

PURPOSE BUILT



Making Capital Projects Work

Ten principles for success, illustrated with case study lessons

Purpose Built Series

Capital projects often bring lasting benefits to nonprofit organizations and the people they serve. In the United States alone, foundations grant more than \$3 billion per year to construct or improve buildings.ⁱ To help these funders and their nonprofit partners make the most of capital projects, The Atlantic Philanthropies and the S. D. Bechtel, Jr. Foundation commissioned *Purpose Built*—a multi-faceted study by MASS Design Group, a nonprofit architecture and research firm. In 2015 and 2016, MASS conducted interviews, held workshops, reviewed literature, and examined a diverse set of complete projects around the world. Each project was supported by one of the above funders. The study generated a set of 10 principles, described in this document, as well as tools for those considering or conducting capital projects:



Introducing the Purpose Built Series is an overview of the study and its core principles.



Making Capital Projects Work more fully describes the *Purpose Built* principles, illustrating each with examples.



Planning for Impact is a practical, comprehensive tool for those initiating capital projects.



Charting Capital Results is a step-by-step guide for those evaluating completed projects.



Purpose Built Case Studies report on 15 projects to illustrate a range of intents, approaches, and outcomes.

See the full *Purpose Built* series online at www.massdesigngroup.org/purposebuilt.

ⁱ Foundation Center, *Foundation Maps* data based on grants made in the United States, 2006-2015.

Purpose Built Principles

Capital projects can inspire and empower users, improve work processes and culture, and open doors to new revenue. They can strengthen the social and economic fabric of the communities where they stand. Some serve as powerful symbols of progress on a regional or national scale. Others catalyze larger systems change—leading to new partnerships, demonstrating practices that can be adopted by others, or sparking policy shifts.

While many projects succeed in fulfilling their ambitions, others fall short of reaching their potential. The best results occur when a project is built with purpose—grounded in a clear and strategic mission that informs design decisions, with a scope that matches what its organization can afford to build, operate, and maintain. Projects that fail to achieve this balance can cause harm, damaging a nonprofit’s short- or long-term financial health, operating systems, culture, or public reputation.

The *Purpose Built* principles can help project teams avoid common pitfalls and generate a greater return on investment in capital projects:

1. Envision greater possibilities for impact.
2. Commit to planning to set the right scope.
3. Engage stakeholders for insights and buy-in.
4. Combine inside knowledge with outside expertise.
5. Connect with partners to scale outcomes.
6. Define donor support as more than construction funding.
7. Invest in design excellence.
8. Be ready for organizational change.
9. See financial realities beyond opening day.
10. Identify the correct metrics for success.

This overarching report describes each principle, illustrated with lessons drawn from *Purpose Built* case studies. The following page presents the lessons mapped onto each principle.

Mapping Lessons

Case study lessons included in this report
View these case studies for more illustrations

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Principles | Case Studies | |
|---|---|---|---|---|---|---|---|---|----|------------|--|---|
| | ■ | | ■ | | | | ■ | | | | | The California Academy of Sciences |
| | | | ■ | | | | | ■ | ■ | | | Constitution Hill Precinct |
| | | | ■ | | | | ■ | ■ | | | | The Exploratorium |
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| ■ | | ■ | | | | ■ | | | | | | Northern Ireland Council for Voluntary Action |
| | | ■ | | ■ | | | | | | | | Presidio Trails, Bikeways, and Overlooks Project |
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| | | ■ | | ■ | | | | ■ | | | | The Summit Bechtel Reserve, The Boy Scouts of America |
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| | | | ■ | ■ | | | | | ■ | | | Viet Nam Health Care System |
| ■ | | | ■ | | | | | ■ | | | West Campus Residential Initiative, Cornell University | |

Please see pages 26-27 for a brief description of each case study.



1. Envision greater possibilities for impact.

Capital projects create unique opportunities for organizations to advance their programs and aspirations. The design process invites leaders to examine organizational goals and consider ways to achieve added impact. The most effective project leaders and teams see beyond near-term demands and explore the full promise inherent in a new facility. They engage a range of future building users as well as program partners and funders to inform design criteria. They look to peers and exemplars to inspire new ideas and surface possibilities. They often consider ways to create project benefits that extend beyond the perimeters of their site, seeking positive effects for their neighborhood, sector, or region. Ultimately, they develop a project mission that aligns with their organizational mission—reflecting the current needs and future hopes of their constituencies.

These case studies illustrate the importance of this principle:

**Life Sciences Building,
University of the Western Cape**
Cape Town, South Africa

**Northern Ireland Council for
Voluntary Action**
Belfast, Northern Ireland

**Science and Engineering Centre,
Queensland University of Technology**
Brisbane, Queensland, Australia

Life Sciences Building, University of the Western Cape

Cape Town, South Africa

A building design reflects the rights and hopes of its constituents:

When leaders at the University of the Western Cape set out to replace their dilapidated science facilities, they saw the opportunity to challenge external perceptions of a historically underfunded and oppressed “coloured” university and students. In addition to designing and constructing a space to support high-quality research, the Life Sciences Building would serve as an icon in South Africa—and send a message to the world. A six-story laboratory building rises out of the landscape to announce the University’s presence in its surrounding community. A green roof on the adjacent Learning Centre as well as access to a nature reserve situates the facility within its environmental context. The design approach went well beyond functional needs to convey that this long-disregarded university had “arrived”—a message that carried deep significance for an institution of higher learning that stands for the rights and future of historically oppressed populations.



