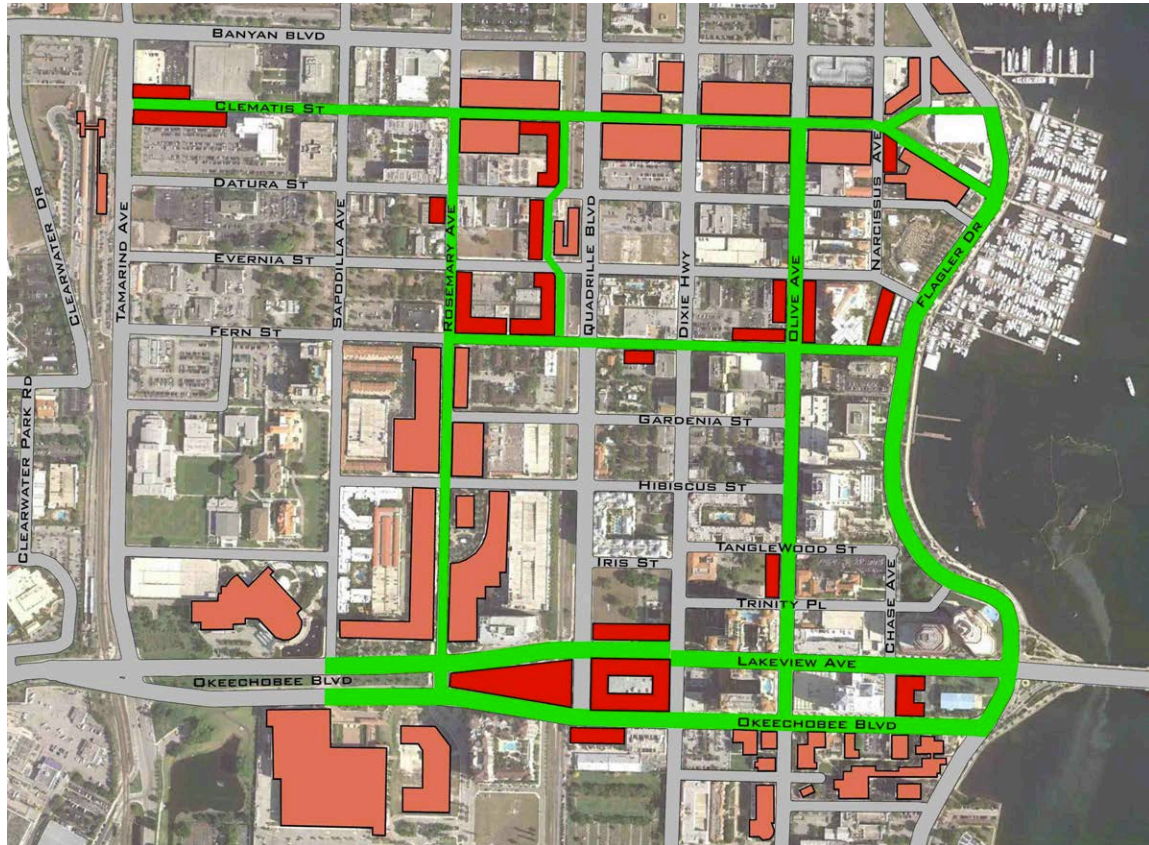


**WEST PALM BEACH, FLORIDA  
DOWNTOWN WALKABILITY ANALYSIS**



**SUBMITTED SEPTEMBER 3, 2014**

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## OVERVIEW

### Approach

By applying a design strategy centered on walkability, this study asserts and attempts to demonstrate how a limited number of relatively small planning interventions can exert a profound influence on the livability and vitality of downtown West Palm Beach.

The study area for this exercise is principally the heart of the downtown, bounded by Clear Lake to the west, the Intracoastal Waterway to the east, 7<sup>th</sup> Street to the north, and the Norton museum of Art to the south. Conditions beyond these borders are considered in this report's recommendations, but all recommendations are limited to this area, with the exception of street re-striping proposals for Flagler Drive, Rosemary Avenue, and South Dixie Highway.

This document begins with a discussion of the four components of walkability, describing how most people will only make the choice to walk if that walk is simultaneously useful, safe, comfortable, and interesting. Those four criteria are then used as a basis for the recommendations that follow.

These recommendations are organized into three sections. The first section, General Recommendations addresses the street network—specifically its one-way pairs—the bicycle network, and the location of the transit hub.

The next section, Street Redesign, establishes a strategy for building streets within the downtown, and then demonstrates how that strategy could be used to improve almost every downtown street. In most cases, suggested street improvements make use of restriping rather than reconstruction in order to conserve funds.

The final section, Setting Priorities, applies an “urban triage” methodology to determine where walkability is achievable in the short run and integrates these findings with an analysis of important anchors and paths in order to designate a Primary Network of Walkability in the downtown. This Network indicates where the fewest investments in infrastructure are likely to have the greatest impact on people's choice to walk. This Network is then used as a means to prioritize both the recommended street improvements and the redevelopment of adjacent properties. Finally, a strategy is suggested for allowing underutilized parking structures to leverage the construction of new downtown housing.

The report concludes with Next Steps, highlighting the few short-term physical interventions that can be expected to have the most immediate impacts on the walkability and vitality of downtown West Palm Beach.



## The Purpose of This Document

This is a downtown walkability analysis, not a downtown master plan. It is not comprehensive, and does not try to be visionary. But, like a master plan, it hopes to have a profoundly positive impact on the physical form, economic success, and social vitality of the city. Specifically, this report, and the effort that led to it, asked this question: *What changes can be made, in the least time, and for the least cost, that will have the largest measurable impact on the amount of walking and biking downtown?*



*The study area, appropriately, is the heart of downtown, bounded by Clear Lake to the west, the Intracoastal Waterway to the east, 7<sup>th</sup> Street to the north, and the Norton museum of Art to the south.*



West Palm Beach is already considered a walkable city, and rightly so. Past investments in progressive city planning and street design, begun more than twenty years ago, have contributed to a downtown that is recognized as one of the most hospitable places for walking in Florida, with the street life to prove it. Since its 1992 Downtown Master Plan demonstrated the relevance of New Urbanist town planning principles—born in Florida—to existing American city centers, West Palm Beach has enjoyed a series of successes that make its former conditions sometimes difficult to remember. From the rebirth of Clematis Street to the creation of City Place, the city’s reputation and its economy have risen in tandem with its commitment to creating a public realm of the highest quality.

But room for improvement remains. Clematis Street and City Place have yet to coalesce into a single, self-supporting mixed-use corridor. Certain streets, most notably the state-owned Okeechobee Boulevard and Quadrille Avenue, are considered downright hazardous to pedestrians. Fast-paced traffic on Flagler drive effectively cuts off the city from its waterfront. And bicycling, on the upswing in many American cities, is still largely absent from downtown streets.

In keeping with their citizens’ well-founded expectations of continual improvement, the political and business leaders of West Palm Beach have asked the question of how their downtown can become more walkable and livable, and—by extension—more safe, healthy, and sustainable. This report attempts to answer that question. Its recommendations are not vague. It will become clear very quickly whether or not they are being implemented. They are presented with a confidence that their audience, having experienced firsthand the manifold benefits of good design, will not shrink from the task of demanding more.

## PROLOGUE

The section that follows is a synopsis of the first three chapters of the book *Walkable City: How Downtown Can Save America, One Step at a Time*, (Jeff Speck, NY: Farrar Straus & Giroux, 2012). Full footnotes for all data and quotations can be found in the book.

## THREE ARGUMENTS FOR THE WALKABLE CITY

After several decades arguing for more walkable cities as a designer, this city planner have found that it is more useful to do so as an economist, an epidemiologist, and an environmentalist. What follows is a discussion of why these three groups are all independently fighting for the same thing, which is to redesign our cities around the pedestrian.

### The Economic Argument

Many cities ask the same question: How can we attract corporations, citizens, and especially young, entrepreneurial talent? In some cities, they ask it differently: “How can we keep our children from leaving?”

The obvious answer is that cities need to provide the sort of environment that these people want. Surveys—as if we needed them—show how creative class citizens, especially millennials, vastly favor communities with *street life*, the pedestrian culture that can only come from walkability.

The number of 19-year-olds who have opted out of earning driver’s licenses has almost tripled since the late seventies, from 1 in 12 to 1 in 4. This driving trend is only a small part of a larger picture that has less to do with cars and more to do with cities, and specifically with how young professionals today view themselves in relation to the city, especially in comparison to previous generations.

The economist Christopher Leinberger compares the experience of today’s young professionals with the previous generation. He notes that most 50-year-olds grew up watching *The Brady Bunch*, *The Partridge Family*, and *Happy Days*, shows that idealized the late-mid-20<sup>th</sup>-century suburban standard of low-slung houses on leafy lots, surrounded by more of the same. The millennials in contrast, grew up watching *Seinfeld*, *Friends*, and, eventually, *Sex and the City*. They matured in a mass culture—of which TV was only one part—that has predisposed them to look favorably upon cities, indeed, to aspire to live in them.

This group represent the biggest population bubble in fifty years. 64 percent of college-educated millennials choose first where they want to live, and only then do they look for

a job. According to surveys, fully 77 percent of them plan to live in America's urban cores.

Meanwhile, the generation raised on *Friends* is not the only major cohort looking for new places to live. There's a larger one: the millennials' parents, the front-end boomers. They are citizens that every city wants—significant personal savings, no schoolkids.

And according to Christopher Leinberger, empty nesters want walkability:

“This group is finding that their suburban houses are too big. . . All those empty rooms have to be heated, cooled, and cleaned, and the unused backyard maintained. Suburban houses can be socially isolating, especially as aging eyes and slower reflexes make driving everywhere less comfortable.”

In the 1980s, city planners began hearing from sociologists about something called a NORC: a Naturally Occurring Retirement Community. Over the past decade, a growing number of retirees have been abandoning their large-lot houses to resettle in mixed-use urban centers. For many of them, that increased walkability means all the difference between an essentially housebound existence and several decades of continued independence.

Of the 100 million new households expected to take shape between now and 2025, fully 88 million are projected to be childless. This is a dramatic change from 1970, when almost half of all households included children. These new adults-only households won't be concerned about the quality of local schools or the size of their backyards. This fact will favor cities over suburbs, but only those cities that can offer the true urbanism and true walkability that these groups desire.

This growing demand for pedestrian-friendly places is reflected in the runaway success of Walk Score, the website that calculates neighborhood walkability. In this website, which gets millions of hits a day, addresses are ranked in five categories, with a score of 50 needed to cross the *Somewhat Walkable* threshold. 70 points earns a *Very Walkable* ranking, and anything above 90 qualifies as a *Walker's Paradise*. San Francisco's Chinatown earns a 100, while Los Angeles' Mulholland Drive ranks a 9. (Downtown West Palm Beach earns an 87, good overall, but about average for a mid-sized downtown.)

If Walk Score is so helpful in helping people decide where to live, then it can also help us determine how much they value walkability. Now that it has been around for a few years, some resourceful economists have had the opportunity to study the relationship between Walk Score and real estate value, and they have put a price on it: \$500 to \$3000 *per point*. In a very typical city, Charlotte, North Carolina, the economist Joe Cortright found that each Walk Score point was worth \$2000—that's \$200,000 across the full scale.



That is the value that houses get for being walkable. But what about cities themselves? Does being more walkable make a whole city worth more?

In 2007, Joe Cortright, the economist responsible for the Walk Score value study cited above, published a report called “Portland’s Green Dividend,” in which he asked the question: what does Portland get for being walkable?

To set the stage, it is useful to describe what makes Portland different. Beginning in the 1970s, Portland made a series of decisions that fundamentally altered the way the city was to grow. While most American cities were building more highways, Portland invested in transit and biking. While most cities were reaming out their roadways to speed traffic, Portland implemented a Skinny Streets program. While most American cities were amassing a spare tire of undifferentiated sprawl, Portland instituted an urban growth boundary. These efforts and others like them, over several decades—a blink of the eye in planner time—have changed the way that Portlanders live.

This change is not dramatic—were it not for the roving hordes of bicyclists, it might be invisible—but it is significant. While almost every other American city saw its residents drive farther and farther every year, and spend more and more of their time stuck in traffic, Portland’s vehicle miles traveled per person peaked in 1996. Now, compared to other major metropolitan areas, Portlanders on average drive 20 percent less.

According to Cortright, this 20 percent (4 miles per citizen per day) adds up to \$1.1 billion of savings each year, which equals fully 1.5 percent of all personal income earned in the region. And that number ignores time not wasted in traffic: peak travel times have actually dropped 11 minutes per day. Cortright calculates this improvement at another \$1.5 billion.

What happens to these savings? Portland is reputed to have the most independent bookstores per capita and the most roof racks per capita. These claims are slight exaggerations, but they reflect a documented above-average consumption of recreation of all kinds. Portland has more restaurants per capita than all other large cities except Seattle and San Francisco.

More significantly, whatever they are used for, these savings are considerably more likely to stay local than if spent on driving. Almost 85 percent of money expended on cars and gas leaves the local economy—much of it, of course, bound for the Middle-East. A significant amount of the money saved probably goes into housing, since that is a national tendency: families that spend less on transportation spend more on their homes, which is as local as investments get.

That’s the good news about Portland. Meanwhile, what’s happened to the rest of the country? While transportation used to absorb only one tenth of a typical family’s budget (1960), it now consumes more than one in five dollars spent. The typical “working-class” family, remarkably, pays more for transportation than for housing.

This circumstance exists because the typical American working family now lives in suburbia, where the practice of “drive-‘til-you-qualify” reigns supreme. Families of limited means move further and further away from city centers in order to find housing that is cheap enough to meet bank lending requirements. Unfortunately, in so doing, they often find that driving costs outweigh any savings, and their total household expenses escalate.

No surprise, then, that as gasoline broke \$4.00 per gallon and the housing bubble burst, the epicenter of foreclosures occurred at the urban periphery, places that required families to have a fleet of cars in order to participate in society, draining their mortgage carrying capacity. These are the neighborhoods that were not hurt by the housing bubble bursting; they were ruined by it.

This is bad news for Orlando and Phoenix, but it’s good news for New York, Chicago, and Portland. But the real Portland story is perhaps not its transportation but something else: young, smart people are moving to Portland in droves. Over the decade of the 1990s, the number of college-educated 25 to 34 year-olds increased 50 percent in the Portland metropolitan area—five times faster than in the nation as a whole.

There is another kind of walkability dividend, aside from resources saved and resources reinvested: resources attracted by being a place where people want to live. The conventional wisdom used to be that creating a strong economy came first, and that increased population and a higher quality of life would follow. The converse now seems more likely: creating a higher quality of life is the first step to attracting new residents and jobs. This is why Chris Leinberger believes that “all the fancy economic development strategies, such as developing a biomedical cluster, an aerospace cluster, or whatever the current economic development ‘flavor of the month’ might be, do not hold a candle to the power of a great walkable urban place.”

## **The Epidemiological Argument**

On July 9, 2004, three epidemiologists published a book called *Urban Sprawl and Public Health*. Until that day, the main arguments for building walkable cities were principally aesthetic and social. More significantly, almost nobody but the planners was making them. But it turns out that while the planners were shouting into the wilderness about the frustrations, anomie, and sheer waste of suburban sprawl, a small platoon of physicians were quietly doing something much more useful: they were documenting how our built environment was killing us, in at least three different ways: obesity, asthma, and car crashes.

The numbers are compelling. According to the U.S. Centers for Disease Control, fully one-third of American children born after 2000 will become diabetics. For the first time in history, the current generation of youth are expected to live shorter lives than their parents. This is due partly to diet, but partly to planning: the methodical eradication from our communities of *the useful walk* has helped to create the least-active generation in

American history.

In any discussion about American health, obesity has to be front and center. In the mid-1970s, only about one in ten Americans was obese, which put us where much of Europe is right now. What has happened in the intervening thirty years is astonishing: by 2007, that rate had risen to one in three, with a second third of the population “clearly overweight.” According to the rules of the U.S. military, twenty-five percent of young men and forty percent of young women are too fat to enlist.

Much has been written about the absurdity of the American corn-based diet and its contribution to our national girth. But our body weight is a function of calories in and calories out, and the latest data suggests that diet is actually the smaller factor. One recent study, published in the *British Medical Journal*, called “Gluttony or Sloth?” found that obesity correlated much more strongly with inactivity than with diet. Meanwhile, at the Mayo Clinic, Dr. James Levine put test subjects in motion-detecting underwear, placed them all on the same diet, and then began to stuff them with additional calories. As anticipated, some subjects gained weight while others didn’t. Expecting to find a metabolic factor at work, he learned instead that the outcome was entirely attributable to physical activity. The people who got fatter made fewer unconscious motions and, indeed, spent on average two more hours per day sitting down.

Over the past decade, there has been a series of studies that attribute obesity to the automotive lifestyle and, better yet, to the automotive landscape. One study, in San Diego, reported that 60 percent of residents in a “low-walkable” neighborhood were overweight, compared to only 35 percent in a “high-walkable” neighborhood. Another, a six-year analysis of 100,000 Massachusetts residents found that the lowest Body Mass Index averages were located in Boston and its inner ring suburbs, while the highest could be found in the “car-dependent” outer ring surrounding Interstate 495.

Now, let’s turn to asthma. About fourteen Americans die each day from asthma attacks. That number does not seem particularly high, but it is three times the rate of 1990. Now, 7 percent of American’s suffer from Asthma in some form.

Pollution isn’t what it used to be. American smog now comes principally from tailpipes, not factories. It is considerably worse than it was a generation ago, and it is unsurprisingly worst in our most auto-dependent cities, like Los Angeles and Houston. In 2007, Phoenix recorded three full months of days in which it was deemed unhealthy for the general public to leave their homes.

Finally, for most healthy Americans, the greatest threat to that health is car crashes. Most people take the risks of driving for granted, as if they were some inevitable natural phenomenon—but they aren’t. While the U.S. suffers 12 traffic fatalities annually per 100,000 population, Germany, with its no-speed-limit Autobahn, has only 7, and Japan rates a 4. New York City beats them all, with a rate of 3. If our entire country shared New York City’s traffic statistics, we would prevent more than 24,000 deaths a year.



San Francisco and Portland both compete with New York, with rates below 3 deaths per 100,000 population, respectively. Meanwhile, Tulsa comes in at 14 and Orlando at 20. Clearly, it's not just how much you drive, but where you drive, and more accurately how those places were designed. Older, denser cities have much lower automobile fatality rates than newer, sprawling ones. Ironically, it is the places shaped around automobiles that seem most effective at smashing them into each other.

In search of some good news, we can turn to Dan Buettner, the National Geographic host and bestselling author responsible for *The Blue Zones: Lessons for Living Longer from the People Who've Lived the Longest*. After a tour of the world's longevity hot spots, Buettner takes his readers through the "*Power Nine*: the lessons from the Blue Zones, a cross cultural distillation of the world's best practices in health and longevity." Lesson One is "Move Naturally":

"Longevity all-stars don't run marathons or compete in triathlons; they don't transform themselves into weekend warriors on Saturday morning. Instead, they engage in regular, low-intensity physical activity, often as a part of a daily work routine. Rather than exercising for the sake of exercising, try to make changes to your lifestyle. Ride a bicycle instead of driving. Walk to the store instead of driving. . ."

Like most writers on the subject, Buettner and his sources neglect to discuss how these "lifestyle" choices are inevitably a function of the design of the built environment. They may be powerfully linked to place—the Blue Zones are zones, after all—but there is scant admission that walking to the store is more possible, more enjoyable, and more likely to become habit in some places than in others. It is those places that hold the most promise for the physical and social health of our society.

### **The Environmental Argument**

In 2001, Scott Bernstein, at the Center for Neighborhood Technology in inner-city Chicago, produced a set of maps that are still changing the way Americans think about their country. In these maps, remarkably, the red and the green switched places. This reversal, perhaps even more than the health discussion, threatens to make walkability relevant again.

On typical carbon maps, areas with the greatest amounts of carbon output are shown in bright red, and those with the least are shown in green, with areas in between shown in orange and yellow. The hotter the color, the greater the contribution to climate change.

Historically, these maps looked like the night-sky satellite photos of the United States: hot around the cities, cooler in the suburbs, and coolest in the country. Wherever there are lots of people, there is lots of pollution. A typical carbon map, such as that produced in 2002 by the Vulcan Project at Purdue University, sends a very clear signal: countryside good, cities bad.

These maps are well in keeping with the history of the environmental movement in the United States, which has traditionally been anti-city, as has so much American thought. This strain traces its roots back to Thomas Jefferson, who described large cities as “pestilential to the morals, the health, and the liberties of man.” Not without a sense of humor, he went on: “When we get piled up upon one another in large cities, as in Europe, we shall become as corrupt as in Europe, and go to eating one another as they do there.”

For a long time, these were the only type of carbon map, and there is certainly a logic in looking at pollution from a location-by-location perspective. But this logic was based on an unconsidered assumption, which is that the most meaningful way to measure carbon is by the square mile.

This assumption is false. The best way to measure carbon is per person. Places should be judged not by how much carbon they emit, but by how much carbon they cause us to emit. There are only so many people in the United States at any given time, and they can be encouraged to live where they have the smallest environmental footprint. That place turns out to be the city—the denser the better.

Or, as the economist Ed Glaser puts it: “We are a destructive species, and if you love nature, stay away from it. The best means of protecting the environment is to live in the heart of a city.”

No American city performs quite like New York. The average New Yorker consumes roughly one third the electricity of the average Dallas resident, and ultimately generates less than one third the greenhouse gases of the average American. The average resident of Manhattan consumes gasoline “at a rate that the country as whole hasn’t matched since the mid-1920s.”

New York is America’s densest big city and, not coincidentally, the greenest. But why stop there?: New York consumes half the gasoline of Atlanta. But Toronto cuts that number in half, as does Sydney—and most European cities use only half as much as those places.

This condition exists not because our buildings or cars are less efficient, or our buildings are less green, but because our cities are not as well organized around walking. This point was made clear in a recent EPA study, “Location Efficiency and Building Type—Boiling it Down to BTUs,” that compared four factors: drivable vs. walkable (“transit-oriented”) location; conventional construction vs. green building; single-family vs. multifamily housing; and conventional vs. hybrid automobiles. The study demonstrated that, while every factor counts, none counts nearly as much as walkability. Specifically, it showed how, in drivable locations, transportation energy use consistently tops household energy use, in some cases by more than 2.4 to 1. As a result, the most green home (with Prius) in sprawl still loses out to the least green home in a walkable neighborhood.

It turns out that trading all of your incandescent light bulbs for energy-savers conserves as much carbon per year as living in a walkable neighborhood does each week. Why, then, is the vast majority of our national conversation on sustainability about the former and not the latter? Witold Rybczynski puts it this way:

Rather than trying to change behavior to reduce carbon emissions, politicians and entrepreneurs have sold greening to the public as a kind of accessorizing. “Keep doing what you’re doing,” is the message, just add another solar panel, a wind turbine, a bamboo floor, whatever. But a solar-heated house in the suburbs is still a house in the suburbs, and if you have to drive to it—even in a Prius—it’s hardly green.

This accessorizing message has been an easy sell in America, where it is considered politically unwise to ask consumers to *sacrifice*, to alter their quality of life in service of some larger national goal, such as keeping a dozen of our largest cities above sea level. But what if there were a more positive quality-of-life discussion, one that allowed us to satisfy consumer demands that have not been met by a real estate industry centered on suburban sprawl.

The gold standard of quality-of-life rankings is the Mercer Survey, which carefully compares global cities in the ten categories including political stability, economics, social quality, health, education, recreation, housing, and even climate. Its rankings shift slightly from year to year, but the top ten cities always seem to include a number of places where they speak German (Vienna, Zurich, Dusseldorf, etc. ) along with Vancouver, Auckland, and Sydney. These are all places with compact settlement patterns, good transit, and principally walkable neighborhoods. Indeed, there isn’t a single auto-oriented city in the top 50. The highest rated American cities in 2010, which don’t appear until number 31, are Honolulu, San Francisco, Boston, Chicago, Washington, New York, and Seattle.

Looking at this ranking, the message is clear. America’s cities, which are twice as efficient as its suburbs, burn twice the fuel of European, Canadian, and Aussie/Kiwi places. Yet the quality of life in these foreign cities deemed considerably higher. This is not to say that quality of life is inversely related to sustainability, but merely that many Americans, by striving for a better life, might find themselves moving to places that are more like the winners. . . or better yet, might try transforming their cities to resemble the winners. This sort of transformation could include many things, but one of them would certainly be walkability.

Vancouver, always a top contender, proves a useful model. By the mid-20<sup>th</sup> century, it was fairly indistinguishable from a typical U.S. city. Then, beginning in the late 50s, when most American cities were building highways, planners in Vancouver began advocating for high-rise housing downtown. This strategy, which included stringent measures for green space and transit, really hit its stride in the 1990s, and the change has been profound. Over the past fifteen years, the amount of walking and biking citywide has doubled, from fifteen percent to thirty percent of all trips. Vancouver is not ranked #1



for livability because it is so sustainable; the things that make it sustainable also make it livable.

Quality of life—which includes both health and wealth—may not be a function of our ecological footprint, but the two are deeply interrelated. To wit, if we pollute so much because we are throwing away time, money, and lives on the highway, then both problems would seem to share a single solution, and that solution is to make our cities more walkable.

## **PART I. BACKGROUND: WHAT CAUSES PEOPLE TO WALK?**

The pedestrian is a delicate creature. While there are many harsh environments in which people are physically able to walk, there are few in which they actively choose to walk, especially when the option of driving is available. The following four sections describe a hierarchy of conditions that must be met if the average person is going to make that choice. Each is necessary but not alone sufficient. They are:

- A safe walk;
- A reason to walk;
- A comfortable walk; and
- An interesting walk.

### **A Safe Walk**

While crime is sometimes a concern, most people who avoid walking do so because the walk feels dangerous due to the very real threat of vehicles moving at high speed near the sidewalk. Statistically, automobiles are much more dangerous to pedestrians than crime, and the key to making a street safe is to keep automobiles at reasonable speeds and to protect pedestrians from them. This is achieved by meeting the following ten criteria, each of which will be addressed individually:

- A network of many small blocks;
- The proper number of driving lanes;
- Lanes of proper width;
- Avoiding One-Ways;
- Limited use and length of turn lanes;
- Avoiding swooping geometries;
- Including bike lanes;
- Continuous on-street parking;
- Continuous shade trees;
- Replacing unwarranted signals with mostly-all-way stop signs; and
- Pedestrian-friendly signals where signals are warranted.

### ***A Network of Many Small Blocks***

Generally, the most walkable cities are those with the smallest blocks. This is because many small blocks allow for many small streets. Because traffic is dispersed among so many streets, no one street is required to handle a great amount of traffic, and that traffic does not reach a volume or speed that is noxious to the pedestrian. In a recent California study, cities with larger blocks suffered more than three times as many vehicular fatalities as cities with smaller blocks. (Marshall and Garrick: *Street Network Types and Road Safety*.)

Smaller blocks also make walking more convenient: the more blocks per square mile, the more choices a pedestrian can make, and the more opportunities there are to alter one's

path to visit a useful address such as a coffee shop or dry cleaner. These choices make walking more interesting, while shortening the distances between destinations. Downtown West Palm Beach benefits from a small block size (typically about 300 x 500 feet) and it is clearly those places with larger blocks—west of Sapodilla and south of Okeechobee—where walkability suffers.

The greatest current concern regarding block size in downtown surrounds the planned new station for All Aboard Florida, which plans to snip Datura and Evernia Streets just west of Quadrille Boulevard. While this snipping presents a challenge to connectivity in any case, it is principally a threat to block size only if a new street is not built connecting the snipped ends of Clematis, Datura, Evernia, and Fern just west of the tracks. If this new street is continuous and properly designed, it will maintain the small-block structure that is so essential to this area's vitality.

### *The Proper Number of Travel Lanes*

The more lanes a street has, the faster traffic tends to go, and the further pedestrians have to cross. As suggested above, most small-block systems also have small streets, and this is what makes them safe. However, two of downtown West Palm Beach's streets clearly have more lanes than they need to satisfy the demand upon them. South of Okeechobee, Dixie Highway presents a four-lane cross section that could easily be converted to three lanes without any loss of capacity. And Flagler Boulevard, currently a barrier between the downtown and its waterfront, could lose two of its driving lanes and still handle twice the traffic volume it currently experiences. In both cases, removing wasted driving lanes frees up valuable pavement for more valuable uses, such as parallel parking and bike lanes.

### *Lanes of Proper Width*

Different-width traffic lanes correspond to different travel speeds. A typical urban lane width is 10 feet, which comfortably supports speeds of 35 mph. A typical highway lane width is 12 feet, which comfortably supports speeds of 70 mph. Drivers instinctively understand the connection between lane width and driving speed, and speed up when presented with wider lanes, even in urban locations. For this reason, any urban lane width in excess of 10 feet encourages speeds that can increase risk to pedestrians.

Many streets in downtown West Palm Beach contain lanes that are 12 feet wide or more, and drivers can be observed approaching highway speeds when using them. On a few streets, highway-style shoulders also contribute effectively to lane width and thus to drivers' comfort while speeding. Such shoulders are not appropriate to urban environments; which is why few cities have them.

