

Introducing the
Prefurbia
Solution
TO
Urban Renewal

by

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Studio

What is Prefurbia ?

A Neighborhood Planning method that produces a Preferred Quality of Life: Organically–designed, low environmental impact neighborhoods with varied streetscapes, *more* public & private space, & better pedestrian connectivity, at *significantly less cost* than traditional neighborhoods.

Subject area:

2 1/3 Traditional neighborhood blocks
in South St Paul, Minnesota



S St Paul's GIS Map Data



'As-is' Site Information

Site Area:

10.8671 Acres

YIELD

Totals

Total Single Family Homes

49

Total Apartments

8

Total Units

57

Total Garage Spaces

80

Street Right-of-Way

2.8228 Acres

Alley Right-of-Way

0.4118 Acre

Net Area in Lots

7.6325 Acres

Average Lot Area , per unit

5,832 sq.ft.

Density: Gross

5.25/Homes per Acre

Net

7.46/Homes per Acre

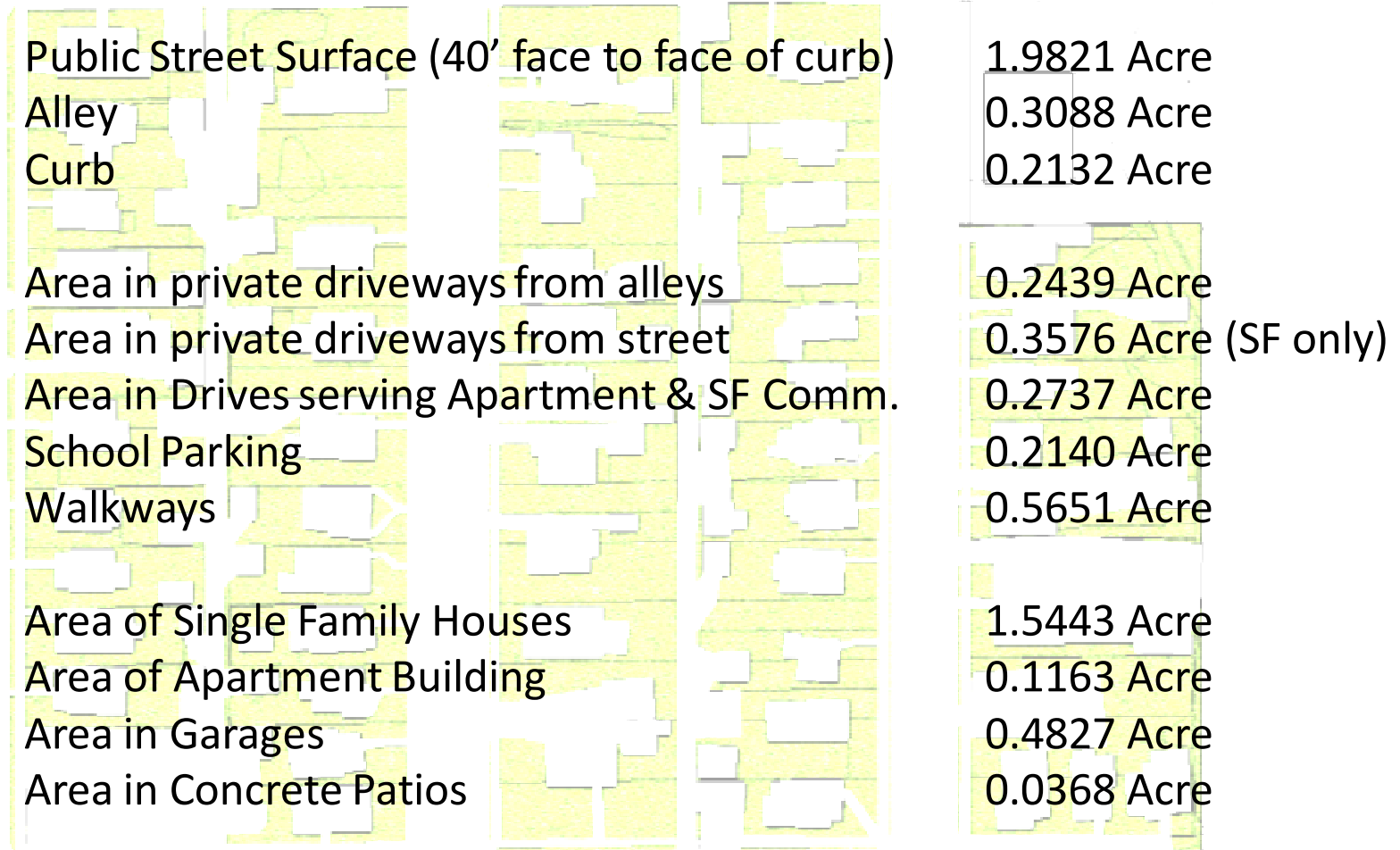
Right-of-Way street width:

