

Big Box Operations: Managing Waste and Change in Walmart Superstores

NOT ANOTHER BIG BOX PROJECT

In the last forty years architects in the United States have continually cast their eyes on the big box, unable to avert their gaze from this massive, unadorned structure. That the big box has emerged as the most alluring urban riddle in the enigmatic North American landscape is not surprising: the answer lies in the numbers.

The sheer size of the big box makes it impossible to ignore: the footprint of retail outlets can exceed 200,000 square feet. These oversize buildings maximize floor area and site impact while minimizing construction detail and cost. This pro forma so far has yielded a windfall for consumers and developers but proven far less generous to the urban landscape.

The ubiquity of the big box also means that it is difficult to overlook: Walmart Inc., the largest retailer in the world, alone operates over 3,000 big box Supercenters in the U.S.¹ A list of the ten largest retailers in the U.S., in fact, reveals that every single one of them is a big box developer.² These numbers suggest that today the big box may be the most important public building type in North America.

Such trends may have been what motivated SITE to begin pioneering a progressive approach to big box design in 1970. Teaming up with BEST Products, the firm sought to unlock the latent potential of an otherwise banal type by re-conceiving the enormous building envelope as a piece of art. SITE completed nine projects over fourteen years, yet never penetrated the big box envelope—literally or conceptually. As a result, they were unable to challenge the fundamental organization of the typology.

In the last several years designers including Lewis Tsurumaki Lewis and Keller Easterling have extended SITE's work by expanding the big box program and radicalizing its form. This body of work has produced highly compelling visions of big box architecture. To date, none of these projects have been realized.

This paper contends that the historical inability of architectural discourse to fundamentally alter big box design results from a misalignment between the

Ian Caine

University of Texas at San Antonio



01

design visions of architects and the economic mandates of big box development. While architects have repeatedly tried to design a better big box, the most essential components in big box developments are not, in fact, buildings. Rather, the most critical elements reside beyond the visible realm, inhabiting the space of the financial and political systems that engulf the big boxes.

This paper, therefore, does not aspire to design a better big box. Instead, it seeks to critically engage the invisible systems of urbanism. In this scenario TIF Districts, tax breaks, property rights, land sales and parking requirements emerge as the unseen currency of urban design—the invisible operations that drive the production of urban space. These systems provide the structural logic within which investors conceive of and produce retail big boxes. As such, they are properly within the design domain of architects and planners.

BIG BOX DESIGN = SYSTEMS DESIGN

Architects display an unfortunate tendency to formalize issues that are essentially systemic in nature. In a speculative, capital-driven environment like the North American suburbs, architectural proposals are only relevant to the extent that they address larger economic imperatives.

This claim is not meant to suggest that our built environment ought to be beholden to the whims of capital investment, or even that it must continue to absorb the negative externalities associated with big box development. Rather, it suggests that in order for future design proposals to gain traction, they must begin to critically address the financial and material systems within which big box developments operate.

The conceptual framework outlined by Alan Berger in *Drosscape: Wasting Land in Urban America* is instructive in this regard because it draws powerful connections between material waste and larger capital flows in the city. Berger argues that such waste is a natural byproduct of urban systems and that it is unreasonable to expect urbanization to occur without it.³

Figure 1: Walmart Home Office and Superstore in Bentonville, Arkansas

The Big Operations utilize the Drosscape framework to shift the design dialogue surrounding big boxes away from building design and towards the management of material waste associated with big box developments.

The material surplus associated with big box developments manifests in numerous forms: abandoned buildings, underutilized sites, redundant water and parking infrastructures. The Big Box Operations rest on three assertions: first, that much of the excess associated with large-scale retail developments results from the difference between the material life-cycle of the built landscape and the financial life-cycle of the big box structure; second, that in order to align these time frames, developers and municipalities must re-conceptualize building systems as dynamic processes that are transitional, not permanent, in nature; and third, that to achieve this shift, these two critical actors must fundamentally reinvent their economic and political relationship.

WAL-MART IS HUGE

The site for this proposal is the Walmart Home Office and Superstore in Bentonville, Arkansas, international headquarters of Wal-mart Inc.

