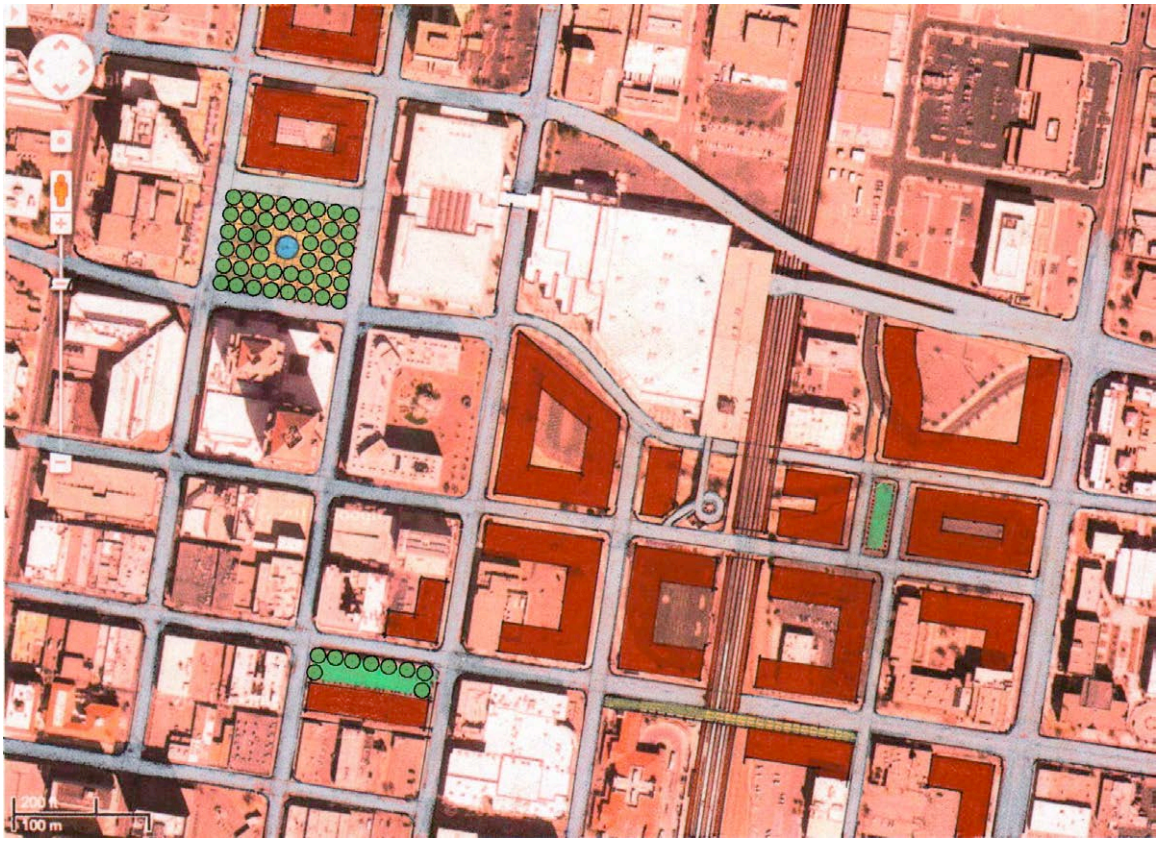
ALBUQUERQUE, NEW MEXICO
DOWNTOWN WALKABILITY ANALYSIS



SUBMITTED SEPTEMBER 5, 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 Albuquerque.

The study area for this exercise is principally the heart of the downtown, bounded by 8th Street to the west, the Broadway to the East, Lomas Boulevard to the north, and Coal Avenue 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 the downtown's principal east-west avenues.

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 simultaneously useful, safe, comfortable, and interesting. Those four criteria are then used as a basis for the recommendations that follow.

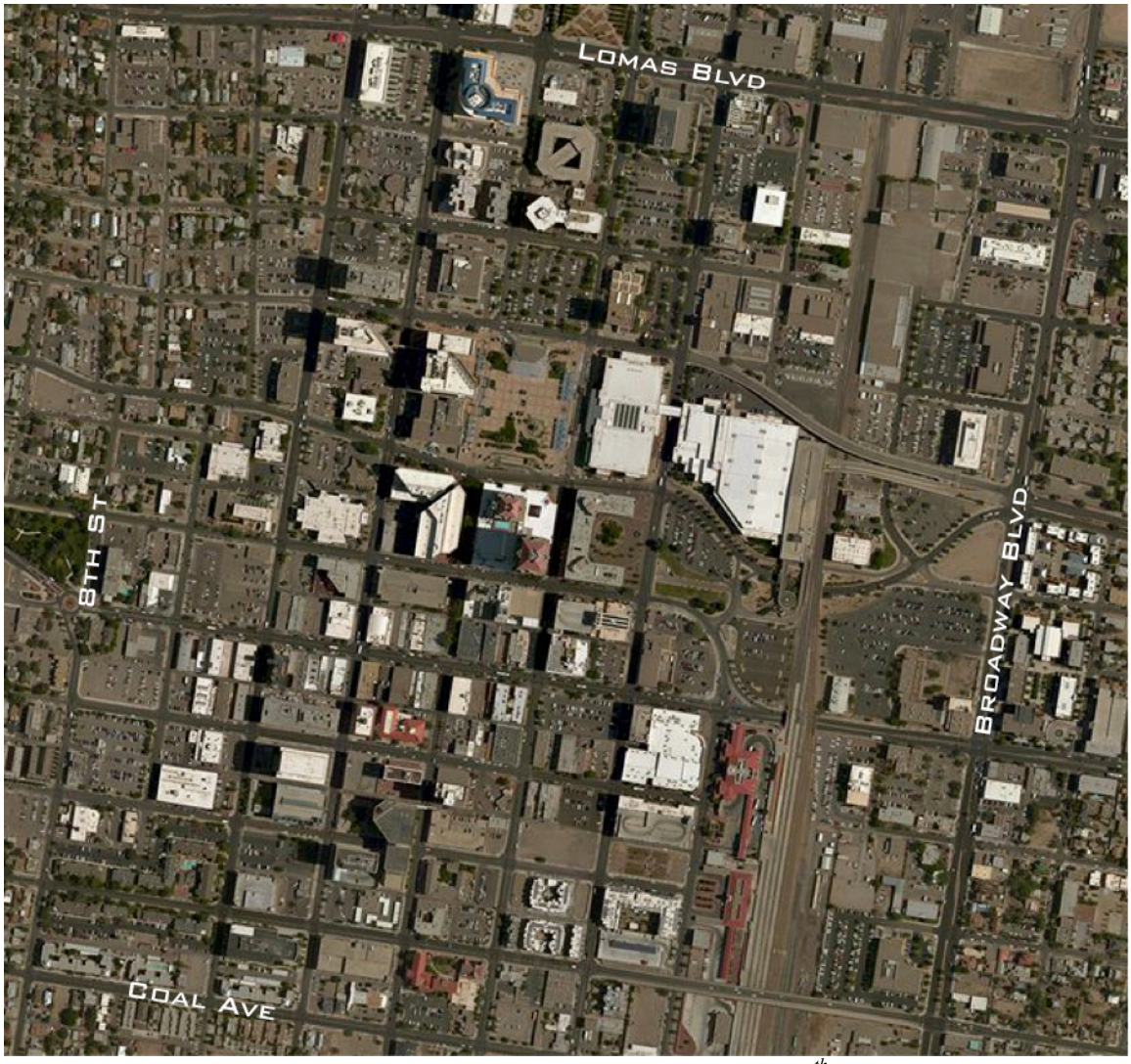
These recommendations are organized into two sections. The first, *A Safe Walk: Street Redesign,* establishes a strategy for striping streets within the downtown, and then demonstrates how that strategy could be used to improve almost every downtown street. In most cases, suggested street improvements make use of restriping and revised signalization rather than reconstruction, in order to conserve funds.