60'

'As-Is' Environmental Data

Site Area:

10.8671 Acres



Total Impervious Surface Area:

6.3383 Acres (58%)

Average Impervious Area Per Unit

Public Paved Surface Area:	1,913 sq.ft. / unit
Private driveways & alley (28 Homes)	886 sq.ft. avg / home
Private driveways from street (16 Homes)	856 sq.ft. / home
Sidewalks, walkways	431 sq.ft. / home
Single Family House Footprint	<u>1,372 sq.ft.</u>
Total AVG Impervious Surface Area / unit:	4,843 sq.ft.

Comments:

Even though most of the garages are located far off the public street (approximately 100' setback) requiring very long driveways, the average volume of paving is less than garages served directly from the alley, which includes the paved alley area.

Individual driveways are maintained by the homeowner, when they are serviced from the front street. Alley-based driveways have most of the surface area (54%) in the form of *publically maintained surface* (approximately 11' wide), creating additional tax payer burdens.

After demolition:

Right of Way
Abandoned

Right of Way
Abandoned

Old Net Buildable Area	7.6325 Acres
Area <i>after</i> demolition	9.7399 Acres
Gained Useable Area	2.1074 Acres

Note: Even though Right-of-Way is abandoned, there may be some thought to use existing utilities. In many cases, it is recommended that new utility lines be replaced, because most are so old they will become problematic soon enough.

School Parking to be
relocated

Prefurbia plan

7 Coved
Single
Family

6' Wide
Main
Walkway

8' Wide
Emergency
Walkway

31
Affordable
BayHomes
(detached
townhomes)

Detention

16' Wide
Private
Drive
(one-way)

22 Attached
Townhomes

20' Wide
Private
Drive

4 Luxury
BayHomes

Rain garden



Prefurbia Site Information

Site Area:

10.8671 Acres

YIELD

Totals

Total Single Family Homes (includes BayHomes)

42 (49 on As-is plan)

Total Townhomes

22 (superior to apts.)

Total Units

64 (7 more than As-Is plan)

Total Garage Spaces

131 (51 more than As-is plan)

Area of Street Right-of-Way

1.1272 Acres

Net Area in Lots

9.7399 Acres

Average Lot Area per Unit

6,629 sq.ft.