Above. A view of the Life Sciences Building at the University of the Western Cape.

Northern Ireland Council for Voluntary Action

Belfast, Northern Ireland

An expansive vision encompasses a stronger sector and community: From the start, lofty ambitions were tied to the Northern Ireland Council for Voluntary Action (NICVA) project. Constructing a new headquarters would help NICVA serve as a hub for the country’s nonprofit and nongovernmental organizations. NICVA leaders also viewed the project as a means to advance

the organization’s cross-sectarian ethos and contribute to local peacebuilding efforts—including a bold decision to build on the peaceline between Catholic and Protestant communities. The facility’s design made a powerful statement about inclusion. In a time when buildings in Belfast were heavily fortified with barred windows and barbed wire fencing, NICVA placed a priority on openness and accessibility. NICVA’S approach was an expression of confidence in a formerly divided Belfast neighborhood, and helped draw other organizations to the area. In the words of NICVA’s Deputy Chief Executive Úna McKernan, “It was always supposed to be more than just a building.”

Science and Engineering Centre, Queensland University of Technology

Brisbane, Queensland, Australia

Careful decision-making supports ambitious goals: In planning its Science and Engineering Centre, Queensland University of Technology leaders saw an opportunity to break down barriers between academia and the public. Decisions made in site selection, building design, and programming all contributed to improving the perception of the University and creating new opportunities for community engagement. The site’s proximity to civic attractions and high-traffic walking routes in Brisbane, combined with the development of The Cube (a large digital learning and display space), have created a new focal point for educational outreach and public engagement. The design of the facility has improved the perception of science, technology, engineering, arts, and math (STEAM) research at the University. While known as high caliber, this research had been viewed as unapproachable and intimidating; it is now seen as accessible and open to all. This project has changed the University’s pedagogical approach as well as its broader relationship with its neighboring community.

View these studies for more illustrations of the importance of this principle:

The Simpson Center for Girls, Girls Inc. of Alameda County
Oakland, California, USA

Translational Research Institute
Brisbane, Queensland, Australia

West Campus Residential Initiative, Cornell University
Ithaca, New York, USA



2. Commit to planning to set the right scope.

Capital projects are large investments, and their design and implementation merit thoughtful consideration and preparation. Projects that feature large ambitions but proceed without studying implications and feasibility will encounter challenges. In some cases, the misalignment between hopes and realities doesn't surface until the construction or post-occupancy stage, leaving an organization at risk for costly problems. The most successful efforts use the planning phase to “right size” the project, blending an organization's aspirations and design intent with a realistic assessment of its needs, abilities, and economic realities through a well-defined project scope.

The following case studies illustrate the importance of this principle:

**The Simpson Center for Girls,
Girls Inc. of Alameda County**
Oakland, California, USA

The California Academy of Sciences
San Francisco, California, USA

**Marymount University
Hospital and Hospice**
Cork, Republic of Ireland

The Simpson Center for Girls, Girls Inc. of Alameda County

Oakland, California, USA

Upfront studies lead to a better process and outcome: In preparing to create a new home to replace its converted warehouse space in San Leandro, California, leaders at the local affiliate of Girls Inc. conducted three important studies over a two-year period. Each was led by qualified consultants, some working pro bono. The first established the potential scale of the project, setting criteria for square footage, location, and price. The second finalized project priorities, assessed financial readiness, and helped Girls Inc. make the decision to relocate to central Oakland—a bold choice that would result in much greater access and visibility for the affiliate. The third examined the feasibility for success of a major capital campaign, and led to a realistic fundraising goal. Ultimately, the organization’s investment in upfront planning, including time as well as dollars, resulted in a more efficient implementation process and a more effective outcome.

The California Academy of Sciences

San Francisco, California, USA

Visionary design carries reward and risk: When the California Academy of Sciences introduced the design for an iconic, sustainable science center and educational museum, donors responded to the architect’s bold vision. The Academy expanded its budget for this building by more than \$100 million over the course of the project. When faced with escalating costs, leaders opted to increase the project’s budget rather than eliminate major elements of the design. Not all capital projects can achieve the deep and expansive donor commitment required to complete this kind of effort. Every project must balance financial and design considerations; in this case the trade-offs were largely manageable. Still, the ambitions of this project created debt for the Academy, as well as significantly increased staffing and operating costs.

