

The Design Process in an Urban Context Q14 Condominium Case Study

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With the recent resurgence of urban living, many major U.S. cities are experiencing unprecedented population growth and prosperity. This growth puts extreme pressure on cities' existing historic fabric and infrastructure, as fewer developable and vacant sites are available. The tight supply of land is making environmentally challenged sites known as "brownfields" as well as other sites with difficult physical attributes more attractive for development as never before. With fewer available sites, and more rigorous review processes placed on new and existing projects, architects and developers face mounting bureaucratic oversight and design complexities as they bring new projects to market.

As sites become more environmentally, technically, and politically encumbered and community groups are given greater voice in the design process, developers on already-limited timelines face even greater demands on their project schedules and on their budgets. For a developer working in this urban context, it is important to assemble a seasoned team of design professionals with experience dealing with the specifics of the development site, and with a thorough working knowledge of the regulatory review and approval process required for the project. Without proper planning and effective management of the design process, a

development project in an urban context can easily lead to financial hardships that may be difficult to overcome, especially in uncertain or emerging markets.

OVERCOMING CONSTRAINTS

When working within the urban context, the developer may expect to run into regulatory and technical constraints that may include:

- The impact the project may have on the established comprehensive land use plan in the general vicinity of the site;
- Regulatory restrictions on the site such as zoning, building code, and site easements;
- Natural features of the site including orientation, sun, wind, rainwater patterns, and seasonal factors;
- Human factors impacting the site such as vehicular and pedestrian movement, access to the site, and adverse views from the site;
- Community concerns such as the impact of the project on adjacent properties, parking limitations, location of loading, service and trash areas, and the generation of traffic and noise;
- Special or extraordinary site characteristics including environmental assessment and remediation of contaminants, limitations on existing utilities, etc; and
- Historic concerns such as height of the building relative to the neighboring historic buildings and compatibility with the established historic context.

A good design team can help a developer navigate this challenging urban development environment by leading an intelligent and focused design process that strives to eliminate unknowns and reduce inherent financial risk. Typically led by an architect, who has a multi-faceted background based on years of practice and relationships with a variety of construction

industry professionals, the design team will consist of a number of qualified professionals determined by the unique requirements of the project.

THE DESIGN TEAM

As noted above, the design team is typically led by an architect with years of professional training involving many facets of building design and implementation. The architect can provide an invaluable combination of practical experience, problem-solving skills, and design sensibilities that assist the client in understanding multi-faceted project requirements; provide the relationships and experience from which to identify other professionals skilled in solving problems created by unique project constraints; and communicate an effective design solution to the client, the public, and special review agencies.

Additional design team professionals can include zoning and land use attorneys, architectural historians, specialty engineers, sustainable design consultants, and public relations professionals. Since the work of these specialists is intrinsically tied to the determination of the physical aspects of the project, their active participation begins at the start of the design process.

Zoning and Land Use Attorney: The design team typically includes legal professionals to assist with an understanding of the zoning restrictions that may be imposed on a project site, especially in an urban environment that may have constantly evolving master planning activities, zoning regulations with changing interpretations, and new zoning overlay districts established. Since these professionals deal with these issues on a day-to-day basis they are invaluable advisors to the developer. A typical first meeting begins with a review of the architect-prepared conceptual zoning analysis with the zoning attorney, who continues as a resource to the architect throughout the design phases of the project.

Architectural Historian: For new projects located within established historic districts or ones that include a historic structure, the participation of an architectural historian is important to

determine the physical constraints these restrictions place on a project. For projects located within a historic district, many jurisdictions publish historic preservation guidelines that assist property owners and architects design for the alteration and addition to existing historic buildings, as well as new construction. These historic guidelines may be inherently subjective and, typically, not as well-defined as established zoning laws. For new buildings in historic districts, the design team must demonstrate “compatibility” with the surrounding historic fabric. Compatibility can be achieved by careful attention to such design principles as: scale, proportion, rhythm, massing, height, materials, and color. These guidelines may not be readily understood without the active participation of the architectural historian, who works directly with the architect on the development and implementation of sound design principles. Further difficulties in interpretation of historic guidelines can come about when components of existing historic buildings are incorporated into a larger development site, as in the consolidation of multiple vacant and built-upon lots into one development site.