Density Gross

5.89/Homes per Acre

Net

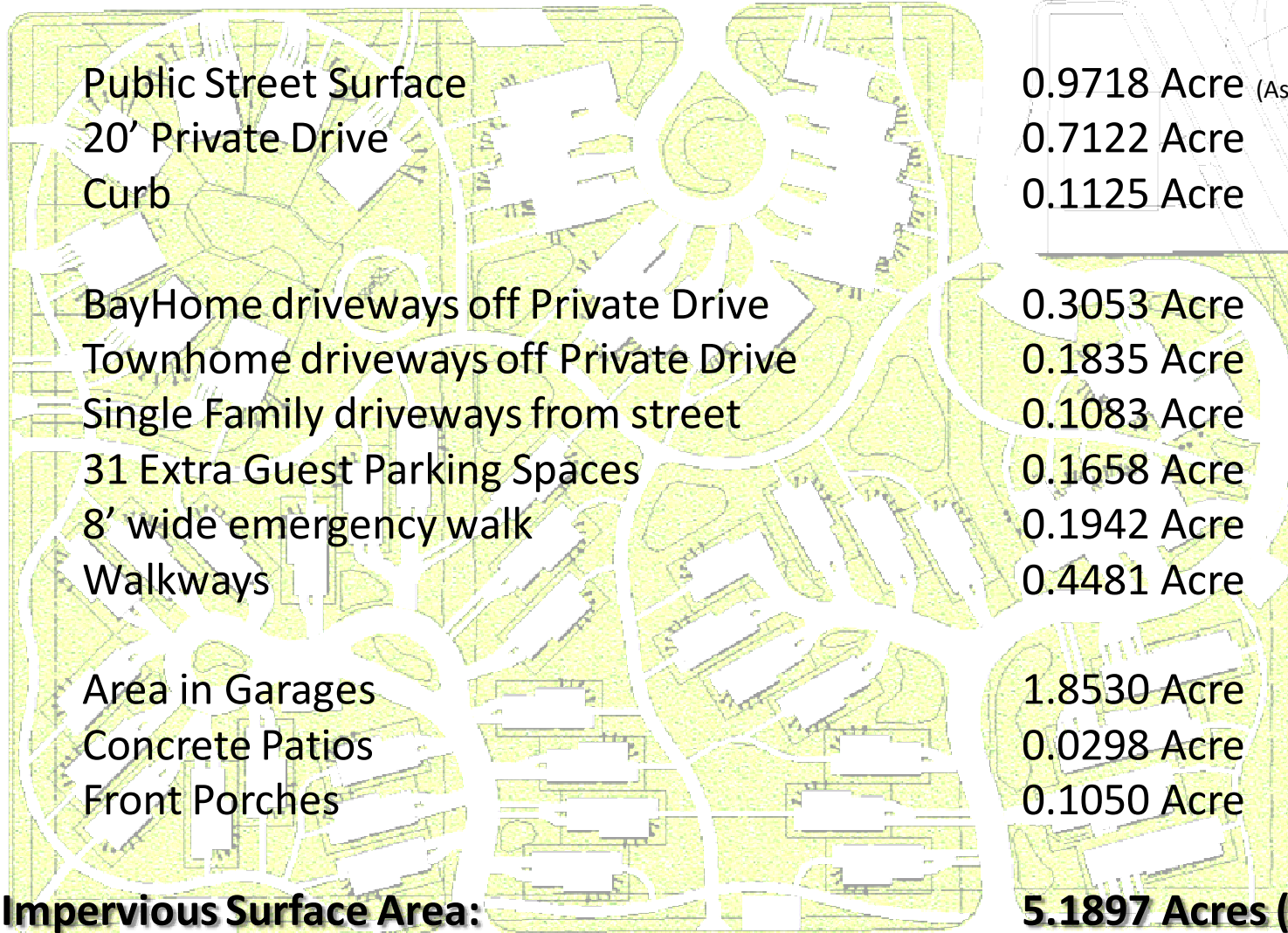
6.57/Homes per Acre

Even though there are 7 more units on this site, the net density is less because of the abandoned streets, which created more space. The example shown is intended to contribute a low environmental impact and address living quality issues, while providing housing at attainable prices.

Prefurbia Environmental Data

Site Area:

10.8671 Acres



(As-is plan had 58%!)

Average **Prefurbia** Impervious Area Per Unit

Public Paving Surface Area	661 sq.ft. per unit
Average Area in driveways	406 sq.ft.
Average Area in driveways including Private Drive	891 sq.ft.
Walkways	437 sq.ft.
House Footprint (including garage)	<u>1,332 sq.ft.</u>
Total AVG Impervious Surface Area / unit:	3,532 sq.ft. (As-is plan had 4,843 sq. ft)

Comments:

Even though the As-is plan had an apartment building on the site (which reduces residential footprints) and the new plan provides 2 garage spaces-minimum for all units (51 more spaces than the original), the overall **reduction** in hard surface area, per unit is **1,311 sq.ft.** or a **reduction per home of 27%!**

The original plan used public alleys that measured only 11' wide, making it difficult for cars to pass each other. The new plan uses a functional 20' wide lane for two-way traffic, and 16' wide on one-way lanes.