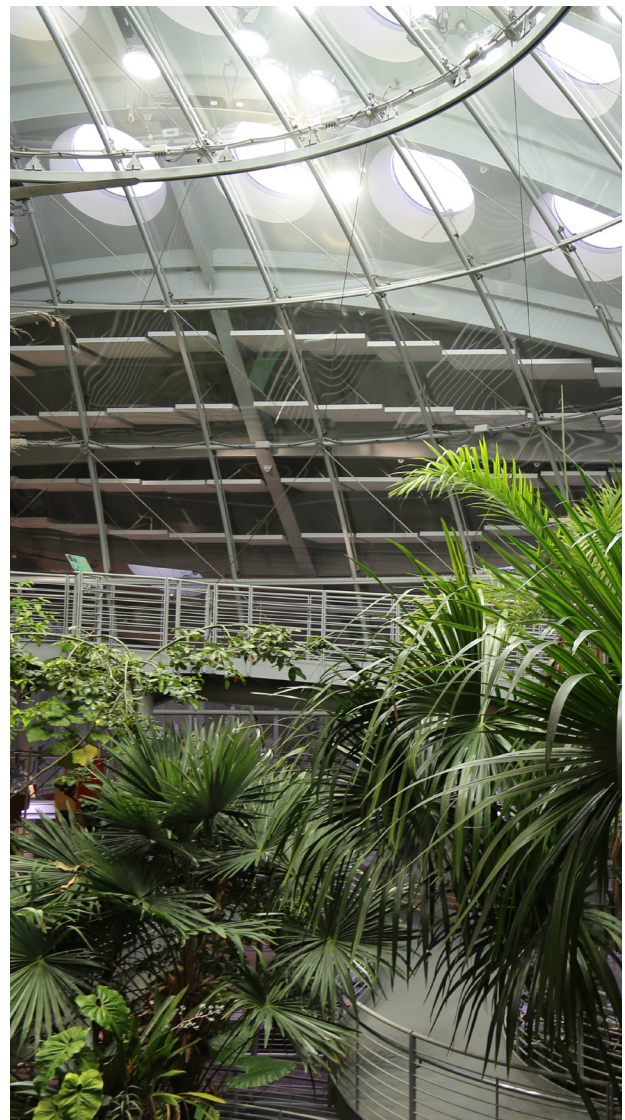
Marymount University Hospital and Hospice

Cork, Republic of Ireland

An enhanced facility requires a new level of operations: After abandoning initial plans to renovate and modestly expand their existing building in favor of a large new facility on an undeveloped site, Marymount Hospital and Hospice leaders invested in a feasibility study to assess the organization’s financial ability to pursue a greater project scope. The reimagined project design included large,

individual rooms, easy access to the outdoors, generous amounts of glass, sustainable building systems, and advanced equipment. These design features resulted in significant implications for the ongoing costs of maintaining, operating, and staffing the facility. Due to a variety of unanticipated challenges, Marymount faced post-occupancy issues related to operating and financing the new site. This project team’s experience underscores the importance of understanding the risks and ramifications of design decisions. These decisions need to align with an organization’s mission and operational capacity in the changed economic context that accompanies a new facility.

Below. The rainforest exhibit is one of the signature attractions at the California Academy of Sciences.





3. Engage stakeholders for insights and buy-in.

Every capital project carries inherent opportunity to deepen relationships with key constituencies, internally and externally. While involving others carries time and cost considerations, the benefits can be significant. Building users and staff can describe requirements, identify constraints, and surface new possibilities. Conversely, failing to engage key stakeholders effectively can lead to missed opportunities—and negative results. Stakeholders typically include an organization’s board of directors, staff, program participants, program partners, donors, and members of the surrounding community. These parties supply information and insights that help fuel development of solid project goals and design criteria. Participation of staff and other facility users in the design process can be especially important to ensure that the project result fits their needs. Involving people in a meaningful way can contribute to a strong solution and nurture broad ownership—and enduring pride—in the completed project. It can also minimize the need for costly post-occupancy changes.

The following case studies illustrate the importance of this principle:

Presidio Trails, Bikeways, and Overlooks Project
San Francisco, California, USA

Science and Engineering Centre, Queensland University of Technology
Brisbane, Queensland, Australia

Presidio Trails, Bikeways, and Overlooks Project

San Francisco, California, USA

Public involvement brings enduring benefit: Creating the Presidio Trails, Bikeways, and Overlooks network provided its lead organizations with opportunities to involve stakeholders in multiple ways. Public comments were invited at the outset to inform development of master plan priorities. The project team then created and released a draft plan—collecting feedback then making revisions. This multi-step, multi-year process resulted in a cohesive vision and goals shared by project leaders as well as the surrounding community. Area residents were also invited to participate in maintaining the park's landscape through stewardship programs. The public literally participates in shaping the park through these activities, which instill a sense of ownership and dedication to the future of the Presidio—while reducing building and maintenance costs.

Science and Engineering Centre, Queensland University of Technology

Brisbane, Queensland, Australia

User testing informs effective design: The Queensland University of Technology project team designing its new Science and Engineering Centre involved the future building's primary users to explore the best layout and furnishings for this research institute. Over two years, the project team mocked-up spaces on campus for students and academic staff to test different design approaches supporting easier communication and a more open culture—while integrating technology into learning spaces. Feedback from these users was instrumental to refining the final design concepts. The result of this engagement process is a collection of environments where researchers can collaborate to enhance their work, and students can study and learn interactively.

View these studies for more illustrations of the importance of this principle:

Mission Bay Campus, University of California, San Francisco
San Francisco, California, USA

Northern Ireland Council for Voluntary Action
Belfast, Northern Ireland

The Summit Bechtel Reserve, The Boy Scouts of America
New River Gorge, West Virginia, USA



Above. Panoramic views of San Francisco and its bay are readily accessible through the Presidio's eastern corridors and overlooks.



4. Combine inside knowledge with outside expertise.

Capital projects can occur infrequently over the life of an organization, and each project involves a distinct mix of requirements. Effective leaders carefully consider project needs, recognize any experience gaps within their staff, and involve outside experts who bring specialized knowledge. Teams that excel combine internal members who can bring institutional insights and manage change with outside professionals who can lead critical aspects of project planning, design, feasibility, and implementation. They also establish clear roles, accountabilities, and strong communication practices—attributes that elevate their ability to complete projects on budget, on time, and on mission.