Having a fully informed discussion comparing 10-foot and 12-foot driving lanes will be central to achieving safer streets in West Palm Beach, as 12 feet is apparently the lane width preferred by FDOT, despite considerable evidence to the contrary. A review of all available literature on the topic produces the following findings:

- While hardly beyond questioning, the AASHTO *Policy on Geometric Design of Highways and Streets* is considered the Bible of conventional traffic engineering, and is useful in protecting engineers against lawsuits. On this topic it says the following: “For rural and urban arterials, lane widths may vary from 10 to 12 feet. 12-foot lanes should be used where practical on higher-speed, free-flowing, principal arterials. However, under interrupted-flow [signalized] conditions operating at lower speeds [45 MPH or less], narrower lane widths are normally quite adequate and have some advantages.”
- According to the conservative Midwest Research Institute’s NCHRP Project 3-72, *Relationship of Lane Width to Safety for Urban and Suburban Arterials*, “A safety evaluation of lane widths for arterial roadway segments found no indication, except in limited cases, that the use of narrower lanes [10 to 11 feet rather than 12] increases crash frequencies. The lane widths in the analyses conducted were generally either not statistically significant or indicated that narrower lanes were associated with lower rather than higher crash frequencies.”
- According to NCHRP 330, *Effective Utilization of Street Width on Urban Arterials*, “...all projects evaluated during the course of the study that consisted of lane widths exclusively of 10 feet or more [vs. 12 feet] resulted in accident rates that were either reduced or unchanged.”
- According to the conservative Texas Transportation Institute, “On suburban arterial straight sections away from a traffic signal, higher speeds should be expected with greater lane widths.” (This is the only available study that seems to have tested what most engineers (and drivers) believe, which is that wider lanes invite higher speeds.)
- According to a collection of studies, a pedestrian hit by a car traveling 30 MPH at the time of impact is between seven and nine times as likely to be killed as one hit by a car travelling 20 MPH. (UK Dept. of Transportation, *Killing Speed and Saving Lives*; and Australian Federal Office of Road Safety, *Vehicle Speeds and the Incidence of Fatal Pedestrian Collisions*.)

Taken cumulatively, these findings could be summarized as follows: 12-foot lanes generally experience no more crashes than 10-foot lanes, and may experience fewer; crashes in 10-foot lanes are likely to occur at a lower speed than crashes in 12-foot lanes; and, therefore, 10-foot lanes can be expected to experience fewer injuries and deaths than 12-foot lanes. Given that 10-foot lanes handle no less traffic than 12-foot lanes (FDOT *Conserve by Bike Program Study*, 2007), there is no justification for 12-foot lanes in urban locations.

Alarmed by the fact that four of America’s five most deadly metropolitan regions are in Florida, FDOT has mounted a noble effort to address pedestrian safety. Unfortunately, none of the materials produced by that effort have yet to address lane width, or any other

of the high-speed geometrics that FDOT continues to apply to its downtown thoroughfares.

The *Florida Pedestrian and Bicycle Strategic Safety Plan* typifies this effort. It's motto, stamped on the plan's cover, is "Alert Today, Alive Tomorrow," firmly placing the safety burden on pedestrians and cyclists. Unfortunately, even the most alert pedestrian or cyclist may find it difficult to stay alive on downtown streets that have been engineered to high-speed standards. Replacing 12-foot lanes with 10-foot lanes on its urban streets would be a good first step in a meaningful FDOT campaign addressing the root causes of its worst-in-the-nation pedestrian safety ranking.

That said, it is unfair to single out FDOT in this discussion. Certain city-owned streets downtown—not coincidentally, the ones that feel unsafe to pedestrians: Tamarind, Banyan, and Flagler—are striped with 12-foot lanes. Others, such as segments of Evernia, have parallel parking where angled parking would fit, resulting in lanes as wide as 19 feet. As it works with FDOT to make Okeechobee and Quadrille less dangerous, the City should lead by example and restripe these streets to a narrower standard.

### ***Avoiding One-Ways***

Like many American cities, West Palm Beach many years ago converted a number of its two-way streets to one-way traffic, most notably Clematis, Dixie, and Olive. This transformation, by eliminating left turns across traffic and by allowing for synchronized signals, helped to speed the motion of cars through downtown. Unfortunately, it did so at the expense of pedestrian comfort and business vitality.

Drivers tend to speed on multiple-lane one-way streets, because there is less friction from opposing traffic, and due to the temptation to jockey from lane to lane. In contrast, when two-way traffic makes passing impossible, the driver is less likely to slip into the "road racer" frame of mind. One-ways also have a history of damaging downtown retail districts, principally because they distribute vitality unevenly, and often in unexpected ways. They have been known to harm stores consigned to the morning path to work, since people do most of their shopping on the evening path home. They can also intimidate out-of-towners, who are afraid of becoming lost, and they frustrate locals, who are annoyed by all the circular motions and additional traffic lights they must pass through to reach their destinations.

Learning from the damage wrought by the one-way conversion, dozens of American cities are reverting these streets back to two-way. West Palm Beach was a pioneer in this regard. As directed by its 1992 Downtown Master Plan, the City reverted its struggling Clematis Street back to two-way traffic, with the expected results. This single change, more than any other, can be credited with the renaissance of downtown. Yet, today, there remains reluctance to revert Dixie and Olive back to two-way, principally due to fears of traffic congestion.



It must be remembered that, when the reversion of Clematis to two-way traffic was suggested in 1992, there were those who advised against it, fearing traffic congestion. Indeed, traffic does flow more slowly on Clematis now than before, to the delight of residents, visitors, and merchants alike. Palm Beach County, which manages signalization downtown, may resist the reversion of Dixie and Olive to two-way traffic. But for the City, the choice should be clear: to be a place that is better for arriving at than driving through.

### *Limited Use and Length of Turn Lanes*

As streets are restriped in Florida, they are typically marked with left-hand-turn lanes, which increase the efficiency of intersections. But left-hand turn lanes are by no means the standard approach to intersection design. They should be used only at intersections where congestion is caused by cars turning left. Exclusive right-hand turns lanes are rarely justified, and only make occasional sense where heavy pedestrian activity causes queuing right-hand turners to dramatically impede through-traffic—something that almost never happens in West Palm Beach. When unnecessary turn lanes are provided, the extra pavement width encourages speeding, lengthens crossing distances, and takes up roadway that could otherwise be used for on-street parking or bike lanes. When justified, turn lanes should be just long enough to hold the number of cars that stack in them in standard rush-hour conditions, and no longer, for the same reasons. Many turn lanes in downtown West Palm Beach seem to have been inserted in an attempt to forestall anticipated congestion rather than to solve a specific challenge, and many seem longer than their queues of cars would mandate.

### *Including Bike Lanes*

For a place as progressive and walkable as West Palm Beach, the profound lack of bicycle facilities is a real surprise, and represents the principal category in which the City lags behind others in its class. There are many reasons to institute a downtown bicycle network, including pedestrian safety. Bikes help to slow cars down, and new bike lanes are a great way to use up excess road width currently dedicated to oversized driving lanes.

However, more significantly, West Palm Beach has a nascent biking culture that seems poised to flower if provided with adequate facilities. The experience in most American cities has been that a modest investment in bike lanes results in a dramatic increase in cycling. Experience in a large number of cities is making it clear that the key to bicycle safety is the establishment of a large biking population—so that drivers expect to see them—and, in turn, the key to establishing a large biking population is the provision of buffered lanes, broad lanes separated from traffic, ideally by a lane of parked cars.

### *Avoiding Swooping Geometries*

Pedestrian-centric environments can be characterized by their rectilinear and angled geometries and tight curb radii. Wherever suburban swooping geometries are introduced,

cars speed up, and pedestrians feel unsafe. The road network of any urban area should never be shaped around a minimum design speed, but rather should be designed to accommodate the turning motions of only the largest vehicles that will be using it on a daily basis.

Swooping geometries impact downtown West Palm Beach in two ways. First, a new, higher-speed standard for corner curb radii means that, when a downtown street is rebuilt, pedestrian-friendly tight corners are replaced by a suburban standard in which the curb radius is considerably larger. This large curve increases crossing distances while encouraging vehicles to round corners at higher speed.

Second, wherever curves appear in the downtown grid, drivers are encouraged to drive more quickly. This behavior can be witnessed on, Okeechobee, Quadrille, and Flagler. While the trajectories of these streets cannot easily be changed, this condition places a higher priority upon reforming the geometry in other ways, such as providing narrower lanes, on-street parking, and/or cycle facilities.

### ***Continuous On-Street Parking***

Whether parallel or angled, on-street parking provides a barrier of steel between the roadway and the sidewalk that is necessary if pedestrians are to feel fully at ease while walking. It also causes drivers to slow down out of concern for possible conflicts with cars parking or pulling out. On-street parking also provides much-needed life to city sidewalks, which are occupied in large part by people walking to and from cars that have been parked a short distance from their destinations. And, according to the retail expert Robert Gibbs, the author of *Urban Retail*, each on-street parking space in a vital shopping area produces between \$150,000 and \$200,000 in sales.

A limited number of important streets in downtown West Palm Beach have lost their parallel parking due to driving lanes that are either too wide or too many in number—that is, more than traffic projections would suggest are needed. On other streets, parking lanes are simply missing for no discernable reason. This report includes a specific proposal for bringing them back.

### ***Continuous Shade Trees***

In the context of pedestrian safety, street trees are similar to parked cars in the way that they protect the sidewalks from the moving cars beyond them. They also create a perceptual narrowing of the street that lowers driving speeds. But they only perform this role when they are sturdy, and planted tightly enough to register in drivers' vision.

Recent studies show that, far from posing a hazard to motorists, trees along streets can actually result in fewer injury crashes. One such study, of Orlando's Colonial Drive, found that a section without trees and other vertical objects near the roadway experienced 12 percent more midblock crashes, 45 percent more injurious crashes, and a dramatically higher number of fatal crashes: six vs. zero.

The more effectively a tree surrounds a street, narrowing the drivers frame of vision, the more it will reduce speeding. For that reason and others listed ahead, Palm trees can be expected to produce a fraction of the safety benefits of trees with robust canopies, such as Live Oaks and Royal Poincianas. West Palm Beach would be wise to recognize that, despite its name, Palm trees do not make it a special place in Florida.

Most downtown streets in West Palm Beach lack adequate trees, which is not surprising given the cost of planting and maintaining them. By some reports, the City is much better at planting trees than keeping them alive, which of course means that public funds are being squandered. This maintenance cost is easier to justify when one enumerates the many hidden benefits of shade trees—again, principally not palms—which include the absorption of storm-water, tailpipe emissions, and UV rays; the lowering of urban heat islands and air-conditioning costs; increased income streams to businesses; and dramatically higher real-estate values (and property tax revenue) on tree-lined streets.

### ***Replacing Unwarranted Signals with Mostly-All-Way Stop Signs***

For many years, cities inserted traffic signals at their intersections as a matter of pride, with the understanding that a larger number of signals meant that a place was more modern and cosmopolitan. Recently, that dynamic has begun to change, as concerns about road safety have caused many to question whether signals are the appropriate solution for intersections experiencing moderate traffic. Research now suggests that four-way stop signs, which require motorists to approach each intersection as a negotiation, turn out to be much safer than signals. Unlike at signalized intersections, there is considerable eye-contact among users. Drivers slow down, but never have to wait for more than a few seconds, and pedestrians and bicyclists are generally waved through first.

While it would be useful to have more research, the one study on this subject is compelling. It is described in Persaud *et. al.*: “Crash Reductions related to Traffic Signal Removal in Philadelphia” (1997). This study recounts the 1978 removal of 462 traffic signals due to a 1977 state ruling stating that signals were not warranted on intersections with an annual average daily traffic of less than 9000 on the major street or less than 2500 on the minor street. 199 of these signals had adequate data to make it into the study, and 71 non-converted intersections were identified as a control group.

In almost all cases, the signals were replaced by all-way stop signs. The overall reduction in crashes was 24 percent. Severe injury crashes were reduced 62.5 percent overall. Severe pedestrian injury crashes were reduced by 68 percent. While some pedestrians and drivers prefer signalized intersections, this data is too conclusive to ignore. Until a contradicting study is completed, cities should be compelled to conduct an audit of current signalization regimes to determine which signals may be eliminated.

The signals on City Streets in downtown West Palm Beach are the responsibility of Palm Beach County, while the stop signs are not. A cost-conscious (and liability-conscious) County should be happy to see signals removed at the City's request.

When making this conversion, the City is faced with the choice between two-way and all-way stops. Clearly, if one street contains tremendously more traffic than the other, a two-way stop makes more sense. However, there is no doubt that all-way stops should be used wherever they do not pose an undue burden, as they are considerably safer. In studying the conversion of 2-way stops to 4-way, "the collective results of numerous published studies of such conversions established that crashes are reduced by approximately 40 – 60%, and injury crashes are reduced by 50-80%." (Hauer, 1985)

### ***Pedestrian-Friendly Signals Where Signals Are Warranted***

A survey of the most and least walkable cities in America reveals a clear correlation: walkable cities rarely have pushbutton signal request buttons. Called "beg buttons" by pedestrian advocates, these signals are alternately annoying and confusing to pedestrians, most of whom do not understand how they are supposed to work—and many of whom end up jaywalking out of sheer frustration.

Here is how these signals work in downtown West Palm Beach: A pedestrian approaches a crosswalk, pushes the button, and waits for the light to change. Typically, a long time passes before the light changes—sometimes more than two minutes. After perhaps 30 seconds, the pedestrian assumes that the light is broken, and jaywalks.

What the pedestrian does not realize is that the pushbutton is not designed to cause the light to change. Rather, it is designed only to lengthen the eventual red light, so that the pedestrian has more time to cross. Given the tremendous amount of jaywalking that these signals cause, these lengthened crossing times are, at best, irrelevant. This dangerous behavior is perhaps the clearest example of the vast difference between traffic-safety theory and traffic-safety reality in Palm Beach County, and should be of grave concern to County engineers.

If County engineers want to create a system in which jaywalking is reduced and pedestrian safety enhanced, they will look to other places where cars and pedestrians interact with a much lower incidence of injury, such as Boston, Washington DC, Chicago, San Francisco, and the smaller towns that surround these cities. What they will find in these places is an almost complete absence of pushbutton signals, short cycles of 60 seconds or less (total), and "concurrent" crossing regimes, in which pedestrians move with parallel traffic, and turning cars must wait for the crosswalks to clear.

Such signals are made more effective by a technology called the Leading Pedestrian Interval (LPI), in which pedestrians receive a 3-second head start to enter (and "claim") the intersection before cars receive a green light. There are a number of locations where these could be put to good use in the downtown.

In terms of encouraging safe pedestrian behavior, the length of the signal cycle is of great significance. When traffic congestion is the dominant concern, traffic engineers prefer longer signal cycles, as they have the advantage of moving large volumes of cars on each approach. These longer periods of vehicle movement mean longer waits for pedestrians trying to cross a street. This is more than just an inconvenience, because it causes jaywalking. For this reason, the long-cycle signalization regimes that make sense in suburban Palm beach County are ill suited to pedestrian-heavy areas like Downtown West Palm Beach, and should be corrected at the first opportunity.

Finally, also of concern in West Palm Beach is the speed to which the one-way green-signal progressions along Dixie Highway and Olive Avenue are timed. An informal test of the light cycles on those streets would suggest that these lights progress at a pace that welcomes driving at speeds slightly above the posted limit. Until these streets are reverted to two-way travel, it must be confirmed that the green-signal progressions along them are not be timed at pace which rewards illegal speeds.

### **A Useful Walk**

As Jane Jacobs noted, “Almost nobody travels willingly from sameness to sameness. . . even if the physical effort required is trivial.” For people to choose to walk, the walk must serve some purpose. In planning terms, that goal is achieved through mixed use. Or, more accurately, placing the proper balance of the greatest number of uses all within walking distance of each other.

An essential step towards achieving better walkability, therefore, is to consider all of the uses present in the heart of your city, and to see which uses are lacking or in short supply. These uses include office, housing, retail, dining, entertainment, hospitality, schools, recreation, worship, and others. The better these uses can be balanced in your downtown, the more walkable it will be. In most downtowns, the use that is most underrepresented is housing.

### ***Ample Housing***

In this regard, West Palm Beach does better than most. A target for snowbirds like many South Florida cities, downtown West Palm has a relatively healthy jobs/housing balance. However, since so many of the city’s apartments are occupied only part of the year and/or are owned by people who have several other homes as well, it must attain a much larger supply of housing to achieve a proper balance of activities downtown.

Additionally, the cost of housing deserves our attention. Like many coastal downtowns, West Palm Beach has a large supply of luxury housing. But luxury condominiums, and apartments as well, are necessarily directed at a limited audience of potential residents, and also not at those who are most ready to live downtown: recent college graduates and empty nesters of moderate income. The City and its pro-urban institutions, if they want more residents downtown, must actively help developers to build attainable housing in



the city center. This help could take a more familiar form, like Tax-Increment Financing, or something more unusual. One approach that may deserve additional attention in West Palm Beach is the leveraging of underutilized parking structures, allowing developers to satisfy their lenders' parking requirements with spaces that have already been built. The savings resulting from this strategy—to be discussed in greater detail in Part III—could contribute significantly to the affordability of market-rate housing downtown.

### ***Market-Rate Parking***

Parking provision can contribute to the usefulness of the city in many ways. On-street parking is cherished by merchants, who understand that many people need to be enticed by curb parking in order to shop and dine. As noted above, each on-street parking space in a vital shopping area produces between \$150,000 and \$200,000 in sales. With this number in mind, it is interesting to learn that the study area includes room for almost 500 additional parking spaces that are currently missing. These can be achieved mostly by right-sizing streets and driving lanes so that they properly invite their current volume of drivers to travel at the desired speeds, as will be discussed ahead.

Also central to the usefulness of parking is avoiding overcrowding at curbs and the circling traffic that results from the most desired parking spaces being underpriced. The parking expert Don Shoup, in *The High Cost of Free Parking*, documents how fully 30 percent of traffic in many downtowns consists of people circling for parking, and how merchants suffer when underpriced parking results in a lack of curb vacancies. A pro-business approach to the hourly pricing of parking downtown suggests some significant changes to the City's current policies and practices.

### ***Intelligent Transit***

Transit service can play a large role in a downtown's usefulness, as it grants pedestrians access to a much larger proportion of their daily needs and destinations, freeing them from the burden of car ownership. In West Palm, Beach, the Downtown Trolley already allows many non-drivers to travel effectively among walkable neighborhoods as well as the Intermodal Center. That said, certain aspects of the current Trolley route seem capable of improvement: It does not currently reach the many conventioners and students located just south of Okeechobee Boulevard, and its high percentage of one-way loops is not in keeping with current best practices in transit route design. Additionally, the introduction of All Aboard Florida's high-speed rail station just west of Quadrille Boulevard suggests a rethinking of both trolley routes to allow them to converge in this location.

### ***Wayfinding***

Finally, even the most mixed-use, well-managed, and well-connected downtown will fall short of its potential utility if it is not clearly legible; locals and visitors alike need to be able to find their way in and out of downtown. If arriving by vehicle, they must be directed clearly to key destinations and to public parking. If moving around on foot, they

must be directed clearly among prime pedestrian activity centers. West Palm Beach could perform better in both of these categories.

### **A Comfortable Walk**

The need for comfortable walk is perhaps the least intuitive part of this discussion, because it insists that people like to be *spatially contained* by the walls of buildings. Most people enjoy open spaces, long views, and the great outdoors. But people also enjoy – and need – a sense of enclosure to feel comfortable as pedestrians.

Evolutionary biologists tell us how all animals simultaneously seek two things: prospect and refuge. The first allows you to see your predators and prey. The second allows you to know that your flanks are protected from attack. That need for refuge, deep in our DNA from millennia of survival, has led us to feel most comfortable in spaces with well defined edges. This issue has been discussed from before the Renaissance, in which it was argued that the ideal street space has a height-to width ratio of 1:1. More recently, it has been suggested that any ratio beyond 1:6 fails to provide people with an adequate sense of enclosure, creating a *sociofugal* space: an environment which people want to flee.

Therefore, in addition to feeling safe from automobiles, humans are not likely to become pedestrians unless they feel enclosed by firm street edges. This is accomplished in several ways:

#### ***Streets Shaped by Buildings***

The typical way in which cities shape streets is with the edges of buildings that pull up to the sidewalk. These buildings need to be of adequate height so that the 1:6 rule is not violated, ideally approaching 1:1. Gaps between buildings should not be very wide. If a street is intended to be walkable, then no building along it should be allowed to sit behind a parking lot.

#### ***No Exposed Surface Parking Lots***

Most American cities suffer from the windswept spaces created where historic buildings have been torn down to provide ample surface parking. These parking lots are often the single greatest detriment to pedestrian comfort, and city codes and private land-use practices must be reviewed in order to fundamentally alter the conditions that lead to their proliferation. Among these are the on-site parking requirement, which should ideally be replaced by a regime that treats parking as a public good, provided strategically in the proper locations to encourage more productive land use. Some streets in the study area are currently lined by so many parking lots that converting them to more walkable status is unimaginable in the short term. Other streets contain only one or two parking lots that mar an otherwise viable pedestrian trajectory; these lots should be made high-priority development targets. Conveniently, it is not necessary to eliminate such parking lots

fully; rather, only the front 60 feet (or so) need to be replaced by a building against the sidewalk.

### ***Street Trees***

Already mentioned under Safety, street trees are also essential to pedestrian comfort in a number of ways. They reduce ambient temperatures in warm weather and reduce the effects of wind on cold days. Trees also improve the sense of enclosure by “necking down” the street space with their canopies. A consistent cover of trees can go a long way towards mitigating the impacts of an otherwise uncomfortable street, but the trees must be substantial. It must be stated unequivocally that, with few notable exceptions, none of the above objectives are satisfied by palm trees. The City’s tree list should be reviewed and purged of any species that is merely decorative and/or fails to offer the microclimate impact of a large shade canopy.

### **An Interesting Walk**

Finally, even if a walk is useful, safe, and comfortable, people will not chose to go on foot unless it is also at least moderately entertaining. There needs to be something interesting to look at.

Humans are among the social primates, and nothing interests us more than other people. The goal of all of the designers who make up the city must be to create urban environments that communicate the presence, or likely presence, of human activity. This is accomplished by placing “eyes on the street,” windows and doors that open, and avoiding all forms of blank walls. These include the edges of structured parking lots, which must be shielded by a minimum 20-foot thickness of habitable building edge, at least at ground level. Cities that support walkability do not allow any new parking structures to break this rule in their designated walkable corridors.

The activity that is placed against the sidewalk is also important. Retail use is much more interesting than office or residential use. Moreover, successful retail requires connectivity, so the goal of continuous retail against designated streets needs to inform planning requirements. The gap in this connectivity that exists between the two key retail corridors of Clematis Street and Rosemary Avenue is a notable flaw in the organization of downtown West Palm Beach.

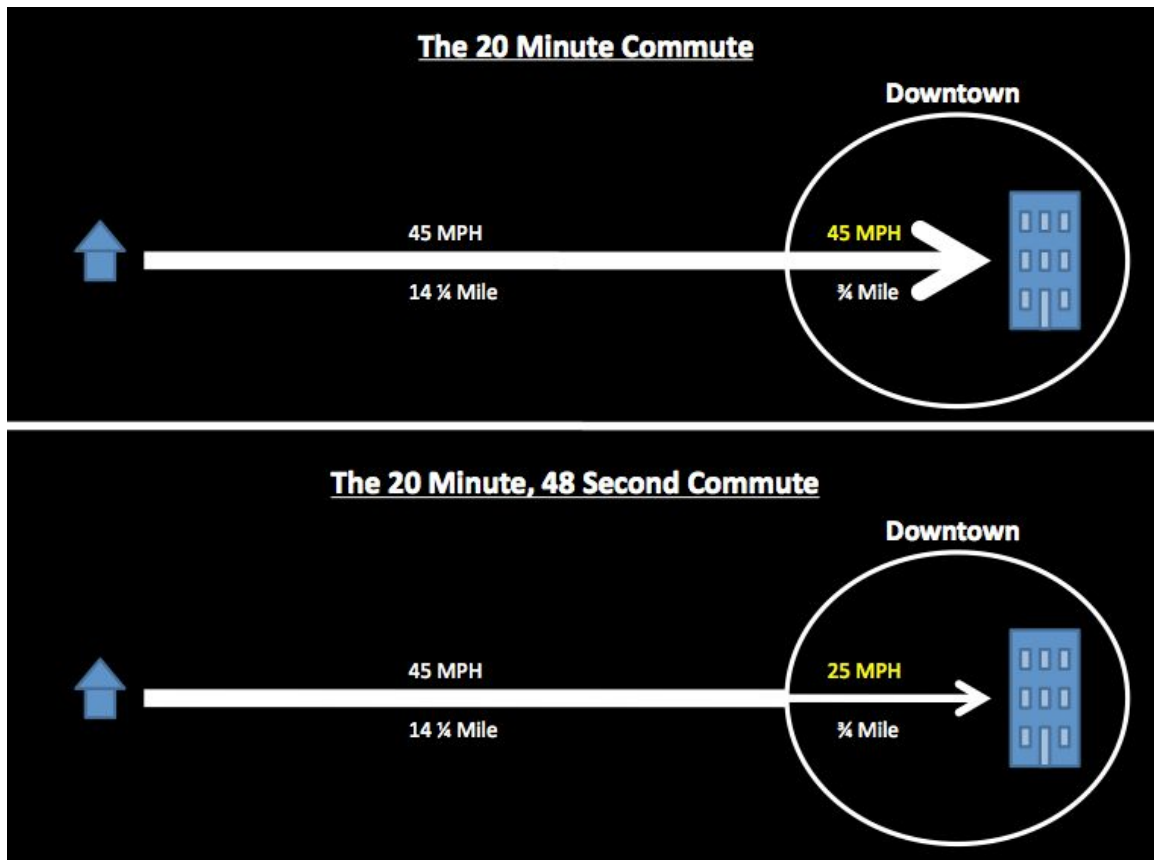
A final enemy of pedestrian interest is repetition. The era of the multi-block mega-project is fortunately over, but cities must take pains not to allow any single architectural solution to occupy more than a few hundred feet of sidewalk edge. Boredom is another reason why “almost nobody travels willingly from sameness to sameness,” and multi-building developments should be asked to distribute schematic design responsibility to multiple architects (even within the same firm), to avoid a city-as-project outcome. Many hands at work is another way to suggest human activity, especially when the number of humans on the sidewalk is less than ideal.

**PART II. A SAFE WALK: STREET REDESIGN**

Street life is dramatically impacted by the speed of vehicles. Whether they know it or not, most pedestrians understand in their bones that a person hit by a car traveling at 30 mph is roughly eight times as likely to die than if the car is traveling at 20 mph. Any community that is interested in street life—or human lives—must carefully consider the speed which it allows cars to drive in places where pedestrians are present.

And in most American cities, the place where pedestrians are most likely to be present is the downtown. Acknowledging this fact opens up real possibilities, as it allows us to have dramatic impact on walking while impacting driving only minimally. By focusing on vehicle speeds in downtown, we can make walking safer for the most pedestrians with the least amount of driver inconvenience.

The illustration below tries to make this point clear. It shows how the difference between an attractive and a repellant downtown may be less than a minute of drive time. Would most people be willing to spare 48 seconds each day if it meant that their city was a place worth arriving at? Probably.



*This diagram from the engineering firm AECOM describes how a significant change in downtown speeds typically results in a minimal change to commute times.*

In the case of West Palm Beach, the number is considerably smaller. The truly walkable part of downtown is only about a half-mile across, in either direction. A 10 mph reduction in driver speed, from 35 to 25, across this distance, translates into a difference of just 21 seconds. Given this tiny number, can a 35 mph speed limit, so dangerous to pedestrians, be justified? To forego a safe and inviting downtown for a piddling 21-second savings seems a poor bargain indeed.

The above logic explains why a growing number of cities have instituted “20 is Plenty” ordinances in their downtowns, and a few have even settled on 18 mph as the target speed. In the interest of compromise, this report recommends the institution of a 25 mph speed limit for the most walkable sector of downtown, essentially bounded by Sapodilla Avenue, 3<sup>rd</sup> Street, the Intracoastal, and the Palm Beach Convention Center. As discussed, lowering speed limits are only the half of it. The more important step is to engineer the streets for the desired speed, which means outlawing wider lanes and other inducements to speeding.

### **A Strategy for Street Redesign**

By the reasoning already put forward in this document, the majority of the streets in downtown West Palm Beach are in need of a redesign. This assessment is presented with an understanding that changes to streets often come slowly and sometimes at considerable expense. But they do come—routine deterioration demands resurfacing, which offers the opportunity to restripe—and sometimes a proper understanding of the value of safer streets causes them to come more quickly. Furthermore, a protocol which focuses on restriping rather than rebuilding, like the one that follows, can allow for dramatic change to occur at a reasonable cost.

Before making specific recommendations, it may be useful to quickly lay out some of the theory that underlies the approach taken here. This approach can be summarized under four headings: *Induced Demand*, *Peak VMT*, *Induced Speeding*, and *The Network*.

#### ***Induced Demand***

While entire books now explain and document the phenomenon, few public works agencies make daily decisions as if they understand Induced Demand. As explained by the First Law of Traffic Congestion, efforts to combat traffic congestion by increasing roadway capacity almost always fail, because, in congested systems, the principal constraint to driving is the very congestion that road-builders hope to eliminate. Studies nationwide document how “metro areas that invested heavily in road capacity expansion fared no better in easing congestion than those that did not. . . areas that exhibited greater growth in lane capacity. . . ended up with slightly higher congestion. . .” despite paying more to relieve it (Surface Transportation Policy Project, Washington, DC).

Because road-building does not typically decrease congestion, cities that wish to cut traffic are told to invest not in wider streets, but in providing alternatives to driving. In



places like West Palm Beach, achieving that goal means making downtown more attractive to pedestrians and cyclists, a goal that would mandate more walkable streets, not wider ones. This report does not try to be ambitious in this regard. It does not reduce the capacity of any street below what that street is currently holding. But it insists that at no point should preserving the opportunity for increased capacity be considered a viable strategy for avoiding future congestion.

### ***Peak VMT***

The mandate to avoid investments in increased capacity is only strengthened by the discovery that, in most American metro areas, the amount of driving is on the decline. While figures are not available specifically for West Palm Beach, the data for Florida shows that total Vehicle Miles Traveled (VMT) on public roads actually peaked in 2007, and has declined more than 7 percent since. This decline occurred even as the state's population grew 2 percent. Cities that improve their walkability can produce even more impressive results. For example, in Washington DC between 2005 to 2009, as the District's population grew by 15,862 people, car registrations fell by almost 15,000 vehicles.