About using Existing Utilities

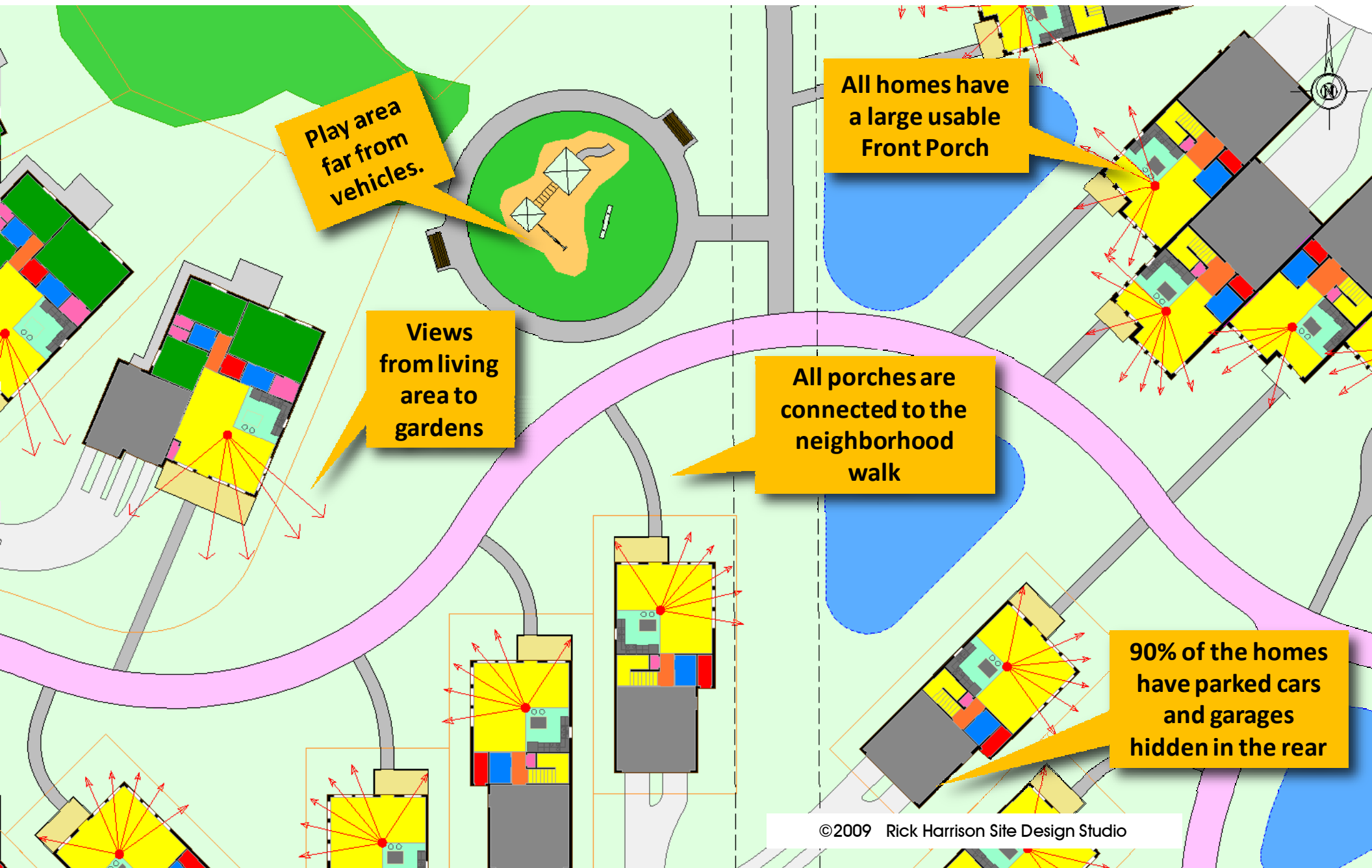
Many redevelopment plans preserve existing streets, right-of-ways and utilities. Generally, older cities have a large percentage of space consumed by grid street patterns and relatively short blocks. Abandoning existing streets, when feasible, creates larger tracts of land to develop, leaving a clean slate for a neighborhood to be designed using Prefurbia planning principles.

