TERRA FLUXUS: URBAN DESIGN IN THE WAKE OF DEINDUSTRIALIZATION

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TERRA FLUXUS: URBAN DESIGN IN THE WAKE OF DEINDUSTRIALIZATION

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This work must necessarily view the entire metropolis as a living arena of processes and exchanges over time, allowing new forces and relationships to prepare the ground for new activities and patterns of occupancy. The designation *terra firma* (firm, not changing; fixed and definite) gives way in favor of the shifting processes coursing through and across the urban field: *terra fluxus*.

James Corner, Terra Fluxus

ACKNOWLEDGEMENTS

First, I wish to thank my family and friends for their unwavering support as I completely immersed myself in the research process particularly in the final months leading to publication. The endless encouragement you have provided throughout my entire education has been an utmost source of strength.

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SUMMARY

Emerging trends in the re-inhabitation of central cities and government funding of numerous financial incentives have succeeded in making brownfield redevelopment a far more lucrative opportunity for developers over the past decade. However, the redevelopment process itself remains virtually unchanged, maintaining a narrow focus on environmental remediation, site engineering, and short-term market demand. Land use, instead of design, drives the entire process. This approach fails to sustain development and recognize larger redevelopment opportunities based on local and regional context. Despite an increasing amount of public money used to fund incentives, development continues to overlook potential positive externalities presumably to avert risk and increase feasibility. The purpose of this thesis is to re-examine brownfield redevelopment from the perspective of urban design in order to define ways in which design might offer solutions to these shortcomings and play a more critical role in future redevelopments.

Using case studies of past redevelopments of former auto plant sites, Landscape Urbanism in brownfield redevelopment, and design proposals for auto plant sites from the GM and Ford closings of 2005-2006, the thesis investigates three primary questions. First, what is the conventional brownfield redevelopment process, to what extent has urban design been involved, and what are the major issues and lessons that can be learned? Secondly, what examples of brownfield redevelopment have integrated urban design to addresses these issues and what are the specific principles that inform design? Finally, how can urban design strategies, based on principles of Landscape Urbanism, lead the redevelopment of brownfield sites?

CHAPTER 1

INTRODUCTION

Following a wave of deindustrialization over the past several decades, 450,000 former industrial sites currently lie abandoned and decaying across the country (EPA, 2007). These “brownfield” sites manifest themselves in a wide range of sizes, locations, contexts, and environmental states and await creative strategies that transform them from isolated liabilities into integrated, productive places for the cities they inhabit. Until recently, uncertainty surrounding the extent of a particular site’s environmental contamination and questions regarding long-term liability caused developers to avoid the extreme risk they associated with these projects. The few who chose to accept the risk focused the majority of their resources and energy into effectively determining and rehabilitating the environmental conditions of a given site. New development began only after the extensive cleanup process was complete. From start to finish, redevelopment was a complex, timely process that involved numerous stakeholders and tremendous capital investment from a variety of sources which constrained redevelopment solutions to principles of site engineering in response to market demand. Brownfield redevelopment cemented itself as a real estate concept.

Cities occupied by these brownfield sites emphasized the importance of redevelopment to determine new, productive uses for a given site as quickly as possible. Suffering the economic fallout associated with the withdrawal of a major manufacturer or other industrial presence, these cities were anxious to restore a declining industrial base or transform that base altogether in an effort to regain lost employment opportunities and tax revenues. Brownfield redevelopment became synonymous with economic development. This was particularly true in the case of smaller cities or municipalities that

Figure 1.1: Aerial Image of Abandoned GM Site in Sleepy Hollow, NY

depended on a single major manufacturer for sustenance of the local economy and whose identities were defined by its presence. In these instances, the wounds created by deindustrialization ran particularly deep and many remain open to this day. Large opportunities existed for these sites to be reintegrated with their cities and play a permanent role in re-staking that identity. However, economic use prevailed in leading the redevelopment process. Little attention, if any, was given to the physical design and reintegration of these sites.

The past decade has witnessed a shift in developer attitudes toward brownfield redevelopment. An emerging trend in the re-inhabitation of central cities and increasing availability of financial incentives from various government agencies has made brownfield redevelopment a far more tempting opportunity. In some cases these financial incentives have succeeded in making redevelopment of urban brownfield sites more lucrative than pursuing new development on suburban, greenfield land. For

Figure 1.2: Brownfield Redevelopment of Atlantic Steel Site in Midtown Atlanta

example, the recently opened and widely popular Atlantic Station in Atlanta, GA (see Figure 1.2), utilized a variety of sources including its tax allocation district (TAD) status to fund environmental remediation and general improvements of the site. This substantially reduced the overall cost of the property compared with similar "uncontaminated" property in the area (Berger, 2006, p. 207). The 138-acre mixed-use redevelopment of the former Atlantic Steel Mill site in Midtown Atlanta was heralded by many for its leadership in refocusing growth and development back towards the inner city and away from the region's sprawling suburbs (Dunham-Jones, 2005, p.61). But even Atlantic Station is not without its own faults. Though the project is often touted as a brownfield model for Smart Growth and New Urbanism, many have criticized the project for its conventional redevelopment approach, over reliance on land use planning, and urban design shortcomings (Dagenhart, Leigh & Skach, 2006 & Miller, 2006). Urban design came long after the developer had already established the site's specific uses.

In its most normative definition, urban design is the discipline that deals with the organization and functionality of cities. As a practice, urban design has a long standing role in the development of cities but has recently reemerged as a critical discipline in the discourse regarding the proliferation of urban sprawl, rapid suburbanization, and the perceived negative consequences resulting from this trend of development. Often urban design is considered a subset within the major disciplines of architecture, city planning, and landscape architecture. While urban design typically blurs the lines between these three major design disciplines, the unique focus and principles of each have prevented the formation of a single, unified theory. In fact several theories have arisen over the past 20 years and range from the more formally-determinant New Urbanism to the more incremental, activity-oriented Everyday Urbanism. Even more recently, Landscape Urbanism has been gaining popularity for its theories on urbanism which use ecological processes as a metaphor to provide new ways of thinking about the processes of urbanization and the future role of urban design (Waldheim et al, 2006). Though each of these theories offers a unique perspective on urban design as a critical theory, core themes of organization, contextual relationships, and sustainable development provide a common thread.

Though the attitudes toward redevelopment have changed, the process itself has changed very little. Brownfield redevelopment still focuses heavily on environmental remediation, site engineering, and short-term market demand. Land use, instead of design, drives the entire process. This focus continues to produce unsustainable development types that ignore context and fail to recognize and capture larger local and regional opportunities. Potential positive externalities are overlooked presumably to avert risk and increase development feasibility. With an increasing amount of public money being spent to create incentives, it is crucial that the redevelopment process be re-examined and potentially redefined to mitigate these shortcomings. The purpose of this

Figure 1.3: Timeline of GM & Ford Auto Plant Closings 1987-2008

thesis is to provide that re-examination from the perspective of urban design and define ways in which design might play a more critical role in future redevelopments. Therefore this thesis will address three primary questions. First, what is the conventional brownfield redevelopment process, to what extent has urban design been involved, and what are the major issues and lessons that can be learned? Secondly, what examples of brownfield redevelopment have integrated urban design to addresses these issues and what are the specific principles that inform design? Finally, how can urban design strategies, based on principles of Landscape Urbanism, lead the redevelopment of brownfield sites?

This thesis uses a three-part case study approach to frame the investigation of each question. Cases studies of past brownfield redevelopments of former auto plant sites, specifically those occupied by Ford Motor Company (Ford) and General Motors Corporation (GM), are used to answer the first question – to what extent has urban design been involved in conventional brownfield redevelopment? The former auto plant sites of these domestic auto manufacturers were chosen for two main reasons. First, the most recent wave of closings announced by both companies in 2005-2006 has brought the subject of brownfield redevelopment back into the spotlight. Many cities now face the difficult task of rehabilitating these sites and, in some extreme case, re-staking their identity altogether. Second, the number of facilities closed by both Ford and GM over the past 20 years provides a significantly diverse inventory of brownfield sites in a variety of different urban, demographic, and economic conditions. The entire inventory is the result

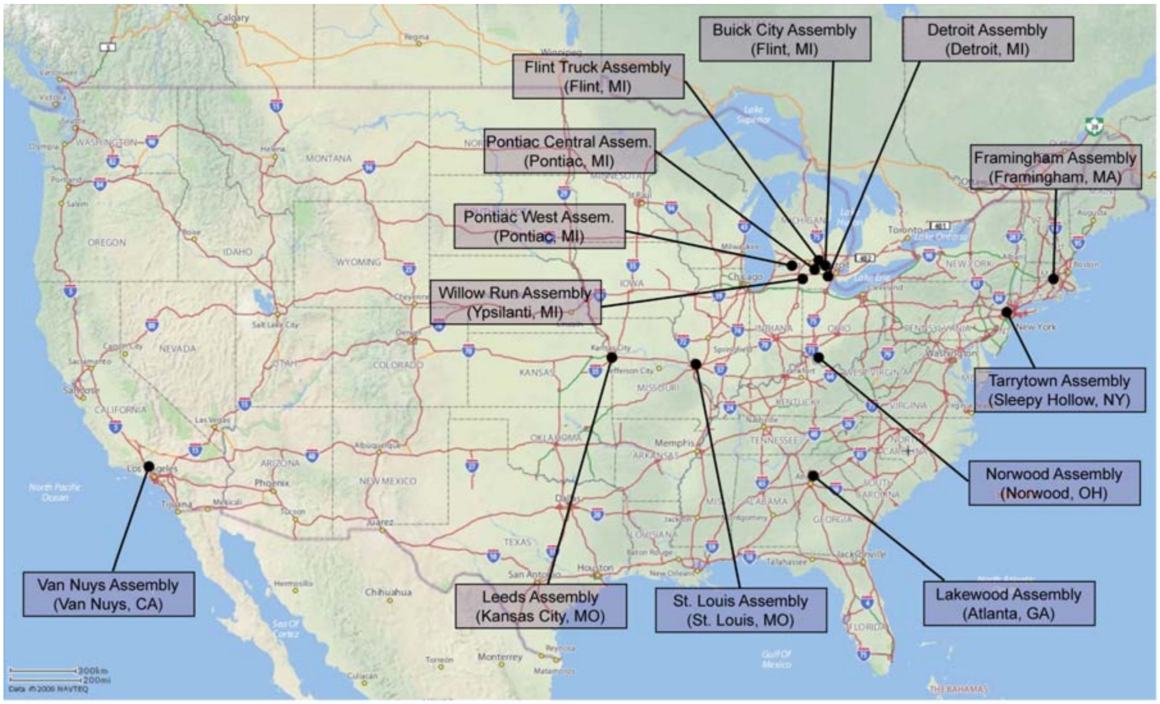


Figure 1.4: Map of GM Closings 1987-1999

of three corporate restructurings by the two auto manufacturers (see Figure 1.3) that illustrates the economic processes that continually produce theses sites and underscores the need for rethinking the strategies by which they are redeveloped.

The first corporate restructuring by GM, "Strategy of the Eighties," came in November of 1986 as the automaker posted another financial loss estimated at $338 million costs ("GM to Close," 1986). The restructuring plan initially called for the closing of 11 operations (car assembly plants and supporting facilities) expected to save the company $500 million annually in fixed. From additional research conducted, a total of 13 assembly plants (see Figure 1.4) were found to have been closed following the initial restructuring plan, spanning a 12-year period from 1987 to 1999. In total, the closings affected approximately 36 million square feet of building on 2,200 acres of land and eliminated 39,000 jobs.

Almost 20 years later, plagued by falling sales and losses in the billions of dollars, GM announced another restructuring in which it planned to close a similar

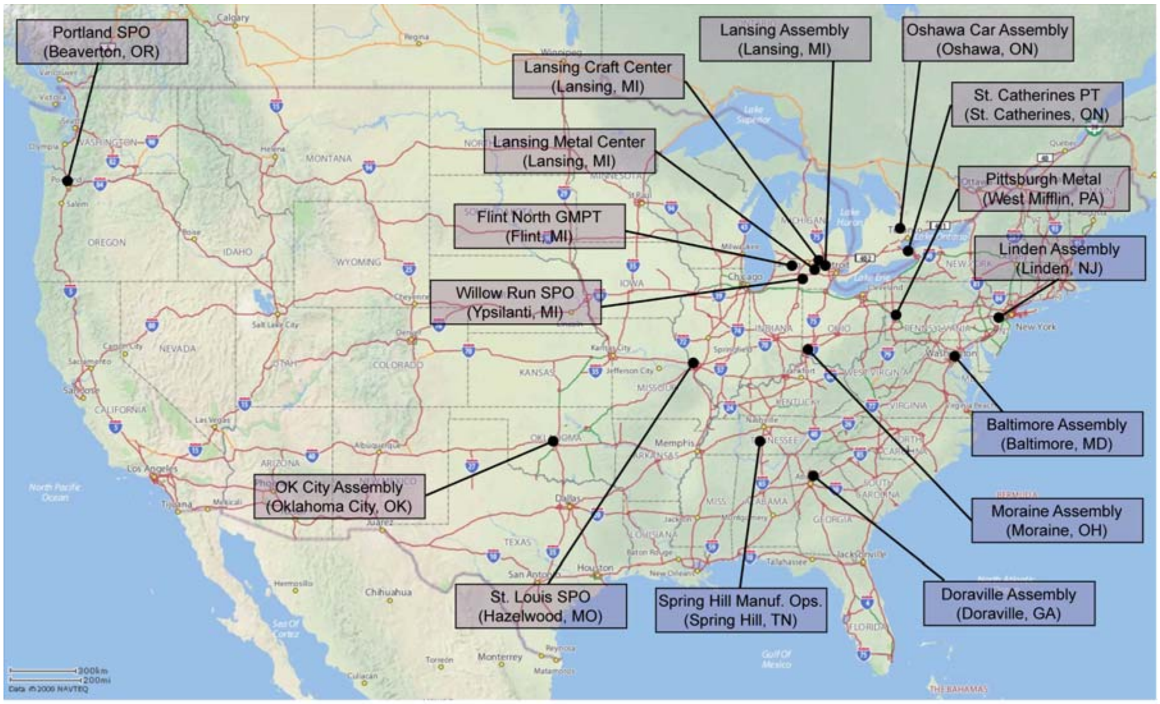


Figure 1.5: Map of GM Closings 2005-2008

number of facilities and further consolidate its operations. The plan, announced in November of 2005, called for the closing of major assembly plants in Doraville, GA, Lansing, MI, and Oklahoma City, OK in addition to scaling back operations in Oshawa, ON, Moraine, OH, and Spring Hill, TN where assembly lines would be idled indefinitely. Months earlier, an assembly plant in Baltimore, MD and another in Lansing, MI had already been closed foreshadowing the event (Hirsch, 2005). Figure 1.5 illustrates the current locations of facilities scheduled to be closed between 2005 and 2008 by GM under the new plan. Again, the figures for the 16 facilities are overwhelming: 44 million square feet of building encompassing 5,200 acres of land in 14 different cities and almost 30,000 jobs affected. For the purposes of this study, these figures include the plants with reduced production that are to remain in operation. In the announcement, the automaker indicated that these initial closings were just the first step and that more could be on the horizon.

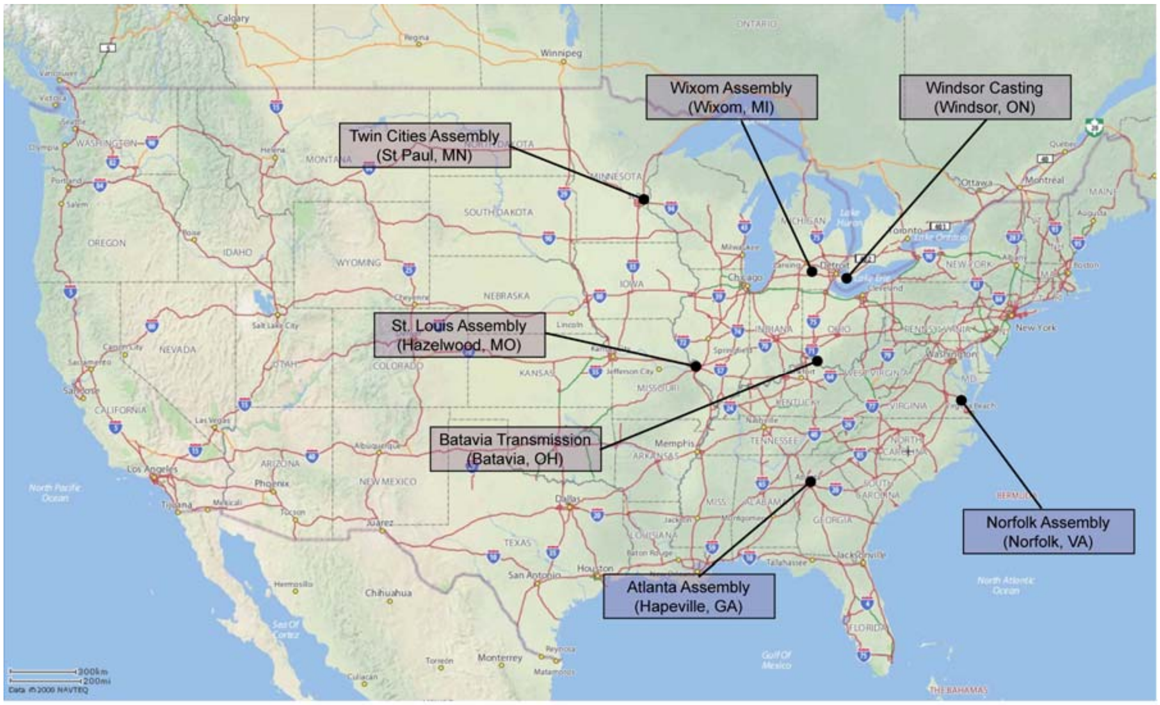


Figure 1.6: Map of Ford Closings 2006-2008

Less than two months later in January of 2006, Ford made a similar move when it also announced its corporate restructuring. “The Way Forward” aimed to cut North American operating loses, estimated at $1.6 billion for the previous year, by eliminating 14 plants and up to 30,000 jobs by the year 2012 (Woodyard, 2006). To date only seven of these plants have been named and include facilities located in major cities such as Hapeville, GA, Norfolk, VA, St. Paul, MN, and St. Louis, MO. Figure 1.6 is the map of the Ford auto plant sites scheduled for close between 2006 and 2008. In total, the closings impact approximately 17 million square feet of building on 1,100 acres of land and 11,000 jobs. This initial amount could potentially double by the time the company announces the remaining seven facilities to be closed.

Since 1986, the auto plant closings of Ford and GM have produced an inventory of 35 brownfield sites (see Table 1.1) each with unique local and regional contexts. Some of the plants have retained an industrial capacity. Others, particularly the most recently closed plants, remain abandoned to this day. However, many have undergone

Table 1.1: Catalog of Ford & GM Auto Plant Sites 1987-2008

Ford Plant Closures, 2006-2008

Name	Type	Open	Close	Address	City	State	Zip	Acres	Sq-Ft	Employees
Atlanta Assembly Plant	Assembly	1947	2008	340 Henry Ford II Ave	Hapeville	GA	30354	128	2,800,000	2,028
Batavia Transmission LLC	Transmission	1980	2008	1981 Front Wheel Dr	Batavia	OH	45103	254	1,800,000	1,445
Norfolk Assembly Plant	Assembly	1925	2008	2424 Springfield Ave	Norfolk	VA	23523	101	2,623,152	2,433
Twin Cities Assembly Plant	Assmebly	1925	2008	966 S Missisippi River Blvd	St. Paul	MN	55116	148	2,144,932	1,866
Windsor Casting	Casting	1934	2008	2900 Trenton St	Windsor	ON	CAN	22	500,000	522
Wixom Assembly Plant	Assembly	1957	2007	28801 S Wixom Rd	Wixom	MI	48393	320	4,700,000	1,259
St. Louis Assembly Plant	Assembly	1948	2006	6250 N Lindbergh Blvd	Hazelwood	MO	63042	161	3,176,080	1,445
							Totals	1,134	17,744,164	10,998

GM Plant Closures, 2005-2008

Name	Type	Open	Close	Address	City	State	Zip	Acres	Sq-Ft	Employees
Doraville Assmebly Plant	Assembly	1947	2008	3900 Motors Industrial Way	Doraville	GA	30360	157	3,600,000	3,076
Flint North, GMPT	Engine	1905	2008	G-3248 Van Slyke Rd	Flint	MI	48550	300	3,159,865	2,677
Moraine Assembly Plant	Assembly	1951	2008	2601 W Stroop Rd	Moraine	OH	45439	360	4,100,000	4,075
Oshawa Car Assembly Plant (Plants No.1 & No.2)	Assembly	1953 1953	(2008) 2008	Park Road South	Oshawa	ON	CAN	650	8,570,000 0	(1,000) 2,530
St. Catharines Powertain	Powertrain	1900	2008	600 Glendale Ave	St. Catharines	ON	CAN	177	2,000,000	1,571
Pittsburgh Metal	Metal	1949	2007	1451 Lebanon School Rd	West Mifflin	PA	15122	70	800,000	620
Willow Run SPO (Belleville)	Parts	-	2007	50000 Ecorse Rd	Ypsilanti	MI	48111	60	820,000	278
Lansing Craft Centre	Body	1987	2006	2801 W Saginaw St	Lansing	MI	48921	65	985,000	400
Lansing Metal Center	Metal	1953	2006	2800 W Saginaw St	Lansing	MI	48921	95	1,590,000	1,398
Oklahoma City Assembly Plant	Assembly	1979	2006	7447 SE 74th St	Oklahoma City	OK	73125	437	3,900,000	2,300
Portland SPO	Parts	-	2006	15005 SW Tualatin Valley Hwy	Beaverton	OR	97075	16	190,000	95
Spring Hill Manuf. Operations	Assembly	1990	(2006)	100 Saturn Pkwy	Spring Hill	TN	37174	2,500	6,800,000	5,776
St. Louis SPO (Hazelwood)	Parts	-	(2006)	5801 N Lindbergh Blvd	Hazelwood	MO	63042	25	560,000	182
Baltimore Assembly Plant, NATG	Assembly	1935	2005	2122 Broening Hwy	Baltimore	MD	21224	185	3,200,000	1,100
Lansing Assembly Plant	Assembly	1920	2005	401 N Verlinden Ave	Lansing	MI	48901	57	1,600,000	1,750
Linden Assembly Plant	Assembly	1937	2005	1016 W Edgar Rd	Linden	NJ	07036	94	2,600,000	1,060
							Totals	5,248	44,474,865	27,888

GM Plant Closures, 1987-1999

Name	Type	Open	Close	Address	City	State	Zip	Acres	Sq-Ft	Employees
Buick City Assembly Plant	Assembly	1904	1999	902 E Hamilton Ave	Flint	MI	48550	235	5,000,000	3,125
Tarrytown Assembly Plant	Assembly	1915	1996	199 Beekman Ave	Sleepy Hollow	NY	10591	97	2,500,000	3,450
Pontiac West Assembly Plant	Assembly	1906	1994	275 Franklin St	Pontiac	MI	48341	63	750,000	1,500
Willow Run Assembly Plant	Assembly	1953	1992	2625 Tyler Rd	Ypsilanti	MI	48198	126	4,800,000	4,000
Van Nuys Assembly Plant	Assembly	1947	1992	7950 Van Nuys Blvd	Van Nuys	CA	91402	100	2,200,000	2,600
Flint Truck Assembly Plant	Assembly	1947	(1991)	G-3100 Van Slyke Rd	Flint	MI	48551	300	3,700,000	3,450
Lakewood Assembly Plant	Assembly	1928	1990	510 Sawtell Ave SE	Atlanta	GA	30315	84	1,800,000	2,200
Framingham Assembly Plant	Assembly	1947	1989	63 Western Ave	Framingham	MA	01702	150	3,000,000	2,700
Pontiac Assembly Plant	Assembly	1927	1988	820 S Opdyke Rd	Pontiac	MI	48341	650	3,400,000	700
Leeds Assembly Plant	Assembly	1913	1988	6817 Stadium Dr	Kansas City	MO	64129	118	1,000,000	2,200
St. Louis Assembly Plant	Assembly	1920	1987	5391 Brown Ave	St. Louis	MO	63120	160	3,000,000	2,200
Norwood Assembly Plant	Assembly	1920	1987	4726 Smith Rd	Hamilton	OH	45212	60	3,000,000	4,000
Detroit Assembly Plant	Assembly	1921	1987	W Fort St & West End Ave	Detroit	MI	48209	49	2,500,000	6,600
							Totals	2,192	36,650,000	38,725

significant redevelopment which has fundamentally transformed the purpose and character of the sites. These redeveloped sites in seven cities serve as the first set of case studies: Van Nuys, CA; Norwood, OH; St. Louis, MO; Pontiac, MI; Sleepy Hollow, NY; Atlanta, GA; and Baltimore, MD. Prefacing these seven case studies is the review of two preliminary urban design proposals for the recently closed auto plants in Doraville, GA and Hapeville, GA. The purpose of this review is to establish and illustrate fundamental principles of urban design and provide a framework for identifying major issues and shortcomings in the seven case studies where evidence of urban design is not necessarily present or immediately apparent.

The second question – what examples of brownfield redevelopment have integrated urban design in response to the major issues and lessons of the conventional approach – is answered through the analysis of case study projects where urban design, specifically based on principles of Landscape Urbanism, has played a more critical role in redevelopment. Conventional redevelopment methods, master planning approaches, and even urban design based on principles of New Urbanism are largely driven by current market demand and focus on defining specific uses, prescribing built forms, and engineering of the site – or landscape – to accommodate. However, Landscape Urbanism offers a dramatically different approach for guiding urban design particularly in brownfield redevelopment applications. In this approach, deindustrialization and subsequent redevelopment are understood as just a small subset of a much larger series of processes that drive urbanization. Use and demand are not static concepts but indeterminately change with time. In response, urban design must focus on creating adaptable strategies rather than predetermined forms for urbanization. Based fundamentally on the organization of landscape and site relationships with surrounding context, these strategies provide a flexible framework that promotes incremental and sustained development. The primary objective is to accommodate the indeterminate

Figure 1.7: Downsview, Fresh Kills, Tanner Street, and Westergasfabriek

nature of market demand, environmental contamination and ultimately urbanization itself. Four major brownfield redevelopment projects, Downsview Park in Toronto, ON, Fresh Kills Park in New York, NY, the Tanner Street Initiative for the Silresim Superfund Site in Lowell, MA, and Westergasfabriek (West Gas Factory) Culture Park in Amsterdam, the Netherlands, illustrate the key urban design principles of Landscape Urbanism and serve as the second set of case studies.

Finally, the thesis returns to the auto plant sites in order to answer the third question: how can strategies of urban design, based on principles of Landscape Urbanism, lead brownfield redevelopment? While many of the case studies in the previous section highlight successful integration of urban design and brownfield redevelopment, the examples focus more on the development of parks and less on private sector redevelopment. However, strong parallels between the principles of Landscape Urbanism with more traditional forms of urbanism indicate that urban design strategies modeled on this theory are capable of accommodating redevelopment by the private sector. The final case studies serve as examples to illustrate this theory.

The diverse inventory of auto plant sites used in the first section of the thesis, particularly those more recently closed and awaiting redevelopment, present a unique opportunity to determine and demonstrate specific redevelopment strategies where urban design leads the process. These strategies are driven by an understanding of redevelopment potential derived from contextual relationships of each site (as a typological condition) and the appropriate application of urban design principles based

Figure 1.8: Ford Batavia, GM Linden, GM Lansing, GM St. Louis

on Landscape Urbanism. Four auto plant sites from the Ford and GM closings of 2005-2006 serve as the final set of design case studies and include sites in Batavia, OH, Linden, NJ, Lansing, MI, and St. Louis, MO. Each site was chosen for its unique set of existing contextual conditions and its ability to clearly illustrate one of four proposed urban design strategies. By reusing the auto plant sites in this manner, the shortcomings of the highly determinate, market-driven process of past brownfield redevelopments can be directly compared and contrasted with the advantages of the indeterminate, adaptable brownfield design strategies proposed by this thesis.

CHAPTER 2

BROWNFIELD REDEVELOPMENT OF AUTO PLANT SITES

The first set of case study projects provides a thorough investigation into the completed redevelopment of seven former auto plant sites in order to understand the role, if any, urban design has played in the process. The seven sites (see Figure 2.1) inhabit a variety of urban, demographic, and economic conditions and are located in Van Nuys, CA, Norwood, OH, St. Louis, MO, Pontiac, MI, Sleepy Hollow, NY, Atlanta, GA, and Baltimore, MD. In order to frame this investigation, an understanding of the typical approach to brownfield redevelopment and fundamental principles of urban design must first be established. A review of literature published by the U.S. EPA Brownfield Program assists in the first object while a review of recent design proposals for two auto plant sites based on traditional principles of urbanism frames the second.

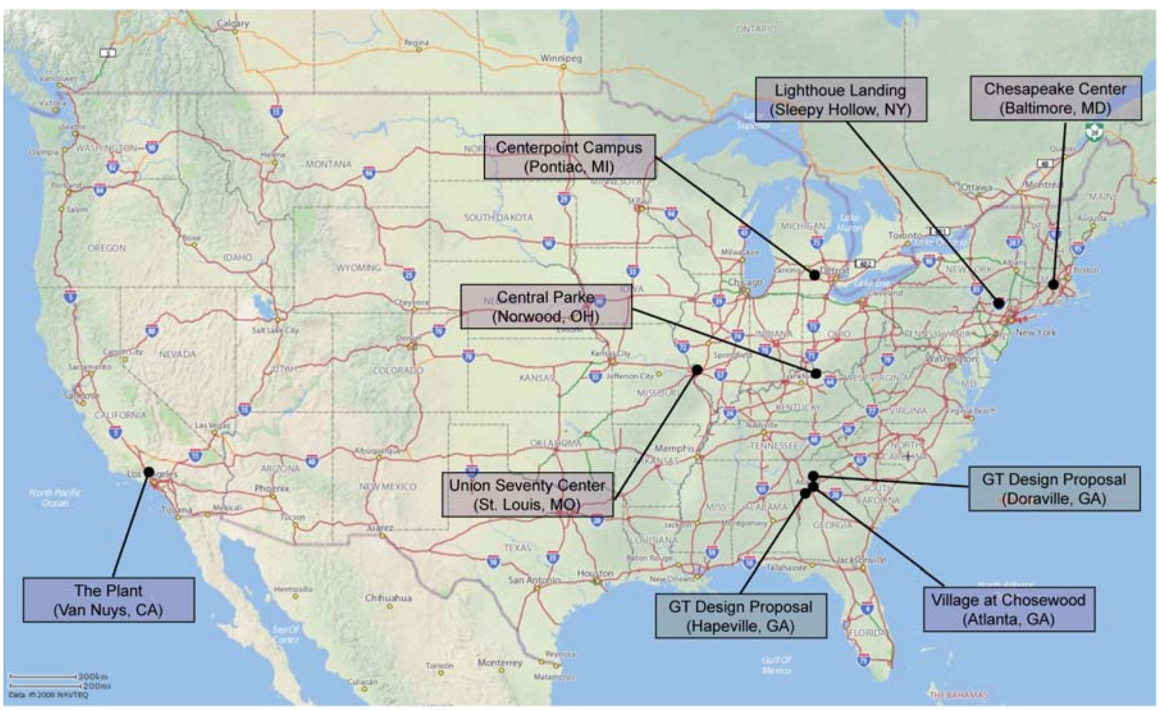


Figure 2.1: Map of Auto Plant Redevelopment Case Studies

2.1 The Redevelopment Process & Fundamentals of Urban Design

The U.S. EPA Brownfields Program, a primary source for grants and specialized low-interest loans aimed at funding brownfield site redevelopment, provides substantial documentation summarizing the redevelopment process. Specifically, in its document titled *Anatomy of Brownfields Redevelopment*, the EPA (2006) officially defines "brownfield" as any property on which expansion, redevelopment, or reuse may be complicated by the presence, or perceived presence, of contamination. The document then identifies four major steps (see Figure 2.2) in the brownfield redevelopment process – pre-development, securing the deal, cleanup and development, and property management – and articulates each in response to perceived redevelopment challenges of environmental liability, financial barriers, cleanup considerations, and reuse planning.

The first step, pre-development, is perhaps the most critical and involves a wide range of activities including determining a new use or idea for the site, studying financial feasibility, analyzing environmental contamination, obtaining property access, and identifying sources of funding. Inception of a driving redevelopment idea typically begins with a "highest and best use" analysis of the property. Though the EPA promotes consultation with all stakeholders including the local community at this point, the use, once it has been established, drives the process; a pro forma and environmental analysis are developed to study the financial feasibility of the project and extent of

Figure 2.2: Typical Steps in the Redevelopment Process (EPA, 2006)

cleanup associated with the determined use. Once the project and funding sources have been established, the remaining steps in the process are relatively straightforward: funding sources are secured, the property rights are obtained, the project is physically designed, and necessary approvals and permits are acquired. All of these steps follow the traditional real estate development process. The exception at this point is the development of a site remediation plan which coordinates cleanup activities with new construction so that both clean-up and new construction may be completed as quickly possible. Once redevelopment is completed and formally opened, the developer may exercise the option to sell the property or engage in its long-term management. In concept the process is simple and effective in creating new use opportunities for a particular site. However, it is easy to see how quickly the process becomes internally focused and loses sight of a site's surrounding context.

Redevelopment on principles of urban design seeks to mitigate these losses by recognizing and capturing larger redevelopment opportunities offered by site contextual relationships. Though the details of specific urban design principles and strategies for future redevelopments are discussed in the remaining chapters, preliminary review of design proposals for the redevelopment of two recently closed auto plants in Doraville, GA and Hapeville, GA assist in establishing fundamental principles of urban design and provide a filter for reviewing the seven case studies. The strategies for the two design proposals are based not on market demand or specific uses but rather more traditional approaches to urban design: the physical organization of the *landscape*. In this approach, the landscape, defined as the site or larger territory, is first physically organized to serve as a framework that can accommodate a variety and change in uses over time. While Landscape Urbanism is a more recent attempt to understand the role of landscape in urbanism, author J.B. Jackson (1997) offers the clearest understanding of the term over 20 years earlier: "a composition of man-made or man-modified spaces to

Figure 2.3: Commissioners Plan for New York City, 1817

serve as infrastructure or background for our collective existence; and if *background* seems inappropriately modest, we should remember that in our modern use of the word it means that which underscores not only our identity and presence but also our history" (p. 305). Much of Jackson's observations of landscape are based upon the functionality of the street grid (particularly of New York City) and designs of well-known projects such as Central Park, Boston's Back Bay, and Boston's Emerald Necklace among others.

The most familiar example is the organization and functionality of the street grid of New York City (see Figure 2.3). When the Commissioners of Streets and Roads drafted the plan to guide development of New York City in 1811, the objective was not to predict the specific range of uses and permutations the city has witnessed over the past 200 years. Instead, the commissioners designed a framework for development, based on the subdivision of land, which depicted the locations of streets, public parks, and developable blocks (200' x 600'). While the streets and parks remain fixed elements, the blocks were further subdivided into parcels and developed independently from the

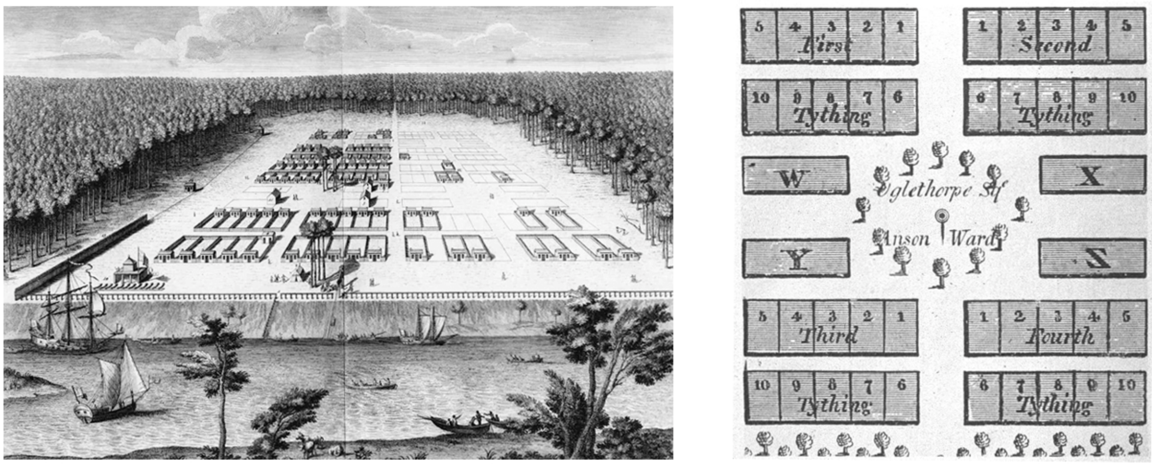


Figure 2.4: Oglethorpe's Plan for Savannah, 1733

overall grid structure. Buildings and uses, within the legally defined lot and block boundaries, continue to be reconfigured even today in order to respond to ever-changing market demand. Additionally, the streets themselves serve several purposes as they simultaneously organize the territory of the city, accommodate transportation options, and create continuous public spaces which bind the blocks together. New York City is not the only example that illustrates the unlimited potential of the grid structure in urbanization. Other well-known cities such as Philadelphia, Portland, San Francisco and even downtown Atlanta provide additional examples. After New York City, perhaps another familiar example is James Oglethorpe's Plan for Savannah in 1733 (see Figure 2.4). Though the plan eschews the simple block pattern seen in New York City for a more sophisticated ward and central square pattern, the fundamental strategy remains the same: subdivision of land into lots, blocks, and streets serves as a framework for incremental and sustained development.

Beyond the street grids of all aforementioned cities, other projects provide clear applications of the urban design principles at alternative scales. Perhaps the most well-known example is the design of Central Park (see Figure 2.5) by Fredrick Law Olmsted and Calvert Vaux in 1858. The park, a much later addition to the original plan for New York City, provides not only a well-known urban amenity and national attraction but also

Figure 2.5: Central Park 1872

serves as the location for a key water reservoir for inhabitants of the city. More important is the manner in which the grid structure (preceding the park by 50 years) was easily adapted to host the park within the city. The park itself has often been exemplified for the manner in which it catalyzed surrounding development and illustrates precisely how organization of landscape is capable of driving the process of city building (Corner, 2006, p. 24).

Similar to Central Park, the Back Bay of Boston serves as another example where a park was used to organize and catalyze development effectively within the city. The project of filling the Back Bay began in order to expand the territory of the city. However, the addition of Back Bay Park, begun by Olmsted in 1878, was a city response to public demand for park space and the need to solve a sewage drainage problem resulting from the city's antiquated sewer system (Seasholes, 2001, p.131). The filling of the bay combined with Olmsted's park served to organize the landscape, catalyze its development, and provide crucial infrastructural and public park elements. The organizing concept of the original park was extended in a more grandiose idea, also by

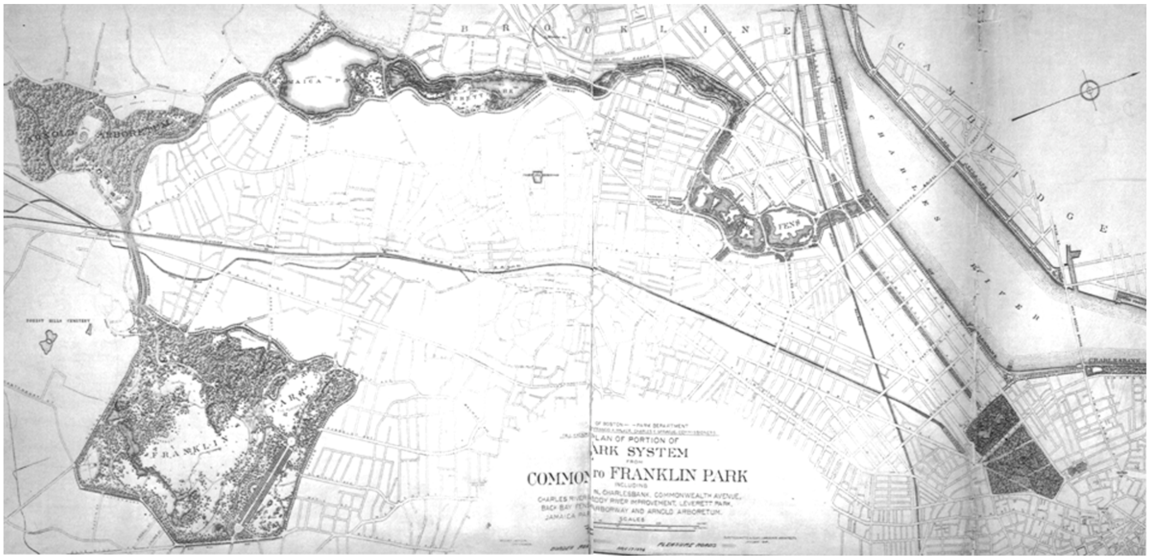


Figure 2.6: Boston Park System 1871-1890

Olmsted, for an "emerald necklace" of interconnected parks in Boston. Alex Krieger (2001) summarizes the objectives of both Olmsted and the city for this project:

> Olmsted's goal was to permeate the increasingly harsh, dense, and expanding industrial city with the healing effects of nature provided in proximity to the daily activities of city dwellers. Combining Olmsted's vision with their own beliefs in the importance of open space, Bostonians pursued park planning as a fundamental concern of city planning: a means to direct city expansion and population density, influence the local economy, improve health and sanitation, and, of course, beautify the city (p. 165).

By its fundamental design, the Emerald Necklace served as an instrument of planning in the way it guided the growth and development of Boston. Olmsted's design for the park system (see Figure 2.6) focuses on the way it organizes the landscape through its interconnected system of streets and parks that also provides a valuable water management service to the city. Many continue to acclaim the project for its all-encompassing vision, as Elizabeth Mossop (2006) notes the project for its "intertwining of transport infrastructure, flood and drainage engineering, the creation of scenic landscapes, and urban planning" (p. 165). One final example, the National Land Ordinance of 1785, demonstrates how landscape is capable of organizing urban development at even the most expansive of scales. In this instance, the U.S. Congress

Figure 2.7: GM Site in Doraville, GA & Ford Site in Hapeville, GA

imposed a grid, disregarding topography and land features, to organize the early western territory into townships of six square miles. This method established critical boundaries in order to avoid disputes as the land was sold and developed (Morris, 1994, p. 335).

These historic examples illustrate how urban design, traditionally viewed as an instrument of planning, succeeded in organizing the landscape in order to cultivate the growth and development of ultimately great cities. From New York City to the smaller auto plant sites in Hapeville and Doraville, these principles are applicable at a variety of scales. Atlanta, as a region, was dealt a powerful blow when GM and Ford both announced plant closings in the area in 2005-2006 (see Figure 2.7). The closings had the largest impact on the smaller cities of Doraville (GM) and Hapeville (Ford) where the plants were actually located: both plants provided hundreds of jobs to their respective local economies and the sites themselves command large areas of territory. Students and faculty from both the Architecture and City and Regional Planning programs at the Georgia Institute of Technology collaborated with both cities in the year following the closing announcements in order to asses redevelopment options. This collaboration produced the following design proposals which illustrate potential redevelopment opportunities and strategies for effectively reintegrating both sites with their cities. Both proposals embody the traditional approach to urban design and emphasize site connections to surrounding context, subdivision of the site into public and private land, and strategies for the incremental development of the site within the subdivision framework. With the understanding that landscape is capable of transcending scale as a medium for urban design, new possibilities are created for urban design to play a critical role in brownfield redevelopment.

2.2 Design Proposal for GM Doraville Assembly Plant (Doraville, GA)

Doraville's historical relationship with the GM site predates the arrival of the auto maker by almost 80 years. The arrival of the railroad connecting Atlanta with Charlotte in 1871 bisected the recently founded Doraville and immediately created a barrier between both city and site which still exists today. MARTA (Metropolitan Atlanta Rapid Transit Authority) later reinforced the rail barrier when it added a public transit rail line and station to the existing rail infrastructure in Doraville during the 1970s. The majority of Doraville's growth and development occurred within the confines of its territory to the south of the rail line while the area to the north underwent a period of rapid industrialization. GM began its operations on the existing 157-acre site in 1947 and boasts a long and productive history. The plant survived the round of closings resulting from GM's Strategies of the Eighties announced in 1986 and actually underwent a major modernization and expansion that same year ("General Motors Announces," 1986). GM also made another significant investment in Doraville when the company converted the assembly plant in 1995 for mini-van production which was being transferred from the recently closed plant in North Tarrytown (Walker, 1992). Despite it's 60 year history, GM announced the close of the Doraville assembly plant in November of 2005 as part of the company's effort to trim corporate losses by downsizing it's North American production.