Since this report focuses on increasing walking and biking downtown, there is every reason to expect that following its recommendations will lead to a reduction in downtown driving. That said, there are still reasons to anticipate some congestion. There is some real logic behind the humorous suggestion that, the more walkable a place becomes, the more people will want to drive to it. However, the experience of Peak VMT makes it clear that any traffic study that includes a "background growth" factor in its assumptions needs to be seriously questioned.

### ***Induced Speeding***

As already discussed, the new science of traffic engineering—as opposed to the old mythology of traffic engineering—maintains that excess lanes, wider lanes, clear zones, and other reductions in the potential for conflict actually encourage speeding and increase the danger of driving in cities. This may not be the case on highways, where most drivers travel at a set velocity based on speed limits, but it is most certainly true in downtowns, where the principal determinant of driver speed is the perception of safety.

The mandate of the above paragraph could not be more profound. For years, American traffic engineers, applying the logic of highways, have widened travel lanes, broadened sight-triangles, and even removed trees from city streets. The studies now show that this was a mistake. One study found that "increased lane widths are responsible for approximately 900 additional traffic fatalities per year." (Robert Noland, *Traffic Fatalities and Injuries: The Effect of Changing Infrastructure and Other Trends*, 2002.) If safety is a concern of those who build and maintain our city streets, then they can no longer allow a 12-foot lane to sit where a 10-foot lane will serve.

### *The Network*

For roughly forty years, the dominant ideology of roadway planning was to eschew street networks in favor of *dendritic* (branching) systems. In such systems, which characterize suburban sprawl, parking lots and cul-de-sacs lead to collectors, which lead to arterials, which lead to highways, and there is typically only one efficient path from any one destination to any other. We now know that these systems present many disadvantages to the traditional network alternative, principal among them their inflexibility. A single engine fire on an arterial can bring an entire community to a halt.

The inflexibility of these dendritic systems has led to a general tendency within the traffic engineering profession to think of networked systems as being considerably less flexible than they truly are. Often, each street is considered individually, with little attention paid to the fact that, within a grid, traffic can easily switch from street to street in response to congestion. Remembering this fact—that each car within a grid is an “intelligent atomic actor” maximizing its utility at every corner—allows us to manipulate networked street systems with much greater freedom than we would have in dendritic sprawl. Gridded streets can and do absorb each other’s traffic every day, something we see clearly when one street is narrowed or closed for repairs.

The analysis and recommendations that follow, for simplicity’s sake, do their best to ensure that each street, individually, will continue to meet the travel demand on it. But, in considering these recommendations and any others that arise from this report, it will be important to not forget that parallel streets are typically available to ease the pressure on busy streets.

### *The Technique behind the Recommendations*

The recommendations that follow suggest the specific changes that were determined to be ideal for each of the streets needing improvement. However, circumstances may change, so it is essential to understand the technique that underlies these recommendations.

In its simplest form, this technique consists of the following three steps:

1. Determine if a street has more lanes than current traffic loads deem appropriate (understanding that a typical one-way lane handles 650 cars per peak hour). If so, rededicate that extra pavement to other use. This includes turn lanes that are not needed or turn-lane segments of excessive length.
2. Determine if a street has lanes wider than 10 feet. If so, rededicate that extra pavement to other use.
3. In making use of extra pavement, balance the two goals of providing ample on-street parking and creating a comprehensive bicycle network that corresponds with current best practices, including a network of protected lanes.

## North-South Thoroughfares

### *A Note on All Recommendations*

Each street redesign recommendation is noted as Short-Term (S), Mid-Term (M), or Long-Term (L), based on a weighted consideration of its priority, ease, and expense. While all recommendations would benefit from being initiated immediately, it is understood that this is not possible, so it is suggested that all short-term recommendations be addressed before any others are begun. These recommendations are repeated as Immediate Action Items at the end of this report, with an understanding that the remainder will not be forgotten.

Recommendations are provided for only those streets and segments of streets that merit change.

## *S. Tamarind Avenue*

### Current Condition

Tamarind sits in a key location between the Intermodal Center and the rest of downtown. It currently invites high-speed traffic with five 12-foot driving lanes. Among those crossing it regularly are many students from the School of the Arts. The avenue lacks traffic signals at both Clematis and Datura, where commuters also cross it.

### Analysis

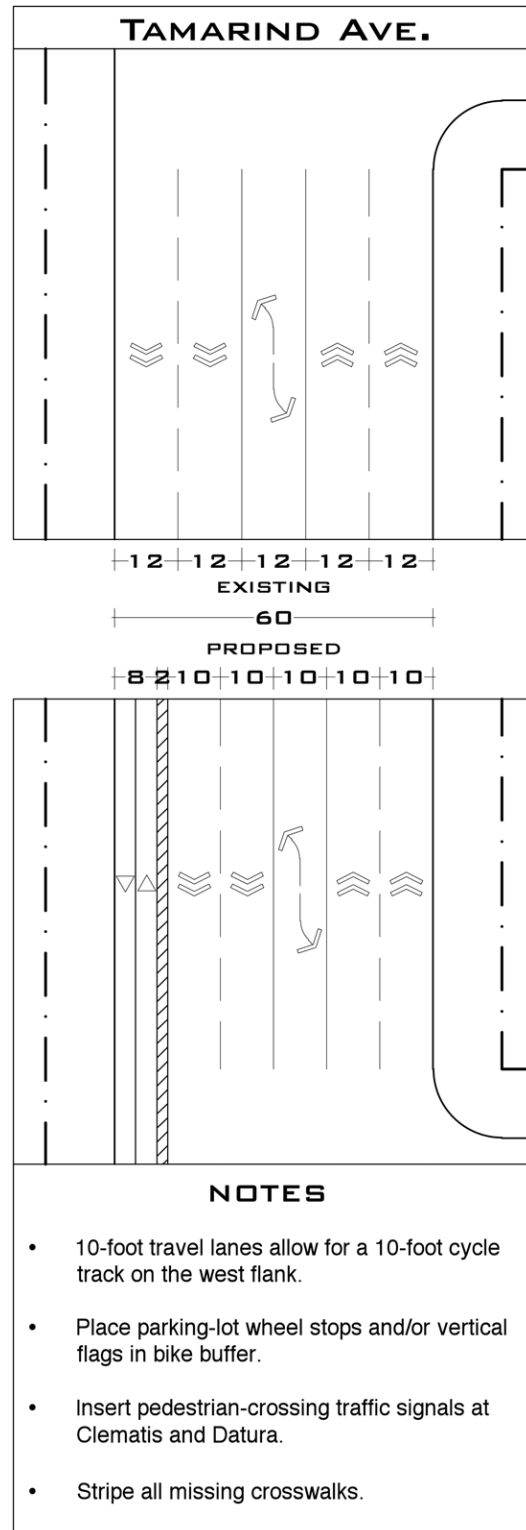
As discussed, 12-foot-wide lanes encourage drivers to speed, and 10-foot-wide lanes, are once again becoming the standard for high-volume urban streets, as they result in safer conditions for all road users. West Palm Beach has many streets in which a reversion back to the 10-foot standard allows large portions of the roadway to be put to better use, such as cycle or parking lanes. In the case of Tamarind, restriping five lanes from 12 to 10 feet yields 10 extra feet, ideal for a two-way cycle track. The presence of the railroad tracks to the west also results in there being very few curb cuts on that side of the street, making it ideal for cycling.

In terms of crossings, many School of the Arts students cross at Fern, while Clematis is the principal route from Downtown, and Datura is the street that connects directly to the front of the Intermodal Center. All three of these intersections lack complete crosswalks on both north and south corners. As noted, crossing signals are also missing at Clematis and Datura, and the pushbutton at Fern does not yield satisfactory results. Because all car

motions onto Tamarind are turning motions, these corners provide a rare condition in which it makes sense to use pushbuttons to yield a 20-second phase which is pedestrian-only. Because pedestrian crossings are not frequent enough to tie up traffic, the pushbutton request should activate the yellow-to-red sequence immediately upon being pushed.

Recommendation

- Restripe crosswalks to include all corners at Clematis, and Datura, and Fern. Insert traffic signals at Clematis and Datura, and create a 20-second pedestrian-only signal cycle that activates immediately upon request at Clematis, Datura, and Fern. (Short Term = S)
- Restripe all lanes at 10 feet, yielding approximately 10 extra feet of pavement. (Mid Term = M)
- Stripe a two-way cycle track in the 10 western feet of pavement, consisting of two 4-foot bike lanes and a 2-foot buffer containing vertical posts and/or parking-lot wheel stops. This buffered lane should end at Banyan Boulevard, where the pavement narrows. (M)



*S. Sapodilla Avenue*Current Condition

North of Fern, Sapodilla contains approximately 30 feet of pavement. In some places, this is properly striped as two driving lanes and one parking lane. In other places, it is striped as two 15-foot driving lanes. In other places, including most of the stretch from Banyan to Datura, there is room for parking, but the parking spaces are simply missing and signed as illegal.

Analysis

The absence of curb parking in these places would appear to be a mere oversight, were it not for the No Parking signs. Whatever standard has created this condition is not being enforced elsewhere in the downtown, and seems to make no sense here. Placing parking where it easily fits improves the parking supply, assists commerce, protects the sidewalk, and causes drivers to do less speeding. That said, this is not an area with a large amount of pedestrian activity, so there is less urgency to these obvious and inexpensive fixes.

Recommendation

- Between Evernia and Fern, restripe to two 11-foot driving lanes and an 8-foot parking lane. (M)
- Between Banyan and Datura, restore parking to entirety of east flank. (M)

*S. Rosemary Avenue*Current Condition

As it passes through City Place, Rosemary is a fairly ideal street for pedestrians. That notwithstanding, its current intersection with Hibiscus is controlled by a 4-way stop that is being considered for signalization because of perceptions of danger. From Banyan to 3<sup>rd</sup>, approx. 41 feet of pavement holds 3 driving lanes and shoulders in a high-speed configuration designed to ease access to the County garage. From 3<sup>rd</sup> to 4<sup>th</sup>, approx 25 feet of pavement holds two wide driving lanes against shops that suffer from a lack of curb parking. From 8<sup>th</sup> to 11<sup>th</sup>, approx. 30 feet of pavement holds two driving lanes and an occasional, faded striped parking lane. Also, from 7<sup>th</sup> to 9<sup>th</sup>, Rosemary is strangely one-way only.

Analysis

Rosemary Avenue is a key pedestrian corridor through the downtown. Because there are so few possible north-south cycle routes in downtown, and because it already carries many bikes south of Clematis, this street is also ripe for cycling designation. In most places, cars already travel so slowly that bikes are comfortable, and only sharrow markings are needed. In the one place where the road is too wide-- between Banyan and 3<sup>rd</sup>--marked lanes are needed. Fortunately, the street contains 11 feet of excess pavement that can be put to this use.

In areas with slow traffic, 9-foot driving lanes and 7-foot parking lanes are a practical alternative to the wider standard elsewhere, and result in a safer environment due to reduced speeding.



One place where this solution makes tremendous sense is on Rosemary Avenue between 3<sup>rd</sup> and 4<sup>th</sup>, where stores against the sidewalk cannot attract sufficient customers without curb parking.

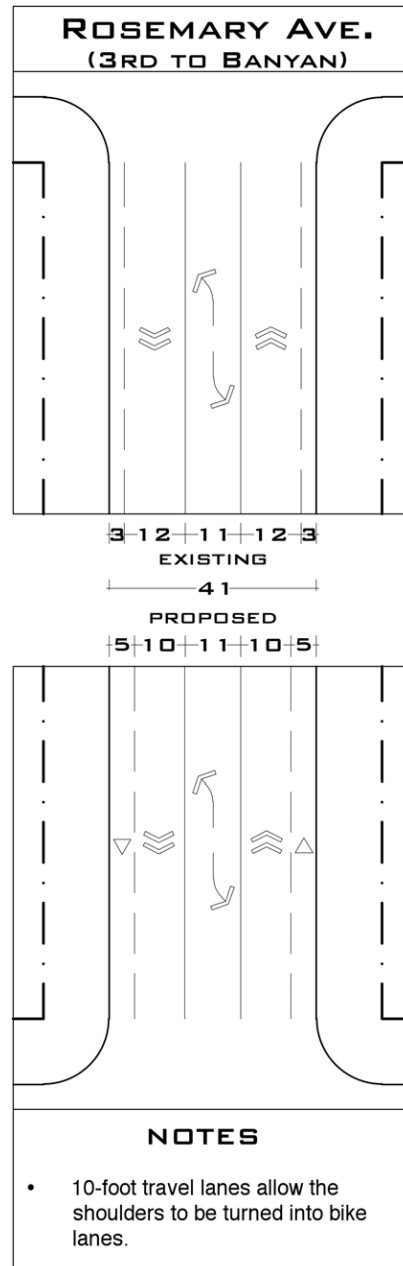
The one-way segment between 7<sup>th</sup> and 9<sup>th</sup> hampers the efficiency of the downtown grid, and serves no real purpose, and should be reverted to two-way. (Indeed, it has not been possible to find someone who can explain it.)

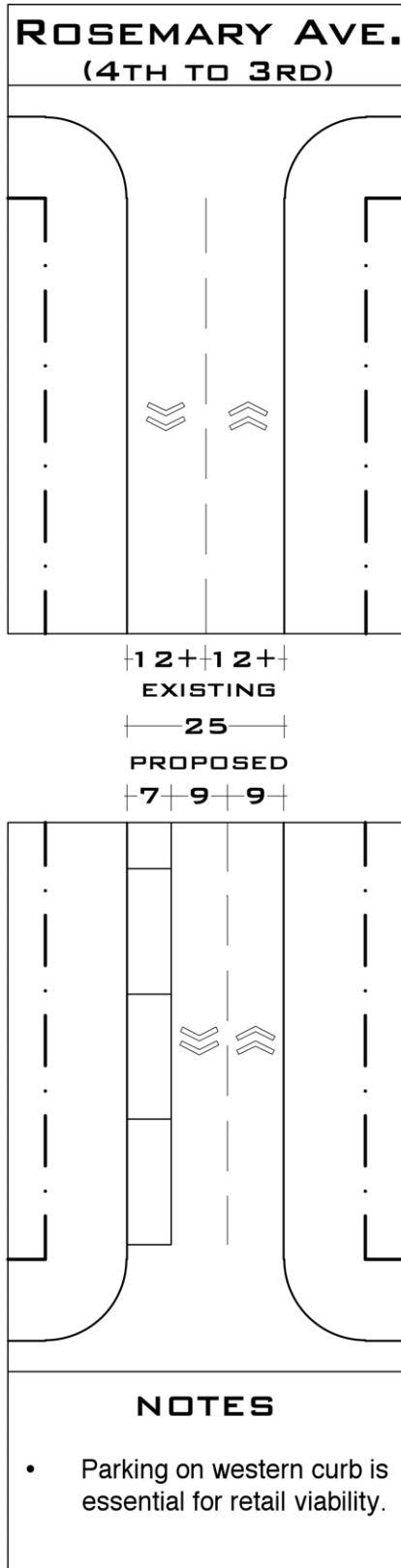
All recommendations are listed as Short Term, because they are inexpensive and quick to implement, and because Rosemary Avenue is the only walkable north-south corridor in the entire western two-thirds of downtown.

Recommendation

- From the Convention Center Hotel to 11<sup>th</sup> Street, Rosemary Avenue should be designated as a key cycle route. Along much of this route, bikes will simply mix with slow-moving traffic. For all locations without designated lanes, mark driving lanes with one sharrow per direction per block. (S)
- Restripe Rosemary from Banyan to 3<sup>rd</sup> as three 10-foot driving lanes flanked by two bike lanes, each a bit wider than 5 feet. (S)
- Restripe Rosemary from 3<sup>rd</sup> to 4<sup>th</sup> as two 9-foot driving lanes flanked by a 7-foot parking lane to the west. (S)
- Revert the one-way segment from 7<sup>th</sup> to 9<sup>th</sup> street to two-way traffic.

- From 8<sup>th</sup> to 11<sup>th</sup>, prominently stripe an 8-foot parking lane on the west flank. (S)
- Do not signalize the Rosemary/Hibiscus intersection unless a study demonstrates that it experiences a high injury rate compared to similar intersections with similar volumes. (S)





**Quadrille Avenue**

Current Condition

As a state highway, Quadrille will be difficult to change, but it is clear that its current striping regime is not in keeping with the travel speeds that are desired in an urban context. Its lane widths vary from 10 feet to as high as 15 feet, with most 12 feet wide. Its number of lanes varies from three to five, including a stretch from Fern to Hibiscus where left-hand turn lanes are not present. Peak-hour car counts from Banyan to Gardenia vary from approx. 1000 to 1200, which is appropriate to a 3-lane section (and not 4 or 5).

The fact that the street contains more lanes and wider lanes than appropriate is cited as a likely factor in the streets high accident and injury rate. The presence of the median in much of its southern section makes restriping difficult, but from Clematis to just west of Dixie, a 60 foot roadway presents an opportunity. The following configurations seem ready for change:

- From Olive to Dixie, the roadway holds four to five lanes, each as narrow as 10-foot wide, demonstrating the acceptability of such lanes to FDOT. The roadway also includes a number of boldly striped, wedge-shaped shoulders, and a highway-style center wedge approaching the left-hand turn lane at Dixie.
- From Dixie, to 3<sup>rd</sup>, approx. 60 feet of pavement holds five driving lanes.

- From 3<sup>rd</sup> to Banyan, approx. 60 feet of pavement holds three 15-foot driving lanes plus two parking lanes. The street broadens at one point to 75 feet to hold 2 handicap parking spaces. Against a single 25-foot-wide driving lane.
- From Banyan to Clematis, approx. 60 feet of pavement holds three driving lanes, a southbound bus-stop lane, and a very long northbound right-hand turn lane at Banyan.

Also remarkable are the enormous curb return radii on this street, especially at Fern Street, where they may top 50 feet—perhaps a national record for an urban thoroughfare. These are a legacy of an earlier roundabout that was removed. As a result, and similarly at Gardenia, pedestrians crossing Quadrille must walk more than 40 feet north or south to reach a crosswalk. Finally, Gardenia lacks a south-side crosswalk.

### Analysis

Given its general low quality as an urban space (see the *Frontage Quality Assessment* ahead), Quadrille is not a high-priority corridor for improvements. It is much more important to consider pedestrians crossing it than pedestrians along it. Moreover maintaining the current 1 to 2 lanes of excess capacity in Quadrille takes pressure off of Dixie and Olive, making transformations to those streets less contentious from a traffic perspective. That said, there is no reason why less dangerous standards should not be applied to this street when it is eventually restriped.

The basic strategy is to restripe the street to the 10- to 12-foot lane-width standard that already exists along parts of it. Doing so results in a large amount of pavement becoming available for curb parking between Olive and 3<sup>rd</sup> Streets. South of 3<sup>rd</sup>, in addition to lanes that are just too wide (and can be narrowed by widening parking lanes with buffer zones) there are places where curb parking has been eliminated to create an unnecessary right-hand turn lane as well as a bus-stop lane that is much longer than it needs to be. Fixing both of these problems creates yet more curb parking.

In terms of its crossings, the highest priority to improving Quadrille is to create more pedestrian-friendly crossings and signalization regimes at Clematis and Fern. At Fern, this improvement would include reshaped corners with a curb radius of perhaps 20 feet, rather than the current 50. Because it is a State Highway, removing the pushbutton requests will be difficult, but the City must fight for pushbuttons that actually activate the crossing signal, rather than merely lengthening the crossing time after a too-long wait.

### Recommendation

- Reshape the corners at Fern to a curb radius of perhaps 20 feet, rather than the current 50. This can be accomplished with stripes and vertical posts in anticipation of construction. (S)
- At Gardenia, create a southern crosswalk (with signal), and bring both crosswalks closer to the intersection. (S)

- Correct the signalization regimes at all Quadrille crossings such that the pushbutton request initiates the crossing signal. (S)
- From Olive to Dixie, eliminate the center wedge approaching the left-hand turn lane, and shorten that turn lane to the proper length for the queues it actually holds. Doing so creates room for one to two flanks of 8-foot-wide parallel parking lanes at the curb. (M)
- From Dixie to 3<sup>rd</sup>, restripe the roadway to hold five 10.2-foot-wide driving lanes and a 9-foot-wide parking lane on the east curb face. (M)
- From 3<sup>rd</sup> to Banyan, fill in the sidewalk segment that has been removed for handicap parking. Make all parking spaces 12 feet wide, narrowing each driving lane to 12 feet. Mark 3 spaces with the handicap configuration. For the remainder, put a buffer zone in the 4 feet of the parking space against traffic. (M)
- From Banyan to Clematis, eliminate the right-hand turn lane approaching Clematis, and shorten the bus stop area to the amount actually needed for buses. Stripe the remainder of the curb area with 12-foot-wide parking spaces consisting of a 4-foot buffer against traffic, resulting in 12-foot driving lanes. (M)

### *Dixie Highway and Olive Avenue*

#### Current Condition

Dixie and Olive function as a one-way pair through downtown, each providing two 12-foot lanes in the same direction. Parking along these streets occurs in pockets cut out of the sidewalk, and is in most places quite limited. Street trees tend to be absent when there is parking, and vice versa. These streets are occasionally used for the loading and unloading of trucks, and they are also the path of the Downtown Trolley.

The perception among many pedestrians is that these streets are not safe, and businesses suffer from a lack of curb parking.

#### Analysis

Whether or not Dixie and Olive should be restriped to two-way is the biggest and most often asked question regarding traffic patterns in downtown West Palm Beach. The current one-way configuration provides the advantage of allowing drivers to ride a wave of green lights through downtown and to take left turns unimpeded by oncoming traffic. It provides the disadvantages of increasing danger to pedestrians and cyclists, undermining retail viability, lengthening trips, and confusing visitors. Each of these advantages and disadvantages effects different populations, so the choice between solutions is a political one, and will ultimately be made by weighing the interests of drivers passing through downtown against the interests of downtown residents, workers, and business-owners.

To be intelligent, this political discussion must be informed by two other discussions. The first concerns urban vitality, while the second concerns relative impacts.

*Urban Vitality:* Few people will argue that, in the heart of a city, the desires of commuters just passing through should trump the safety of pedestrians and the success of businesses. However, there are many people who reasonably fear that slowing down traffic might create such congestion that the city fails to function properly, and that all residents and businesses will suffer as a result. While this fear is reasonable, it is not based in fact. The experience of hundred of cities all across America—including West Palm beach when it reverted Clematis to two-way—has been consistent: there is not a single record in the extensive annals of urban planning of a city’s vitality suffering in any way from a one-way to two-way conversion. To the contrary: there are many reports of business success and a rebirth of street life, but never has the additional traffic friction presented by two-way streets caused a city to perform less well socially or economically.

*Relative Impacts:* For that reason, this discussion becomes a simple argument between those who want to get through the downtown as quickly as possible, and those who want a downtown worth arriving at. While only those who prioritize speed over vitality can argue for the former, it is worth considering what the true speed impacts are likely to be. These depend on the streets’ current level of congestion and the availability of alternative routes, as follows:

- Currently, taken together, Dixie and Olive handle approximately 7188 daily trips northbound and 6678 daily trips southbound. Traffic engineers generally expect a well-networked 2-lane, two-way street to be capable of easily handling 10,000 trips per day (without left-hand turn lanes). That suggests that the capacity of a reconfigured Dixie and Olive would be approximately 20,000 daily trips total, which is 44 percent higher than the current traffic volume. These numbers become even more encouraging when one notes that a significant portion of current traffic is trips that have been lengthened by the circling that is needed to reach one’s destination in a one-way system; all such circling will be eliminated.
- That said, those drivers who wish for a quicker path through downtown will be looking for alternatives. Fortunately, both Quadrille and Flagler include considerable excess capacity—even if Flagler is reduced to 3 lanes as will be suggested ahead. So, both these streets themselves and the larger downtown network seem adequately robust to support the conversion. It is expected that most such trips will divert to Quadrille, as befits a state highway designed principally around handling high volume. Since it will be politically impossible to transform Quadrille into a street that welcomes pedestrians or cyclists, all the more reason that

it should be used as a traffic workhorse.

To be sure, there are some issues to be resolved. The first is the fact that trucks sometimes load and unload on these streets, and the removal of the second lane in each direction will make this act impossible. Before a two-way conversion, the City must work with business owners to identify alternative loading zones within a reasonable distance. One hopes that merchants will be incited to support this effort by the data surrounding two-way conversion and retail success.

Second, as the Downtown Trolley will continue to use these streets, its infrequent stops can be expected to slow down traffic. When driving behind the trolley, drivers in a hurry will be frustrated. Happily, this frustration need not last longer than a block, as each intersection will provide the opportunity to shift one block east or west, where no trolley is likely to be present.

The current lack of curb parking, so detrimental to shopping, is a tougher nut to crack, especially if one wants to preserve the existing street trees, which are also known to help retail sales. The proper path here is a careful, block-by-block study that identifies locations where shopfronts would benefit from curb parking and an analysis of where it can most easily be inserted in the sidewalk zone with a minimal amount of tree removal. This analysis should consider the following factors:

- As long as it is protected by curb parking, a sidewalk as narrow as 6-feet wide is adequate for the pedestrian loads in West Palm Beach. Experience would

suggest that a protected 6-foot wide sidewalk is more attractive to pedestrians than an unprotected 12-foot wide sidewalk.

- A classic 2-lane main street, such as Worth Avenue in Palm Beach, contains 10-foot driving lanes and 7 foot parking lanes. This results in a curb-face to curb-face measurement of 34 feet if parked on both sides, and 27 feet if parked on one side. Thanks to their 12-foot driving lanes, Dixie and Olive are already 24 feet wide. This means that, in areas where a new lane of parking is desired, reducing driving lanes to a 10-foot width would result in the need to remove only 3 feet from the existing sidewalk—not 8, as is currently the standard. (Incidentally, in downtown Philadelphia, two-lane one-ways with a flank of parking are only 25-feet wide, thanks to their 9-foot driving lanes.)
- Reshaping curbs is expensive, but parking meters generate considerable revenue. The construction of each new parking space can be easily funded based upon the present value of the anticipated income stream from the new meters it will support. Indeed, this anticipated revenue is the proper funding source for the construction effort.

A final note concerns signalization. As already discussed, under certain locations, removing traffic signals in favor of stop signs can make intersections safer. Removal can also make it quicker to get through the downtown, as pausing at a stop sign



takes less time than waiting at a signal. Moreover, 4-way stop signs present an advantage over signals in that left-hand turn lanes—not possible here—are not needed to avoid slowdowns caused by cars turning left against opposing traffic; each car simply takes its turn.

Between Quadrille and Lakeview, Dixie and Olive currently have signals at 4<sup>th</sup>, 3<sup>rd</sup>, Banyan, Clematis, Datura, Evernia, Fern, and Hibiscus. This approach befits a street with two lanes moving in the same direction. Once they become two way, Dixie and Olive may no longer warrant signals at any of these intersections except Banyan. All told, as many as fourteen signals could potentially be replaced by stop signs along this stretch. Of course, every removed signal is money in the bank: money saved from not having to move it during the conversion, and money not spent on continued maintenance and eventual replacement in the future.

Most of the above recommendations are listed below as Medium-Term, because it is understood that such a major reconfiguration takes time and money. But the effort should begin immediately.

In one final discussion: for the two blocks between 4<sup>th</sup> and Banyan, Dixie contains two southbound lanes separated by a median from one northbound lane. While this second southbound lane may be needed for drop-offs for short stretch, most of it could be converted to a parking lane. If security is a concern—fear of car bombs—it should be noted that there exist ample opportunities for parking alongside these court buildings on other flanks.

### Recommendation

- Reach out to local merchants to create a plan for relocating deliveries that currently take place along Dixie and Olive. (S)
- Conduct a study of where merchants would benefit from cutting additional parking spaces into the sidewalk, with limited loss of street trees. (S)
- Conduct a study of where, once a two-way conversion occurs, intersection signals can be replaced by 4-way stop signs (and per haps two-way stops in some locations). (S)
- Convert Dixie and Olive to two-way traffic for the entirety of their one-way segments. (M)  
Replace signals with stop signs where signals are no longer warranted.
- Cut additional metered parking spaces into the sidewalk, as discussed above, understanding that only a 3-foot-deep cut allows for a 10 – 10 – 7 roadway configuration, given the current 24-foot cartpath. Use future meter revenues to fund construction. (M)
- Place a parking lane (if necessary, with a small no-standing drop-off zone) on the west flank of Dixie between 4th and Banyan. (S)

***Dixie Highway South of Okeechobee***Current Condition

From Pembroke Place to Avon Road—a distance of almost a mile—Dixie highway takes a 4-lane configuration. For some of this stretch, the street contains a parking lane on its east flank. None of the west-flank sidewalk is protected by parked cars, and commercial establishments along this route suffer from an absence of curb parking, while residents complain of shoppers parking on side streets.

