

Emergency Response and Traditional Neighborhood Street Design

CASE STUDIES

Hercules, California

Memphis, Tennessee

Seattle, Washington



top right: Hercules' Waterfront District
top left: High Point, Seattle
above: Harbor Town, Memphis

In recent years, local governments and developers have been trying to build new neighborhoods with traditional-style streets that are narrow, tree-lined and allow on-street parking. These streets – along with shorter, well-connected blocks – are a shift away from the trend since the Second World War to build large subdivisions with hierarchical networks of wide streets, long blocks and disconnected, dead-end cul de sacs.

These narrower, traditional-style streets are considered key features of livable, sustainable, and smart growth neighborhoods that are becoming increasingly popular with local governments, developers and home buyers.

■ Narrow Streets, Livable Communities

Residents like these narrow (26- to 28-foot wide), tree-lined streets because they keep traffic moving at moderate speeds while providing quiet, safe, comfortable conditions for all users, including pedestrians and bicyclists. Homes in these neighborhoods have been shown to appreciate in value more rapidly than other areas, and often become the most desirable places in a community to live.

■ Street Design and Emergency Responders

Fire departments and other emergency responders in older towns and cities are well-versed in working in traditional neighborhoods with narrower, tree-lined streets. They understand that while they may have to slow down a bit within the neighborhood, the well-connected street network and short blocks make it easier to find the property and give them more routes to get there. Many of these neighborhoods also have alleys or lanes that provide emergency responders with additional points of access.



Local
Government
Commission

1414 K St., Suite 600 ■ Sacramento, CA 95814-3966 ■ (916) 448-1198 ■ www.lgc.org

This factsheet is funded by the U.S. Environmental Protection Agency.

ADDRESSING THE OBSTACLES TO GOOD STREET DESIGN



These case studies illustrate how these issues were handled in three cities. We hope that the lessons learned from these projects will help local governments, emergency responders and developers work together to create safe, livable and walkable neighborhoods with great streets in the future.

Problem Areas

■ Newer, Suburban Neighborhoods

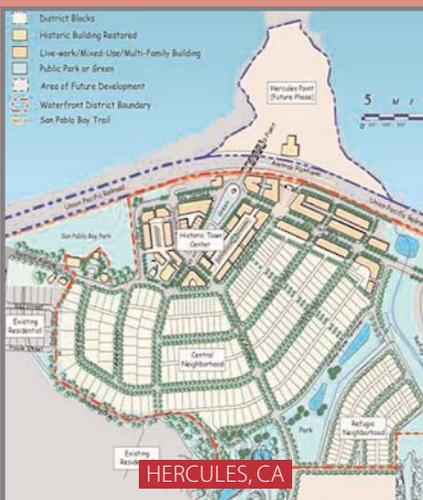
In newer, suburban areas over the last six decades, fire departments have learned to insist on wide 36- to 40-foot streets to ensure good access. The codes used today by fire or public works departments fail to differentiate between the suburban system of disconnected pods and the traditional system of well-connected streets. The result is rigid, code-driven requirements that tend to be enforced across the board with little room for flexibility or discretion.

■ Bigger Fire Trucks

The problem has been compounded by the trend to build bigger and bigger fire-fighting equipment. The irony is that this trend has occurred at the same time that the number of fires in our communities has significantly declined. Many fire departments report that less than 10% of their emergency calls today are for fires; the large majority are for medical emergencies and car crashes – ironically often on wide streets that encourage drivers to speed.

■ Code Obstacles

As a result, local governments and developers that try to go back to the more livable, walkable, traditional neighborhood block and street structure, often face opposition from fire departments who insist all new development must conform to the code that calls for wide streets and limited on-street parking. As the trend towards livable, smart growth neighborhoods accelerates in years to come, it is critical that developers, fire departments and other emergency responders work out these problems and identify solutions that meet the needs of all users.



WATERFRONT DISTRICT HERCULES, CA

Hercules is a small city on the shores of San Pablo Bay, northeast of San Francisco. The community was presented a unique opportunity for large scale infill development with property that once housed the California Powder Works, and was cleared of residual toxics by the 1990s. "Hercules" was the name of one of the company's dynamite brands.

Community activists were unhappy with the seemingly inevitable expansion of suburban housing development onto the site. That style of development was incompatible with a small but remarkable district that once provided "company" housing for managers.