The following case studies illustrate the importance of this principle:

Constitution Hill Precinct
Johannesburg, South Africa

**The Simpson Center for Girls,
Girls Inc. of Alameda County**
Oakland, California, USA

**West Campus Residential Initiative,
Cornell University**
Ithaca, New York, USA

The Exploratorium
San Francisco, California, USA

Constitution Hill Precinct

Johannesburg, South Africa

Local capacity grows through involvement of external experts:

When project leaders initially set out to turn the infamous Old Fort Prison complex into a historical museum and mixed-used development, South Africa had relatively few museum and curatorial professionals with relevant experience. Project leaders engaged local firms to conduct many aspects of the project implementation and also brought in well-established consultants from the US and Canada. The inputs of these external consultants, and a collaborative process of engaging stakeholders and developing exhibits, helped build the knowledge and skills of the local project team; many team members have continued to work in South Africa's cultural sector. This partnership also facilitated the emergence of a new language for memorialization that rejected traditional curation techniques, serving to reclaim and reconstruct a national memory that had historically been neglected. This case highlights the value of balancing local and international knowledge, investing in outside experts to train local professionals, and empowering local players to establish an appropriate contextual approach to sensitive and important cultural exhibits.

The Simpson Center for Girls, Girls Inc. of Alameda County

Oakland, California, USA

Consultants and board members add value: When Girls Inc.'s former Executive Director Linda Boessenecker initiated the process for a major capital project, she assessed the level of relevant experience and knowledge among staff, and engaged outside experts to bring value at each stage of the project. Boessenecker expanded the Girls Inc. board, knowing that board members could also bring specialized knowledge and connections vital to the project process and outcomes. Girls Inc. began consulting with building professionals even before initiating the search for a new site. Pro bono consultations from Deloitte and the Northern California Community Loan Foundation helped Girls Inc. define needs and affirm that it had the capacity to take on the project. Girls Inc. then involved consultants to scope and structure a capital campaign. The search for a new building drew on the expertise of three real estate consultants, an architect, and a contractor. An outside designer was instrumental in seeing the potential to transform an old building into an exceptional home for Girls Inc. A developer helped secure tax credits that were pivotal to the project's financing. From start to finish, the combination of internal leadership and external guidance helped Girls Inc. plan and implement the project successfully.

West Campus Residential Initiative, Cornell University

Ithaca, New York, USA

Shared internal accountability promotes integration: To develop facilities that blended residential life and learning for students, the project team for Cornell University's West Campus Initiative sought to achieve collaboration among key University administrative departments. Two project managers were named, one from Facilities Management and one from Student and Academic Services. They worked side-by-side in the same office space throughout the project's duration; this arrangement allowed them to clearly define their roles and working relationship, ensure that the perspectives and priorities of the two departments were understood, and combine their individual expertise. This structure was mirrored at the executive level as well, with the assistant vice president of Student and Academic Services collaborating directly with a faculty leader counterpart. By creating a team structure that encouraged collaboration rather than siloed roles, Cornell was able to steer implementation of the West Campus Initiative effectively.

The Exploratorium

San Francisco, California, USA

A well-structured team navigates complexity: Four parties managed the Exploratorium's capital project. Two were internal (the Board Building Committee and the Staff Building Committee) and two were external (a developer and a project manager/owner's representative). The capital project director—a crucial role—facilitated clear accountability and communication among all parties. This fixed-term position at the Exploratorium aggregated information from all parties and advocated for the Exploratorium's interests and vision. Having the necessary people on the project, both in terms of number and knowledge, allowed the Exploratorium to coordinate the many moving parts of the process, from fundraising to materials procurement to design, and to respond effectively to issues as they arose.

View these studies for more illustrations of the importance of this principle:

The California Academy of Sciences

San Francisco, California, USA

Viet Nam Health Care System

Central Region, Viet Nam



5. Connect with partners to scale outcomes.

Capital projects can reach new heights through effective collaboration. Joining efforts with government agencies, nonprofit or for-profit program providers, local businesses, and funders can multiply the outcomes and reach of a project. Partnership can provide a means to pilot, test, and scale a new idea, or to combine the strengths of multiple players and implement an effort that none could do alone. Working with the right partner, or partners, can expand the scale and enrich the results of a capital project.

The following case studies illustrate the importance of this principle:

**National Centre for Sensor Research,
Dublin City University**
Dublin, Republic of Ireland

**Presidio Trails, Bikeways, and
Overlooks Project**
San Francisco, California, USA

**The Summit Bechtel Reserve,
The Boy Scouts of America**
New River Gorge, West Virginia, USA

Viet Nam Health Care System
Central Region, Viet Nam

National Centre for Sensor Research, Dublin City University

Dublin, Republic of Ireland

Government investment enables large-scale impact: The Republic of Ireland initiated a modest program of public investment to improve the national research infrastructure through its universities, including Dublin City University. The Atlantic Philanthropies pushed for a more significant and timely commitment to the nation's knowledge economy, offering greater support if the government would match its funds. This partnership resulted in a dramatically expanded program that contributed to success at and well beyond Dublin City University—building the research infrastructure across all seven of the nation's universities helping to fuel growth that attracted new financial and human capital from outside the Republic of Ireland. The National Centre for Sensor Research was one of many successful projects that inspired the government to ultimately conduct five cycles of funding to grow university research capacity. This approach drew funders in addition to Atlantic; combined public and philanthropic sources invested a total of €1.22 billion in this effort, and significantly elevated the nation's research output.