Analysis

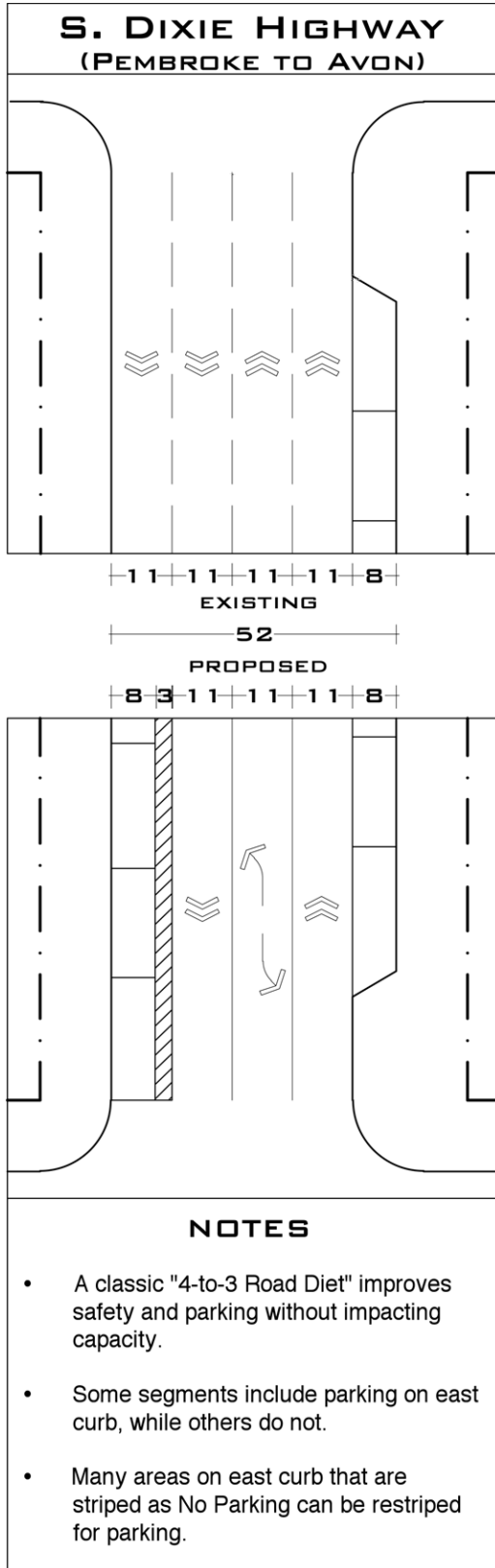
South Dixie Highway, in this configuration, corresponds exactly with the “before” image of what has become known as the “Classic 4-to-3 Road Diet.” Across the U.S., 4-lane roads of this type are regularly being converted to 3-lane roads with great reduction in collision injuries but no decrease in efficiency. (Comparison of seventeen 4-lane to 3-lane road diets conducted by the engineering firm AECOM found that only two streets lost capacity, while five stayed the same, and ten actually handled more cars per day after the conversion. Traffic volumes on these streets averaged about 20,000 cars per day.)

The elimination of a driving lane frees up 12 feet of roadway for alternative use. Given the unmet demand for parking along this corridor, this 12 feet should be dedicated to a continuous parking lane on the west flank, located beyond a painted buffer that uses up the remaining roadway width.

As an FDOT road, this reconfiguration will take some effort, so it is considered a mid-term project. But it should be initiated as soon as possible.

Recommendation

Restripe South Dixie to include three 11-foot lanes, including a continuous center turn lane, plus an 8-foot parking lane beyond a 3-foot striped buffer. Begin this restriping southbound with a 2-to-1 merge south of Pembroke place. Begin this restriping northbound at Westwood Road, by marking the left-lane as a left-turn-only lane south of Westwood. (M)



**Olive North and South**

Please note that we will forego the Observation/Discussion/Recommendation format for thoroughfares that require only simple changes.

Just south of Okeechobee, Olive has a left-hand turn lane that is much longer than typical rush-hour queues would suggest is needed. Shortening this lane to a more proper length creates 4 parking stalls on the eastern curb. (S)

Just north of Banyan, there is a bus stop that is no longer in use. Remove the stop and insert parallel parking in its place. (S)

**Chase Street**

On Trinity Park, Chase has ample width to support parallel parking that is missing on both curbs. Insert approximately 7 parking spaces on street to the west flank and 10 on the east flank. (S)

**Narcissus Street**

Between Datura and Evernia, Narcissus has ample width to support parallel parking that is missing on the west curb. Insert approximately 9 parallel parking spaces. (S)

## *Flagler Drive Downtown*

### Current Condition

From bridge to bridge, Flagler Drive has a 5-lane layout: two northbound lanes, two southbound lanes, and a center turn lane at most intersections. From North Clematis to Lakeview, the roadway contains a center median that either narrows or disappears when space is needed for the center turn lane. Lanes are 12 feet wide. From Tanglewood Court to Datura street, the roadway also contains an 8-foot-wide parking lane, although in many areas that lane is striped “No Parking,” in some cases without clear reason.

The drive is flanked to its east by a continuous wide sidewalk that could serve pedestrians well, but is not adequate to also serve the many cyclists who also use it. Many pedestrians wear headphones, making the sidewalk’s use as a cycle corridor even less safe for all users.

Restaurants on the corner of North Clematis and Flagler tend to go out of business out of business, perhaps due to the fact that vehicles on Flagler are traveling at relatively high speed.

### Analysis

Flagler Drive is a good example of what Jane Jacobs was referring to when she invented the term “border vacuum.” It was made unnecessarily wide during the mid-20<sup>th</sup>-century craze for waterfront highways, and has never managed to attract enough vehicles to justify its width. It ruthlessly separates downtown West Palm beach from its best natural feature and greatest physical attraction, its waterfront. It’s wide lanes invite

speeding, as does the fact that it is rarely crowded. It presents an inhospitable setting for businesses as well as residential and office uses. In short, it represents a palpable drain on West Palm Beach’s walkability, livability, and economic vitality.

Such a drain might be justified if the street’s configuration were needed to handle the amount of traffic that it currently conveys. But, since the same number of cars, and more, could be well served by a much narrower design—created with paint at a very low cost—there is no logical reason other than inertia for not restriping the road immediately.

Between the bridges, traffic counts on Flagler Drive are measured approaching 10,000 cars per day. (Peak-hour counts average about 800, which is in keeping with daily volumes below that amount.) As already noted, a typical 2-lane street, without turn lanes can comfortably handle 10,000 cars per day, and a typical 3-lane street can handle 20,000 cars per day. This data makes it clear that a 3-lane Flagler could handle more than twice the traffic that it currently experiences as a 5-laner.

Final evidence of the street’s excess capacity is offered twice a year, during SunFest and the International Boat Show, when Flagler Drive is entirely closed to through traffic. Clearly, taking the street off line does not cripple traffic in the downtown, even with record crowds. And taking the road offline is not being suggested; rather, the proposal is to make it twice as big as it needs to be, rather than three times as big.

How could Flagler’s two extra lanes be put to better use? First, the westernmost

lane could be used to create a continuous edge of parallel parking, which would considerably increase the downtown parking supply, make the sidewalk feel safer, and benefit businesses along Flagler. In that limited area where parallel parking already exists, it could be replaced by angle parking, doubling the number of stalls.

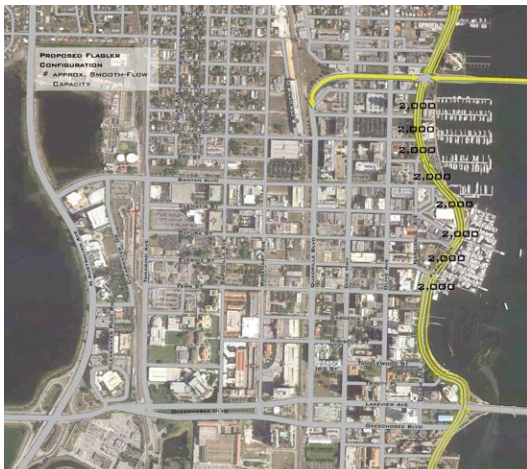
cyclists from the seawall pedestrian path, enhancing the waterfront experience for all users. Again, both of these changes could be accomplished through a simple restriping.

Recommendation

- Where no parallel parking is present, restripe the westernmost lane of Flagler drive to include an 8-foot parking lane beyond a 4-foot striped buffer. (S)
- Where parallel parking is already present, restripe the parking lane and its adjacent lane to include 60-degree angle parking instead. This parking could be head-in or back-in, but back-in is recommended for its greater safety performance. Conduct an aggressive analysis of where parking is currently disallowed along this curb without adequate justification. (S)
- Restripe the easternmost lane to include a ten-foot two-way cycle track protected by a 2-foot striped buffer. For greater protection, place parking-lot wheel stops and/or vertical posts in the center of the buffer. (S)

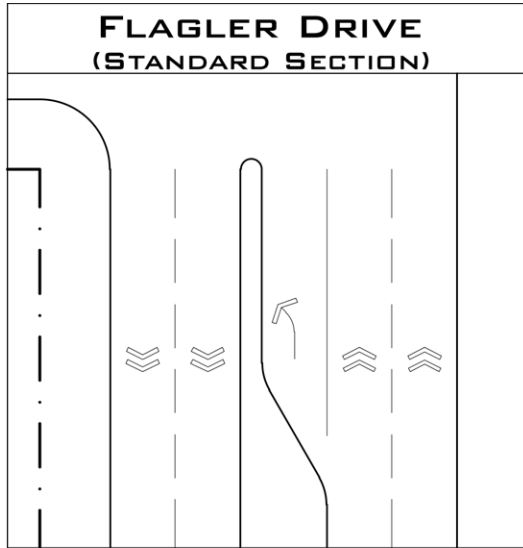


*Flagler Drive currently handles approx. 900 peak-hour trips in five lanes.*



*Evidence suggests that a three-lane Flagler could easily handle 2000 peak-hour trips.*

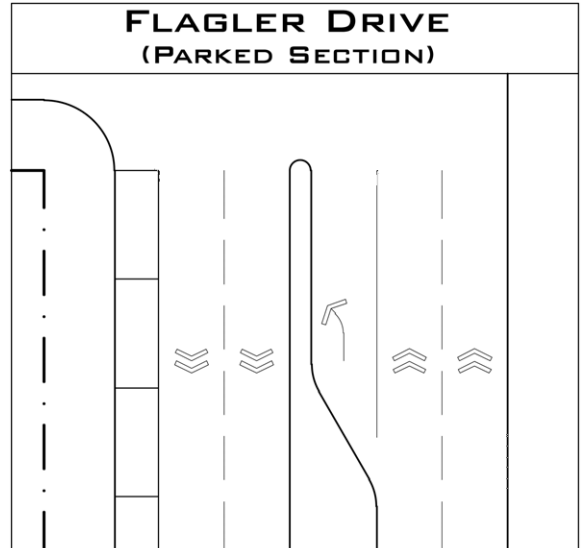
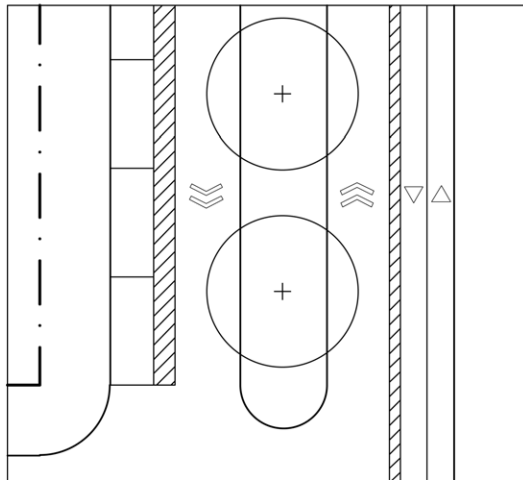
Second, the easternmost lane could be turned into a two-way cycle track, providing a protected route for cyclists, uninterrupted by cross traffic for almost a full mile. This facility would remove



12 | 12 | 16 | 12 | 12 |  
EXISTING

64  
PROPOSED

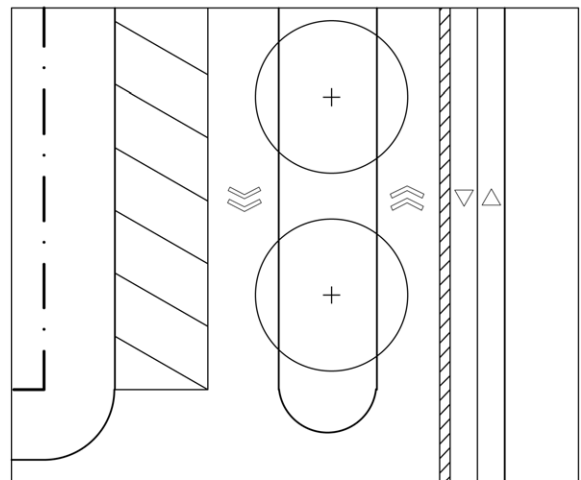
8 | 4 | 12 | 16 | 12 | 25 | 5 |



8 | 12 | 12 | 16 | 12 | 12 |  
EXISTING

72  
PROPOSED

17 | 13 | 18 | 12 | 25 | 5 |



**NOTES**

- Traffic volumes are easily served by a 3-lane section, allowing the addition of parallel parking to the west and a 2-way cycle track to the east.
- Place parking-lot wheel stops and/or vertical flags in bike buffer.
- Maintain all left-hand turn lanes.
- Plant arboring deciduous trees in median wherever missing.

**NOTES**

- In this case, parallel parking is already in place, so the removal of the adjacent lane allows it to become 60-degree angled parking, ideally back-in.
- Place parking-lot wheel stops and/or vertical flags in bike buffer.
- Maintain all left-hand turn lanes.



***Flagler Drive North and South***

Current Condition

Both north and south of downtown, Flagler Drive almost certainly contains more lanes of traffic than justified by current traffic volumes. In some cases, these lanes are also 12 to 16 feet wide, further inviting speeding.

Analysis

Pending traffic counts confirming this observation, it would seem that Flagler Drive need not have a section wider than 3 lanes at any point in its trajectory. In certain locations, where the street now contains three lanes, it is expected that traffic counts below 10,000 cars per day will determine that a 2-lane section is adequate. Finally, there are segments currently containing two lanes that have enough excess lane width to also contain a cycle track in the roadway. Narrowing all lanes to between 10 and 11 feet, and reducing the number of lanes to what is justified by anticipated traffic, allows for the insertion of a continuous cycle track all the way from Pine Street (to the north) to Avila Road (to the south), a distance of more than 2 miles. Along almost all of this trajectory, there is also adequate room in the roadway for a flank of parallel parking along the western curb.

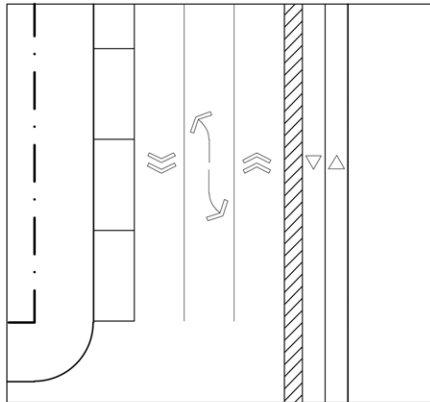
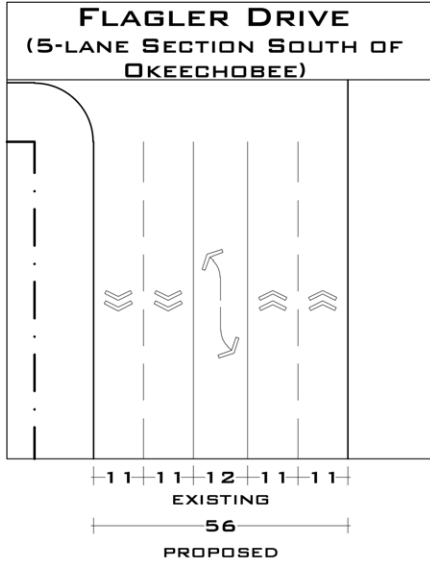
While these changes are less important than the ones proposed between the two downtown bridges, they are also recommended for the short term because of their limited cost and their role in creating a Flagler Drive cycle track of regional scale.

The following recommendations depend upon traffic counts determining that all segments recommended for 3-lane configuration carry considerably fewer than 20,000 cars per day, and all segments recommended for 2-lane configuration carry considerably fewer than 10,000 cars per day.

Recommendation: South Flagler Drive

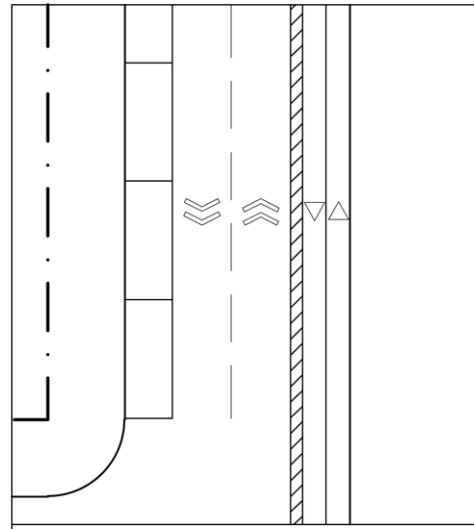
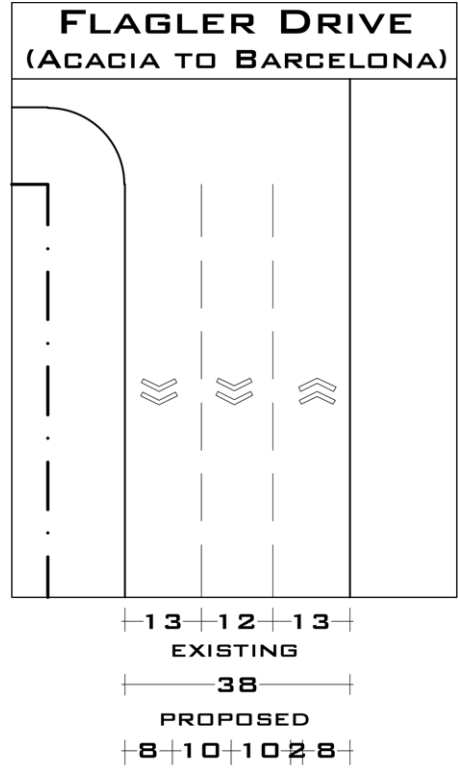
- Beginning about 250 south of Okeechobee Boulevard, restripe Flagler Drive’s 5-lane section to a 3-lane section, approximately as follows: 9 feet of parking, three 11-foot driving lanes, and a 10-foot cycle track beyond a 4-foot striped buffer. For greater protection, place parking-lot wheel stops and/or vertical posts in the center of the buffer. (This comment applies to all remaining cycle track recommendations, and will not be repeated below.) North of this location, allow the cycle track to mount the curb to join the multi-use path that goes both over and under the Royal Park Bridge. (S)
- Continue the above section south to Acacia Road, where the current configuration changes to include three broad driving lanes. Here, restripe the roadway approximately as follows: 8 feet of parking, two 10-foot driving lanes, and a 10-foot cycle track beyond a 2-foot striped buffer. Continue this configuration south to Barcelona Road. (S)
- From Barcelona Road to Avila Road, the current configuration includes two 16-foot driving

lanes. Here, restripe the roadway approximately as follows: two 10-foot driving lanes and a 10-foot cycle track beyond a 2-foot striped buffer. (S)



**NOTES**

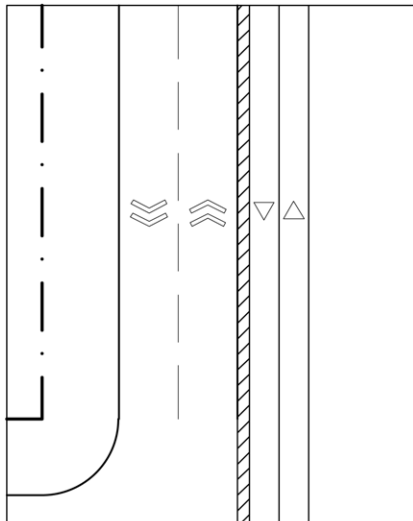
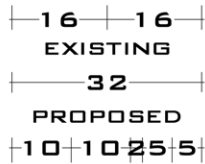
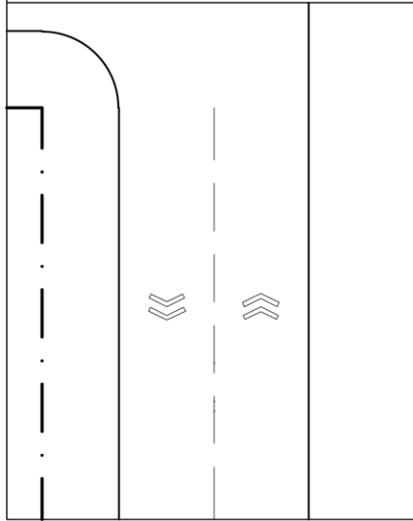
- Traffic volumes are easily served by a 3-lane section, allowing the addition of parallel parking to the west and a 2-way cycle track to the east.
- Parking and biking flanks continue along 4-lane section as well.
- Bike lane leaves roadway where pedestrian path along seawall widens along approx. 250 feet south of Okeechobee Blvd.
- Place parking-lot wheel stops and/or vertical flags in bike buffer.



**NOTES**

- Traffic volumes are easily served by a 2-lane section, allowing the addition of parallel parking to the west and a 2-way cycle track to the east.
- Place parking-lot wheel stops and/or vertical flags in bike buffer.

**FLAGLER DRIVE  
(BARCELONA TO AVILA)**

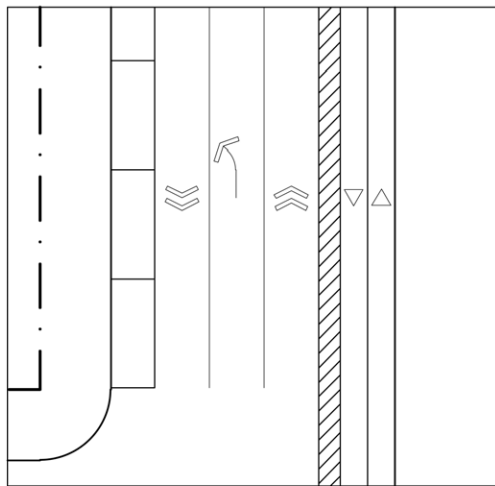
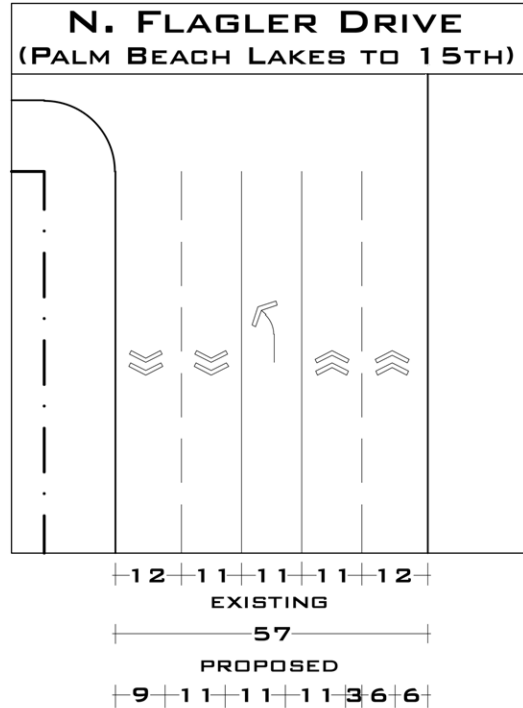
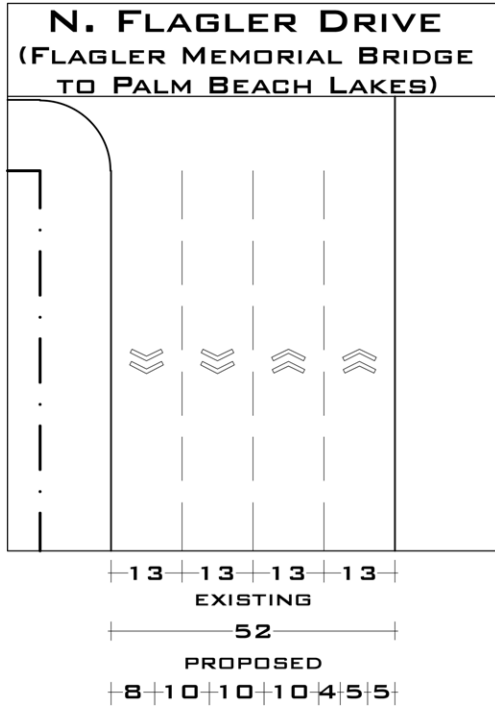


**NOTES**

- Traffic volumes are easily served by a 3-lane section, allowing the addition of a 2-way cycle track to the east.
- Place parking-lot wheel stops and/or vertical flags in bike buffer.

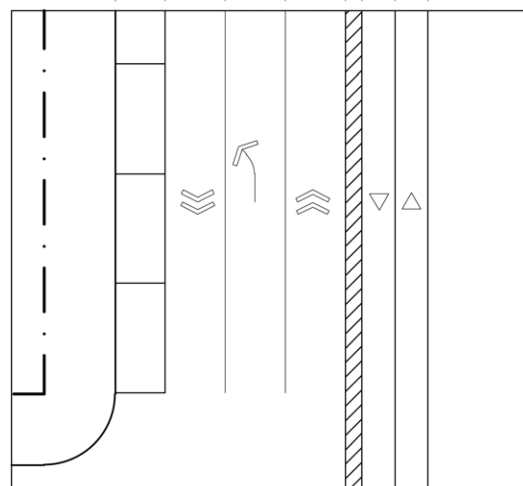
Recommendation: North Flagler Drive

- North of the Flagler Bridge to Palm Beach Lakes Boulevard, restripe Flagler Drive’s 4-lane section to a 3-lane section, approximately as follows: 8 feet of parking, three 10-foot driving lanes, and a 10-foot cycle track beyond a 4-foot striped buffer. (S)
- From Palm Beach Lakes Boulevard to 15<sup>th</sup> Street, restripe Flagler Drive’s 5-lane section to a 3-lane section, approximately as follows: 9 feet of parking, three 11-foot driving lanes, and a 12-foot cycle track beyond a 3-foot striped buffer. (S)
- From 15<sup>th</sup> Street to Pine Street, restripe Flagler Drive’s 4-lane-plus-parking section to a 3-lane section, approximately as follows: 8 feet of parking, three 10-foot driving lanes, and a 10-foot cycle track beyond a 4-foot striped buffer. (S)



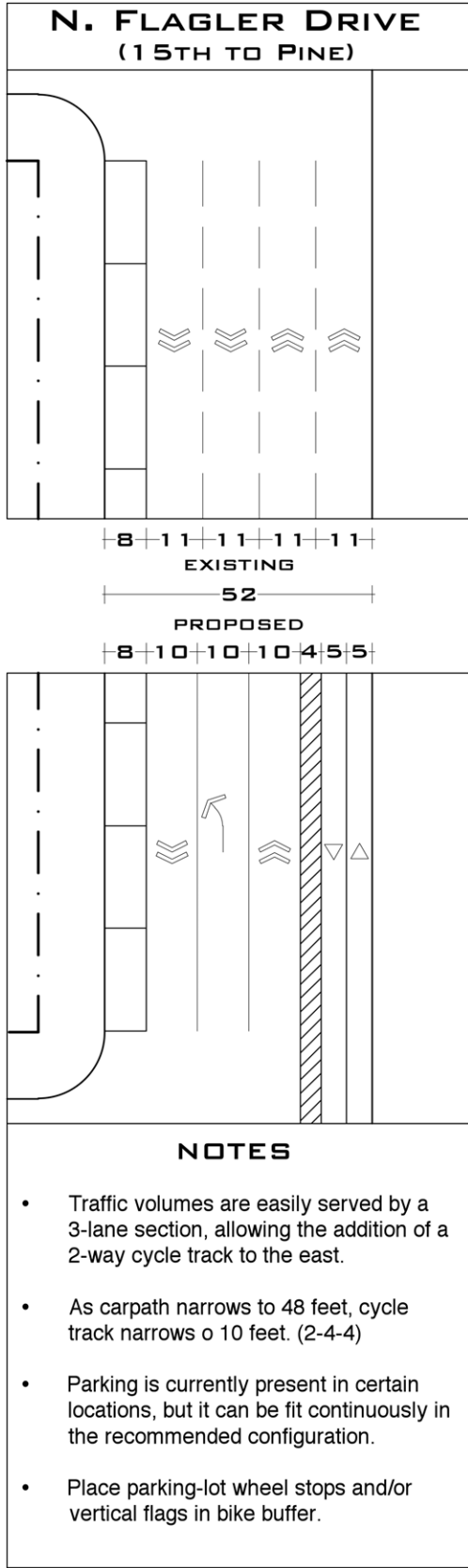
**NOTES**

- Traffic volumes are easily served by a 3-lane section, allowing the addition of parallel parking to the west and a 2-way cycle track to the east.
- Place parking-lot wheel stops and/or vertical flags in bike buffer.



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- Place parking-lot wheel stops and/or vertical flags in bike buffer.



**East-West Thoroughfares**

**5<sup>th</sup> Street**

From Olive to Lantana, 5<sup>th</sup> Street contains areas where parallel parking has been made illegal without apparent reason. Reinstate curb parking wherever possible. This should add approx. 3 spaces on the south flank, and then 4 on the north flank. (S)

From Lantana to Flagler, a 30-foot section contains two 15-foot driving lanes. Restripe this section to two 11-foot lanes plus an 8-foot parking lane on the south flank. (S)

**4<sup>th</sup> Street**

From Olive to Dixie, 4<sup>th</sup> Street contains areas where parallel parking has been made illegal without apparent reason. Reinstate curb parking wherever possible. This should add approx. 2 spaces. (S)

**3<sup>rd</sup> Street**

3<sup>rd</sup> Street contains an odd chamfer of extra pavement just east of the parking lot garage entrance at Rosemary Street. Where this chamfer is wider than 7 feet restripe it to receive parallel parking.

When studied, this northern entrance to the parking lot was gated shut. If that entrance is to remain closed, continue the new parallel parking westward across this entrance to the corner.

3<sup>rd</sup> Street includes a westbound turn lane onto Rosemary. This lane strangely runs the full length of the block. Shorten this turn lane to standard length—perhaps 50 feet—and then introduce continuous

parallel parking along the northern flank of the street as space permits, approx. 8 spaces. (S)

***Banyan Boulevard***

Current Condition

From Australian to Dixie, Banyan contains five 12-foot driving lanes in a carpath of 60 feet or more. As it approaches Dixie, the carpath narrows to approx 38 feet, where it alternately holds three driving lanes, two driving lanes with parking on one side or both, or just two extremely wide driving lanes.