These century-old buildings along two short streets near the waterfront are on the Historic Register as individual homes, and collectively as a neighborhood.

With the increasing visibility of the smart growth movements in the 1990s coinciding with the cleanup, a different development path was sought.

Looking for alternatives, the planning commission began to lobby for a new type of development authorized by a new kind of code. With the increasing visibility of the smart growth movement in the 1990s, a different development path was sought.

During this process, a planning commissioner and resident of the historic former company managers' neighborhood who had articulated the need for change



In the Waterfront District: Railroad Avenue's new homes at sunset.

became planning director and played a key role in guiding the development of a traditional neighborhood with a mix of uses and housing types.

In 2001, the City adopted the Central Hercules Plan to regulate development by creating a new community core in an area adjacent to the bay, with little existing development. The form-based code that was adopted as the zoning tool was prepared by

Dover, Kohl and Partners. Construction soon followed, with a number of development firms jumping at the chance to build in this well-planned community.

Of particular interest is the Waterfront District with its bay views, neighborhood commercial center, mixed residential developments and live-work units. The district's code was prepared by David Sargent, Sargent Town Planning, for John Baucke (Bixby Company).

Street design and Hercules' form-based code

Like most form-based codes, this document is built around streets. Everything shaping the public realm, from façade-to-façade, is addressed in the code. Building and use standards are determined by the street type the property fronts upon. Graphics for each street type are provided on a single page, with information and diagrams that show street widths, parking areas, bicycle facilities, landscaping, sidewalks, building setbacks and façade details such as balconies and awnings. This detail includes street widths that in some cases provide less than the usual 20-foot minimum, clear of parked cars. The street clear widths that would be viewed by some as substandard are:

STREET TYPE	TOTAL WIDTH	PARKING (7' stalls)	CLEAR WIDTH
2-lane avenue with median and bike lane	24' (each direction)	1 side	17'
Neighborhood lane	26'	1 side	19'
Edge drive	19'	1 side	12' + walkway

These street profiles have proven to work well, in spite of the standoff that occurred with the fire service providers.

WATERFRONT DISTRICT HERCULES, CA

■ Resolving the Conflict

Creating a community like the Hercules Waterfront District was not without difficulties. As with many smart growth projects across the country, the narrow streets that designers planned and the wide streets that fire officials wanted were at odds.

In many communities, the fire officials understood the public safety benefits of narrow, slower streets, and worked with designers and their emergency responders to come up with solutions to their access and setup needs. In others, fire officials were simply instructed by city leaders to live with the narrow streets.

This last approach was not possible in Hercules, because fire service is not provided by a city department. Instead, the Rodeo-Hercules Fire Protection District – an independent special district – provides fire and emergency response services in an area that includes the city of Hercules.

This arrangement was struck in the 1930's, when Hercules was a factory, and has remained essentially unchanged throughout the period of residential development beginning in the 1970s.

This arrangement has allowed a small city like Hercules to avoid the direct fixed expense of a fire department, and provides sharing of services with the adjacent unincorporated Rodeo.

However, as Hercules' residential growth intensified, diverging



Hercules' Waterfront District includes this 26-foot residential street with one-sided parking (top), 12-foot Edge Drive with at-grade sidewalk (bottom) and ownership units in a live-work building (next page).

more sharply from Rodeo's stagnant, low-intensity development, officials of the two local agencies found themselves uncomfortably at odds over the issue of design standards for residential streets.

Initial discussions between project developers, fire officials and the City resulted in street designs and widths that were agreeable to the lead fire official. The City moved forward with project approvals, while that fire official retired. His replacement, not privy to the prior discussions, was not happy with the earlier, unsigned, agreement.

After numerous meetings, correspondence, research and public hearings, an unwritten settlement

was reached between the Rodeo-Hercules Fire District and the City of Hercules.

In the Waterfront District's Baywood neighborhood, the fire department maintained that the 26-foot-wide streets with parking on one side would not be wide enough. That street width would leave only 18 or 19 feet of clear width for fire equipment, instead of the 20-foot width called for in the fire code.

Ultimately, the Hercules Redevelopment Agency paid the developer to provide sprinklers in the 64 single-family units in that neighborhood and the fire district removed parking from one side of the street.