Specialty Engineers: For projects with site complexities that can include limited site utility infrastructure, site and utility easements, environmental issues such as soil contamination of brownfield sites, offsite constraints, and adverse geotechnical conditions such as poor soils or high water levels, any number of specialty engineers may be required. Traffic, geotechnical, and environmental engineers, for example, are called upon to assist with these complex site issues. Since these issues may affect the physical layout of the building, they must be addressed early in the design process, making participation by these professionals an important component in a successful project.

Sustainable Design Consultant: As today’s projects are increasingly required to conform to newly established “green” building standards, involvement of sustainable design professionals early in the design process is more important than ever. The inclusion of sustainable design features into a building design requires an early understanding of the physical requirements for these features and their impact on the configuration, overall height, and area of a building. In

Washington, DC, for example, local and federal building height laws place limitations on floor-to-floor heights. Developers often seek to maximize total building floor area by reducing floor-to-floor heights in order to overcome the added costs of their urban projects. In this situation, the additional depths required for a sustainable feature like a green roof may not be possible if a developer is also trying to achieve certain financial goals within the legal height limitations.

Other sustainable features with a physical impact on the project design include: site development strategies such as storm water management related to green roofs, depth and location of “daylighting” equipment or reflectors that bring natural lighting further into the core of a building, the size and location of water storage tanks for geothermal wells, specialty utility room and mechanical requirements, and a myriad of other potential site specific strategies for energy efficiency.

Public Relations Professional: For politically sensitive urban projects, where community opposition is anticipated, developers may benefit from the implementation of carefully orchestrated public presentations to specific community leaders, focused and coordinated media outreach, and community relations campaigns. The determination of effective presentation strategies for disseminating project information to the community and understanding the political environment that the design team is working within must be initiated early in the design process. For example, the public relations professional can help develop likely scenarios that anticipate the public’s reaction to the project design, allowing the design team to develop appropriate responses over the course of the entitlements process.

Code Consultant: Complex projects with multiple uses may encounter continuously changing building codes that occur over the life of the development cycle. Experienced building code professionals can provide cost saving interpretations for unique project types and for sites requiring complex building configurations. Additionally, it is important to review the code implications of the proposed design from time to time throughout the design process to ensure that the proposed designs conform to code.

Construction Professionals: Since today's urban buildings are inherently more complicated, time-consuming, and expensive to build, involving construction professionals such as general contractors and cost estimators early in the design process is becoming increasingly important to the financial success of a project. Many projects require a thorough understanding of the construction process including assistance with site access and staging activities, public space closings, and for dealing with the retention of historic buildings and protection of neighboring properties. With input from a construction professional, a client can understand the full scope and cost of a design as the design is developed.

Additionally, in a heavily restricted urban environment, it is increasingly necessary to provide innovative and potentially costly structural features as part of the building design, including highly articulated facades with setbacks at varying levels to respond to a varied context. Without input from construction professionals, a developer may find out—too late—that these design features are not consistent with the financial goals of the project.

UNDERSTANDING SITE CHARACTERISTICS AND COMMUNITY ISSUES

Regulatory Limitations

Once a potential development site has been selected by the developer, the architect's first task is to conduct a feasibility study to determine the regulatory limitations that may be placed on a building's design. This conceptual analysis helps the client decide, in general, whether the project can meet their financial and aesthetic goals for the project. A feasibility study is a process by which the architect first establishes the zoning, building code, and historic constraints for a project, which allows the determination of yield diagrams showing the allowable development envelope for a site. Most jurisdictions establish zoning districts that incorporate existing land use strategies and control the allowable building area through zoning limitations such as allowable uses; overall building height; open space requirements, including rear and side yard setbacks for light and air; the determination of a floor area ratio (FAR), a defined

multiple of the site area; and other standards set forth by the jurisdiction. It is good practice for the architect to review the findings of this analysis from time to time during the design process, as further regulatory and physical constraints are understood.