The second section, *A Useful, Comfortable, and Interesting Walk,* 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 determine where the fewest investments in infrastructure are likely to have the greatest impact on people's choice to walk. Next, a strategy is suggested for allowing underutilized parking structures to leverage the construction of new housing. Finally, several important sites—and pressing issues—are given special attention for their potential contribution to a more walkable downtown.

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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, 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 8th Street to the west, the Broadway to the East, Lomas Boulevard to the north, and Coal Avenue to the south.

Downtown Albuquerque is the center of a metropolis of more than half a million people. Historically a vibrant hub of commercial and political life, it has seen its fortunes shift as a great suburban migration decanted many of its resources to surrounding areas. Now, after several decades of enlightened but limited reinvestment—and some real

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improvement—some people still fear that "downtown Albuquerque is a place whose potential has become permanent."

Despite the naysayers, there is every reason to believe that downtown is poised for a true transformation. National trends, to which Albuquerque is certainly not immune, show the beginnings of what is understood to be a tremendous shift of populations back to city centers. With 88 percent of the next 100 million American households expected to be childless, and with 77 percent of millennials saying that they want to live in America's urban cores, demand for downtown housing in Albuquerque is about to skyrocket—but only if downtown can provide a truly urban lifestyle that distinguishes it from its surrounding suburbs. And central to that lifestyle—its very essence—is walkability. Polling among both millennials an empty nesters indicates a strong preference for mixed-use neighborhoods in which automobile use is an option rather than a universal mandate.

Based on these indicators, the question is not whether people and businesses will be moving downtown, but whether they will be moving to downtown Albuquerque. The answer to that question will depend in part on whether Albuquerque provides a downtown environment that welcomes and supports walking.

It can be said with some objectivity that there is still much work to be done in this regard. Most streets in downtown Albuquerque are engineered to invite driving speeds considerably higher than those posted. Few sidewalks have adequate tree cover. Many curbs have been robbed of their parallel parking, to the detriment of business viability and sidewalk safety. Bicycle facilities are in short supply. And current City construction standards, enforced by the Development Process Manual, ensure that every street "improvement" downtown makes the city less, not more, walkable.

Acknowledging these circumstances, Albuquerque's political and business leaders 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 in a manner that both directs and motivates real change in the short term. Few people will dispute whether its recommendations will lead quickly to more walking, biking, and vitality downtown. Few people will question the cost of its recommendations, which are limited. But some people may ask whether these recommendations, which have been applied successfully in every region of the United States, somehow cannot achieve similar results in Albuquerque. It is hoped that the evidence gathered in this report will quell those fears, and overcome the attachment to business as usual that is generally the greatest impediment to the revitalization of American downtowns.

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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. The book's full test is recommended as background reading for those who wish to better understand the theory and experience behind the recommendations in this report.

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-20th-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

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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 retires 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 Albuquerque 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.

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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 new 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.

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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

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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.

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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.

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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.

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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-20th 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

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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.

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PART I. 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; and
- Replacing unwarranted signals with mostly-all-way stop signs.

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

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walking more interesting, while shortening the distances between destinations. Downtown Albuquerque benefits from a small block size (typically about 300 feet square) and it is clearly those places with larger blocks—such as on both sides of the railroad tracks—where walkability suffers.

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, many of Albuquerque's downtown streets clearly have more lanes than they need to satisfy the demand upon them. In relationship to their peak-hour traffic counts, 2nd, 6th, Marquette, Tijeras, and Coal all have a full extra lane, and most others have segments that are also oversized. In all 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 American urban lane is 10 feet wide, which comfortably supports speeds of 35 mph. A typical American highway lane is 12 feet wide, 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 Albuquerque contain lanes that are 12 feet wide or more, and drivers can be observed approaching highway speeds when using them. Indeed, many downtown lanes are 15 feet wide, which may be some sort of national record. 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 Albuquerque, as 12 feet is the lane width mandated by current City ordinances. 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."

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- 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 of 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 that 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.

In terms of discussing the downtown's many 15-foot wide lanes, it is difficult to know where to begin. It is clear that they were laid out without any concern that such wide lanes might encourage speeding; this is understandable, as the research discussed above has only slowly come to light. While non-traffic-engineers might find it surprising, traffic engineers have until recently been trained that wider lanes are safer, because they provide broader recovery zones. Only in the past decade have mainstream engineers begun to concur with the public that broader streets encourage faster speeds and thus experience more deadly crashes.