WATERFRONT DISTRICT HERCULES, CA

■ Stormwater Management

Like the High Point project in Seattle, considerable attention was given to reducing stormwater runoff, and providing on-site drainage management.

Some alleys in the district are paved with permeable materials, as are walkways at appropriate locations around the perimeter of the development. (These materials were used to meet requirements of the drainage permit issued by the Regional Water Quality Control Board.)

In one instance, a narrow lane at the edge of a drainage pond did not provide the necessary 20-foot clear width called for in the fire code. To meet this standard, the adjacent walkway was lowered to street level, but distinguished from the vehicle surface with colored permeable pavers.

While providing sidewalks without curbs is not the usual smart growth street design approach, it works in this location, on a short lane with little traffic.

■ Results

Since its adoption, significant development has occurred in the Waterfront District. With its free-way proximity, relative affordability and stunning views of the bay and the valleys to its north, its homes are proving very popular. Builders have viewed their projects here as opportunities to test the smart growth waters. Most have found the experience worthwhile, and are moving forward into additional projects.



QUICK FACTS • HERCULES

Acres: 167

Residential: Over 1,000 units, with approximately 300 single-family, 60 cottages, 14 townhouses, 500 apartments, 150 live-work units

Commercial Uses: Nearly 100,000 square feet in the historic town center, which includes ownership live-work units in shared building

Community Facilities: 30,000 to 60,000 square feet in town center

Open Space: Parks, playgrounds, trails, open green space and large naturalized riparian areas for stormwater containment and drainage

Street Standards: Residential street width of 26 feet, single-side parking, edge drive 12 feet wide with additional 7 feet of sidewalk at grade, avenue with median, 24 feet each direction with parking and bike lane

Other Features: Innovative drainage control, permeable pavers, on-site ponds

Previous Uses: Explosives factory 1872 until late 1900s

Form-based Code: Prepared by Dover Kohl and Partners, and David Sargent, Sargent Town Planning for John Baucke, Bixby Company

■ For more information

Steve Lawton, Community Development Director, City of Hercules
slawton@ci.hercules.ca.us

John Baucke, AICP, CEO, New Urban Realty Advisors, Inc.
john@newurbanrealtyadvisors.com

HIGH POINT SEATTLE, WA

High Point is one of the largest residential redevelopment sites in recent Seattle history. Covering 120 acres and providing 1,600 housing units on 34 new city blocks, it represents cutting-edge project design with narrow streets.

A convergence of other elements promoting smart growth street design support the project's approach to creating a sustainable environment and an engaged community, including block-level drainage controls, affordable housing, green building construction and open space.

Like New Holly, another south Seattle redevelopment project, High Point replaces outdated and decaying public housing with an innovative modern design.

The original military housing, built in the 1940s, was later converted to 1,300 low-income units. The redevelopment incorporates low-impact sustainable design in an urban residential setting and provides 1,600 new units with roughly half designated as affordable housing – rental and affordable homeownership – and the other half at market rate – rental, single-family homes and condos. Construction began in late 2003 with the removal of vacated units.

Other uses include a library, medical and dental clinic, small retail center, senior complex and community center. There is also an effort to add a grocery store. There will be more than 20 acres of parks and recreational green space, trails and playgrounds.



Neighborhood design and stormwater management: This High Point residential pocket park (above) features a ponding basin. On the next page: An aerial view shows that the first phase of the redevelopment is near completion (top). The second phase (bottom) includes 25-foot residential streets with drainage swales.

Critical design features and project goals

To redevelop the High Point site, the Seattle Housing Authority wanted to move beyond just replacing the remaining 716 obsolete and decaying housing project units with new structures (another 500 units were removed in the 1970s).

The agency set three primary goals for the project: healthy environment, quality design and an engaged community. As with many smart growth projects, these goals overlap and reinforce each other. High Point's walking environment is a great example:

- The green spaces and landscaped areas next to walking routes represent a healthy environment.
- The project's narrow streets shed less stormwater runoff, also improving the environment in and near the site.
- These same narrow streets that calm vehicle traffic are safer and more pleasant for pedestrians, which promotes walking.
- More people on the street on foot brings about human contact, which creates the "engaged" community that the designers are seeking.

HIGH POINT SEATTLE, WA

■ Street Design

Two factors helped the designers win support for smart growth street design principles in the High Point community.