On May 9, 1950, a fledgling businessman named Sam Walton bought a main street storefront in Bentonville, Arkansas and opened a discount variety store called Walton's 5 - 10. He sold whirly pops, wax lips and Ol' Roy coloring books.⁴ Business was good.

By 2011, Walton's 5 - 10 had spawned 10,130 additional locations in 27 countries and converted a sleepy Ozark mountain town into home of the world's largest retailer: Wal-Mart Stores, Inc.⁵ Today, Walmart reports annual revenues of 444 billion dollars.⁶

Walmart's unprecedented economic expansion prompted unparalleled territorial expansion, radically transforming the physical scale and character of urban fabric in the United States. In 2008, the total floor area of Walmart retail locations in the U.S. was larger than the footprint of Manhattan.⁷ If Walmart were a country, it would have the world's 26th largest economy, right behind Austria.⁸


This project focuses on Wal-mart Inc. because with 4,468 domestic stores and counting, the retailer has likely emerged as the most prolific generator of urban form in the U.S.

Imagining a Secondary Transformation

This project recommends that the best response to Walmart urbanism and the accompanying cycle of waste is a secondary transformation, one with equally radical implications.

This proposal seeks to bring the civil infrastructure of suburbia into line with the logic of Walmart urbanism. It re-imagines the space surrounding Walmart big boxes as a legally public landscape; one that introduces an expanded right-of-way in an attempt to strike a more productive balance between development and infrastructure, between commerce and government.





The goal is not to condemn or censure the retail giant, but rather to leverage its enormous growth potential for public gain; protecting the City of Bentonville and places like it from the negative externalities associated with retail development while further liberating Walmart to do what it does best: make money.

The Public Financing of Wal-mart Inc.

The massive tax subsidies provided to Wal-mart Inc. by local municipalities—subsidies intended to cover site infrastructure costs—constitute the license for a contemporary public works project.

Consider the following:

- 92% (84 of 91) of Distribution Centers receive subsidies⁹
- one-third of all retail locations receive subsidies¹⁰
- over 1000 stores have received subsidies¹¹
- total subsidies exceeds \$1 Billion¹²

These subsidies come in all shapes and sizes and are dispersed throughout the United States. The most common include:¹³

- free or reduced price land
- infrastructure assistance
- tax increment financing
- property tax breaks
- state corporate income tax credits
- sales tax rebates
- enterprise zone status
- job training and worker recruitment funds
- tax exempt bond financing
- general grants

THE WASTE PARADOX

Waste = Success

The multiplication of material waste that typically accompanies the ascent of big box retail has had a profoundly negative impact on the physical fabric of suburban communities in the United States. The proliferation of empty big boxes, underutilized and abandoned retail development sites and redundant water and parking infrastructure has exacerbated the physical deterioration that plagues many suburban communities. Walmart Realty, for example, currently lists 880 buildings and lots for sale or lease in North America.¹⁴

Big box critics correctly cite high vacancy rates as one of the most damaging externalities associated with this type of development. These critics

might consider the possibility, however, that the vacancy and redundancy associated with underutilized development results not from the failure of the big box model, but rather from the inability of physical infrastructure to accommodate the economic volatility of contemporary retail.

One of the great ironies of the empty big box is that the departure typically results from financial success—not failure. In fact, big box buildings are most often vacated because the retailer experienced a financial wind-fall and decided to move to a larger structure—not because they went out of business.¹⁵

This suggests that a fundamental misalignment may exist between the financial logic of big box developments and the physical infrastructure that serves them. The infrastructure is designed to provide for long-term tenants while the market logic of big box developments is typically short-term in nature. The disparity between these two time frames generates much of the waste associated with big box environments.

Redundancy = Opportunity

Another source of waste is the enormous amount of redundant parking provided by private developers.

At the Walmart Home Office, parking lots devour 1,124,283 square feet of the site, providing 3,720 spaces for workers and customers of Walmart. Yet, just 2,789 parking spaces are required to satisfy the local code requirements. This 25% surplus could be further reduced with the introduction of a shared parking arrangement to take advantage of the differential peak load requirements among tenants.