The problem becomes what to do with the existing utility lines, especially the expensive sanitary and storm sewers. In some cases the sewer system is “down stream,” serving a larger region, making a new route difficult. In redevelopment areas, upstream, it might be reasonable to reconfigure all the sewers and utilities.

Using century old sewer lines to save money just delays replacing them sooner rather than later. In redevelopment, it’s much easier and less expensive to replace during redevelopment, than if the old lines were preserved, and replacement takes place after the site has been completed.

For the purposes of this example, a 25’ wide easement is shown indicating the position of existing public sewers to be retained (except one small area).

Prefurbia: A park-like feeling throughout...



In this Prefurbia neighborhood example,
there are
three different housing types

- Coving
- BayHomes
- Townhomes

and a variety of techniques
employed to reduce
development impact

Site development techniques which reduce environmental impact,
may vary from site to site, depending upon variables such as
code issues, density, topography, the site's natural features,
etc.

Coving: A streetscape in motion

Coved Single-Family lots have meandering front home setback lines, which, when set along winding streets, create park-like streetscapes that enhance the feeling of space. Coved S.F. lots form traditional home ownership with a yard space owned by the resident. The lots (with the exception of the walkway) are owner-maintained, like any other single-family lot. There would be a minimum association fee as most of the site is maintained by the townhome and BayHome units, however; each lot owner would have the option to have lawn and snow care added.

The homes shown would look similar to the size of the home shown here, except the proposed home has a full front porch made possible because the two car garage is offset (on the proposed homes).

Note the beautiful meandering front walkway and the sense of space only coved design delivers.



BayHomes: New urbanism with a View

BayHomes are single-family detached homes set under multi-family zoning, to allow freedom of unit-placement not possible with standard single-family platting. This allows the homes to be serviced by a private association-maintained drive and reduces setback requirements typical of Single-Family regulations. A primary BayHome design benefit is panoramic views, as units overlook gardens instead of streets and parked cars. Other than the 7 coved Single-Family lots, the entire site is association-maintained.



New Urbanism align home fronts preventing panoramic views

This picture was taken of New Urban units overlooking a greenway. BayHomes would look similar, except that there is a significant stagger to the home placement, allowing windows and architectural detailing to wrap further around (the living areas) providing an increased sense of space, while preserving privacy.

Bayhomes continued....

Another benefit of the staggering, is the diverse rear home façade, which eliminates uninviting alleys. This attractive rear is seen in this BayHome neighborhood using similar private drive access. Some of the garages can be side-loaded, reducing the typical alley look.



The BayHome sets the benchmark for detached homes, in expanding the feeling of space. In Prefurbia, space is expanded through scale & design, making dense areas feel rural in nature and small homes seem much larger than they actually are. The kitchen area, in American homes – often becomes the gathering place, so this is the focal point for living space in each BayHome. From the kitchen, views extend through living areas out windows into the gardens, without viewing into the neighbor's homes, preserving privacy. The 10' wide side yard space between homes can be fenced to add private yard space, if zero lot line development is implemented (recommended).

Townhomes Gardenview-style

Staggered Townhomes provide all of the benefits of the BayHomes but in an attached housing setting. How can affordably-priced townhomes be built, with full front porches, generous offsets and plenty of window space and connected walkways? Easy – the 27% reduction per home in impervious surface area comes mostly from the reduction of very expensive paved surfaces. These savings can then be applied to the homes and landscaping!

Typically with multi-family design, the interior units get the short end of living quality, with little light and sense of space.

In Prefurbia, *every* townhome has a panoramic view of space, increasing value at all income levels.