The first was Seattle's traditional residential street width of 25 feet, much narrower than conventional modern residential streets.

The second was the historic grid street pattern prevalent in the neighborhoods adjacent to the High Point site. In the context of this existing street environment, it was logical to continue the narrow streets and grid pattern into the redesigned street network for High Point.

The residential streets that lie at the core of the High Point project are all built to the traditional 25-foot width from curb to curb. Curb extensions protect existing trees in the project.

The project's first phase will have two 32-foot-wide streets. High Point Drive, for example, has densities high enough to justify additional width at some locations.



Traffic islands will be provided along those streets to slow traffic and improve pedestrian safety.

The project also includes alleys with the required 20-foot minimum clearance, and only 16 feet of pavement.

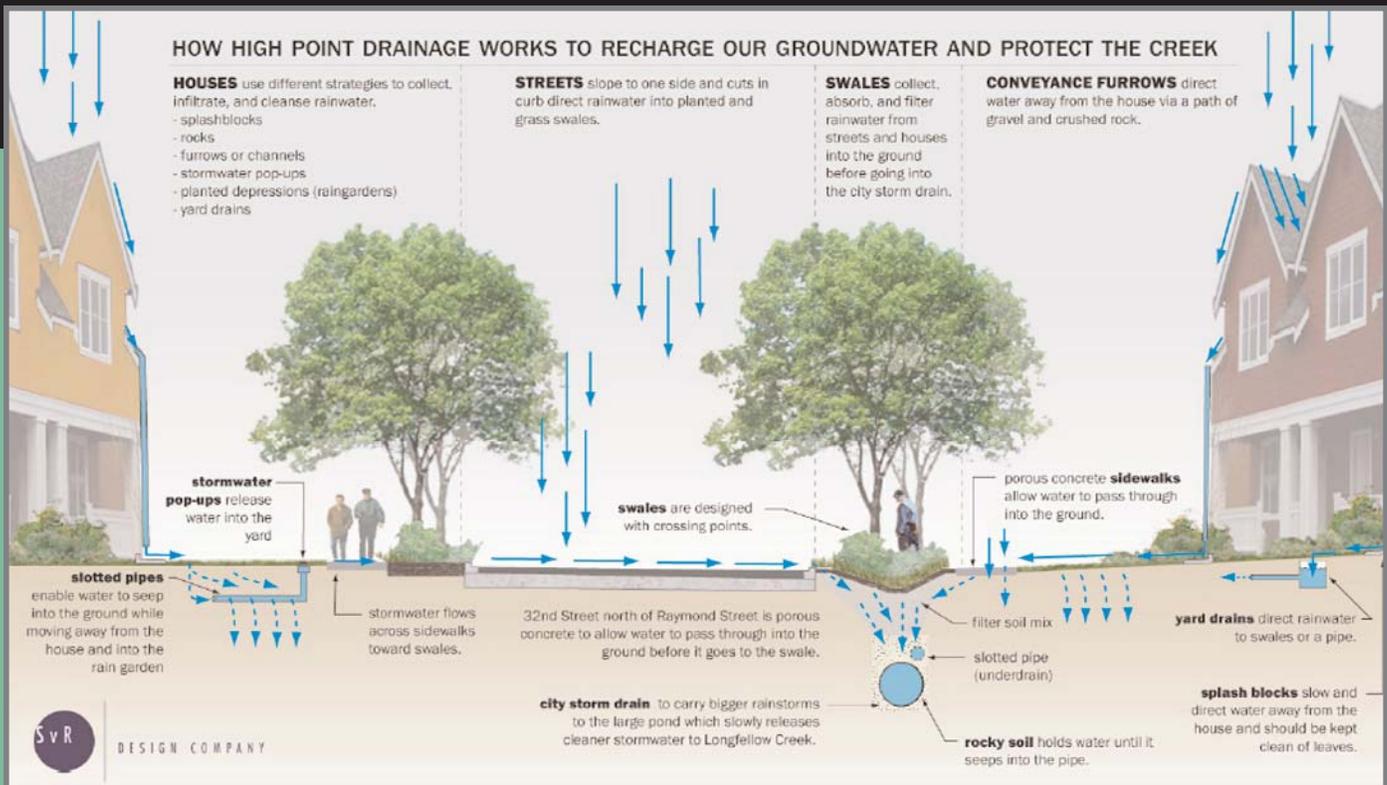
As can be seen in the aerial photograph of the project area, the High Point street grid improves connectivity and closely follows the pattern found in nearby existing neighborhoods.