Understanding and Addressing Site Characteristics

Another early step in the design process involves an exploration into the natural attributes of the site. Factors such as sun, wind, and site orientation, among others, figure prominently into the design of the building, and need to be understood early in the design process. Given the rising cost of energy, this is particularly true as we focus on environmental sustainability and energy efficiency of our built environment. The US Green Building Council (USGBC) states that buildings consume roughly 40% of our overall energy demand. Careful attention must be made to the size and orientation of such features as window glazing to limit a building's energy needs.

In an urban setting, however, the design team must go beyond these natural parameters. Factors such as automobile traffic and pedestrian patterns around the site, delivery of goods and services to the site, utility services to the site, trash collection, as well as cultural and community concerns, all can affect the building design and overall project budget. A clear understanding of these constraints, contextual issues, and financial implications of the project site, along with an understanding of the clients needs, will ultimately affect the final design solution.

Mitigating Community Concerns

In many jurisdictions, the community has been afforded an increased authority in the review and approval process for development projects. This increased authority can affect the project in significant ways such as limiting the size of buildings, limiting design alternatives and contemporary design features, and increasing the review timeframes, all with the potential to

increase a project's financial risks. When dealing with the community, the architect and developer must present a clear and understandable vision for the project, one that appropriately responds to the community's needs and concerns, and allows for participation in a non-threatening environment. As in any process involving special approvals, the impact of community participation greatly affects project design. Initial meetings with community leaders early in the conceptual design phase can help to highlight potential community concerns and allows the design team to hone their design solutions and develop presentation strategies to deal with potential community opposition.

THE ARCHITECTURAL DESIGN PROCESS: METHODOLOGY

Only when the regulatory and technical requirements of a site are fully understood from all these perspectives can the architect begin the important next steps in the architectural design process. Armed with this information, the architect can begin the development of aesthetic and building massing concepts to suitably fit the building into its surrounding environment.

Understanding Context Through Visual Analysis

Beaux Arts architectural training placed strong emphasis on the analysis of existing architecture through drawing as a way to thoroughly understand the intricacies of any building's design. Today, with ready access to digital photography and computer modeling, it is easy to overlook the benefits that the use of freehand drawing can add to the architectural design process. While photo documentation of the site and its surrounding context is an important first step in understanding the specifics of a project site, freehand sketching allows designers to quickly commit a feature to memory, quickly analyze the existing massing, rhythms, and proportion of neighboring buildings, or just allows the freedom to explore a thought quickly and thoroughly. The preparation of freehand sketches is a powerful communication tool that allows

the architect to effectively express his or her ideas to clients, the specialty consultants, and the community.

Utilizing *Charrettes* to Quickly Determine Design Alternatives

The design “charrette” is a term that has been handed down from its roots in the Ecole des Beaux Arts in Paris, which, until the 1940’s, was seen as the paradigm of formal architectural education. The charrette, or cart, was pulled through the architectural studios to collect students’ work at a predetermined deadline. Stories abound about students with incomplete work riding or walking along with the cart as they feverishly finished their drawings before the cart completed the final leg of its journey back to the professor’s offices. This design technique, of establishing a rigorous schedule of completion of an initial design task, requires a focused “energy” within a short timeframe that can provide surprisingly positive results.

This approach to design, especially in the initial stages of a project’s design, can be an invaluable tool to advance the design by determining multiple design solutions for consideration and potential development. Using the design charrette concept, the project team defines a timeframe in which to explore design ideas. Designers, working individually, prepare and present design options for the project within this limited timeframe. These individual options are evaluated by the team and can be used in the development of design alternatives for the project.

Exploring Architectural Precedents

When designing a new building in an existing urban context it is appropriate to explore architectural precedents that show a successful solution to the design of a building in a similar context, with a similar building program, or even an emotional expression of how the building will present itself to its environment. During the architect’s initial project research, it is useful to research existing precedents to understand such issues as how a similar massing situation was

dealt with successfully, or to demonstrate alternative stylistic approaches that may be considered for the project.