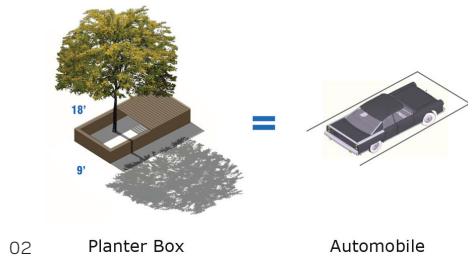
A similar situation exists in the area of storm water management, where a lack of coordination by developers leads to the construction and management of redundant infrastructure.

The justification for establishing a publicly financed infrastructural landscape begins with the assertion that the capitalist logic of big boxes generates certain efficiencies—lowering consumer prices, for example—while destroying others. The provision of parking and storm water infrastructure clearly falls within the latter category.

EXPANDING THE LEGAL RIGHT-OF-WAY

Another cause of the redundancy associated with big box developments involves the historical transfer of design responsibility from the public to the private sector during the last one hundred years.

The structure of the nineteenth century North American city rested on the provision of a clearly defined legal-right-of-way. This zone was paid for by the municipality and delivered the basic infrastructure required for urbanism. Until approximately 1920 this included a street, sewer, essential utilities and perhaps a sidewalk. This equation, of course, shifted dramatically as the scale of infrastructure required by automobiles began to exponentially increase.



In 2012 the distribution of responsibilities for civil infrastructure has shifted dramatically. Today big box developers design, build and maintain the massive infrastructures associated with parking and storm water management. Unfortunately, developers are not well-equipped to deal with the long-range planning, financing and management of these systems. As a result, they have every incentive to externalize the costs associated with the systems—leaving municipalities and ultimately citizens to deal with the results. These externalities manifest in numerous ways: downstream flooding resulting from overloaded storm sewers, massive unused parking lots due to uncoordinated transportation infrastructure, lack of safe walkways for pedestrians and increased heat island effect due to inadequate planting and consideration of parking surfaces.

So what can be done to address this situation? The level of cooperation that would be required between private developers to execute this work efficiently is virtually impossible given the financial pressures that the competitors face. As a remedy, Big Box Operations propose an eight-part strategy to rebalance prevailing ecologies while internalizing the costs associated with parking and storm water infrastructure.

BIG BOX OPERATIONS

The following big box operations are proposed as a method to manage waste and change in Walmart Superstores:

Operation 1: Implement a Grid

The dimensional logic of the proposal is built on the logic of an infrastructural grid. The grid provides a systemic framework within which to manage primary site ecologies. These ecologies include storm water, parking, circulation and buildings. The selected module is 9' x 18', the dimension of a single parking space.

Given the project's commitment to change, the 162 square foot parking space is reinterpreted as a unit of exchange to accommodate the shifting demands of the site.

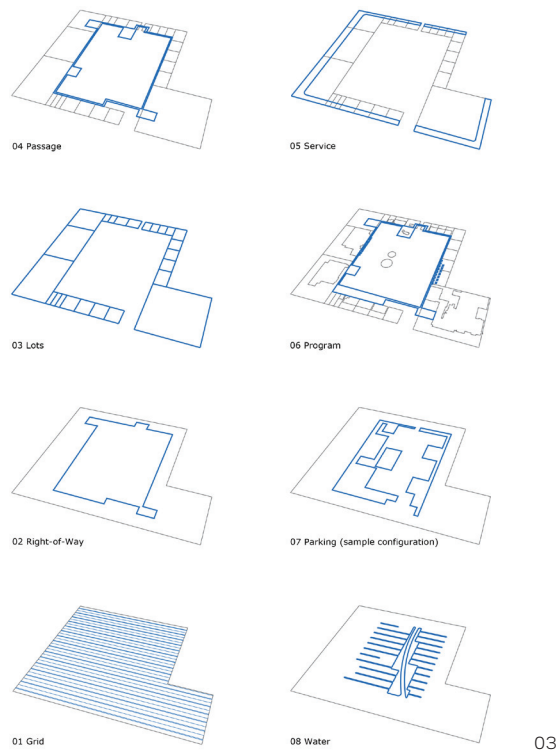
The infrastructural grid allows designers to re-imagine the physical components of development as interchangeable parts. In this scenario trees, planter boxes, automobiles and parking spaces can be swapped out to accommodate economic growth and decline.