Although modern fire codes call for wider streets than those proposed, local fire personnel have decades of experience providing emergency service to streets the same width as those in High Point.

With the added weight of the drainage permit agreements calling for narrow streets, the fire marshal signed off on the street design. While this may seem like a convenient coincidence, it is indicative of how diverse the reasons are for supporting smart growth principles. Still, fire personnel were included in the charrette and design discussions as the project was being developed.

In the end, the narrow streets that are environmentally sound and safer for residents, will not compromise emergency response. Years of experience in nearby neighborhoods has demonstrated that fact.





■ Stormwater Management

While High Point's block, building and street design features are common in many smart growth projects, it is the stormwater management system that truly sets this project apart.

The site is adjacent to Longfellow Creek, which local and state regulators hoped to make a model watershed. The High Point project provided an opportunity for a demonstration drainage project.

Since Seattle Housing Authority officials had already set out to design an environmentally sound project, a partnership was created in which permits would be forthcoming for a design that incorporated state-of-the-art drainage management features. Narrow streets were one of the key features.

HIGH POINT

QUICK FACTS • HIGH POINT

Acres: 120

Residential: 1,600 total

- 800 low-income, with 720 rental and 80 for sale
- 800 market-rate, with 150 rental, 250 single-family, 400 condos

Commercial Uses: Small retail center with grocery store and other small shops

Community Facilities: Community center, medical/dental clinic, senior center, community gardens and public library

Open Space: 21 acres of parks, playgrounds, trails, open green space and a large pond to help contain storm water runoff

Street Standards: Residential street width of 25 feet, historic grid street pattern

Other Features: State-of-the-art, block-level drainage management

Previous Uses: Originally constructed for military housing in the 1940s, and later converted to public housing

■ For more information

Tom Phillips, Project Manager, Seattle Housing Authority
tphillips@seattlehousing.org

Kathy Gwilyn, Civil Engineer, SvR Design
kathyg@svrdesign.com

HARBOR TOWN MEMPHIS, TN

Harbor Town is one of the nation's most successful traditional neighborhood developments. Located on Mud Island near downtown Memphis, Harbor Town contains 500+ houses, 400+ apartments, 80 condominiums, a shopping district, a small private school and several town greens.

The site represented a unique opportunity for the developer to create an affordable community reflecting the characteristics of small southern towns from an earlier era.

Notably, as recently as the 1950 U.S. Census, barely half of the country's households owned an automobile. Naturally, this meant far more people met their daily needs by walking, and their neighborhoods were designed to accommodate this travel.

Linked to Memphis by a bridge completed in 1987, the island is easily accessible from downtown but is also self-contained. The village is organized around a traditional street grid intersected by a series of diagonal east-west boulevards. The boulevards help define the various residential and commercial districts.



Mixed-use building (above); The Beacon, a mixed-use loft building (below).

The plan reflects scaled-down urban elements that are derivative of Memphis. Houses are sited close to tree-lined streets, block dimensions are comparable to those in other Memphis neighborhoods, and boulevards incorporate small commons or parks.

Architecturally, the buildings feature front porches, balconies and elevated entries, which are indigenous to Memphis and evocative of early waterfront towns.

Garden apartments are located at either end of the site and incorporate generous porches, visitor-oriented, on-street parking and courtyard parking for residents.

■ Three Neighborhoods

The community consists of three neighborhoods: the Harbor District, the Garden District and the Village District.

Harbor District offices are located at the southern end near the bridge and thus minimize the circulation of commercial traffic through the residential areas.

The character of the Harbor District's surrounding retail

square is planned to be sympathetic to that of the residential neighborhoods yet conducive to use for outdoor festivals and markets. The marina lends a special identity to the retail square area.

Construction began in the summer of 2006 on a boutique inn and two restaurants. A Montessori school is also located in the Harbor District.

The Garden District includes a mix of attached and detached dwellings that are integrated with three parks, a nature trail winding through a central wooded area that embraces six ponds, and a wetlands bird sanctuary.