These precedents need not be architectural in nature. Inspiration for a building design has developed from paintings and sculpture, industrial design solutions, from the establishment of a simple metaphor, or from images that are drawn from everyday life.

In the first phase of design, numerous design possibilities may present themselves. Showing specific images of other projects as a starting point for the design process helps architects convey their ideas to clients and to the community through familiar and successful design solutions.

Applying Philosophical Design Tenets

Today's development market demands buildings that are often larger, more complex, or aesthetically very different from their neighbors. Architects must look for design strategies that make them suitable for their urban context. Careful analysis of building massing, façade rhythm, window proportion, height, and scale, both in the existing context and proposed design, allows a contemporary architectural design solution to fit more comfortably in an existing urban context.

TOOLS TO FACILITATE THE DESIGN PROCESS

A number of sophisticated graphic tools are available to today's architects in the development of a building design. These tools offer a wide range of flexibility for a variety of presentation demands and may be in the form of physical models or computer-generated drawings (CAD drawings). To avoid needless project costs, care should be taken in choosing the most effective ways to convey a project design. One must keep in mind the format and environment of public presentations that will be encountered during the design and review process and determine the best presentation tools to fit the specific needs of the project.

Computer-generated Three Dimensional Drawings: The use of computer generated three dimensional (3D) images can be an effective tool to convey how a building will integrate into an existing urban context. Building massing studies can be quickly developed and modified to demonstrate a number of strategies for how a building fits into its existing context. As well, these 3D drawings can be used to demonstrate how a proposed design will look from any vantage point around the site.

For projects in historic districts or in areas with difficult zoning restrictions, the building's sightlines—the views of the building from the public street—must be carefully determined as they may become an important test of a projects “compatibility” with its surrounding context. New buildings in an historic district must be deemed “compatible” with its surrounding context and historic review boards many times deem the sightlines from a public street to be of paramount importance in the determination of compatibility. In order to demonstrate the visual impact a building may have from the street, the development of a series of 3D computer images of the building at predetermined intervals along the street can be effectively utilized. These sightline diagrams show what an observer may see from a series of vantage points. Since the accuracy of these drawings is sometimes called into question, comparative photographs from the same vantage points can be provided to demonstrate the accuracy of these computer generated images.

Shadow Studies: Increasingly important to community groups and, specifically, to neighbors directly adjacent to project sites is the impact that a taller building may have on its surroundings. The use of computer generated sun angle and shadow diagrams to represent the impact on sunlight that a new building might impose can be an effective tool to demonstrate the shading impacts of the project design.

Physical Models: The construction of a physical model is considered by many to be one of the best ways to convey a massing idea within an existing context. Initially, models may take the form of clay “blocks”, and then develop into more complex media. Physical models are not only

an important way to quickly determine design strategies but also a valuable tool to quickly convey ideas to a client and others who may not have a developed ability to understand drawings alone.

The Q14 CONDOMINIUM—A CASE STUDY OF THE DESIGN PROCESS IN AN URBAN CONTEXT

Background

Several years ago, Bonstra Haresign Architects, was commissioned by a local developer to design a mixed-use building in the fast redeveloping Logan Circle neighborhood of Washington, DC. The vacant site, at the northwest corner of 14th and Q Street, NW, was prominently located within the Greater Fourteenth Street Historic District. Fourteenth Street, originally comprised of single-family Victorian-era row houses along a prominent north-south streetcar route, had transformed into a lively commercial zone in the early 20th Century with the advent of the automobile. Limestone-clad buildings in Art Moderne and Neo-classical styles of the period replaced many of the original Victorian era row houses and housed automotive showrooms, auto parts stores, and repair shops serving patrons of the new automotive era. This left a lively mix of building types of varying heights and architectural design.

All this changed in the aftermath of Dr. Martin Luther King's 1968 assassination. Fourteenth Street was the site of the most devastating riots and looting of private property in the city's history. Of the remaining buildings, over half were burned during a four-day period; most became abandoned and neglected. The next wave of redevelopment would not occur until the late 1990's—almost 30 years later—and would begin to return this commercial district back to a thriving mixed-use area of the city.