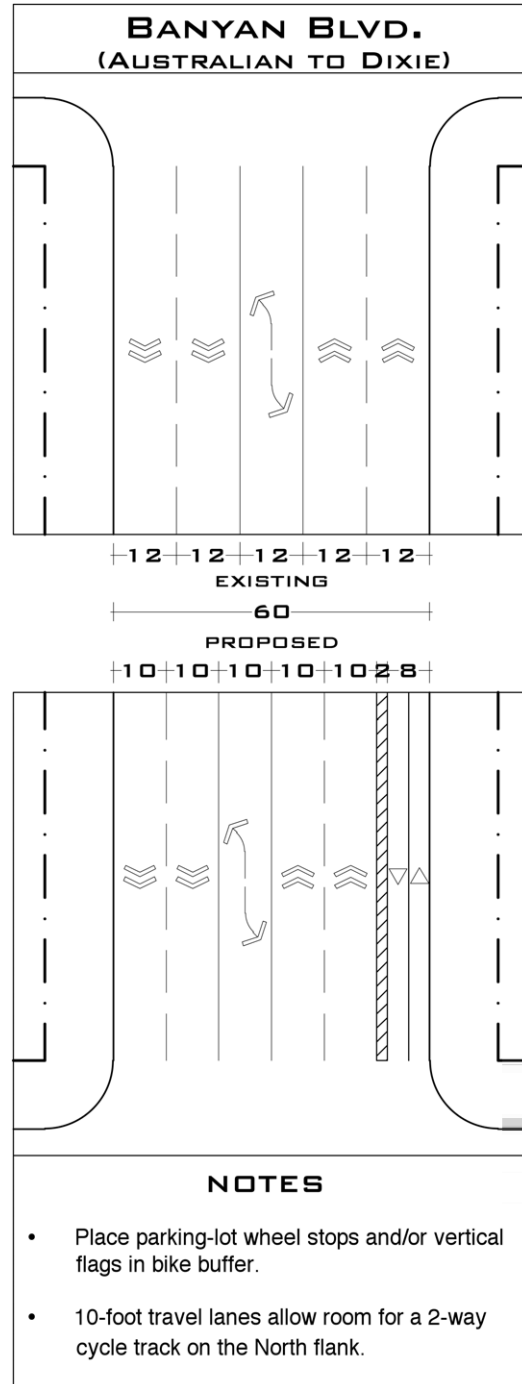
Analysis

12-foot driving lanes encourage speeding, as does any condition where excess pavement is not being put to use as parking or cycle facilities. The extra pavement on Banyan, in conjunction with its status as a principal east-west connector, positions it well to be a major cycling corridor.

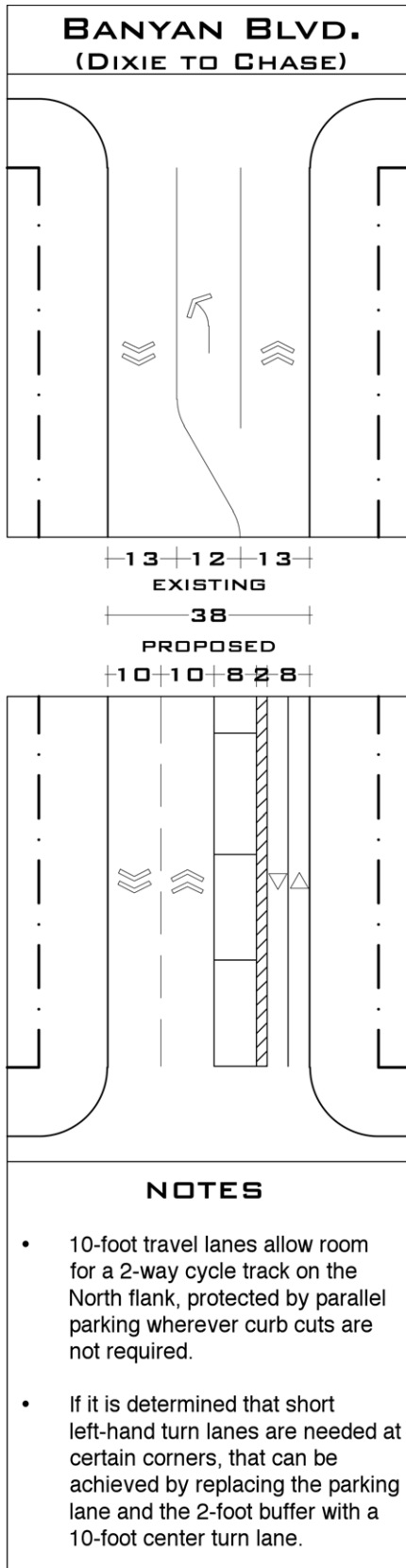
Recommendation

From Australian to Dixie, restripe Banyan to hold five 10-foot driving lanes plus a 10-foot north-side cycle track consisting of two 4-foot-wide cycling lanes behind a 2-foot buffer. From Dixie to Flagler, restripe Banyan to hold two 10-foot driving lanes plus an 8-foot parking lane shielding a 10-foot north-side cycle track consisting of two 4-foot-wide cycling lanes behind a 2-foot buffer. If it is determined that short left-hand turn lanes are needed at certain intersections, that can be achieved by replacing the parking lane and the 2-foot buffer with a 10-foot center turn lane for a short distance. Where curb cuts are

present on the north curb, these should be limited to the minimum width needed, and then enfronted with gaps in the parallel parking but not in the cycle track. (S)







**Clematis Street**

Clematis Street falls into the category of “if it ain’t broke, don’t fix it.” Years ago, it was broken, and it was fixed with two-way reversion. More recently, a median was added to the section west of Sapodilla which, if properly filled with (eventually) tall, deciduous trees, will become much more walkable. Some limited room for improvement exists where parallel parking is missing from the curb for no apparent reason, for example the three missing spaces just northeast of Sapodilla.

There is much current discussion about whether the most successful blocks of Clematis Street should be turned into a pedestrian mall and closed to vehicular traffic. This transformation could occur from Narcissus to Quadrille, or could perhaps reach as far west as Rosemary, where the entertainment corridor currently ends.

While there is no doubt that a car-free Clematis, like Lincoln Road in Miami Beach, could be a wonderful place, there is every reason to fear its commercial failure. In all, of the 200 or so pedestrian malls created in the U.S. in the 60s and 70s, only about thirty remain. Of those, most are low-rent districts like Main Street in Memphis where, despite the presence of an appealing streetcar line, empty storefronts abound. The exceptions are almost all in college towns like Boulder and Burlington, or in resorts like Miami Beach and Aspen.

The reason for this failure was that, in almost all American cities, downtown commercial enterprises require cars driving and parking in front to thrive.

Only in places like Manhattan, where merchants rely principally on foot traffic, can pedestrian malls be expected to succeed.

With autos reintroduced, most failed pedestrian malls, like Monroe Place in Grand Rapids, have come back at least part way. The main lesson from this experience is not to avoid trying pedestrianization, but to avoid doing it the way they did last time, with the construction of expensive and expensive-to-remove streetscapes.

As demonstrated more recently in Times Square and elsewhere, the proper way to test the viability of a pedestrian main street is to spend no money on construction, but to bring in some temporary bollards, potted trees and movable chairs. If it works for a full weekend, expand the days. Perhaps it will work for a season, but not a year. If it proves successful for twelve months, consider a limited investment in better surfaces and furnishings.

Many cities waste a lot of time and money considering and studying things that can just be tried out instead. There is little reason to discuss a pedestrian Clematis any further without simply testing it at different hours and observing its impact on business revenue. (S)

### ***North Clematis Street***

Just west of Flagler Avenue, the westbound fork of Clematis Avenue holds one driving lane and one parking lane in a 27-foot roadway. This ample width can hold parking on both sides. Restripe this segment as a 13-foot driving lane flanked by two 7-foot parking lanes. (S)

### ***Datura Street***

Between Dixie and Olive, Datura Street contains a full center lane that is not needed to handle traffic volumes. However, this lane is used regularly for truck deliveries, and there is no compelling reason to eliminate it, especially in light of the fact that the two-way reversion of Olive and Dixie will eliminate from those streets the redundant lanes that are also used for deliveries. (S)

### ***Evernia Street***

#### Current Condition

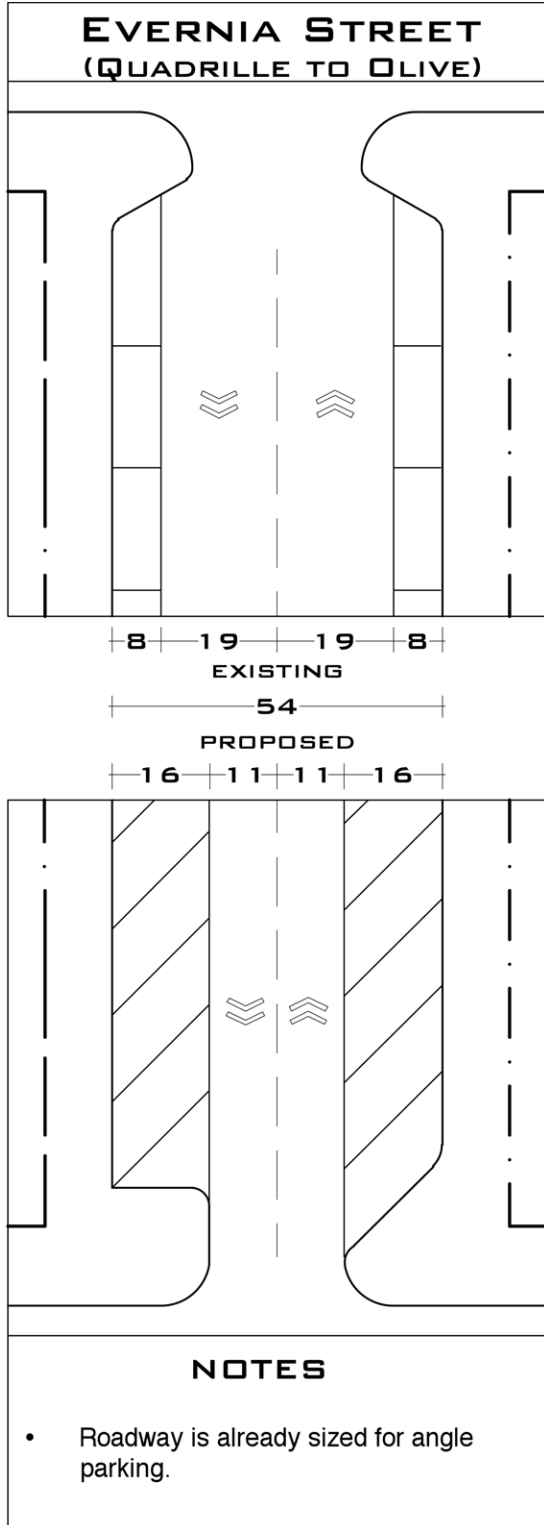
Between Quadrille and Olive, Evernia Street holds two travel lanes and parallel parking in a 54-foot-wide roadway that seems to have been built for angle parking. This configuration results in 19-foot travel lanes.

#### Analysis

Any travel lanes that are wider than needed encourage speeding, and parallel parking provides half the number of spaces as angle parking. Converting the parallel parking to angle results in an increase of perhaps 40 parking spaces, while encouraging legal driving speeds.

#### Recommendation

Restripe the roadway between Quadrille and Olive to include two 11-foot driving lanes flanked by two 16-foot-deep 45-degree angled parking lanes. (S)



**Fern Street**

Current Condition

Fern Street is becoming a more significant thoroughfare in downtown West Palm Beach, as the closing of Datura and Evernia Streets caused by All Aboard Florida will result in a greater amount of circulation—of all kinds—occurring along it. Moreover, it is also the designated recipient of a federal grant that will allow it to be rebuilt in a more multimodal and sustainable way, with attention given to cycling and to the treatment of stormwater in rain gardens.

The current plans for Fern, which were submitted in concert with its federal grant application, consist principally of two distinct designs, both within an 80-foot right-of-way. The first, from Tamarind to Sapodilla, and from Rosemary to Quadrille, contains two 11-foot driving lanes flanked by two 16-foot parking lanes with stalls at a 45-degree angle, flanked by two 13-foot sidewalks. (The block between Sapodilla and Rosemary, recently rebuilt, is left unchanged, and also contains double-angle parking.) Islands between every few parking spaces include rain gardens for stormwater detention.

The second section, from Quadrille to Olive, is planned to contain 11-foot driving lanes, 8-foot parallel parking lanes, 8-foot continuous rain gardens, and a 13 foot sidewalk. While Fern Street is considered a designated cycle facility, neither of the above sections contain dedicated bike lanes.

Analysis

As the only good corridor for a dedicated east-west cycle facility between Okeechobee and Banyan, Fern should receive more than just cycle markings. Moreover, it is well documented that cycle facilities should not be placed on streets with head-in parking, which occurs on most blocks of the current proposal. A new solution is needed for this corridor, one which is not only safe for bikes, but also truly welcoming.

As noted, the current state of the art in cycle facilities is the protected cycle track, in which bike lanes are buffered from traffic by a barrier of parked cars. If the sidewalks are made 8 feet wide rather than the proposed 13, there is ample room to include a two way cycle track on one side of the street, still keeping ample rain gardens between street and sidewalk.

This narrower sidewalk is acceptable for several reasons. First, given that Fern is not heavily retailed, 8 feet is ample. Second, in locations where a wider sidewalk is desired for dining, it is possible to place a small “parklet” deck atop a portion of the rain garden. As long as these do not proliferate widely, the rain garden will still function.

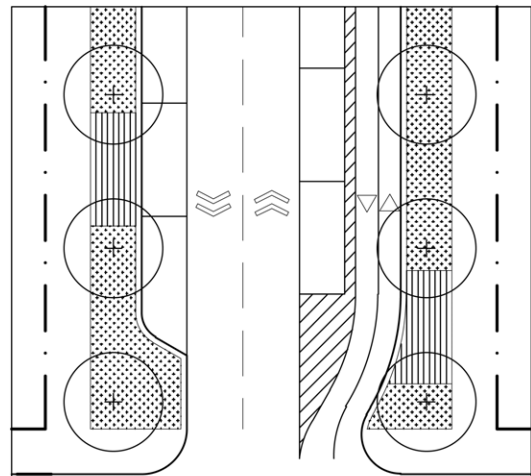
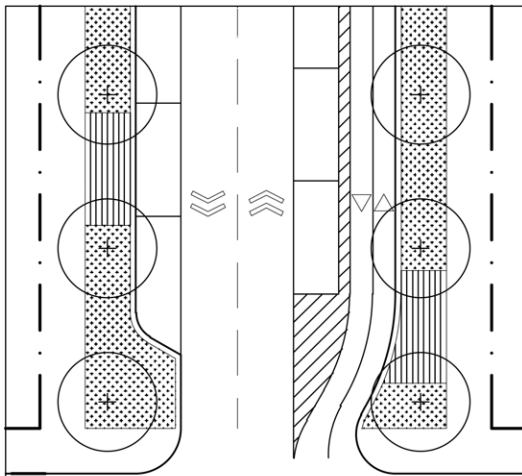
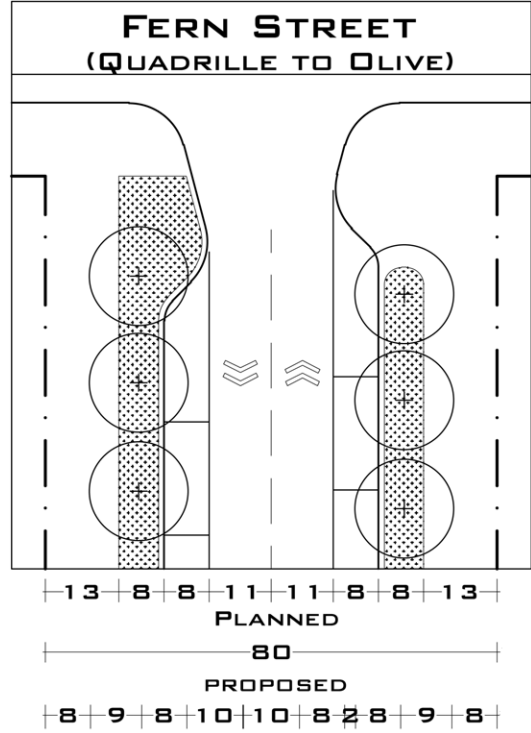
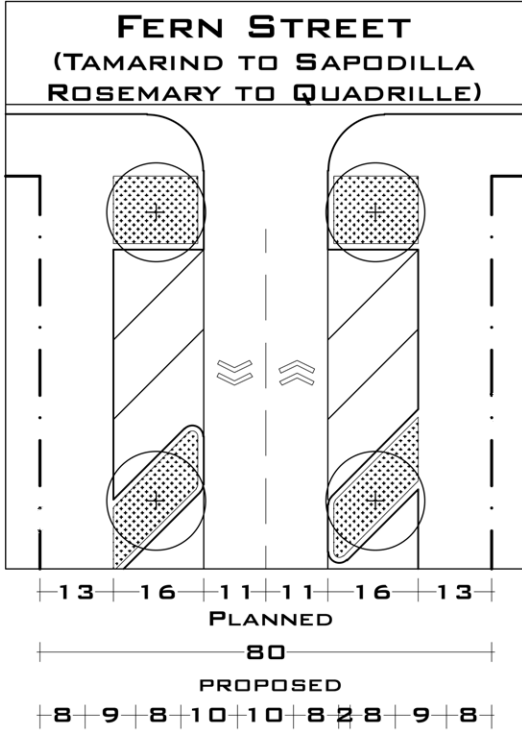
The result of this new proposal is a truly sustainable facility, one that truly attracts cyclists, reducing auto dependence, while providing more square feet of rain gardens than in the current proposal.

Finally, it must be noted that the head-in parking recently been built between Rosemary and Sapodilla makes this one

block dangerous for cyclists, and it should eventually be rebuilt.

Recommendation

Replace the current design proposal with the one detailed here, in which 10-foot driving lanes are flanked by 8 foot parking lanes, 9-foot rain gardens, and 8-foot sidewalks. On one side, insert a 2-foot buffer and an 8-foot two-way cycle track between the parking and the curb. Offer merchants the option of small parklet decks spanning the rain garden in limited locations for sidewalk dining. As soon as possible, rebuild the block between Sapodilla and Rosemary according to the same plan, or simply with rear-in instead of front-in parking. (S)



#### NOTES

- As a key bike corridor, Fern merits a cycle track.
- Pervious decks may be inserted in landscape strip where desired between trees to expand sidewalk.

#### NOTES

- As a key bike corridor, Fern merits a cycle track.
- Pervious decks may be inserted in landscape strip where desired between trees to expand sidewalk.

***Hibiscus Street***

From Quadrille to Dixie, Hibiscus contains parallel parking in locations that are the proper width for angle parking. Reinstate 2-sided 45-degree angle parking in all locations where the carpath is approximately 54-feet wide.

***Okeechobee Boulevard***Current Condition

From Tamarind to Rosemary, Okeechobee Boulevard, an FDOT facility, consists of four lanes of traffic in each direction, plus left-hand turn lanes at all intersections west of Quadrille. Eastbound and westbound traffic is separated by a median, which expands east of Rosemary to include developable private property. As befits a highway, each lane is 12 feet wide, and the medians are shaped to allow turning motions around them at relatively high speeds.

Analysis

Unfortunately, Okeechobee Boulevard is not a highway in the conventional sense. It is a city street that happens to be State owned, and which carries a very large amount of traffic. But traffic volume and traffic speed are two distinct things, and the location of Okeechobee in the heart of a walkable downtown core makes its high-speed design characteristics extraordinarily dangerous and threatening to the hundreds of pedestrians who walk along it and across it each day.

Moreover, its location between the Palm beach Convention Center and City Place, where many conventioners go for food and drink, results in a situation where it is being crossed frequently by visitors who are unfamiliar with its risks. (Incidentally, 100 percent of these visitors come from states where pedestrians are less likely to be killed in traffic.) The construction of the Convention Center Hotel on the south



side of Okeechobee will only increase the frequency of these crossings.

In anticipation of this crisis, the developers of the Convention Center Hotel commissioned a study, by Thomas A. Hall, LLC, to recommend modifications to the intersection of Okeechobee and Rosemary Avenue, where most of these crossings will occur. This study made a number of excellent recommendations which will be repeated here, and supplemented by the additional changes that are needed if walking across and along Okeechobee are to become both less dangerous and less unpleasant.

As already discussed, lane width is one of the principal determinants of driving speed, and Okeechobee's 12-foot lanes invite speeds in excess of the posted limit. Further, they occupy roadway that could be better put to other use, such as serving cyclists or protecting the sidewalk from moving vehicles. Both of these objectives can be achieved by the right-sizing of Okeechobee's driving lanes to 10 feet, yielding an additional 8 feet of roadway on each flank. This space is best utilized as protected bike lanes, which provide an important east-west cycle facility while pushing moving traffic away from the curb edge.

In making this recommendation, it is important to repeat certain facts already stated in this report. While all available research supports these statements as facts, they regularly contested in the words and actions of FDOT. It is possible that FDOT will oppose these recommendations on the basis of safety or traffic volume. Such opposition would have no basis in fact, however, because:

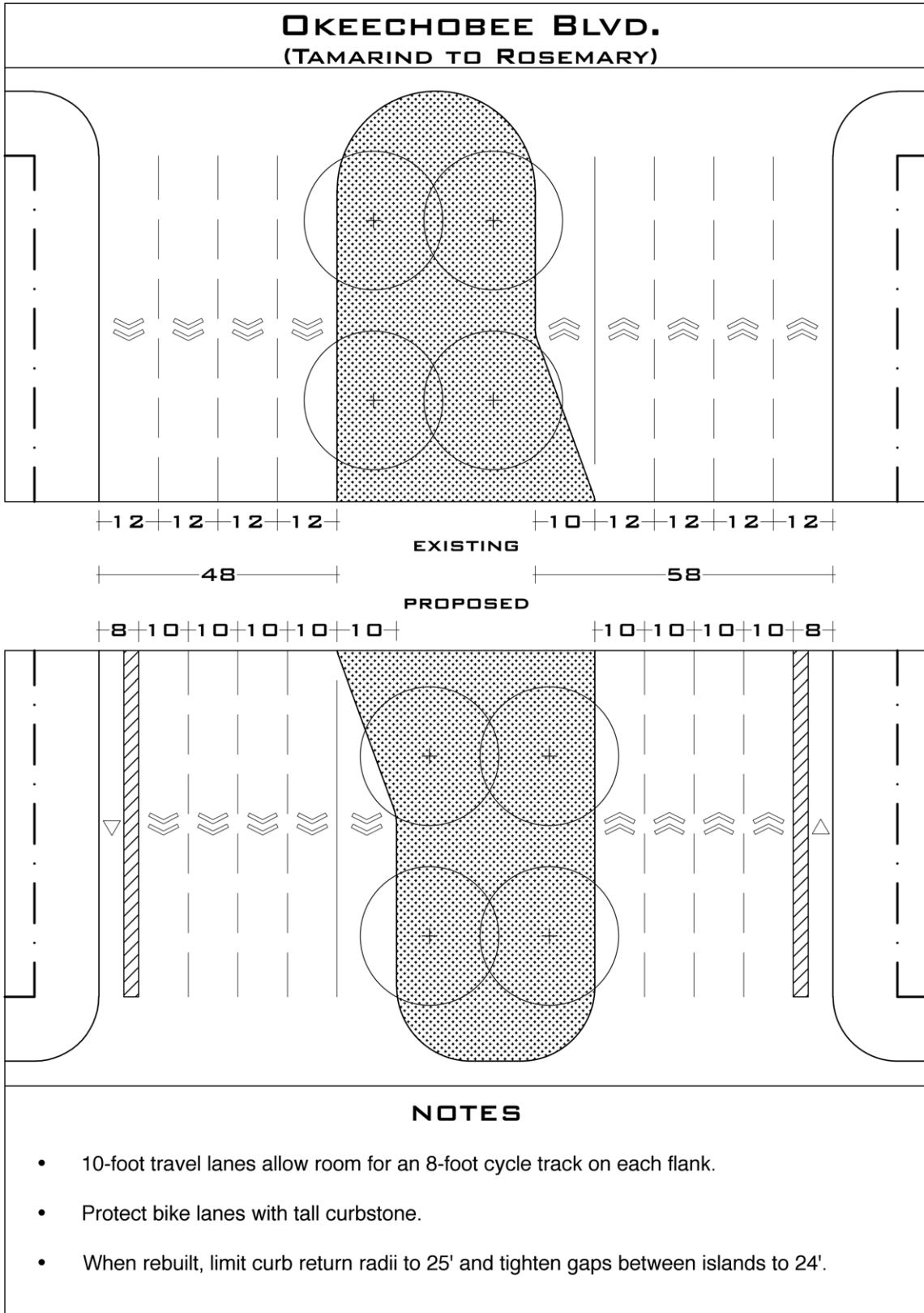
- 10-foot lanes experience no higher crash frequency than 12-foot lanes, and may in fact experience fewer crashes;
- 10-foot lanes encourage lower-speed driving than 12-foot lanes, and therefore are likely to experience crashes of lower severity and with fewer injuries;
- When located in urban arterials such as Okeechobee Boulevard, 10-foot lanes carry no less traffic volume than 12-foot lanes.

Recommendation

Restripe Okeechobee's 12-foot lanes to 10 feet, and place an 8-foot cycle facility on each flank of the roadway. These bike lanes should be protected by a high curb, similar to a small Jersey barrier, substantial enough to deflect glancing blows from vehicles.

When reconstruction is possible, all intersections should be rebuilt with tighter curb radii and smaller gaps between median islands. An example of this approach is shown in the redesign of the Rosemary Avenue intersection ahead.

These changes are listed as mid-term due to the negotiation with FDOT that they will require. However, this negotiation should begin immediately. (M).



### *The Okeechobee/Rosemary Crossing*

The Thomas Hall study of the Okeechobee/Rosemary intersection recommends 4 steps towards making the crossing easier and safer:

- Improved pedestrian detector visibility;
- Revising the median nose shape to reduce the distance across the roadway;
- Pedestrian (shade) shelters in the median; and
- Revised signal timing to prioritize pedestrian crossings.

These proposals are all advisable, and can be supplemented by a more aggressive design which demonstrates to what degree the roadway can and should be reconfigured if pedestrians are to feel safe crossing Okeechobee in this location. The suggested design:

- Reduces driving lanes to 10 feet and introduces protected bike lanes, as already discussed;
- Introduces higher-visibility crosswalks, ideally built of contrasting materials;
- Closes the slip lane, unjustified by traffic volumes, that speeds northbound traffic east on Okeechobee;
- Lowers the radius of curvature on all corners to an appropriate urban standard below 20 feet;
- Narrows the gap between median islands to the 24 feet appropriate to the two lanes of travel that are allowed; and
- Places deciduous street trees in the median to shelter and cool pedestrians (rather than shade structures, which lack their climatic benefits).



*The current configuration of the Okeechobee/Rosemary intersection.*

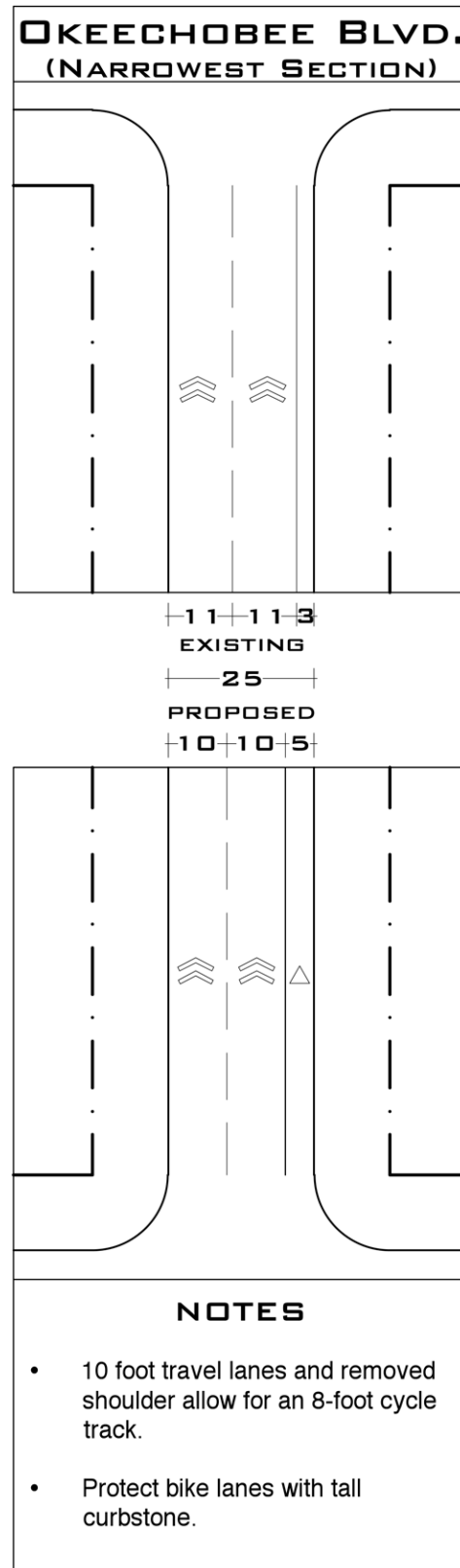


*Proposed reconfiguration, drawn atop the existing conditions photograph.*

While more expensive than a simple restriping, these reconfigurations are amply justified by the great danger that this crossing currently poses. They are listed as mid-term recommendations due to their cost and the negotiation with FDOT that they will require. However, this effort should begin immediately. (M).