Applying this newfound understanding to downtown Albuquerque results in a compelling mandate for change. Like removing extra lanes, replacing the 12- to 15-foot standard

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(sometimes exceeded) with a 10 foot standard—or 11 where possible on key bus routes—creates a tremendous opportunity to reallocate pavement to better use.

A final comment is needed about the demands of buses. City buses are 8'-6" wide, plus another foot for mirrors. The mirrors are rarely below 7 feet tall, so they do not pose a threat to pedestrians. When a bus in a 10-foot lane passes a car in a 10-foot lane, there is no conflict. When a bus passes another bus under similar circumstances, both vehicles fit, but it can be a tight squeeze. This squeeze requires the bus to slow down slightly, for a moment that is too short to impact bus schedules, but has a positive impact on the street's safety to all users.

Avoiding One-Ways

Like many American cities, Albuquerque many years ago converted a number of its two-way streets to one-way traffic, most notably Marquette, Tijeras, Lead, and Coal. 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. Albuquerque has already made this change to the downtown sections of Lead and Coal Avenue. This report will recommend a similar reversion for Marquette and Tijeras Avenue.

Limited Use and Length of Turn Lanes

As streets are restriped in Albuquerque, 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 Albuquerque. 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

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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. Most turn lanes in downtown Albuquerque seem to have been inserted in an attempt to forestall anticipated congestion rather than to solve a specific challenge, and many are longer than their queues of cars mandate.

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 Albuquerque 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 more than twice as large. This large curve increases crossing distances while encouraging vehicles to round corners at higher speed.

Second, in the area between 2nd Street and Broadway, the traditional rectilinear city grid has been replaced by a suburban-style swooping street system that has all the qualities of a highway on-ramp, and invites similar behavior. Wisely, the City already has plans to eliminate the Central-to-Copper curve between 1st and 2nd, as it has recently cut its twin to the south of Central. Cars can be observed speeding around this corner with great frequency, and the geometry of the curve actually makes it impossible for pedestrians to reach the Alvarado Transportation Center while walking south on 1st Street.

Including Bike Lanes

Cycling is the largest planning revolution currently underway. . . in only some American cities. The news is full of American cities that have created significant cycling populations by investing in downtown bike networks. Among the reasons to institute such a network is 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. When properly designed, bike lanes make streets safer for drivers, cyclists, and pedestrians alike.

Albuquerque has a good regional bike system, and the beginnings of a useful bike lane network entering its downtown along Marquette, Tijeras, and the recently restriped Central Avenue. But these lanes all disappear once they hit the heart of the city. Most of the bike "routes" downtown are simply shared streets. Some of these are safer than others, but none of them are the type of facility that encourages people who are not dedicated cyclists to take up biking as a way to get around.

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Albuquerque 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. In one study, the insertion of buffered bike lanes in city streets was found generally to reduce injuries to all users (not just bicyclists) by 40 percent. In Brooklyn, NY, the insertion of buffered bike lanes in Prospect Park West reduced speeding from 75% to 17% of all vehicles and reduced injury crashes by 63 percent, while tripling the number of cyclists on the street.

Additionally, bike lanes are good for business. A study in Portland, OR, found that customers arriving by bike buy 24 percent more at local businesses than those who drive. And merchants along 9th Avenue in New York City showed a 49 percent increase in retail sales after buffered bike lanes were inserted.

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.

On-street parking is also essential to successful shopping districts. According to the consultant Robert Gibbs, author of *Urban Retail,* each on-street parking space in a vital shopping area produces between $150,000 and $200,000 in sales.

Most of the streets in downtown Albuquerque have lost a significant amount of 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. Some of these streets have no parallel parking at all. On many other streets, parking spaces are simply missing for no discernable reason.

Bringing this parking back will contribute markedly to the success of downtown. It is in recognition of the value of downtown parking that cities, including Albuquerque, regularly invest tens of millions of dollars in parking structures. Yet there are literally several parking structures' worth of missing curb spaces in downtown Albuquerque. This unrealized asset should compel the city to quickly make an inventory of all the places in the downtown where curb parking has been disallowed, to determine where it can be reinstated. The individual street redesigns that follow discuss some, but not all, of these many locations.

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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.

Most downtown streets in Albuquerque lack adequate trees, which is not surprising given the cost of planting and watering them. This cost is easier to justify when one enumerates the many hidden benefits of shade trees, 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.

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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.

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

Albuquerque must attain a much larger supply of housing to achieve a proper balance of activities downtown. From a planning perspective, the ideal, walkable, 24-hour city center contains a fairly even jobs/housing balance. The downtown Albuquerque study area, which aligns exactly with census tract 002100, contains only 645 housing units (holding a population of 1887) in an area of 313 acres, for a gross density of 2.06 units per acre, hardly higher than some of the most sprawling exurban developments. While no data was available on the number of jobs downtown, that number can be guessed at. There are approximately 2.3 million square feet of offices, which are about 30 percent vacant. Assuming 200 square feet per worker (2.3M x 70% / 200), there are about 8000 workers downtown, in offices alone. Adding a margin for retail and other jobs, it would seem that the jobs/housing ratio is likely to be at least 5:1.

If we are to achieve a better balance, then we must look carefully at the cost of housing. There is a very small market for luxury housing in downtown Albuquerque; the people most ready to live downtown are 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 Albuquerque 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.

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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 concerning that the study area includes room for many hundreds of 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.

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

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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. 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.

Given the expense of planting and maintaining trees in Albuquerque's dry climate, it is useful to prioritize the city's streets for tree investment based upon each street's likelihood of being walked upon. Such a prioritization is one of the tasks undertaken by this study.

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

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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 desires 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 commercial corridors along Central Avenue, east and west of the railroad tracks, is one of the biggest challenges in the planning of downtown Albuquerque.

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.

