Figure 18.15: Approvals – Brookside Gardens Entrance – Source: MNCPPC – [file:\BP-Approvals.jpg]

<b>Approvals. The necessary approvals are listed (Figure 18.15). When the task has been completed and approval received, the appropriate person signs off on the approval. In addition, there were approvals required by the NRI/FSD which is included elsewhere (see Figure 18.20).

<b>Notes. Since the focus of this construction plan is on the entrance site, the notes reflect details associated with site construction (Figure 18.16a and Figure 18.16b)). These are an outgrowth of the cultural, physical, and biological inventory factors discussed in this chapter as part of the site design process and they are discussed in more depth in the Chapter 16 on master planning. For the Brookside Gardens entrance, notes included reference to summary map, property information, historic and cultural resources, rare threatened and endangered species, water shed use and classifications, environmental table summary, and soil type (not shown).

<u>NOTES FOR NRI/ FSD:</u>		
<b>SUMMARY MAP:</b>		
Steams, wetlands and buffers:		as shown
Forest and tree cover:		as shown
Trees > 24" and specimens:		as shown
Floodplains and 25' BRL:		as shown
Soils:		as shown
Topo:		2' contours
Steep slopes:		as shown
Buil features and utilities:		as shown
Property lines:		as shown
100' offsite for ex. and Env. features		study area is within eisting approved NRI/FSD and FCP Area, so offsite features are not required.
<b>PROPERTY INFORMATION – Study area covers two parcels</b>		
Parcel No.:	P593	P658
Account Nos:	00967786	00972001
Subdivision:	502	0001
Grid Number:	JQ23	JQ23
Liber/Folio 92)	04431/0407	02762/0336
Bose Map No.	216NW02	216NW02
Tax Map No.	Jq123	Jq122
Acres		
(Study area size = 2.7 acres)		
<b>HISTORICAL AND CULTURAL RESOURCES – Not known</b>		
<b>RARE THREATENED AND ENDANGERED SPECIES -- None</b>		
<b>WATER SHED USE AND CLASS – Northwest Brancy IV / IV - P</b>		
<b>ENVIRONMENTAL TABLE SUMMARY</b>		
Forest acres:		0.11
Floodplain:		0.17 acres (from 1991 FEMA Flood Plain map 240049 0200 C)
Forested Floodplain:		0.06 acres
Wetlands:		0.12
Forested Wetnads:		0.00
Environmental Buffer:		1.90
Forested Env. Buffer:		100 '
Linear Extent of Streams:		230'
Champion Trees:		There are not County Champion Trees in the study area.

Figure 18.16a: Notes – Brookside Gardens Entrance – Source: MNCPPC – [file:\BP-Notes.jpg]

<b>Legend. The legend shows the features found in the drawing area (Figure 18.17). This legend includes slopes steeper than 25%, slopes between 15% and 25%, wetland, wetland buffer, stream or wetland boundary, limits of study area, limits of soil types, specimen tree, wetland and/or stream buffer, flood plain, building restriction line, gas line, sewer line and water line. Although there is commonality among many of the legend features, features shown in the legend will vary with different sites.

<b>Scale. The scale shows the ratio of distance on the blue print with actual distance in reality (Figure 18.18). The drawing is to scale. Also, a word of caution is that if the blue print is reduced in size through copying, the scale is no longer accurate.

<b>North (not shown). In order to orient the map with its surroundings, north is indicated. Orientation means that the features found on the blue print are in the same location as they are found in reality. It should be remembered that most of the features on the blue print are new and it is the role of the contractor to place these new features in reality as they are depicted on the blue print.

TREES WITHIN THE IOD WITH DBH >= 24"			
NUMBER	DBN	SPECIES	COMMENTS
1	26.5	TULIP POPLAR	Ave to good condition
2	29.0	TULIP POPLAR	Ave to good condition
3	35.0	TULIP POPLAR	Ave to good condition
4	25.5	TULIP POPLAR	Ave to good condition
5	26.3	TULIP POPLAR	Ave to good condition
6	27.75	TULIP POPLAR	Hole in the bottom
7	33.5	RED MAPLE	Ave to good condition
8	39.0	RED MAPLE	Ave to good condition
9	28.75	TULIP POPLAR	Ave to good condition
10	19.25	TULIP POPLAR	Double trunk
11	37.75	TULIP POPLAR	Good condition
12	33.0	TULIP POPLAR	Good condition
13	26.0	TULIP POPLAR	Good condition