Settlers Point Park, which includes a pavilion area, is the most formal of the parks. It is intended to be a focal point and gathering spot for residents for activities such as occasional Sunday jazz concerts.

The Village District is more densely configured and includes a mix of apartments, townhomes, semi-attached homes and single-family detached homes as well as a village commons.

HARBOR TOWN MEMPHIS, TN

Developer Henry Turley, a fourth-generation Memphian who lives downtown, and partner Belz Enterprises wanted to build a neighborhood that would capture the sense of community he experienced as a bike-riding youngster 50 years ago: A neighborhood should be a varied and complete slice of the world accessible to all its residents.

What finally attracted builders, architects and home buyers alike to Harbor Town was the exceptional setting. The view from Harbor Town looking across the Mississippi River to the greenbelt on the other side is unchanged since the days of steamboats. Day and night, riverboats and barges quietly ply the river.

To the east are views of the Memphis skyline, the Pyramid arena, and the graceful M-shaped span of the Hernando De Soto Bridge lit at night.

Harbor Town's design guidelines were developed by Looney Ricks Kiss Architects. They show appropriate building types as well as architectural elements consistent with the developer's vision.

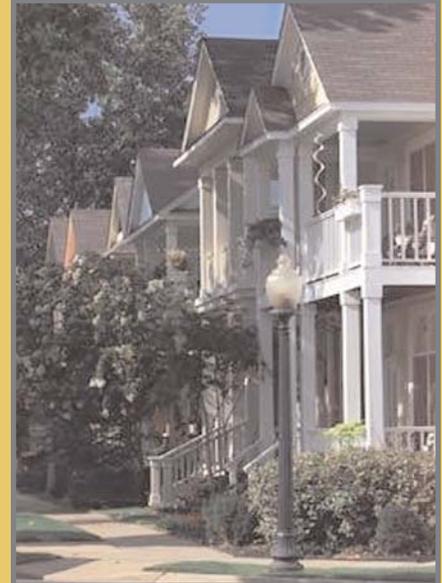
Every house plan is reviewed for compliance before construction begins. The goal is to encourage friendliness with the neighbors while providing privacy within the confines of small lots.

As early plans for Harbor Town began to take shape, the architects and the development team came up with a concept for a Charleston-style house, to be built on a

30- by 100-foot lot. These lots were much smaller than those originally platted and allowed the developer to target a \$150,000 sale-price range not originally considered for detached homes at Harbor Town.

The first prototype won the House of the Year in the 1992 "Best in American Living" awards by the National Association of Home Builders. A 6,000-square-foot grocery store opened in 1998, along with a pizza restaurant and video rental store.

Thanks in part to Harbor Town, downtown Memphis' residential population has grown by thousands in the past 10 years.



Harbor Town Savannah style

QUICK FACTS • HARBOR TOWN

Acres: 135, including 35 in floodplain

Residential: 1,000 total, with 506 single-family, 414 rental, 80 condos

Commercial Uses: Grocery store, deli, pizza parlor, day spa, fitness and medical center, Montessori school, foreign-language immersion day care center, marina, restaurants, laundry, barber/beauty salon and boutique hotel

Community Facilities: Public school and hotel provide meeting space

Open Space: Parks, greenbelt walkways, ponds and channels

Street Standards: 28-foot wide residential streets with double-sided parking, historic grid street pattern with short blocks and vista termination features

Previous Uses: Sharecropping agriculture

■ For more information

Antonio Bologna, FAIA, Bologna Consultants
(formerly with Turley Company), Memphis, TN
tbologna@midsouth.rr.com

HARBOR TOWN MEMPHIS, TN

■ Emergency Response Issues

Some of the planning issues that were worked out with engineers, planners and emergency responders include: public streets versus private streets; street widths; emergency vehicle access; street trees; location of utilities; lanes for vehicular access; and on-street parking.

Traffic engineers and Memphis fire officials were concerned with street widths that they felt were too narrow. Typical residential streets with parking on both sides were proposed to be 28 feet curb-to-curb, instead of the 36-foot width the City desired.

Corner curb radii were designed to a 15-foot arc, half the dimension the City wanted.

Boulevard streets with landscaped medians and single-side parking were designed with 18 or 20 feet between the curbs, while the City wanted 28 feet.

The City Traffic Engineer was unwilling to build and maintain these narrow streets or compromise by recognizing Harbor Town's pedestrian-friendly design.