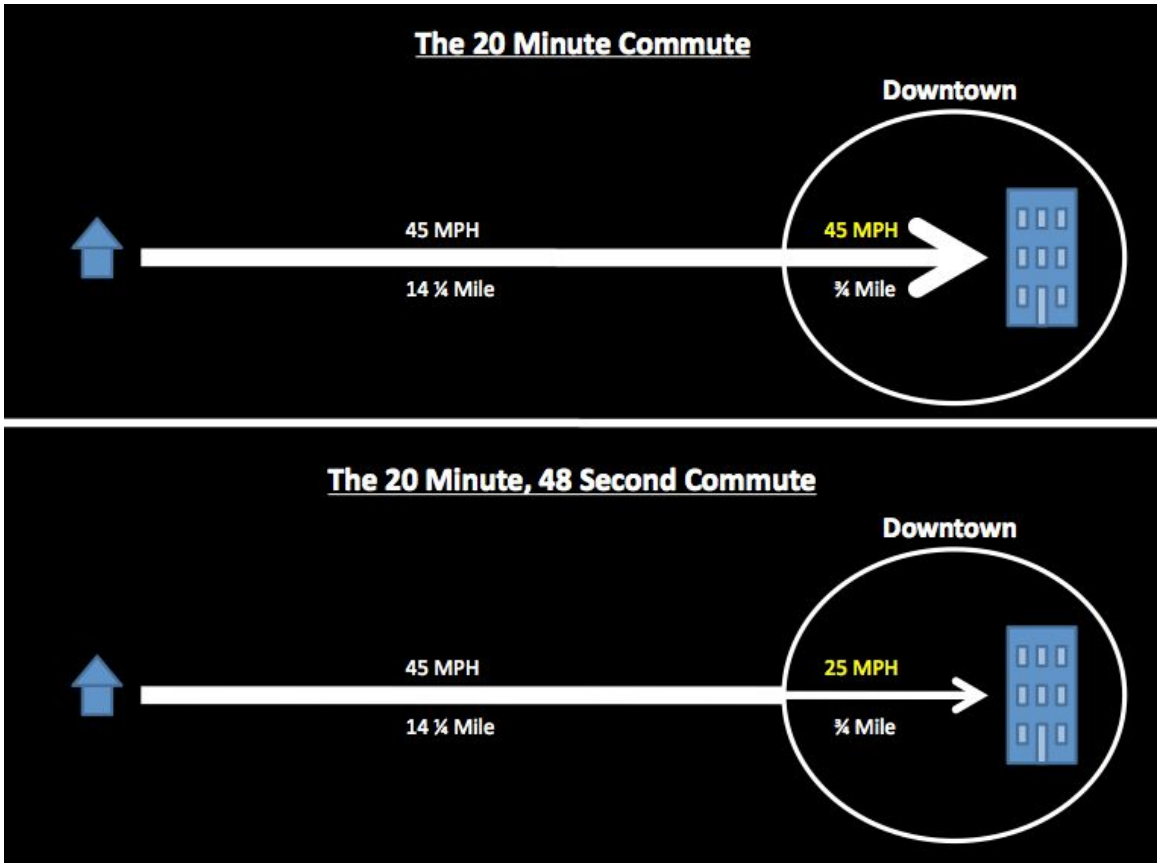
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PART II. A SAFE WALK: STREET REDESIGN

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.

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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 this study area. 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 Albuquerque 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 six headings: *Induced Demand, Peak VMT, Induced Speeding, The Network, The Functional Classification Mismatch,* and *Overcoming Institutional Barriers.*

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 Albuquerque, 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. With only one exception—Central Avenue—it does not reduce the capacity of any street to anywhere near 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.

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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 Albuquerque, the data for New Mexico 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. The experience of Peak VMT makes it clear that any traffic study that includes a "background growth" factor in its assumptions must be rejected.

Sometimes, people's response to the above logic is to say, "yes, VMT is shrinking, but we expect more development downtown, so we need to assume more traffic." This reasoning fails to apprehend that an increase in downtown development is one of the factors contributing to the national decline in VMT. As more residential units come downtown, and as city neighborhoods become more walkable through redevelopment, more people make the choice to walk, bike or take transit. In this case, growth reduces VMT rather than contributing to it. Such a situation should be the expected outcome of the recommendations included in this report.

Washington DC provides an instructive example. Between 2005 to 2009, as the District's population grew by 15,862 people, car registrations fell by almost 15,000 vehicles.

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. As already discussed, 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,

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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.

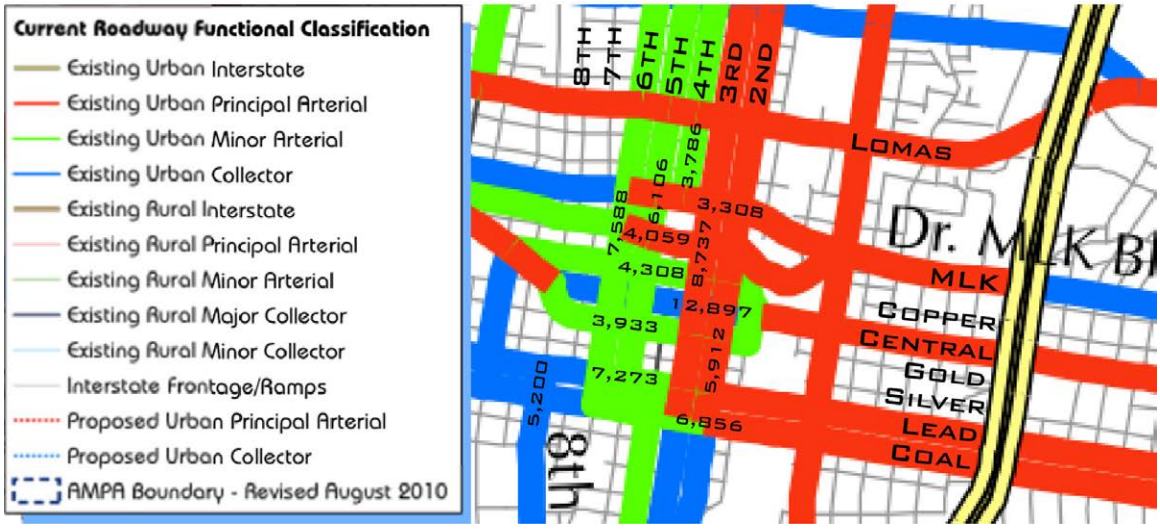
The analysis and recommendations that follow, for simplicity's sake, do their best to ensure that each street, individually, will continue to meet the travel demand on it. But, in considering these recommendations and any others that arise from this report, it will be important to not forget that parallel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

The Functional Classification Mismatch

Each street in the downtown network has been assigned a Functional Classification that determines many of its design features. Functional Classification derives from the above-mentioned dendritic street design system, in which the hierarchy up from local through collector to arterial and highway is designed to correspond with the spectrum of trips from shortest and slowest to longest and fastest. Traffic volume also plays a role, with arterials generally expected to hold more traffic than collectors, which are expected to hold more traffic than locals. It makes sense to organize streets this way when the street pattern is dendritic, since it is easy to know which types of trips will make use of which class of street.