Presidio Trails, Bikeways, and Overlooks Project

San Francisco, California, USA

Distinct strengths add up to greater opportunity: Developing a comprehensive network of improvements to enhance access to the Presidio required cooperation among three partners. Each contributed its own strengths to the effort: the National Park Service (NPS) as a public entity steeped in the care of US parks; the Presidio Trust (the Trust) as a distinctive federal agency chartered to generate income from building renovations and leases; and the Golden Gate National Parks Conservancy (the Conservancy) as an independent nonprofit instrumental to the workings of the region's national parks. Every partner took the lead as appropriate to advance the multiple phases of the master plan concurrently and efficiently. For example, the Trust was unable to apply its full resources to the project until it achieved financial self-sufficiency, so the NPS and the Conservancy led the development of public infrastructure in the meantime. Similarly, the Conservancy stepped in to raise funds for ongoing maintenance that the fixed NPS budget could not cover. By applying individual strengths within a unified effort, the partners were able to complete an important, challenging, and large-scale project—with their success attracting new funding for subsequent projects in the Presidio.

The Summit Bechtel Reserve, The Boy Scouts of America

New River Gorge, West Virginia, USA

Investment in local capacity benefits a community: The Boy Scouts of America (BSA) supported a number of area businesses through its decision-making in the design and construction phases of its capital project. The project team made critical choices in this regard, such as aligning the site's aesthetics with the area's architectural vernacular, selecting local materials, and sourcing labor from the area. All of these approaches had a positive economic impact in the region—and local contractors advanced their familiarity and experience with new sustainable technologies, materials, and processes. The project manager recalled a local mill operator who gained certification in order to meet the material specification of the Summit Bechtel Reserve and who, by project completion, was “an owner of a sustainable business [that had] a zero-waste operation.” The BSA's investments in local capacity will benefit the Mount Hope community for years to come.



Above. Capital improvements to key components of the Presidio's infrastructure welcome visitors and make it easy to view many of the region's iconic places, including the Golden Gate Bridge.

Viet Nam Health Care System

Central Region, Viet Nam

Large-scale change requires a systems lens: Working to improve Viet Nam's sprawling, underfunded health care system, The Atlantic Philanthropies observed that isolated investments in human resources, equipment, and facilities were not enough to move the needle. A complex system called for a more comprehensive strategy to elevate overall effectiveness and create more equitable access to public health care in the country—especially for low-income, rural, and minority populations. The initiative to build and renovate 940 commune health centers in eight provinces began with a modest-size pilot conducted in partnership with committed leaders from the Khanh Hoa Provincial Health Service. This approach generated models that gained broader government support and stimulated reform in the primary health care system—and that allowed new funders of all sizes to participate in their replication across Viet Nam. These models were accompanied by Atlantic's investments in human capital to improve health outcomes, including funding Australian higher education institutions to train Vietnamese physicians, other health care workers, and government officials.

Below. A view of the front of a commune health center in Khanh Hoa. Pilot facilities generated community pride, and citizens actively participated in the construction process.

View these studies for more illustrations of the importance of this principle:

Life Sciences Building, University of the Western Cape
Cape Town, South Africa

Mission Bay Campus, University of California, San Francisco
San Francisco, California, USA





6. Define donor support as more than construction funding.

Philanthropists often add value to capital projects that goes well beyond responding to a request for financial support. Many donors have experience and capacity to support organizations at multiple stages in the process. For example, they can underwrite needed research or visits to peer facilities early in planning, make introductions to other potential donors, offer access to experts who strengthen the project team, and provide needed credibility to government agencies, community groups, or others whose endorsement of the project is essential. Donors can also supply candid, useful feedback in project planning—serving as thought partners who help capital project leaders envision long-term possibilities as well as implications of their choices, and who encourage organizations to establish a project scope that fits both their future intent and practical realities. Productive relationships can benefit nonprofit organizations and the outcomes of their capital projects while also helping donors realize a greater return on their financial investment.

The following case studies illustrate the importance of this principle:

**Life Sciences Building,
University of the Western Cape**
Cape Town, South Africa

**Marymount University
Hospital and Hospice**
Cork, Republic of Ireland

Life Sciences Building, University of the Western Cape

Cape Town, South Africa

A bold investment creates confidence, attracts support: The Atlantic Philanthropies were the first and largest investor in a new Life Sciences Building at the University of the Western Cape (UWC), a historically disadvantaged university. The commitment of a significant funder to the mission and future of the organization was embraced as a sign that “someone believed in us,” and helped lift the University community with a renewed sense of its own potential. University leaders also used Atlantic’s investment to secure commitments from other funders—including the South Africa Ministry of Education, which ended a 15-year moratorium on university infrastructure in the country and renewed government support for all public universities. This support attracted other investors, including the Ford Foundation and the W.K. Kellogg Foundation, whose contributions were crucial to reaching the University’s fundraising goal.

Marymount University Hospital and Hospice

Cork, Republic of Ireland

Investment helps decision-makers raise their sights: When Marymount was planning for the potential renovation of a 140-year old care facility, The Atlantic Philanthropies encouraged its leaders to think beyond immediate needs and envision the future for their hospice. Atlantic recommended that the organization invest in a more ambitious project that would bring greater impact, increasing its capital investment by €2 million and supporting two studies. One study confirmed the funder’s initial hypothesis that the original site could not meet Marymount’s long-term needs; the second study assessed and confirmed the organization’s financial ability to pursue a greater project scope. This collaboration resulted in a larger-scale capital project featuring relocation of the hospital and hospice and construction of a new building. Atlantic also played an important role advocating on the organization’s behalf for increased investment from the national Ministry of Health. This case demonstrates a variety of roles that a funding partner could play and also highlights one that the funder did not play: staying involved after opening day to ensure that the risks of establishing a new level of operations and costs were appropriately managed.