Figure 18.16b: Notes – Brookside Gardens Entrance – Source: MNCPPC – [file:\BP-Notes.jpg]
















NRI - FSD LEGEND:	
	SLOPES STEEPER THAN 25%
	SLOPES BETWEEN 15% AND 25%
	WETLAND
	WETLAND BUFFER
	STREAM OR WETLAND BOUNDARY
	LIMITS OF STUDY AREA
	LIMIT OF SOIL TYPE
	SPECIMEN TREE
	WETLAND AND/OR STREAM BUFFER
	FLOOD PLAIN
	BUILDING RESTORATION LINE
	ELECTRIC LINE
	GAS LINE
	SEWER LINE
	WATER LINE

Figure 18.17: Legend – Brookside Gardens Entrance – Source: MNCPPC – [file:\BP-Legend.jpg]

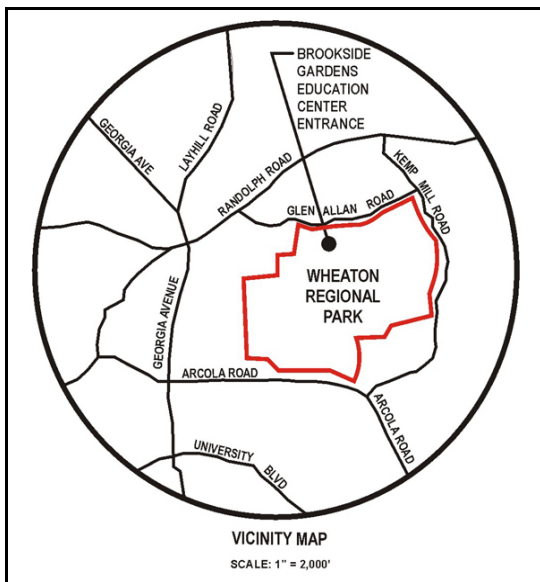


Figure 18.19: Vicinity Map – Brookside Gardens Entrance – Source: MNCPPC – [file:\BP-VicinityMap.jpg]

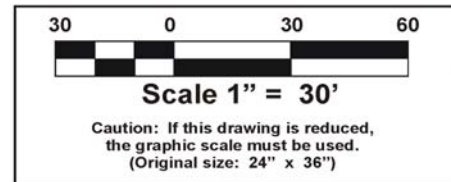


Figure 18.18: Scale – Brookside Gardens Entrance – Source: MNCPPC – [file:\PB-Scale.jpg]

<b>**Vicinity Map.** The vicinity maps shows the location of the site within its surrounding community (Figure 18.19).

<b>**NRI/FSD Approval.** The placement of this approval on the map suggests that the NRI/FSD approval was stamped on the blue print and signed (Figure 18.21). The Gardens involve both natural resources and forests. NRI and FCP stand for The Natural Resource Inventory and the Forest Conservation Plan respectively. Retaining a majority of and minimizing the disruption to the existing trees is an objective under the Forest Conservation Plan. The overall importance of the natural resource and forest concerns are apparent from the number and volume of notes and approvals on the cover page.

<b>THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION</b>	
NRI/FSD PLAN	
<b>APPROVED</b>	
NRI/FSD No.	<u>4-94-149</u>
Date Approved:	<u>5/04/07</u>
Expiration Date:	<u>5/04/09</u>
<u>John Poplar</u> Signature	<u>5/04/07</u> Date

**Figure 18.20: NRI/FSD – Brookside Gardens Entrance** – Source: MNCPPC – [file:\BP-NRIFSDapproval.jpg]

## Chapter Summary

This chapter delineates the site design process. The site design process can work in conjunction with the master plan or it can work independently of it. The site design process can be applied to the entire site or it can be subdivided into smaller and more manageable projects.

Terms such as holistic, integrative and inductive are used to describe the integrative process of the site design process. It is a process of weaving and incorporating the inventory factors into a plan that addresses the experience being delivered. It is a process that maximizes the attributes of the resource and addresses the issues identified in the inventory process. The end product of the process is the development of a facility site plan that can easily be converted into architectural blueprints for constructional purposes.

The Brookside Gardens example illustrates the facility design process. It illustrates how the overall plan can be broken down into manageable projects. Also, it demonstrates how a seemingly mundane entrance can amplify the programmatic theme of the Gardens through the design of space.

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