However, not long after it was created to organize the design of rural and suburban streets, the Functional Classification system was also assigned to most cities' urban streets as well. Like the zoning codes imported from the suburbs that caused new buildings in cities to be incompatible with their historic fabric, this application created a mismatch. Designed for a branching system, Functional Classification was not meant to be applied to the urban grid, which operates in an entirely different way, as discussed above. In a porous network of streets, trips from origin to destination can take many different paths--and often do--based on a variety of factors. The typical street in a downtown grid handles trips of all types--local, mid-range, and distant--in defiance of its Functional Classification assignment.

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Within the downtown grid, there is no observable correlation between Functional Classification and traffic volume.

This mismatch can be observed in downtown Albuquerque, where data show no alignment whatsoever between functional classification and traffic volume. Here are some of the daily car counts on downtown streets of various classification:

Principal Arterials

- MLK: 3308 trips/day
- Tijeras: 4056 trips/day
- Coal: 6856 trips/day
- 2nd: 5912 trips/day
- 3rd: 8737 trips/day

Minor Arterials

- Lead: 7273 trips/day
- Gold 3933 trips/day
- Copper 4308 trips/day
- 4th: 3786 trips/day
- 5th: 6106 trips/day
- 6th: 7588 trips/day

Urban Collectors

- 8th 5200 trips/day
- Central 12,897 trips/day

These data, if mapped, would form a cloud, with no real correlation between Functional Classification and volume. More significantly, these are all streets in a pedestrian-oriented part of the city in which moderate driving speeds should be encouraged,

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universally--there is no reason why cars should be driving at higher speeds on some streets than others, since pedestrians and cyclists are present everywhere.

Unfortunately, this outcome is not the intention nor the result of the Functional Classification system, which specifically assigned design speeds to each class of street, resulting in many downtown streets having high-speed standards that threaten pedestrian and cyclist safety. The first step to reforming these standards is to modify the Functional Classification system in a way that acknowledges the mismatch that is represented by its application to downtown grids. Until such a modification can be accomplished, however, the proper short-term solution is to waive the requirements of that system downtown.

Overcoming Institutional Barriers: The Development Process Manual

One of the reasons why we must move beyond the Functional Classification approach is that it is institutionalized as the basis for designing streets in the City's DPM, its Development Process Manual. This document provides rules for all development citywide. Violating its directives makes it difficult to receive City permits for any form of construction, and so most new streets (and buildings) are constructed to its specifications.

The Development Process Manual assigns design speeds to the engineering of all collectors, and arterials, ranging from 35 mph for a Collector to 50 mph for a Principal Arterial. Shockingly, this requirement results in all of the colored streets in the above illustration being engineered to encourage 35 mph speeds and above, with green streets designed for 45 mph and red streets designed for 50 MPH. In case this isn't clear: even though we know that speeding increases fatalities, and higher design speeds increase speeding, the downtown segments of 2nd, 3rd, Marquette, Tijeras, and others have all been consigned a 50 mph standard.

The DPM also controls curb radii, and is the reason why 4th Street, which once had curb radii approaching 10 feet, is currently being rebuilt with swooping corners more than twice as large. While 10 feet is the historical standard, the DPM now requires curb radii of 25 feet where are collector meets a collector, and 35 feet where an arterial meets an arterial, such as at Tijeras and 2nd. From a national perspective, this requirement is beyond excessive.

Also controlled by the DPM, and also most important, is lane widths. Despite what is now known about wider lanes encouraging speeding, and despite the presence of many lanes downtown that are 10 feet wide and narrower, the DPM's standard for all lanes—including low-density residential lanes—is 12 feet. Parking lanes are required to be 8 feet wide, which is not excessive, but ignores the places downtown where 7-foot lanes serve perfectly well.

Happily, the City has just recently embarked upon a process to replace the DPM with a new document, the Unified Development Ordinance, which can be written with a contemporary understanding of traffic safety best practices. However, as this process is

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expected to take several years, a stopgap measure may be needed to efficiently overrule the in order to implement the proposals put forth in this document, most of which are currently illegal.

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 that are excessively long.

2. Determine if a street has lanes wider than 10 feet (or 11 feet on a bus route), or parking lanes wider than 8 feet. If so, rededicate that extra pavement to other use. In limited occasions on low-traffic streets, 9-foot driving lanes and 7-foot parking lanes can suffice, as can currently be seen on 7th Street.

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.

In order for this study to be politically viable, the above steps are taken extremely conservatively. Almost every street recommended for lane reduction still ends up with considerably more capacity than its current peak-hour traffic would demand.

As site-specific conditions and unforeseen changes may cause some of the following recommendations to be invalidated, it is essential that the above strategy be understood in a general way, so that it may be applied anew to create alternative solutions as alternatives are needed.

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ALBUQUERQUE STREETS

Recommendations are provided for only those streets and segments of streets that merit change. Longer discussions and specific plans are provided for those streets for which detailed redesigns are needed.

With few exceptions, the recommendations that follow can all be accomplished with paint and signals rather than concrete. Because restriping is so much less expensive than reconstruction, it is hoped that many of the recommendations can be accomplished within current operational budgets, rather than demanding independent funding. That said, since all proposals are intended to increase the value of surrounding properties—as similar efforts have done in other cities—it is not difficult to imagine even those proposals of significant cost paying for themselves within a relatively short time.