The Doraville assembly plant is scheduled to officially close in 2008. Following the announcement to close the Doraville plant, both the City of Doraville and the College of Architecture sponsored a city planning studio to examine redevelopment options for site. Development of the site since GM's arrival has placed it at a significant intersection of a major industrial railroad corridor and the Atlanta region's perimeter highway (I-285) located approximately 13 miles northwest of Downtown Atlanta. The railroad, interstate, MARTA station, and location of Doraville's existing town center to the south all presented large opportunities to consider in creation of a redevelopment proposal. The final proposal delivered by the studio to Doraville in December of 2006 identifies these opportunities and offers a strategy, rather than a specific use-driven project, for redevelopment of the site.

At the core, the strategy emphasizes reconnection of the site of the site with Doraville, internal re-organization of the site itself, and the incremental development of uses with the new framework (Cohn et al, 206). Subdivision of the site into blocks and streets constructs the physical framework for flexible, incremental redevelopment which is capable of adapting to changes in use and market demand over time. A simple layering concept illustrates how the framework is to be initially constructed and will sustain economic development and redevelopment over time. The first layer is the design of an internal street grid informed by existing streets adjacent to the site and establishes primary connections with Doraville. The street grid additionally organizes the site into a series of independently developable blocks while careful design of the streets themselves provides a critical public space element. With the exception of proposing potential locations for additional public parks, the blocks themselves are left relatively undetermined. However, the proposal illustrates a wide array of additional development strategies that could be accommodated within the context of the underlying framework. These strategies include transit-oriented development (TOD) at the Doraville MARTA

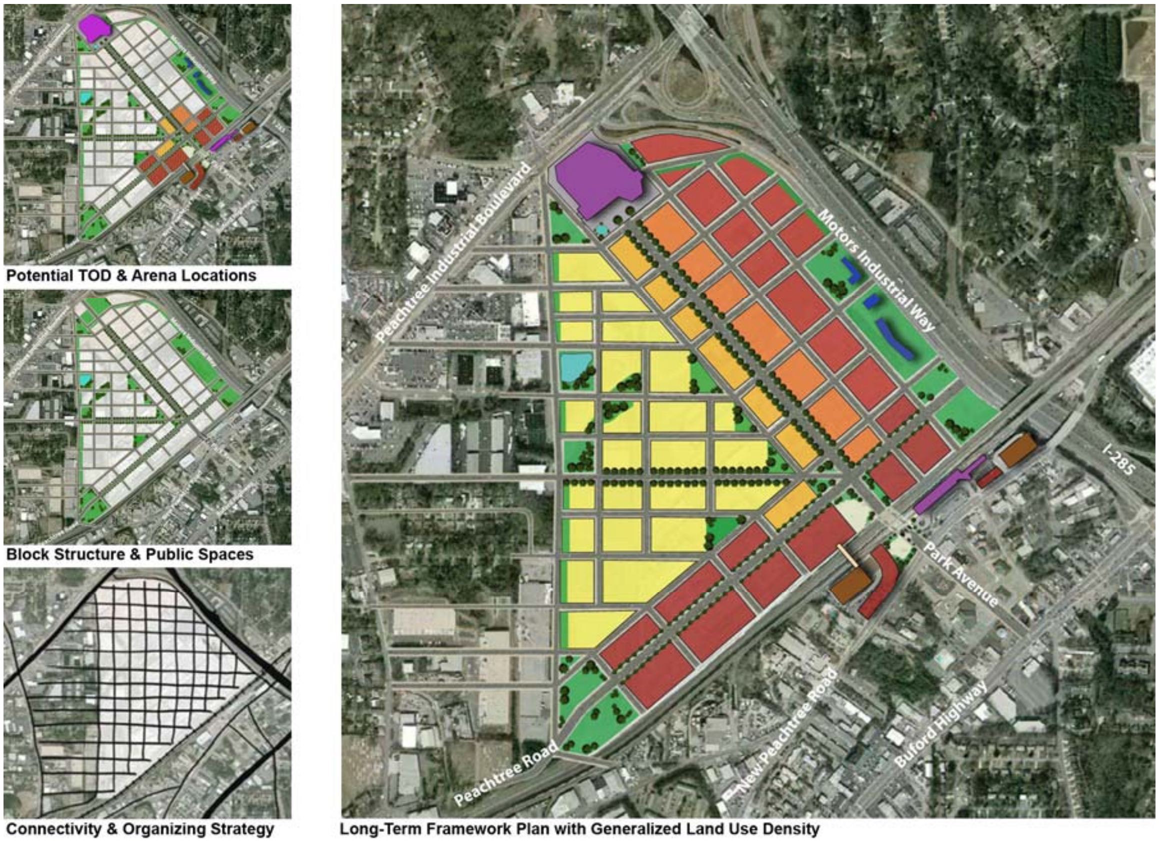


Figure 2.8: Design Proposal for GM Doraville Assembly Plant (Georgia Tech, 2006)

Station, adaptive-reuse of the existing assembly plant's administration building for relocation of Doraville's City Hall, construction of an arena currently proposed by Dekalb County, and recommended density guidelines for all other general development on the site. The main intent was to create multiple options on the site for Doraville's economic development that could be sustained over time rather than make the city dependent on a new, single user or project. By constructing the physical framework *first*, these initial use-driven opportunities are granted and can continually readjust themselves to reflect market demand over time without requiring additional financial investment to fundamentally alter the underlying organization of the site itself. Though Doraville must wait until the plant is officially closed before redevelopment of the site can proceed, this proposal offers a clear strategy for reintegrating the site with the city and sustaining its economic development for years to come.

2.3 Design Proposal for Ford Atlanta Assembly Plant (Hapeville, GA)

The case study of Hapeville, GA features a particularly challenging factor surrounding the site's future redevelopment: the dominating presence of Atlanta's Harstfield-Jackson International Airport located immediately to the west. First constructed in the 1940s, the airport maintains several major runways which place flight paths directly over the assembly plant. The Ford Atlanta Assembly Plant, located in Hapeville seven miles south of Downtown Atlanta, arrived almost at the same time as the airport; the plant's "grandfather" status has permitted its continued operation despite the gradual expansion of the airport and associated FAA restrictions. However, any new development on the site after Ford leaves must comply with FAA flight path envelope restrictions which make all but a third of the site developable (another third is developable with heavy restrictions) in the immediate future. Beyond the FAA no-build restrictions, noise levels and barriers in the form of an interstate highway (I-75) to the east and the railroad to the north present additional obstacles to redevelopment. Similar to Doraville, the railroad on the north boundary effectively severs the site from downtown Hapeville. Many of these factors also contributed to Ford's decision to ultimately cease operations on the site. Despite the success of its primary model, the Ford Taurus, significant investments in plant modifications, and noted productivity of its assembly line operations, the aforementioned barriers prevented Ford from being able to expand its 128-acre site and had already led the company to consider constructing a new assembly plant on larger sites well outside the immediate Atlanta region (Peralte, 2003). Declining North American production led Ford to abandon the possibility of a new assembly plant and ultimately close the existing Hapeville plant altogether in 2006 (Peralte, 2003). Less than a month later, the City of Hapeville re-zoned the entire 128-acre Ford site to a new Urban Village (UV) classification in hopes the motion would encourage mixed-use redevelopment of the site (Woods, 2006). Though the plant idled operations permanently

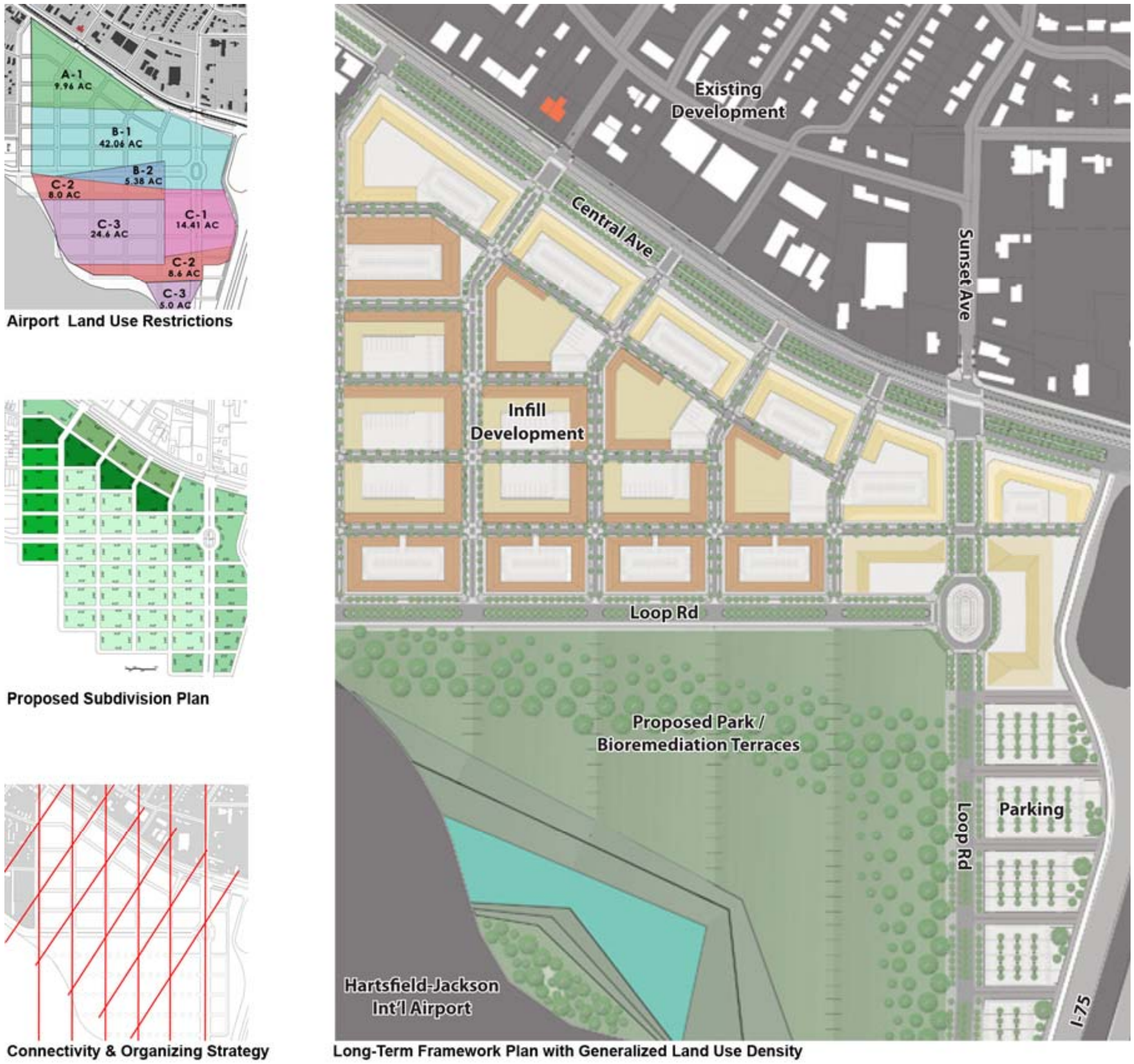


Figure 2.9: Design Proposal for Ford Atlanta Assembly Plant (Georgia Tech, 2007)

in October of 2006, Ford was unable to officially begin negotiations on the future of the site until the plant's UAW contract expired in September of 2007.

Given the unique set of conditions surrounding the site's context, a team of senior architecture students, as part of an urban design studio at Georgia Tech's College of Architecture, produced a provocative solution for redevelopment of the Hapeville site (Graham, Marshall & Thomason, 2007). Similar to the approach for the Doraville site, the Hapeville site strategy focuses on physically reconnecting the site with Hapeville, re-organizing the site itself for development, and suggesting development strategies within the new framework. The connections themselves focus on bridging the railroad barrier and aligning with an existing street grid in the recent, adjacent development of the Olde Towne neighborhood to the northwest. In addition, the connection scheme proposes re-aligning the Airport Loop Road to the south to increase the amount of developable area on the southern portion of the site. Construction of the Airport Loop Road post-dated the construction of the Ford assembly plant and forced the alignment to maintain an irregular curvature which could now be corrected, providing both benefits to the site and logistical operations at the airport. The connections and resultant street grid organize the site into a series of blocks which are further subdivided into lots for individual, private development. Rather than prescribe uses into the lot and block structure of the reintegrated site, the plan demonstrates strategies for added physical development at a variety of densities and uses including a widely-speculated hotel in the northeast corner of the site. Specific use and density is left to be determined by the market and capable of change within the underlying development framework.

Two remaining features of the plan are the design of public spaces and the ability of the plan to expand over time. First, streets and a major park are designed as functional public spaces: streets accommodate multiple transportation options while the park provides a passive environmental remediation service through its use of groundwater filtration techniques. The park occupies the unbuildable portion of the site for the foreseeable future but its organization, based on the logic of the new street grid, allows extension of the development framework in the long-term future should FAA regulations change or the airport decline. This last feature illustrates the strategy's key principle of accommodating change over time; not only can uses within the new framework change as needed, the logic of the framework may also be extended with relative ease providing room for additional development.

2.4 The Plant (Van Nuys, CA)

The Plant, located in the suburb of Van Nuys approximately 16 miles northwest of Downtown Los Angeles, is a retail/light industrial mixed-use redevelopment of the site formerly occupied by the GM Van Nuys Assembly Plant. The 94-acre site is characterized by its location along a declining industrial rail corridor along its southern boundary, conventional retail strip development along Van Nuys Boulevard to the west, and a network of single family residential neighborhoods to the north and east. GM operations at the assembly plant began in 1947 and were primarily focused on the production of both the Chevrolet Camaro and Pontiac Thunderbird models until its close 45 years later. Operations peaked in 1978 with 5,100 employees and then steadily declined until 1990 when production of both models was moved to a newer facility in Quebec (Associated Press, 1992). Despite appeals by Los Angeles County to maintain the plant's presence in Van Nuys, the assembly plant was idled indefinitely in 1991 and officially closed a year later. Following the closing, GM announced its plans to release a 68-acre portion of the site for private redevelopment while retaining the remaining 26-acres for the construction of a new emissions testing facility.

Despite the withdrawal of major industries leaving the area for newer facilities on cheaper land beyond the San Fernando Valley and Los Angeles County, Van Nuys rejected initial attempts by GM to rezone the site for commercial retail use hoping to instead retain the site for continued industrial use and maintain manufacturing jobs within the city (Newman, 1998). Negotiations proceeded through the Northridge earthquake of 1994 after which the Federal Economic Development Agency (EDA) supplied a $30 million grant to assist with reconstruction of the hard-hit area. Eventually both parties reached a compromise to redevelop the site in both retail and industrial capacities using $4 million of the EDA grant for site improvements including the widening of Van Nuys Boulevard and the extension of Arminta Street into the site. In addition, the

Current Development

Internal Block Structure

Internal Street Network

Aerial Image of Existing Development at The Plant (Source: Microsoft LiveLocal/USGS, 2007)

Figure 2.10: The Plant by Selleck Properties (Van Nuys, CA)

city set aside another $1 million towards the construction of a new police station for the Los Angeles Police Department on land donated from GM. These improvements, along with redevelopment efforts, were aimed at increasing public access and creating more than 2,000 full-time jobs at the old GM site (Orlov, 1997).

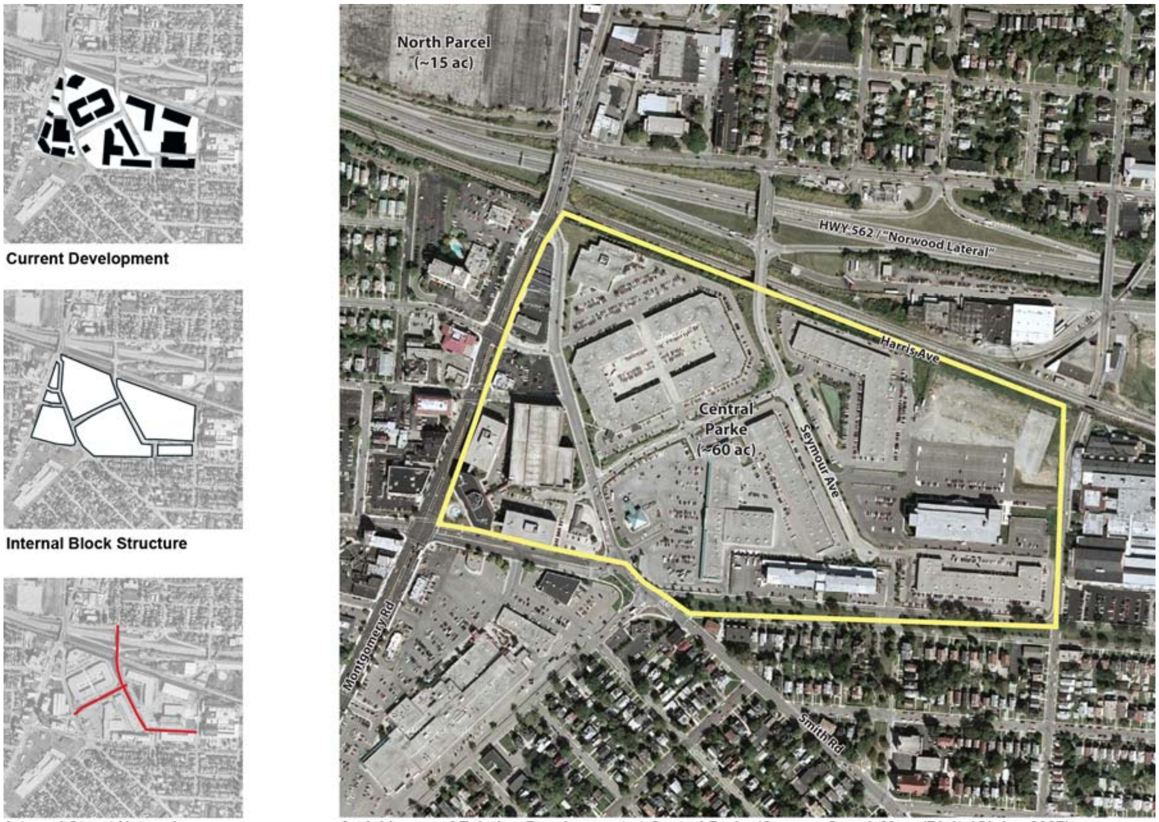
A joint-venture consisting of Selleck Properties and the Voit Company purchased the 68-acre site in February of 1996 proposing to transform the site and surrounding “crime-ridden neighborhood” into a “bustling center with stores, theatres, restaurants, and industrial space” (Brozan, 1996). The original redevelopment, completed in 1998 at a cost of $75 million, consisted of a 370,000-sf retail component on 35-acres named the Van Nuys Center and 600,000-sf of light industrial space on the remaining 33-acres. Original retail anchors included Home Depot, Office Max, and a 16-screen movie theatre while Ricon Corp. became the first “industrial” tenant to accept a deal on a new 150,000-

sf (later expanded to 200,000-sf) building. As originally planned, GM constructed an emissions testing facility on its 26-acre parcel where it continued operations until eventually leaving the site at the end of 2003. Less than a month later, the Selleck-Voit development team purchased the remaining property from GM to expand development of The Plant. In 2005, the joint venture broke ground on the newly acquired property for the second phase of The Plant and scheduled completion for 2006. The new development added approximately 250,000-sf of industrial space and 32,000-sf of retail space to the overall project.

2.5 Central Parke (Norwood, OH)

The City of Norwood, a small suburban town located five miles northeast of downtown Cincinnati, provides an example of a city highly dependent, in economic terms, on its relationship with a GM assembly plant. General Motors opened the three million square foot assembly plant on the 60-acre Norwood site in 1923 where the auto maker produced sports cars for its Chevrolet and Pontiac lines, most notably the Chevrolet Camaro, Chevrolet Nova, and Pontiac Thunderbird, during the course of its 64-year operation (Associated Press, 1987). Operations officially came to an end in August of 1987 at which time Norwood, having been informed a year earlier of GM's decision to close the plant, sued the company for a "breach-of-contract" to the sum of $318.3 million (Schlesinger, 1987). At the time, the withdrawal of GM marked only the most recent plant closing during a rapid period of deindustrialization for the city. Given the age of the facility and the declining industrial market, Norwood initially had been willing to accept the losses - an estimated 4,000 jobs and 35 percent of its tax base - provided that GM would maintain a sense of "corporate responsibility" by preparing the site for the high-density office development the city envisioned as the future for the site (Dettmer, 1997). However, GM's desire to sell the site, facility included, to another auto manufacturer or industrial user incited the litigation by the city who sought punitive damages and a recovery of funds provided to GM for site improvements. Norwood dropped the suit against GM in August of 1988 when both parties negotiated a deal where GM would demolish all structures on the site and offer to sell the land to an office-developer at a heavily discounted price (Reuters, 1988). In addition, GM agreed to transfer ownership of an existing 1,700-car parking deck on the site to the city who planned to renovate the deck and use it as a free parking amenity to attract potential tenants.

Despite its proximity to several of the city's single-family residential neighborhoods and decaying industrial character, the site boasted direct access to two of the region's major highways, I-71 and the "Lateral" (Hwy 562), and a short travel time to Downtown Cincinnati. This site's accessibility, existing parking structure, and status as a Federal Enterprise Zone quickly attracted a developer. In 1989, Cincinnati-based Belvedere Corp. committed to Norwood's business park vision for the site and desire to transform the city itself into a white-collar community. The first phase of Central Parke, as it was named by the developer, consisted of three multi-story office buildings on the southwest corner of the site for a total of 235,000 square feet. Belvedere succeeded in pre-leasing a majority of the space bringing an estimated 1,000 jobs back to the site when the first phase was completed and opened for business in 1991 (Gerard, 1992). A more ambitious, second phase began shortly thereafter and promised to bring retail to the development as well as additional office space. Another feature of the second phase was the extension of Wesley Ave southward from the Lateral and its connection with the newly constructed Wall Street which provided access from the northern neighborhoods into the site. Completed in 1997, ten years after the close of the GM plant, the fully transformed site featured 320,000 square feet of multi-story office space, 300,000 of single-story flex office space, and 200,000 square feet of retail space (Dettmer, 1997).



Current Development

Internal Block Structure

Internal Street Network

Aerial Image of Existing Development at Central Parke (Source: GoogleMaps/DigitalGlobe, 2007)

Figure 2.11: Central Parke by Belvedere Corporation (Norwood, OH)

That same year, with over 80 diverse businesses now occupying the site, the National Council for Urban Economic Development selected Central Parke as the recipient for the National Economic Development Partnership Award.

With the GM plant replaced by Central Parke and several other industrial sites converted into similar office developments, Norwood seemingly succeeded in transforming its economic base. However, despite the recovery, two new problems began to surface. First, a continued trend of fast-paced development following Central Parke and its sister projects ignited concerns among Norwood residents about increased traffic congestion and general quality of growth (Vela, 2003). Then, in 2004, the Ohio Auditor's Office was forced to declare Norwood in a state of fiscal emergency. As the office development projects continued to thrive, critics pointed to the local government's overspending and poor budget management rather than the economic shift as responsible for the city's condition (Kemme, 2004). Both issues aside, Norwood's development continues today. At the end of 2007, developer Al Neyer, Inc. completed a $105 million first phase of yet another large-scale office development on a 15-acre parcel to the north of the Central Parke site which had also previously been owned by GM (Bernard-Kuhn, 2007). The project, Linden Point, is expected to add another 600,000 square feet of combined office and retail space when it is completed in 2011. With this and other office developments on the horizon, Norwood appears to remain committed to its white collar image.

2.6 Union Seventy Center (St. Louis, MO)

The redevelopment of a former GM assembly plant in St. Louis, Missouri is one of the few examples in which the site successfully retained its industrial capacity. In addition to further developing the site to accommodate additional users, the centerpiece of the project revolves around the adaptive re-use of the original GM assembly plant. Constructed by GM in 1920, the three million square foot plant operated two assembly lines for the production of various car and truck models over the next 60 years. First signs of the plant's decline came in August of 1981 when GM made the decision to close the plant's Corvette assembly line (Reuters, 1981). Recently imposed federal pollution standards would have required extensive modification of the assembly line, and the company opted to send production of the Corvette to a newer facility in Bowling Green, Kentucky rather than make the expensive investment in the aging facility. Just three years later, in 1984, GM announced that the truck assembly line would also be closed in the following year at which time production would be moved to another new facility in Fort Wayne, Indiana ("GM Missouri Unit," 1984). The plant officially closed in August of 1987 leaving the future of the 160-acre site in question. The site itself sat in the middle of an active industrial center, but the larger area beyond had long since developed into

Current Development

Internal Block Structure

Internal Street Network

Aerial Image of Existing Development at Union Seventy Center (Source: GoogleMaps/DigitalGlobe, 2007)

Figure 2.12: Union Seventy Center by Clark Properties (St. Louis, MO)

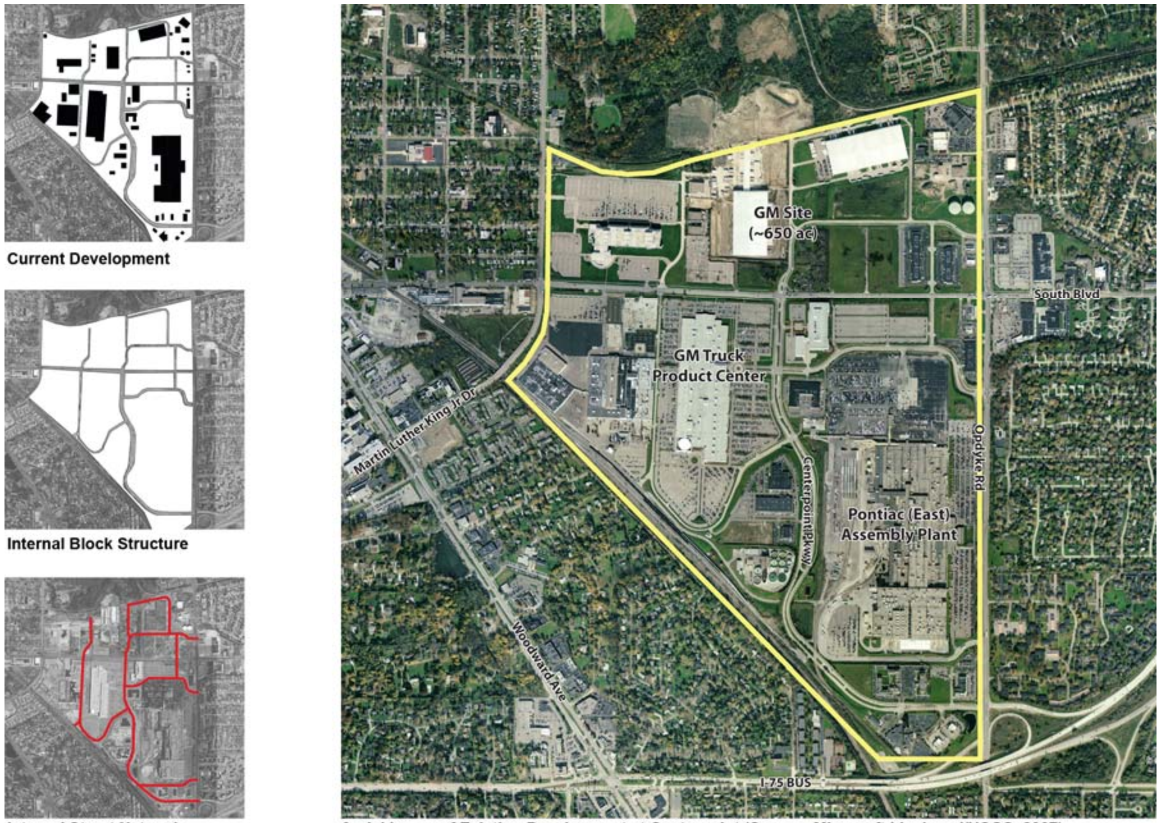
single and multi-family residential neighborhoods. In addition, the Planned Industrial Expansion Authority (PIEA) of St. Louis, a city agency responsible for reviewing plans and granting financial incentives to designated areas and projects, declared the site a "blighted area" following GM's departure which imposed requirements that any redevelopment plan for the site be submitted for approval (Lindecke, 1989). In February of 1989, less than two years after the plant's closing, developer Clark Properties announced that it had purchased the site for $500,000 and had already gained approval from PIEA for its plan to redevelop the site for warehousing and manufacturing space (Ibid). The first phase of Union Seventy Center, named for the project's proximity to Interstate 70, called for an initial $21 million investment towards the renovation and adaptive re-use of seven existing buildings for warehouse space (including the former GM assembly plant) as well as environmental remediation and other site improvements intended to attract additional manufacturing companies. A new, internal 60-foot street (edge of pavement dimension), Brown Avenue, was a major feature of the first phase intended to provide access to the remaining 70 acres of the site where additional development would be focused during the second phase. In announcing the deal, Clark Properties cited that a strong market demand for warehousing and manufacturing, coupled with the site's location approximately six miles from both Downtown St. Louis and Lambert International Airport and proximity to major rail and interstate corridors, made it a prime candidate to attract new industrial users. Additionally, the city had lowered the tax assessment on the property and granted a 25-year tax abatement on all property improvements made by the developer. By August of the same year, Clark Properties broke ground on the first phase and announced that the major lease signings of Mercantile Bank, Norcliff Thayer, and The Sansone Group had placed pre-leasing eight months ahead of schedule (Faust, 1989). With status pending as a Missouri Enterprise Zone, both developer and city officials remained optimistic that the extra financial incentive would sustain the overwhelming rate at which tenants were being attracted to the redeveloped site.

Following the completion of Brown Avenue, Clark Properties began the second phase of Union Seventy Center in September of 1990. While the first phase succeeded in securing tenants for 900,000-sf of the newly renovated GM plant, the second phase focused on all new construction which the developer anticipated would be 30 percent owner-occupied (Faust, 1990). Both phases, at a combined estimate of $75 million, were targeted for completion by 1993 and expected to bring an estimated 3,000 jobs back to the site. With the initial development complete, the Union Seventy Center would continue to attract and change tenants and undergo additional development through the rest of the decade. In 1994, Clark Properties dedicated a new $35 million facility that had been developed exclusively for Pepsi-Cola Co. for use as a brand new bottling facility

(Faust, 1994). Initial tax abatements granted to the developer and the site's recently attained enterprise zone status were key components in securing the deal with Pepsi. The new 260,000-sf facility, constructed on a 27-acre parcel, remains the largest owner-occupied structure on the redeveloped GM property and, along with the renovated assembly plant, continues to serve as an anchor facility on the site today.

2.7 Centerpoint Business Campus (Pontiac, MI)

At 650 acres, the Centerpoint Business Campus represents one of the largest redevelopments of a GM site and the largest among the auto plant case studies. Redevelopment of the massive site, located on Pontiac's southwestern suburban edge along Interstate 75, involved three assembly plants in total: the Pontiac East and Central Assembly Plants located on the primary site and the Pontiac West Assembly Plant on a separate 63-acre site located immediately to the northwest. The unique element regarding the redevelopment is the active, dominant presence retained by GM on the site. Though both the central and western assembly plants have long since ceased production, GM's desire to transform the site into a high-tech research facility and maintain operation of the eastern assembly plant served as the centerpiece for the proposed redevelopment. In 1986, due to heavy financial losses, GM announced a corporate restructuring plan that included the closing of 11 assembly plants through the country (Associated Press, 1986). This included the 60-year-old Pontiac Central Assembly Plant whose truck line had just recently been merged with Volvo White Truck Corp. which relocated the truck production to the partner's facility in Greensboro, NC starting in 1988 (Miller, 1996). A year later GM announced the sale of the remaining bus and van line to Greyhound Corp. which remained in production until August of 1990 when the plant ceased all operations.



Current Development

Internal Block Structure

Internal Street Network

Aerial Image of Existing Development at Centerpoint (Source: Microsoft LiveLocal/USGS, 2007)

Figure 2.13: Centerpoint Business Campus (Pontiac, MI)

By the end of 1993 GM had already received final approval for redevelopment and announced Etkin Equities, Inc. as the developer for its plan to transform the 650-acre property into a $300 million industrial and commercial mixed-use campus where GM would consolidate its truck research and engineering facilities currently dispersed throughout the surrounding region (Halliday, 1993). The first phase of the plan, the most ambitious, focused on opening a 450-acre portion of the site, located between the remaining assembly plants, for new development. An integral part of the first phase was the $150 million conversion of the closed three million square foot central assembly plant into GM's one million square foot Truck Product Center which would provide an anchor for additional development (Pinto, 1993). Another $14 million would be spent to improve the site primarily in accessibility to I-75 and the construction of a new, major road through the site named Centerpoint Parkway. In addition to tax abatements already granted on the property by the city, the development also sought status as an enterprise zone to help attract tenants and funding of approximately $15 million from various sources including the Michigan Department of Transportation and the U.S. Department of Commerce to assist with road construction and site improvements. By the time the new GM Truck Product Center opened in July of 1995, GM had already amended its scope within the Centerpoint Business Campus to include an additional $56 million, 400,000 square foot Truck Development Center on the current site and renovation of the recently closed western assembly plant to serve as a Truck Validation Center annex (Desmond, 1995). With GM's presence firmly established and the site ready for further development by industrial users and commercial and retail businesses, Etkin and GM estimated that Centerpoint Business Campus could bring as many as 11,300 jobs to Pontiac.

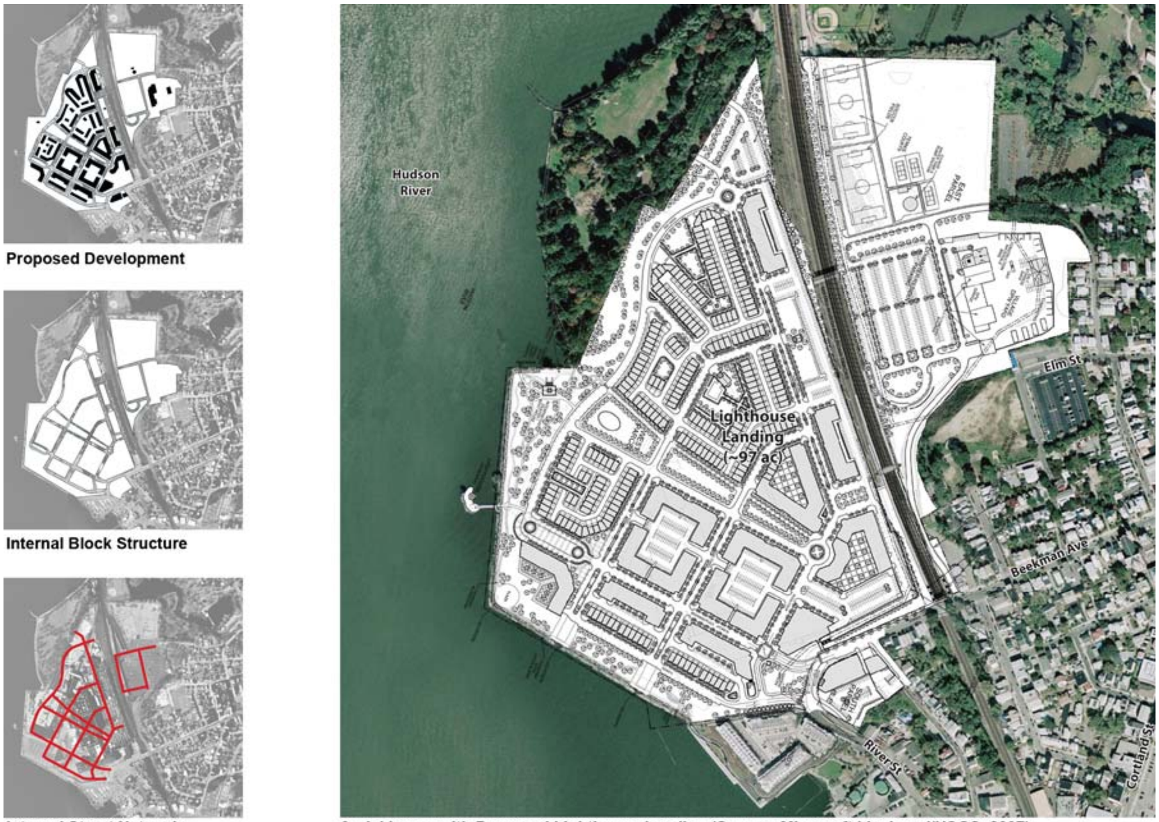
The site continued development through the new millennium including the construction of facilities and flex space for various industrial and office tenants, three new hotels, a retail center, various restaurants, and even a fitness club. Construction of a $44 million Marriott hotel designed by PFVS Architects, Inc. of Atlanta was heralded as the "crowning jewel" of the campus when it began construction in 1999 (Etkin, 1999). Etkin announced its plans to move forward with the second phase of Centerpoint in April of 2001 which called for an extension of Centerpoint Parkway, opening the northern 150-acre portion of the site for additional development and continuing the goal of "offering a suburban business park with an array of amenities" (Smith, 2001). Rather than build speculatively, new construction focused primarily on owner-occupied projects. However, despite continued development at Centerpoint, the City of Pontiac is still encountering obstacles including some at Centerpoint itself. A recently conducted study estimated the city's office and storefront retail vacancy at 25.8 percent and 35.5 percent respectively (Duggan, 2007). The news came on the heels of an announcement by GM who planned to move thousands of jobs from its Centerpoint facility to a newer tech center in nearby Warren, Michigan (Smith, 2007). Though Etkin was successful in replacing the loss with a new tenant, both factors raise initial questions regarding the future role of GM at Centerpoint in Pontiac.

2.8 Lighthouse Landing (Sleepy Hollow, NY)

Originally announced in 2001, the development of Lighthouse Landing, a mixed-use village proposed to replace the long since demolished GM Tarrytown Assembly Plant, only tells a portion of the saga that directly links the development of Sleepy Hollow, formerly known as North Tarrytown, with the fate of the GM-owned property. Located along the banks of the Hudson River approximately 30 miles north of New York City, the 97-acre property sits immediately adjacent to the village of Sleepy Hollow. A series of operating rail lines bisects the site north to south and creates a barrier between both the site and the village. GM's long history on the site began with its purchase of an existing auto plant on the site in 1914. The plant, under GM's ownership, began production the following year and, in the mid 1920s, filled the neighboring Safe Haven Bay for its expansion (Russell, 1999). The removal of the bay was further implicated by the location of the Pocatino River whose original course through the site had to be rerouted into the Hudson River farther to the north: a move that would prove problematic in the redevelopment process decades later. Other notable environmental issues mark the plant's relationship with the waterfront. In 1970 the U.S. Attorney's office cited the plant for pumping waste, primarily from its paint shop, into the Hudson River and required the construction of storage tanks on-site to store and treat effluent material (Anonymous, 1971). Despite the environmental issues, the village, prompted by recent production shutdowns at the plant and aware of growing attempts by Sunbelt states to attract industry, became concerned with the long-term future of a plant that played a vital role in the local economy and represented almost one-half of the property tax base (Hudson, 1982).

After almost 70 years in operation, concerns regarding the long-term future of the GM assembly plant in Tarrytown first became reality. Though the plant initially undertook a $50 million assembly line conversion in 1984 to prepare for the production of newer, mid-size car models, the Federal Clean Air Act of 1978 necessitated a more substantial investment of $200 million to bring facilities up to compliance with recently established environmental standards (Lueck, 1984). Most notable of these upgrades was the necessary construction of a new paint shop by 1987, requiring the majority of the financial investment. Eager to ensure continued operation of the plant far into the future, local and state officials prepared an incentive package aimed at ameliorating the financial and other logistical implications cited by GM during its consideration of the plant upgrade. The final incentive package, accepted by all parties in 1985, provided many financial benefits to GM including subsidies for energy consumption, tax relief from site designation as a Foreign Trade Zone, heavily reduced payments in-lieu-of-taxes (property) to all involved municipalities, and bonds for the construction of the new paint shop secured through the Mount Pleasant Industrial Development Agency (Hudson, 1985). The package also arrange for the Mount Pleasant Industrial Agency to purchase and leaseback the GM property for a period of ten years at which time the terms of the lease would be renegotiated. The term of the lease guaranteed the plant's operation for the next decade, and officials hoped the successful deal would provide a gesture of goodwill, enticing GM to construct its recently announced Saturn assembly plant within the state (Blau, 1986). Though Spring Hill, Tennessee was ultimately selected as the location for the new assembly plant in 1986, local and state officials continued to work with GM by spending over $22 million to raise 23 bridges within the region to a clearance required for the plant's railroad utilization (Shervington, 1987). GM seemingly reciprocated this gesture when it announced an $80 million conversion of the Tarrytown Assembly Plant for production of its new Lumina mini-van model.

In 1992, despite the numerous incentives, GM finally announced its plans to close the Tarrytown plant by 1995 (later extended to 1996 due to brief sales increase) as part of its effort to consolidate production operations (Lueck, 1992). The village, already suffering from an eroding tax base created by the payments in-lieu-of taxes, stood to lose the most financially. State officials attempted to persuade GM to keep the plant open but were cognizant of an estimated total of $140 million already offered in past incentives and a trend of deindustrialization along the Hudson River (Brenner, 1992). Persuasion to keep the plant open was soon replaced by feasibility and remediation studies to ascertain a new future use for the site. The village, witnessing first-hand the deindustrialization of the Hudson River and wishing to avoid another blighting, abandoned industrial site, drafted and passed its Environmental Protection and Abandoned Property Reclamation Law (Nolon, 2003, p. 47-48). The law, the first of its kind, went beyond federal and state remediation standards and required any industrial property owner with more than 50,000-sf of space to demolish all structures and remediate the site for any potential use within 18 months of officially closing. GM disputed the law in court before eventually dropping the suit and returning to the negotiating table to discuss the terms of its departure with the local government. Meanwhile, the village began its own preparations for re-staking its identity following the auto plant’s departure. The first action came when the village officially changed its name from North Tarrytown to Sleepy Hollow in hopes of capitalizing on it cultural heritage in transforming into a tourist-based economy (Berger, 1996). The name change was almost immediately followed by passage of the Local Waterfront Revitalization Plan. The plan, approved in 1997, proposed new parks and recreational uses for the village’s waterfront and rezoned the GM site to a newly created Riverfront Development District



Proposed Development

Internal Block Structure

Internal Street Network

Aerial Image with Proposed Lighthouse Landing (Source: Microsoft LiveLocal/USGS, 2007)

Figure 2.14: Lighthouse Landing by Roseland Properties (Sleepy Hollow, NY)

(RF) category for mixed-use and waterfront amenity space (New York, 1997). The riverfront plan proved vital in providing the village with leverage as GM, in compliance with the reclamation law, had already begun conducting best-use studies and soliciting developers for the site. As demolition of the site completed in 1999, redevelopment proposals, including one by Donald Trump estimated at $1 billion, began capitalizing on the waterfront plan's mixed-use vision but began prompting village concerns over added population and development density (Glaberson, 1997).