The Project Site

The vacant site totaling 7,900 square feet was prominently situated within the *Greater 14th Street Historic District* and located on the edge of the commercial zone, with a mature residential neighborhood located to the west of the site. The building's 14th Street exposure would need to respond to the commercial zone along this street while its south-facing Q Street exposure would need to respond to the historic Victorian-era row houses to the east and west. A 20-foot wide alley behind the building, serving the adjacent commercial buildings and running north-south, would separate these distinct zoning districts.

The Client

The client, Mr. Fred Bahrami of CRES Partners, had an extensive background in commercial real estate, but had only developed several small residential projects of no more than five units each. The client's established goals for the project were to construct a new seven-story mixed-use building of roughly 45,000 gross square feet that was to maximize the residential floor area, provide street front retail space along 14th Street, and provide underground parking at a ratio of one space per unit. Architecturally, the client desired a contemporary building design that provided large glass areas to maximize views, exterior balconies or terraces for all units wherever possible, with a contemporary aesthetic appealing to the young urban professionals who were migrating to the area. To meet the client's financial goals, the project would need to achieve its maximum allowable zoning envelope and provide a marketable design that would set it apart from neighboring developments.

In order to deal with the multi-faceted demands of this complex project, which was located in an area of the city surrounded by a variety of historic buildings of varying heights and which was likely to draw community opposition, the firm assembled a design team consisting of an architectural historian, a zoning and land use attorney, a public relations professional, as well as a group of specialty engineering consultants.

Analysis of the Existing Context

Beginning with a complete photo documentation of the site, the architectural team began documenting the existing building elevations for two blocks north and south of the project site. The team obtained computer drawings of proposed building designs and projects already in construction within the 4-block vicinity of the site and inserted these into what would become a 12-foot long “super-context elevation”.

Using this drawing as well as photographic information, the architects next prepared a context analysis with the goal of determining the nature of the adjacent building heights and widths, rhythm of existing bay projections, and size and spacing of windows, etc. Existing primary and secondary cornice heights were determined and the relationship to the Barrett School, a tall, pitched-roofed Victorian-era school turned apartment building located directly across Q Street to the south, was established. This existing historic structure would become the key reference point upon which the discussion of the project height would center and, ultimately, be the basis for determining the compatibility of the project on this difficult site.

Design Charrette

The team next continued the design process by utilizing a design technique called a *charrette*. Working over an eight-hour period, the initial project team of three architects, working with the design principal, individually explored options for the building design. Provided with a scaled site plan, a building program, a zoning and building code analysis, site photographs, and the “super-context elevation”, the designers developed a number of massing schemes for the project with the goal of establishing strong visual relationships with the proposed building’s existing context. At the conclusion of this period, four distinct design concepts were pinned up and each individual architect was given the opportunity to present his ideas. Through this design process, a design direction was quickly established that offered the most opportunities to accomplish the client’s stated goals and was the most appropriate response to the existing historic context.

Developing the Project Design

Once an overall massing design was established, the next step was to begin discussions with the rest of the established design team in anticipation of the first community review. Working closely with the architectural historian, the architects further developed and fine-tuned the design to reinforce the building's compatibility with its context, while maintaining the established building massing that would remain unchanged throughout the design process. The design strongly related to the height and major horizontal datum points of the existing Barrett School building to the south, the tallest building along the street.

The design—a composition of three primary masses, articulated in materials corresponding to their function and location along each respective street front—was interlocked into a single building that respected its surroundings without being a literal copy of the existing historic fabric. A lively mix of forms, colorful but cohesive masonry materials, and projecting glass bay windows were developed to respond to specific features and uses associated with each primary façade. This design would have to bridge between the reestablished commercial uses on 14th Street while respecting the historic residential row houses along Q Street. Ultimately, the architects developed a design that, while taller than its neighboring buildings, fit comfortably into this context and was contemporary in style, showing it to be a “product of its time”.