Low Income Issues: quality of life

Low income housing is typically associated with bland architecture and substandard landscaping.

Another image that comes to mind is the lack of views, space and privacy associated with “low Income” housing, which hastens the high unit turnover rate.

For example, windows overlooking loading docks of adjacent strip malls are all too common.



The methods and techniques of Prefurbia were created to eliminate the negative aspects of lower cost housing. Prefurbia implements ways to increase site efficiency & decrease infrastructure costs, which yields additional space that is utilized to create views and a low density feel – at any income level! A portion of the money saved on site work can be applied to the home structure. This requires a working relationship between the site developer, builder, architect and planner, including how the interior space functions in order to increase views of nature & access to walks. The above picture shows Prefurbia-planned low income units in Mahtomedi, Minnesota, and proves low income living does not have to sacrifice livability.

LOW INCOME ISSUES: parking

Residents will park their nicest vehicles in the protection of the garage, but other vehicles get left outside.

As income drops, this becomes more of a problem. Prefurbia-planned low income neighborhoods typically place parked cars in the rear. All have a minimum two car garage.



In Prefurbia neighborhoods, all of the home garages are attached, as detaching garages means building two extra exterior walls (an extra 40 ft minimum). By *attaching* garages, enough money is saved to pay for a beautiful functional front porch. Detaching also creates unusable yard spaces. Then of course, bad weather also makes a trip from the garage to house uncomfortable (especially Minnesota's icy winters). Because of this, all homes have integrated garages.

Low Income Issues: Poor quality views



A front stoop overlooking the neighbors' rusted parked cars and a sea of concrete discourages interaction.

Full front porches, all connected by a safe meandering trail through landscaped association-maintained gardens, provide a superior setting to the alternative.

Which provides a better quality of life?

Now, for the first time in urban areas, it is possible for every resident to enjoy a heightened sense of space, connection to nature, and gain use of a continuous flowing greenway. Not down the street, but out every residents' front door.

Instead of the suburbs enticing home buyers to purchase into developments on the outer fringe, Prefurbia brings these qualities to urban cities!

Prefurbia and Low Environmental Impact

Many older neighborhoods had narrow driveways serving rear yard garages, & used very little pavement. Back then, there was little awareness of environmental issues, so the main reason was most likely cost and curb appeal, no different than today.



These visionaries did not even realize their strip-lane driveways have much less environmental impact. With new planting options like low-mow and low-water grasses that tolerate pollutants from passing vehicles, this minimalist-paved method or pervious pavers in strip patterns, makes more sense than ever. There is a significant reduction in development and construction costs by embracing variations of this technique of the past as seen in this neighborhood.

Prefurbia: *Green, learning from nature*



Over eons of time, our rivers and rainwater have sculpted very interesting patterns, few of which are linear.

Land itself is rarely perfectly flat.

Drainage varies with each region. There are many different methods and regulatory requirements, but emulating natural systems reduces both costs and environmental impacts.

Unlike “green” architectural solutions that often increase costs to decrease environmental impacts, Prefurbia’s land development “green” solutions generally reduce both construction costs and environmental impacts – when implemented correctly.

Prefurbia: *Minimizing impervious surfaces*



New development does not increase the amount of rain that falls onto the site but increases the amount of water running off of the site. As rain falls, some of it evaporates before reaching the ground. Organic surfaces do a good job of absorbing much of the rain and the excess “runs off” the site onto adjacent land eventually forming streams and rivers leading to large bodies of water. Hence the term “run-off”.

What makes developed land different, is that the hard surfaces caused by rooftops, driveways, patios, walkways, parking lots, streets, etc. absorb very little of the rain, so the amount of water draining off of the site is much higher, and likely leaving the site at a much higher velocity. This is why our 27% reduction of impervious surface per unit is so important.

Prefurbia: Rain gardens



To explain in very simple terms how a rain garden can filter out pollutants, think of a sponge that absorbs not just liquid but traps dirt to be removed from a surface.