***Okeechobee Blvd. east of Rosemary***

As it continues east, the broadening of its median into developable land turns Okeechobee Boulevard into two separate one-way streets, Okeechobee and Lakeview. While the number of lanes on these street segments varies, all lanes are wider than the 10-foot standard. Additionally, the roadway includes a roughly 3-foot shoulder, a strange detail appropriate to rural highways, not urban streets. In all locations from Rosemary to Flagler, the right sizing of the travel lanes and the elimination of the shoulder provides ample space for the continuation of the cycle route already introduced further west. Restripe travel lanes to 10 feet, resulting in a westbound bike lane. When this bike lane is 6 feet or wider, make it a cycle track with a raised curb against traffic. When it is less than 6-feet wide, do not include a buffer.(M)”

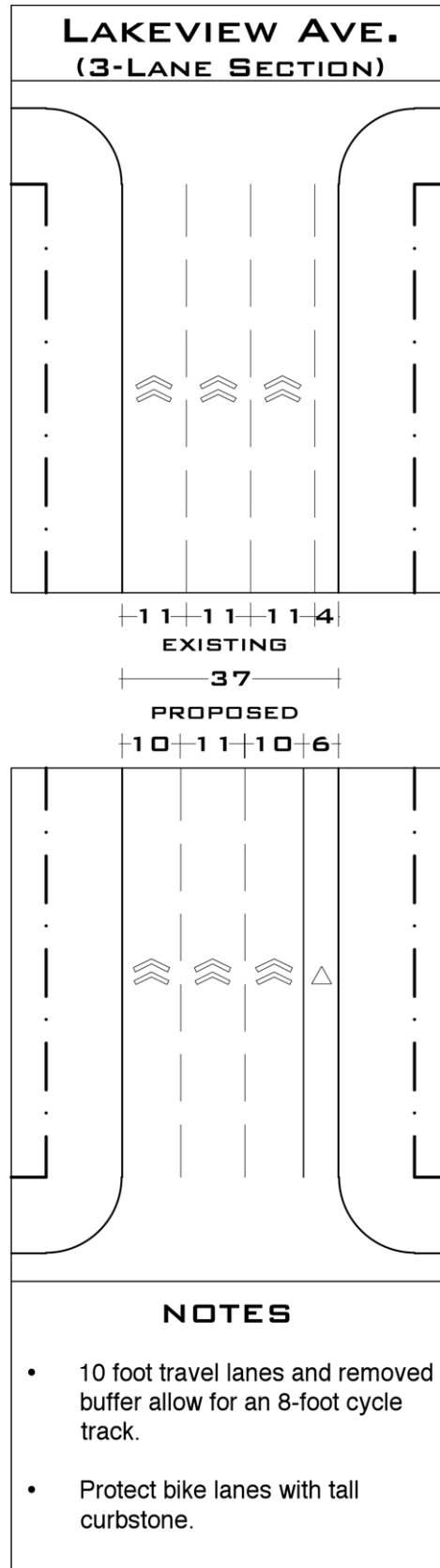


**Lakeview Avenue**

As per the above discussion of Okeechobee East, restripe Lakeview from Rosemary to Flagler to include principally-10-foot travel lanes and either a cycle track or bike lane based on available pavement (M).

Additionally, wayfinding onto Lakeview Avenue is much on need of improvement, as southbound drivers looking for Okeechobee often miss the Lakeview turn, not realizing that it effectively *is* Okeechobee. Particularly on Dixie Highway, introduce bold signage pointing to the right turn onto Lakeview. This signage should say something like: “To Okeechobee Blvd., City Place, and I-95.” (S)

Once Olive is two-way, similar signs will be needed on Olive as well. (M)





### One-Way Reversion

The one-way pair of Dixie and Olive have already been recommended for reversion back to two-way traffic. The other one-way pair downtown, Okeechobee and Lakeview, represent the splitting in half of Okeechobee Boulevard, and thus cannot be converted to two-way traffic. The same is true of the eastern end of Clematis Street. The other one-way streets downtown—Narcissus, Tanglewood, and Trinity Place, are short and narrow urban streets that function perfectly well in their current configuration.



*Current one-way streets in downtown.*

However, just northwest of downtown, Douglas, Division, Sapodilla, and a short segment of Rosemary Avenue all contain one-way traffic that is less easy to explain. Indeed, in the case of Rosemary’s odd condition, it has not been possible to uncover any institutional memory of why a short segment of the street lost its two-way traffic.

Whatever the original justification, these streets now invite speeding, with driving lanes that are too wide. Even in their

narrowest sections, all of these streets provide no less than the 16-foot clear zone that is demanded by City public works and fire departments.

A good model for improving this sector can be found just south of downtown, in Grandview Heights. Here, on streets like New Jersey, New York, Palm, and Penn, a 16-foot clear zone is the standard for supporting two-way traffic, not one-way. Because cars must slow down when encountering opposing traffic, the streets in Grandview Heights are considered great places to walk and bike, especially with children.

There is no reason why the northwest quadrant of downtown should be designed around a higher-speed standard than Grandview Heights. Given that these streets meet the 16-foot clear zone requirement, it is recommended that Douglas, Division, Sapodilla, and Rosemary streets be restriped to welcome two-way traffic (without increasing the width of travel lanes). (S)



*Proposed one-way streets in downtown.*



## Traffic Signals

### *Eliminating Unwarranted Signals*

As already discussed, there is ample evidence to suggest that removing signals from moderate-volume intersections and replacing them with multi-way stop signs, in addition to creating greater appeal to pedestrians and cyclists, improves safety for all users. Additionally, when two-lane one-ways are converted to two-way traffic, it becomes practical to introduce stop signs at intersections where signals were once necessary.



*Recommended changes to signalization in downtown West Palm Beach*

The diagram above shows the following recommended changes:

- The reversion of Dixie and Olive to two-way allows fourteen signals on those two streets to be replaced by stop signs. These are all 4-way stops, except along 4<sup>th</sup>, 3<sup>rd</sup>, and Hibiscus, where the dominant north-south traffic suggests that 2-way stops may be more appropriate.

- The signals at Clematis & Rosemary and at 7<sup>th</sup> & Tamarind are replaced by 4-way stop signs, allowing these intersections to invite calmer traffic.
- A new signal is added at Quadrille and Fern, mandated by the greater traffic Fern will invite with the closing of Datura and Evernia caused by All Aboard Florida.
- Signals are placed along Tamarind at Clematis and Datura to ease pedestrian crossings to the Intermodal Center. These two signals could be pedestrian only (with quick pushbutton activation), with cars still controlled by the existing stop signs.
- When signals are replaced by stop signs at intersections with center turn lanes present, these lanes are removed.

In sum, these recommendations would remove sixteen of the downtown core's 43 traffic signals and add three new ones. Independent of safety benefits, this change will reduce future downtown signalization maintenance and replacement costs by more than 30 percent.

### ***Improving the Pedestrian Experience***

As already discussed under *A Safe Walk*, the current signalization regime in place in much of the downtown is not a type that is found in any city that is known for welcoming pedestrians. From a national best practices perspective, it is truly substandard. Unfortunately, changing the current regime requires cooperation from Palm Beach County, which controls it. It is hoped that the evidence already provided will convince the County to recognize downtown West Palm Beach as the exceptional environment that it is, and allow it to implement the signal removal recommendations above, as well as the following comprehensive changes:

- Remove pushbuttons from all signals except those along Okeechobee and Flagler, where longer crossing times are needed due to excess width. In those locations, working with FDOT, allow the pushbutton request to preempt the signal cycle, so that pedestrians are not led to believe that the buttons are broken.
- Implement simple concurrent crossing signals at all intersections, such that the pedestrian is given the walk signal at the same time as vehicles heading in the same direction. Use Lead Pedestrian Indicators (LPis) at intersections with high pedestrian volume, such as Rosemary & Okeechobee, Clematis & Quadrille, Fern & Flagler, and Lakeview & Flagler.
- Working with FDOT as necessary, shorten signal cycles to a target length of 60 seconds for the entire cycle at all signalized intersections.
- Until they are converted to two-way, ensure that the “green wave” signal timing along Dixie and Olive allows speeds no faster than 25 MPH.



## Hidden Parking

Reviewing all of the recommended changes to streets above, it is possible to consolidate all of the missed opportunities for on-street parking into a single diagram. As noted, there are many locations in which:

- A parking lane exists, but curb parking has been prohibited for no apparent reason;
- Oversized driving lanes, when made the proper width, create space for curb parking;
- Oversized driving lanes, when made the proper width, create the opportunity to convert parallel parking into angle parking, doubling its amount;
- Parallel parking is provided on streets that are wide enough to provide angle parking, which would double its amount.



*An approximate accounting of additional curb parking spaces that are available downtown.*

When all of these opportunities are considered together, it becomes clear that the City possesses a tremendous underutilized resource – almost 500 hidden parking spaces in the downtown core alone. Given that cities routinely pay more than \$10,000,000 to build parking garages of that size, there is an additional economic incentive to the street re-stripings proposed in this report.

In the spirit of full disclosure, this report also recommends that approximately 50 parking spaces be eliminated, by converting angled parking to parallel parking on Fern Street. These are noted in the diagram, and considered an important sacrifice so that that street may contain a first-class cycling facility.

## Cycle Facilities

### *Bike Lanes*



*Current cycling facilities in West Palm Beach.*

The street redesigns proposed above take into consideration the goal of creating a limited network of high-quality cycling facilities, in order to invite a larger cycling population. Currently, there are almost no dedicated bike facilities in downtown West Palm Beach. While many streets are certainly welcoming to bikes, the downtown almost completely lacks the sort of well-marked and ideally protected bike lanes that have been shown around the world to create a cycling culture.



The street redesigns together include a robust but not excessive framework of high-quality cycle facilities. Far from suggesting bike lanes on every street, they insert lanes only where room can easily be made for them, but also with the goal of creating a properly-spaced armature that will provide convenient access to the whole downtown. Specifically, they create three north-south bikeways—Tamarind, Rosemary, and Flagler—and three east-west bikeways—Okeechobee, Fern, and Banyan. Distributed evenly through the downtown, this armature concentrates cycling in locations where it will be noticed, making it safer than would be the case were it dispersed on a larger number of streets.



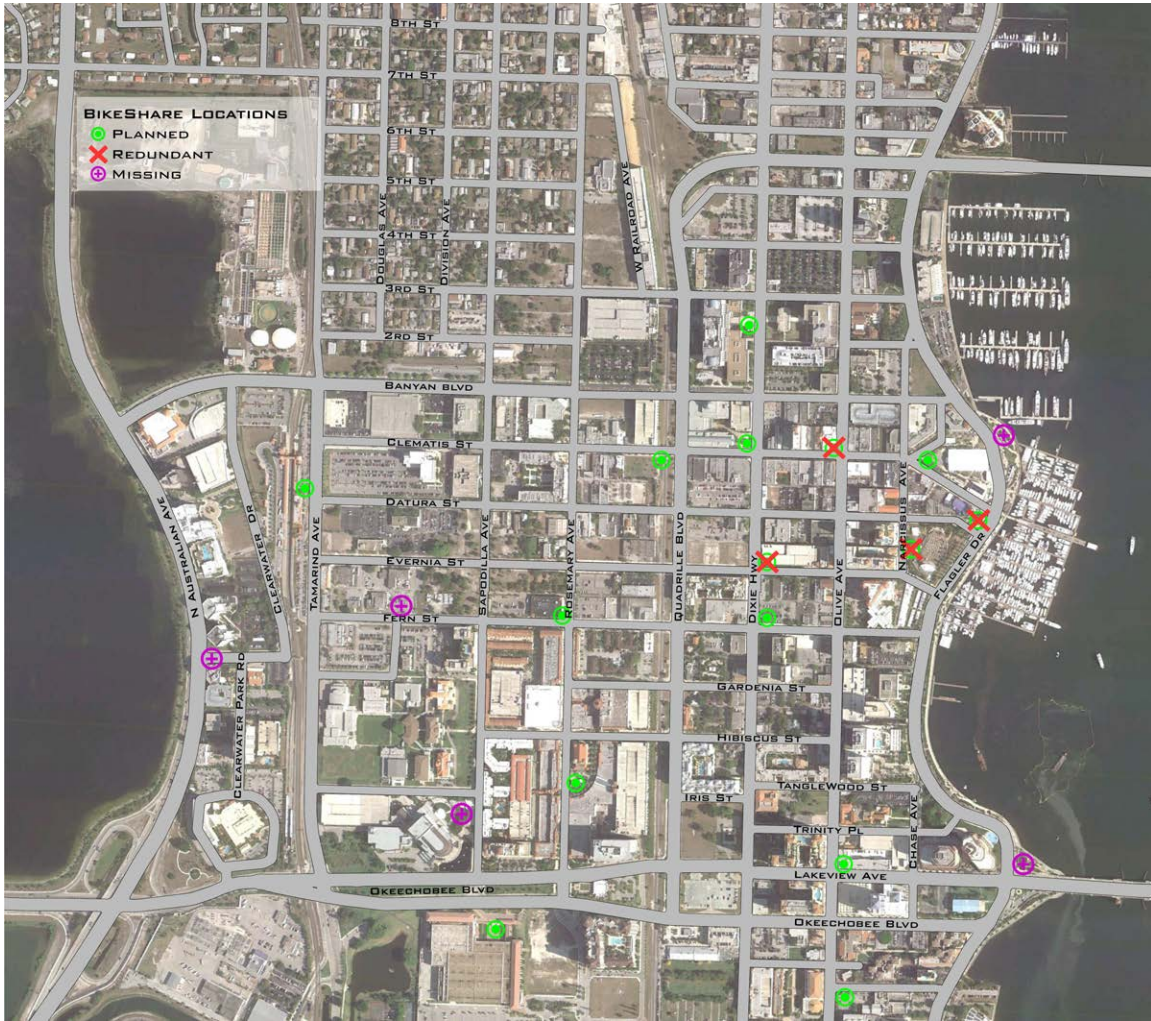
*Proposed Cycling Facilities Map*

Bikes will of course be welcome on most of the non-marked streets, and certain cyclists will be comfortable on the entire network. But the experience in those cities that have succeeded in shifting a significant percentage of trips from car to bike suggests that such a framework of marked facilities and protected lanes is necessary if West Palm Beach is to achieve a similar success.



**Bike Share**

The City of West Palm Beach is to be congratulated for instituting its new BikeShare system. The locations of the first BikeShare docking stations have been proposed, and it is appropriate within the context of this effort to consider whether any changes to that proposal might be advisable.



*Proposed modifications to the current BikeShare docking station proposal.*

Presuming that the number of stations that are currently funded is only a bit flexible, this analysis considered whether there were any key areas downtown that would benefit from a docking station but were not slated to receive one, and then considered where proposed docking stations might not be necessary. The areas of potential redundancy, marked above with an X, are four locations on Clematis, Datura, Narcissus, and Evernia where another docking station could be found at close quarters. The locations recommended for an additional docking station were as follows:

- Along Australian Avenue, where large buildings contain many office workers who might consider biking downtown to the courthouse or for lunch;



- Near the High School of the Arts, where students might chose to bike to a transit station or elsewhere;
- By the Kravis Center for the Performing Arts, where tourists and others might bike to or from a show.
- At Flagler Drive near Banyan and Lakeview, where they provide key access to the proposed Flagler cycle track and to destinations across the Intracoastal.

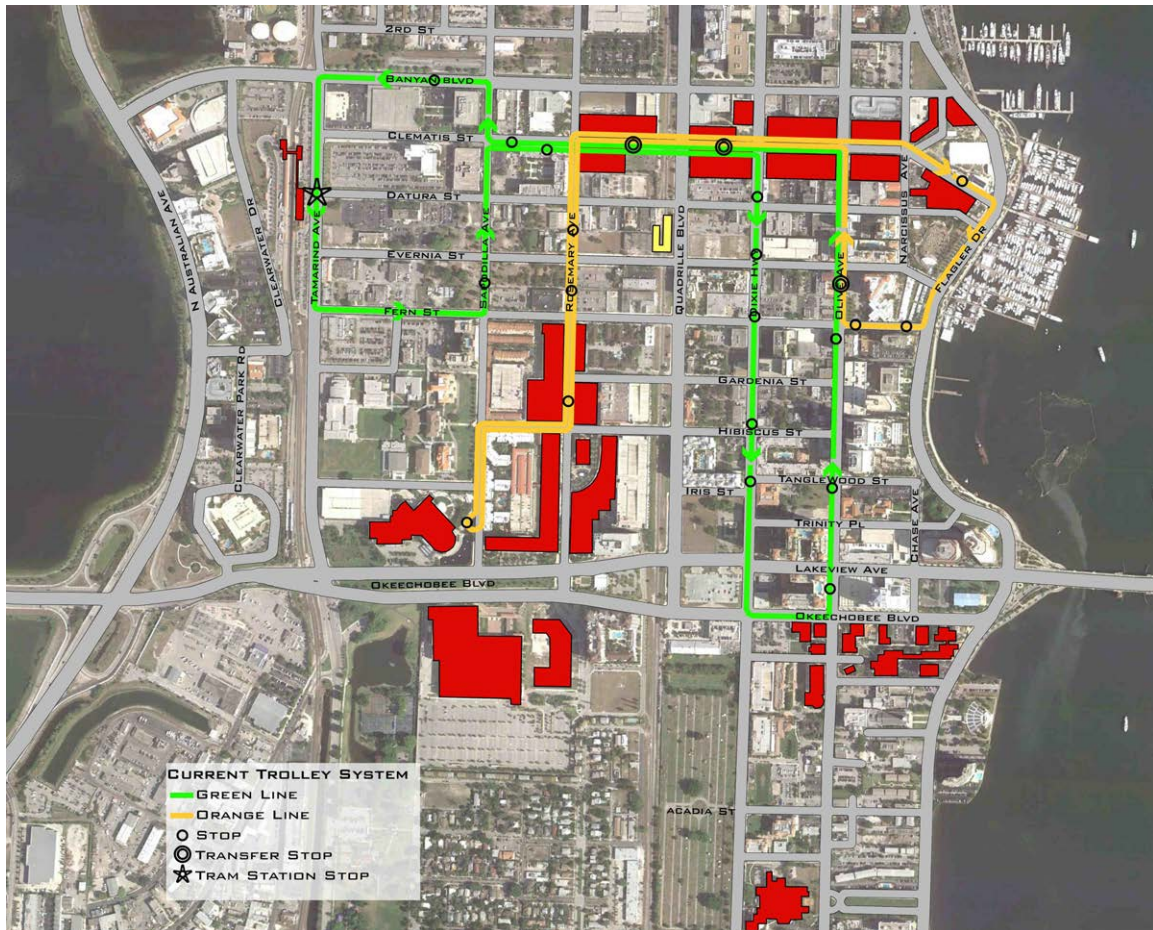
This study was done quickly with a limited understanding of all the criteria that led to the current docking station proposal, but it is hoped that the directors of the City's nascent BikeShare program will take it into consideration as that effort moves forward.

**PART III. A USEFUL, COMFORTABLE, AND INTERESTING WALK**

**The Downtown Trolley**

The downtown is well served by its rubber-wheeled trolleys, which already attract a significant ridership, despite headways (frequencies) that are, technically speaking, too long. While not studied in depth, the current trolley routes would seem to benefit from reconsideration, based on the following factors:

- The arrival of the new All Aboard Florida train station suggests that the two routes should both be reconfigured to include stops in that location.
- Conventioneers and convention hotel guests should not be asked to cross Okeechobee to get to a stop.
- The trolley should also reach south of Okeechobee to welcome students at Palm Beach Atlantic University, and ideally connect to the Norton Museum of Art, a key tourist destination.

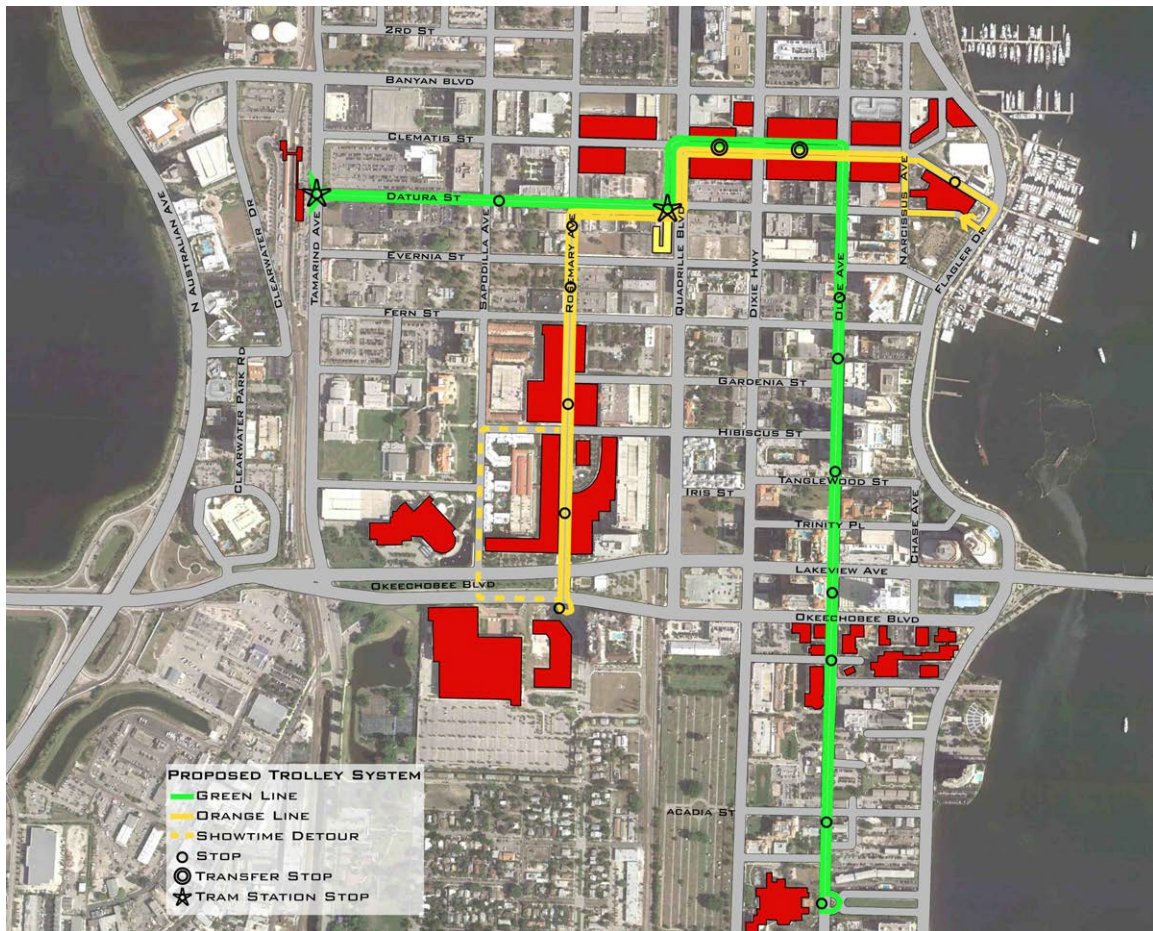


*The current downtown trolley system, with key destinations shown in red and the new train station in yellow.*

- Research on transit performance suggests that one-way loops do not attract ridership as well as two-way linear routes.
- The two-waying of Dixie and Olive will allow that loop to be replaced by a two-way line.
- Transit ridership is negatively influenced by routes that are not simple and easy to picture mentally.

Based on the above factors, a revised route map is proposed here. It's principal features are as follows:

- Both routes pass by the new All Aboard Florida train station.
- The orange line reaches to the new convention center hotel. It also includes a showtime-only loop to the Kravis Center for the Performing Arts.



*The proposed trolley system simplifies routes while reaching more destinations.*

- The green line extends south of Okeechobee past Palm Beach Atlantic University to the Norton Museum of Fine Arts.



- The current loops are largely replaced by straight line paths. Olive is selected over Dixie for a number of reasons, including its proximity to the waterfront and its better connection to activities south of Okeechobee. (It is suggested that the trolley make a 3-point turn at the Intermodal Center.
- Each route becomes a simple L-shape, which is easier to picture mentally.

Finally, there are many people who would like to see one of the trolley routes reach west across Tamarind Avenue to serve the Marriott Hotel and the offices located along Australian Avenue. These locations do contain many potential riders, and also entities like the Marriott that might consider funding the additional cost that such an extension would represent. Unfortunately, the great disconnection of this area from the rest of the downtown makes it difficult to conceive of a way to reach it without inordinately lengthening the trips of many other riders. A deeper investigation is welcome, but it seems likely that that these locations would be better served by a shuttle that is independent of the principal downtown trolley routes.

## **Parking Policy**

Parking covers more acres of urban America than any other one thing, yet until about a decade ago, there was very little discussion about how parking could be managed for the benefit of a city. Thankfully, due to the work of Donald Shoup, Ph.D, the author of *The High Cost of Free Parking*, there is now a comprehensive set of practices that cities can undertake to ensure that downtown parking works to make downtown more attractive, more convenient, and more successful.

These practices, which Shoup organizes as a three-legged stool, consist of the following: eliminating the on-site parking requirement (and addressing downtown parking supply collectively); charging market-based prices for parking; and reinvesting increases in parking revenue in the very districts where that revenue is raised. We will address each of these concepts briefly.

### ***The On-Site Parking Requirement***

Abolishing the off-street parking requirement is one of the three cornerstones of Shoup's theory, because it allows the market to determine how much parking is needed. He notes that "removing off-street parking requirements will not eliminate off-street parking, but will instead stimulate an active commercial market for it."

This is what already happens in America's most walkable communities. In Manhattan, developers do not feel any need to provide parking for their apartments, stores, and offices, so only some do. Eliminating parking minimums simply allows developers to give their customers what they want. But, as discussed ahead, it is only politically viable when combined with a safety net that protects current residents' status quo.

## Residential Use

Shoup is correct when he calls the on-site parking requirement “a fertility drug for cars.” When developers are required to provide one or two parking spaces per residential unit, they tend to sell or rent apartments with parking attached. This effectively subsidizes driving: often, non-driving residents unwittingly pay for the parking of those who drive, making car ownership more affordable and therefore more likely. Simultaneously, it makes housing more expensive for everyone, typically by about 20 percent.

Cities are often reluctant to lower the on-site parking requirement for residential development because current residents who park on the curb are worried about new residents creating increased competition for these spaces. That is why it is essential, before lowering or eliminating the on-site parking requirement for residential development, to complete a “Parking Preservation Plan” that guarantees existing residents their current curbside parking circumstances will not be worsened. This is typically achieved through a parking permit program—well enforced—that is only available to residents of currently existing addresses.

Interestingly, anecdotal evidence from new developments in American cities—most recently Washington, DC and Somerville, MA—suggests that residents should think twice before fighting against reduced residential parking ratios in their neighborhoods. In both cities, new buildings with ample on-site parking rented up principally with tenants who brought cars with them, while new buildings without parking filled up with car-free tenants who principally walked, biked, or took transit. Needless to say, the buildings with ample parking ultimately placed a much greater strain on the roadways and parking spaces of their neighborhoods.

The simple fact is, many developers themselves insist upon high parking ratios and, if they don’t, their lenders do. The typical downtown residential developer is not willing or able to provide a significant reduction in parking supply; therefore, those that choose to do so are aiming precisely towards those renters and buyers who own fewer cars.

The path to the goal line may be unclear, but the goal is not. Reducing or eliminating the residential on-site parking requirement as possible on a neighborhood-by-neighborhood basis will be central to making West Palm Beach a more successful city.

## Retail Use

In terms of parking for retail and dining/entertainment uses downtown, the city already does what Shoup recommends, which is to allow merchants to pay fees that support collective parking supply in lieu of providing their own off-street parking. However, these in-lieu fees are currently being waived in many instances, and there exists a perception of inconsistency in the City’s performance. To create a sense of fairness among merchants, the City needs to create a simple, consistent, and well-enforced policy for the in lieu fees it collects.

***The Right Price***

Where West Palm Beach truly falls behind other well-planned cities is in the pricing of its parking. The current regime seems to be working against the success of downtown, in that it encourages overcrowding at curbs and driver circling during times of peak demand. This outcome is the result of curb parking that is, at times, priced too cheaply in relation to parking in the public structures. This artificially low price drives up demand for the type of parking that is already hardest to find, short-circuiting the free-market functionality that would otherwise allow people to make smart choices about where to park. The result is a scarcity of the underpriced good (curb parking), perceptions of inconvenience among potential shoppers, and an underutilization of the City’s investment in its parking structures.

As described by Shoup, the proper price for curb parking is the price that results in a steady availability of one empty parking space per curb face at all times, an occupancy rate of approximately 85 percent. At times, this occupancy can be achieved with a price of \$0, but at other times the price must rise significantly to assure that “Daddy Warbucks can always find a spot near the furrier.” This outcome can be often be achieved without elaborate or expensive congestion pricing devices, such as the system recently installed in San Francisco: often, the price need only change once or twice a day.

Once the role of parking meters is better understood—not as a revenue source but as a means of ensuring availability—then the current downtown parking regime in West Palm Beach begins to look very silly. With most of the demand in the evenings and on weekends, it seems preposterous that meters become free at 7 PM and on Sundays. The laws of economics are not suspended at those times, so nor should a demand-based price for parking.

Surprisingly, it is often the downtown merchants who fight most ardently against increased meter rates or expanded hours. Their opposition is based on an instinctive fear that shoppers will be scared away, and their sales will suffer. Fortunately, this fear has no theoretical basis and no evidence to support it. In city after city, the business-owners who fought the loudest against market-based pricing were among the first to admit that, once instituted, it increased their sales dramatically. The parking meter was invented, after all, to help businesses—by increasing shopper turnover—and an underpriced parking meter is not being allowed to do its job.

***Parking Benefit Districts***

This third leg of Shoup’s stool can often be what it takes to win over reluctant merchants. It is only fair, and beneficial, to take the extra meter money raised in a popular shopping district and reinvest it in that district itself. In addition to improving sidewalks, trees, lighting, and street furniture, these districts can renovate storefronts, hire public service officers, and of course keep everything clean. As has been demonstrated in Pasadena and elsewhere, these districts can initiate a virtuous cycle where parking demand begets an improved public realm, which in turn begets even greater demand.