The tradition of town planning in the United States provides important historical precedents that illuminate the potentially powerful relationship between geometry and real estate. Two instructive models include The Rectangular Survey of 1785 and The Commissioner's Plan of 1811, both of which utilize descriptive geometry to tame the excesses of unfettered real estate speculation.

Operation 2: Expand the Legal Right-of-Way

Historically, the right-of-way represented the commercial and civic spine of the city; the counterpoint to private interests and the venue for public culture. The contemporary right-of-way, now re-configured as an automotive

Figure 2: Units of Exchange



boulevard, is no match for the private, corporate development of Wal-Mart, Inc. This proposal argues that a re-designed Walton Boulevard leverages contemporary growth patterns, streamlining the redundant infrastructure that results from uncoordinated private development.

The second half of the twentieth century saw a massive increase in the size and arrangement of private retail lots: the original Walmart 5 - 10 occupied a 3,500 square foot storefront on a one-acre lot abutting South Main Street; the contemporary Walmart Superstore occupies a 200,000 square foot footprint on a lot of over one hundred acres set back 800 feet from Sam Walton Boulevard. Amazingly, this transformation saw the size of the public right-of-way remain virtually unchanged—adding just two lanes of traffic.

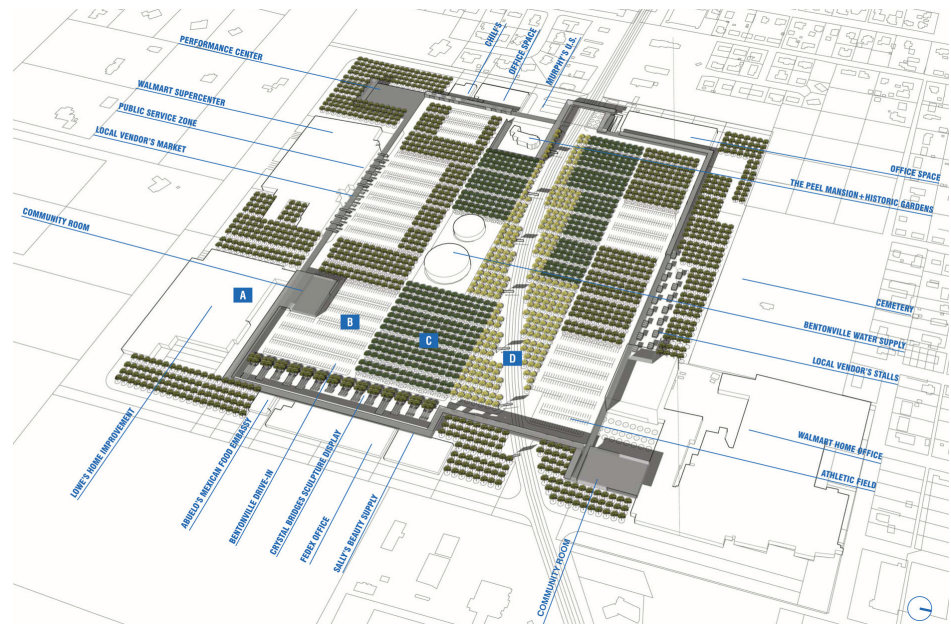
Expanding the size and scope of the legal right-of-way will create a new public landscape capable of managing waste and reducing redundancy in these privatized retail landscapes. It will bring the infrastructure of suburbia into line with the logic of Walmart urbanism.

Operation 3: Rationalize the Lots

Four building types appear consistently in big box developments—each closely associated with a particular lot size, building size and program. They include the big box, office, drive-thru and institution.

Despite the consistency and predictability of these types, lots in the Home Office development range in size between .11 acres and 32 acres while the shapes vary tremendously. The idiosyncratic size and proportion of lots means that many cannot take development unless they are combined with other lots.

Figure 3: Summary of the Big Box Operations



04

This proposal re-sizes and re-organizes the nineteen existing lots around collective parking infrastructure while providing for typical building types and sizes. The proposal includes two lot sizes: large and small. The large lots provide 10 acres of land for big boxes. This lot is smaller than the typical 20-acre big box lot but does not accommodate parking, which is now conceived of as collective infrastructure. The small lots provide a single acre of land in support of supplemental building types like drive-thru restaurants and offices.