View this study for another illustration of the importance of this principle:

National Centre for Sensor Research, Dublin City University
Dublin, Republic of Ireland



Top. Students attend class in the lecture hall at the Learning Centre of the Life Sciences Building.

Bottom. An exterior view of the Marymount University Hospital and Hospice; large windows provide light and views of the natural surroundings.



7. Invest in design excellence.

The design of a building can make a lasting statement about the work and values of its organization. Design decisions that are aligned with the project mission can improve organizational performance as well as convey important messages. A structure's aesthetics can boost visibility and help attract program participants, donors, and staff while enriching the character of a surrounding neighborhood. Investing in quality design, materials, and construction can express an organization's confidence in its future and commitment to its constituents. It can also reduce maintenance, operating, and replacement costs in the future.

The following case studies illustrate the importance of this principle:

Translational Research Institute
Brisbane, Queensland, Australia

**Northern Ireland Council for
Voluntary Action**
Belfast, Northern Ireland

Translational Research Institute

Brisbane, Queensland, Australia

Design communicates values: The Translational Research Institute (TRI) group in charge of guiding design and implementation for a leading-edge facility understood that this project would be critical to its vision of facilitating translational research and fostering collaboration among biomedical researchers. As a result, the group was willing to invest time and resources in developing a design brief and compensating architectural firms that participated in a subsequent design competition. This purposeful and thorough planning process led to a unique building design that responded to the vision and values identified for TRI. As the project progressed, the TRI team was able to invest in high-quality finishes and features, resulting in spaces and ambiances very different from those of typical laboratory facilities. The building's beauty and innovative atmosphere have played a role in attracting high-caliber researchers and partners, and changing the perception of biomedical research in Brisbane.

Northern Ireland Council for Voluntary Action

Belfast, Northern Ireland

Both one-time and life-cycle costs matter: While planning a new headquarters in a neighborhood once divided by sectarian violence, leaders at the Northern Ireland Council for Voluntary Action (NICVA) placed a high emphasis on quality design and building construction and invested in the extra upfront costs required. For example, at a time when most buildings in Belfast were heavily fortified with barred windows, their design featured large windows paired with discrete protective measures such as tempered glass and safety shutters that rolled down at night. The overall design quality made a powerful statement of NICVA's values and confidence in the neighborhood's renewal and reconciliation. These decisions have also paid off over time. The building is still in excellent condition after almost 15 years of operation. No major repairs or renovations had been required, with the exception of technology upgrades to maintain high-quality services such as video conferencing. Routine facility checkups and a preventative maintenance approach have helped keep the building in top condition.

View this study for another illustration of the importance of this principle:

Life Sciences Building, University of the Western Cape
Cape Town, South Africa



Above. The design of NICVA's new building brings transparent design to a neighborhood that had been fortified in response to violence.



8. Be ready for organizational change.

Every organization is a dynamic enterprise, and a capital project will affect its program delivery—as well as its operations and culture. Project teams must anticipate and prepare for inevitable change, including ensuring that facilities, systems, and users have a built-in ability to adapt. Organizationally, this includes using the capital project implementation period as a time to get ready for the new systems and processes that will accompany a move. With the right blend of design and change management, capital projects can elevate the performance and sustainability of the enterprises they serve. Conversely, some organizations struggle after they move because of misaligned expectations or missed opportunities to implement productive changes and prepare occupants for new practices before relocating.

The following case studies illustrate the importance of this principle:

The California Academy of Sciences
San Francisco, California, USA

**Mission Bay Campus,
University of California, San Francisco**
San Francisco, California, USA

Translational Research Institute
Brisbane, Queensland, Australia

The California Academy of Sciences

San Francisco, California, USA

Interim space is a place to prepare: When the Academy began the process of replacing its science center and educational museum, it had to move exhibits into a temporary off-site location to remain open to the public. Unlike many natural history museums, the Academy featured living marine exhibits, which made the move logistically complex. The Academy not only handled the transition smoothly, but also used the temporary facility as a learning space to test many ideas for its new aquarium. Staff members constructed mock-ups of the coral reef tank and tested sunlight levels and dive-show procedures, built scale models of penguin exhibits and touch tanks, and grew their collection in preparation for the new facility. The Academy also piloted NightLife, a program that continued following the move as a means to bring younger adults into the institution. In addition, Academy leaders used the move to temporary space, which required fewer staff to operate, as a time to rethink their operating structure. More collaborative, cross-disciplinary approaches to research, and to public programs, were introduced in the temporary space and carried over into the new Academy. This approach to the interim years allowed the Academy to open the new facility in ways that reflected its ambitions—and avoided many of the change-management issues that often accompany a move.



Above. Staff from partner institutions are separated by floors at the Translational Research Institute, hampering desired collaboration.