The most recent chapter in the saga began in 2001 when GM announced Roseland Property as the developer for the former auto plant site (Foderaro, 2001). The developer immediately went to work with the local village in creating a clear vision for the project named Lighthouse Landing. From the outset, Roseland's desire to take full advantage of the 1,900 housing units allowed under the property's current zoning

Figure 2.15: Lighthouse Landing with Proposed Pocatino River Restoration

conflicted with village claims that it could only support little more than half of the maximum development scenario. City officials worked with the developer for the next two years finally unveiling the initial plan for Lighthouse Landing in 2003 (Stillman & DeWan, 2003). The master plan, a culmination of over 40 meetings involving the developer, city officials, and local residents, proposed transforming the former industrial site into a $1billion mixed-use development consisting of 1,562 housing units, 180,000-sf ground floor retail space, 50,000-sf office space, 150-room hotel, and 33-acres of parks and open space aimed at providing public waterfront access and connections to a state proposed greenway project. Projections that the development could bring upwards of 2,900 new residents to the city immediately raised public concerns regarding burdens to streets, services, and other infrastructure not just in Sleepy Hollow but also in surrounding villages particularly the neighboring Tarrytown (separate municipality from North Tarrytown). Site access, limited due to the location of the railroad through the site, focused street connections on Beekman Avenue, the “main street” of Sleepy Hollow, and the potential for traffic congestion became a primary concern of the residents. Additionally, Riverkeeper, an environmental organization concerned with the protection of the Hudson River, criticized the plan for not exploring the possibility of restoring the Pocatino River and natural habitats, overbuilding the site, and providing inadequate amounts of open space particularly along the waterfront (Bloom, 2003). Controversy over the project’s proposed density and open space configuration, physical and ecological restoration of the Pocatino River, and site remediation standards continued for the next several years as Roeland prepared the Environmental Impact Statement for the project. Concerns eventually led the developer to propose a revised plan for Lighthouse Landing in February of 2007 that reduced development to 1,250 housing units, 132,000-sf ground floor retail space, 35,000-sf office space, and 140-hotel room at a new total cost of $800 million including $25 million specifically for site remediation (Brenner, 2007). Local officials acknowledged Roseland's attempt to redraw the plan in conformity with local wishes but maintained previous criticisms regarding density impacts and ecological restoration. Finally in December of 2007, with Tarrytown indicating it would again reject the developer's special permit required to proceed, Roseland Property officially announced its withdraw from the Lighthouse Landing project citing that local expectations regarding density and environmental standards made the project no longer financially feasible (Anderson, 2007). With no contingency plans currently in place, the future of the demolished GM site along the banks of the Hudson River remains in question as a new developer is sought.

2.9 The Village at Chosewood (Atlanta, GA)

The Village at Chosewood is a case study of a project currently under development. Though plans have yet to move beyond the drawing board, sufficient material exists to understand the proposed redevelopment in terms of its physical and historical context. The site, originally 84-acres when occupied by GM, is located adjacent to a federal prison along a decaying industrial rail corridor approximately three miles south of Downtown Atlanta. Also immediately adjacent are the neighborhoods of Chosewood Park and Lakewood Heights, both of which have played a critical role in establishing a new vision for the site. The original plant began operation as Atlanta Chevrolet Assembly Plant in 1929 officially changing its name to Lakewood Assembly Plant when it was re-organized by GM in 1968 (Wertheim & Zeccola, 2005). The plant underwent a series of temporary layoffs and shutdowns throughout the next decade. Serious doubt was cast on the future of the plant when it was idled indefinitely in 1982 but was allayed temporarily following a re-opening with one production shift less than a year later (United Press International, 1983). Lakewood witnessed a short production resurgence through the mid-1980's adding back both production shifts and undergoing a $135 million conversion for full-size model production in 1986 ("General Motors to Close," 1985). The resurgence was short-lived, however, as poor sales led GM to idle the plant permanently in March of 1990 and officially close it four months later (Staff, 1991).

After vacating, GM opted to place the entire site up for sale in 1991 anticipating that a new industrial user would be able to take advantage of the existing plant and its infrastructure. It took less than three months for Mindis Industrial Corporation to purchase the site for $5 million for use as its headquarters and integrated recycling facility (Scott, 1991). Mindis reused a portion of the original plant for this purpose while demolishing the rest of the site to accommodate a railroad/truck container storage yard. Though the site still functions in that capacity today, additional uses were proposed for the site throughout the next decade. The most interesting of these was a proposal by architect Wade Burns to use the site and truck containers to create a "boxcar community" temporary homeless shelter (Scott, 1994). Chosewood Park and its Neighborhood Planning Unit (NPU-Y) succeeded in opposing the proposal. The proposal foregrounded outstanding questions regarding the site's continued industrial operation and catalyzed the neighborhoods of Chosewood Park and Lakewood Heights into becoming active participants in creating a new vision for the site. In 1997 both neighborhoods, along with the City of Atlanta Zoning Review Board (ZRB), rejected several attempts by developers seeking to transform portions of the site into a salvage yard (Williams & Reid, 1997). Following plans by the City of Atlanta to move forward with

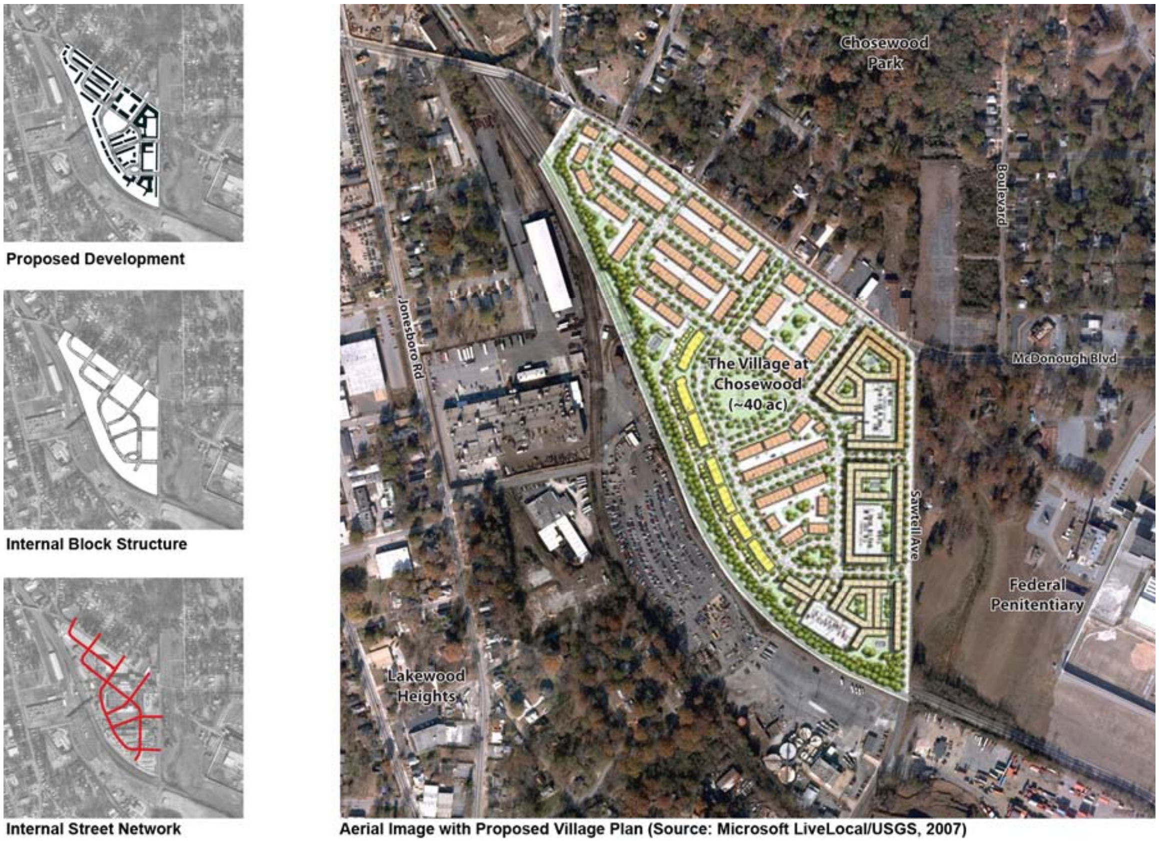


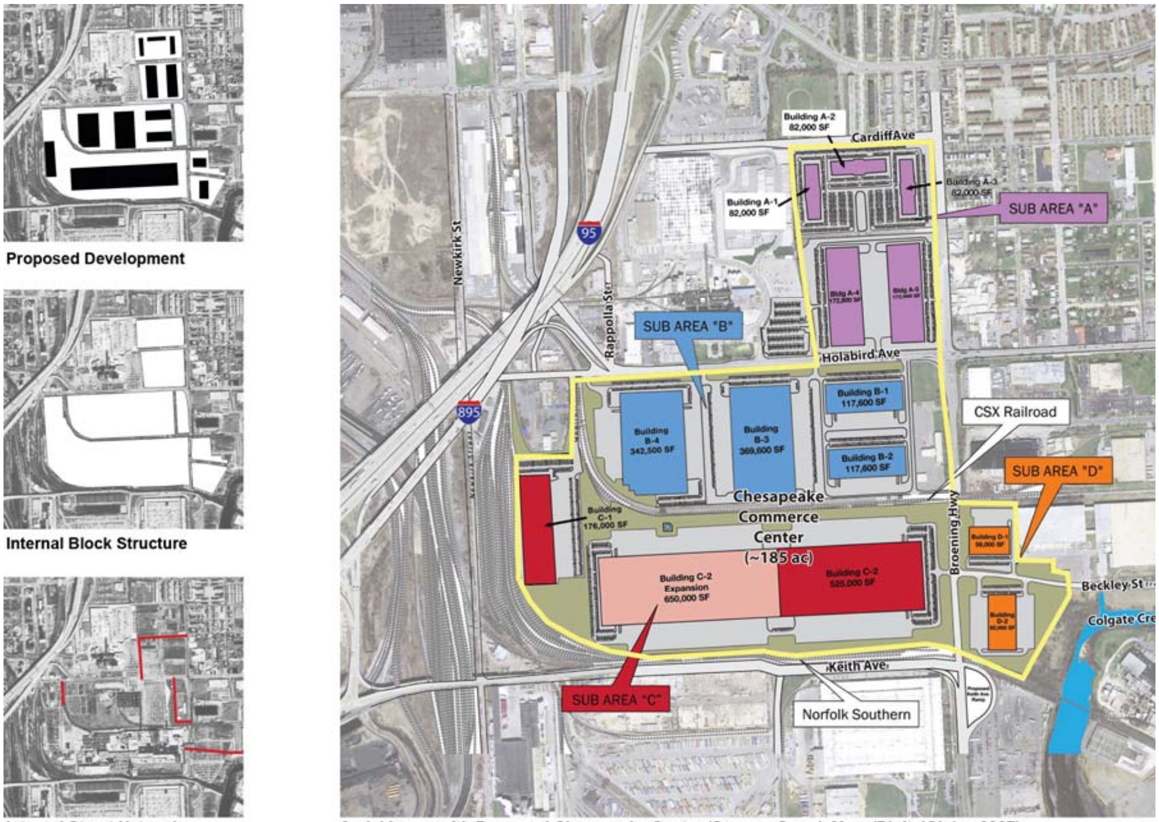
Figure 2.16: The Village at Chosewood by LAS Architects (Atlanta, GA)

the BeltLine project (an urban transportation amenity utilizing the city's inner loop of railroads) the neighborhood of Chosewood Park enlisted the services of local architecture firm Lord, Aeck & Sargent to develop a master plan for the area. The firm, in partnership with an architecture studio at the Georgia Institute of Technology, developed a master plan consisting of a street grid framework, block development strategies, and a new 22-acre park at the heart of the neighborhood. In addition to anticipating future connections to the proposed BeltLine located to the north of the neighborhood, the street framework was also design in such a way that it could also be expanded into the declining industrial property including the GM site to the south.

The Chosewood Park Master Plan set the stage for future collaboration between the neighborhood and Lord, Aeck & Sargent. In April of 2007, the firm unveiled a new plan for the Lakewood property called The Village at Chosewood (MacDonald, 2007). A product of collaboration, the plan proposes transforming a 40-acre portion of the original site into a mixed-use village consisting of up to 1,200 new housing units and 25,000-sf of ground floor retail space in 49 new buildings in addition to a new 2.3 acre park, wrapped parking decks, and other amenity spaces. The underlying street framework and subsequent block structure were designed in conformity with the neighborhood master plan providing numerous street connections and substantial frontage along both McDonough Boulevard and Sawtell Avenue. The City of Atlanta ZRB has already taken the necessary initial steps in making the proposed redevelopment possible by rezoning the property from its previous I-2 heavy industrial classification to the requested MRC-3 mixed-use residential commercial classification. Now the site awaits a developer to make the vision a reality.

2.10 Chesapeake Commerce Center (Baltimore, MD)

Most of the case studies focus on GM assembly plants that were closed in the wake of GM's corporate restructuring during the mid-1980s. However, the GM assembly plant in Baltimore, MD was closed in early 2005 just prior to the second announced restructuring and provides an even more recent example of a former auto plant site already in the process of redevelopment. The plant itself, originally constructed in 1935 on just a 45-acre site, underwent several conversions during its 70-year lifetime including a brief period where it served as a military parts depot and produced aircraft fuselages during World War II (Johnston Jarobe, 2005). GM converted the plant a final time in 1984 for the production of its Chevrolet Astro and GM Safari mini-van lines. Declining sales of both models over the next two decades and the ability to move production to a non-dedicated production facility eventually led GM to decide to close the plant in 2002 (Gray, 2003). However, intense lobbying by both local and state officials and the plant's reputation for productivity gained a brief reprieve on the closing. In May



Proposed Development

Internal Block Structure

Internal Street Network

Aerial Image with Proposed Chesapeake Center (Source: GoogleMaps/DigitalGlobe, 2007)

Figure 2.17: Chesapeake Commerce Center by Duke Realty (Baltimore, MD)

of 2005, the assembly plant in Baltimore, as well as one in Lansing, Michigan, were officially closed sparking wide speculation on GM's current financial status and foreshadowing the second corporate restructuring to be announced later that same year (Hirsh, 2005). Baltimore quickly went to work to fill the estimated 3,000-job economic hole the plant closure represented in the city (Lyne, 2002).

The site, located just four miles southeast of downtown Baltimore, had long since expanded from its 45-acre size and now occupied a total of 183 acres on the Port of Baltimore. Immediate access to the port, major railroads, and two interstate highways (I-95 and I-895) continued to support a substantial active industrial base immediately surrounding the site and left few questions as to what might replace GM on the site. Less than a year later, in February of 2006, Duke Realty Co. announced that it had purchased the property, valued at $30 million, from GM with plans to demolish the existing assembly plant and replace it with a new $150 million, 2.8 million square foot industrial park consisting of up to 16 new buildings. The new buildings were to be constructed primarily for warehousing and office uses in an effort to market to a growing research and development base. Having successfully developed several similar projects in the area, Duke Realty claimed that the site's location would provide a "beachhead" for mid-Atlantic operations (Degregorio, 2006). Additionally, the site's location in a designated Federal Enterprise Zone and Foreign Trade Zone created other financial incentives Duke could use to attract potential tenants to the site. GM and government officials both eagerly accepted the deal when the developer expressed its commitment to the city's goal of tripling the employment on the former auto plant site and accepting responsibility for its environmental remediation (Zibel, 2006). In the nearby town of Dundalk, residents applauded the motion to maintain employment in the area on which they were reliant but also hoped the new development would be configured in such a way as to compliment their own recent revitalization efforts by reducing the amount of heavy truck traffic in the area (Degregorio, 2006).

Duke broke ground on the Chesapeake Commerce Center in April of 2007. The developer cited that the willingness of Maryland's Department of the Environment (MDOE) to tailor the objectives of its Voluntary Cleanup Plan (VCP) to the remediation standards of the Environmental Protection Agency (EPA) facilitated the creation of a unified remediation plan which allowed demolition and the majority of the cleanup activities on the site to be completed in a remarkably short timeframe (Rosen, 2007). The initial process took just 18 months to complete, allowing construction to begin on the primary site while cleanup of remaining areas would be completed by the end of the year. The program also recycled a majority of the demolished material, most of which will be used in construction of the new facility. Today development of the site is still underway. Numerous stakeholders and agencies from all levels of government have played an active role to bring the project to this point and will most likely continue to throughout the complex process. It is uncertain what the future holds for the new industrial park or how it will impact Baltimore and Dundalk but one thing is certain: expectations by all involved parties are extremely high.

2.11 Change & Uncertainty: Lessons of Deindustrialization

The redevelopment of the seven former auto plant sites contrasts remarkably with the design proposals for Doraville and Hapeville. The Village at Chosewood, with its emphasis on the physical framework and contextual relationships, offers a potential example of urban design in redevelopment but has yet to be implemented. In most of the other six case studies, urban design is virtually non-existent and appears as an afterthought in the few instances where examples may have been detected. The main problem is that the entire future of the site is virtually inscribed in stone by the end of the first step of the redevelopment process – pre-development. Market demand is used to ascertain project feasibility and prescribe a specific use which drives redevelopment: The Plant is a retail and industrial center; Central Parke is a commercial office park, and Chesapeake Commerce Center will be an office and warehousing complex. Under this model of a redevelopment process, unforeseen issues surrounding environmental cleanup, funding commitments, project marketing, and even public resistance may result in several adjustments during the remaining course of the process. However the overall redevelopment idea fundamentally remains the same and is extremely difficult to alter. In some cases, such a rigid development concept and process can create irreconcilable problems that will ultimately cause the entire project to collapse. Roseland’s Lighthouse Landing in Sleepy Hollow spent six years since its inception battling public resistance. Though the developer attempted to revise its initial vision for the mixed-use village on the Hudson River waterfront, differing views and values surrounding the site resulted in

Figure 2.18: Images of The Plant, Central Parke, and Lighthouse Landing

the eventual withdrawal of the developer and the project's ultimate demise. In other cases an over-reliance in a site's specific function is observed. The City of Pontiac is witnessing tremendous vacancy rates in its downtown while the massive 650-acre Centerpoint Business Campus itself is thriving and continuing to develop. Norwood's Central Parke was the first step in an effort by the city to transform itself from a blue-collar to a white-collar economic base and identity. While similar office development projects continue today, Norwood continues to struggle financially. Despite the immediate problems they face, what will happen to these two cities if these use-based projects encounter the same fate of their auto plant predecessors and are forced to reinvent themselves again?

At the heart of the problem lies the issue of uncertainty: the conventional development process, from interest rates to vacancy rates, abhors uncertainty while urbanization epitomizes it (Koolhaas & Mau, 1998). Understanding what is meant by *deindustrialization*, a term often associated with brownfield redevelopment, further illustrates the concept of uncertainty in urbanization. The term deindustrialization is often used to describe a decline of industry or industrial employment in a specific area. This narrow definition oversimplifies the term and overlooks a broader set of active economic forces and conditions. Jefferson Cowie and Joseph Heathcott (2003) in *Beyond the Ruins: The Meanings of Deindustrialization* argue that the term deindustrialization entertains a wide variety of meanings:

> Thus “deindustrialization” can mean many varied things…only a small part of these meanings emerges from the loss of manufacturing employment. The broader meanings emerge from the de-linking of investment and place, the deinstitutionalization of labor relations machinery, de-urbanization (and new forms of urbanization), and perhaps even the loosening of connections between identity and work. A still broader view suggests that deindustrialization and industrialization are merely two ongoing aspects of the history of capitalism that describe continual and complicated patterns of investment and disinvestment. These patterns respond to new politics, technology, and cultural conditions, but in the end the seeds of deindustrialization were in every instance built into the engines of industrial growth itself (p. 15).

The core of the argument is that deindustrialization must be understood as an ongoing, indeterminate *process* rather than a specific *period* within a discernable end point. For example, in the aftermath of the recent Ford and GM closings, other auto plants continue to open in new locations. Even in Georgia where Atlanta witnessed the simultaneous plant closings in nearby Hapeville and Doraville, new plants within the state promise to take their place. South Korean-based Kia Motors Corporation is currently constructing a new $12 billion facility in West Point, Georgia which aims to employ up to 2,500 workers when it opens in 2009, while German-based Volkswagen AG is contemplating construction of a new plant on a 1,500-acre site near Savannah (Chapman, 2008). In an unpredictable manner, the arrival of these plants will transform all aspects of the cities they inhabit but one day these plants too will close. Someday these cities will also be forced to respond to the very same set of circumstances being experienced by the numerous cities affected by the recent Ford and GM plant closings today. Ultimately, new brownfield sites will have been created implicating them not just in a process of deindustrialization but rather a much broader set of processes that drive urbanization. Cowie and Heathcott (2003) argue the various ways deindustrialization implicates itself in this manner:

> Rather than arguing that simple job creation or destruction is the key, these contributors show that fundamental long-term historical trends are very important to understanding seemingly rapid changes. We have to look at issues such as spatial relations, cultural politics, labor organization, key transformations in the

> urban landscape, the political and social burdens that plague former industrial communities, the environmental legacy, and changes in social identity (p. 14).

In *Drosscape: Wasting Land in Urban America*, Alan Berger (2007) makes a dubious distinction between the terms deindustrialization and postindustrial in turn further cementing the role of the specific site as subject to the processes of deindustrialization and, ultimately, urbanization:

> The term itself, *postindustrial*, arguably creates as many (or more) problems than solutions in rethinking landscapes leftover from previous industrial eras. The reason for this may be that the concept of the postindustrial narrowly isolates and objectifies the landscape as being the result of very specific processes that no longer operate upon a given site (residual pollution aside). This outlook reifies the site as essentially static and in isolation and defines it in terms of a pre-industrial past rather than as an ongoing industrial process of the city (p. 46).

Urbanization is a complex series of ongoing processes of growth and change whose implications are impossible to predict beyond the immediate future. Despite efforts to the contrary, market demand and land use are no exception to this fact, and a development process that clings to these principles is inherently flawed. Therefore, the key to rethinking brownfield redevelopment is not eliminating uncertainty – an impossible task – but rather accepting that it exists and devising potential strategies that both guide and adapt development to whatever the future holds. Likewise, urban design must forgo consideration of urbanism as a determinant form and instead focus its energies on constructing frameworks that strategically accommodate development in this manner. It too must reflect the idea that use is temporary and change is inevitable. Brownfield sites

Figure 2.19: Central Parke (Norwood) vs. Central Park (New York City)

are not to simply be *redeveloped* for a new use but rather *reintegrated* into a larger set of ongoing processes. The next chapter and its set of case studies illustrate how urban design principles derived from *landscape* hold the potential to inform strategies to this effect.

CHAPTER 3

URBAN DESIGN IN BROWNFIELD REDEVELOPMENT

Both the Doraville and Hapeville redevelopment proposals in the previous chapter outline a strategy of urban design based on physical organization of territory, connections to surrounding context, and strategies for incremental development in order to accommodate change and uncertainty. Together these projects illustrate how urban design *could be* integrated with brownfield redevelopment. So far the tremendous opportunities embedded within the Doraville and Hapeville proposals have yet to be realized, and Hapeville has even just contracted with Jacoby Development, developers of Atlantic Station, to develop the Ford site in similar, mini-city fashion (Duffy, 2008).

Many have exemplified Atlantic Station for its success in turning a contaminated site in Midtown Atlanta into a poster child for Smart Growth and New Urbanism in such a small timeframe. Indeed, if success of the project is to be judged on remediation and compact mixed reuse of a contaminated site alone, then Atlantic Station and its developers have made quite an accomplishment (Miller, 2006). The 138-acre site has been one of the largest urban brownfield redevelopment projects in the U.S. to date, if not the largest. However, critics have also begun to cite Atlantic Station’s urban design shortcomings, specifically in its fundamental organization based on traditional land use master planning, inability to effectively connect with surrounding neighborhoods, and poorly designed public spaces (Dagenhart, Lee & Skach, 2006). Therefore the objective of this chapter is to observe projects where urban design *has been* integrated with brownfield redevelopment.

3.1 The Emergence of Landscape Urbanism

Since the end of the last decade, landscape urbanism has emerged as a critical theory that poses new ideas regarding the processes of urbanization. The term *landscape* often evokes images of naturalistic settings and pastoral scenes which seemingly place *nature* in opposition to the *city*. However, *Landscape Urbanism* asserts that landscape, as opposed to architecture or other form-oriented notions of urbanism, should be viewed as the medium by which urban processes are staged and influenced (Waldheim, 2006, p. 39). Just as complex organizations and dynamic relationships inherent to ecological processes continue to shape the landscape, likewise do the processes of capital accumulation, deregulation, globalization, and environmental protection among others – all processes inherent to urbanization – continue to shape the city and the landscape it inhabits (Corner, 2006, p. 28). In this construct of urbanism, deindustrialization and redevelopment are only two in a wide array of active processes in urbanization. When patterns of urbanization are observed over long periods of time (50, 100, 200 years and beyond), use and demand become highly unpredictable and serve as poor foundations for planning. Instead, urban design has the ability to account for this unpredictability through the design of adaptable physical frameworks, offering a far superior planning instrument.

At the core of this framework-approach to urban design lie the fundamental principles of organization of landscape, connection with existing context, and sustained, incremental development that have guided the creation of great cities in the past such as New York and Savannah. When applied specifically to brownfield sites, such a physical framework is capable of quickly adapting to changing market demand, both in the short and long term, as well as potential environmental contamination during the course of redevelopment. The first part of this chapter illustrates this role of urban design in four major brownfield redevelopment projects (see Figure 3.1): Downsview Park in Toronto,

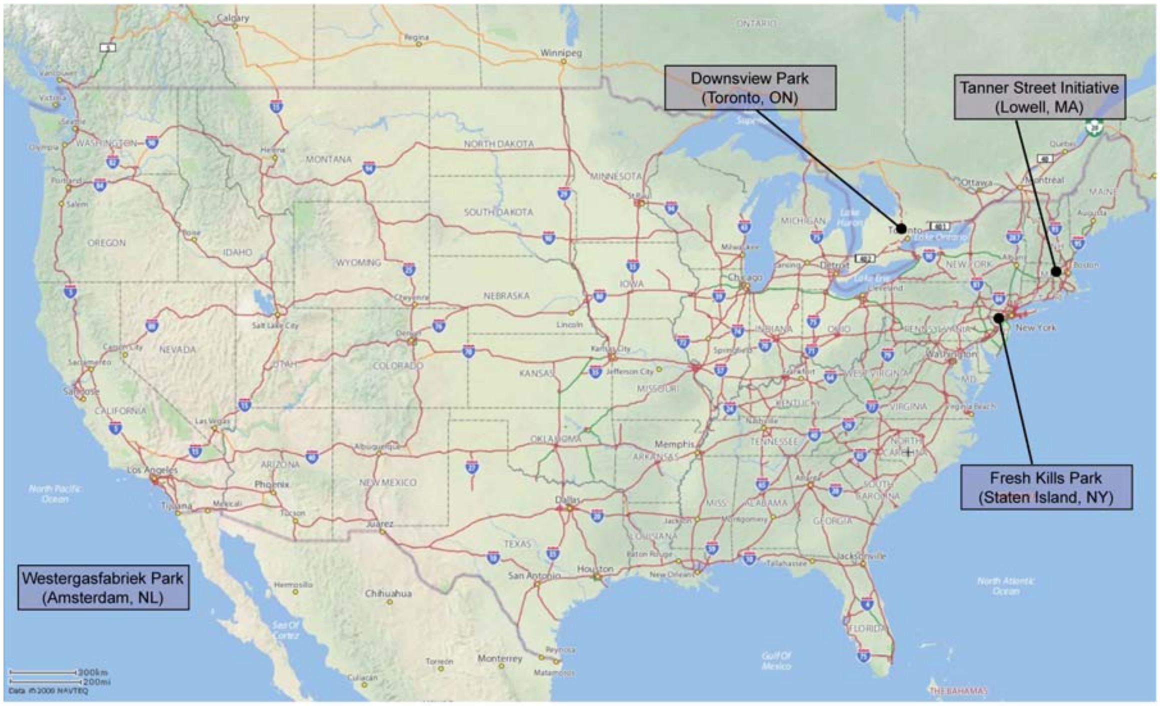


Figure 3.1: Map of Urban Design in Redevelopment Case Studies

ON; Fresh Kills Park in New York, NY; the Tanner Street Initiative for the Silresim Superfund Site in Lowell, MA; and Westergasfabriek (West Gas Factory) Culture Park in Amsterdam, the Netherlands. Following the case studies, five specific principles of urban design are identified, articulated and positioned for further integration into future brownfield redevelopments.

3.2 Downsview Park (Toronto, ON)

The redevelopment process for Downsview Park, located six miles north of Toronto, is defined less by obstacles of environmental contamination and more by the project's size and complex set of program elements. Redevelopment of an air force base that previously operated on the 640-acre site was just one of several objectives to be addressed by the Downsview Park concept. The Tree City concept, produced as a result of the project's international design competition, was chosen for its ability to incorporate the site's storied history, surrounding development, and remaining users into a new vision for the future of Downsview.

Downsview, originally named for its high elevation and south view, sustained an agricultural base until the middle of the 1900s. DeHavilland Aircraft of Canada was the first industrial user to develop when the company constructed an assembly plant along the Canadian National Railway on the site in 1929. Less than a decade later in 1937, the Royal Canadian Air Force (RCAF) expanded the existing airfield and began operations on the site and later expanded again in 1956 firmly establishing RCAF Station Downsview. The RCAF would continue its operations on the majority of the site for almost another 40 years before being decommissioned by the Canadian Department of Defense in 1994; the site was the most recent in a trend of Canadian demilitarization following the end of the Cold War. Following the close of the air force base, the Government of Canada set forth a mission to transform the Downsview site into world-class urban park and amenity for the people of Toronto. Though a public consultation process would eventually lead to the creation of a preliminary master development plan in 1998, the biggest step came a year later when the Government of Canada created Parc Downsview Park, Inc. (PDP) as the agency responsible for developing Downsview Park into financially self-sustaining entity (Genco, 2007). Shortly after its creation in 1999, PDP announced an international design competition to generate a guiding design concept for the park. In all, the competition elicited entries from 179 teams from 22 countries: five of which would be short-listed for further development and included entries from noted architects Rem Koolhaas and Bruce Mau of OMA, Bernard Tschumi, Field Operations, Brown and Storey, and FOA.

In May of 2000, PDP selected the Tree City proposal by the Koolhaas/Mau team as the design concept for Downsview Park (PDP, 2007). The design envisioned an urban forest at the center of all private and public development organized by three major themes. First, the Tree City proposal organized the landscape of Downsview in order to accommodate existing and future development of Downsview Park. It then proposed that

Interim Use of Airfield

Promenade as Urban Amenity

Phasing of Private Development

Aerial Image with Parc Downview Park Development Plan (Source: PDP Corporate Plan, 2006)

Figure 3.2: Downview Park by Koolhaas & Mau (Toronto, ON)

both park construction and new private development be phased in such a way that initial improvements made to the site would create value in turn attracting and funding additional development in future phases; this provided PDP with a critical method for maintaining its financial self-sufficiency. The final and most unique aspect of the design concept proposed that the people of Toronto (primarily in the neighborhoods immediately surrounding the site) and eventually the residents of Downsview Park itself be charged with the construction and maintenance of the urban forest and subsequent additional public park spaces. Not only did this final theme create an opportunity for building social equity into creation of the park, it would also eventually connect Downsview Park with Toronto's existing network of parks and trails. Taken in their totality, all three themes were aimed at providing Toronto with its world class urban amenity by effectively reintegrating the site into the larger context of the city.

Since Tree City was selected as the design concept, activity has already begun on the site to become Downsview Park. Awaiting a finalized plan to proceed, the site has found itself the subject of several interim uses including the World Youth Day in 2002 which brought over 800,000 attendees and a SARS benefit concert in 2004 which featured The Rolling Stones and attracted another 450,000. In 2006, the public process for the planting of the 30-acre urban forest officially began and marked the beginning of physical redevelopment of the site (“Plans for Long-promised,” 2006). That same year PDP released its Corporate Development Plan for Downsview Park which designated the names and locations for the new neighborhoods for private development and their proposed phasing schedule (PDP, 2006). The revenue generated from the leasing and adaptive re-use of existing structures left by the RCAF would fund the initial new development whose additional revenue would be reinvested in subsequent phases in order to sustain the funding cycle. The first new neighborhood, Allen, has been scheduled to begin in 2009. Allen, along with all the other neighborhoods and private development, are to be guided by the Downsview Park Sustainable Community Development Guidelines (PDP, 2006). Instead of prescribing a specific end-product for all private development, the sustainability guidelines offer design standards for streets, blocks, and other urban infrastructure as well as local best development practices in construction that will continue to guide all development beyond the initial Downsview Park build-out anticipated in 2012. From the Tree City design concept, to interim activities and uses, and ultimately implementation of the development plan, PDP has committed itself to a sustainable process that is the vision for Downsview Park.

3.3 Fresh Kills Park (Staten Island, NY)

At 2,315 acres, the proposed redevelopment of Fresh Kills Park is by far the largest project of all the case studies. Located approximately 14 miles to the south of

New York City on Staten Island, Fresh Kills Park is a “world-class” park envisioned to reclaim the former landfill located on the site. Its four square miles far surpasses Central Park (843 acres) in size by almost three times and has required great ingenuity in conceiving a redevelopment strategy. The strategy was complicated by more than just the park’s size: proposed new park programs and natural wildlife restoration would also have to accommodate ongoing maintenance of landfill processes creating a complex set of factors to be considered by the park’s designers.

The Fresh Kills Landfill was first established by Robert Moses in 1948 and remained in operation until 2001. The landfill was re-opened for a brief period of a year to assist the city in disposing of World Trade Center debris following the terrorist attacks of September 11. In May of 1999 with capping of the first landfill mounds already underway, an International Design Competition Organizing Committee formed with the purpose of preparing a redevelopment master plan in anticipation of the landfill’s closing. The committee, led by the New York City Department of City Planning, consisted of several local and state agencies including the Municipal Arts Society, New York State Department of State, New York City Department of Sanitation, New York City Department of Parks & Recreation, and New York City Department of Cultural Affairs. By the time the landfill initially closed in 2001, the design competition had commenced and narrowed the field of entries to three finalist teams. After a lengthy selection process ending in June of 2003, the committee announced the New York-based landscape architecture and urban design firm of Field Operations as the winner. The winning entry, titled “Lifescape,” proposed an incremental strategy for the redevelopment of the massive site: new park programs would be phased into the site to coincide with the inherently gradual process of natural habitat restoration. A series of public design workshops that took place in the spring of 2004 was responsible for determining the specific details regarding the project elements and initial uses that would be inscribed

Habitat Restoration & New Program

Layering of Park Infrastructure

Aerial Image with Illustrative Site Plan (Source: Lifescape, 2006)

Figure 3.3: Fresh Kills Park by Field Operations (Staten Island, NY)

into the master plan for the site. The preliminary document, incorporating the ideas and suggestions from the public involvement process, was released for additional public review and comment in 2005 and then further revised for its official release as the Fresh Kills Park: Draft Master Plan in March of 2006 (New York, 2007).

In order to achieve its goals of public park creation, wildlife restoration, and landfill accommodation, the Lifescape plan proposed three major design moves (Field Operations, 2006). First, the plan subdivided the unwieldy 2,315 acre site into five smaller parks. The four primary parks (North Park, East Park, South Park, and West Park) are to be developed independently with a unique identity as prescribed by the plan while the centrally located “Confluence” (the fifth park) is to serve as the focal point of all public activity. Though each park is considered a unique entity, the park’s underlying infrastructure, the second major design move, provides interconnectivity between the otherwise disparate pieces. The site's existing infrastructure, conceived as a series of layers, includes the site's original wetlands, landfill waste, water collection and treatment system, landfill gas extraction network, impermeable liner, soil cover, and surface water. Paired with the Lifescape plan's added layers of new habitat, new circulation (vehicular and non-vehicular), and new program, the various infrastructural layers culminate in a framework that cultivates the development of the various parks and is capable of accommodating change over time. The accommodation of change over time leads directly to the third major design move: phasing of the park's development. Given the size of the site and the magnitude of the project, the plan additionally stages development in three ten-year phases that began in 2005. Each of the three phases focuses on sequencing the development of the five different parks beginning with the construction of the Confluence and the circulation layer. As the most crucial element, the circulation layer establishes critical connections with various neighborhoods and existing parks located along the periphery of the site. In addition, creation of the circulation network allows public access and use in the interim while facilitating development of the remaining parks in later phases. The phasing approach also allows the financial issues to be dispersed throughout the entire 30-year development period minimizing upfront costs that might otherwise make redevelopment unfeasible. Though this first phase has only just begun, the Lifescape plan for Fresh Kills Park offers potent lessons for dealing with larger sites whose size might otherwise discourage potential developers from realizing their full potential.

3.4 Tanner Street Initiative (Lowell, MA)

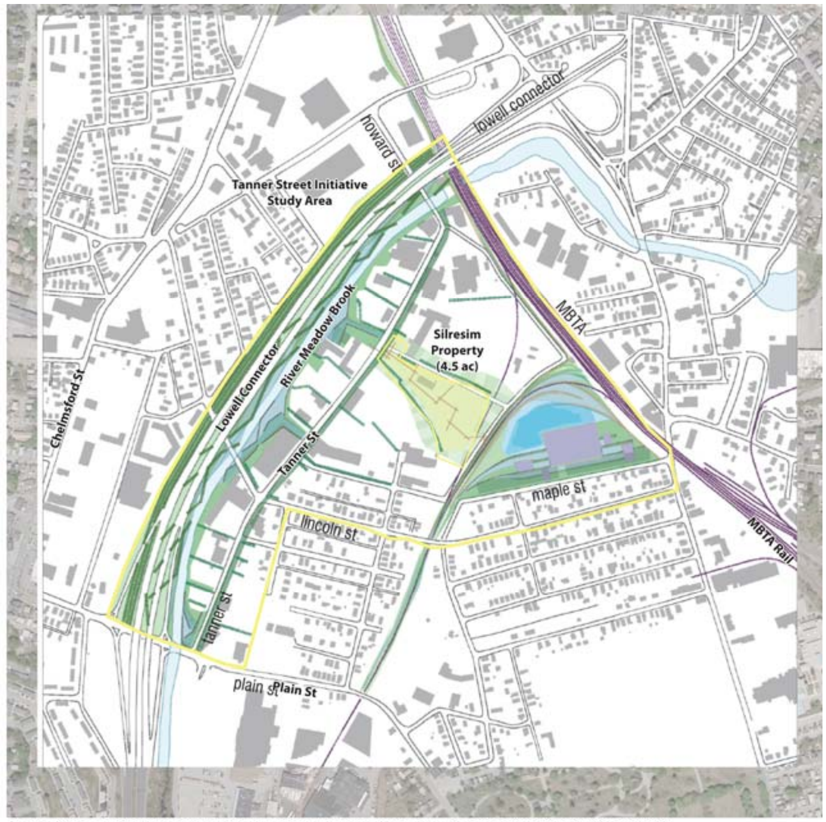
The Tanner Street Initiative for the Superfund Site in Lowell, Massachusetts is a case study of a project that currently only exists on paper. Funding issues for the plan's implementation have prevented the project from moving forward. However, the plan itself is worth examining because of its ambitious proposal to link the redevelopment of a single, smaller site with the redevelopment of one of the city's most industrialized corridors. Prior to the plan, the fate of the site previously occupied by the Silrem Chemical Corp., was firmly tied to adjacent property when the EPA added the site to its National Priorities List (NPL) in 1983. In addition to setting rigorous standards for the site's remediation, the Superfund status also defined the 4.5-acre site in terms of the extent of its groundwater contamination which encompassed a larger 16-acre area (EPA, 2001). Environmental remediation also became a more complex issue given the overall context of the Tanner Street Corridor. The corridor had played a significant industrial role for more than a century, but its gradual deindustrialization promised to leave behind numerous sites also requiring strategies for rehabilitation.

Tanner Street's history began in 1847 when the area started development as a residential and industrial district known as Ayres City. The repercussions of this paired development type first manifested themselves in 1916 when the State Department of Public Health discovered the contamination of River Meadow Brook (then known as Hale's Brook) affecting the area's water quality. Despite the early problems, the river was straightened and channelized when the Lowell Connector was constructed during the 1950s. The connector increased overall accessibility to the Tanner Street Corridor and sustained development for the next several decades. Both the connector and river create a significant boundary along the corridor's northwestern edge. Silresim Chemical Corp. began using the site for chemical waste disposal in 1971 until bankrupting just six years later in 1977. Despite the company's brief presence, the environmental contamination was extreme. After the state spent the remaining part of the 1970s removing stored waste from the site, the EPA added the 16-acre Superfund site to the NPL and spent the 1980s demolishing the site's structures and continuing the remediation efforts (EPA, 1991). Groundwater contamination proved to be the biggest

Long-term Redevelopment Strategy

Interim Park Uses

Extent of Silresim Contamination



Aerial Image with Tanner Street Framework Plan (Source: Tanner Street Initiative, 2002)

Figure 3.4: Tanner Street Initiative by StoSS Landscape Urbanism (Lowell, MA)

challenge, and in 1995 the EPA mandated the installation of a water extraction and treatment system on the site that would take the next 30 years to complete its task. Finally, with remediation of the site significantly accounted for, the EPA granted $100,000 to the City of Lowell to conduct a redevelopment study of the site. Within the year, the city hired Boston-based StoSS Landscape Urbanism and began the process.

After a year of various stakeholder interviews and public meetings facilitated by the city's Community Advisory Board (CAB), StoSS completed the redevelopment study and submitted it to Lowell in September of 2002 (StoSS, 2002). From the public involvement process and an exhaustive examination of the site and its context, both Lowell and StoSS determined that the site could not effectively be redeveloped without considering the redevelopment potential of the entire Tanner Street Corridor: an expanded study area of 120-acres. The final product was a radical departure from the master planning or market reuse assessments typically conducted for similar redevelopment studies. Instead, the Tanner Street Initiative is presented as a redevelopment strategy that proposes phased development of potential interim and long-term uses along with construction of new infrastructural elements. The phasing itself remains flexible in order to coincide with the corridor's ongoing deindustrialization and environmental remediation. A sequence of interim uses, described as events, catalysts, and scaffolds, seek to immediately transform the site into a public park, reconnect it with the city, and allow flexibility for new uses to develop over an estimated 30 year time period (the anticipated time of completion for all groundwater remediation). The idea of incremental reuse culminates in the initiative's long-term framework plan which designates the locations for new circulation (pedestrian, vehicular, and industrial) networks, passive bio-remediation systems, and ultimate re-organization of the corridor for potential future private development. Instead of presenting a single, static use for the site, the plan includes the study of multiple development scenarios illustrating the framework's ability to accommodate a dynamic range of uses and reuses beyond the initial program.

Despite the lack of progress in implementing the plan, the Tanner Street Initiative has already garnered an "Award of Merit" for both the city and designers from the American Society of Landscape Architects in 2004 (Lipchitz, 2004). Lack of funding has been cited as the reason for the delay in progress so far. However, Lowell has just recently begun re-examining the plan, intending to begin the initial steps at implementing its various proposals (Coggins, 2007). The future remains to be seen if the project's vision is completely realized or if continued funding issues cause serious revisions.

3.5 Westergasfabriek Culture Park (Amsterdam, NL)

The case study of Westergasfabriek (West Gas Factory) Culture Park in Amsterdam reveals a project heavily reliant on its process rather than a specific form for the final park design. The park has undergone the majority of its physical rehabilitation and redevelopment over the past decade, but the process itself was set in motion over 40 years earlier when the original gas plant was closed. Complex political, contextual, and environmental problems demanded that the redevelopment process remain flexible throughout its duration. This same flexible attitude continues to guide ongoing development on the site today. Both the redevelopment process and the eventual plan for the new park offer urban design lessons for brownfield redevelopment.

Redevelopment of Westergasfabriek began in 1967 when, after 83 years in operation, the plant was closed following the discovery of natural gas fields in northern Netherlands, making the plant’s coal gasification use obsolete. When the plant opened in 1884, the site remained at the outskirts of the most populated area of Amsterdam. However, the growth of the city during the plant’s operation now placed the site firmly within the local district of Westerpark (West Park). Shortly after the closing, the gas handlers and other equipment on the site were dismantled. It wasn’t until 1981 that the city designated the Westergasfabriek site for recreational use following approval of the city’s new land ordinance. Original maps produced before the construction of the gas factory had originally included the site in an expanded vision of the existing Westerpark to the east; public pressure from the local district sought to have this vision restored in the new land ordinance. Initial plans for the park in 1985 called for demolition of all existing buildings and significant site modifications. This plan was put on hold three years later when a soil analysis revealed the extent of contamination on the site. The recently enacted Soil Cleanup Interim Act of 1983 imposed strict standards regarding the remediation of contaminated sites making the cost of demolition, cleanup, and construction on the Westergasfabriek site simply unfeasible. Redevelopment was delayed even further when Amsterdam's central city government underwent a period of re-organization which officially delegated authority to govern various public services from the central city to the local districts. Included among these was the responsibility of the Westergasfabriek site whose redevelopment was now to be directly supervised by its local district council (EPA, 2007).