Operation 4: Coordinate Services

The accumulation of individual decisions made by private developers over the years typically leads to the emergence of a fragmented and inefficient service zone. Operation 4 provides for a shared service zone at the exterior of the development. This strategy creates multiple efficiencies by eliminating overlap between automobile and truck traffic, reducing redundant drives and providing a visual screen between the space of retail and service.

Operation 5: Guarantee Passage

Existing infrastructure for pedestrians is fragmented and discontinuous—the result of multiple individual decisions made without regard for a larger circulation strategy. Operation 5 provides for a continuous pedestrian circulation system at the development perimeter and between intermittent parking aisles.

Operation 6: Insert program

The typical Supercenter floor plan focuses inward and does not provide space for local vendors. The proposed program adds space for small businesses and community groups, increasing the mixed-use capacity while decreasing the programmatic grain of the site.

Figure 4: Re-proposed Walmart Home Office and Superstore in Bentonville, Arkansas

Operation 7: Consolidate Parking

Currently, drivers utilize a small percentage of the available parking infrastructure at any one time. The Home Office development currently exceeds Bentonville zoning requirements by 25%. The introduction of shared parking strategies can further reduce this obligation by 20%.

The most valuable and frequently used spaces reside close to the big box entrances; the less valuable and infrequently used spaces sit far from the big box entrances and close to Sam Walton Boulevard.

The proposed parking distribution maximizes parking spaces closest to the big box entrance. One-third of the least desirable spaces are planted with trees to increase water infiltration and reduce the heat island effect.

Operation 7 achieves efficiencies through the use of a shared parking strategy which clusters development to take advantage of the differential parking requirements associated with various programs, times of day and seasons.

Operation 8: Slow the Water

Current water management strategies rely on engineering solutions to hold the water on site for a prescribed period of time before releasing it into the storm sewer. This scenario externalizes the problem of flooding and pollution to downstream communities.

Operation 8 inserts an infiltration zone into the less desirable portion of the parking lot. The infiltration zone features a permeable surface to absorb water and a bio-swale to filter water. This zone both absorbs and filters storm run-off from paved surfaces before depositing the water in the retention zone adjacent to Sam Walton Boulevard.

MANAGEMENT ZONES

With the installation of eight Big Box Operations, four unique management zones emerge.

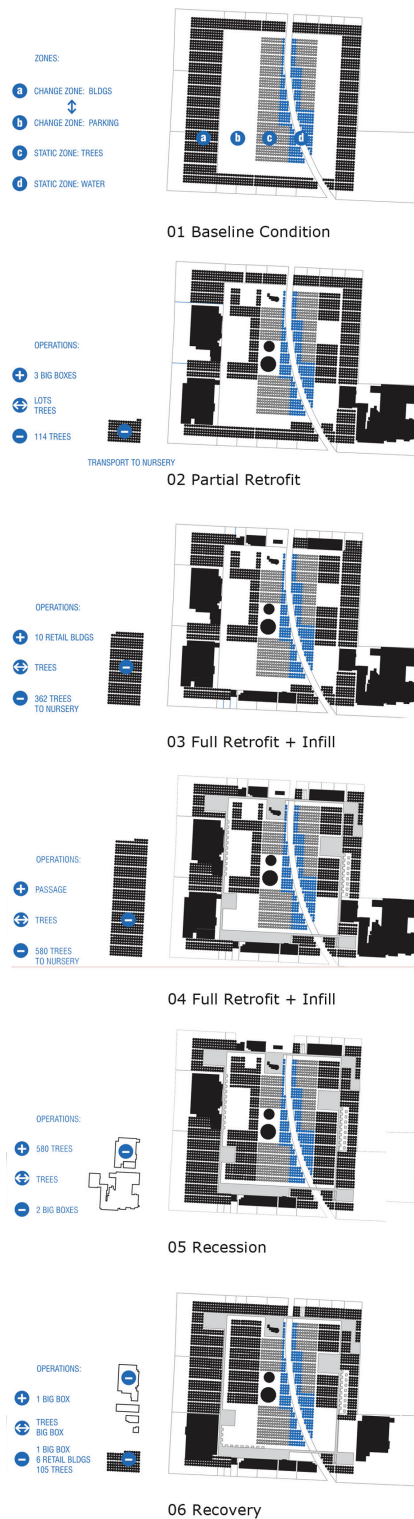
Zone A: Building

Big boxes maintain their position at the perimeter of the site. This zone generates the financial profit and is most vulnerable to marketplace pressures. It is therefore managed by the private developer. Developers—now freed from the obligation to provide site infrastructure—are able to renovate, raze, relocate or rebuild big boxes in response to shifting economic conditions.