Mission Bay Campus, University of California, San Francisco

San Francisco, California, USA

An overarching mission guides steady adaptation: The University of California, San Francisco's efforts to create a new research and clinical campus at Mission Bay have evolved over several decades, and will likely continue to develop for many more. When embarking on the capital project in the 1990s, the University anticipated that its needs and its context would change over time, and displayed an ability to pursue its campus mission strategically while remaining flexible enough to take advantage of opportunities as they arose. While the master plan for the campus originally accounted only for basic sciences research buildings, the site eventually evolved to accommodate a state-of-the-art medical center and a robust translational research capacity. While moving from the original plan posed some challenges, being adaptable allowed the University to adjust and take advantage of unforeseen opportunities and support its mission to "advance health worldwide" via its Mission Bay campus.

Translational Research Institute

Brisbane, Queensland, Australia

Incomplete organizational planning limits results: The creation of the Translational Research Institute involved carrying out a major capital project while establishing a new institutional entity and model for research. Launching the Institute meant bringing together scientists from four institutions to turn leading-edge research into medical innovations that spur economic growth. This required bridging the needs and agendas of the partner organizations, each with unique offerings and perspectives. The four partners were unable to create a combined organizational structure in the timeframe needed to inform the building's design. As a result, the facility's location and design elements support productive research collaborations in many ways; however, it is challenging for occupants to achieve fully their desired work processes in the new space. In particular, staff from each partner organization are grouped together and separated from others by floors of the building, and this approach limits opportunities for informal encounters and interdisciplinary interaction.

View this study for another illustration of the importance of this principle:

The Exploratorium

San Francisco, California, USA



9. See financial realities beyond opening day.

The best planned and designed structures may encounter economic challenges following move in. Even organizations experienced with capital projects can be surprised by the actual cost of operating in a new space or providing ongoing maintenance. Plus, forecasting visitor levels and revenues can be inherently difficult, especially when expanding programs or changing locations. From the onset, leaders must be realistic about future expenses and careful about revenue expectations—including considering ways to adjust if income falls short. Funders should encourage and expect rigorous consideration of future economics. Project teams should test their assumptions regarding usage of the new space. All should make financial plans with an eye toward the lasting impact they seek to sustain after opening day.

The following case studies illustrate the importance of this principle:

The Exploratorium

San Francisco, California, USA

**West Campus Residential Initiative,
Cornell University**

Ithaca, New York, USA

**The Summit Bechtel Reserve,
The Boy Scouts of America**

New River Gorge, West Virginia, USA

The Exploratorium

San Francisco, California, USA

Income projections must align with expanded operations: The Exploratorium’s capital project was dramatic in scale, as well as effect. With the move from the Palace to its new home on Pier 15, the museum more than doubled its programmable square-footage, added about 140 staff members, and increased its total annual revenue significantly. The organization planned for additional staff, exhibits, programs, and attendance—and while its number of annual visitors nearly doubled following the move, the growth in attendance and ticket sale revenue fell short of an overly optimistic forecast. In tandem with other shifts in revenue sources, the Exploratorium experienced an income shortfall against increased operating and maintenance expenses in the new facility. Leaders took action to adapt to this situation, resulting in layoffs that were painful for all staff and generated negative media coverage. As of 2015, the museum continued to address growing pains related to its scale change. As one executive staff member said, “Most of all, if I had any advice for others . . . it’s that the world doesn’t end on your opening day; it just begins, and you’ve got to worry about Day Two.”



Above. The new buildings at Cornell emphasize communal spaces, such as dining halls, to create a sense of community on campus.

West Campus Residential Initiative, Cornell University

Ithaca, New York, USA

Missed cost projections have consequences: When designing residential houses aimed at extending learning beyond the classroom and fostering community among students and with faculty, the project team for Cornell University’s West Campus Initiative felt strongly that in-house dining was vital to the project mission. Shortly after opening, it became clear that individual dining halls in each facility were too expensive to operate at full capacity, and the University was forced to scale back, retaining dinner service in all houses, but providing hot breakfast in only two. Although the project team knew from the outset that individual dining halls would be more costly than a centralized cafeteria model, they opted for this design because it was important to achievement of their mission to support community building; underestimating the costs of this decision resulted in hard choices after the project was completed.

The Summit Bechtel Reserve, The Boy Scouts of America

New River Gorge, West Virginia, USA

Everyday usage is vital to ongoing success: Project leaders had a strong commitment to complete construction of a high-adventure base in West Virginia in time for the 2013 Jamboree—the Boy Scouts of America’s signature national gathering that occurs once every four years—but did not thoroughly plan for uses of the site beyond the initial event. With attendance of 3,821 in 2014—its first full year of operation—the Summit Bechtel Reserve was underutilized and operated at an economic loss. While numbers grew in subsequent years, attendance did not approach the financial break-even level of 22,000 annual users. Fortunately, the organization was positioned to absorb the financial shortfall, and began developing new programming, facilities, and marketing approaches to increase usage of the facility.

View these studies for more illustrations of the importance of this principle:

Constitution Hill Precinct

Johannesburg, South Africa

The Simpson Center for Girls, Girls Inc. of Alameda County

Oakland, California, USA



10. Identify the correct metrics for success.

Buildings are typically evaluated against a few key metrics that often center on early usage. However, buildings are living systems, and the impact of a capital project cannot be determined in the first day, month, or even year following its completion. The measure of any capital project should consider a multiplicity of stakeholders and an ever-changing context. It is essential to measure the right criteria: Rather than settling for the easiest-to-track metrics, assessments should consider if and how the project has achieved its mission. A holistic review of both outcomes and design is necessary to form a complete picture of positive and negative consequences on operations, users, and organizational dynamics related to a new facility. This assessment can in turn surface needed actions and improvements as well as capture important lessons for the future.