Imagine creating a depressed area for water to sit long enough for pollutants to drop into the soil that has been altered to act as a sponge, providing the foundation for clean water to run off of the site. Rain gardens use plants that develop deep roots and die off and decay each year, conditioning the soil over time with tiny “tunnels” that can trap pollutants.

The trick is to engineer them as part of the drainage system, because eventually the runoff needs to leave the site in its filtered capacity. In Prefurbia neighborhoods, these are used in conjunction with detention ponds and surface drainage.

A side benefit is that when properly designed, they are significantly less cost than traditional sewer systems.

Prefurbia: *gently managing storm water*

In this photo, there are no curbs & gutters along the street.

Storm water and pollutants falling off of passing traffic are washed into swales filled with grasses, and / or rain gardens. A site such as this, developed without storm sewer pipes eliminates costly curb and gutter construction and is a financial win, which would result in a lower cost to develop home sites (This method works well on most low- and medium-density residential zoned sites).



However, the growth of plant materials along the front yards can screen architectural elements. Not everyone thinks these systems are attractive. In our Prefurbia example, the plant placement is actually a benefit, as the plants will soften the visual impact of rear loaded garages along the private drives.

Prefurbia: Enjoyable walks get used!

Typical urban sidewalks are a narrow 4' wide, much too small for a couple to walk comfortably side by side.

The As-Is site had wider 5' walks, which are better. The *best width* to use on walks that get any volume of use, is 6' wide, as the one shown here.



Width means nothing if the walks are too difficult to traverse through an area, so the walk placement is designed to bring neighbors into the site – not along its outer edges. On the Prefurbia re-plan, a destination walk directs residents to the school to the west.

The main walk system is 8' wide, which will be sufficient to duplicate its purpose for emergency access, creating a neighborhood that has easy access if a drive is blocked during an emergency.

Prefurbia: *A safe walkable Neighborhood*

Safety should be a primary concern, yet urban and suburban neighborhoods intermix pedestrians and vehicles in very close proximity. Some planners actually think this is good because most drivers become extra careful when driving through people laden streets. Unfortunately “most” is a far cry from “all”.



Placing pedestrians and vehicles in close proximity is just bad planning. An unaware driver being distracted for only a moment can change the life(s) of the person(s) that vehicle will crash into too easily.

Of course, separating the systems as is done on this proposal, eliminates 90% of the conflicts in the first place. Safer? Of course it is!

Prefurbia: Running the Numbers

We reduced the paving used to service cars by 25% (not including the previous sites school parking), yet it's more convenient for residents to get home.

A 25% decrease in paving to serve homes has a direct relationship to an increase in organic open space. All of this with an 11% increase in density... without relying on apartment units that the existing development had.

The walk surface area increases by 8% on the new neighborhood but the walking connectivity for all neighbors is designed to encourage their use. Remember, this is all accomplished with an 11% increase in density. This means on a per unit basis, there is a decrease in walk surface. There is probably an 800% increase in actual use of the walks - an excellent return on investment. The walk system on the existing development was 5' wide, and these new walks are 6' (17% wider) and 8' (38% wider) -- the "numbers" come out impressive.

Eliminating the need for storm sewer pipes and using natural surface flow reduces the development costs by thousands of dollars per unit. All of these numbers relate directly to the cost of the home, allowing more construction dollars for builders, so that homes can look expensive at a low income price!

Thoughts on Energy Efficiency

Current tax credits encourage residents of older wasteful homes to upgrade by remodeling to reduce energy consumption. Low income neighborhoods where residents have trouble meeting monthly expenses would not be candidates for these incentive programs. But let's suppose every one of the 49 existing single family homes did somehow decide to upgrade their windows, wall insulation, and replace that old furnace with a Geothermal system. This would run over \$50,000 per home – roughly 2.5 million dollars. Tax payers would be burdened with almost a million dollars of the upgrades and yet the homes would still be downtrodden – efficient but downtrodden!