The local district went to work on the site, hosting a national competition in 1992 to solicit ideas for its reuse from the public. The most popular of these was a proposal that called for the adaptive re-use of the existing buildings, noted for their neo-classical architecture, in housing a school for modern music on the site. Negotiations to find a music school for the site would take time so in 1993 the district council decided to temporary lease the buildings to artists and other cultural-related activities. The "interim use" period as it has become to be called was proposed for two major reasons: first to keep squatters out of the existing buildings and second to begin allowing public use of the site. Originally intended to last only for the pilot year, the interim use period attracted a number of users to the site and produced numerous public events including art festivals, concerts, fashion shows, and theatrical performances among many others. It was such a success that the interim use period was extended each year for another seven years and may have continued indefinitely except that extensive site remediation forced its conclusion in 2000 (Koekebakker, 2004).

During the seven years of the interim use period another significant set of events surrounding the park's physical redevelopment had taken place. The central city council of Amsterdam rejected the local district's proposal for placing a musical school on the Westergasfabriek site. Instead, in 1995 the central city government chose to locate the school elsewhere in the city. In place of the music school, the central city government offered to provide substantial funding assistance towards the creation of an alternative

Adaptive Re-use of Facility

Park Boundaries & Connections

Interim Use Period

Aerial Image of Westergasfabriek Culture Park (Source: GoogleMaps, 2007)

Figure 3.5: Westergasfabriek Culture Park by Kathryn Gustafson (Amsterdam, NL)

plan for the site. The result was a design competition that produced the final plan by landscape architect Kathryn Gustafson in 1997. The local district selected Gustafson's plan, titled *Changement* (*Change*), for its dramatic contrast to the other entries in its proposal for a varying number of uses and experiences across the site. Instead of proposing a fixed visual image of the park, the final plan featured three primary elements which reinforced the idea of the park as a process (Dagenhart, Leigh & Skach, 2006).

First, the site was internally organized to accommodate new park program and structures in addition to extensions of the interim use period and continued adaptive re-use of existing buildings. The second element, a circulation network constructed on the site, organized the park's internal territories: a major east-west axis connected the primary program elements on the site and was accessible from all of the park's boundaries. Meanwhile the boundaries themselves provided the third element. Clearly defined, the boundaries of the site established key connections with the adjacent neighborhood and existing Westerpark and anticipated future development to the north by allowing for the possible extension of its internal circulation framework. In this sense *Changement* implied not only the internal variation of experience within the site but also the ability of the park's framework to remain flexible and readjust itself as future development demanded.

As of 2003 construction was completed and the park opened, allowing public access to the site for the first time since environmental remediation forced its temporary close three years earlier. Changes to the original law governing soil remediation standards were eased in 1995 but the extent of remediation still caused an interruption to ongoing activities. Remediation became a factor again during building renovations following the re-opening of the park. Responsibility of the buildings had been deeded to developer MAB when the local district established a public-private partnership with the developer in 1999, but now the cost of remediation threatened completion. In response, the local district succeeded in securing low-interest loans from the National Restoration Fund to provide the additional funds required by MAB to continue the renovation work. This final example completes the illustration of the Westergasfabriek redevelopment as a flexible process over time. By maintaining this focus, the redevelopment team, both public and private partners alike, were able to adapt to unforeseen obstacles as they arose ensuring the park's ultimate success.

3.6 Key Principles of Landscape for Urban Design

The four case studies – Downsview Park, Fresh Kills Park, the Tanner Street Initiative, and Westergasfabriek Culture Park – provide clear examples where urban design has played not simply an integral role in brownfield redevelopment but has actually led the process. At the core, these four projects focus on the organization of landscape in order to accommodate change and uncertainty throughout the redevelopment process. This ideology contrasts greatly with the auto plant case studies where consideration of landscape is often narrowly viewed as an object for environmental remediation before redevelopment may proceed. The case studies of Landscape Urbanism in this chapter illustrate five key principles that have guided urban design in brownfield redevelopment: incremental development, organization of territory, layering of infrastructure, definition of boundaries, and creation of public space.

3.6.1 Incremental Development

The first principle, incremental development, maintains that design should reflect the uncertainty of the future or the possibility of several different future scenarios. More fundamentally, urbanization, understood as ongoing process that has no determinant end form, requires a strategic framework that allows the city to continually reinvent and reconstruct itself while providing an organizing structure for its development. The conventional brownfield redevelopment approach, even when it includes principles of master planning or New Urbanism, overlooks this principle by allowing current market demand for use to drive design decisions aimed at quickly developing and maintaining a static project or image of urbanism. Instead, design should remain flexible, adaptable, and indeterminate such that any future development scenario, foreseen or unforeseen, can be accommodated. Rem Koolhaas' design for Parc de la Villette (see Figure 3.6) is one of the most frequently cited projects used to illustrate incremental development (Waldheim, 2006, p. 40-41 & Shane, 2006, p. 60). Rather than design the 125-acre park as a single composition, Koolhaas' scheme focuses on the design of a framework composed of organized programmatic "strips." Additionally, instead of focusing on specific programs or uses for each strip, careful consideration is given to the design of the framework such that it has the flexibility to accommodate any number of programs or

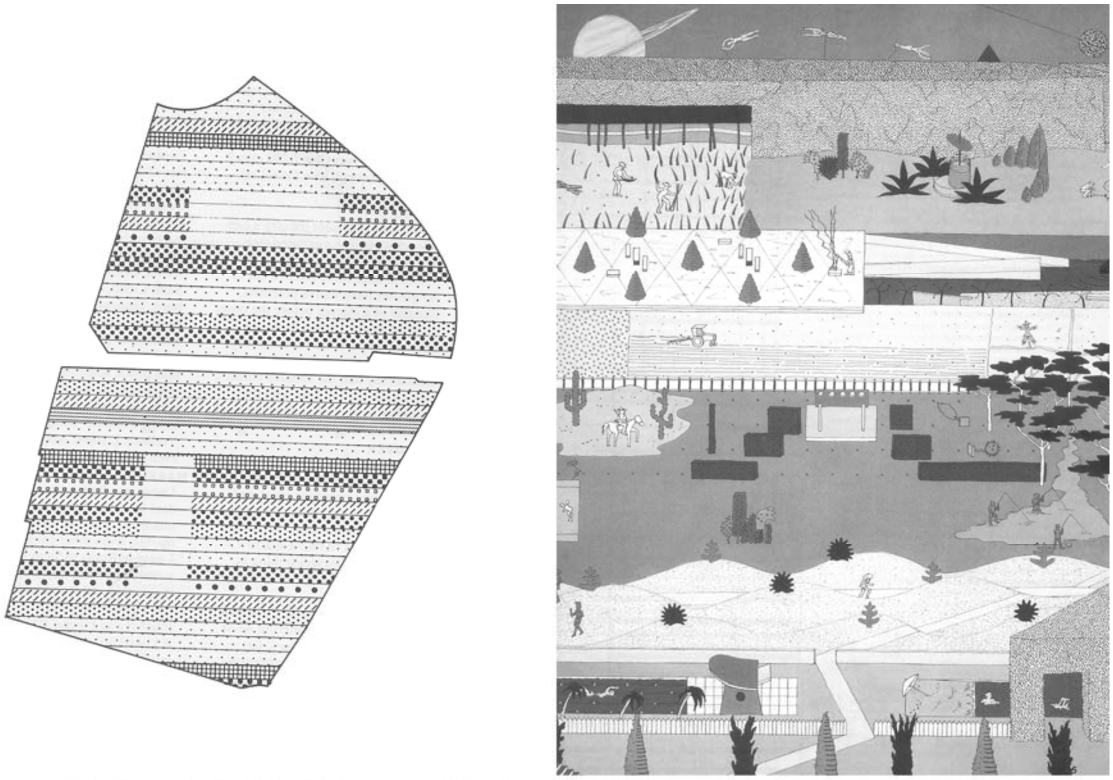


Figure 3.6: Parc de la Villette Concept by Rem Koolhaas

uses over time. Two of the case studies in this chapter – Downsview Park and the Tanner Street Initiative – as well as the redevelopment proposals for Doraville and Hapeville also provide clear examples of this principle.

Similar to Parc de la Villette, Rem Koolhaas and Bruce Mau provided another framework concept, titled "Tree City," to transform the massive 640-acre Downsview site from an air force base into an urban amenity for the City of Toronto. Given the government mandate for financial self-sufficiency and the site's enormity, master planning and development of the site as a single, immediate project simply proved to be unfeasible. Instead, Parc Downsview Park (PDP), the park's development agency, crafted a corporate development plan guided by the Tree City concept. This plan organized the site for phased redevelopment including interim uses in existing structures, creation of public parks, and private development of neighborhood blocks. This incremental approach accommodates the long timeframe required for the

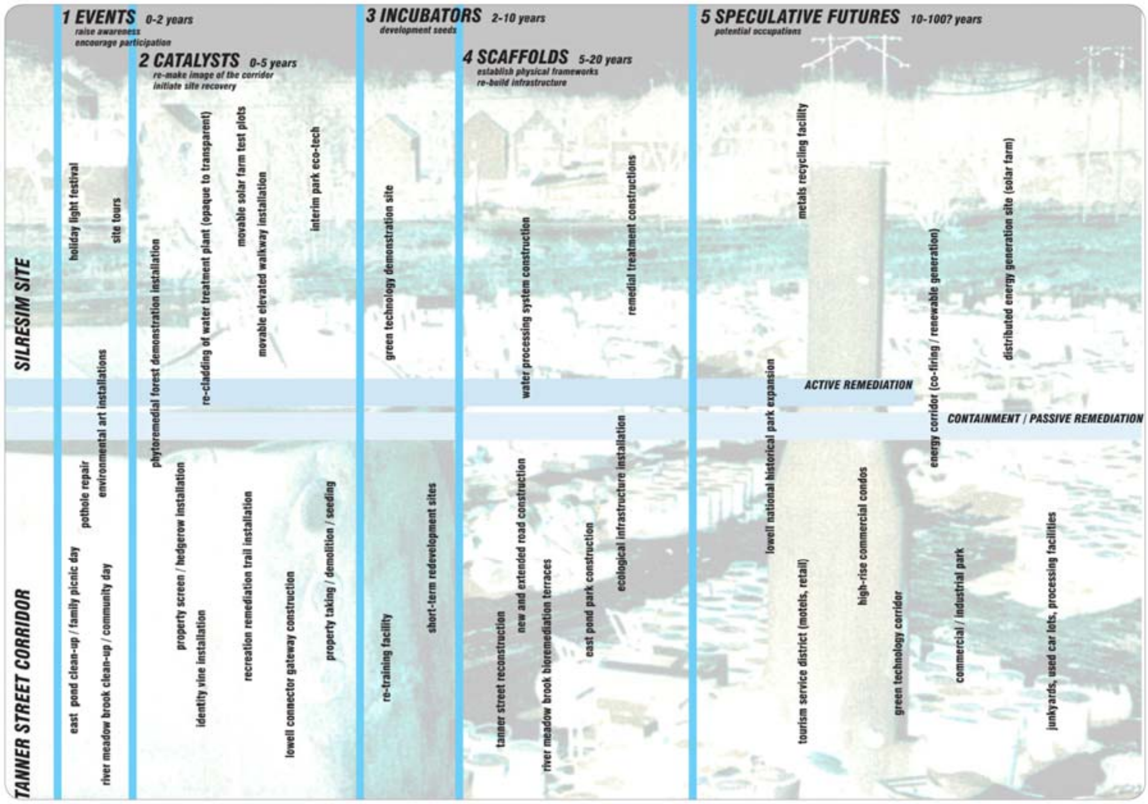


Figure 3.7: Interim Uses & Incremental Redevelopment of Tanner Street

redevelopment of the 640-acre site by allowing programs and uses to adapt to changing demand, unforeseen environmental contamination, and availability of funding sources. Additionally, the Tanner Street Initiative prepared by StoSS Landscape Urbanism links the redevelopment of the 16-acre Silresim Superfund Site in Lowell, MA with the eventual transformation of the Tanner Street industrial corridor. Gradual deindustrialization of the corridor, implicated by highly uncertain environmental contamination conditions and potential long-term remediation, necessitated that StoSS devise an incremental strategy, rather than a specific plan, that stages interim public uses and new private development within a long-term redevelopment framework (see Figure 3.7). Without detailing a specific end-product of redevelopment, the StoSS strategy simultaneously accommodates immediate re-use of the site while allowing the possibility for a variety of potential future uses within the entire corridor. Similarly, at the time the proposals were designed, the environmental statuses of both the Doraville and

Figure 3.8: Organization of Territory for New York City, Hapeville, and Doraville

Hapeville sites were unknown. For this reason the proposals for both auto plant sites purposefully avoid determining and assigning a specific uses for either site. Instead, both sites are organized internally to adapt to uncertainty in environmental contamination and acceptable re-use as a result. Real estate markets still play a role in determining internal uses, programs, and densities, both in the short-term and in the long-term, and may be reconstructed any number of times in any number of combinations. However, the underlying framework remains intact and guides the development.

3.6.2 Organization of Territory

While incremental development establishes a critical strategy for urban design, the second principle – organization of territory – directly informs how incremental development is capable of being staged. How a site is organized internally influences how and where development occurs. With the understanding that urbanization is a series of ongoing and incremental processes, it is crucial that territory be organized in such a way that specific uses and programs embedded within the system are allowed to change ad infinitum without altering the underlying ordering strategy. The traditional street grid system found in many cities both domestically and abroad provides an example of such a framework. James Corner (2006), landscape architect and principal for Field Operations, argues, “this organization (the grid) lends legibility and order to the

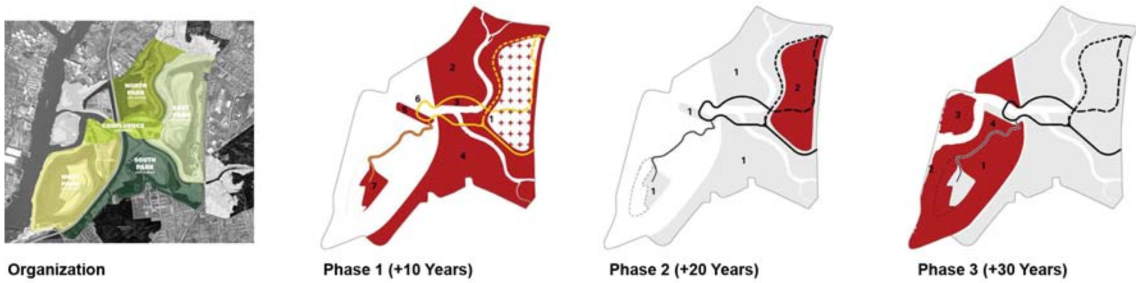


Figure 3.9: Organization & Phasing of Development for Fresh Kills Park

surface while allowing for the autonomy and individuality of each part, and remaining open to alternative permutations over time" (p. 31). The redevelopment proposals for both the Doraville and Hapeville sites, using New York City and Savannah as models, employ street grids to organize their internal sites (see Figure 3.8); the resultant blocks are then subdivided into dimensional lots which provide a further level of organization. The critical dimensions of the entire block and even the individual lot itself condition independent development without affecting the underlying grid of streets. In the case of Hapeville, the street grid is even organized in such a way that it can be extended into the FAA-restricted portion of the site to allow for the future possibility of expansion.

Though the traditional grid provides perhaps the clearest and most flexible example, other projects from the case studies in this chapter illustrate alternative strategies for the interior organization of territory. Downsview Park organizes its territory in such a way that interim performance spaces, adaptive re-use of existing military base structures, development of private neighborhoods, continued air force operations (including the airfield), and many other elements are able to occupy the same site simultaneously. Should a programmatic element or use be removed, added, or changed in some fashion, the underlying organization of the entire 640-acre site, based on infrastructural networks of circulation and major site features, will be unaffected. Fresh Kills Park, previously a 2,200-acre landfill, is first organized into five smaller parks to allow the phasing of development over a 30 year period (see Figure 3.9). In the first

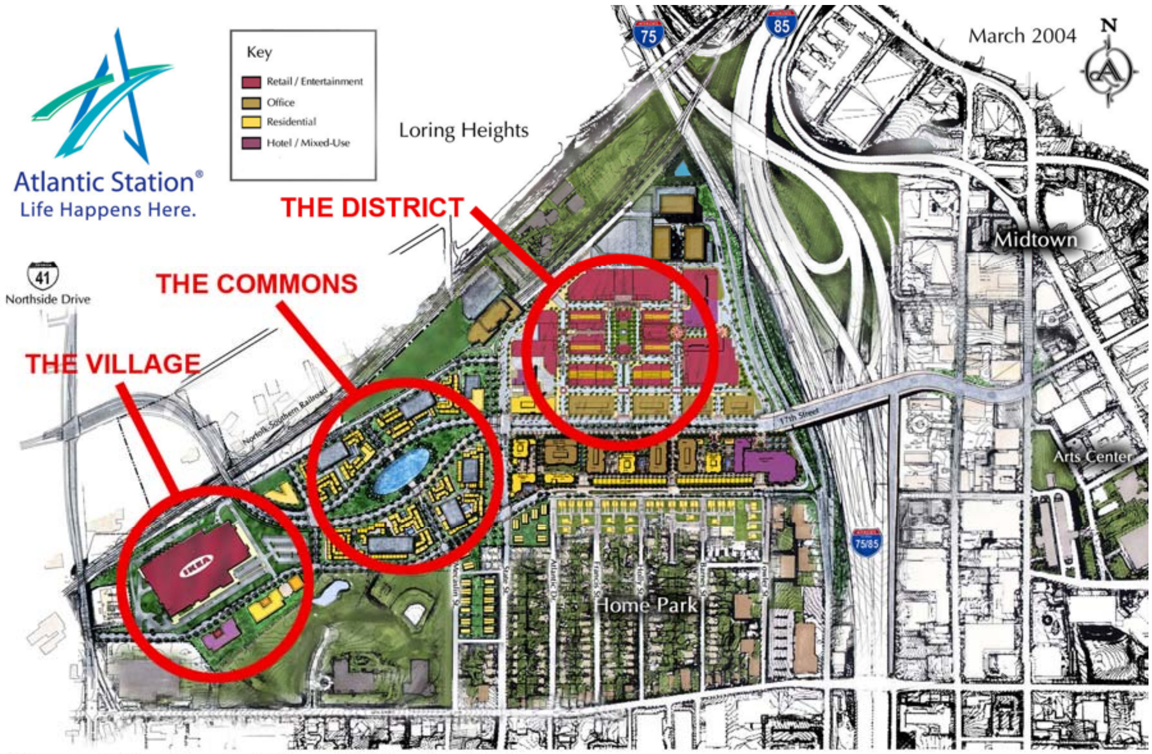


Figure 3.10: Master Plan of Atlantic Station

phase of development, the site's major infrastructure – vehicular and non-vehicular circulation networks – is constructed to organize the five parks for development in future phases. The additional elements such as park activities, retail amenities, and restoration of various wildlife habitats are then "layered" onto the initial framework. The internal organization cultivates rather than depends upon these additional programmatic layers. This principle of design actually illustrates a major shortcoming in Atlantic Station. Though the project features an attempt at creating a street grid on the site, land use drives organization of the site into three elements (see Figure 3.10): a shopping mall on top of a 30-acre parking garage (The District), an apartment development surrounding a 2-acre lake (The Commons), and an IKEA store (The Village). Essentially one third of Atlantic Station depends on the IKEA for its vitality. While the store is currently a huge success in the Atlanta area, what happens should the retailer go out of business or decide to relocate to a new site? The present site design has been driven and highly customized for use by IKEA and will require substantial reinvestment in order to redevelop both building and site in order to accommodate new use. Had the framework been designed to accommodate flexibility in use first, IKEA would have conformed to the framework, significantly reducing the scope and investment required in redevelopment.

3.6.3 Layering of Infrastructure

The method by which a territory is internally organized brings into discussion the third principle of design: layering of infrastructure. On the surface, streets seem like the most logical candidate to fill this role. However, when considering the manner in which the traditional design syntax of streets has been highly segregated into separate networks of vehicular streets, pedestrian sidewalks, bike paths, and systems of water management, it becomes apparent that this principle of urban design be re-asserted. The Director of the School of Landscape Architecture at Louisiana State University, Elizabeth Mossop (2006), makes a similar observation: “in the course of the century we have seen the increasing standardization of infrastructural systems as they meet higher standards of technical efficiency. These ubiquitous urban environments have been considered and evaluated solely on technical criteria and somehow exempted from having to function socially, aesthetically, or ecologically” (p. 171).

Whether intentionally or unintentionally, the method by which infrastructure is designed and constructed automatically informs organization of territory. For example, the traditional street grid has served the purposes of efficient organization of territory, accessibility, and mobility among many others. Allan Jacobs (1993 & 2002) has exhaustively demonstrated the ability of “great streets” to organize cities while serving as well-designed public spaces. However, widespread acceptance and use of the hierarchal street system – arterials, collectors, and distributors – has shifted the focus more towards mobility almost to the point where any other design element has been

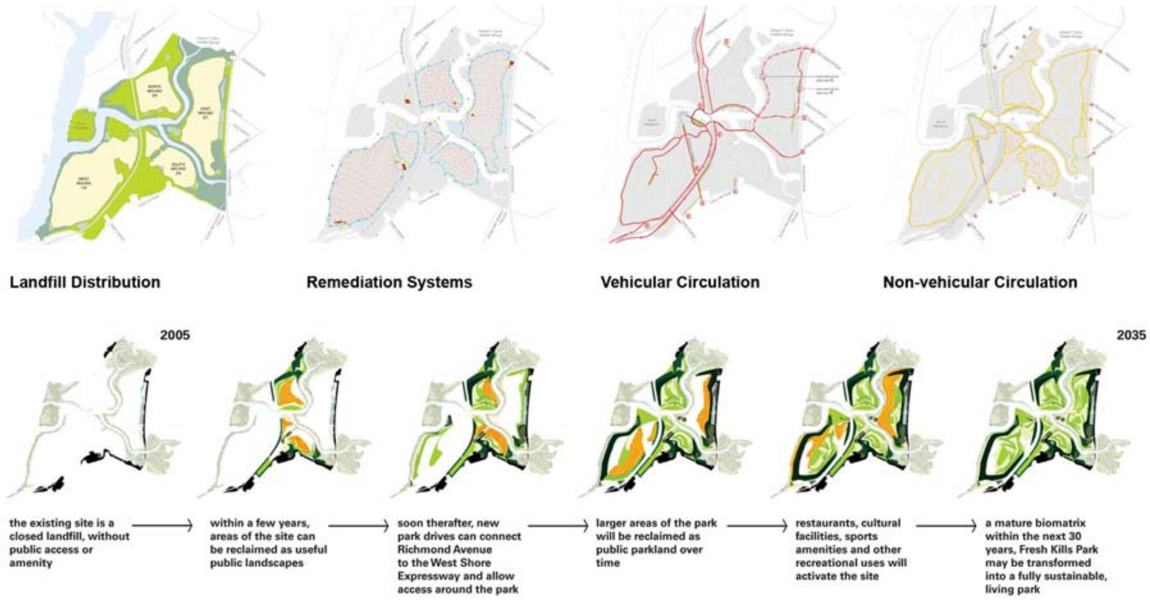


Figure 3.11: Infrastructural Layers & Incremental Development of Fresh Kills Park

subverted altogether. The resulting organization of territory has been haphazard at best and is difficult to correct. The auto plant case studies the additions of Brown Avenue at the Union Seventy Center and Centerpoint Parkway at the Centerpoint Business Campus illustrate this point where both streets provide an element of vehicular accessibility but offer little else. The permanent nature of infrastructure necessitates that it reclaim its traditional ability to function as a critical organizing element: serving as the skeleton for a given site or larger territory. Using this concept as a starting point, careful design of infrastructure can incorporate any number of additional elements; as Mossop (2006) also argues, "like other infrastructure, roads are required to perform multiple functions: they must fulfill the requirements of public space and must be connected to other functioning urban systems of public transit, pedestrian movement, water management, economic development, public facilities, and ecological systems. These demands are therefore propelling new design approaches" (p. 174).

Analysis of the case study projects provides clear examples of this principle. First, the proposals for both Downsview Park and Fresh Kills Park effectively utilize circulation networks of streets which have been designed to accommodate vehicular,

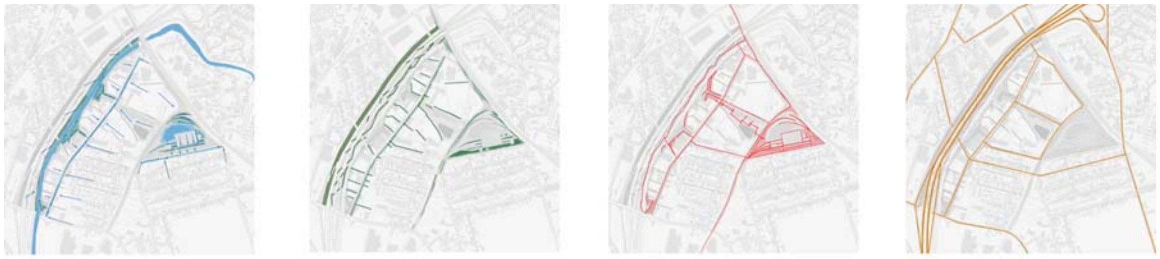


Figure 3.12: Infrastructural Layers for Tanner Street Initiative

pedestrian, and bike traffic that simultaneously organize and provide access to the internal sites of both projects. In the case of Fresh Kills, the circulation network is just one of several layers of infrastructure that also considers the site's ongoing remediation and waste management systems in combination with existing ecological networks (see Figure 3.11). Likewise, the Tanner Street Initiative overlays a new framework of streets that also incorporates a complex water management system aimed at passive filtration and remediation of environmental contaminants (see Figure 3.12); it will take years for the entire corridor to rehabilitate from its current state, but the permanence of the street framework makes it the perfect candidate for accommodating the long-term remediation infrastructural requirements. The street networks of both the Doraville and Hapeville projects are effectively used to organize the territory, allow multiple transportation options, accommodate parking demands, and create key elements of carefully designed public space. Similar to the Tanner Street Initiative, the proposed street network for the Hapeville site, coupled with an effective grading plan and specialized design for the primary park, creates an additional infrastructural layer to assist in long-term site remediation. These projects contrast heavily with Atlantic Station whose streets, particularly 17th Street, do attempt to accommodate transportation options and create public space but ultimately fail as a result of poor design syntax of elements embedded within these infrastructural systems. This is especially true of the 30-acre parking garage which serves as a platform for a majority of the project's development. As a major infrastructural element, it moves beyond its typical organizing role and dictates the form of development above. Just as the principles of New Urbanism and Smart Growth have advocated and popularized the mixing of land uses, this principle of design promotes the mixing or layering of uses in infrastructure.

3.6.4 Definition of Boundaries

Definition of boundaries, the fourth principle, underlies both the principles of organization and infrastructure and focuses on how sites and larger territories are physically connected to their surrounding context. This principle of design is critical in the sense that it seeks to understand and connect with existing physical conditions external to the site in order to promote accessibility and integration. The conventional redevelopment process typically subverts this principle by allowing land use to drive the process. Large property setbacks often required by conventional land use zoning practices attempt to buffer incompatible land uses from one another and, in effect, create barriers rather than boundaries. The key distinction is this: barriers separate whereas clearly designed boundaries connect. Streets, as an infrastructural element, are capable of informing the internal organization of a territory, but if understood in their primary function as connective public space, the specific design of streets is capable of binding territories in a meaningful way.

In the traditional street grid, it is the streets themselves that both clearly define the boundaries and provide the connective tissue between the resultant blocks. The Doraville and Hapeville site proposals both use the street grid in this matter (see Figure 3.13). Existing grid structures and key connecting streets from the surrounding context of both sites inform the logic of the new grids which are overlaid on the sites themselves. In this sense the two grids are bounded by design, enhanced through the careful design of all streets, and serve as the boundaries for the interior block structure. This street grid

Figure 3.13: Boundary Conditions for Ford Hapeville Site

provides just one prime example at one scale of design. Examples in the case studies themselves offer other examples of well designed boundary conditions.

In a primary design move, Downsview Park established a 60-foot edge along its perimeter streets to be designed as a hybrid park-planting zone. The purpose of this zone is to unify the site's presence within its context, connect its primary internal public parks, and provide adjacent neighborhoods with key access points to its various amenities including the parks themselves (see Figure 3.14). Even Fresh Kills Park, the largest site among the case studies, ensured that circulation networks reconnected with streets external to the site in order to promote access to the park and enhance connectivity across Staten Island. Other boundary conditions respond to the site's previous landfill history, proximity to natural wetlands, and location along Arthur Kill to the west by creating water management systems that ensure that contaminants are not leaked into natural water systems. Kathryn Gustafson's plan for Westergasfabriek Culture Park in Amsterdam first clearly defines the park's physical boundaries and then

Promenade Stanley Green Neighborhood William Baker Neighborhood

Figure 3.14: Boundary Condition for Downsview Park

also uses its internal organization system to further bind the park to the adjacent street grid, the existing Westerpark to the east, and potential future redevelopment of industrial sites to the north. Ensuring that the park connected seamlessly with the local district was a critical element of the design brought about by the district's instrumental role in transforming the previous gas works plant into a vibrant urban amenity.

One of Atlantic Station's biggest failures is its boundary conditions. The final plan by Jacoby Development failed to connect the majority of its streets with the adjacent Home Park neighborhood. Additionally, the project's "main street" rises to meet The District on top of the parking garage, creating a serious barrier between the development above and the remaining site at grade. The importance of the boundary condition is underscored by a commonality between all of the case study sites' previous incarnations – auto plants, air force base, landfill, gas factory, and steel mill – where previous access to these sites had been highly restricted. The precise method of binding these large sites to their surrounding context was a critical influence in shifting perception of the site from one of restriction and isolation to one of access and invitation, in turn stimulating re-use and redevelopment of the transformed site.

3.6.5 Creation of Public Space

The last principle, creation of public space, is both a principle of physical design and the redevelopment process itself. Physically, the principle serves as an extension of the boundary, infrastructure, and organization conditions by designating locations for key public parks and programs. However, as a process, creation of public space implicates public involvement in the redevelopment process beyond the conventional scope which often finds itself confined to the act of commenting on and approving completed plans for redevelopment. The auto plant case study of Sleepy Hollow illustrates how this type of public involvement can potentially have adverse and even catastrophic impacts on development. Roseland's plan for Lighthouse Landing in Sleepy Hollow collapsed completely when public resistance to the developer's original plan could not be resolved. Atlantic Station provides another example where limiting public involvement ultimately reduced the quality of design and functionality of the completed project. Public resistance to proposed connections between Home Park and Atlantic Station late in the process led to a quick-fix solution that severed the vital street connections and kept Atlantic Station from binding to its surroundings. Had the issue been addressed early on, a more optimal solution could potentially have been found.

Beyond merely opening the conventional redevelopment process for greater public involvement, the principle of public space aims to create opportunities for the public to become invested in the site and stake leadership roles in the redevelopment process itself, including the staging of interim uses and creation of *meaningful* public spaces. Public space in this sense moves beyond contemporary notions of the public park as passive or open recreation space. The word "meaningful" implies the presence of some programmed activity or function that creates an identity and sense of place for the reconnected site and builds *social capital*. Robert Putnam (in Frenchman, 2004) defines this idea of social capital as "connections among individuals – social networks

Figure 3.15: Interim Uses & Development of Westergasfabriek Culture Park

and the norms of reciprocity and trustworthiness that arise from them" (p. 42). If the boundary condition is the principle by which territories are bound and reintegrated with context, true creation of public space validates surrounding communities, attracts users, and catalyzes development (Frenchman, 2004). Activity, rather than form, supersedes city-building. Three of the case studies provide provocative examples of public space creation in redevelopment projects.

Westergasfabriek Culture Park best illustrates the principle as its public space element is at the core of the project. Fearing that squatters would move into the site after close of the gas plant, the local district was charged with the task of leasing existing building space to artists and other cultural institutions to ensure that the site maintained an active use until a specific long-term redevelopment strategy could be identified. Not only did this first step establish redevelopment of Westergasfabriek as a public-led

Figure 3.16: Interim Uses & Development of Downsview Park

process, but the interim use phase – an array of performances, concerts, fashion shows, festivals, and other social events – also reconnected the site immediately with the local district, cultivated a new sense of identity, and suggested how a long-term redevelopment strategy might be devised (see Figure 3.15). The interim use period was so popular that it continued well past its originally intended pilot year and lasted a total of seven years ending only when remediation activities forced the interim uses to be temporarily suspended. During this period, because of their investment in the site, residents of the local district became actively involved in the design process for remediation and long-term development of the site.

Downsview Park, entering its initial development phases, is attempting a similar strategy by scripting a public role in development of Koolhaas' Tree City scheme for design of the primary park (see Figure 3.16). In their role, the residents of the surrounding neighborhoods have been charged with planting and maintaining the urban forest which serves as the centerpiece for the development. This concept is then carried into the smaller parks which are developed during each phase of private development throughout the site. Though the StoSS plan has yet to be implemented, the Tanner Street Initiative is also based on a phased, interim use strategy that seeks to establish public access and program for the Silresim site immediately in order to build public involvement in the continued rehabilitation of the corridor throughout the initiative's projected 30-year timeframe. The key to all of these projects is that the public is involved from the very beginning and maintains that involvement throughout the duration of the process.

Five major principles for urban design have been identified and thoroughly defined: incremental development, organization of territory, layering of infrastructure, definition of boundaries, and creation of public space. Perhaps the most critical aspect of these five principles is the manner in which they are all highly interconnected; incremental development relies on a physical framework of a site based on the organization of territory and layering of infrastructure. Clear boundary definitions inform the physical organization of infrastructure, reintegrate sites with surrounding contexts, and create opportunities for public involvement infusing the site with activity and stimulating initial development. These principles have clearly played a critical role in the redevelopment strategies of the four brownfield sites as illustrated in this chapter. Because Downsview Park and Fresh Kills Park have yet to be fully developed and the Tanner Street Initiative has yet to be even implemented, the true success of these projects remains to be observed. Additionally, the fact that many of these projects focus on park-based concepts also calls into question the ability of private development to establish itself under this alternative redevelopment process. Downsview Park, with neighborhood components phased for private development, is the only case study that provides a clear strategy for how this might be accomplished. However, when the ability of these principles is measured against the successes of more historic examples such as those observed in New York, Savannah, Boston, and countless other great cities, the potential of these principles to guide urban design strategies for brownfield redevelopment remains virtually unquestionable.

CHAPTER 4

CONCEPTUAL DESIGN OF AUTO PLANT SITES

Following in the wake of deindustrialization, urban design must respond to the ongoing processes of urbanization though the strategic integration and organization of landscapes. Armed with five core principles that inform this theory of urban design, the final segment of this thesis focuses on synthesizing the principles into strategies for the leadership of urban design in brownfield *reintegration*. These strategies customize the urban design principles to a specific site's redevelopment potential which is based on varying characteristics of scale and context. The large number of auto plant sites, all potential brownfield sites, provides an adequate sample size to understand redevelopment potential of a site as a more general condition or *typology*. Classifying sites in this manner provides a clear organizational framework that more directly informs how specific design strategies should correspond in order to maximize redevelopment potential.

Alan Berger's work in *Drosscape: Wasting Land in Urban America* (2007) serves as an initial exploration into site as a typology. In his book, Berger surveys a number of underutilized, abandoned, and contaminated sites, what he refers to as "waste landscapes," and proposes typologies based on general characteristics of each (p. 140-233). These typologies range from the setbacks and easements of infrastructural systems (particularly highways, interstates, and power transmission lines) to abandoned greyfield sites (such as shopping malls, big-box retailers, or similar structures requiring intense landscapes of asphalt for surface parking) and include contaminated brownfield sites such as the auto plant sites. These typologies and the numerous sites they represent are used by Berger to construct his argument for the need to develop

Figure 4.1: Proposed "Drosscapes" by Alan Berger

strategies by which these sites are reintegrated, by design, into new, productive landscapes (Ibid, p. 236-237). The argument parallels with that of this thesis and provides a departure point for considering specific design strategies for brownfield sites based on site typology.

4.1 Urban Design Strategies for Brownfield Reintegration

To begin the classification process, redevelopment and design potential of the auto plant sites are evaluated based on scale and physical context. An analysis of all 35 auto plant sites using company documentation of facilities, redevelopment studies of former sites, aerial photography from multiple years, and maps by the United States Geological Survey (USGS) reveals eight commonly reoccurring characteristics. The following first four criteria deal with classifying sites based on ranges of physical characteristics and context relationships common between the 35 documented auto plant sites.

4.1.1 Facility Type

The type of the existing facility, based on its previous use, is often highly associated with potential environmental contamination and adaptation for reuse and informs how design should anticipate these factors in response. Three of these types have been identified in the 35 auto plant sites though more may exist.

“Assembly” These facilities house the final production of vehicles and are the most commonly occurring type. The total extent of environmental contamination is uncertain but in the past has typically been found in close proximity to paint shop operations and chemical storage tanks. The case studies of Central Parke, Union Seventy Center, and Centerpoint Business Campus illustrate the potential for the adaptive re-use of existing structure.

“Support” The label of “support” is a broad classification that encompasses powertrain, transmission, engine, metal, and other facilities dealing with the production of key vehicle components. There is little information regarding past redevelopments of this facility type making re-use potential uncertain and is further complicated by unknown environmental status which typically depends on the specific facility.

“Service” Service Parts Operations (SPO) facilities are typically the smallest type of facility implicating the least amount of site area. Depending on the specific size of the facility and site, adaptive re-use or immediate redevelopment for new economic use is the most likely course of action. Lack of manufacturing operations makes the possibility of intense environmental contamination less likely but still uncertain.

4.1.2 Site Size

The size of a site is most often correlated with the type of its facility. Understanding size as another type informs strategies of incremental development in scales. For example, small sites have more potential for immediate and long-term adaptive re-use or use-based redevelopment: design intervention may be less necessary. On the other hand, extremely large sites require specialized design strategies for their reintegration. Four size ranges have been identified:

"Small"	Less than 50 acres; Sites of this size primarily include service facilities, some support facilities, and older assembly plants with single production lines and are often found in a variety of locations. Depending on specific site size, facility structure, and location, adaptive re-use or immediate redevelopment for new economic use is a potential course of action, making design intervention minimal.
"Medium"	50 – 150 acres; Sites of this size primarily include older facilities, such as assembly plants with single production lines, and may encompass some larger support facilities. Medium sites are often found in locations characterized by surrounding urban growth that has occurred during the facility's lifespan. Adaptive re-use potential and level of design intervention depends on specific site location and context.
"Large"	150 – 250 acres; Sites in this range include moderately aged facilities such as single-line assembly plants at the lower-end of the spectrum and assembly plants with double production lines or integrated supporting facilities at the higher-end. Large sites are typically found in suburban locations chosen for the availability of larger tracts of land at the time of construction. Adaptive re-use potential and design intervention depends on the specific level and pattern of recent urban growth and development in the surrounding area.

“X-Large” Over 250 acres; These sites include newer facilities that are typically found only in exurban or light suburban locations chosen for the availability of extremely large tracts of land to house assembly plants with multiple production lines and integrated supporting facilities. Given the lack of surrounding development, sites of this size are often autonomous. Adaptive re-use of the existing facility may be possible but redevelopment beyond continued industrial use is unlikely. Design strategies that capture the long-term potential of these sites are critical.

4.1.3 Site Location

Physical location is one of two criteria that seek to discern redevelopment potential and design implication of a site depending on its location relative to major areas of urban development, population, and growth. Proximity to major cities with populations of 50,000 (based on the 2000 U.S. Census) is used as a benchmark to establish the physical location of sites and reveals the following three classifications:

“Urban” Less than 5 miles; Urban sites are located within close proximity to the center of a major city, typically found along declining industrial/rail corridors, and surrounded by high densities of urban growth and development that has occurred during the previous facility’s lifespan.

“Suburban” 5 – 15 miles; Suburban sites are located on the urban fringe and typically fall within the jurisdiction of smaller municipalities within a larger metropolitan region. Sprawling patterns of growth and development or active industrial corridors often surround these sites.

“Exurban” Over 15 miles; Exurban sites are typically located well beyond areas of intense growth development. These sites are usually adjacent to agricultural areas or large tracts of undeveloped land.

4.1.4 Contextual Framework

The previous classification, site location, is a pure function of distance that only provides vague clues as to a site’s specific context. As an extension of site location, the contextual framework classification seeks to understand the existing framework conditions that actively guide surrounding development. Understanding context in this manner provides specific clues as to site redevelopment/reintegration potential which later informs the strategic design and connection of new frameworks. Figure 4.2 provides diagrammatic examples of each of the following classifications.

“Open” Sites classified as “open” typically have little surrounding development or physical context to consider; landscape beyond the site remains largely greenfield and awaits development. Any surrounding development is often at light intensities.

“Barrier” A “barrier” site is informed by surrounding patterns of development that favor large, use-driven organization (i.e. shopping centers, office parks, etc.). The underlying framework is based on hierarchical street systems and superblocks which both act more as barriers than as clues for effectively organizing and binding sites.

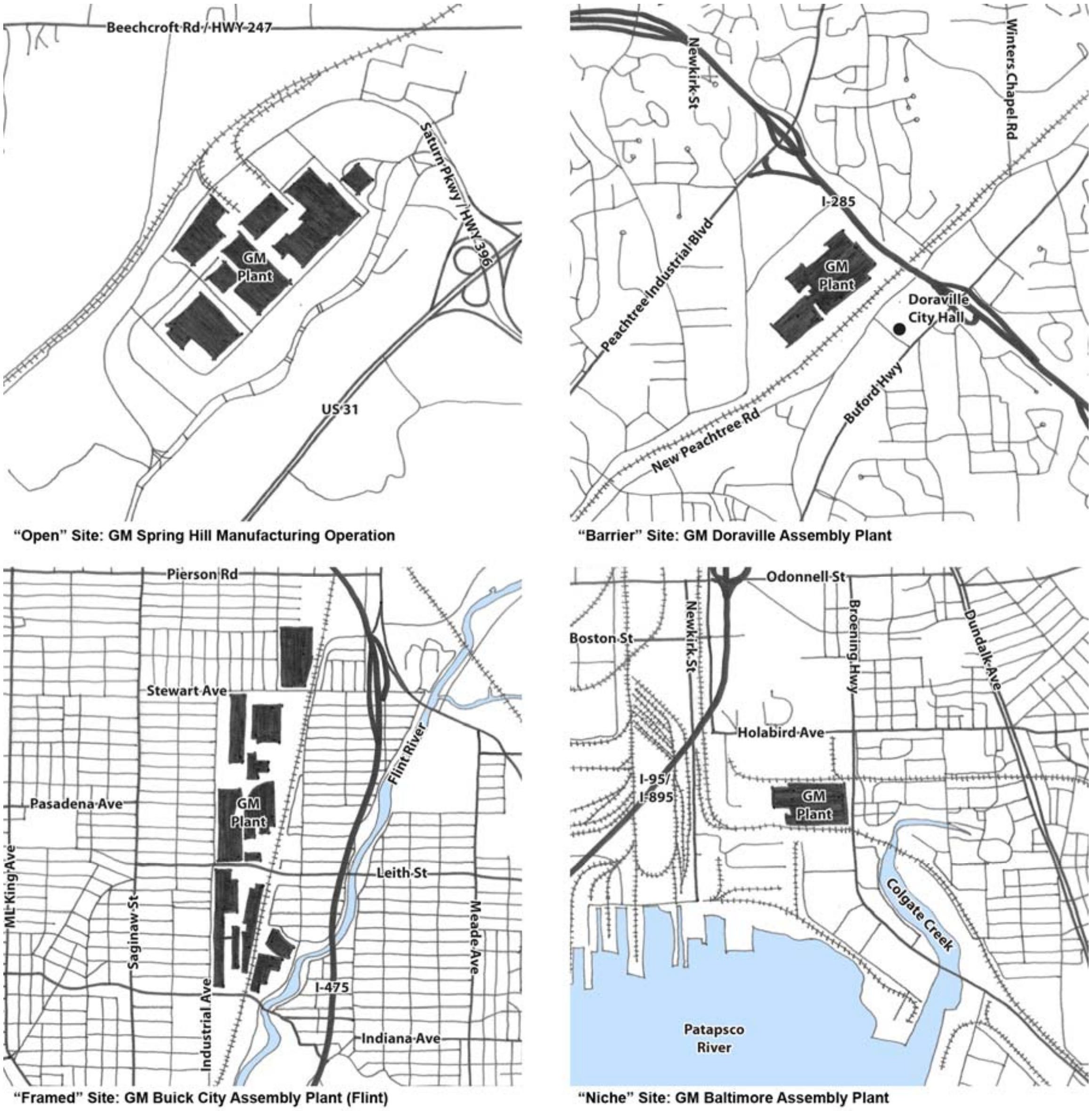


Figure 4.2: Examples of Context Framework Classifications

"Framed" These sites are generally located in core urban areas that are well organized by the presence of an existing framework based on a street grid. "Framed" sites often have multiple possibilities for reconnecting to the existing grid, providing obvious clues as to the proper interior organization of the site.