The following case studies illustrate the importance of this principle:

Constitution Hill Precinct
Johannesburg, South Africa

Viet Nam Health Care System
Central Region, Viet Nam

Constitution Hill Precinct

Johannesburg, South Africa

Ultimate impact takes sustained commitment: The Constitution Hill precinct opened in 2004 and the museum outperformed the expected number of attendees in its first two years. Since that time, a number of issues—legal, organizational, and financial, some foreseeable and others unforeseeable—have prevented the site from becoming a major destination and educational resource for national and international visitors. For example, the original museum curators intended for the temporary collection of exhibitions on the site to be reevaluated every five years and recreated in response to current conditions; that approach had not been implemented at the time of this study. Factors including the passing of Nelson Mandela in 2013, and lessened international interest in South Africa’s post-apartheid experience, likely contribute to continued challenges with attracting funders and visitors. While the work of partners and funders successfully preserved this important heritage site and secured its historic buildings for the future, the question of ultimate impact from this project remains open.



Above. A group of students attending an outreach program at Constitution Hill tour the ramparts of the Old Fort.



Above. Patients wait for treatment at a commune health center in Viet Nam.

Viet Nam Health Care System

Central Region, Viet Nam

Designs should be tested and improved: The Atlantic Philanthropies and Provincial Health Service originally partnered to design, build, and operate seven commune health centers (CHCs) in the Khanh Hoa province. These pilot facilities were well regarded

by both community members and local health professionals, and an early assessment indicated that the approach was generating needed trust and attracting a greater number of patients. With Atlantic providing funding and others committing land, labor, and staffing, the partners proceeded to invest in a full implementation of 139 CHCs in the Khanh Hoa province. The assessment of the pilot accurately indicated that the CHC built environment was improved, but did not go deeper with a detailed design analysis. The design implemented across the province therefore retained some ineffective elements included in the pilot—for example, air flow, circulation, and storage requirements could have been enhanced through more thorough evaluation. Adding to these missed opportunities, local project designers were encouraged to improve and adapt the design but often lacked the skills to do so in a way that would be appropriate to each CHC’s geographic and community context—also pointing to the importance of investing in human capital to support the success of capital projects.

View this study for another illustration of the importance of this principle:

**Science and Engineering Centre,
Queensland University of Technology
Brisbane, Queensland, Australia**

Purpose Built Case Studies

The California Academy of Sciences

San Francisco, California, USA

This science museum designed an iconic, sustainable building to attract visitors and deepen their connection with the natural world.

Constitution Hill Precinct

Johannesburg, South Africa

This infamous site of persecution was redeveloped to preserve history, house the new Constitutional Court, and spur urban regeneration.

The Exploratorium

San Francisco, California, USA

This experiential museum relocated to grow its audience, expand its exhibit space, and create a stronger internal organization.

Life Sciences Building, University of the Western Cape

Cape Town, South Africa

This historically disadvantaged university designed a new facility to improve its scientific research—and create a physical landmark suitable for a world-class institution.

Marymount University Hospital and Hospice

Cork, Republic of Ireland

This center applied patient-centric design and created a welcoming environment to offer high-quality and dignified care, demonstrating a model for future hospices.

Mission Bay Campus, University of California, San Francisco

San Francisco, California, USA

This growing institution created new research and clinical facilities to relieve crowding, expand program space, and encourage cross-disciplinary collaboration.

National Centre for Sensor Research, Dublin City University

Dublin, Republic of Ireland

This relatively young university co-located multiple disciplines to advance scientific discovery, elevate its profile as a research institution, and grow the nation's knowledge economy.

Northern Ireland Council for Voluntary Action

Belfast, Northern Ireland

This membership body created a headquarters to strengthen the work and profile of voluntary organizations and contribute to the transformation of a neighborhood once divided by sectarian conflict.

Presidio Trails, Bikeways, and Overlooks Project

San Francisco, California, USA

This urban national park developed a comprehensive network of improvements to enhance access to natural, cultural, scenic, and recreational resources and engage visitors in memorable experiences.

Science and Engineering Centre, Queensland University of Technology

Brisbane, Queensland, Australia

This national research institution created a place for staff, students, and the wider community to connect, learn, and grow interest in STEAM education and research.

The Simpson Center for Girls, Girls Inc. of Alameda County

Oakland, California, USA

This local affiliate of a national nonprofit relocated its program center, renovating a historic space to reach and empower more underserved girls.

The Summit Bechtel Reserve, The Boy Scouts of America

New River Gorge, West Virginia, USA

This national youth organization developed a high-adventure base to host its signature event and demonstrate its relevance in the 21st century.

Translational Research Institute

Brisbane, Queensland, Australia

This collaboration among four institutions brought scientists together to turn leading-edge research into medical innovations and spur economic growth.

Viet Nam Health Care System

Central Region, Viet Nam

Philanthropy joined with government and created facilities to expand access to quality services and demonstrate models that would strengthen the nation's continuum of care and prevention.

West Campus Residential Initiative, Cornell University

Ithaca, New York, USA

This long-established university designed new housing for students to provide living-learning environments, supporting on-site programs and ongoing interaction with faculty.

View these case studies and the complete *Purpose Built* series at www.massdesigngroup.org/purposebuilt.

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