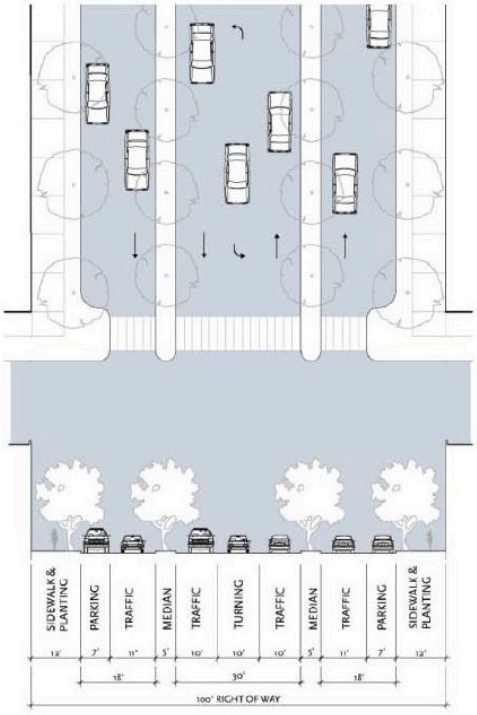
NORTH-SOUTH THOROUGHFARES

Broadway Boulevard

Like most state highways, Broadway is built principally to move vehicles at considerable speed, and does not welcome pedestrians or cyclists. Its 12-foot lanes encourage speeds above the posted limit, and its broad multilane sections are a burden to cross.

Currently, only one short segment is striped with a bike lane, serving no purpose, especially given the threat of the high-speed traffic next to it. Parallel parking also appears and disappears along the street edge, sometimes marked as parking and other times marked confusedly as a shoulder. In some cases, it is hard to tell whether the edge of the street is for parking, biking, or nothing.

If it is to serve multiple modes of travel



The EDO Master Plan properly recreates Broadway as a classic multilane boulevard.

in its current built form, Broadway should be restriped with 10-foot lanes, with the roadway gained striped as a shoulder, providing some distance between traffic and the sidewalk. However, this change would require considerable negotiation with NMDOT, an effort that should perhaps be expended on a more effective solution. Such a solution exists in the EDo Master Plan, where Broadway is rebuilt as a classic multilane boulevard, in which a central roadway serving regional traffic is flanked by two slower service lanes serving local traffic, bikes and parking. This plan requires no improvement. Its three center lanes alone would provide ample throughput to serve current

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volumes on the street, which do not surpass 20,000 daily trips.

While that plan is pursued, NMDOT should be amenable to an immediate striping correction, which would be to clarify the use of the shoulder. In those places where space exists for parallel parking, that parking should be properly marked, so that users do not remain confused.

Commercial Street

This relatively new street holds two driving lanes and two parking lanes in a roughly 37-foot section heading north-south, a reasonable dimension. However, when it curves to cross Tijeras, it widens to 42 feet yet holds three driving lanes and no parking. These roughly-14-foot lanes encourage speeding, so, in the short term, parking should be added to them on one side. In the longer term, this curved segment of the street will ideally be rebuilt in a more urban configuration as a part of Innovate ABQ.

Union Square

This low-traffic street has an approx. 33-foot one-way cartpath with parking on both sides. It is clear from observing 7th Street downtown that this dimension is more than ample to serve two-way travel in a roughly 7-9-9-7 configuration

1st Street

Heading south from Lead Avenue, 1st Street holds two driving lanes and only one parking lane in a cartpath of approx. 38 feet. This width is more than ample to hold parallel parking on both flanks of the street.

2nd Street

Current Condition

North of the Convention Center bridge, 2nd Street consists of four roughly-11-foot-wide driving lanes. South of this location, 2nd Street holds three lanes in a cartpath approximating either 45 feet or 40 feet. These lanes range from roughly 12 to 17 feet wide. 2nd Street is a significant bus way, and is designated as a principal arterial.

Analysis

2nd Street is designated as a principal arterial despite carrying only a moderate amount of traffic. In no location does it carry loads approaching 1000 cars per peak hour; in the heart of downtown, volumes are closer to half that. In many cities, streets carrying this little traffic are two lanes wide, not three or four. That said, it is understood how center turn lanes improve flow at intersections—but there is no justification for such lanes to be any longer than needed, as they increase crossing distances and invite speeding.

There is no justification for keeping the four-lane section of 2nd Street in its current configuration, since 3-lane streets handle just as much traffic as 4-lane streets, and do so with much greater safety. However many lanes are provided, lanes serving buses should not be wider than 11 feet, and the avergage-15-foot-wide lanes in much of 2nd Street clearly support illegal speeds. Moreover, the street's lack of parallel parking makes local retail and entertainment uses less viable.

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The large mount of wasted asphalt in 2nd Street makes the thoroughfare a good candidate to receive a cycle track. Even the 40-foot section is wide enough to hold a cycle track along a two-lane street containing center turn lanes at corners. Away from corners, the center turn lane can be replaced by a flank of parallel parking that separates the cycle track from traffic.

Currently, 2nd Street's 3-lane section contains a dedicated bus lane. However, traffic volumes suggest that such a lane is far from needed. However, what may be needed to ease traffic is a place for buses to pull over at bus stops. For this reason, the 3-lane solution that is proposed for intersection approaches (to include a center turn lane) should also be used in bus stop locations, and be no longer than needed. The best location for bus stops, then, is at the edge of the intersection approach, where an already-3-lane section can simply be extended long enough to hold a bus.

If there is an unwillingness to build a cycle track, the facility proposed above can be replaced by two bike lanes alongside traffic—an inferior alternative, but one superior to the current condition. Unlike the cycle track, these integrated bike lanes would require some of the lanes serving buses to be 10 feet wide, a foot narrower than the transit agency's desired standard (the buses themselves are 8'-6" wide). However, since they would be flanked by integrated bike lanes, the effective width of these bus lanes would be considerably greater.