“Niche” Some sites remain centrally located in active industrial areas where a strong potential exists for the site to fill an immediate industrial or similar economic demand. “Niche” sites are typically smaller whose internal organization is already defined or constrained by an existing organizational framework.

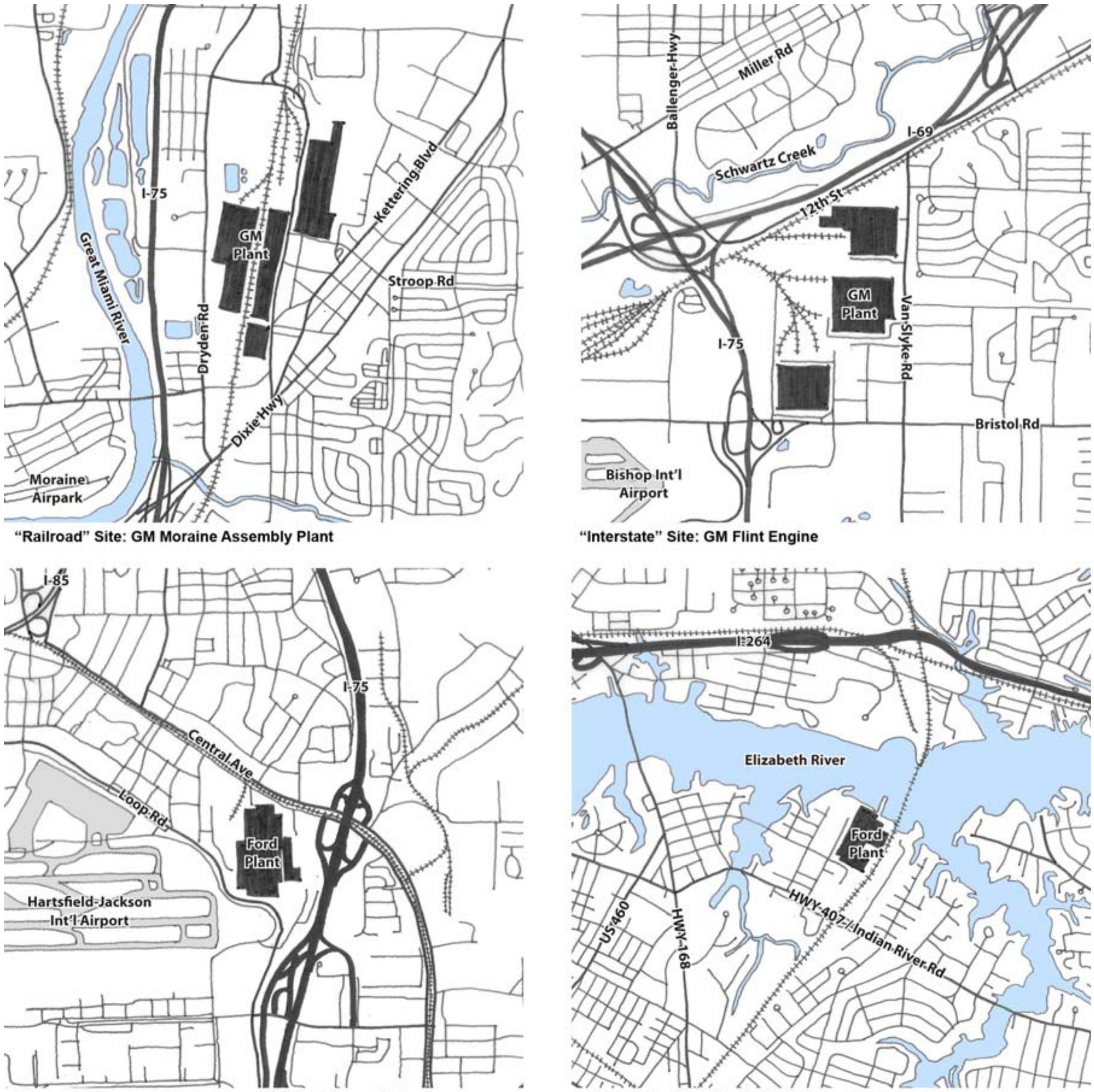
The first four criteria define sites based on common physical characteristics and context relationships found in all 35 sites. However, the following four additional physical characteristics have also been frequently observed to inform redevelopment potential but are unique to each site. Figure 4.3 provides diagrammatic examples of each of the following classifications.

4.1.5 Railroad Configuration

Is there a railroad or rail infrastructure on or adjacent to the site that is to remain active? Does the specific location of rail infrastructure act as a barrier to redevelopment on the site and/or complicate the reconnection of the site with development beyond? Does rail infrastructure include public transit systems or the potential for transit systems in the future?

4.1.6 Interstate Proximity

Is there a major interstate or other major highway located adjacent to the site that may act as a barrier to redevelopment or create opportunities for redevelopment due to access? For example, does the highway serve as an immediate barrier that prevents reconnection to development beyond or does the highway, with access ramps, provide high accessibility to the surrounding city and region?



"Railroad" Site: GM Moraine Assembly Plant

"Interstate" Site: GM Flint Engine

"Airport" Site: Ford Atlanta Assembly Plant (Hapeville)

"Water" Site: Ford Norfolk Assembly Plant

Figure 4.3: Examples of Unique Context Conditions

4.1.7 Airport Proximity

Is an airport (major international or private commercial) present that may act as a barrier to redevelopment or create a unique development opportunities? For example, do FAA runway protection zones or noise restrictions contain development options or does the adjacency of the airport provide specialized redevelopment opportunities?

4.1.8 Water Feature Proximity

Is there a major body of water or other water feature present that should be considered in the redevelopment of the site? For example, would the presence of the water feature incur greater remediation requirements of the site, implicate the protection of natural wetlands, or even provide an opportunity/amenity for special development types (i.e. waterfront condition)?

Table 4.1 on the next page is the previous catalog of 35 auto plant sites that has been refined using the criteria above with two additional columns. From the completed assessment of each site, the first of the final two columns assigns a redevelopment potential while the second column assigns one of four design strategies based on the five urban design principles established in the previous chapter.

4.1.9 Redevelopment Potential

"Low" Current growth and development of the area are of low demand and light intensity. Existing frameworks that inform site strategies are vague or non-existent. Sites with low redevelopment potential are typically classified as extremely large, exurban, open, or any similar combination.

"Medium" Current or recent growth and development of the area are of intermediate demand and varying intensity. Existing frameworks that guide surrounding development are poorly organized. Sites with medium redevelopment potential are typically classified as suburban and barrier and occur at a variety of sizes.

Table 4.1: Classification of Ford & GM Auto Plant Sites 1987-2008

Typology of Ford & GM Auto Plant Sites											
Close	Name	City	Facility	Size	Location	Context	Railroad	Interstate	Airport	Water	Potential	Strategy
2008	Ford Atlanta Assembly Plant	Hapeville, GA	Assembly	Medium	Suburban	Barrier	Norfolk Southern	I-75	Hartsfield-Jackson	-	Medium	L-CAT
2008	Ford Batavia Transmission LLC	Batavia, OH	Support	X-Large	Exurban	Open	Norfolk Southern	-	-	-	Low	L-ANT
2008	GM Doraville Assmebly Plant	Doraville, GA	Assembly	Large	Suburban	Barrier	Southern, MARTA	I-285	-	-	Medium	L-CAT
2008	GM Flint North, GMPT	Flint, MI	Support	X-Large	Urban	Barrier	CN North America	I-75	Bishop International	-	Medium	L-CAT
2008	GM Moraine Assembly Plant	Moraine, OH	Assembly	X-Large	Urban	Barrier	Conrail	I-75	-	Miami River	Medium	L-CAT
2008	Ford Norfolk Assembly Plant	Norfolk, VA	Assembly	Medium	Urban	Barrier	Norfolk Southern	-	-	Elizabeth River	Medium	L-CAT
(2008)	GM Oshawa Car Assembly Plant	Oshawa, ON	Assembly	X-Large	Urban	Niche	Canadian Nat'l	-	-	Lake Ontario	Medium	L-CAT
2008	GM St. Catharines Powertain	St. Catharines, ON	Support	Large	Urban	Niche	Canadian Nat'l	-	-	Welland Canal	Low	L-ANT
2008	Ford Twin Cities Assembly Plant	St. Paul, MN	Assembly	Medium	Urban	Framed	Soo Line	-	-	Mississippi River	High	L-INT
2008	Ford Windsor Casting	Windor, ON	Support	Small	Urban	Framed	Essex Terminal	-	-	Detroit River	High	L-INT
2007	GM Pittsburgh Metal	West Mifflin, PA	Suport	Medium	Suburban	Open	Pittsburgh & WV	-	-	Monongahela River	Low	L-ANT
2007	GM Willow Run SPO (Belleville)	Ypsilanti, MI	Service	Medium	Suburban	Open	Norfolk Southern	I-94	Detroit-Willow Run	-	Low	L-ANT
2007	Ford Wixom Assembly Plant	Wixom, MI	Assembly	X-Large	Exurban	Open	CSX Transport	I-96	-	-	Low	L-ANT
2006	GM Lansing Craft Centre	Lansing, MI	Support	Medium	Urban	Framed	CSX Transport	-	-	-	High	L-INT
2006	GM Lansing Metal Center	Lansing, MI	Support	Medium	Urban	Framed	CSX Transport	-	-	-	High	L-INT
2006	GM Oklahoma City Assembly Plant	Oklahoma City, OK	Assembly	X-Large	Exurban	Open	Burlington North	I-240	Tinker AFB	-	Low	L-ANT
2006	GM Portland SPO	Beaverton, OR	Service	Small	Suburban	Barrier	Burlington North	-	-	-	Low	L-ANT
(2006)	GM Spring Hill Manuf. Operations	Spring Hill, TN	Assembly	X-Large	Exurban	Open	CSX Transport	-	-	-	Low	L-ANT
2006	Ford St. Louis Assembly Plant	Hazelwood, MO	Assembly	Large	Suburban	Niche	Norfolk Southern	I-270	-	-	Very High	L-USE
2006	GM St. Louis SPO (Hazelwood)	Hazelwood, MO	Service	Small	Suburban	Niche	Norfolk Southern	I-270	Lambert-St. Louis	-	Very High	L-USE
2005	GM Baltimore Assembly Plant, NATG	Baltimore, MD	Assembly	Large	Urban	Niche	CSX, Conrail	I-95/895	-	Colgate Creek	Very High	L-USE
2005	GM Lansing Assembly Plant	Lansing, MI	Assembly	Medium	Urban	Framed	CSX Transport	-	-	-	High	L-INT
2005	GM Linden Assembly Plant	Linden, NJ	Assembly	Medium	Suburban	Barrier	Conrail, NJ Transit	-	Linden Municipal	-	Medium	L-CAT
1999	GM Buick City Assembly Plant	Flint, MI	Assembly	Large	Urban	Framed	CSX Transport	I-475	-	Flint River	High	L-INT
1996	GM Tarrytown Assembly Plant	Sleepy Hollow, NY	Assembly	Medium	Suburban	Barrier	Conrail	-	-	Hudson River	Medium	L-CAT
1994	GM Pontiac West Assembly Plant	Pontiac, MI	Assembly	Medium	Urban	Framed	CN North America	-	-	-	High	L-INT
1992	GM Van Nuys Assembly Plant	Van Nuys, CA	Assembly	Medium	Urban	Framed	Southern Pacific	-	-	-	High	L-INT
1992	GM Willow Run Assembly Plant	Ypsilanti, MI	Assembly	Medium	Suburban	Barrier	Norfolk Southern	I-94	Detroit-Willow Run	-	Low	L-ANT
(1991)	GM Flint Truck Assembly Plant	Flint, MI	Assembly	X-Large	Urban	Barrier	CN North America	I-75	Bishop International	-	Medium	L-CAT
1990	GM Lakewood Assembly Plant	Atlanta, GA	Assembly	Medium	Urban	Barrier	Norfolk Southern	-	-	-	Medium	L-CAT
1989	GM Framingham Assembly Plant	Framingham, MA	Assembly	Medium	Urban	Open	MBTA	-	-	Waushakum Pond	Low	L-ANT
1988	GM Leeds Assembly Plant	Kansas City, KS	Assembly	Medium	Suburban	Barrier	Union Pacific	I-70/435	-	-	Medium	L-CAT
1988	GM Pontiac Assembly Plant	Pontiac, MI	Assembly	X-Large	Urban	Niche	CN North America	I-75	-	-	Medium	L-CAT
1987	GM Detroit Assembly Plant	Detroit, MI	Assembly	Small	Urban	Niche	Norfolk Southern	I-75	-	Detroit River	High	L-INT
1987	GM Norwood Assembly Plant	Norwood, OH	Assembly	Medium	Suburban	Framed	Baltimore & Ohio	I-71	-	-	High	L-INT
1987	GM St. Louis Assembly Plant	St. Louis, MO	Assembly	Large	Urban	Niche	Southern Pacific	I-70	-	-	Very High	L-USE

“High” Surrounding areas are highly developed at varying intensities. Demand for new land for additional development is high. Existing frameworks are firmly established and typically based on an effective street network. Sites with high redevelopment potential are typically classified as urban, framed, and range in size from medium to large.

“Very High” Growth and development of the area are intensely focused on a specific use (i.e. active industrial corridors) creating extremely high demand for redevelopment to fill an immediate market demand. These sites are highly subject to rigid existing frameworks that have been designed to serve a specialized economic niche. Sites with “very high” redevelopment potential are typically classified as niche and vary widely in location and size.

4.9.10 Design Strategy

Landscapes of Anticipation (L-ANTs): given the lack of existing surrounding development or potential for development in the immediate future, objectives of this design strategy are clear: adaptive re-use and/or interim use of the landscape are the primary objectives. Adaptive re-use may include new industrial users in existing site structures. Interim uses that focus on site reclamation may include large park spaces or restoration of natural ecology. Short-term infrastructural demands are minimal but should be organized in such away that future expansion for potential private development is accommodated. Remediation systems may be passive and integrated with other infrastructure. The Fresh Kills Park case study best exemplifies this strategy. Figure 4.6 (see Page 103-105) shows the auto plant sites that fall under this classification.

Landscapes of Catalyzation (L-CATs): given the existing poor organizing framework driven by land use, the first objective of these sites is to overcome physical barriers and establish critical connections to context. Site connectivity and accessibility is critical. Once this has been established, the internal organization of the site itself must be designed in a fashion that accommodates multiple, undetermined uses, maximizes redevelopment potential of the site, and allows the logic of the framework to be extended to potentially catalyze the reorganization and redevelopment of the surrounding area. The Doraville redevelopment proposal best exemplifies this strategy. Figure 4.7 (see Page 106-108) shows the auto plant sites that fall under this classification.

Landscapes of Integration (L-INTs): the presence of an existing street grid (or other organizing framework) provides a clear direction for this strategy. A site under this classification is reintegrated directly through the reconnection and/or extension of the existing organizing framework which simultaneously organizes the internal site and binds it with its surrounding context. Design of public space is critical, of which streets are the most important, and cultivates private development. The Doraville and Hapeville redevelopment proposals are partial applications of this strategy. Figure 4.8 (see Page 109-111) shows the auto plant sites that fall under this classification.

Landscapes of Utilization (L-USEs): if an immediate industrial or similar economic niche can be filled, reconfiguring sites based on use may prove to be the most logical course of action. This is especially true of smaller sites which may be forced to conform to an existing organizational framework. Chesapeake Commerce Center and Union Seventy Center provide two examples of this scenario. Adaptive re-use of existing site structures may be possible depending on specific age or environmental contamination. However, more careful consideration should be given to the long-term future adaptability or expansion of any infrastructure or other organizing element introduced during redevelopment of the site. Figure 4.9 (see Page 112) shows the auto plant sites that fall under this classification.

The strategies inform how the principles of urban design should be applied to a site based on its corresponding typological classification. Figure 4.4 is a classification matrix of the auto plant sites based on design strategy and redevelopment potential typology. As illustrated by the matrix, in many cases this may not necessarily be a one-to-one relationship. The design strategy typologies should be viewed as a continuum, rather than as absolute options, that can inform an array of intermediate scenarios. The redevelopment proposal for Hapeville provides a great instance where a unique context factor, FAA flight path restrictions, necessitated that a hybrid design strategy be used. In this case, the developable portion of the site is reintegrated (L-INT) with Hapeville based on the existing street grid while the undevelopable portion of the site temporarily serves (L-ANT) as a bio-remediation park. The developable portion of the site and the park are organized in such a way that the site's street grid could be expanded easily to support additional private development should the airport decline or FAA restrictions change. Indeed, the unique factors as previously defined only serve as a few examples in a potential array of other factors (topography, existing land use, cultural resources, etc.) to consider when examining specific site context to apply the design strategies. Though the additional factors themselves may be numerous and vary by site, the key is to understand that the design strategies fundamentally focus on the organization of landscape to accommodate incremental and diverse development.

This section has focused on defining specific strategies for integrating urban design principles with brownfield redevelopment. The remainder of this chapter presents

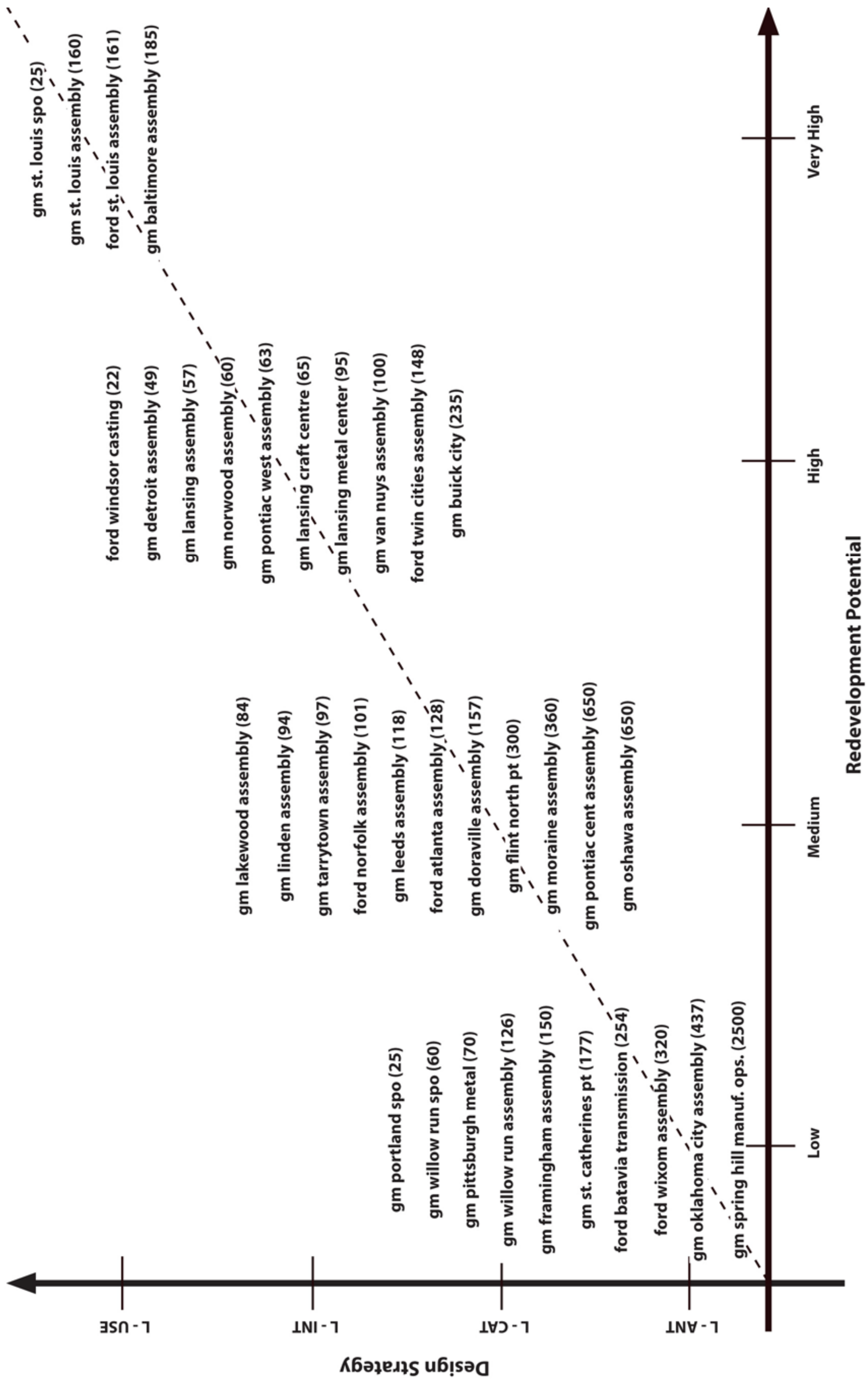


Figure 4.4: Scatter Plot / Matrix of Redevelopment Potential vs. Design Strategy

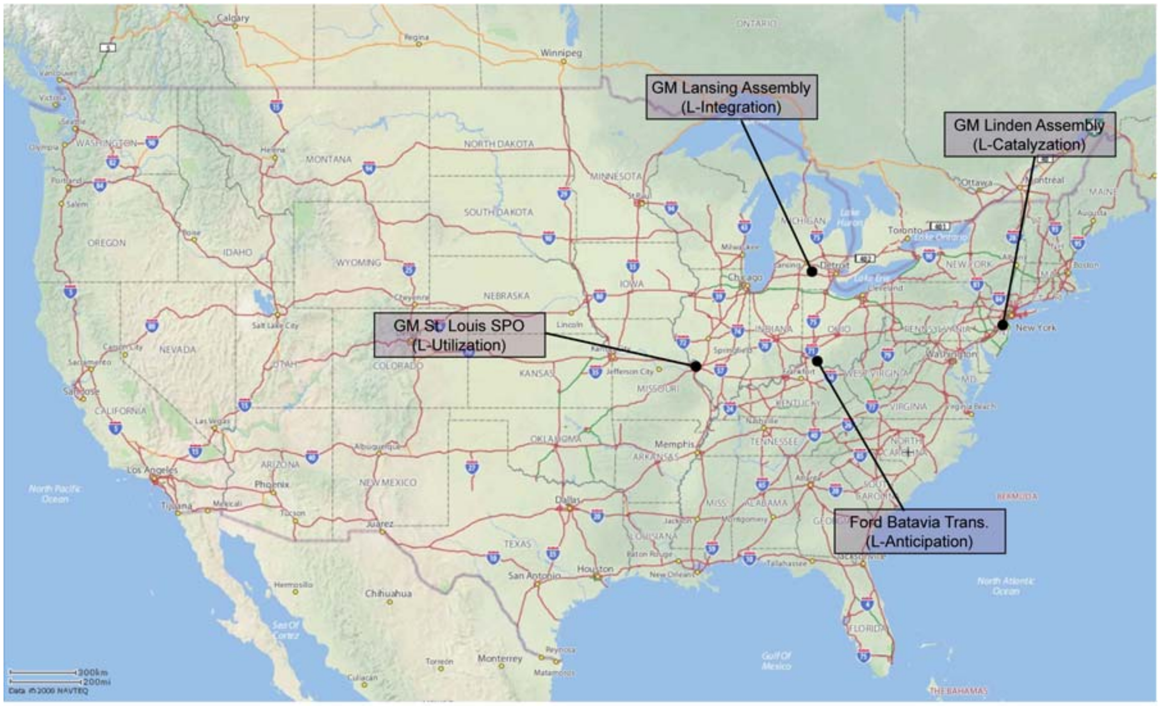


Figure 4.5: Map of Design Experiment Case Studies

auto plant sites in four cities – Batavia, OH; Linden, NJ; Lansing, MI; St. Louis; MO – as evidence for this approach to brownfield redevelopment (see Figure 4.5). The design process for the four sites is conducted in three parts. First, a more thorough investigation is conducted into the existing conditions of site context. A series of diagrams evaluates existing street network, block structure, development intensity, land use, rail corridors, cultural resources, and natural features. The next section diagrammatically applies the urban design principles by establishing site boundaries, potential connection opportunities, infrastructural networks, internal organization, and key public spaces. While the first two preliminary design sections operate on the site as the subject of a larger two square mile impact area, the final section of design focuses on the site itself. The third section uses enlarged plans and three-dimensional models to detail the underlying long-term framework plan and illustrate its ability to adapt to different development scenarios and densities. Each site was chosen for its ability to clearly demonstrate each of the four strategies based on its preliminary classification based on diagrammatic analysis conducted of all 35 auto plant sites (see Figures 4.6-4.9 following pages). The conclusion of the design experiments will reiterate the potential advantages of the design strategies and make recommendations as to their implementation.

GM Spring Hill Manufacturing Operations (2,500-ac)
Spring Hill, TN

GM Oklahoma City Assembly Plant (437-ac)
Oklahoma City, OK

Ford Wixom Assembly Plant (320-ac)
Wixom, MI

Ford Batavia Transmission, LLC (254-ac)
Batavia, OH

Regional Context Map **Local Context Map** **Site Aerial Photo**

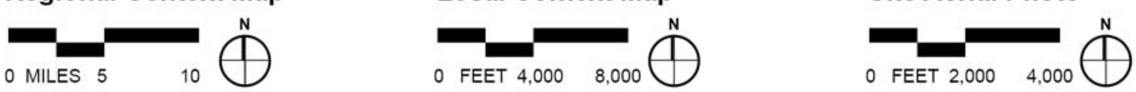


Figure 4.6: Potential Landscapes of Anticipation (L-ANTs)

GM St. Catherines Powertrain (177-ac)
St. Catherines, ON

GM Framingham Assembly Plant (150-ac)
Framingham, MA

GM Willow Run Assembly Plant (126-ac)
Ypsilanti, MI

GM Pittsburgh Metal (70-ac)
West Mifflin, PA

Regional Context Map

0 MILES 5 10 N

Local Context Map

0 FEET 4,000 8,000 N

Site Aerial Photo

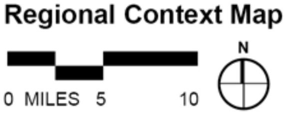
0 FEET 2,000 4,000 N

Figure 4.6: Continued

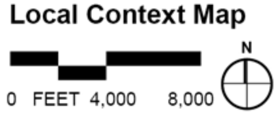
GM Willow Run SPO (60-ac)
Ypsilanti, MI

GM Portland SPO (25-ac)
Beaverton, OR

Regional Context Map



Local Context Map



Site Aerial Photo

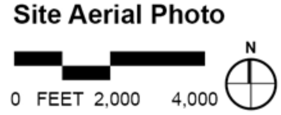


Figure 4.6: Continued

GM Oshawa Assembly Plant (650-ac)
Oshawa, ON

GM Pontiac Central Assembly Plant (650-ac)
Pontiac, MI

GM Moraine Assembly Plant (360-ac)
Moraine, OH

GM Flint North GMPT (300-ac)
Flint, MI

Regional Context Map

0 MILES 5 10 N

Local Context Map

0 FEET 4,000 8,000 N

Site Aerial Photo

0 FEET 2,000 4,000 N

Figure 4.7: Potential Landscapes of Catalyzation (L-CATs)

GM Doraville Assmebly Plant (157-ac)
Doraville, GA

Ford Atlanta Assembly Plant (128-ac)
Hapeville, GA

GM Leeds Assembly Plant (118-ac)
Kansas City, MO

Ford Norfolk Assembly Plant (101-ac)
Norfolk, VA

Regional Context Map **Local Context Map** **Site Aerial Photo**

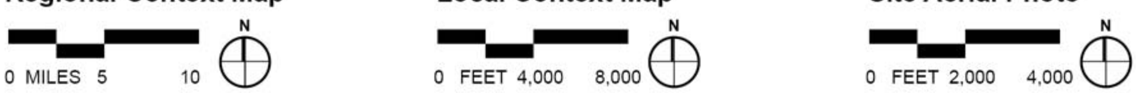


Figure 4.7: Continued

GM Tarrytown Assembly Plant (97-ac)
Sleepy Hollow, NY

GM Linden Assmebly Plant (94-ac)
Linden, NJ

GM Lakewood Assembly Plant (84-ac)
Atlanta, GA

Regional Context Map

0 MILES 5 10 N

Local Context Map

0 FEET 4,000 8,000 N

Site Aerial Photo

0 FEET 2,000 4,000 N

Figure 4.7: Continued

GM Buick City Assmebly Plant (235-ac)
Flint, MI

Ford Twin Cities Assembly Plant (148-ac)
St. Paul, MN

GM Van Nuys Assembly Plant (100-ac)
Van Nuys, CA

GM Lansing Metal Center (95-ac)
Lansing, MI

Regional Context Map

0 MILES 5 10 N

Local Context Map

0 FEET 4,000 8,000 N

Site Aerial Photo

0 FEET 2,000 4,000 N

Figure 4.8: Potential Landscapes of Integration (L-INTs)

GM Lansing Craft Centre (65-ac)
Lansing, MI

GM Pontiac West Assembly Plant (63-ac)
Oklahoma City, OK

GM Norwood Assembly Plant (60-ac)
Norwood, OH

GM Lansing Assembly Plant (57-ac)
Lansing, MI

Regional Context Map **Local Context Map** **Site Aerial Photo**

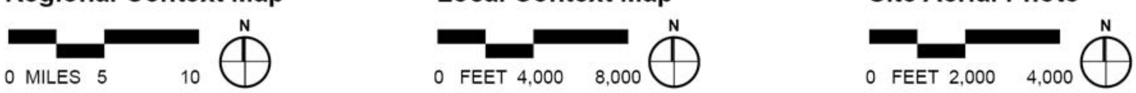


Figure 4.8: Continued

GM Detroit Assembly Plant (49-ac)
Detroit, MI

Ford Windsor Casting (22-ac)
Windsor, ON

Regional Context Map

0 MILES 5 10 N

Local Context Map

0 FEET 4,000 8,000 N

Site Aerial Photo

0 FEET 2,000 4,000 N

Figure 4.8: Continued

GM Baltimore Assembly Plant (185-ac)
Baltimore, MD

Ford St. Louis Assembly Plant (161-ac)
Hazelwood, MO

GM St. Louis Assembly Plant (160-ac)
St. Louis, MO

GM St. Louis SPO (25-ac)
Hazelwood, MO

Regional Context Map — 0 MILES 5 10, N

Local Context Map — 0 FEET 4,000 8,000, N

Site Aerial Photo — 0 FEET 2,000 4,000, N

Figure 4.9: Potential Landscapes of Utilization (L-USEs)

4.2 Landscape of Anticipation: Ford Batavia Transmission Site Design

Located over 20 miles from Downtown Cincinnati, the massive 255-acre site that was once the home of Ford's 1.8 million square foot transmission facility is classified as a *Landscape of Anticipation*. Existing condition diagrams of the site (see 4.2.1 Batavia Site Design – Part I, Page 115) reveal that land immediately surrounding the site is of low intensity and loosely organized by a few major arterial streets. The Appalachian Highway (S.R. 32) serves as a primary organizing element that also separates the site from undeveloped and agricultural land to the north. Light industrial uses are organized along the Norfolk Southern railroad on the site's southern boundary and introduce the possibility for interim adaptive re-use in an industrial capacity.

Adaptive re-use scenarios first must give way to the design of a long-term redevelopment framework for the site (see 4.2.2 Batavia Site Design – Part II, Page 120). Upon consideration of the site's boundary, primary possibilities for physical site connections exist along Frontwheel Drive, Batavia Road, and Curliss Lane. Additional connections to Old S.R. 32 beyond the site's southern boundary require bridging of the railroad and negotiation of right-of-way through existing development. Using the key connection points and existing internal streets as guides, an infrastructural grid is superimposed on the site that binds the site to its surroundings and organizes it into a series of blocks. Typical dimensions of the blocks are approximately 550' x 360' though small variations occur due to specific right-of-way alignments. The majority of the blocks are held for private development but potential locations for key public parks are designated first. Though the actual location of public parks may vary, the proposed location seeks to take advantage of the area's natural topography by allowing it the possibility to serve as a passive remediation measure for water runoff from the site. Streets are designed as key public spaces with privileged streets designated based on connections to cultural resources such as Batavia High School.

Figure 4.23 is the illustrative long-term framework plan for the Batavia site which features new street network, park locations, and developable blocks which have been further subdivided based upon a 60-foot critical dimension. Figure 4.24, followed by similar diagrams on the following pages, demonstrates how this 60-foot dimension can be reconfigured in multiple ways to condition the internal block structure for varying densities of development. Specific uses are unprescribed and left for market demand to determine and change over time. In similar fashion, Figures 4.25-4.30 show how the overall framework of the site can adapt to accommodate continued and adaptive industrial uses (scenario #1), interim uses during environmental remediation (scenario #2), or an eventual build-out (scenario #3). In all of these scenarios specific uses, programs, buildings, and densities all change over time but the underlying framework remains the same.