A dedicated zone for pedestrians is maintained at the perimeter of the lot. This continuous linear space provides safe passage while accommodating the insertion of additional civic program and small-scale, local retail outlets.

Zone B: Parking

Zone B occupies the perimeter of the lot closest to retail activity and therefore provides the most desirable parking spaces in the development. Zone B features no planted trees and an impermeable surface to maximize parking capacity. Zone B is the most adaptable area in the development as planter



05

Figure 5: Managing Waste and Change in Walmart Superstores

boxes are transferred to and from a local nursery in response to the variable parking loads associated with shifting economic conditions.

Zone C: Water Filtration and Parking

This zone occupies the middle portion of the lot but unlike Zone C, it doesn't retain water. Instead, Zone C features planted trees and bio-swales to clean run-off water before it reaches the retention zone.

Zone D: Water Retention and Parking

This zone resides adjacent to Sam Walton Boulevard and provides the least desirable parking spaces within the development. The area therefore features maximum permeability, shade and water retention. As water levels recede and retail activity spikes, Zone D can also provide overflow parking capacity to support peak shopping periods.

CHANGE ZONES AND STATIC ZONES

The economic life of a big box development is relatively short—typically 5-7 years in its first incarnation.¹⁶ As a result, one of the primary goals of the Big Box Operations is to identify which physical elements are most amenable to change. This project proposes that variable elements should be deemed short-term commodities and left within the domain of the marketplace.

Short Term Elements = Change Elements

Change elements include buildings and shade trees, a portion of which are housed in planting boxes to increase mobility.

Surprisingly, buildings are among the most malleable elements on the site. The flexibility of big box structures emerges from a variety of physical and economic factors: relatively fast construction schedules, inexpensive construction costs, ease of renovation and vulnerability to the demands of free-market capitalism. Given these characteristics, it is not surprising that big box structures are often the first elements in developments to turn over or be torn down.

Long Term Elements = Static Elements

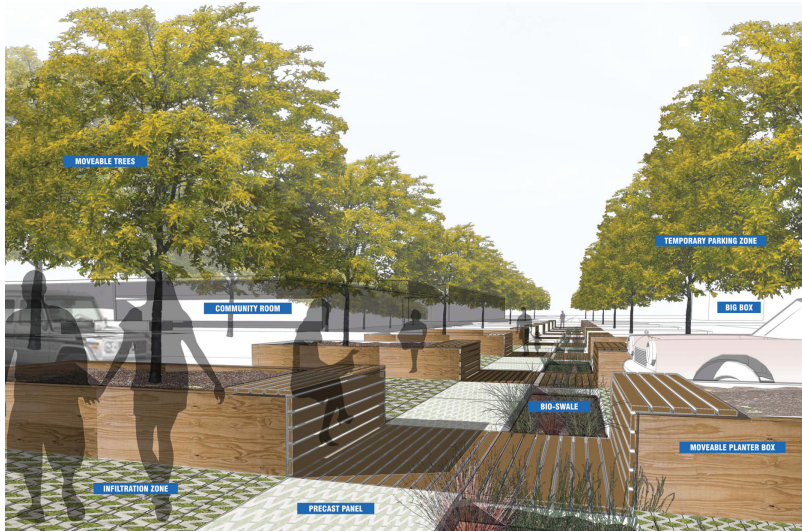
Static elements include a significant portion of the parking infrastructure, the pedestrian passages and the entire storm water management system.

Not surprisingly, infrastructural elements such as parking lots and storm sewers are among the most difficult elements to change. Their size and legal structure makes them resistant to relocation, modification and reduction. They last a long time and require relatively little maintenance.