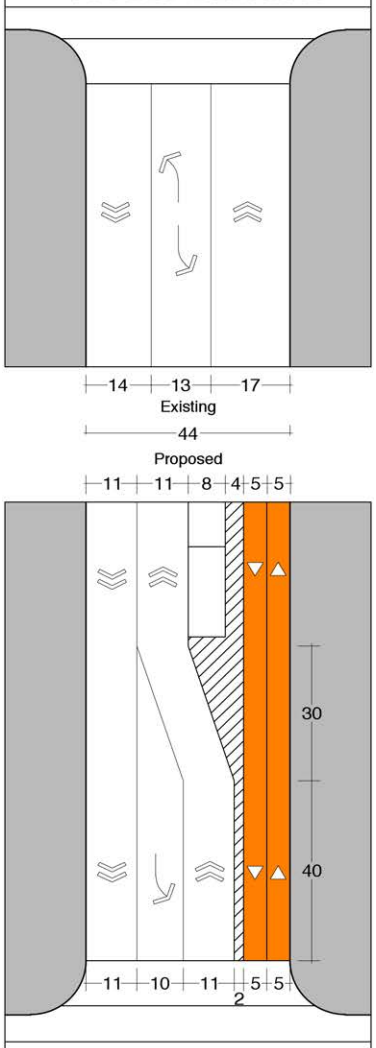
Recommendation

Restripe 2nd Street with a two-way cycle track along its east flank. Limit the center turn lane to locations at signalized intersections, where it should not be longer than needed—probably no more than 40 feet plus a 30-foot chamfer. Extend this 3-lane section where bus stops are needed. Where no center turn lane is present, place parallel parking between the cycle track and the roadway.

As an inferior alternative, replace the cycle track with two integrated bike lanes.

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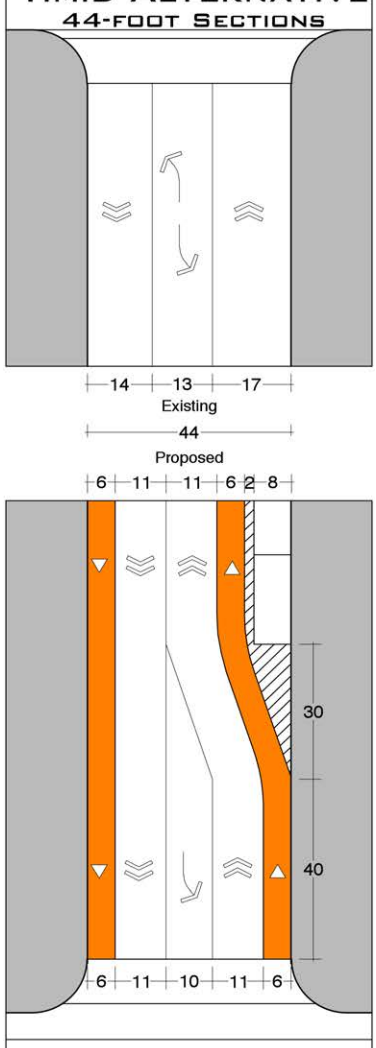
2ND STREET
44-FOOT SECTIONS



NOTES

- Occurs from Lomas to Copper and from South of Central to Lead.
- Existing conditions vary from 3 to 4 driving lanes. This 70-foot-long facility is used on bus routes.
- 70-foot-long left-turn facility used on bus routes.
- Left-hand turn lanes are only used when demanded by backups due to turning motions, and are eliminated where signals are replaced by stop signs.
- Street section at bus stops matches that at corners, with short bus lane introduced and parking lane eliminated.

2ND STREET - TIMID ALTERNATIVE
44-FOOT SECTIONS

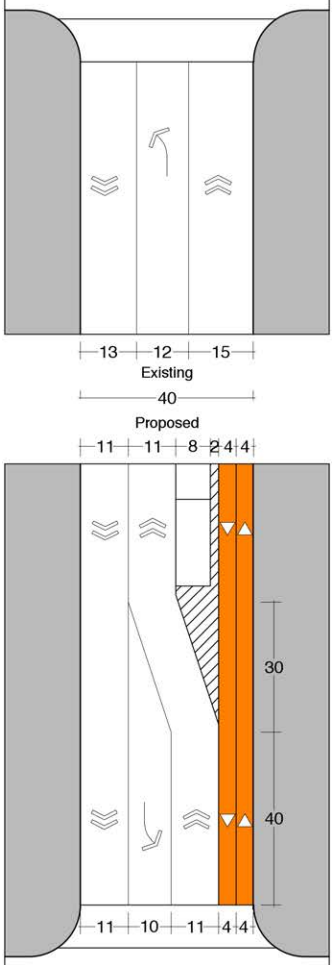


NOTES

- Occurs from Lomas to Copper and from south of Central to Lead.
- The less effective solution replaces the cycle track with two integrated lanes.
- 70-foot-long left-turn facility used on bus routes.
- Left-hand turn lanes are only used when demanded by backups due to turning motions, and are eliminated where signals are replaced by stop signs.
- Street section at bus stops matches that at corners, with short bus lane introduced and parking lane eliminated.

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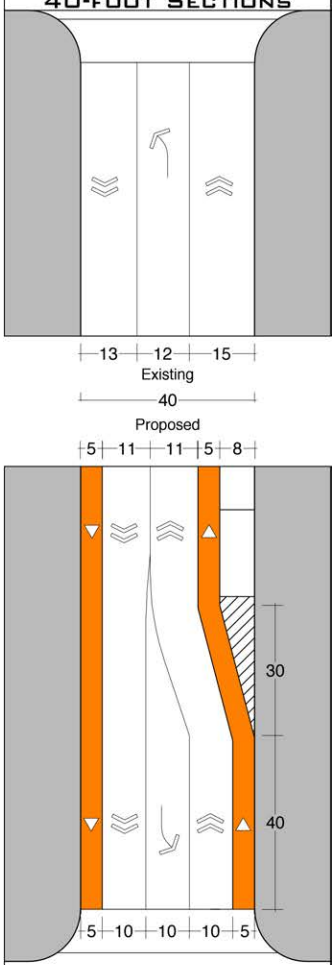
2ND STREET
40-FOOT SECTIONS



NOTES

- Occurs from Copper to south of Central, and south of Lead.
- Existing conditions vary from 2 to 3 driving lanes.
- Turn lane is 40-fett-long within a 30-foot chamfers.
- 70-foot-long left-turn facility used on bus routes.
- Left-hand turn lanes are only used when demanded by backups due to turning motions, and are eliminated where signals are replaced by stop signs.
- Street section at bus stops matches that at corners, with short bus lane introduced and parking lane eliminated.