4.2.1 Batavia Site Design Part I - Analysis of Existing Conditions

Figure 4.10: Aerial Image of Existing Site - Batavia, OH

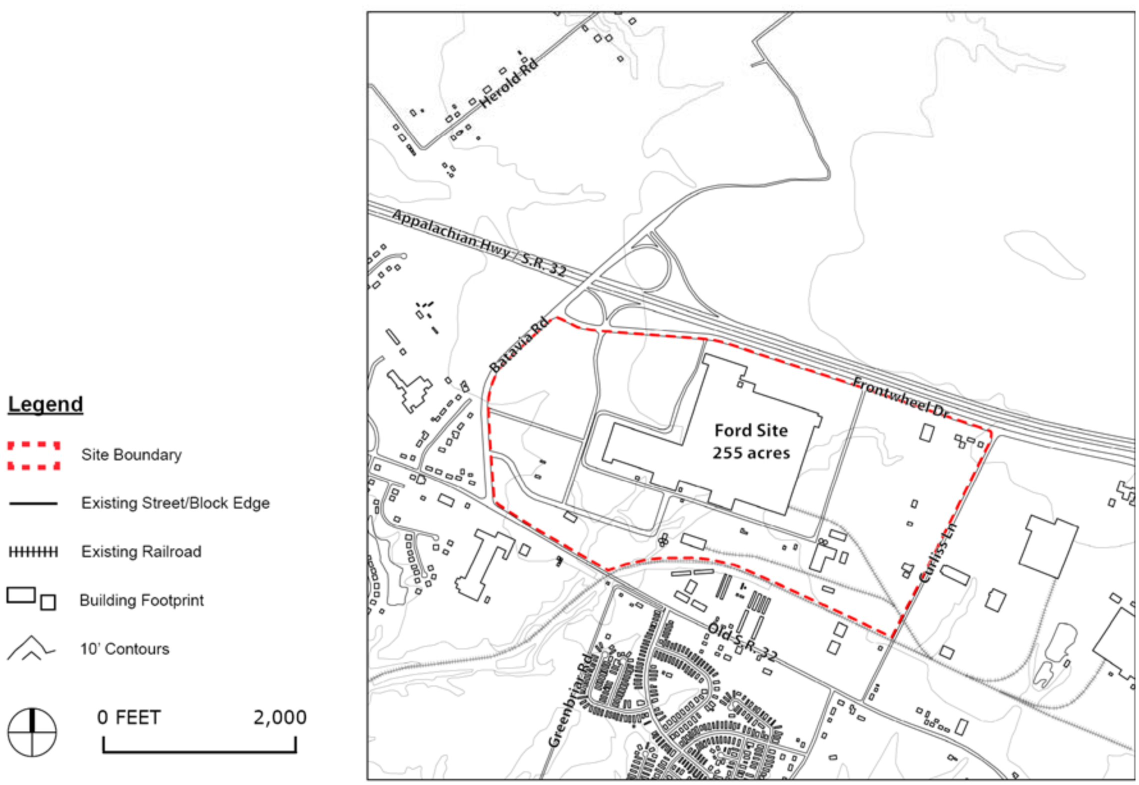


Figure 4.11: Base Map of Existing Site - Batavia, OH

Figure 4.12: Street Network Diagram - Batavia, OH

Figure 4.13: Block Figure-Ground Diagram - Batavia, OH

Figure 4.14: Building Figure-Ground Diagram - Batavia, OH

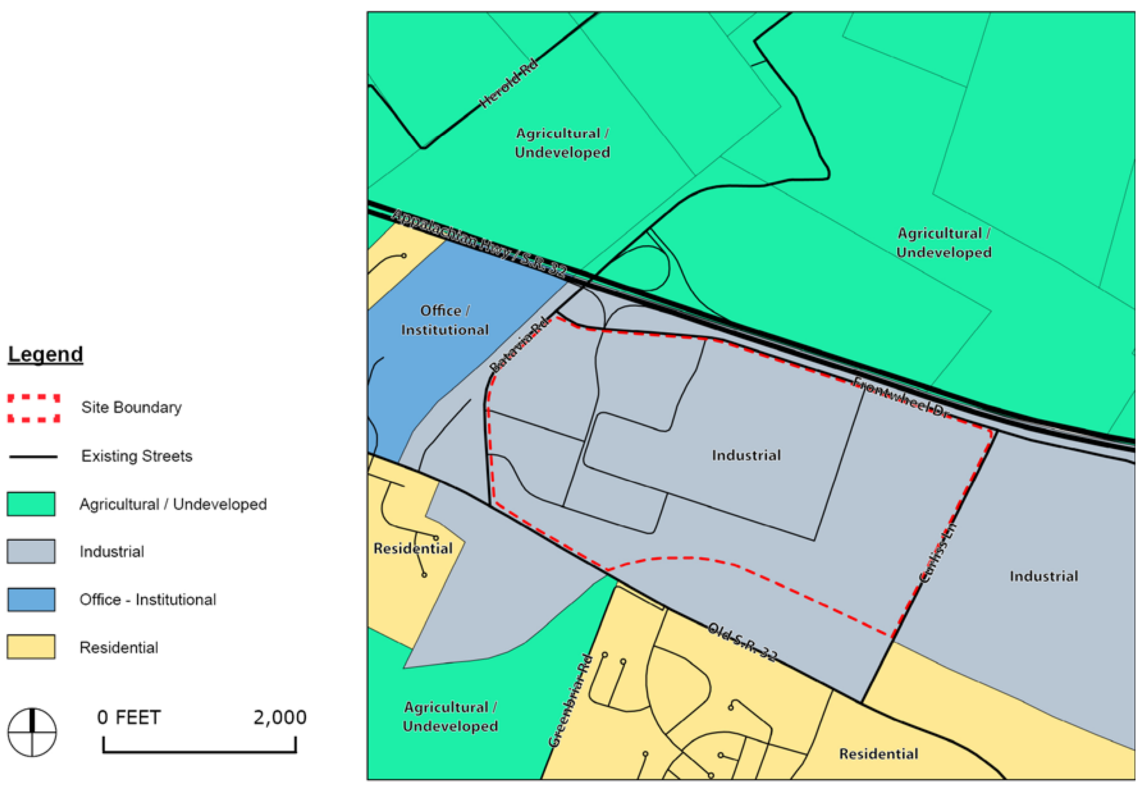


Figure 4.15: Land Use Diagram - Batavia, OH

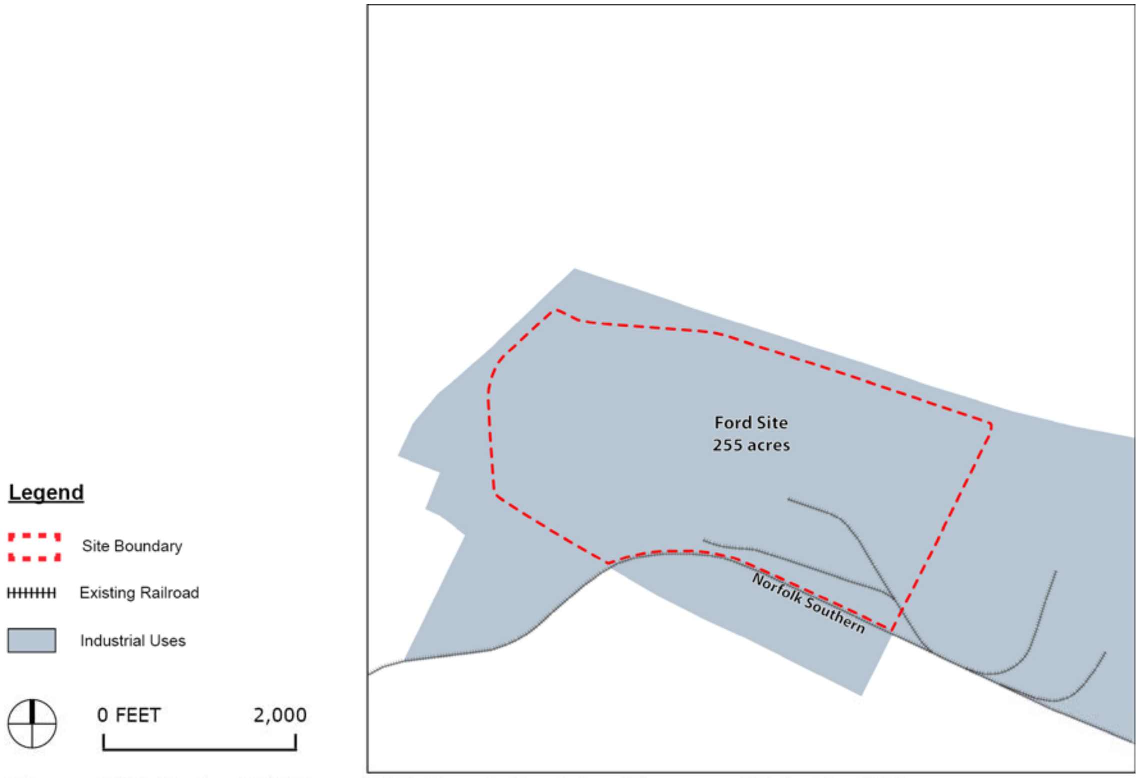


Figure 4.16: Industrial Uses & Railroad Corridor Diagram - Batavia, OH

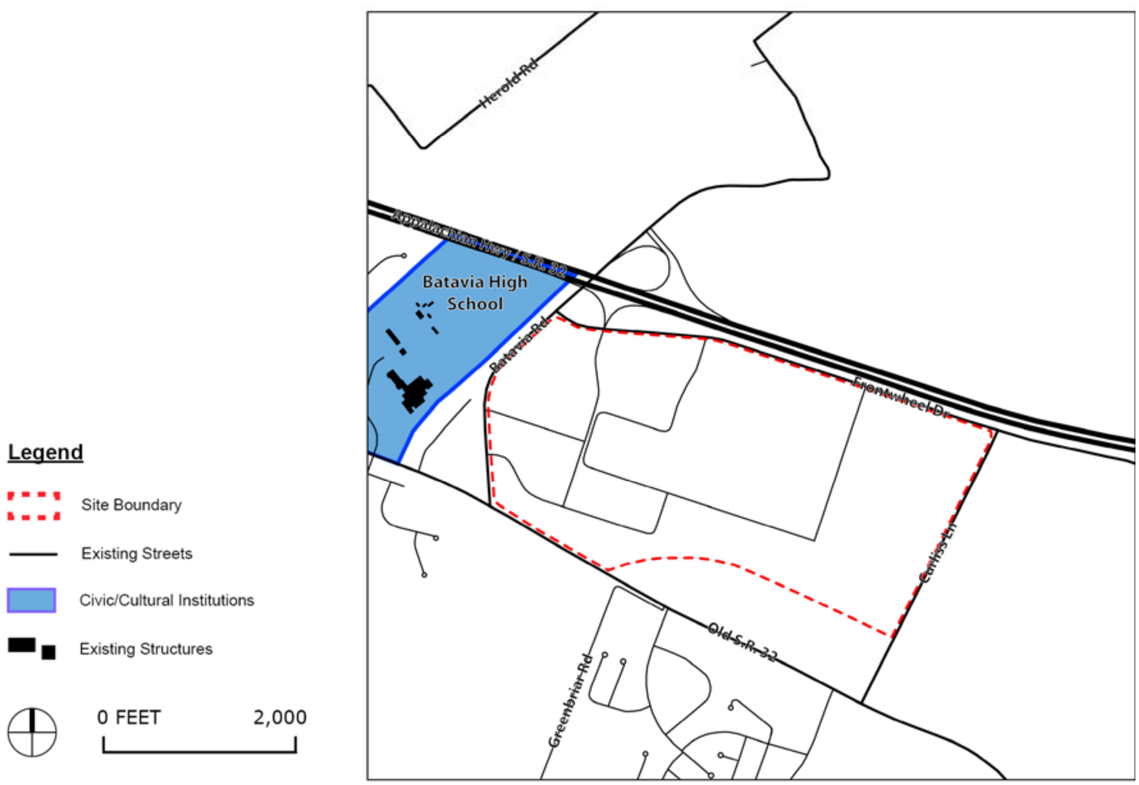


Figure 4.17: Cultural Resources Diagram - Batavia, OH

Figure 4.18: Natural Features Diagram - Batavia, OH

4.2.2 Batavia Site Design Part II - Site Design Strategy

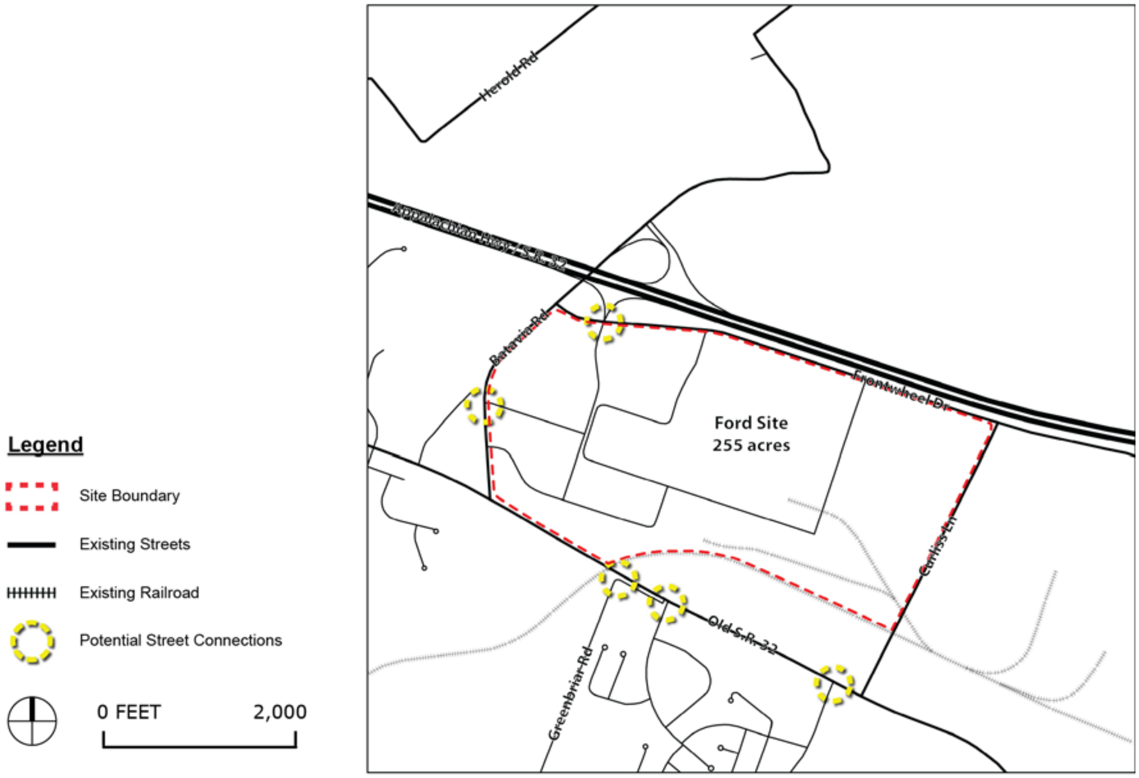


Figure 4.19: Site Boundaries & Potential Connections - Batavia, OH

Figure 4.20: Proposed Street/Infrastructural Network - Batavia, OH

Figure 4.21: Proposed Interior Organization of Territory - Batavia, OH

Figure 4.22: Potential Public Space Locations & Connections - Batavia, OH

4.2.3 Batavia Site Design Part III - Site Redevelopment Framework

Figure 4.23: Illustrative Long-Term Framework Plan - Batavia, OH

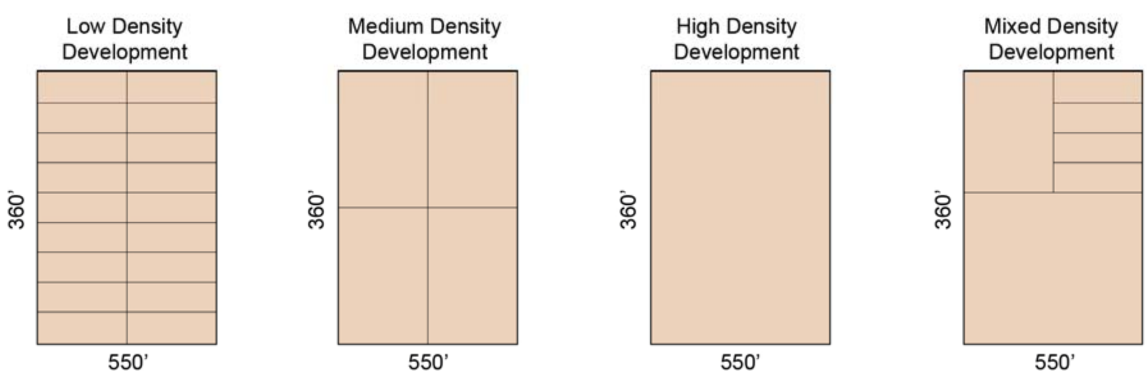


Figure 4.24: Block Configuations for Private Development - Batavia, OH

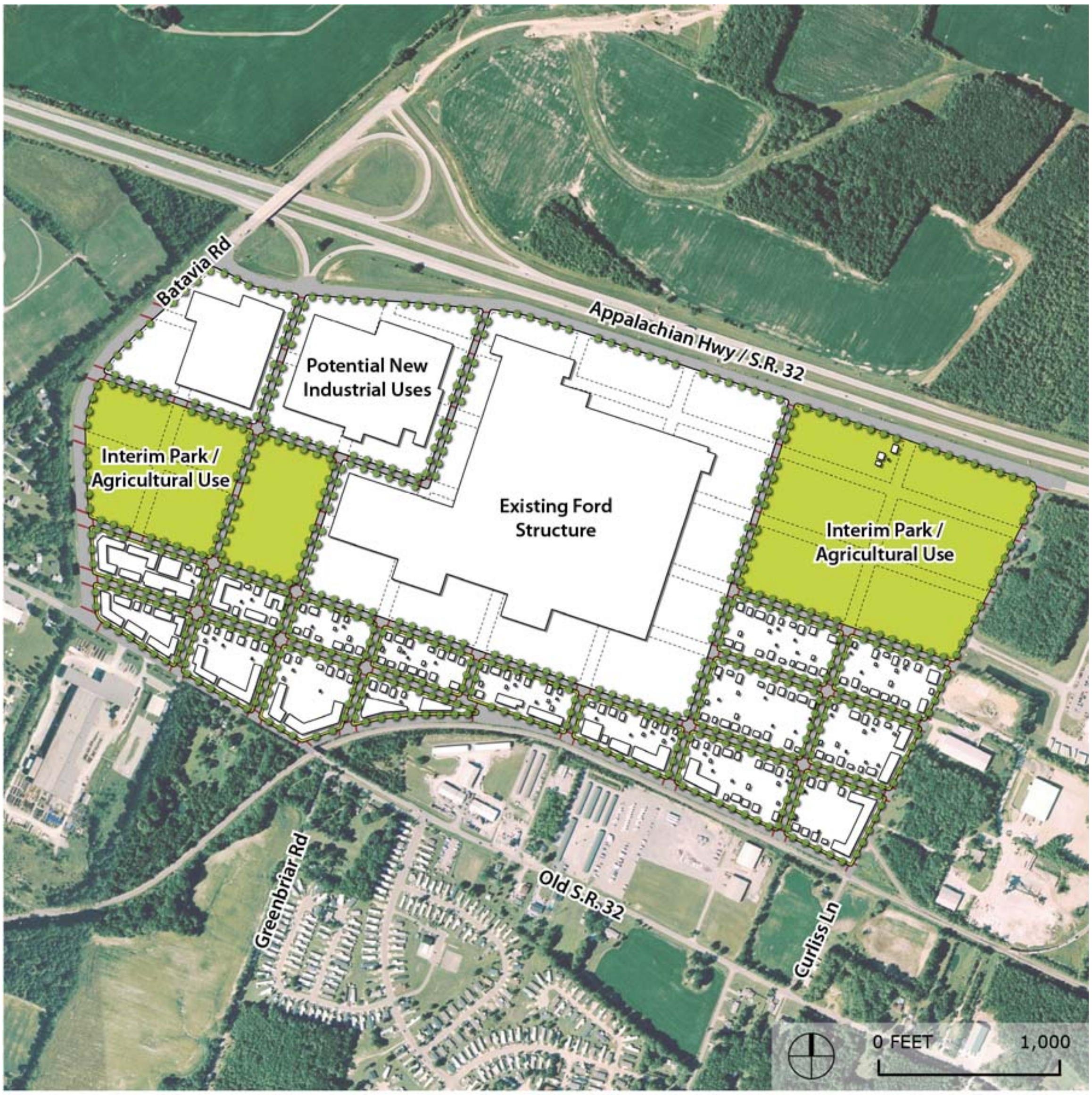


Figure 4.25: Illustrative Development Scenario #1 (Adaptive Re-use) - Batavia, OH

Figure 4.26: Low/Mixed Density Block Development Strategy - Batavia, OH

Figure 4.27: Illustrative Development Scenario #2 (Interim Use) - Batavia, OH

Figure 4.28: Medium/Mixed Density Block Development Strategy - Batavia, OH

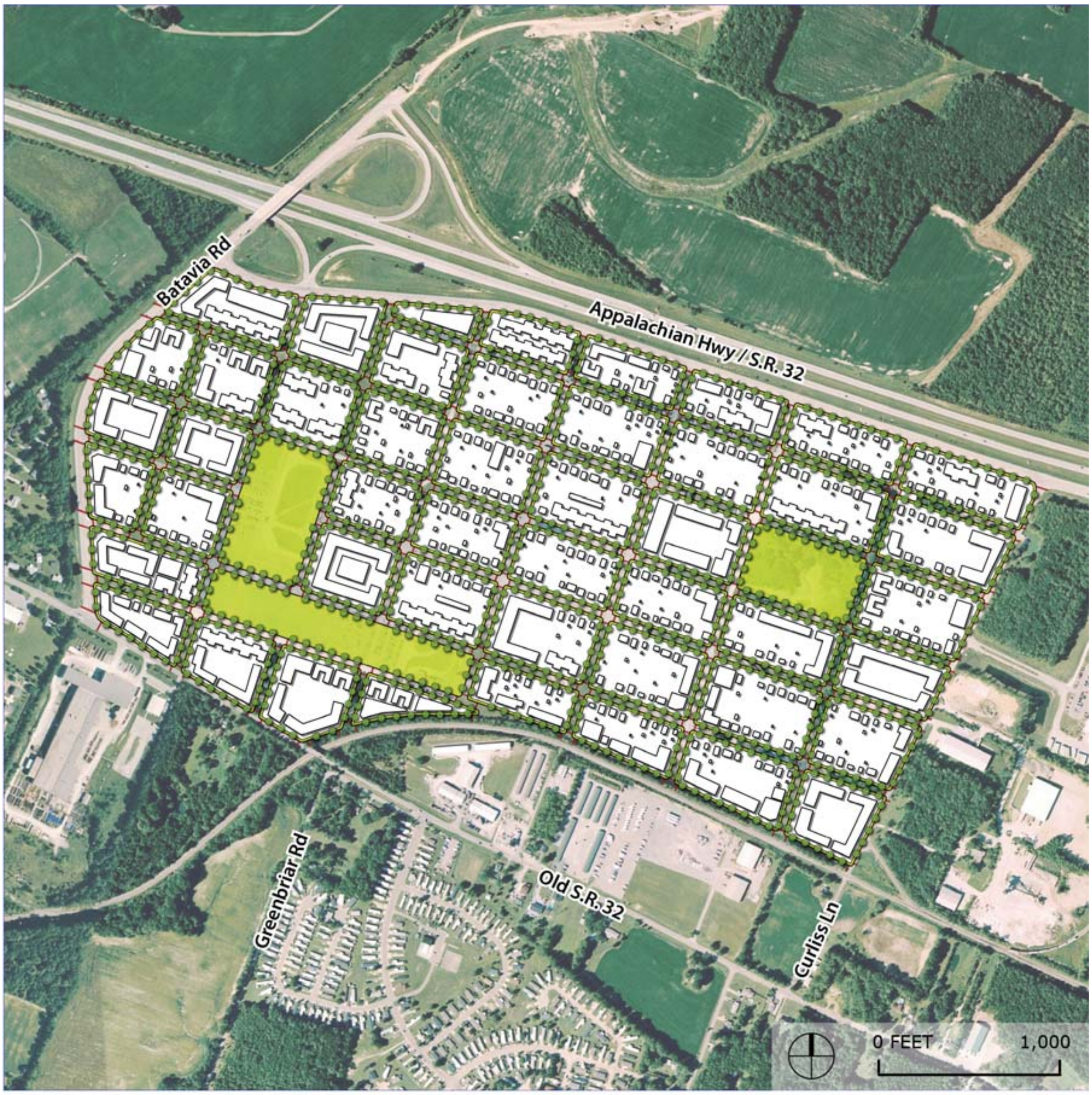


Figure 4.29: Illustrative Development Scenario #3 (Build-out) - Batavia, OH

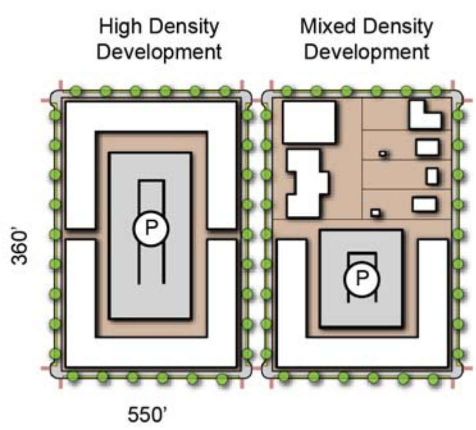


Figure 4.30: High/Mixed Density Block Development Strategy - Batavia, OH

4.3 Landscape of Catalyzation: GM Linden Assembly Plant Site Design

The city of Linden is located approximately four miles south from the more urbanized city of Elizabeth. The GM Linden Assembly Plant site itself, classified as a *Landscape of Catalyzation*, occupies 94 acres of land in a declining industrial sector of Linden. Existing conditions diagrams (see 4.3.1 Linden Site Design – Part I, Page 128) reveal that surrounding development has focused along the Edgar Road (U.S. 1 & 9) corridor including the recent development of a major retail strip anchored by Home Depot and Target located immediately adjacent to the GM site's southeastern boundary. The existing framework immediately surrounding the site is classified as "barrier" due to its basis on land use. However, a prevailing street grid and a series of parks and schools in the northern neighborhoods offer larger connection possibilities. Both the Linden Municipal Airport to the southeast and NJ Transit/Amtrak lines to the northwest provide unique factors and opportunities in consideration of site design.

The site's location and existing surrounding framework present limited connection opportunities (see 4.3.2 Linden Site Design – Part II, Page 133). Immediate possibilities for site connections exist along Linden Avenue, Pleasant Street, and Edgar Road. Additional connections to Stiles Street via West Munsell Avenue and to Elizabeth Road beyond the site's northwestern and northeastern boundaries require negotiation of right-of-way through existing development and bridging of multiple rail lines. The extensions of streets that currently terminate at Edgar Road and Pleasant Street, along with key connections with Laurita Street and West Munsell Avenue, define the infrastructural network of the site and organize it into blocks. The framework itself is oriented to accommodate future expansion and additional development. Typical dimensions of the blocks are approximately 440' x 300' though variations occur due to specific right-of-way alignments. The majority of the blocks are held for private development but potential locations for key public parks are designated first based on airport location. If FAA guidelines heavily restrict development in this area, interim park space could temporarily hold the area for development or permanently bind it to the small neighborhood cluster to the south. Streets are designed as key public spaces with privileged streets designated based on connections to cultural resources such as West Brook, Wheeler Park, and Second Ward Park.

Figure 4.44 is the illustrative long-term framework plan for the Linden site which features new street network, park locations, and developable blocks which have been further subdivided based upon a 60-foot critical dimension. Figure 4.45, followed by similar diagrams on the following pages, demonstrates how this 60-foot dimension can be reconfigured in multiple ways to condition the internal block structure for varying densities of development. Specific uses are unprescribed and left for market demand to determine and change over time. In similar fashion, Figures 4.46-4.51 show how the overall framework of the site can adapt to accommodate adaptive re-use of existing site structures (scenario #1), interim uses during environmental remediation (scenario #2), or an eventual build-out (scenario #3). In all of these scenarios specific uses, programs, buildings, and densities all change over time but the underlying framework remains the same.

4.3.1 Linden Site Design Part I - Analysis of Existing Conditions

Legend

Site Boundary

0 FEET 2,000

Figure 4.31: Aerial Image of Existing Site - Linden, NJ

Legend

Site Boundary

Existing Street/Block Edge

Existing Railroad

Building Footprint

10' Contours

0 FEET 2,000

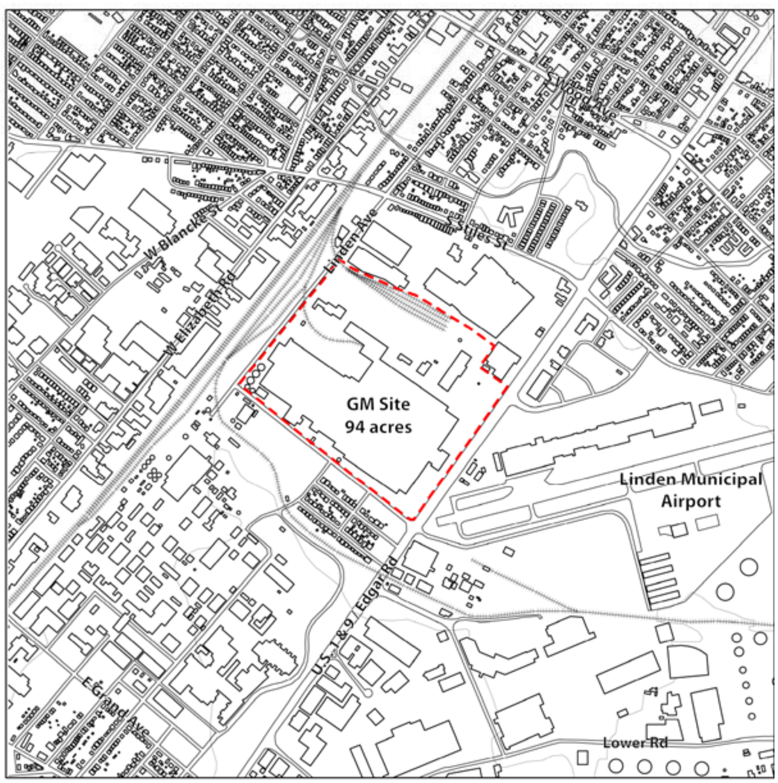


Figure 4.32: Base Map of Existing Site - Linden, NJ

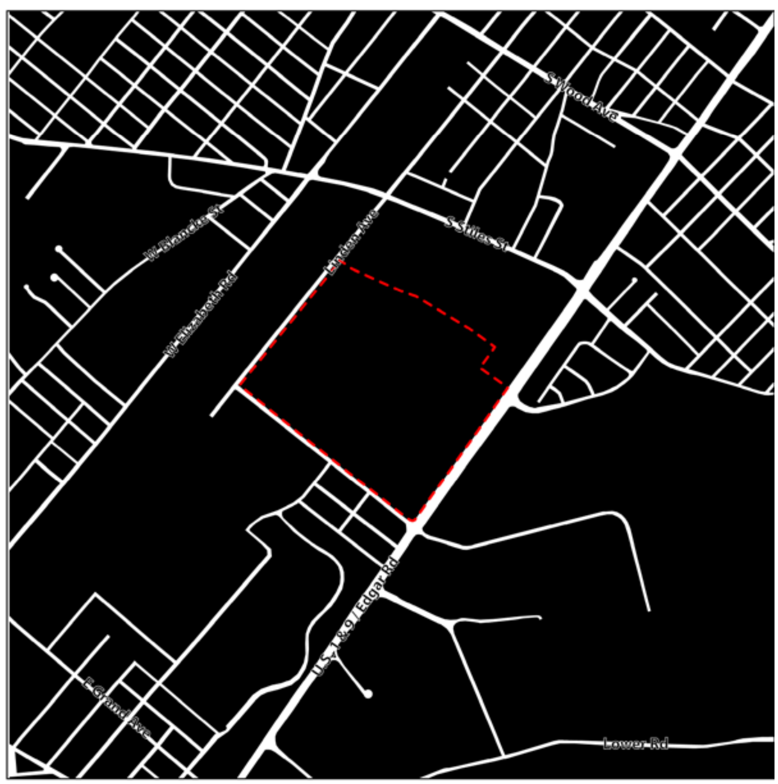
Legend

Site Boundary

Existing Streets

0 FEET 2,000

Figure 4.33: Street Network Diagram - Linden, NJ



Legend

Site Boundary

Existing Block Figure

Existing Right-of-way

0 FEET 2,000

Figure 4.34: Block Figure-Ground Diagram - Linden, NJ

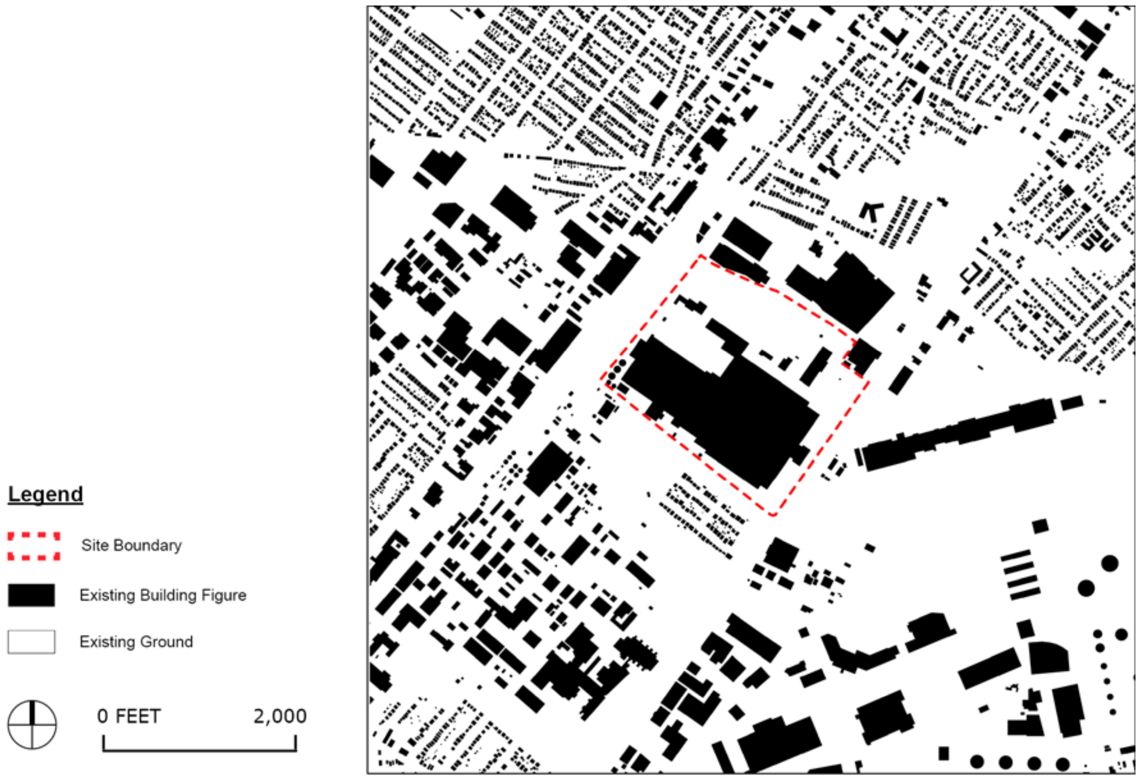


Figure 4.35: Building Figure-Ground Diagram - Linden, NJ

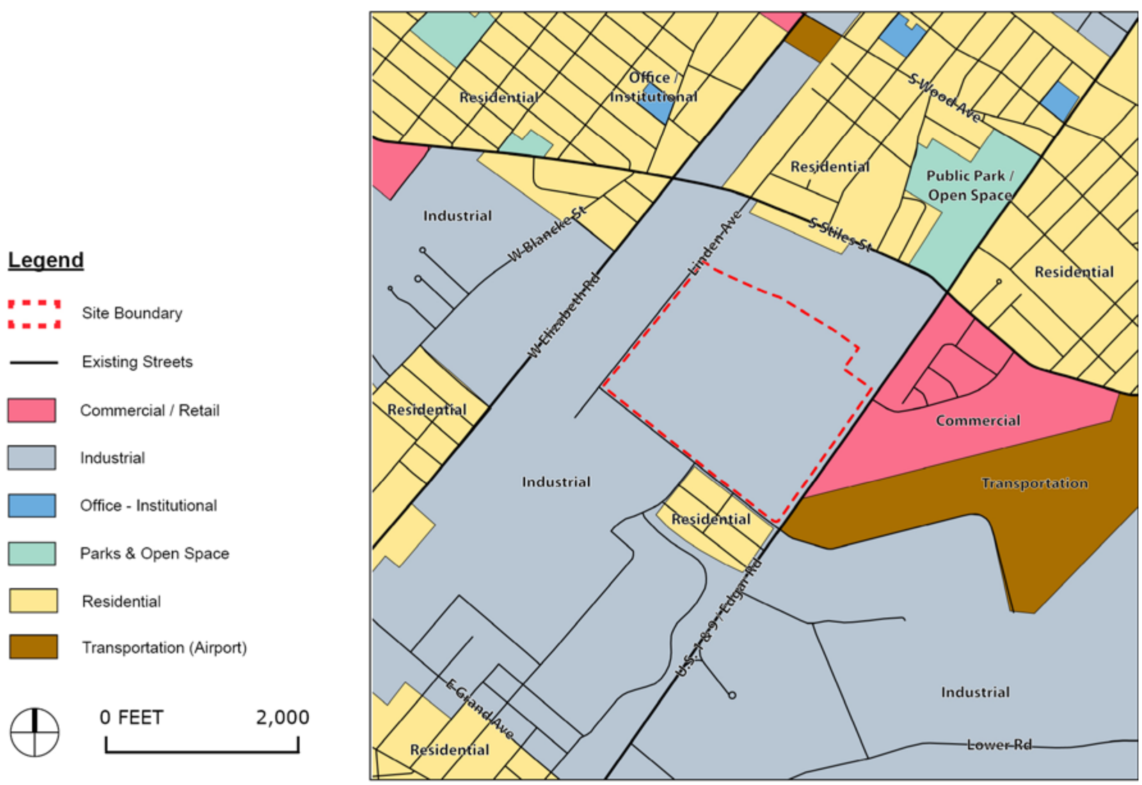


Figure 4.36: Land Use Diagram - Linden, NJ

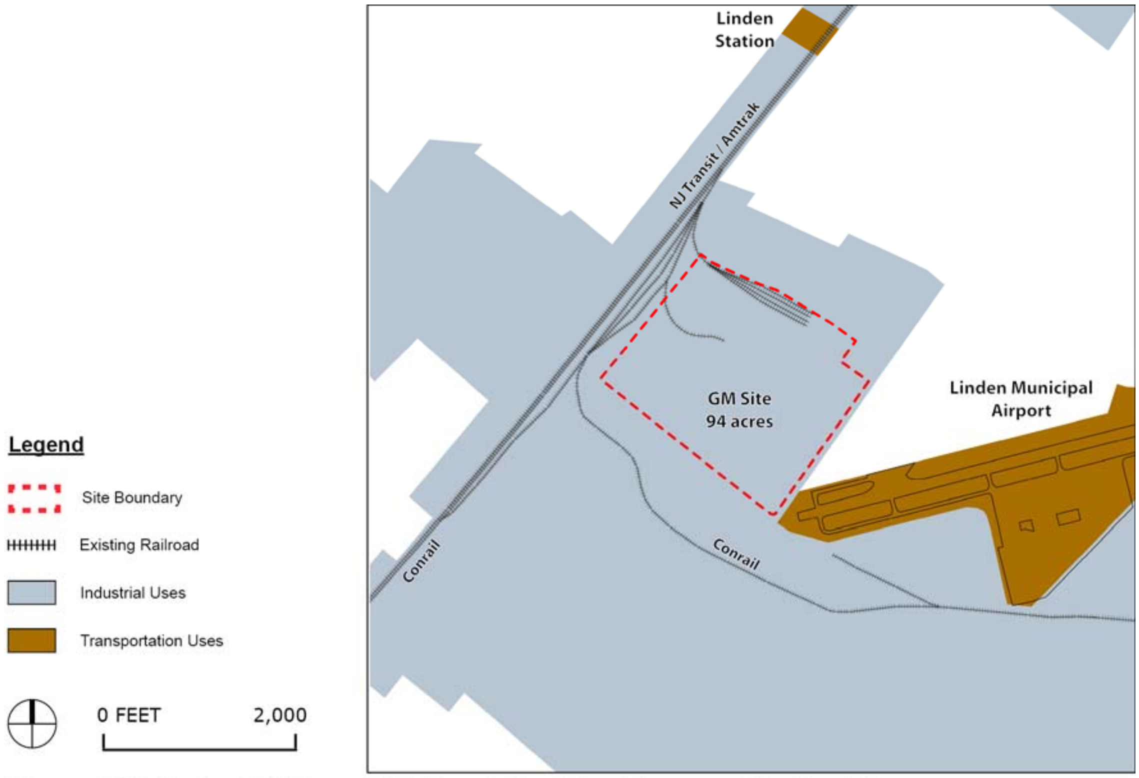


Figure 4.37: Industrial Uses & Railroad Corridor Diagram - Linden, NJ

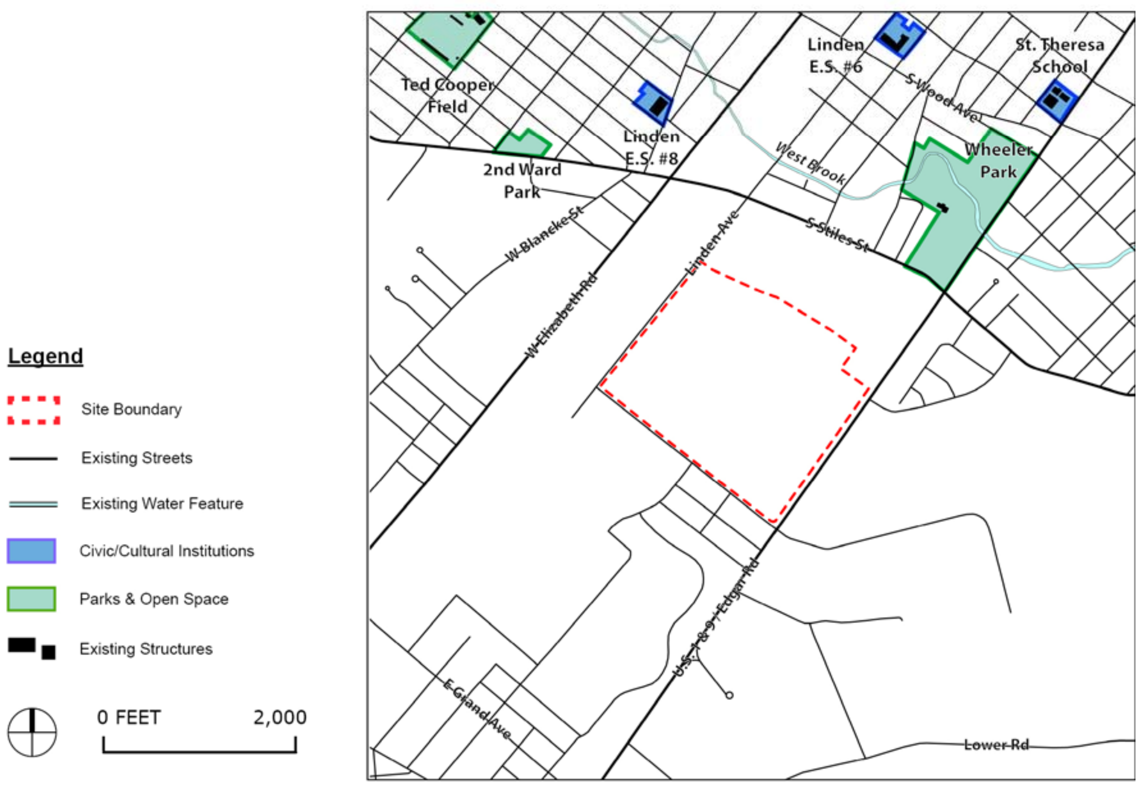


Figure 4.38: Cultural Resources Diagram - Linden, NJ

Figure 4.39: Natural Features Diagram - Linden, NJ

4.3.2 Linden Site Design Part II - Site Design Strategy

Figure 4.40: Site Boundaries & Potential Connections - Linden, NJ

Figure 4.41: Proposed Street/Infrastructural Network - Linden, NJ

Figure 4.42: Proposed Interior Organization of Territory - Linden, NJ

Figure 4.43: Potential Public Space Locations & Connections - Linden, NJ

4.3.3 Linden Site Design Part III - Site Redevelopment Framework

Figure 4.44: Illustrative Long-Term Framework Plan - Linden, NJ

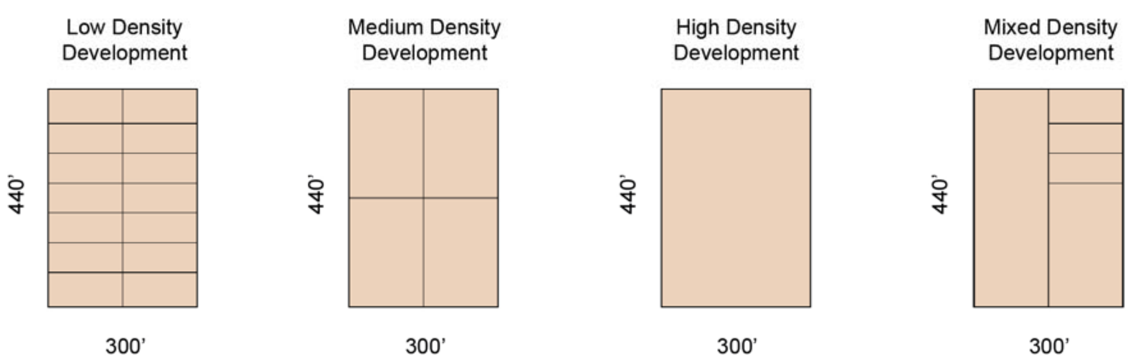


Figure 4.45: Block Configuations for Private Development - Linden, NJ

Figure 4.46: Illustrative Development Scenario #1 (Adaptive Re-use) - Linden, NJ

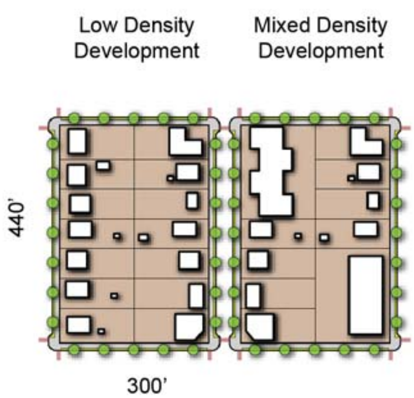


Figure 4.47: Low/Mixed Density Block Development Strategy - Linden, NJ

Figure 4.48: Illustrative Development Scenario #2 (Interim Use) - Linden, NJ

Figure 4.49: Medium/Mixed Density Block Development Strategy - Linden, NJ

Figure 4.50: Illustrative Development Scenario #3 (Build-out) - Linden, NJ

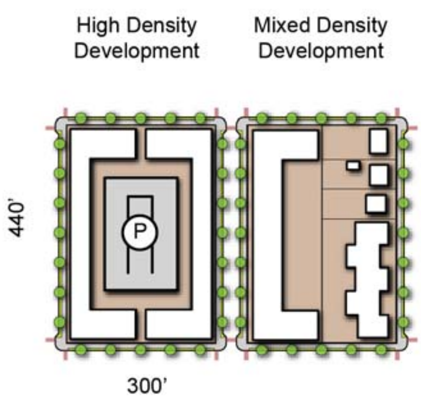


Figure 4.51: High/Mixed Density Block Development Strategy - Linden, NJ

4.4 Landscape of Integration: GM Lansing Assembly Plant Site Design

The site design for a *Landscape of Integration (L-INT)* actually involves three adjacent GM sites that occupy 217 acres of land within two miles of downtown Lansing. Additionally the sites were chosen as a response to the Site Feasibility Study issued by Urban and Regional Planning Department at Michigan State University in 2006 (Boehm et al, 2006). Conducted on the primary 57-acre assembly plant site, the study provides a thorough background of the site but allows feasibility of particular land uses drive its redevelopment proposals for the site. Existing conditions diagrams (see 4.4.1 Lansing Site Design – Part I, Page 141), including land use as just one of several factors, reveal that a use-driven approach critically underestimates the redevelopment potential of the GM sites. Surrounding development, based on a traditional street grid framework and classified as “framed,” has cultivated the widest variety of uses and densities seen in any of the design case studies by far. Essentially, the three GM sites act as the final “pieces” to the framework “puzzle” which currently separate development beyond either boundary of the site.

The existing, well-organized framework presents a variety of connection opportunities, and the presented design is only one of several possible solutions (see 4.4.2 Lansing Site Design – Part II, Page 146). Primary connection opportunities exist along the sites’ boundaries on Willow Street, Saginaw Street, and Michigan Avenue which could be later extended into less intensely developed land to the north and south. Numerous additional connections are provided along the east and west boundaries of the sites by the existing street network in the adjacent neighborhoods. The new infrastructural network of the site organizes it into new blocks of similar geometry and size of existing blocks in the study area. Typical dimensions of the blocks are approximately 460’ x 230’ though variations in the longest dimension occur due to existing right-of-way alignments. The majority of the blocks are held for private development but potential locations for key public parks are designated based on distance from existing parks and can vary as needed. Streets are designed as key public spaces with privileged streets designated based on connections to cultural resources such as Westside Park, Windemere Park School, and Sexton High School. Additional privileged streets strategically bind neighborhoods by bridging the railroad which centrally bisects the entire study area. Figure 4.65 is the illustrative long-term framework plan for the Lansing site which features new street network, park locations, and developable blocks which have been further subdivided based upon a 60-foot critical dimension. Figure 4.66, followed by similar diagrams on the following pages, demonstrates how this 60-foot dimension can be reconfigured in multiple ways to condition the internal block structure for varying densities of development. Unlike the Michigan State University Study, specific uses are purposefully unprescribed and left for market demand to determine and change over time. Figures 4.67-4.72 show how the overall framework of the site can adapt to accommodate multiple development scenarios including adaptive re-use of existing site structures (scenario #1), interim uses during environmental remediation (scenario #2), or an eventual build-out (scenario #3). In all of these scenarios specific uses, programs, buildings, and densities all change over time but the underlying framework remains the same.