Figure 5 describes a scenario in which long-term elements remain in place while short-term elements move in space to accommodate shifting market conditions.

Baseline Condition (1)

This represents an original description of the site elements and their relative position within an emerging, time-sensitive site logic. The proposal identifies four zones: two that are changeable, two that are static.



06

The Change zones (A,B) remain in play as the ratio of trees and parking spaces shifts to accommodate variations in programmatic requirements and economic conditions. These zones are where the buildings and the most desirable parking spaces go.

The Static zones (C,D) are planted with trees year round and do not change. This is where the storm water is retained and the least desirable parking spaces reside.

Partial Retrofit (2)

Three big boxes are added to the mix. These insertions resemble the actual commercial mix on the site today, with one big box added. This scenario is intended to build the logic for a retrofit of the site. In this scenario we see a resulting shift of trees both on the site and in a nearby tree nursery.

These trees can be made available to other commercial sites or re-purposed for additional uses. The goal is to provide as many trees as possible while still accommodating parking requirements for the retail program.

Full Retrofit and Infill (3)

In this condition ten retail and office buildings are added to the mix. This increases the square footage and profitability of the site. Again, temporary trees are re-arranged to maximize parking for the new occupants while 362 trees are sent to the nursery.

Full Retrofit and Infill (4)

This condition describes the insertion of a pedestrian passageway to guarantee access across the development. This addition again requires that trees in the temporary zone relocate to fulfill the evolving spatial logic of the development. Additionally, 580 trees relocate to the nursery.

Recession (5)

In this scenario a downturn in the economy causes one of the big boxes to

Figure 6: Water filtration, passage, and parking in a re-proposed Walmart Home Office and Superstore

FIGURES

- 1 Aerial photo by Brad Higbee
- 2 Drawing by author
- 3 Drawing by author
- 4 Drawing by author
- 5 Drawing by author
- 6 Drawing by author

ENDNOTES

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close. Additionally, the Wal-mart Home Office relocates to another site. Both structures are razed. As a result of this economic downturn, 580 trees are imported from the nursery to cover the land vacated by the big boxes.

Recovery (6)

At this point a new big box emerges on the site formerly held by the Wal-mart Home Office. Several of the smaller retail outlets and offices on the northern portion of the site go out of business but a new retail outlet opens on the southern portion of the site. A critical mass of program and capital investment begins to accumulate in this area. A portion of the temporary trees relocate to accommodate this shift while 105 trees are moved off-site to the nursery.

CONCLUSION

The Big Box Operations strive to uncover and leverage the unseen mechanisms that lead to the production of urban space in big box developments. The financing and organization of public infrastructure, particularly systems involving parking and water, plays a critical role in the formation of these environments. This is particularly true in locations where market forces have overrun weak and fragmented government control structures.

The project asserts the importance of balancing the obligations of developers and municipalities. A close examination of the dynamic between these two critical actors reveals a compelling paradox: while much of the new infrastructure associated with big boxes is planned, programmed and built by developers—much of it is paid for by the government with public dollars. Ironically, the laissez-faire landscape of Walmart capital and consumption appears to be more John Maynard Keynes than Adam Smith.

This proposal resists the temptation to burden developers with additional responsibilities such as adding program or attending to environmental matters. Given the short economic lifespan of big boxes, developers are not well positioned to deal with infrastructural issues in a proactive or long-term manner. Instead, the project seeks to reduce the financial and managerial burden on big box developers by re-assigning the responsibility for infrastructure systems where it belongs—to local municipalities. This type of public-private arrangement more closely resembles the historical balance of power in U.S. cities.

As architects today we are struggling to maintain relevance at the urban scale. We find ourselves discredited by the monumental miscalculations of urban renewal, surpassed by the ascent of the landscape discourse, weakened by the lingering impact of a severe recession. This project contends that one way for architects to re-engage the urban environment is by leveraging the mechanisms of regulation and production as platforms for strategic intervention. Such an approach will require architects to transcend typical form-based inquiries, thereby moving beyond the traditional boundaries of our profession. These transgressions, while challenging, are nonetheless necessary as we seek to rejoin the discourse on the North American city—a conversation that continues in our absence, yet desperately needs our attention. ♦