If the supply and management of parking in downtown West Palm Beach is going to work to the benefit of downtown West Palm Beach, then a commitment to the above three basic principles of parking policy must explicitly guide City efforts

### *Other Uses of the Parking Lane*

At the micro level, there are four additional current discussions that merit consideration here, all of which deal with the elimination of on-street parking spaces on Clematis Street in favor of other uses for the space: for street tree planters, dining parklets, bike corrals, and taxi stands. As noted, every on-street parking space is worth potentially \$150,000 to \$200,000 in revenue to surrounding merchants, so their removal should not be taken lightly. That said, each of the other suggested uses also has value, and a balanced outcome—one that does not reduce on-street parking by more than perhaps 20 percent—seems wise. To wit:

- Adding one additional (shading) street tree, such as a Royal Poinciana, for every five parking spaces would result in a 10% reduction in spaces, since each tree box can be half the size of a parking space. These are discussed ahead under *Street Trees* as well.
- Adding one or two parking-space-sized dining parklets per block, perhaps awarded to the highest bidder, would result in about a 5% additional reduction in spaces.
- Adding one bike corral per block or two would result in a very small reduction in spaces.
- Easy access to taxis are a hallmark of walkable downtowns, and creating a single taxi stand in a prominent location along Clematis Street would represent a real convenience to visitors. Such a stand should be limited to perhaps three parking spaces in length—a negligible loss.

### **A High-Impact Development Strategy**

Most mayors, city managers, municipal planners, and other public servants feel a responsibility to their entire city. This is proper, but it can be counterproductive, because by trying to be universally good, most cities end up universally mediocre. This is particularly the case when it comes to pedestrian activity. Every city has many areas that would benefit from concerted public investment, but only a few where such investment can be expected to have a significant impact on the number of people walking and biking.

The reason for this circumstance can be found in our earlier discussion about the conditions that are needed to welcome pedestrians: the useful, safe, comfortable, and interesting walk. Unless a walk can simultaneously satisfy all four criteria, it cannot be expected to get people out of their cars. Yet, even in American cities known for their

walkability, only a small percentage of the metropolis provides a tight-grained mix of uses, let alone a collection of well-shaped streets that provide comfort and interest. It is for this reason that most walkability studies focus on downtowns; that's where walking can serve a purpose, and where the block structure is likely to be the most robust. West Palm Beach has lovely neighborhoods beyond downtown, but it can hardly be considered an exception to this rule.

And even within an urban downtown, all is not equal. Generally, there are two types of areas within a downtown where public investment will have a greater impact on walkability than in others.

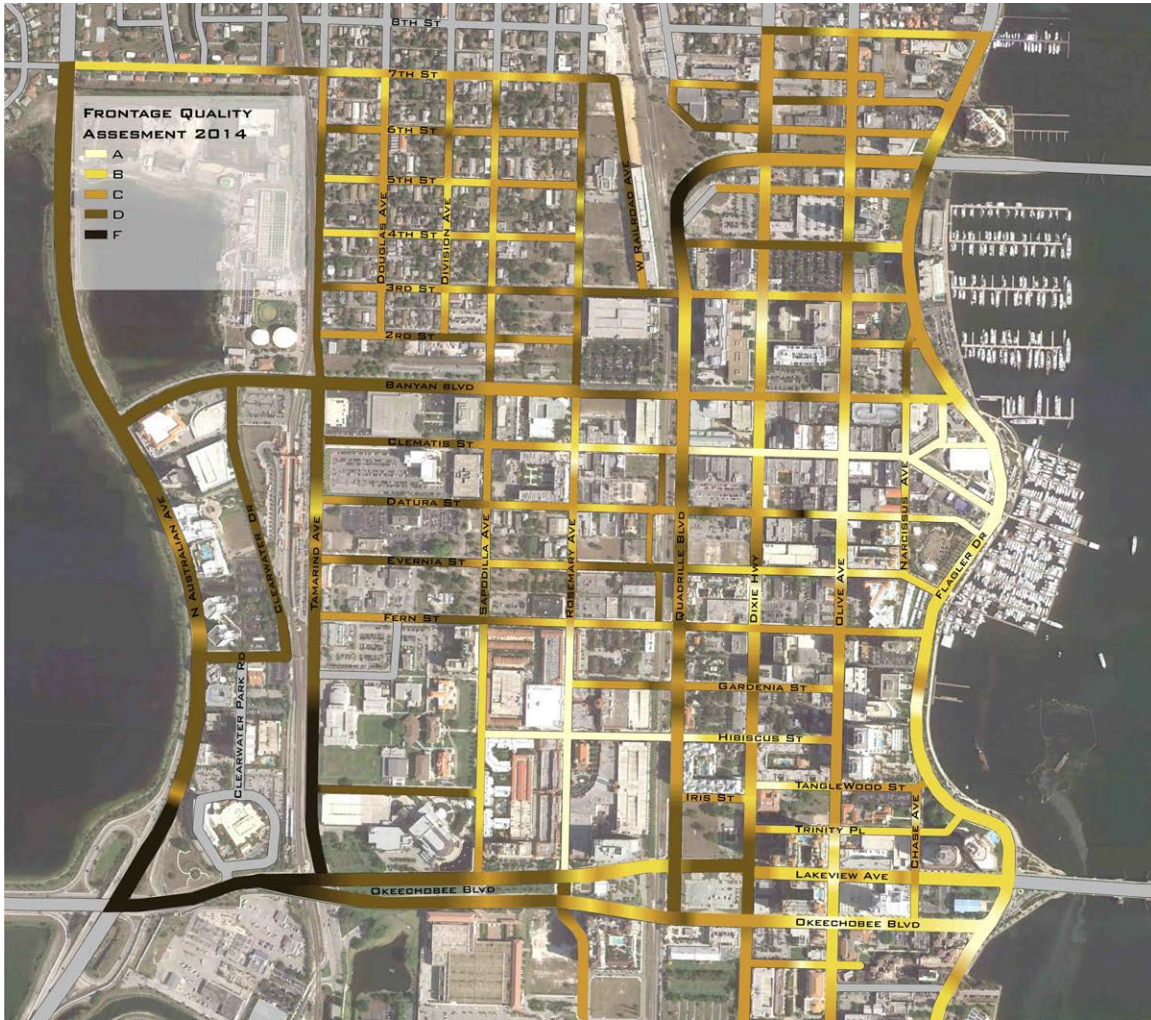
First, only certain streets in the downtown are framed by buildings that have the potential to attract and sustain pedestrian life. There is little to be gained in livability by improving the sidewalks along a street that is lined by muffler shops and fast-food drive-thrus. These streets should not be allowed to go to seed; the trash must be collected and the potholes filled. But investments in walkability should be made first in those places where an improved public realm is given comfort and interest by an accommodating private realm—or a private realm that can be improved in short order.

Second, there are streets of lower quality than those above, but which are essential pathways between downtown anchors, for example from a college to a restaurant row. These streets may require greater investment to become walkable, but that investment is justified by their importance to the downtown pedestrian network.

By studying existing conditions, we can see where streets are most ready, or most needed, to support pedestrian life, and focus there. This technique of *Urban Triage*—a phrase coined by Andres Duany—may sound a bit mercenary and unfair, but it results in money being spent wisely.

### ***The Street Frontage Quality Rating***

The drawing below is a Street Frontage Quality Rating for the study area. This map rates each street segment subjectively in terms of its pedestrian quality, based on the criteria of use, comfort and interest. Lighter-colored areas are generally useful, comfortable and interesting, and therefore capable of attracting pedestrians. Darker-colored areas fail to embrace the sidewalk with active building edges, and it is hard to imagine how limited interventions could turn them into places where pedestrians would feel comfortable.



*The Street Frontage Quality Rating ignores Safety and instead focuses on the Usefulness, Comfort, and Interest of the street space.*

Unlike many American cities, West Palm Beach is expected to receive a great amount of new construction in its downtown over the next few years. These new buildings will have a profound impact on the quality of the streets they face, and will alter the findings shown above. The drawing below represents an attempt to map all of the proposed buildings that seem well on their way to construction in short order, with the Street Frontage Quality Rating adjusted to reflect their presence. While this diagram represents a marked improvement to the downtown, it still indicates how some area are more likely to attract pedestrians than others.





The revised Street Frontage Quality Rating adjusts the prior diagram to the anticipated reality of 2016.

It is worth stressing that the three criteria measured in this diagram do not include the geometry of the street itself—whether it makes pedestrians feel safe. That important category has already been addressed in the *Street Redesign* section, and is unique among the four criteria in that it is something that public entities can improve very quickly, spending public dollars. In contrast, usefulness, comfort, and interest can be improved by cities over time—through design codes and, potentially, investment—but those improvements are usually achieved through the efforts of private actors, at arm’s length.

Given that the improvement of these three criteria—the ones rated in the drawing above—are generally not publicly controlled, and tend to take more time, it is wise for public agencies to focus on street design as a principal way to improve walkability quickly. That effort, however, needs to be prioritized based upon where the ground is already primed for such improvements to take root.

In this drawing, the ratings—from Best to Worst—truly cover the full range of quality, from delightful to miserable. Only those places marked Best or Good have frontages that

are inviting to pedestrians. It is evident that West Palm Beach has a clear core of reasonably inviting downtown frontages, with a sweet spot that is bounded by its two best streets: Clematis Street to the north and Rosemary Avenue to the west. This area still needs much work, but it is superior to the remainder of the downtown. This map allows us to create a second drawing that can be more instrumental in the direction of our efforts.

### *The Primary and Secondary Networks of Walkability*

Turning a Frontage Quality Rating into a Primary Network of Walkability is a two-step process. First, the Rating is studied for patterns that emerge, in which certain streets of higher quality come together to form a clear network of walkability. Second, that network is supplemented by the additional streets that are necessary to connect it to the key anchors that it almost reaches, including other pieces of itself. These anchors are chosen for practical purposes—like connecting a theater to its parking—and for social purposes—like connecting a transit hub to a health clinic. It is important to remember, in this work, that some people do not have the luxury of automobile use and, while they may not be many in number, they rely more heavily on walkability than others do.

As diagrammed on the next page, trajectories shown in light green are already pedestrian-friendly, capable of becoming so with limited short-term intervention, and/or important to the establishment of a meaningful network. This light green web is the Primary Network of Walkability.

Shown in darker green in the same drawing is the Secondary Network of Walkability. Once the Primary Network is established, the Street Frontage Quality Rating suggests that this larger secondary network also possesses the potential to welcome pedestrians. Given the somewhat lower quality of surrounding frontages, the establishment of this Secondary Network must be considered a longer-term prospect.

This Secondary Network is distinguished from the few remaining uncolored streets by the fact that it has mid-term potential. The presence of missing frontages and/or high-speed roadways on the uncolored thoroughfares exclude them from consideration as walkable trajectories except in the longest term. Most notable among these are Quadrille, which has only one segment that seems poised to attract pedestrians in the decade ahead.

As can be seen in the Diagram, the Primary Network of Walkability includes most of the streets in the heart of the downtown. It reaches north beyond Clematis Street near the waterfront, where a lot of redevelopment has already taken place. It also includes the important east-west corridor of Okeechobee Boulevard, which is becoming well-shaped by buildings even as its traffic characteristics remain noxious. It also includes Olive Avenue and the Flagler waterfront heading south, and Clematis street as a key connection to the Palm Beach Intermodal Center.





*The Primary and Secondary Networks of Walkability emerge from the Frontage Quality Assessment.*

Worth discussing are the streets within the heart of the downtown that have been relegated to the Secondary Network of Walkability. These include the following:

- Most of Datura and Fern Streets which, in addition to having lower-quality frontages than other parallel streets, will also lose their significance as connective east-west corridors when they are snipped by the All Aboard Florida station platforms; and
- Segments of Gardenia and Tanglewood Streets that have lower-quality frontages.
- All areas west of Sapodilla, where there are fewer generators of pedestrian activity, with the exception of Clematis Street, the key east-west access to the Palm Beach Intermodal Center.

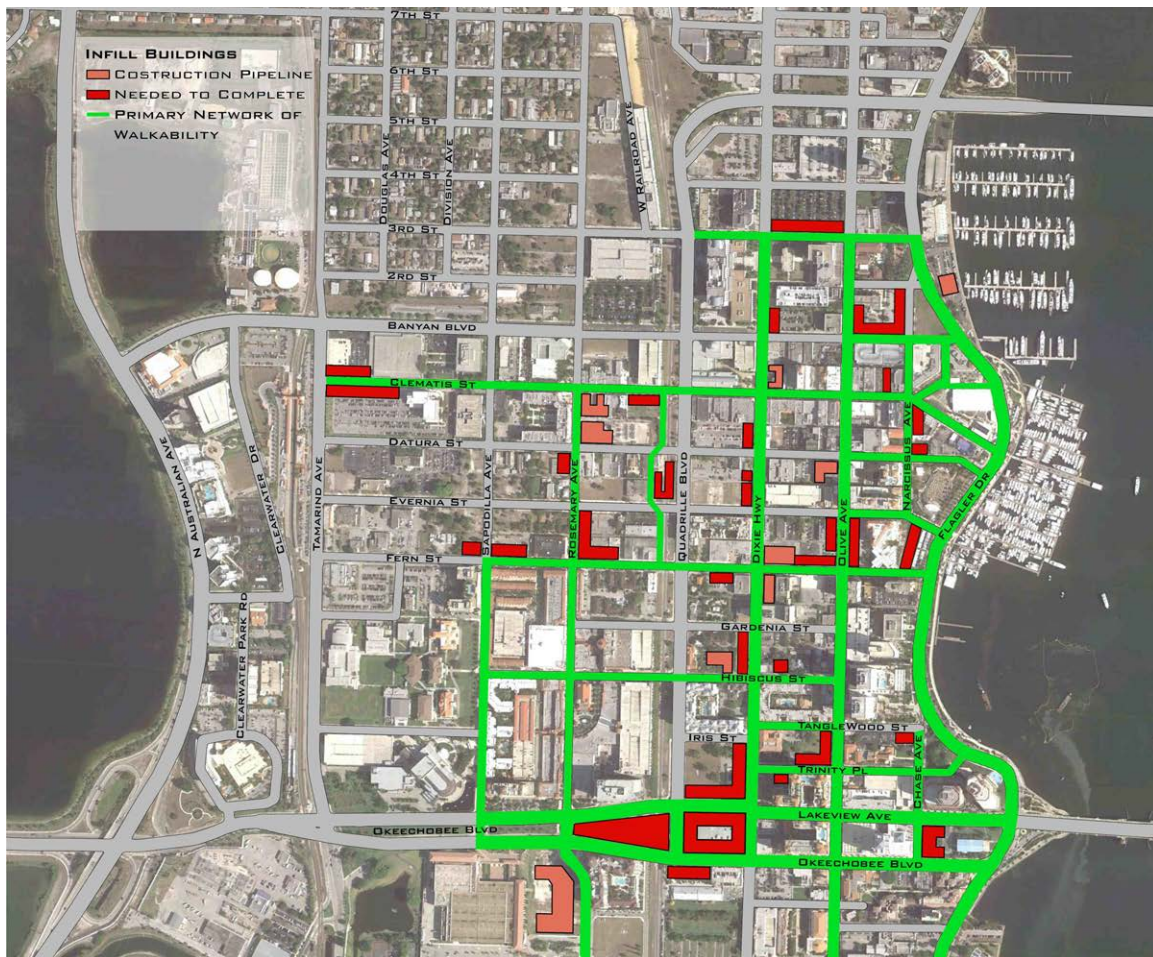
It is important to note that this diagram is based upon a current understanding of the quality of downtown frontages, and it will change as additional buildings are developed in the downtown.



In addition for being a tool for prioritizing the improvement of city streets, the Primary Network of Walkability is also a tool for prioritizing investment along streets. Such an approach is detailed in the Infill section that follows.

***Infill Sites***

In terms of private investment—and public investment in vertical construction—the next diagram takes the Primary Network of Walkability one step further, to indicate the non-roadway construction that is necessary if the Primary and Secondary Networks of Walkability are to take root. Transforming the realities of the Urban Frontage Quality Rating into the Network of Walkability requires correcting the flaws that distinguish these two drawings. This is done by filling in missing teeth, hiding parking lots, and otherwise turning unfriendly street edges into friendly ones. When combined with the thoroughfare redesigns already outlined, these changes will add comfort and interest to these street’s planned improvements in safety.



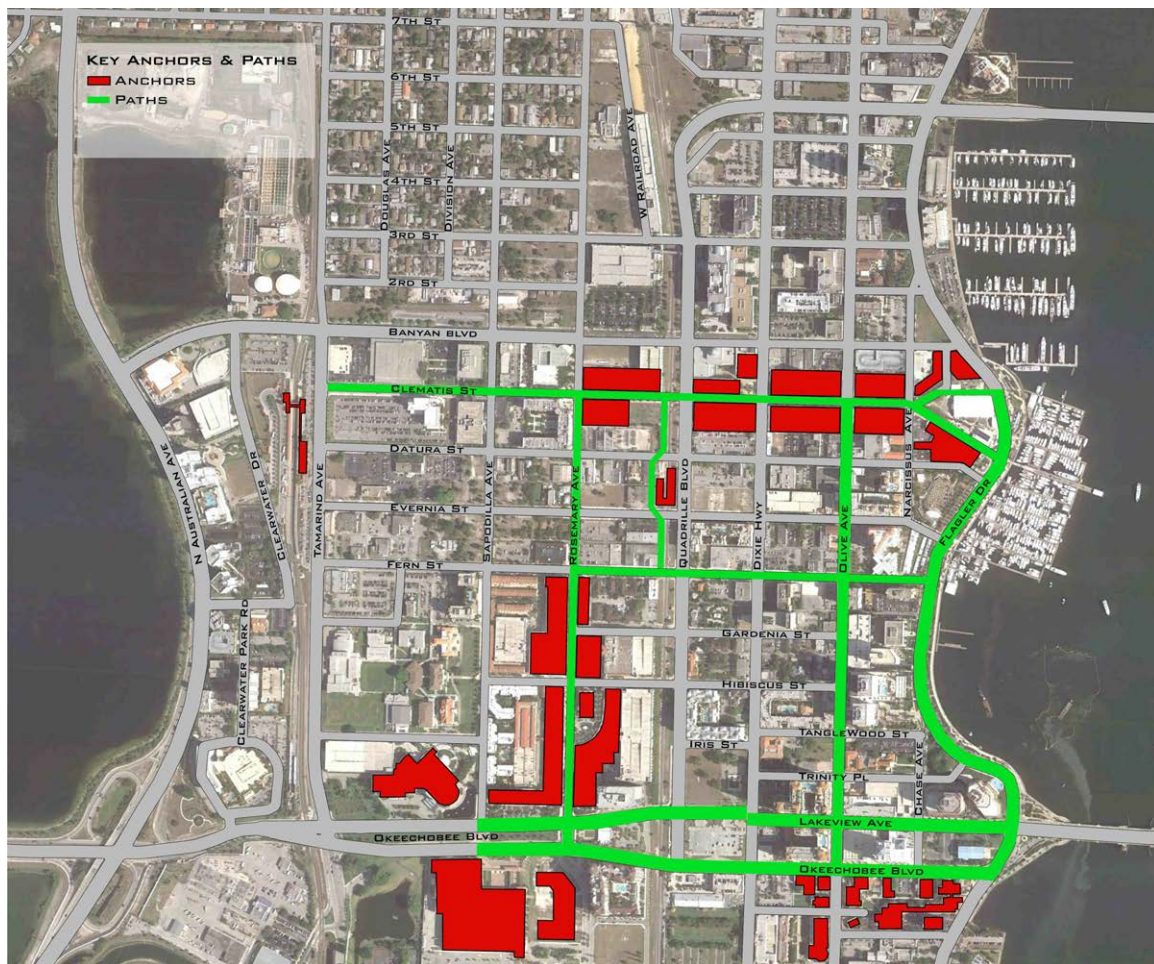
*The sites indicated in bright red are the buildings that must be constructed to perfect the Primary Network of Walkability.*

Creating this diagram, titled Infill Sites, is a simple mechanical exercise, in which all missing teeth are replaced by buildings. Shown in red above are the few dozen

buildings—some quite small—that are needed to make the Primary Network of Walkability complete. The specific footprint of each building shown in the Infill Sites diagram can be somewhat flexible, with the understanding that buildings should sit directly against the sidewalk along the majority of their frontages, and that those frontages should receive active, open facades.

As a tool for prioritizing construction, however, the above drawing has a problem: more than thirty building sites are listed as high-priority—too many to incentivize all at once. It is necessary to identify an additional criterion to better determine which locations within the downtown are most in need of development. That criterion is represented by the concept of Anchors and Paths.

***Anchors and Paths***



*The key generators and receivers of pedestrian activity in the downtown, and the paths that connect them.*

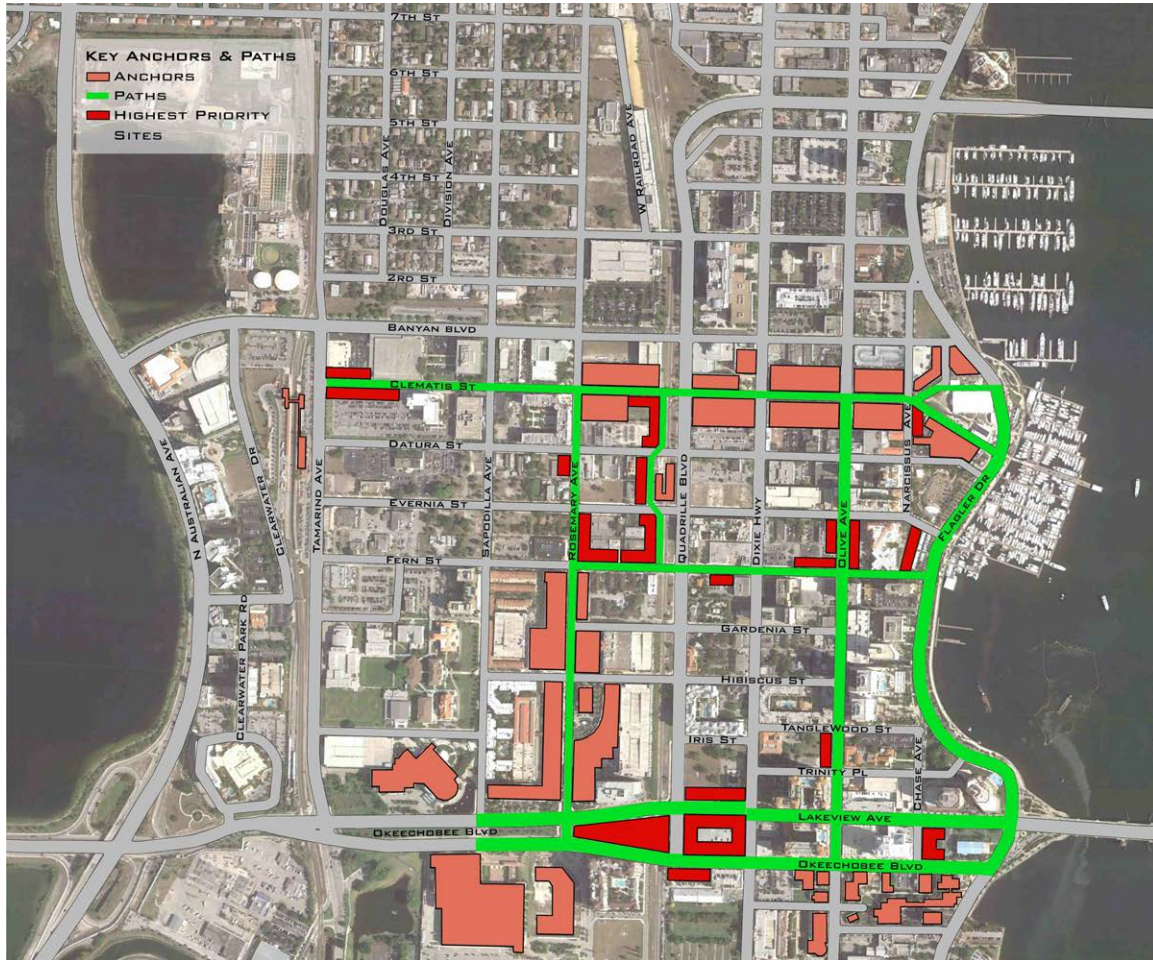
The drawing above identifies the key anchors (generators and receivers of pedestrian activity) in the downtown, and the paths among them.



The key downtown anchors include the following:

- Clematis Street;
- City Place;
- The Palm Beach Convention Center and its Hotel;
- The Kravis Center for the Performing Arts;
- Palm Beach Atlantic University;
- The Intracoastal waterfront; and
- The Palm Beach Intermodal Center and the All Aboard Florida station.

As can be seen in the diagram, properly connecting these anchors to each other relies upon excellent pedestrian trajectories along major segments of Clematis, Fern, Lakeview, Okeechobee, Rosemary, Olive, and Flagler, as well as the new frontage road being planned just west of All Aboard Florida. When one limits the recommended infill buildings to those located along these paths, a new diagram emerges.



*Based on their location along key downtown paths, the eighteen highest-priority development sites are shown in bright red.*

Highlighted in this drawing are eighteen building sites. Key among them are the following:

- The sites facing the new frontage road that is to be located just west of the All Aboard Florida station;
- The site across Rosemary Avenue from the Publix;
- The unappealing metal shed at the corner of Rosemary and Datura;
- The small parking lot at the corner of Clematis and Narcissus;
- The parking lot against the Flagler Drive green between Evernia and Fern; and
- The sites between and along Okeechobee and Lakeview.

To the degree that the City or other public agencies are able to sponsor or incentivize building construction in downtown, the eighteen sites shown above are the ones to build first, as they perfect the downtown's key pedestrian corridors. Investments elsewhere, while perhaps justifiable for other reasons, will not contribute as meaningfully to downtown walkability.

### *A Strategy for Leverage*

Placing buildings upon the Infill Sites described above is an instrumental strategy for improving street life in West Palm Beach, and also for bringing more housing into the downtown. Unfortunately, real estate developers are finding it difficult to provide downtown housing at a rate that is attainable to the millennials and other urban-minded groups that are most likely to want to locate in the heart of the city. One strategy that can help in this regard is the dedication of underutilized capacity in downtown parking garages in support of new housing.

While it is not the only municipality that has made use of this strategy, Lowell, Massachusetts, provides a compelling example. As recently as 2000, the heart of the city held only about 1700 housing units, of which fully 79 percent were subsidized and income-restricted. Thirteen years later, the number of units has roughly doubled, and almost 85 percent of the new housing is market rate. This outcome was the result of a number of strategies, the most significant of which was perhaps the City's assignment of underutilized spaces in its five municipal lots towards the construction of new housing. Specifically, rather than having to build new lots to satisfy their lenders' demands for parking, the city explicitly assisted developers in identifying parking spaces that were already sitting empty in the City's garages.

This approach, in addition to helping the City pay down its debt service on the garages, allowed developers to provide housing at a cost that was perhaps 25% lower than it would have been otherwise. A similar discount could go a long way toward making middle-class housing more possible in downtown West Palm Beach.

In considering how much housing these garages could potentially leverage, it is necessary to consider the complimentary loads that different uses place upon parking spaces at different times of the day. While it would be beneficial to determine a more precise formula for West Palm Beach, it is probably a safe guess that at least half of the people living with cars in downtown will commute to work every weekday, vacating their

parking spaces during their current daytime peaks. That assumption leads to the determination that the additional capacity of a given garage is equal to whichever is less: the weekend/evening availability, or twice the daytime availability.

Old City Hall and Banyan Lots

Both of these lots are already near capacity.

Evernia Lot

This garage has 780 Spaces. Daytime Availability is 304; Weekend/Evening Availability is 307. Here, the nighttime availability is the limit, and permits approx. 300 additional cars. At a ratio of 1.5 cars per unit, this garage could support 200 units of new housing.

Police Department Lot

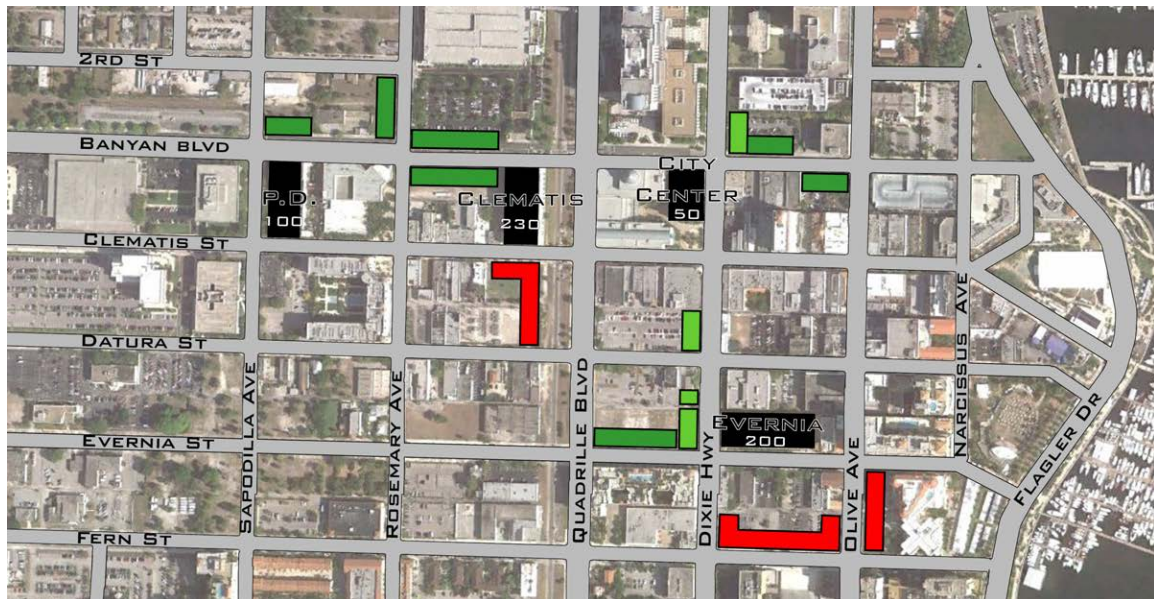
This garage has 250 Spaces. Daytime availability is 129; Weekend/Evening availability is 157. Here, the nighttime availability is the limit, and permits approx. 150 additional cars. At a ratio of 1.5 cars per unit, this garage could support 100 units of new housing.

City Center Lot

This garage has 266 Spaces. Daytime availability is 41; Weekend/Evening availability is 97. Here, the daytime availability is the limit, and permits approx. 80 additional cars. At a ratio of 1.5 cars per unit, this garage could support an 50 units of new housing.