As a result, the streets were made private, putting the full burden of construction and maintenance onto the project's developers and future property owners and residents. In the spirit of community, the developer and homeowners association have not installed gates or restricted public access to these private streets.



Harbor Town streetscape

In contrast, Memphis Fire Department, with a history of community involvement and problem-solving, was willing in the early stages to work on solutions rather than force an uncompromising design.

Narrow street dimensions and tight curb radii will always draw the attention of fire officials, but in the case of Harbor Town, they were willing to find design solutions that did not destroy the character of its streets.

For example, at the primary access point to a gate-controlled apartment complex: The largest piece of equipment that the Memphis Fire Department uses happens to be the primary response unit for Harbor Town, because it also serves the nearby St. Jude Children's Hospital.

The turn radius at the entrance was too tight for the large fire

truck (cab-forward, with an extreme front overhang).

Experiments revealed a creative solution, which did not require a redesign of the entryway or other access streets: The truck simply uses an automated gate device to open the exit gate, allowing a wider turn into the project.

Now, on occasional Sunday mornings, this fire truck is seen driving through Harbor Town to see if there are any areas that would cause the fire department a problem during an emergency.

If the watch lieutenant sees a problem – whether it is trees hanging too low over the driving lane or a street blocked by construction materials or equipment – it is dealt with promptly by either the developer or the homeowners association.

Special thanks for images and assistance to Steve Lawton, John Baucke, David Sargent, Tom Phillips, Kathy Gwilyn, Peg Staeheli (SvR Design), Henry Turley and Antonio Bologna.

THE VALUE OF WORKING WITH THE FIRE DEPARTMENT

In three cases, the interaction between the project proponents and fire officials determined key elements of the project's design. In some cases, the project was approved and built without tension between fire officials and project proponents. In Hercules, this dynamic led to significant compromises in the project's design. The message is clear: early and open communication with the fire department is key to the project's success – and to keeping all of its good street design components. Equally important is a better understanding of traditional neighborhood streets by fire officials.

■ Waterfront District • Hercules

In Hercules, project developers and the City were at a disadvantage from the beginning. The structure of their fire service arrangement is determined by the contract between the City and the independent Rodeo-Hercules Fire District. By giving the district authority to approve (agree to serve) or disapprove a project, the City no longer has complete control over street design and other project features. For the Waterfront District projects, this arrangement resulted in the loss of desirable on-street parking, and required the City to pay to install sprinklers in several dozen homes.

The fire district has insisted on red curbing and “no parking” signs to eliminate parking on one side of several streets. Some residents have defied these controls, and successfully fought parking tickets on the grounds that the municipal code allows parking on both sides of the streets.

With even denser multi-story projects planned in the near future in the Central Hercules area, significant upgrades to fire equipment will be necessary. This expense and the lingering issue of smart growth street design versus typical fire code standards – plus the fact that the fire district's largest revenue stream comes from the City of Hercules – has prompted talk about providing fire services within the City's governmental structure. No official discussion or action has been taken yet, but this step would remove the institutional barrier that has most impaired good street design for the area.

■ High Point • Seattle

In High Point, the City was able to get buy-in for narrow streets because: fire service is provided by

a city department; the developer is a respected public entity; drainage controls including narrow streets were key to protecting a critical watershed; and narrow streets had been in place in much older neighborhoods nearby for years.

While fire officials may not be entirely happy with the street widths in the new High Point project, they have clearly adjusted to serving neighborhoods with what they might consider “substandard” streets with modern fire equipment.

In the end, the High Point project resulted from a holistic approach where city departments were able to step back from their agency's individual perspective, and consider the diverse goals of community ambience, water quality and public safety in a more balanced manner.

■ Harbor Town • Memphis

In Harbor Town, relations between project proponents and fire service providers began with a cooperative approach that continues to this day. Even though a dependent city agency would necessarily yield to a decision by higher city authorities, no such overruling was necessary. Fire officials had an opportunity early in the process to review project plans.

When they expressed some concerns about access routes and room to set up equipment, the developers sat down and worked out solutions that were acceptable to everyone, without compromising the original smart growth street design, and without requiring intervention to solve a dispute. Both the developer and the fire department had to be flexible, but the result was safe streets and livable neighborhoods.