4.4.1 Lansing Site Design Part I - Analysis of Existing Conditions

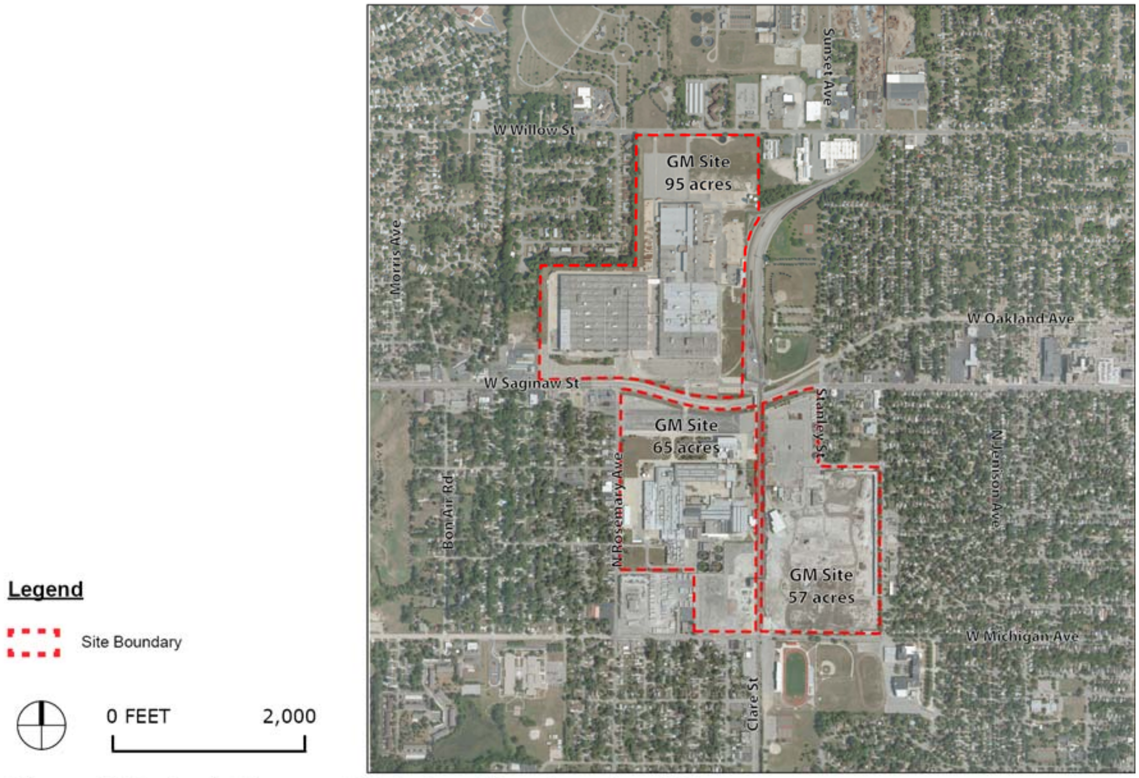


Figure 4.52: Aerial Image of Existing Site - Lansing, MI

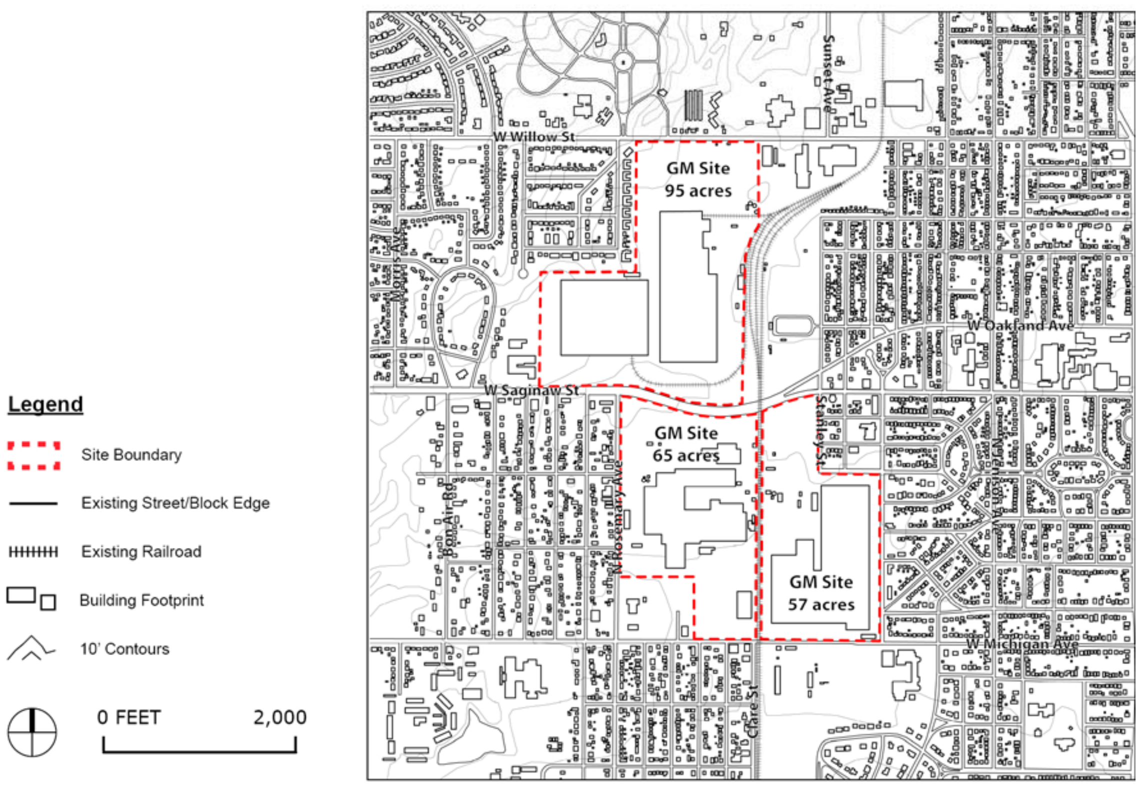


Figure 4.53: Base Map of Existing Site - Lansing, MI

Figure 4.54: Street Network Diagram - Lansing, MI

Figure 4.55: Block Figure-Ground Diagram - Lansing, MI

Figure 4.56: Building Figure-Ground Diagram - Lansing, MI

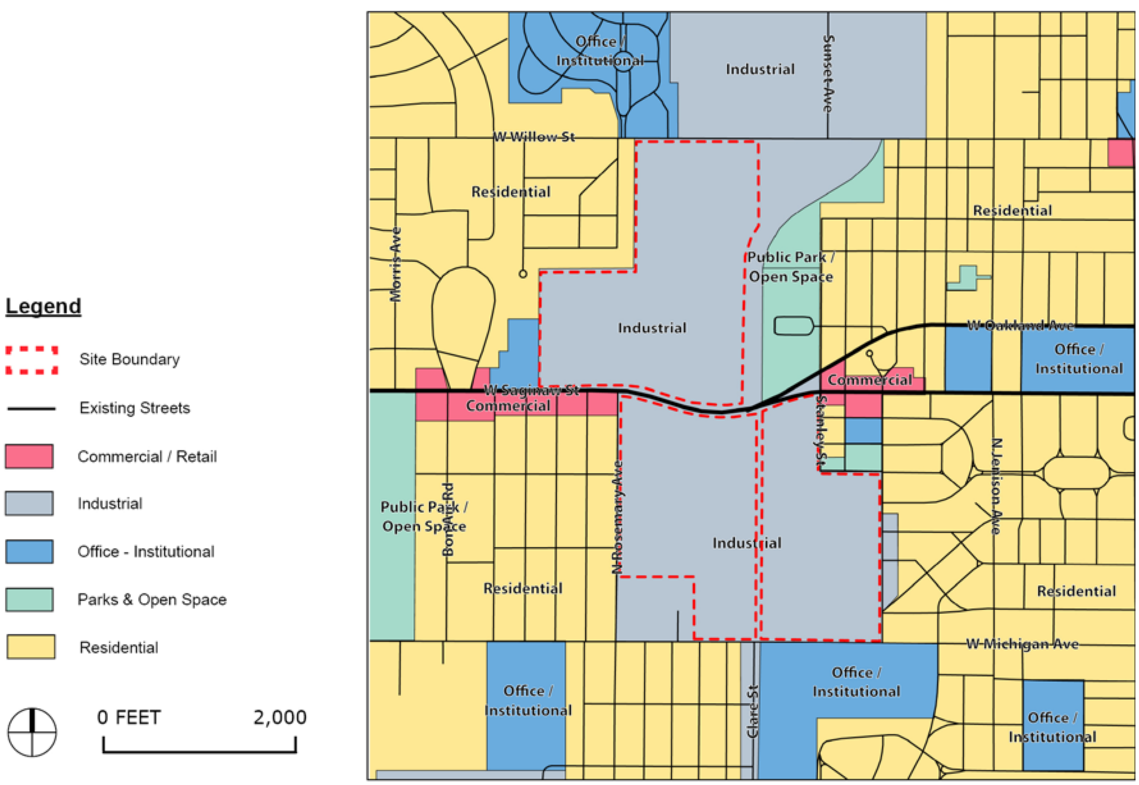


Figure 4.57: Land Use Diagram - Lansing, MI

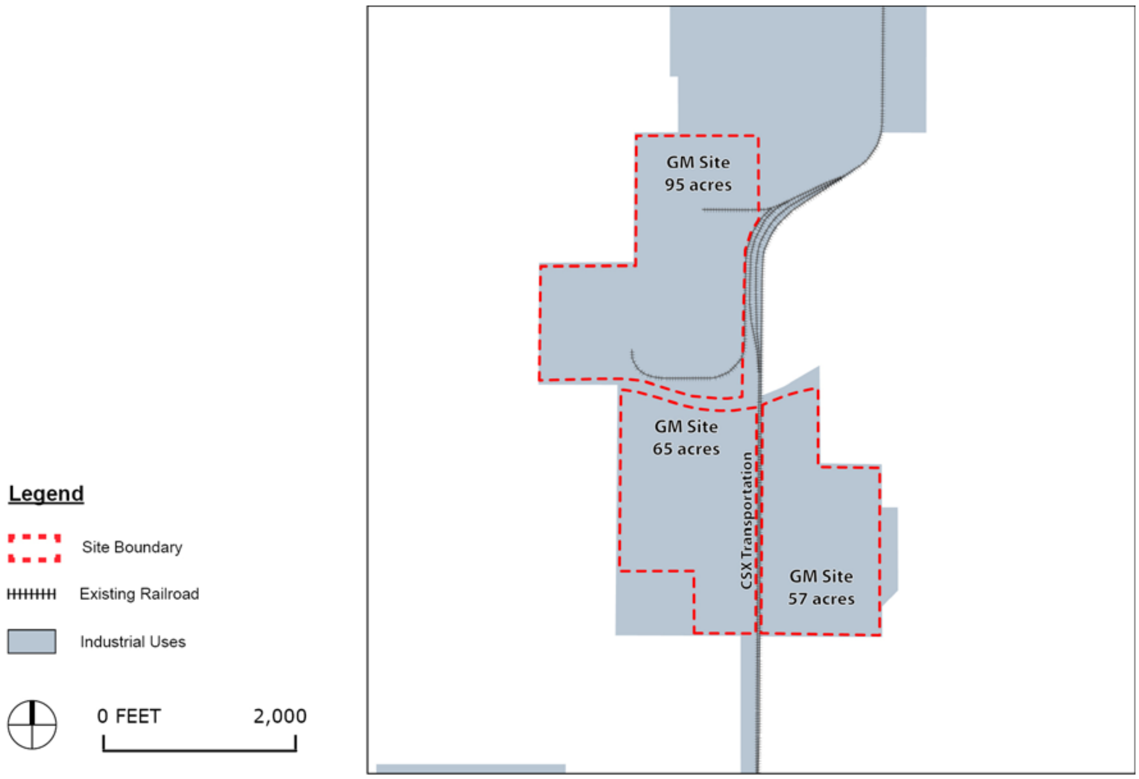


Figure 4.58: Industrial Uses & Railroad Corridor Diagram - Lansing, MI

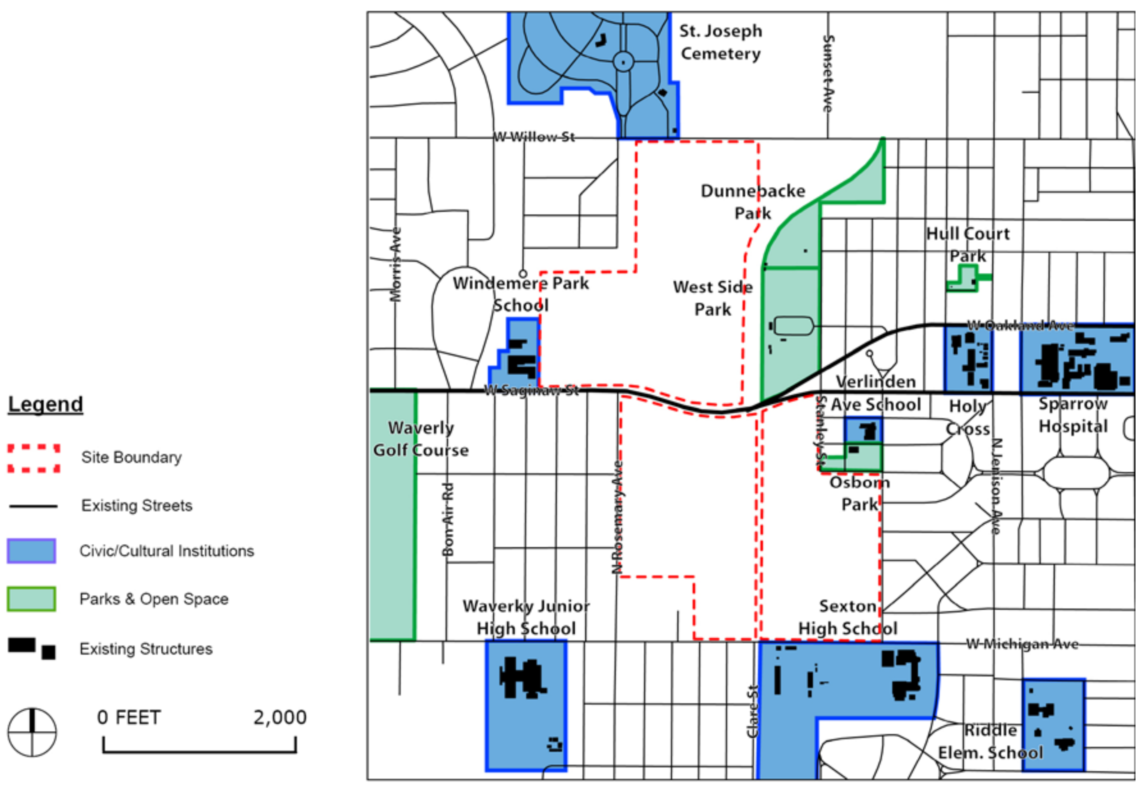


Figure 4.59: Cultural Resources Diagram - Lansing, MI

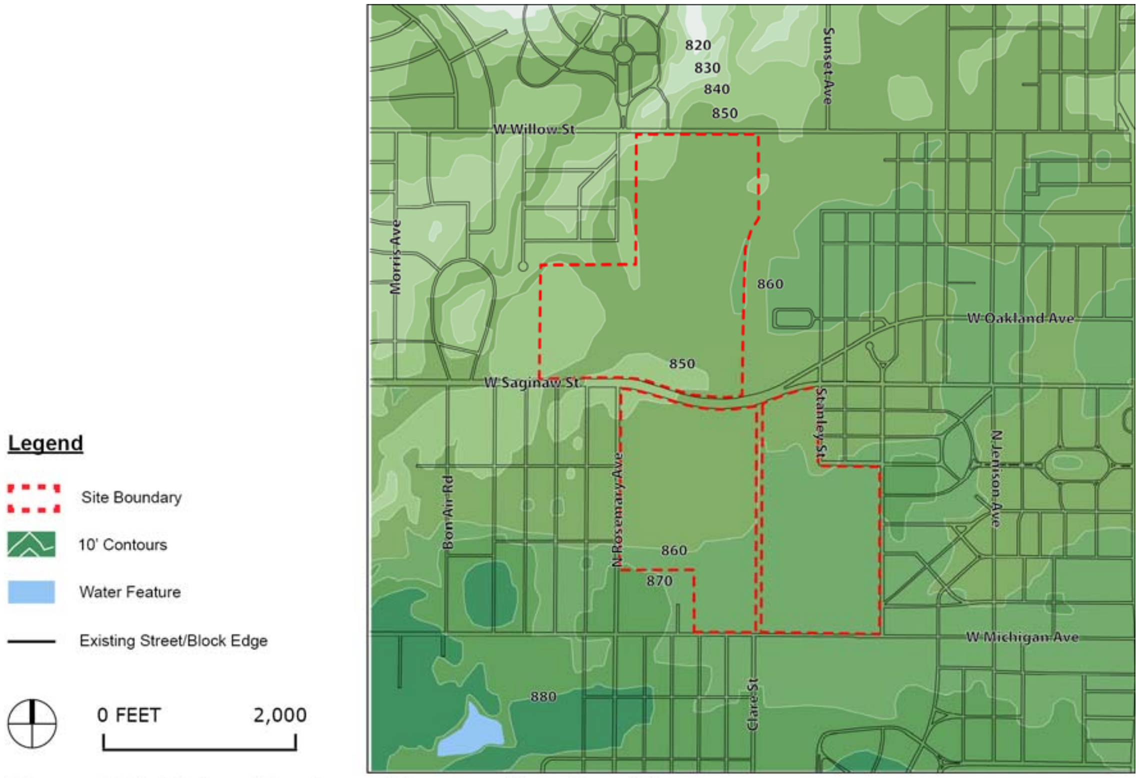


Figure 4.60: Natural Features Diagram - Lansing, MI

4.4.2 Lansing Site Design Part II - Site Design Strategy

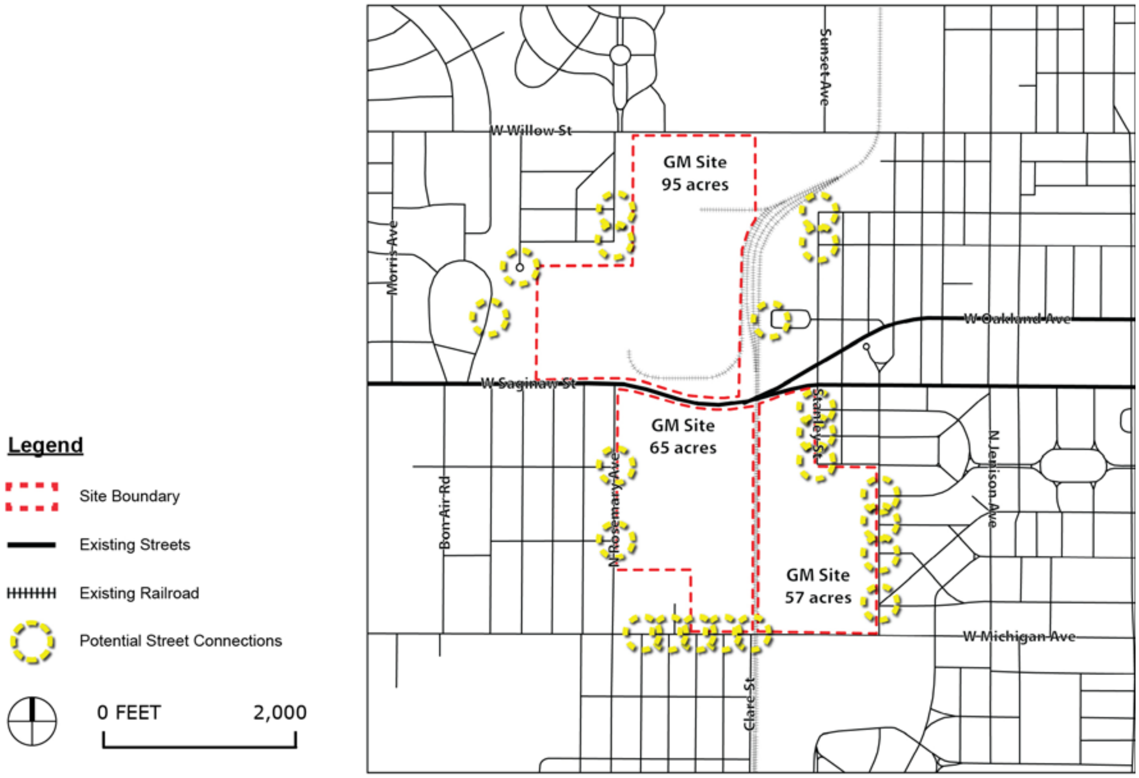


Figure 4.61: Site Boundaries & Potential Connections - Lansing, MI

Figure 4.62: Proposed Street/Infrastructural Network - Lansing, MI

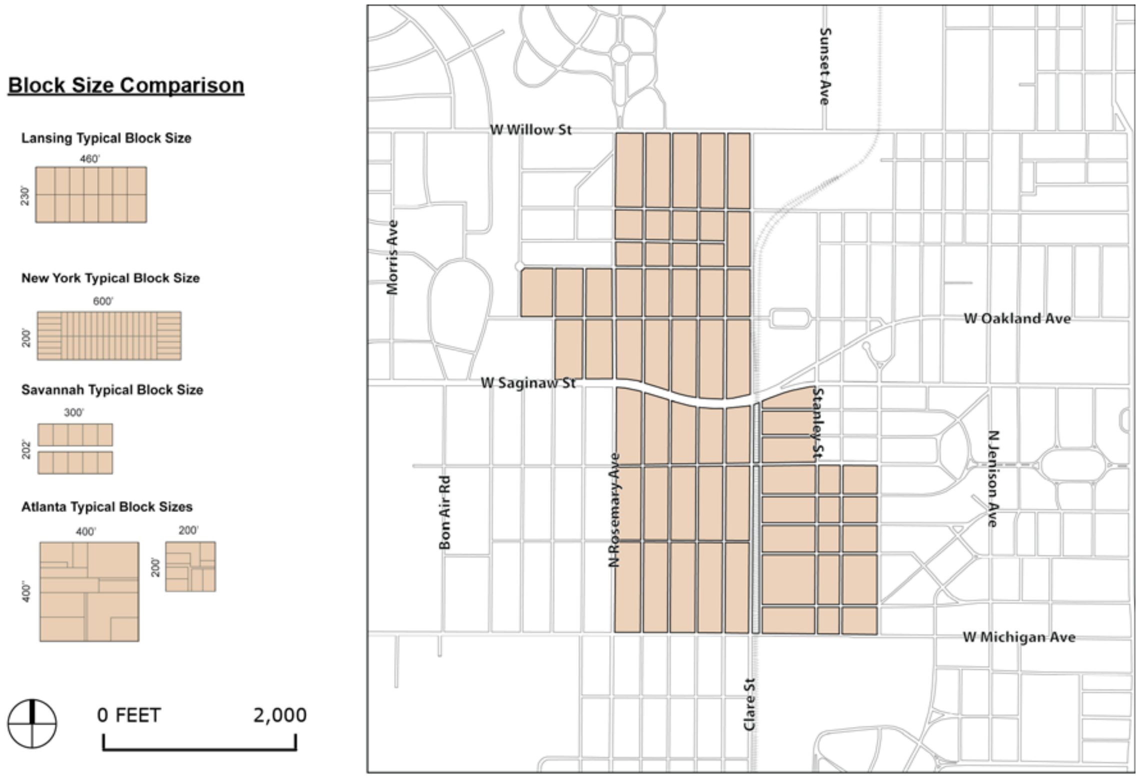


Figure 4.63: Proposed Interior Organization of Territory - Lansing, MI

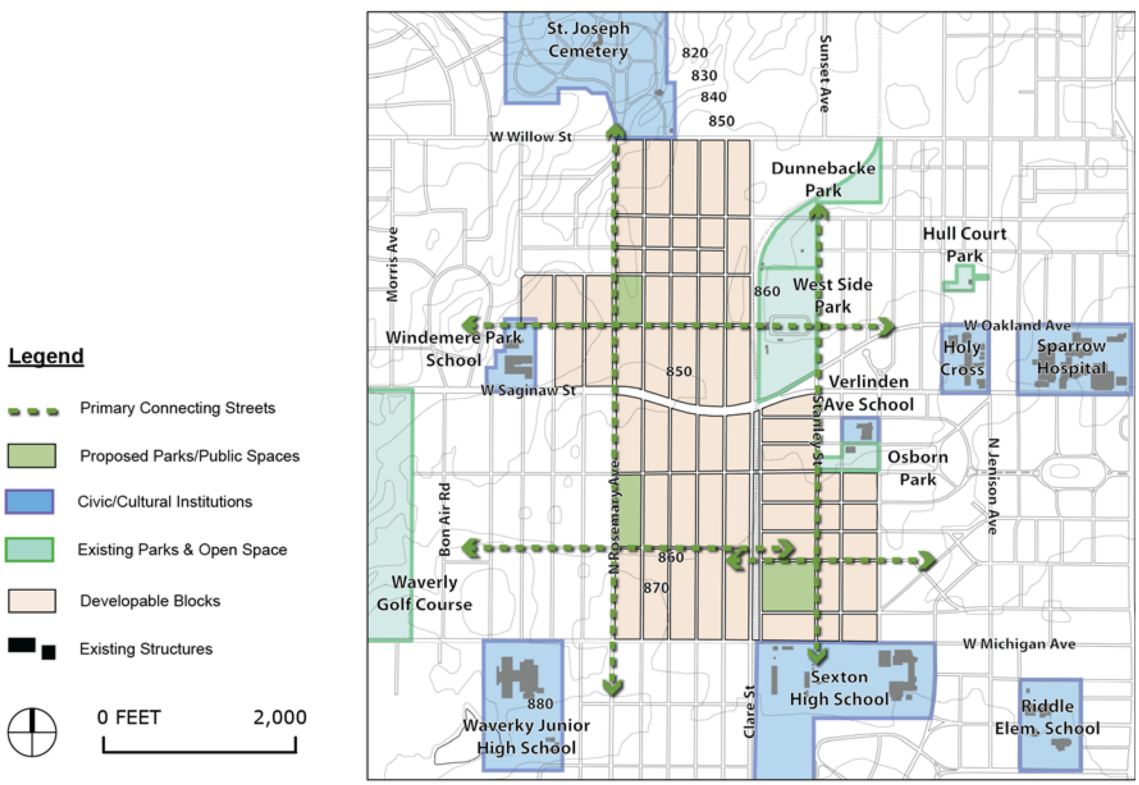


Figure 4.64: Potential Public Space Locations & Connections - Lansing, MI

4.4.3 Lansing Site Design Part III - Site Redevelopment Framework

Figure 4.65: Illustrative Long-Term Framework Plan - Lansing, MI

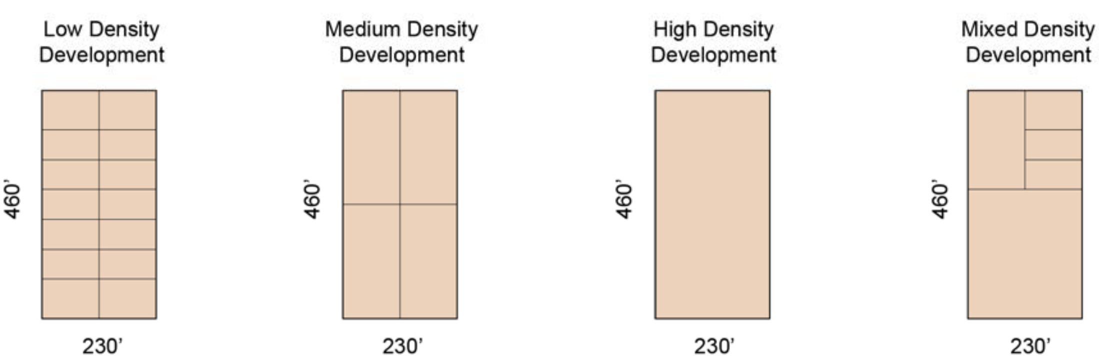


Figure 4.66: Block Configuations for Private Development - Lansing, MI

Figure 4.67: Illustrative Development Scenario #1 (Adaptive Re-use) - Lansing, MI

Figure 4.68: Low/Mixed Density Block Development Strategy - Lansing, MI

Figure 4.69: Illustrative Development Scenario #2 (Interim Use) - Lansing, MI

Figure 4.70: Medium/Mixed Density Block Development Strategy - Lansing, MI

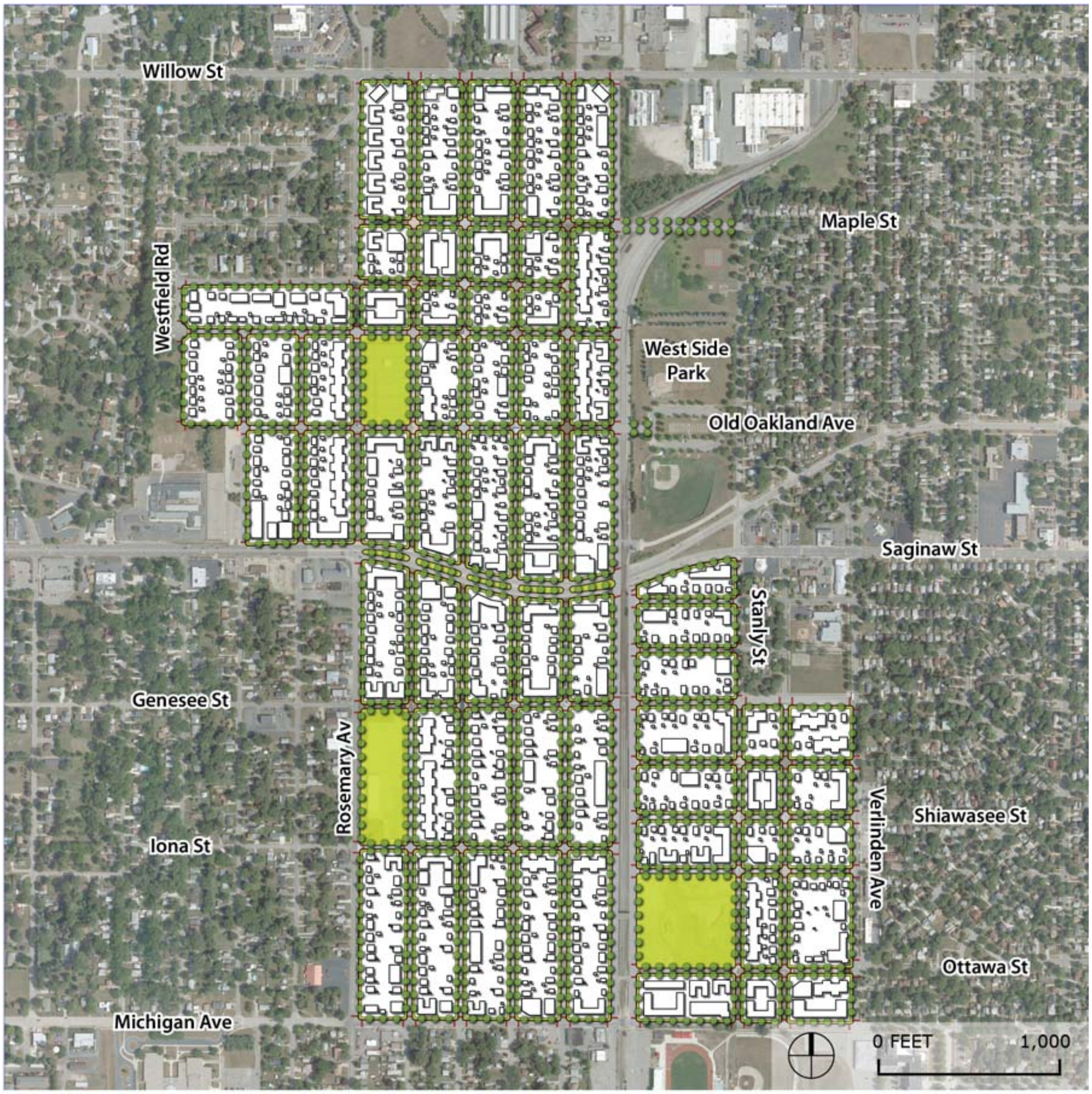


Figure 4.71: Illustrative Development Scenario #3 (Build-out) - Lansing, MI

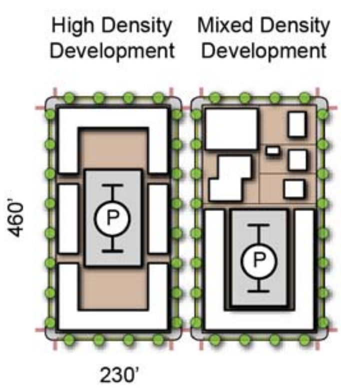


Figure 4.72: High/Mixed Density Block Development Strategy - Lansing, MI

4.5 Landscape of Utilization: GM St. Louis Site Design

The site for the former GM St. Louis Service Parts Operations (SPO) is actually located approximately 15 miles outside of St. Louis, adjacent to the massive Lambert-St.Louis International Airport, and within the smaller municipality of Hazelwood. Centrally located in an active industrial cluster that also features a major Boeing facility and a former Ford Assembly Plant, the 25-acre former GM site is a perfect example of a *Landscape of Utilization*. In fact, Duke Realty, the same developer of Baltimore's Chesapeake Commerce Center, has recently begun marketing its completed redevelopment of the site (Duke, 2008). The new development, named the Lindbergh Distribution Center, retained the existing 500,000 square foot structure for adaptively re-use as light industrial/warehousing/office space. Existing condition diagrams of the site (see St. Louis Site Design – Part I, Page 154) reveal that the intense industrial nature of the study area made this the most logical course of action. The surrounding framework is dictated by wide, arterial streets and large tracts of land required to accommodate industrial uses which dominate in the study area. Lindbergh Boulevard and James McDonnell Boulevard serve as the primary northwest and southeast boundaries of the site while developing land and the airport lie beyond the southern and western boundaries. Though the diagrams indicate a small pocket of residential uses, the long-term future of the site seems to be highly invested in its industrial nature.

Despite the likelihood of prolonged industrial use, the primary lesson of deindustrialization (in the scope of this thesis) teaches that this will not be the case forever, necessitating that the eventual redevelopment of the site for other purposes be reflected in the design strategy (see St. Louis Site Design – Part II, Page 159). Given the geometry of the site and its boundary along Lindbergh and James McDonnell Boulevard, primary possibilities for physical site connections exist in the creation and connection of new, internal infrastructural networks. The illustrated solution organizes the site into a series of nine blocks using a consistent 350’ x 260’ dimension. All but center block is held for private development which has been designated as a public park. Though actual location of park may be in any one of the blocks, the centrally located block allows balanced accessibility by the remaining eight blocks. As in the previous three sites, streets are designed as key public spaces with privileged streets designated based on connections to cultural resources. None were found in the existing impact area but may lie beyond or develop in the future.

Figure 4.86 is the illustrative long-term framework plan for the St. Louis site which features new street network, park location, and developable blocks which have been further subdivided based upon a 60-foot critical dimension. Figure 4.87, followed by similar diagrams on the following pages, demonstrates how this 60-foot dimension can be reconfigured in multiple ways to condition the internal block structure for varying densities of development. Specific uses are unprescribed and left for market demand to determine and change over time. In similar fashion, Figures 4.88-4.93 show how the overall framework of the site can adapt to accommodate continued and adaptive industrial use (scenario #1), interim uses during environmental remediation (scenario #2), or an eventual build-out (scenario #3). In all of these scenarios specific uses, programs, buildings, and densities all change over time but the underlying framework remains the same.