Clematis Lot

This garage has 575 Spaces. Daytime availability is 237; Weekend/Evening availability is 355. Here, the nighttime availability is the limit, and permits approx. 350 additional cars. At a ratio of 1.5 cars per unit, this garage could support 230 units of new housing.



*These four City-owned parking garages contain enough underutilized capacity to support the construction of the indicated number of apartments.*



Totaling all of the above availability reveals enough underutilized capacity to lower the cost of construction on almost 600 new housing units downtown. It is important to note that this housing must be located within a short walk of the underutilized garages. That mandate leads to the above drawing indicating which buildings on the prior Infill Sites diagrams can be served by which garages. These sites are prioritized based on the earlier discussion, with red as highest priority and dark green as lowest.

The City of West Palm Beach already offers real estate developers access to parking spaces in underutilized City Garages. This analysis is intended to encourage a more aggressive effort in that regard. Finally, this technique need not apply only to the six downtown garages that are owned by the City, but to County and private lots as well, where the City can act as an intermediary between developers and lot owners.

Dedicating underutilized parking to new construction in this way may not be enough to dramatically impact the construction of housing, but it is one strategy out of several that the City and other public agencies can pursue in support of a more vital downtown.

### **All Aboard Florida**

There is great concern about the impacts on downtown West Palm Beach on the arrival of All Aboard Florida along the train tracks west of Quadrille Boulevard. While residents are rightly excited about the important high-speed rail connections that AAF's 32 daily trains will provide, they are rightly worried about the interruption that the station facility will introduce to the downtown street network: Due to the length of AAF's trains, the new platforms will cause both Datura and Evernia Streets to be snipped at the tracks.

### ***Founded and Unfounded Concerns***

Experience in cities suggests that closing downtown streets in this way is always a bad thing. Any interruption to the traditional grid creates odd lagoons of inactivity which are detrimental to both retail success and public safety. They also relocate traffic to adjacent streets, which can overburden them. Moreover, each train causes interruptions to east-west traffic throughout the downtown. Given these potential problems, is All Aboard Florida a net positive or a net negative for West Palm Beach?

Before answering this question, it is necessary to remove from the discussion some of the fears that threaten to distract us from the issues that matter. First, in terms of traffic, there is little reason to think that the removal of Datura and Evernia from the network will put any real strain on surrounding streets. A single two-lane street can easily handle 1000 cars per peak hour. Current peak-hour counts at the railroad tracks are as follows:

- Clematis: 300;
- Datura: 210;
- Evernia: 151; and
- Fern: 282.

- Based on this count, shifting all of Datura’s traffic to Clematis and all of Evernia’s traffic to Fern would still result each of those streets being at about half capacity.

Next is the question of delays caused by the lowering of crossing gates for each of the 32 daily trains through downtown West Palm Beach. These will indeed present a minor inconvenience, but the 90-second wait time for each train is hardly longer than a typical traffic-light cycle on Okeechobee or Quadrille. (Worth more attention is the rumor that All Aboard Florida will bring with it a dramatic increase in the number of long freight trains through downtown, a serious concern that must be addressed independently of this discussion, and prevented.)

Finally worth discussing is All Aboard Florida’s insistence that their trains be 860 feet long, with an engine on each end and seven cars in between. This configuration is presented by AAF as an immutable fact, as if their trains are beholden to divine principles unalterable by man. In fact, their trains are subject to the laws of physics and economics, and are likely more profitable at seven cars than six or five..

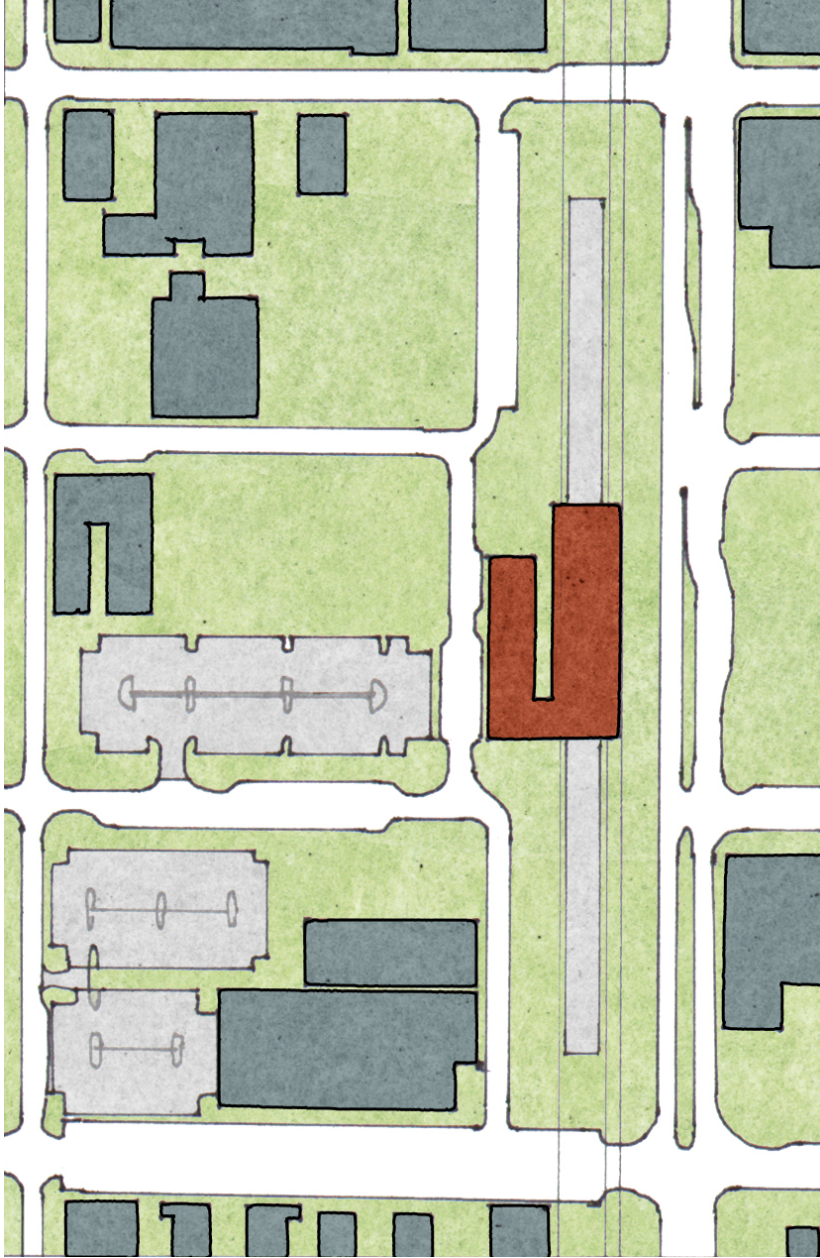
The prospect of a shorter train is raised here because it should not be considered too sacred for discussion. That said, at the time of this writing, it would seem that All Aboard Florida is likely to be developed as planned, with 860-foot trains, and with acceptable impacts upon traffic flow in West Palm Beach. The tradeoff that it represents is one in which two street connections are sacrificed in order to gain something tremendously valuable: high-speed transit connections to Miami and Orlando, and the commercial and tourism benefits that these represent.

### *The Urban Design Mandate*

On its face, from a planning perspective, this seems a fair trade. But it is only a fair trade if the lost street connections are not allowed to blight their surroundings, something that depends principally upon the details of the design of the station area. These details will determine whether the new train service results in greater liveliness and economic energy downtown, or less. Specifically, if the area surrounding the All Aboard Florida station is not to become a moribund pedestrian no-man’s land, the following criteria must be met:

- The four streets of Clematis, Datura, Evernia, and Fern must be connected by a continuous new street that is built before Datura or Evernia are snipped;
- This new street must be built to the highest urban design standards, with properly-sized driving and parking lanes, pedestrian-friendly straight and angular (rather than auto-centric curvilinear) geometries, and parallel parking along all curbs enfronting active land uses. (In front of the train station, these parking spaces can be marked as “Drop-Off Only.”)
- Development of the three blocks bounded by this new street, Rosemary Avenue, Clematis, and Fern must be required to enfront the sidewalks with active building

edges. Specifically, the building edges against Clematis, Fern, and the new street must be held to the highest standard, while the edges against Datura and Evernia must provide enough active buildings fronts—perhaps a minimum of 50 percent—to keep them attractive to pedestrians.

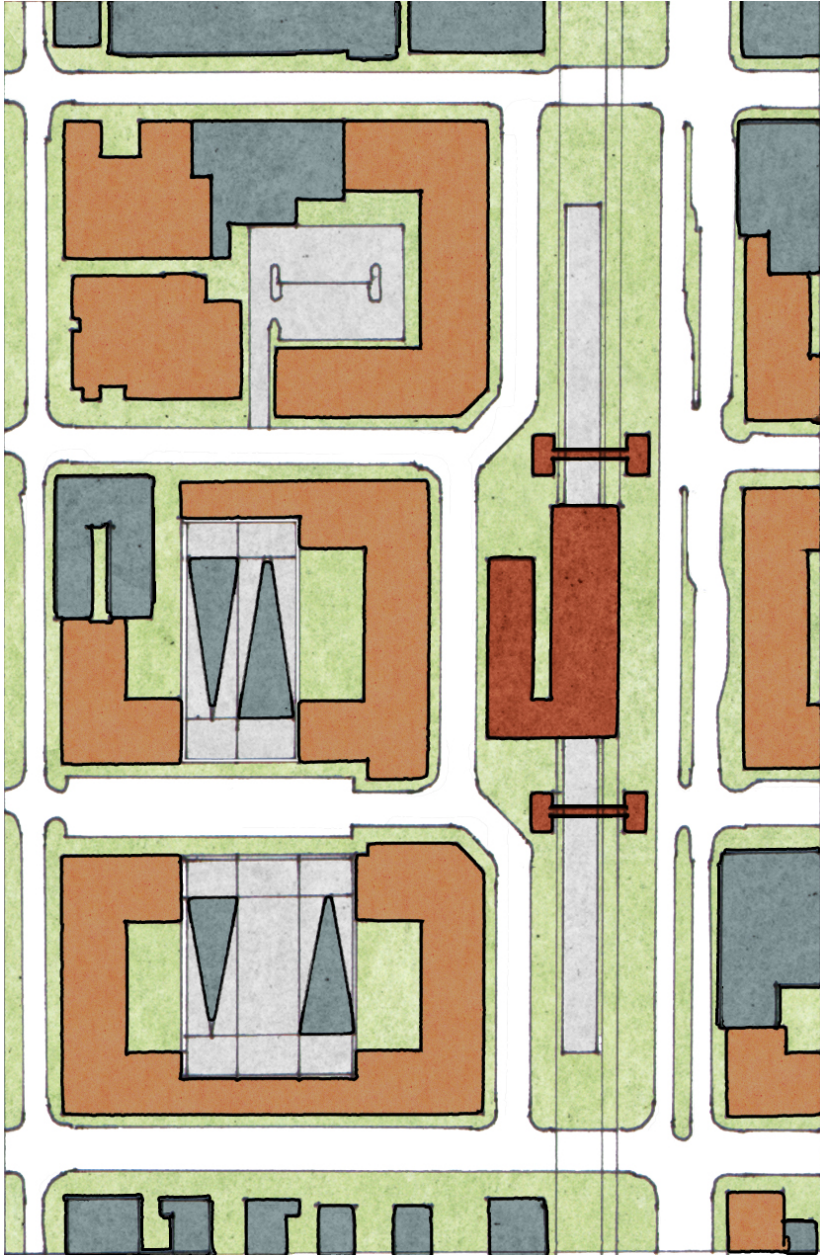


*This drawing attempts to consolidate the latest plans reviewed for the station area.*

In its most recently-reviewed form, the design of the station area does not satisfy the majority of these criteria. Shown above, it does not commit to an urban design that will support pedestrian activity; instead, it consists of suburban-style streets with limited curb parking and curvilinear intersections, surrounded by surface parking lots and empty lots. Everything we know about walkability suggests that this design will likely have a greater negative impact on its neighborhood than the closure of Datura and Evernia Streets.



In order to properly communicate the flaws of this design, the next page shows an illustrative design of what a proper station area would look like. This design was completed without any interaction with All Aboard Florida of the City, and is not meant to be *the* design for the site. Rather, it is just one design of many that accomplishes what any acceptable proposal should do, including the following:



*An illustrative plan of what a proper design for the station area might look like. New buildings are shown in orange.*

- Street geometries are angular rather than curvilinear;

- The new street, Rosemary Avenue, and Clematis and Fern Streets all receive continuous active building frontages along their sidewalks.
- Datura and Evernia Streets also receive largely active frontages. (In this particular plan, the depth of mid-block parking garages allows Datura to be continuously active, while Evernia has exposed garage edges for a portion of its length.
- While less significant, the attention to continuously enfronted sidewalks is continued across the tracks to the eastern edge of Quadrille Boulevard.
- Streets are all designed to hold parallel parking on both curbs, with the exception of double-angle parking that is maintained on Evernia Street. (Note that an alternative scheme for the new street along the tracks would place parallel parking and sidewalks on the west side only for the blocks between Clematis and Datura and between Evernia and Fern, since there would be nothing but train tracks to the east in these locations.
- Whether multistory structures of surface lots, all parking facilities are located at midblock and hidden to the greatest extent possible.
- Pedestrian crossover bridges are provided along the trajectories of Datura and Evernia Streets. Importantly, these are conceptualized as civic monuments and carefully placed on the centerlines of both streets, to artfully terminate framed views of them from locations east and west.

Less important than the specifics of this design is that it corresponds with the criteria listed three pages earlier, and also the fact that it exists; the most concerning aspect of the All Aboard Florida proposal is that it has not yet been accompanied with an area plan of this quality. To be blunt, the road configurations in the current AAF plan suggest that their station design has been approached principally as an architectural site planning exercise rather than what it is: a city planning effort of the greatest significance. Such an effort merits an urban design exercise, ideally co-sponsored by AAF and the City of West Palm Beach, that applies all current best practices to the challenges of the site and its program.

### *The 7<sup>th</sup> Street Ask*

Looking holistically at the downtown, the closures at Datura and Evernia Street suggest one other demand that the City should consider making of All Aboard Florida and its partners. Currently, there are no crossings of the railroad tracks allowed between 3<sup>rd</sup> Street and Palm Beach Lakes Boulevard, a distance of two-thirds of a mile. This disconnection in the city grid deprives the northwest quadrant of downtown of its access to the Intracoastal, and keeps the growth that is occurring east of the tracks from potentially catalyzing growth further west. The current configuration of 7<sup>th</sup> Street would allow a direct connection across the railroad tracks, if only the rail companies would allow it. Pending neighborhood approval, such a connection makes great sense.



## Street Trees

As already noted, street trees make streets safer and more comfortable, and also perform a wide range of ecosystem services including storm-water absorption and urban temperature reduction. But they do not play this role anywhere near as effectively if they are palms or if they are dead. For this reason, it is recommended that, except in rare cases when a special signature look is desired, the City simply stop planting palm trees, and consider eventually replacing palm trees on its streets with deciduous shade trees that grow to an ample height.

In terms of keeping trees alive, a change in current practices is clearly needed. Trees recently replanted on Quadrille Boulevard are dead and dying. Many tree pits in downtown contain dead trees or none at all. People interviewed suggest that there is a muddying of roles and responsibilities; merchants and building owners do not know who is responsible for what. One interviewee joked that, in downtown, the web app “See, Click, Fix” functions primarily as “See Click.”

In this regard, the City needs to be realistic about the responsibility that it can place on the shoulders of other parties. Just as most parents do not abandon their children at birth, smart cities realize that investments in tree planting only pay off when met with a commensurate effort in ensuring the trees’ survival. When one property owner does not maintain his or her street tree, all property owners nearby also suffer, as does the city as a whole.

Finally, it was noted that an earlier effort to plant additional trees on Clematis Street was vetoed by merchants, who were concerned about the impact these trees might have on parking provision and store visibility. As already discussed, the addition of trees should be limited to ensure a reduction in parking of not more than 10%—an amount that should not have a significant impact. When it comes to store visibility, the best-practices solution is to plant taller trees whose canopy begins above head height. Given the height of pedestrians and drivers and the sight angles to store signs, canopies need only be kept about 8 feet high minimum.

Clearly, it costs more to plant taller trees, but the investment is well worth it. Merchants may be interested to learn that one recent study showed 12 percent higher income streams accruing to shops on tree-lined streets.

## Wayfinding

As already noted, the fact that the westbound leg of Okeechobee is called “Lakeview” causes confusion among some southbound drivers who, hoping to go west on Okeechobee, skip the Lakeview turn and find themselves confronted by a one-way Okeechobee heading east. This problem can be fixed by prominent signs on Dixie (and eventually on a two-way Olive) alerting drivers of Lakeview’s role.

For drivers entering downtown, wayfinding seems acceptable in general, but there does not seem to be adequate signage directing cars to public parking garages. Given the many benefits of convincing more of its visitors to park in these structures, such signage merits a concerted investment.

The City has already identified improved wayfinding around downtown as a high priority, particularly as it pertains to pedestrian activity. As The City considers new signage, it would be wise to investigate the concept called “Walk Your City,” which replaces or supplements conventional downtown tourist maps with destination-specific signs that identify walking direction and time.



*A “Walk Your City Campaign” would call attention to the many walkable destinations in downtown West Palm Beach.*

One of the things that makes *Walk Your City* so exciting is that the signs are inexpensive and understood as temporary; if they are popular and effective, they can be made permanent with more elegant materials. Because they celebrate walking—a typical sign might say, “It’s a 15-minute walk to the Norton Museum of Art”—they help to create a pedestrian culture. Some *Walk Your City* campaigns begin as “guerilla wayfinding,” with signs posted without City participation or permission, but there is no reason why an officially condoned or even City-sponsored effort would not be more effective than one launched underground.

It is easy to make a first recommendation as to what destinations would be best connected by *Walk Your City* signage. These would include the Convention Center (and its Hotel), the Kravis Center, City Place, Clematis Street, the Waterfront and City Commons, the Intermodal Center (and eventually All Aboard Florida), and the Norton Museum.

Deciding where and in what number to place the signs is a trickier matter, and will require some careful planning in order to avoid overkill. Too many signs will cause them to be ignored. The highest priority would seem to be attracting Conventioneers and City Place visitors northward to Clematis Street, and then east across Quadrille to the old heart of downtown.

The City has a lot to juggle at it moves forward with the implementation of this study's recommendations, but when it turns its attention to wayfinding, it is hoped that an unconventional, pedestrian-centric approach of this nature will receive full consideration.

## IMPLEMENTATION CHECKLIST

The 56-point checklist that follows is a summary and enumeration of the recommendations included in this document, with no prioritization or justification attached. This list is intended as an aid to implementation, but will not seem logical or perhaps even rational to those who have not read the entire report. All items are described as simply as possible, so readers are encouraged to refer to the report's full discussion before implementing them.

### A Strategy for Street Redesign

1. Acknowledge “The Fundamental Law of Traffic,” that increased roadway capacity is typically met by increased traffic, and therefore reject any suggestions that increased capacity can ease congestion.
2. Acknowledge that Florida’s Vehicles Miles Traveled has declined 7% since 2007, even as State population grew, and therefore that no future traffic projections should anticipate increased driving (absent increased capacity).
3. Acknowledge that gridded traffic networks are efficient and intelligent, and allow traffic to shift to parallel streets when a particular street becomes overtaxed, and therefore consider any capacity reductions in light of additional capacity available elsewhere.
4. When a street contains more lanes than its current traffic volumes should demand (understanding that a typical one-way lane handles 650 cars per peak hour), rededicate that excess pavement to other use.\*
5. When a street contains lanes wider than 10 feet, rededicate that excess pavement to other use.\*
6. In making use of excess pavement, balance the two goals of providing ample on-street parking and creating a comprehensive bicycle network that corresponds with current best practices, including a limited network of protected lanes.\*
7. \* Items 4, 5, and 6 above represent the general technique behind the specific recommendations that follow.

### North-South Thoroughfares

8. Tamarind Avenue: restripe to 10-foot lanes to include a 2-way cycle track on its west flank; insert pedestrian-activated crossing signals at Clematis and Datura.
9. Sapodilla Avenue: Restripe to two 11-foot driving lanes and an 8-foot parking lane between Evernia and Fern; restore parking to the east flank between Banyan and Datura.



10. Rosemary Avenue: Designate as a cycling route with prominent Sharrows; restripe to three 10-foot driving lanes and two 5+-foot bike lanes between Banyan and 3<sup>rd</sup>; restripe as two 9-foot driving lanes and a 7-foot parking lane from 3<sup>rd</sup> to 4<sup>th</sup>; eliminate one-way segment between 7<sup>th</sup> and 9<sup>th</sup>; stripe an 8-foot parking lane on the west flank from 8<sup>th</sup> to 11<sup>th</sup>.
11. Quadrille Avenue: Working with FDOT: Reduce the curb return radii at Fern to approx. 20 feet; create a southern crosswalk at Gardenia; create an 8-foot parking lane between Olive and Dixie by eliminating the center striped wedge and shortening the left-hand turn lane; restripe the roadway between Dixie and 3<sup>rd</sup> to hold five 10.2-foot-wide driving lanes and a 9-foot-wide parking lane on the east curb face; from 3<sup>rd</sup> to Banyan, fill in the sidewalk segment that has been removed for handicap parking, and make all parking spaces 12 feet wide, narrowing each driving lane to 12 feet.
12. Olive and Dixie: convert to two-way traffic; conduct a study with the goal of increasing on-street parking, and then create spaces by cutting 3 feet out of the sidewalk where possible, creating a 10-10-7 configuration; place a parking lane on the west flank of Dixie between 4th and Banyan.
13. South Dixie: restripe from south of Pembroke Place to Westwood Road to include three 11-foot lanes, including a continuous center turn lane, plus an 8-foot parking lane beyond a 3-foot striped buffer.
14. South Olive: shorten the left-hand turn lane just south of Okeechobee to create 4 curb parking stalls; shorten the bus stop area just north of Banyan to create additional parking.
15. Chase Street: on Trinity park, insert approximately 7 parking spaces on the west flank and 10 on the east flank.
16. Narcissus Street: insert approx. 9 parallel parking spaces between Datura and Evernia.
17. Flagler Drive downtown: where no parallel parking is present, restripe the westernmost lane of Flagler drive to include an 8-foot parking lane beyond a 4-foot striped buffer; where parallel parking is already present, restripe the parking lane and its adjacent lane to include 60-degree angle parking instead; restripe the easternmost lane to include a ten-foot two-way cycle track protected by a 2-foot striped buffer.
18. North and South Flagler Drive: As further described in this document, restripe from Avila to 15<sup>th</sup> to include a continuous two-way cycle track along its eastern flank; reduce the number of travel lanes to three from Okeechobee to Acacia, and to two further south; reduce the number of travel lanes to three from the Flagler Memorial Bridge to Pine; insert a parallel parking lane on the west curb from Barcelona to Okeechobee and from the Flagler Memorial Bridge to Pine.

**East-West Thoroughfares**

19. 5<sup>th</sup> Street: Reinstate curb parking where possible from Olive to Lantana, adding about 7 spaces; restripe from Lantana to Flagler to include two 11-foot driving lanes and an 8-foot parking lane on the south flank.
20. 4<sup>th</sup> Street: Reinstate curb parking where possible from Olive to Dixie, adding about 2 spaces.
21. 3<sup>rd</sup> Street: Restripe the odd chamfer east of Rosemary to include parallel parking where it fits; shorten the left-hand turn lane east of Rosemary and introduce approx. 8 parallel parking spaces on its north flank.
22. Banyan Boulevard: From Australian to Dixie, restripe Banyan to hold five 10-foot driving lanes plus a north-side cycle track; from Dixie to Flagler, restripe Banyan to hold two 10-foot driving lanes plus an 8-foot parking lane shielding a 10-foot north-side cycle track.
23. Clematis Street: If there is a desire to eliminate vehicles from the most lively sections of this street, test this scenario temporarily (avoiding any expensive construction) to see if the change helps or hurts businesses; expand the hours of closure carefully if this change is met with success.
24. North Clematis Street: Restripe the block west of Flagler as a 13-foot driving lane flanked by two 7-foot parking lanes.
25. Evernia Street: Restripe the roadway between Quadrille and Olive to include two 11-foot driving lanes flanked by two 16-foot-deep 45-degree angled parking lanes.
26. Fern Street: Replace the current design proposal with one in which 10-foot driving lanes are flanked by 8 foot parking lanes, 9-foot rain gardens, 8-foot sidewalks, and a 10-foot two-way cycle track between the parking and the curb; eventually rebuild the block between Sapodilla and Rosemary according to the same plan, or simply with rear-in instead of front-in parking.
27. Hibiscus Street: From Quadrille to Dixie, reinstate 2-sided 45-degree angle parking in all locations where the carpath is approximately 54-feet wide
28. Okeechobee: Working with FDOT, restripe 12-foot lanes to 10-feet and place an 8-foot cycle track on each flank of the roadway; rebuild intersections with tighter curb radii and smaller gaps between median islands; rebuild/restripe Rosemary Avenue intersection as detailed in this report.
29. Okeechobee East of Rosemary: Restripe travel lanes to 10 feet, resulting in an 8-foot westbound cycle track.

30. Lakeview Avenue: Restripe travel lanes to 10 feet, resulting in an 8-foot eastbound cycle track.

### **One-Way Reversion**

31. Just north of downtown, revert all of Douglas, Division, Sapodilla, and Rosemary Streets to two-way traffic (without increasing the width of travel lanes).

### **Traffic Signals**

32. Replace the signals at Clematis & Rosemary and 7<sup>th</sup> & Tamarind with 4-way stop signs. Remove center turn lanes at these intersections.
33. Introduce a signal at Quadrille and Fern.
34. When Dixie and Olive are reverted to two-way traffic, convert fourteen signals on those two streets to stop signs; all should be 4-way stops, except along 4<sup>th</sup>, 3<sup>rd</sup>, and Hibiscus, where 2-way stops may be more appropriate.
35. When signals are replaced by stop signs at intersections with center turn lanes present, these lanes are removed.
36. Remove pushbuttons from all signals except those along Okeechobee and Flagler. In those locations, working with FDOT, allow the pushbutton request to preempt the signal cycle.
37. Implement simple concurrent crossing signals at all intersections. Use Lead Pedestrian Indicators (LPIs) at intersections with high pedestrian volume. Working with FDOT as necessary, shorten signal cycles to a target length of 60 seconds for the entire cycle at all signalized intersections.
38. Until they are converted to two-way, ensure that the “green wave” signal timing along Dixie and Olive allows speeds no faster than 25 MPH.

### **Hidden Parking**

39. The map included in the *Hidden Parking* section simply collects information already discussed in the *Street Redesign* section, but this document may be used to help conceptualize the changes suggested.

## Cycle Facilities

40. The map included in the *Cycle Facilities* section simply collects information already discussed in the *Street Redesign* section, but this document may be used to help conceptualize the changes suggested.
41. Consider expanding the BikeShare docking locations to include additional installations near Australian Avenue, the High School of the Arts, the Kravis Center, Palm Beach Atlantic University, and the Flagler Drive waterfront. If necessary, eliminate somewhat redundant facilities at Clematis & Olive, Flagler & Datura, Evernia & Dixie, and on Narcissus near Evernia.

## The Downtown Trolley

42. Reroute the Orange and Green trolley lines to eliminate unnecessary loops and to connect to key locations south of Okeechobee as well as the new All Aboard Florida train station.
43. Service each trolley line with two trolleys to improve headways.

## Parking Policy

44. Begin a concerted effort to reduce or eliminate the on-site parking requirement for all downtown uses, understanding that effective measures (A “Parking Preservation Plan”) must be put in place to protect the on-street parking enjoyed by current residents.
45. Re-price meter parking downtown to achieve an around-the clock curb vacancy of approximately 15%. Create a Parking Benefit Districts that dedicate excess revenue from increased meter rates to the physical improvement of the neighborhoods where the meters are located.
46. As noted in more detail in this report, add a strictly limited number of additional street trees, dining parklets, bike corrals, and a taxi within the parking lanes along Clematis Street.

## A High-Impact Development Strategy

47. When prioritizing street improvements and support for new development, look first to the streets and empty lots located within the Primary Network of Walkability, and only subsequently within the Secondary Network of Walkability. Place the highest priority upon those streets and empty lots highlighted in the *Key Anchors and Paths* diagram.
48. Create a concerted program for dedicating the excess parking capacity in the Evernia Lot, Police Department Lot, City Center Lot, and Clematis Lot to



residential developers so that they may satisfy their bank lending requirements for on-site parking.

### **All Aboard Florida**

49. Connect the four streets of Clematis, Datura, Evernia, and Fern with a continuous new street that is built before Datura or Evernia are snipped. Build this street to the highest urban design standards, with properly-sized driving and parking lanes, pedestrian-friendly straight and angular (non-curvilinear) geometries, and parallel parking along all curbs enfronting active land uses.
50. Working with All Aboard Florida and other landowners, create an urban design plan for the sector bounded by Clematis, Rosemary, Fern, and Quadrille to ensure that the future development of all properties results in all sidewalks being lined by active building edges.
51. Working with All Aboard Florida and its partners as well as the effected neighborhoods, work to reconnect 7<sup>th</sup> Street across the railroad tracks.

### **Street Trees**

52. For downtown locations, limit the City's approved trees list to deciduous (non-palm) species that grow tall and provide shade.
53. Modify the existing tree maintenance regime to ensure that street trees are properly cared for, and quickly replaced when necessary.

### **Wayfinding**

54. Create improved signage notifying southbound drivers that Lakeview Avenue is the proper path to Okeechobee, City Place, and I-95.
55. In concert with its efforts to improve downtown wayfinding, invest in prominent signage directing visitors to downtown parking garages.
56. Create a Walk-Your-City-style signage campaign directing pedestrians to key downtown locations including the Convention Center (and its Hotel), the Kravis Center, City Place, Clematis Street, the Waterfront and City Commons, the Intermodal Center (and eventually All Aboard Florida), and the Norton Museum.

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