Community Review

In Washington DC, unique legal recognition is given to a body of elected individuals known as the Advisory Neighborhood Commission (ANC). Individual residents living within defined sub-boundaries of the City's ward system, or Single Member Districts (SMDs), are elected every two years and participate in monthly public meetings along with interested neighbors. The vote of these ANCs is, by law, given “great weight” by the various review agencies/boards; it is not uncommon for community leaders to participate in approval hearings for the projects that they have reviewed publicly. While the level of public interest varies by

ward, the residents of the District of Columbia are active participants in local events, especially when it comes to the impact of a new project on an established neighborhood. This project would be no exception.

Once the conceptual design was determined, the next step in the design process was to meet with the community. The design team prepared for the first community meeting—a presentation to the limited number of neighbors in closest proximity to the site who resided in the two- to three-story Victorian-era residences along Q Street. The team used a small number of drawings for this initial meeting in order to focus less on the building and more on community issues such as parking, trash, etc. The overall design concept, project goals, and initial thoughts on how the building would be designed to fit comfortably among the neighboring historic buildings were presented. As a commitment to these neighbors' request, the client agreed to provide attractive temporary fencing and landscaping around the existing site. However, the project drew a mixed response from the neighbors, most centering on what was felt to be an impact on the existing two- and three-story residential neighborhood. The measure of the appropriateness of building height would be the sole issue that would remain throughout the historic review and approvals process.

Over the course of the public review of the project, the team engaged the broader community in discussions regarding issues and concerns, including specific features of the design, through presentations in the architect's office, at neighbors' homes, and during monthly public presentations.

Although the project had opposition from the small group of well-organized neighbors fearful of the impact of a larger building in their midst, the local ANC and its Community Development Committee (CDC), voted overwhelmingly to support the project. Each meeting these groups included the placement of the 12-foot long "super-context elevation" behind the dais. 3D images and physical models supplemented this drawing to complete the graphic presentation and support discussions of the building's compatibility within its historic context.

Overall, the ANC appreciated the care and commitment with which the architects developed design strategies and a thorough study of the existing context and the team's efforts to engage the community and adapt to its concerns promptly and effectively.

Public Relations Professional

Given the complexities of the site, community opposition for the project was anticipated from the start. In response, an effective strategy was developed to deal with the project's review and approval at the community level. The team's public relations advisor, a member of the community and an individual well-versed in the political climate of both the city and this specific neighborhood, was an invaluable resource in this effort. Working with community leaders, the team was able to develop and maintain the community's confidence in the design and the community's trust, which was necessary to deal with specific community member opposition to the project.

Historic Preservation Review Board Meetings

Over the course of the next four months, the project was presented to the DC Historic Preservation Review Board (DCHPRB) during three public sessions with each session focusing on the buildings "compatibility" within its historic context. During the first official public review of the project, the board believed the building to be too tall and requested the design team remove the top floor of the building to lower its overall height. Not content with losing a substantial amount of value—estimated at over \$2.5 million of sales revenue— and making the project financially infeasible, the client insisted the architects look at ways to reduce the height of the building without losing a full residential floor. At the second review session, contrary to the board's request, a building design was presented that reduced each floor by eight inches, resulting in a building that was four feet shorter overall, rather than the full floor that the board had originally demanded.

Working with the architectural historian, the architects established a number of design features such as strategically placed cornices carefully aligned with the neighboring Barrett

School building, window and bay proportions responding to the neighboring buildings, and material selections based on the color and texture of its neighbors. The combination of these features contributed to a compelling design that was presented to the review board.

The DCHPRB ultimately approved the project in this form, five months after the start of design. The project was built to its full allowable floor area, even within a historic district and its substantially lower-scale context. The initial massing scheme would remain intact throughout the design of the project.

CONCLUSION

A team of design professionals, led by an architect experienced in dealing with the complex development issues of urban sites and with a thorough working knowledge of the applicable review and approval process, is of utmost importance to the success of a development project within an established urban context. Working with these specialty consultants, the architect is tasked with developing a design that synthesizes the physical constraints of the site within an aesthetic framework that satisfies not only the client's needs but also the community's concerns and any number of special review agencies' guidelines. Ultimately, the architect must be an effective communicator and design team leader with the vision to create lasting architecture in an increasingly complex environment.