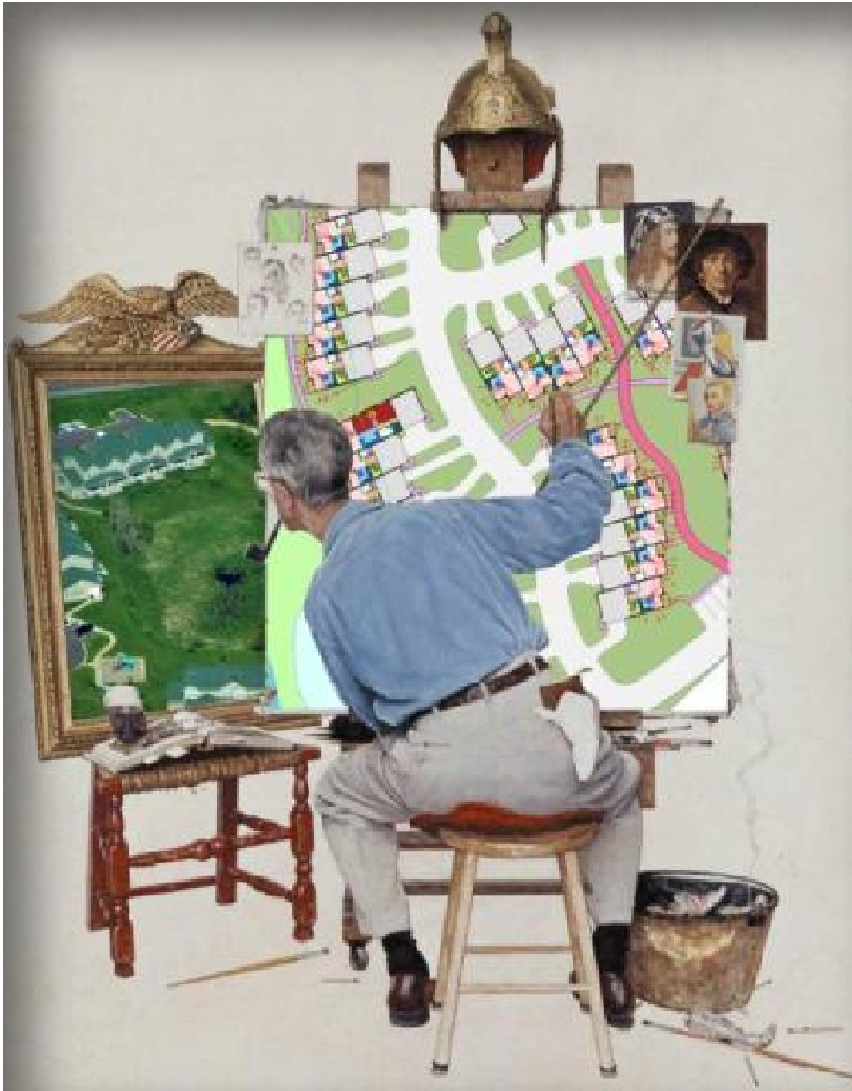
New construction can easily be built to high energy efficiency without breaking the bank. For \$2,000, highly insulated windows can be included. \$2,000 pays for 1" structural foam, insulating the home, and another \$2,000 upgrades the HVAC to 95% efficiency. These upgrades on all 64 homes add up to a total of \$384,000. Installing energy-efficient appliances and LED lighting (soon promising to be more affordable) will cut overall energy use well over 50% compared to typical new construction. Too bad these new energy tax credits do not apply to new construction!

Prefurbia: A Sustainable Neighborhood

- Is the development economically viable?
- Is it environmentally responsible?
- What about energy consumption?
- Will it be neighborly?
- Is it attractive and an amenity to the community?



All of these issues are part of a sustainable neighborhood. But sustainability should not be about specific issues, but about the living standards of those most important – its residents. Is the low income development likely to soon become another project for redevelopment, or will it become a vibrant neighborhood that is the foundation for residents to be happy? Will those that move into a low income project dream of the day they can move out, or will those that move into a neighborhood feel they have finally arrived at a place that makes them want to stay, and preserve home values? *This is the aim of Prefurbia.*



Questions?

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