4.5.1 St. Louis Site Design Part I - Analysis of Existing Conditions

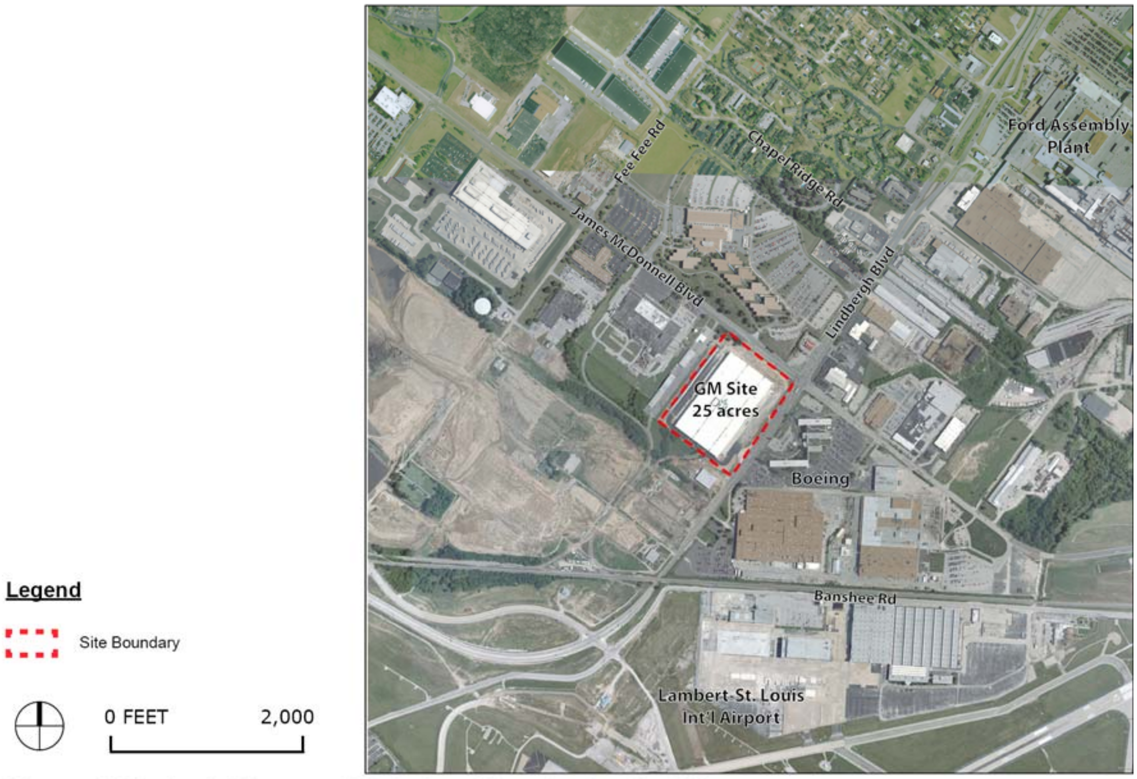


Figure 4.73: Aerial Image of Existing Site - St. Louis, MO

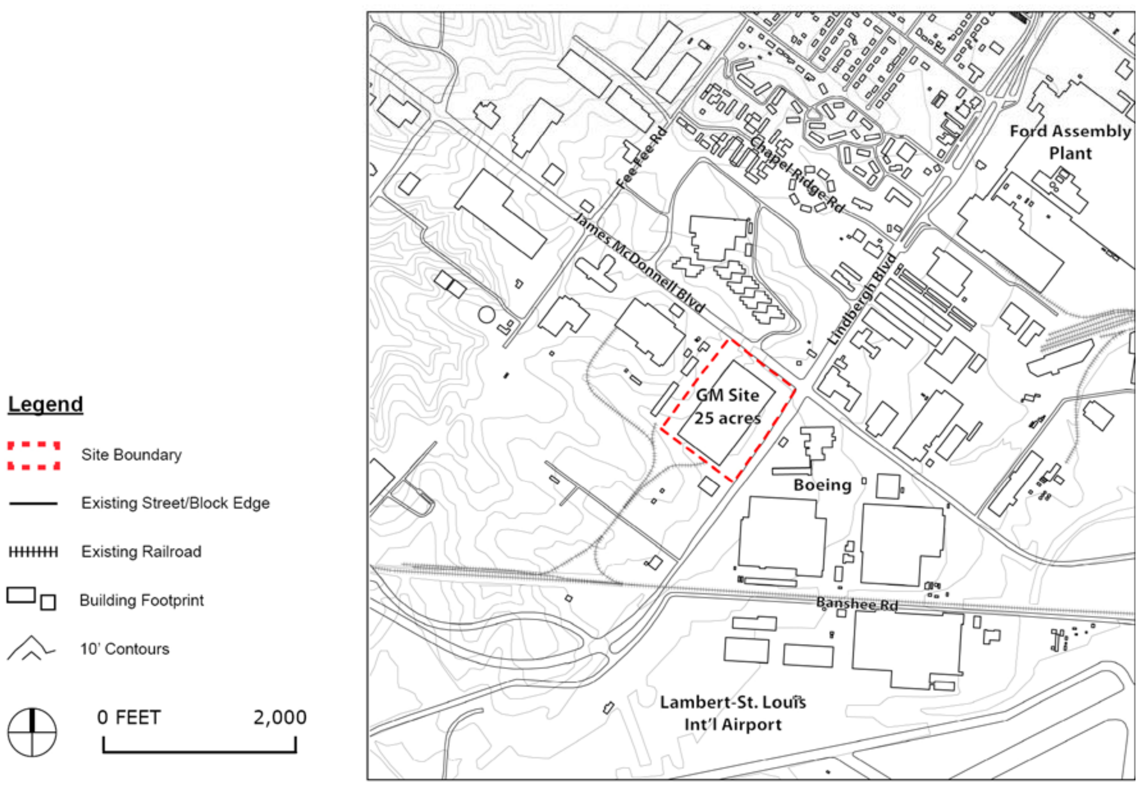


Figure 4.74: Base Map of Existing Site - St. Louis, MO

Figure 4.75: Street Network Diagram - St. Louis, MO

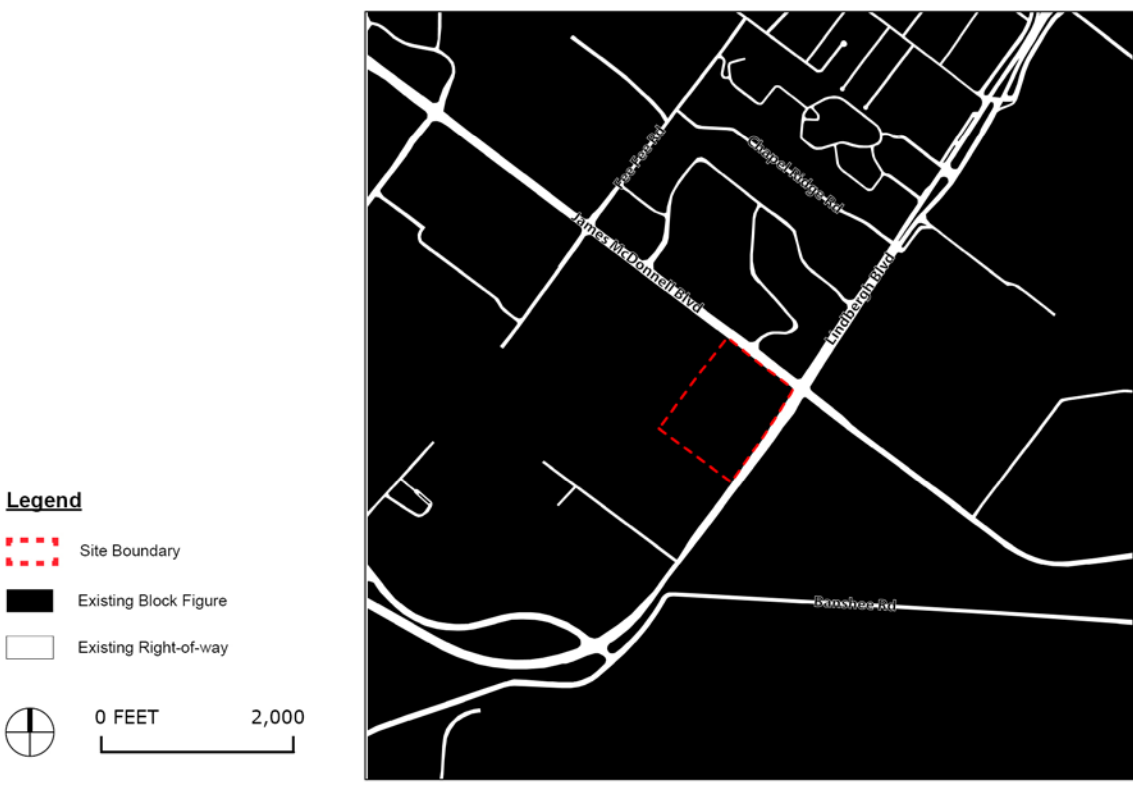


Figure 4.76: Block Figure-Ground Diagram - St. Louis, MO

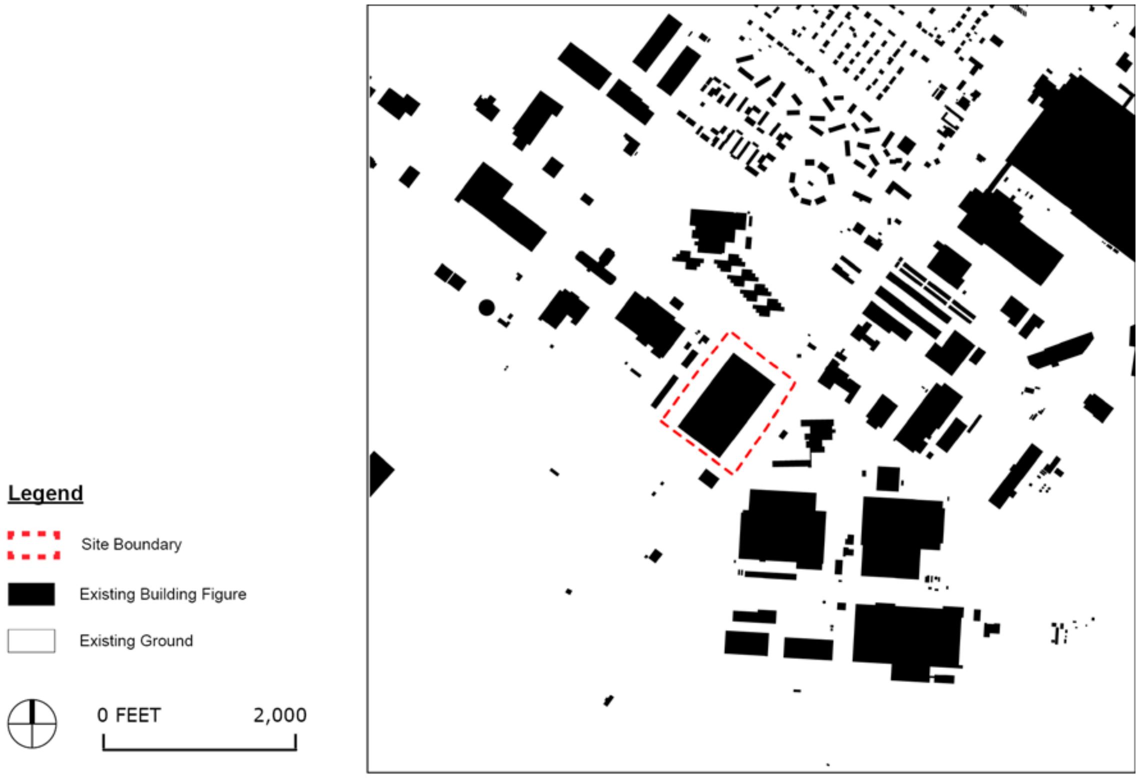


Figure 4.77: Building Figure-Ground Diagram - St. Louis, MO

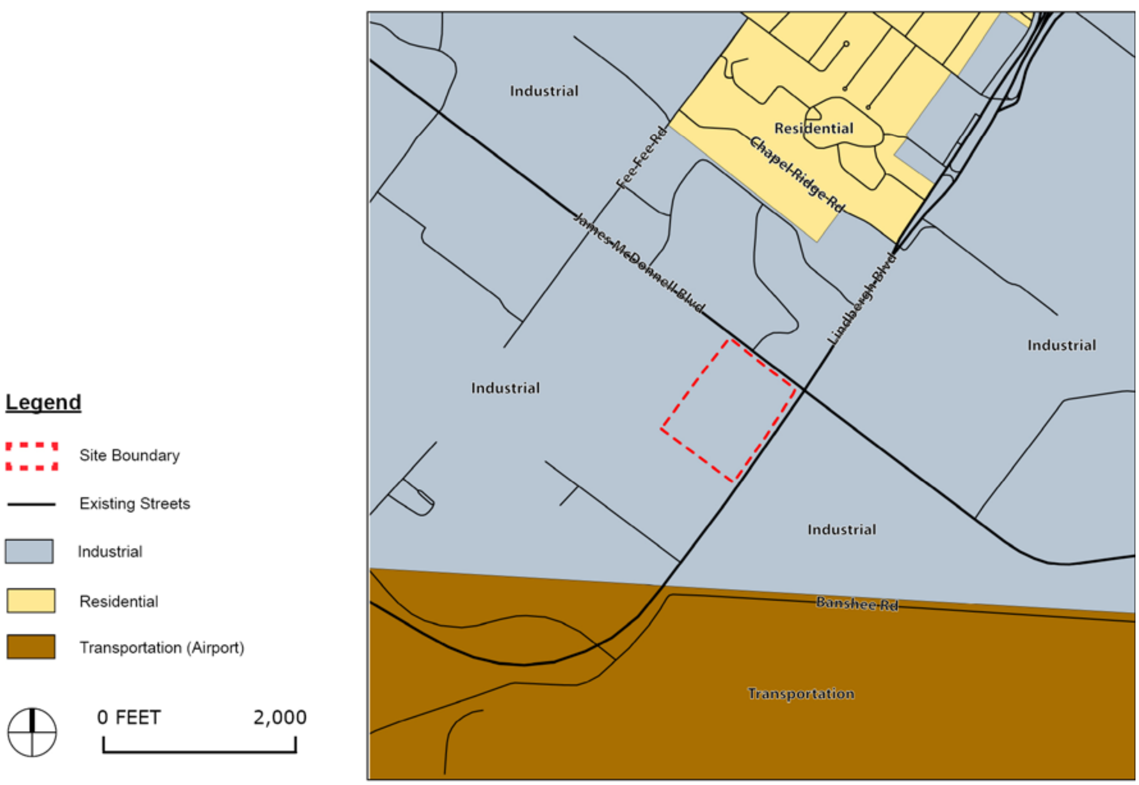


Figure 4.78: Land Use Diagram - St. Louis, MO

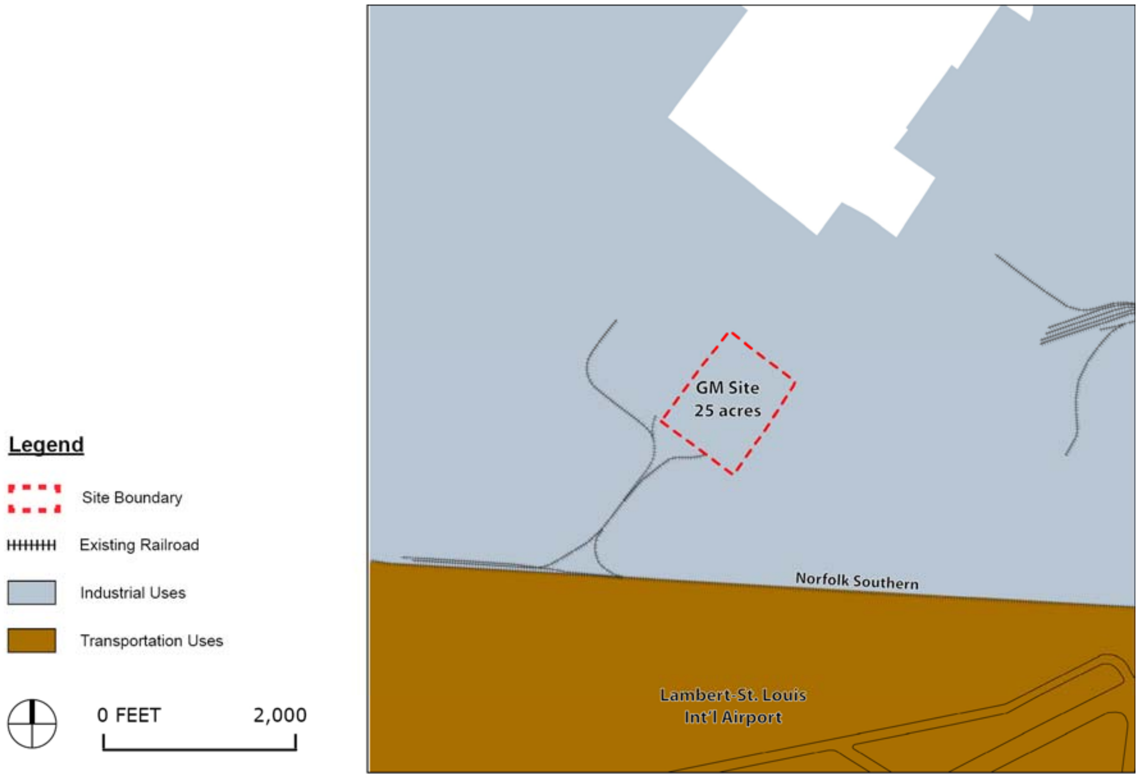


Figure 4.79: Industrial Uses & Railroad Corridor Diagram - St. Louis, MO

Figure 4.80: Cultural Resources Diagram - St. Louis, MO

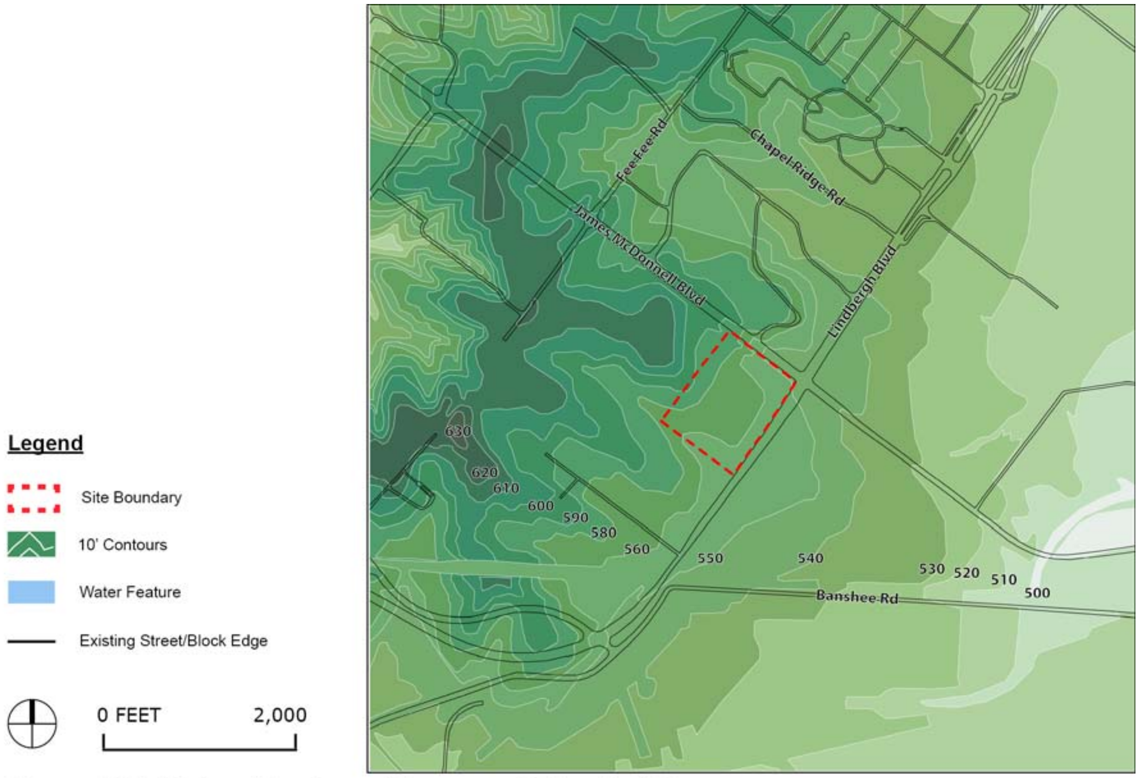


Figure 4.81: Natural Features Diagram - St. Louis, MO

4.5.2 St. Louis Site Design Part II - Site Redevelopment Strategy

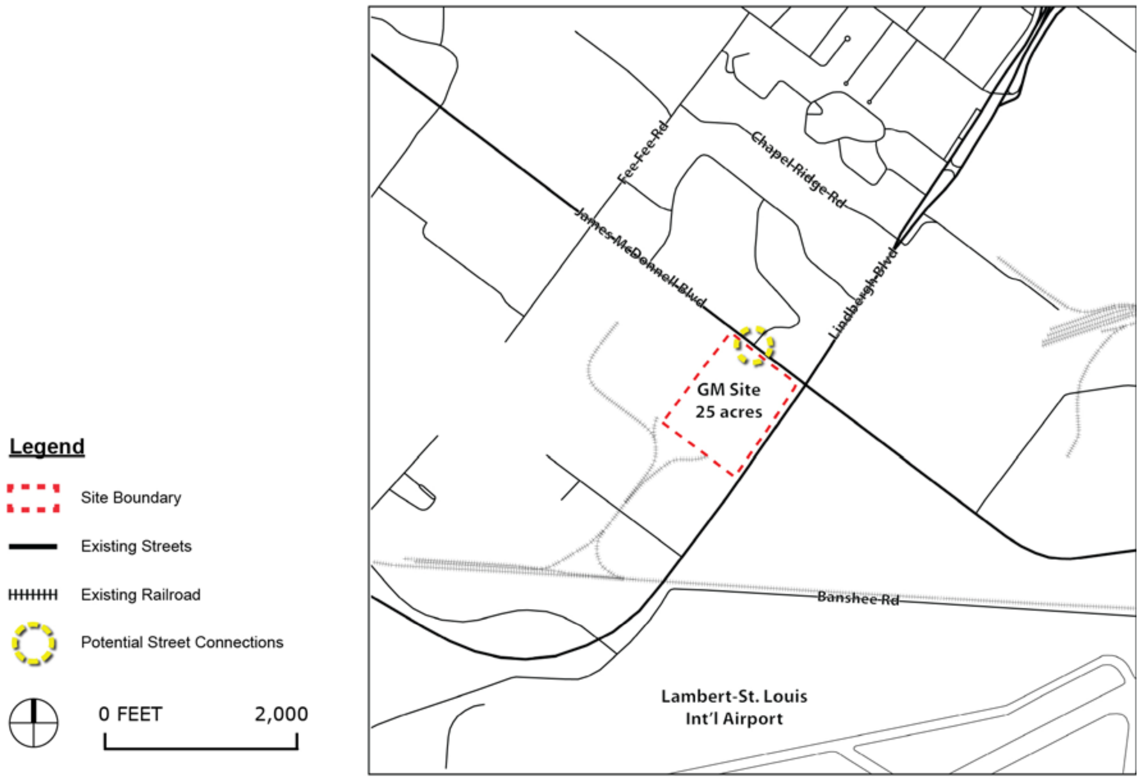


Figure 4.82: Site Boundaries & Potential Connections - St. Louis, MO

Figure 4.83: Proposed Street/Infrastructural Network - St. Louis, MO

Figure 4.84: Proposed Interior Organization of Territory - St. Louis, MO

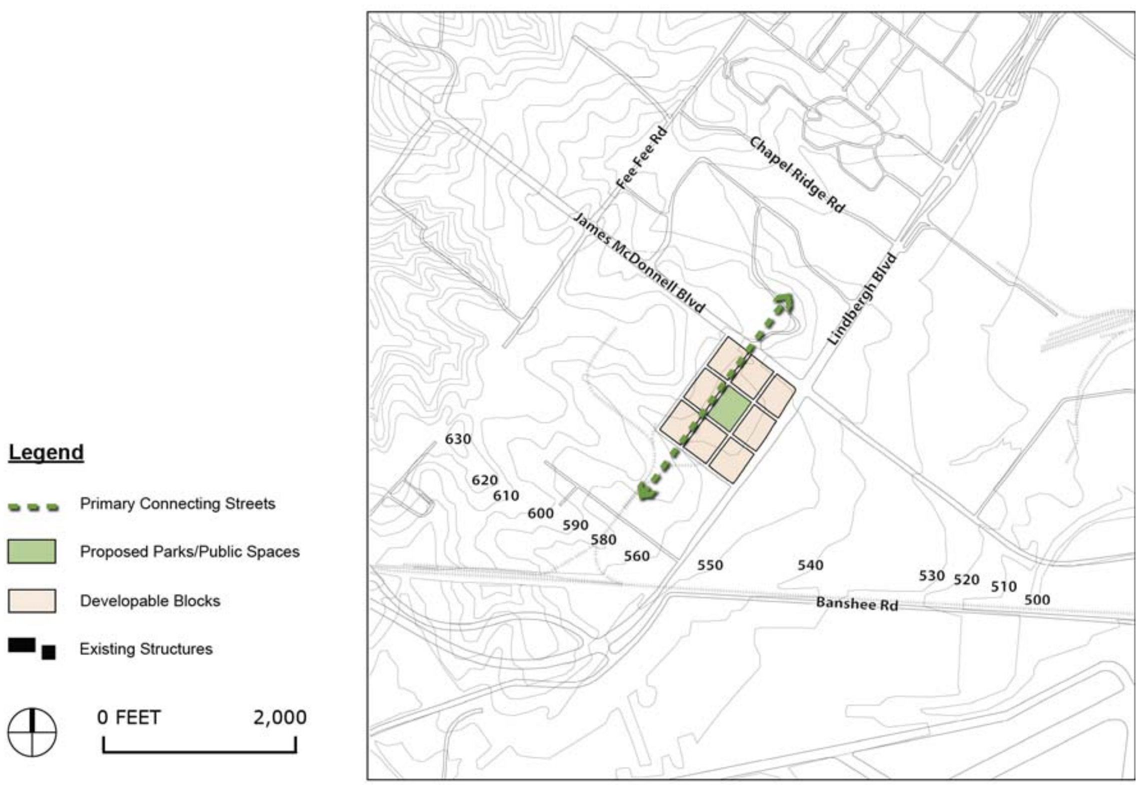


Figure 4.85: Potential Public Space Locations & Connections - St. Louis, MO

4.5.3 St. Louis Site Design Part III - Site Redevelopment Framework

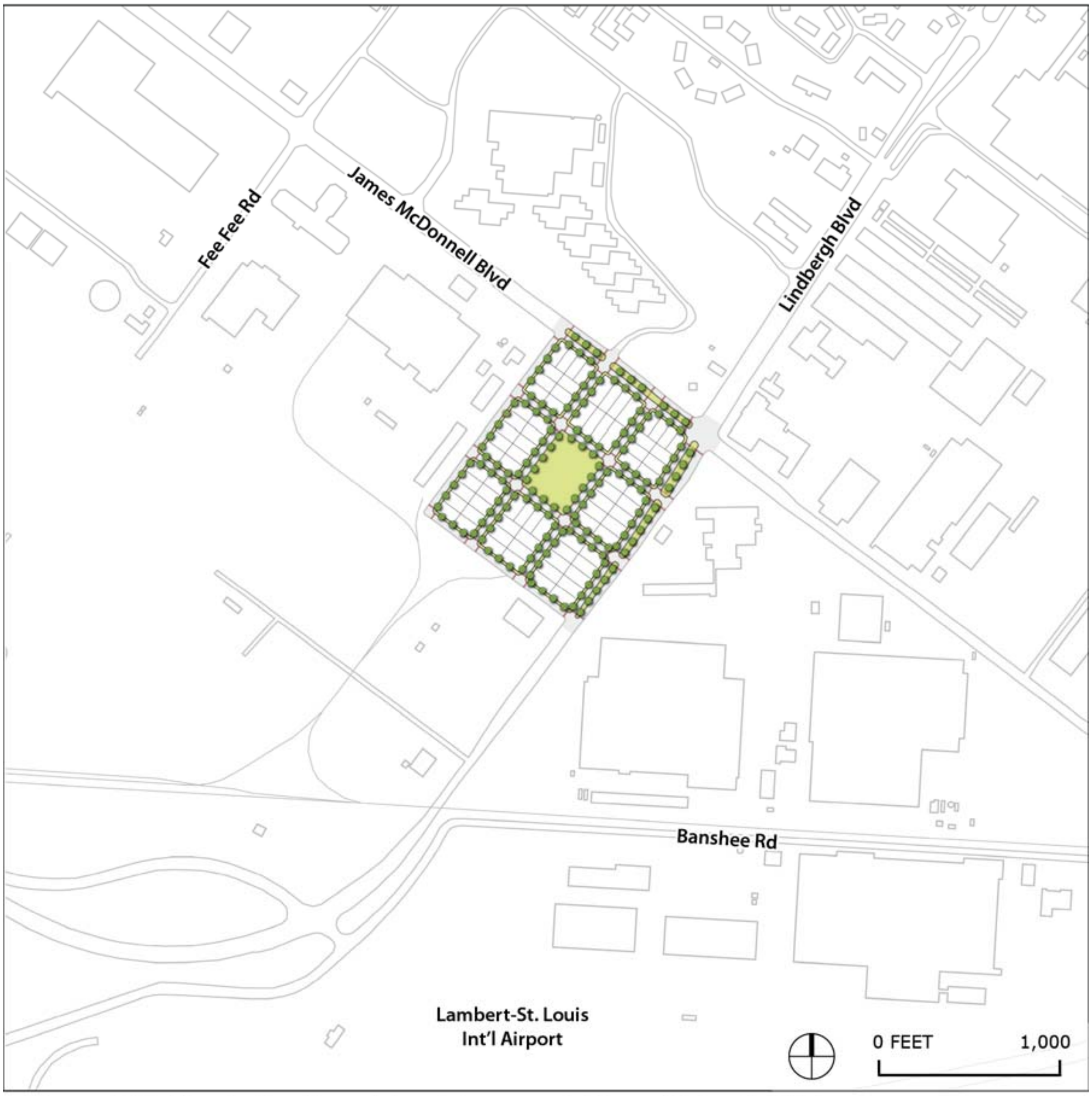


Figure 4.86: Illustrative Long-Term Framework Plan - St. Louis, MO

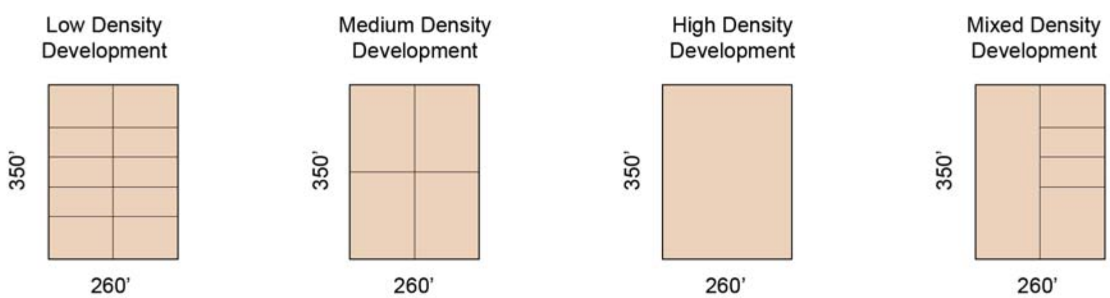


Figure 4.87: Block Configuations for Private Development - St. Louis, MO

Figure 4.88: Illustrative Development Scenario #1 (Adaptive Re-use) - St. Louis, MO

Figure 4.89: Low/Mixed Density Block Development Strategy - St. Louis, MO

Figure 4.90: Illustrative Development Scenario #2 (Interim Use) - St. Louis, MO

Figure 4.91: Medium/Mixed Density Block Development Strategy - St. Louis, MO

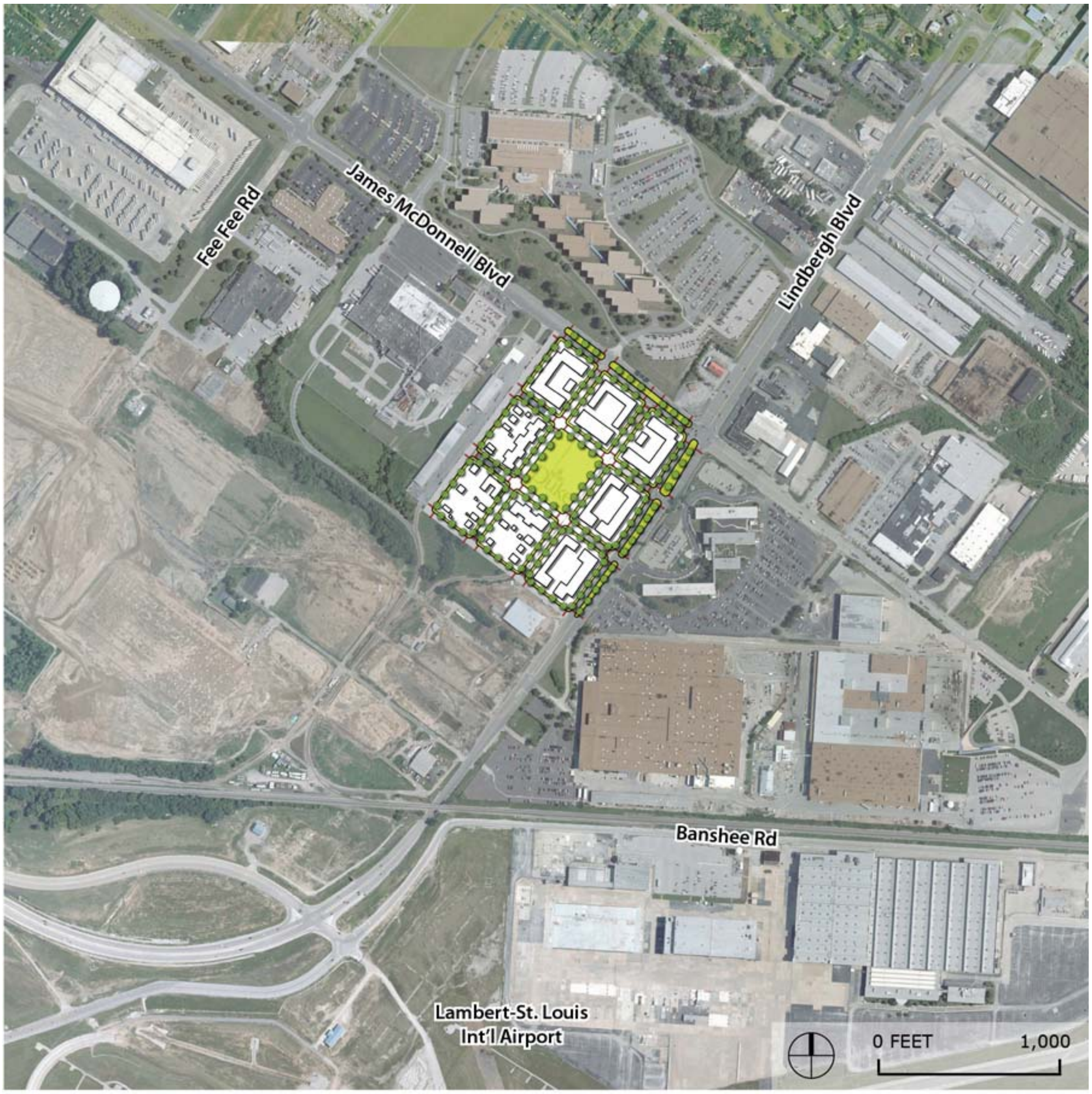


Figure 4.92: Illustrative Development Scenario #3 (Build-out) - St. Louis, MO

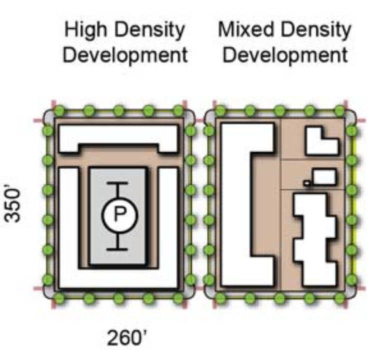


Figure 4.93: High/Mixed Density Block Development Strategy - St. Louis, MO

CHAPTER 5

CONCLUSION: FROM BROWNFIELD SITES TO GREAT CITIES

Emerging trends in the re-inhabitation of central cities and government funding of numerous financial incentives have succeeded in making brownfield redevelopment a far more lucrative opportunity for developers over the past decade. However, the redevelopment process itself remains virtually unchanged, maintaining a narrow focus on environmental remediation, site engineering, and short-term market demand. Land use for economic development drives the entire process. Little attention, if any, is given to the physical design and reintegration of these sites. This approach fails to sustain development and recognize larger redevelopment opportunities based on a site's local and regional context.

Despite an increasing amount of public money being used to fund incentives, development continues to overlook potential positive externalities presumably to avert risk and increase feasibility. The purpose of this thesis has been to re-examine brownfield redevelopment from the perspective of urban design in order to define ways in which design might offer solutions to these shortcomings and play a more critical role in future redevelopments. To that end, three primary questions have been addressed. First, what is the conventional brownfield redevelopment process, to what extent has urban design been involved, and what are the major issues and lessons that can be learned? Secondly, what examples of brownfield redevelopment have integrated urban design to addresses these issues, and what are the specific principles that inform design? Finally, how can urban design strategies, based on principles of Landscape Urbanism, lead the redevelopment of brownfield sites?

Investigation of the first question – to what extent has urban design been involved in conventional brownfield redevelopment – used the redevelopment proposals for the former auto plant sites in Doraville and Hapeville to establish fundamental principles of urban design and frame seven case study redevelopments of former auto plant sites. The urban design principles, based on more traditional examples of urbanism such as New York and Savannah, focused on the organization of the landscape to accommodate change and uncertainty in development. This “filter” revealed an overwhelming lack of urban design consideration in the majority of the seven former auto plant case studies. Virtually every case, from The Plant in Van Nuys, CA to Lighthouse Landing in Sleepy Hollow, NY, illustrated applications of the conventional redevelopment process where short-term market demand of use dictated development feasibility and informed remaining design decisions.

The fundamental issue is that of uncertainty: conventional brownfield redevelopment attempts to eliminate it while urbanization thrives upon it. Deindustrialization, as only one process of urbanization and a primary producer of brownfield sites, provides an invaluable lesson as to the impermanent nature of use and the inherent flaw in basing development decisions on such a dynamic variable. Urban design, in response, must accept change as a constant and forgo principles that promote static urban forms. Instead, it must focus its efforts on constructing frameworks that are capable of strategically guiding the development of a site or even a city over prolonged periods of time.

Identifying Landscape Urbanism as an emerging and responding theory of urban design, four brownfield redevelopment projects from the Landscape Urbanism corollary provide an avenue for investigation of the second question: what examples of brownfield redevelopment have integrated a model of urban design that responds to the issues of change and uncertainty? The case studies of Downsview Park in Toronto, Fresh Kills

Park in Staten Island, the Tanner Street Initiative in Lowell, and Westergasfabriek Culture Park in Amsterdam all served as examples where urban design was successfully integrated in brownfield redevelopment at a variety of scales and contexts. Each case focused not on a fixed use or program but rather the possibility for variations in use throughout the redevelopment process. In response, the strategic organization of landscape was used to provide an underlying physical framework for redevelopment based on five key principles: incremental development, organization of territory, layering of infrastructure, definition of boundaries, and creation of public space. However, the five principles of design, all of which parallel those exemplified in the more traditional examples of urbanism, illustrate the clear ability of these principles to guide urban design in future brownfield redevelopment.

The auto plant sites are used to answer the third and final question: how can strategies of urban design, based on the five principles, lead brownfield redevelopment? The inventory of auto plant sites presented 35 potential opportunities in a variety of different urban, demographic, and economic conditions to test urban design strategies in the redevelopment process. Four specific urban design strategies – Anticipation, Catalyzation, Integration, and Utilization – were derived from typological classifications of redevelopment potential for the 35 sites as defined by various contextual conditions and relationships. Four former auto plant sites from the Ford and GM closings of 2005-2006 in Batavia, OH, Linden, NJ, Lansing, MI, and St. Louis, MO serve as case study illustrations of each of the four design strategies.

Reusing the auto plant sites in this manner directly illustrates the advantages of the strategic framework design process over the conventional, use-based redevelopment process. These advantages include its unique abilities to effectively reintegrate sites with surrounding context and accommodate potential adaptive re-use and interim use scenarios, short-term private development, and long-term uncertainty.

The advantages are made possible because the design strategies fundamentally focus on the organization of landscape first in order to accommodate incremental and diverse development second.

For the 450,000 sites that currently lie abandoned and decaying across the country, it is crucial that this approach of brownfield *reintegration* be implemented. Since the Supreme Court decision in Euclid vs. Ambler and the subsequent adoption of the Standard State Zoning Enabling Act in 1926, *land use* has subverted *landscape* as the primary instrument of planning. Today, the growth and development of cities is largely dependent upon the location of particular land uses and buffers for “incompatible” types almost to the point of neurosis. Any sense of physical planning or design happens at the level of the individual site and has resulted in the haphazard formal arrangement of cities and loss of any sense of place. Brownfield sites are no exception and have the greatest potential to catalyze a change in the way cities are planned and perceived. I.L. Whitman (2006) argues that brownfield redevelopment is ultimately a real estate concept that succeeds or fails, in each case, based on real estate principles (p. 27). If brownfield redevelopment is instead seen as a planning concept based on urban design principles of landscape, then it will have the potential to succeed in every case in transforming these sites from isolated, environmental liabilities into integrated, vibrant amenities that cultivate great places and ultimately great cities.

Figure 5.1: Urban Design as an Instrument of Planning

REFERENCES

Anderson, S. (2007, December 20). GM and Sleepy Hollow seek new developer for Lighthouse Landing. *The Journal News*, News.

Anonymous. (1971, January 10). Information bank abstracts. *The New York Times*. p. 1; col. 4.

Associated Press. (1992, August 28). Last auto factory in southern California closed by GM. *The New York Times*, p. D3.

Associated Press. (1987, August 27). GM plant closing shakes Ohio town. *The New York Times*, p. A13.

Bernard-Kuhn, L. (2007, November 30). Linden Pointe ready for more tenants. *The Cincinnati Enquirer*, News.

Berger, A. (2006). Drosscape. In Waldheim, C. (Ed.), *The landscape urbanism reader* (pp. 197-217). New York, NY: Princeton Architectural Press.

Berger, A. (2007). *Drosscape: Wasting land in urban america*. New York, NY: Princeton Architectural Press

Berger, J. (1996, October 10). Passions stir in 'Sleepy Hollow'; Debate on a name change for prestige and profit. *The New York Times*, p. 1-33.

Blau, E. (1986, June 1). GM working on Hudson plant. *The New York Times*, p. 49.

Bloom, J. (2003, June 6). DEIS comments for Lighthouse Landing [Letter to the mayor & board of trustees]. *Riverkeeper*.

Boehm, E., DeWitt, A., Cha, Y., Graham, B. Panken, S. & Yang, M. (2006). *General Motors Verlinden Avenue Site Feasibility Study*. Lansing, MI: Urban and Regional Planning Department, Michigan State University.

Brenner, E. (1992, March 8). A task force begins its struggle with GM. *The New York Times*, p. 12WC-1.

Brenner, E. (2007, February 11). In new plans, hope for GM site. *The New York Times*, p. 12.

Brozan, N. (1996, February 13). Untitled. *The New York Times,* p. B4.

Corner, J. (2006). Terra fluxus. In Waldheim, C. (Ed.), *The landscape urbanism reader* (pp. 21-34). New York, NY: Princeton Architectural Press.

Cerere, J., Foard, A., Mai-Lombardo, N., Owen, J., Perlmutter, J.,Sherriff, R., & Tuley, J. (2006). *City reassembly: When the auto plant closes – redevelopment analysis* *for Hapeville, Georgia*. Atlanta, GA: City & Regional Planning Program, Georgia Institute of Technology.

Chapman, D. (2008, January 26). GA site draws interest of VW; Tract outside of Savannah sits unoccupied, passed over by other auto makers and heavy industrial companies. *The Atlanta Journal-Constitution*, p. 1C.

City of Lowell Department of Planning and Development. (2007). Tanner Street Initiative. Retrieved December 17, 2007, from: http://www.lowellma.gov/depts/dpd/services/econdev/brownfield/tanner

Coggins, J. M. (2007, July 24). Request the city manager to provide the Tanner Street corridor plan and begin the process of updating the same [Letter to the city manager]. Lowell, MA: Author.

Cohn, S., Dixon, M., Granier, M., Hayes, K., Liu, R., Piece, D. & Singer, S. (2006). *City reassembly: When the auto plant closes – redevelopment opportunities for Doraville, Georgia*. Atlanta, GA: City & Regional Planning Program, Georgia Institute of Technology.

Cowie, J. & Heathcott, J. (2003). The meanings of deindustrialization. In Cowie, J & Heathcott, J. (Eds.). *Beyond the ruins: The meanings of deindustrialization* (pp. 1-15). Ithaca, NY: Cornell University Press.

Dagenhart, R., Leigh, N.G., & Skach, J. (2006). Brownfields and urban design: learning from Atlantic Station. In C.A. Brebbia & U. Mander (Eds.), *Brownfields III: Prevention, assessment, rehabilitation, and development of brownfield sites* (pp. 185-194). Ashurst, UK: WIT Press.

Degregorio, J. (2006, February 3). Duke Realty Co. plans $150 million industrial park at former GM site. *The Daily Record*, News.

Degregorio, J. (2006, October 6). Life after GM. *The Daily Record*, News.

Desmond, D. (1995, July 2). Commercial, industrial complex transforms era. *Oakland Press*, p. F2.

Dettmer, R. (1997) New life for Norwood, Ohio. Retrieved March 18, 2008, from: http://www.norwood-ohio.com/cued.doc

Duggan, D. (2007, November 26). Pontiac: The last frontier. *Crain's Detroit Business*, p. 3.

Duffy, K. (2008, March 11). Jacoby envisions Ford plant as start of mini-city. *The Atlanta Journal-Constitution*, p. 1D.

Duke Realty. (2008). Lindbergh Distribution Center Retrieved March 14, 2008, from: http://www.dukerealty.com/Properties/

Dunham-Jones, E. (2005). Smart growth in Atlanta: A response to Krieger and Kiefer. In Saunders, W. (Ed.), *Sprawl and suburbia* (pp. 57-70). Minneapolis, MN: University of Minnesota Press.

Etkin Equities, LLC. (1999, February 22). Etkin Equities launches Centerpoint's crown jewel [Press release]. Pontiac, Michigan: Author.

Faust. F. (1989, August 18). Old GM plant looks to future. *St. Louis Post-Dispatch*, p. 1B.

Faust. F. (1990, September 17). Clarke Properties has started the second. *St. Louis Post-Dispatch*, p. 16.

Faust. F. (1994, March 30). $35 million Pepsi plant is dedicated at Union 70. *St. Louis Post-Dispatch*, p. 1C.

Field Operations. (2006, March). Fresh Kills Park: Lifescape [Draft master plan]. Retrieved January 30, 2008, from: http://www.nyc.gov/html/dcp/html/fkl/fkl4.shtml

Foderaro, L. (2001, June 22). GM announces a developer for a complex at its former plant. *The New York Times*, p. B7.

Frenchman. D. (2004, Fall). Event-places in North America: City meaning and making. *Places, Vol. 16 No. 3*, pp. 36-49.

Genco, T. (2007). A sustainable community for the 21st century – Downsview Park. *Environnment Urbain/Urban Environment*, Volume 1; p. b-1 a b-8.

General Motors announces modernization of Doraville plant. (1986, March 5). *The Associated Press*, Business News.

General Motors to close 11 plants. (1986, November 6). *The Associated Press*, Business News.

Gerard, W. (1992, March 21). How one city survived a GM shut-down. *The Toronto Star*, p. D5.

Glaberson, W. (1997, September 27). Skittish about growth in Sleepy Hollow. *The New York Times*, p. B5.

GM Missouri unit shifting to Indiana. (1984, September 1). *The New York Times*, p. 1-33.

Graham, L., Marshall, B., & Thomason, L. (2007). *Hapeville Ford plant redevelopment*. Atlanta, GA: Architecture Program, Georgia Institute of Technology.

Gray, S. (2003, September 20). GM will close Baltimore plant in mid-2005." *The Washington Post*, p. E01.

Halliday, J. (1993, October 25). GM plant gets redo. *Crain's Detroit Business*, p. 1.

Hirsh, S. (2005, May 9). GM plant a sign of decline. *The Baltimore Sun*, News.

Hudson, E. (1982, January 31). Layoff at GM points out concerns of village officials. *The New York Times*, p. 1-11.

Hudson, E. (1985, June 23). Property tax called key issue in GM pact. *The New York Times*, p. 11WC-1.

Jackson, J.B. (1997). The word itself. In Horowitz, H. (Ed.), *Landscape in sight: Looking at America* (pp. 299-306). New Haven, CT: Yale University Press.

Jacobs, A.B. (1993). *Great streets*. Cambridge, MA: The MIT Press.

Jacobs, A.B. (2002). *The boulevard book*. Cambridge, MA: The MIT Press.

Johnston Jarboe, K. (2005, May 14). General motors closing Broening Highway plant. *The Daily Record,* News.

Kemme, S. (2004, August 30). Norwood struggles with fiscal crisis. *The Cincinnati Enquirer*, News.

Koekebakker, O. (2004). *Westergasfabriek Culture Park: Transformation of a former industrial site in Amsterdam*. Rotterdam, NL: NAi Publishers.

Koolhaas, R. & Mau, B. (1998). What ever happened to urbanism? In J. Sigler (Ed.), *S, M, L, XL* (2nd ed. pp. 958-971). New York, NY: The Monacelli Press.

Krieger, A. (2001). Experiencing Boston: Encounters with the places on the maps. In Krieger, A., Cobb, D. & Turner, A. (Eds.). *Mapping Boston* (pp. 146-172). Cambridge, MA: MIT Press.

Lindecke. F. (1989, February 25). Tenants sign on at old GM site. *St. Louis Post-Dispatch*, p. 7A.

Lipchitz, R. (2004, July 15). Silresim cleanup efforts attract national praise. *Lowell Sun*.

Lueck, T. (1984, May 10). Westchester fights to keep blue-colar (sic) Jobs. *The New York Times*, p. A1.

Lueck, T. (1992, February 27). End of plant predictable, but closing still hurts. *The New York Times*, p. B1.

Lyne, J. (2002, September 9). One time dead plant walkin', GM's Baltimore facility gets two-year reprieve. *Site Selection*, News.

MacDonald, M. (2007, April 5). Neighbors see promise in GM site plan. *The Atlanta Journal-Constitution*, p. B3.

Miller, E. (1996, August 15). Depressed market brings joint venture. *AP Business News*.

Miller, J. (2006, Summer). New towns: Evolution of a brownfield. Retrieved January 28, 2008, from: http://www.tndtownpaper.com/Volume8/evolution_of_brownfield.htm

Morris, A.E.J. (1994). *History of urban form: Before the industrial revolutions* (3rd ed.). Harlow, England: Pearson Education Limited.

Mossop, E. (2006). Landscapes of infrastructure. In Waldheim, C. (Ed.), *The landscape urbanism reader* (pp. 163-177). New York, NY: Princeton Architectural Press.

New York City Department of City Planning. (2007). Fresh Kills Park project history. Retrieved December 17, 2007, from: http://www.nyc.gov/html/dcp/html/fkl/fkl_index.shtml

New York Department of State. (1997, August 8). Secretary of State Alexander F. Treadwell announces approval of the Village of Sleepy Hollow's Local Waterfront Revitalization Program [Notice of public meeting]. Sleepy Hollow, NY: Author.

Newman, M. (1998, February 22). For a Los Angeles "suburb,' steps to recovery. *The New York Times*, p. 11-5.

Nolon, J.R. (2003). Golden and its emanations: the surprising origins of smart growth. *The Urban Lawyer, 35* (1), 15-73.

Orlov, R. (1997, January 28). Panel seeks federal grant for GM site. *The Daily News of Los Angeles*, News.

Parc Downsview Park. (2006, November). Summary of the corporate plan 2007-2008 to 2011-2012. Retrieved December 17, 2007, from: http://www.pdp.ca/en/corporate/corporateplan.cfm

Parc Downsview Park. (2006, December 5). Draft sustainable community development guidelines. Retrieved December 17, 2007, from the Word Wide Web: http://www.pdp.ca/en/corporate/community.cfm

Parc Downsview Park. (2007). Park design concept. Retrieved January 29, 2008, from: http://www.pdp.ca/en/corporate/concept.cfm

Peralte, P. (2003, May 1). Ford, Georgia discuss deal to close plant. *Cox News Service*.

Peralte, P. (2003, November 21). Ford idles plant plan; State option on Morgan County tract expires. *The Atlanta Journal-Constitution*, p. 1F.

Pinto, L. (1993, October 25). GM revamps truck development. *Automotive News*, p. 41.

Plans for long-promised park to proceed at Downsview. (2006, December 22). *CBC News*.

Pollack, L. (2006). Constructed ground: Questions of scale. In Waldheim, C. (Ed.), *The landscape urbanism reader* (pp. 125-139). New York, NY: Princeton Architectural Press.

Reuters. (1988, August 20). GM cleared in shutdown. *The New York Times*, p. 1-45.

Reuters. (1981, August 3). GM closes Corvette plant. *The New York Times*, p. D6.

Rosen, A. (2007, April 9). Duke Realty begins cleanup, rebuilding of old GM site in east Baltimore. *The Daily Record,* News.

Russell, J. (1999, June 17). GM's North Tarrytown plant gone but not forgotten. *The New York Post*, p. 74.

Schlesinger, J. (1987, August 21). GM sued by town for $318.3 million over breakup of 64-year 'marriage'. *The Wall Street Journal*, p.1-2.

Scott, J. (1991, June 27). Mindis to recycle GM plant into headquarters. *The Atlanta Journal-Constitution*, p. B3.

Scott, P. (1994, March 31). The Atlanta project clusters south Atlanta has mixed feelings on boxcar community for homeless. *The Atlanta Journal-Constitution*, p. N10.

Seasoles, N. (2001). Gaining ground: Boston's topographical development in maps. In Krieger, A., Cobb, D. & Turner, A. (Eds.). *Mapping Boston* (pp. 118-145). Cambridge, MA: MIT Press.

Shane, G. (2006). The emergence of landscape as urbanism. In Waldheim, C. (Ed.), *The landscape urbanism reader* (pp. 55-68). New York, NY: Princeton Architectural Press.

Shervington, S. (1987, February 5). State details plan to raise bridges. *The New York Times*, p. 11WC-1.

Smith, J. (2001, April 2). Etkin Equities plan more Centerpoint development. *Crain's Detroit Business*, p. 35.

Smith, J. (2007, April 16). Etkin looks for big draw tenants in Livonia, Pontiac. *Crain's Detroit Business*, p. 5.

Staff. (1991, March 15). GM to sell Lakewood plant." *The Atlanta Journal-Constitution*, p. F3.

Stillman, W. & DeWan, D. (2003, March 23). Vision is there; Now for the focus. *The New York Times*, p. 14WC-13.

StoSS Landscape Urbanism. (2002, September). Silresim Superfund Site Study: Tanner Street Initiative. Retrieved December 17, 2007, from: http://www.lowellma.gov/depts/dpd/services/econdev/brownfield/tanner

U.S. Environmental Protection Agency. (1991, September 19). EPA superfund record of decision: Silresim Chemical Corp. (EPA/ROD/R01-91/061). Lowell, MA: Author.

U.S. Environmental Protection Agency. (2001, December 2). Remediation system evaluation: Silresim Superfund Site (EPA 542-R-02-008p). Lowell, MA: Author.

U.S. Environmental Protection Agency. (2003) International brownfields case study: Westergasfabriek. Retrieved December 26, 2007, from: http://www.epa.gov/brownfields/partners/westergas.html

U.S. Environmental Protection Agency. (2006). Anatomy of brownfields redevelopment (EPA-560-F-06-245). Brownfields Solutions Series.

U.S. Environmental Protection Agency. (2007, May 14). EPA awards $71 million to help brownfields bloom into productivity. Retrieved January 27, 2008, from: http://www.epa.gov/brownfields/pilot_grants.htm

United Press International. (1983, October 6). GM will reopen a plant in Georgia. *The New York Times*, p. D3.

Vela, S. (2003, July 8). Development boom worries many. *The Cincinnati Enquirer,* News.

Waldheim, C. (2006). Landscape as urbanism. In Waldheim, C. (Ed.), *The landscape urbanism reader* (pp. 35-54). New York, NY: Princeton Architectural Press.

Walker, T. (1992, August 19). Doraville: Retooling for the future. *The Atlanta Journal and Constitution*, p. C1.

Wertheim, A. & Zeccola, J. (2005, November 22). General Motors' history in metro Atlanta. *The Atlanta Journal-Constitution*, p. C3.

Whitman, I.L. (2006). Brownfield redevelopment by the private sector: Market driven decision making. In C.A. Brebbia and U. Mander (Eds.), *Brownfields III: Prevention, assessment, rehabilitation, and development of brownfield sites* (pp. 21-27). Ashurst, UK: WIT Press.

Williams, M.R. & Reid S.A. (1997, August 21). Community wins round against auto salvage lot. *The Atlanta Journal-Constitution*, p. D3.

Woods, W. (2006, October 22). Ford Hapeville plant; Jockeying begins on future of plant site. *The Atlanta Journal-Constitution*, p. G1.

Woodyard, C. (2006, January 23). Ford will cut 25,000 to 30,000 Jobs, close 14 plants. *USA Today*, Internet.

Zibel, A. (2006, April 1). Heavy hitters in real estate: #1 conversion/development former General Motors van assembly plant. *Baltimore Business Journal*, Internet.