2ND STREET - TIMID ALTERNATIVE
40-FOOT SECTIONS



NOTES

- Occurs from Copper to south of Central, and south of Lead.
- Existing conditions vary from 2 to 3 driving lanes.
- Travel lanes narrow to 10 feet only where turn lane is present. Bike lanes provide additional elbow room.
- 70-foot-long left-turn facility used on bus routes.
- Left-hand turn lanes are only used when demanded by backups due to turning motions, and are eliminated where signals are replaced by stop signs.
- Street section at bus stops matches that at corners, with short bus lane introduced and parking lane eliminated.

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3rd Street

Current Condition

With the exception of the block in front of the Convention Center, 3rd Street is approx. 45 feet wide and holds a variety of configurations. These range from two 14.5-foot lanes flanked by parking to four lanes of traffic, the latter occurring most often at intersection approaches. One common configuration is three wide driving lanes with one flank of parking.

Analysis

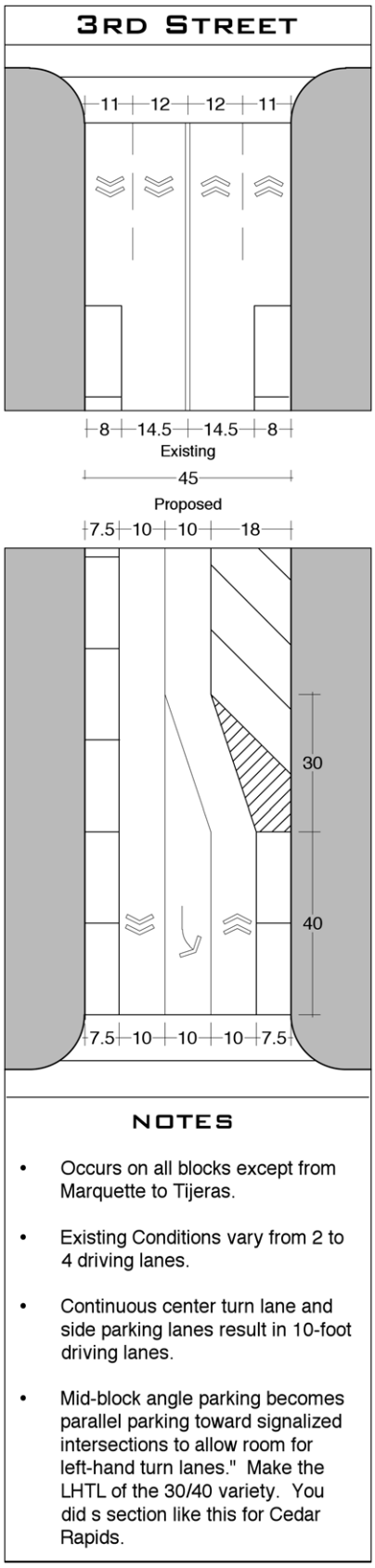
Like 2nd Street, 3rd Street is designated as a principal arterial despite carrying only a moderate amount of traffic. In no location does it carry loads approaching 1000 cars per peak hour; south of Central, volumes are closer to half that. Indeed, as if to teach a useful lesson, 3rd Street just south of Central was completely closed during the principal week of this study, and this closure placed no undue traffic burden on surrounding streets. This experience reminds us of the flexibility of the grid—a "principal arterial" can be closed without causing a problem—and makes understand how individual streets can be dieted without fear of congestion as long as the network remains intact.

The above argument about the proper capacity for 2nd Street applies equally well here. Right-sizing 3rd Street to match its traffic loads results in a two-lane street with left-hand turn lanes where needed at busy intersections only. If the goal were to put bike lanes in as many streets as possible, the ideal solution for 3rd Street would match that for 2nd. However, there is a logic to limiting bike lanes to a sparser street network, as doing so concentrates cyclists in a way that makes them more visible to motorists. For this reason, 3rd Street is imagined as a non-cycling street, which raises the question: what do we do with the excess roadway?

For areas where a left-hand turn lane is not needed, the best way to use up the extra space is by converting one flank of parallel parking to angle parking. 45 feet is the perfect width for a two-lane street with 45-degree angle parking on one side and parallel parking on the other. Such a design—common in many places, including cities with snow—is outlawed by current City ordinances, but, as discussed, these ordinances are awaiting an update that will bring them up to date with national best practices. This angle parking will be a boon to local businesses, who rely on curb parking to attract shoppers. This parking is shown as back-in, which is much safer for cyclists than head-in.

North of Central, most intersections receive enough traffic to benefit from left-hand turn lanes. This lane can be fit in the existing roadway by turning the flank of angle parking in to parallel parking, resulting in three 10-foot driving lanes. While these are narrower than the 11-feet preferred for buses, the presence of the additional center lane leaves ample leeway for buses to pass each other.

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NOTES

- Occurs on all blocks except from Marquette to Tijeras.
- Existing Conditions vary from 2 to 4 driving lanes.
- Continuous center turn lane and side parking lanes result in 10-foot driving lanes.
- Mid-block angle parking becomes parallel parking toward signalized intersections to allow room for left-hand turn lanes." Make the LHTL of the 30/40 variety. You did s section like this for Cedar Rapids.

Recommendation

Restripe 3rd Street to include two driving lanes flanked by parallel parking on one side and 45-degree angle parking on the other. At busy intersections from Central north, insert a center turn lane by converting the angle parking to parallel at the intersection approach. Do not make turn lanes any longer than needed—probably no more than 40 feet plus a 30-foot chamfer

As discussed ahead under Signalization, the traffic signal at Silver Avenue should probably be replaced by an all-way stop sign, eliminating any left-hand turn lanes in this location.

4th Street

Current Condition

4th Street typically holds two driving lanes 13 to 15 feet wide, flanked by parallel parking on both sides. It's cartpath varies from approx. 42 to 45 feet in width, except for its brand new section from Central to Tijeras, and for the block from Central to Gold, which is roughly 27 feet wide and holds two wide driving lanes.

Analysis

4th Street is designated as a minor arterial despite holding very little traffic, nowhere more than 350 cars per peak hour—about a third of what a two-lane street can handle. It is also becoming a significant bike route, with its inclusion along the City's new 50-mile loop. Given its significance for biking, it should contain a cycle track wherever it fits, which means everywhere except between Tijeras and Gold. From Tijeras

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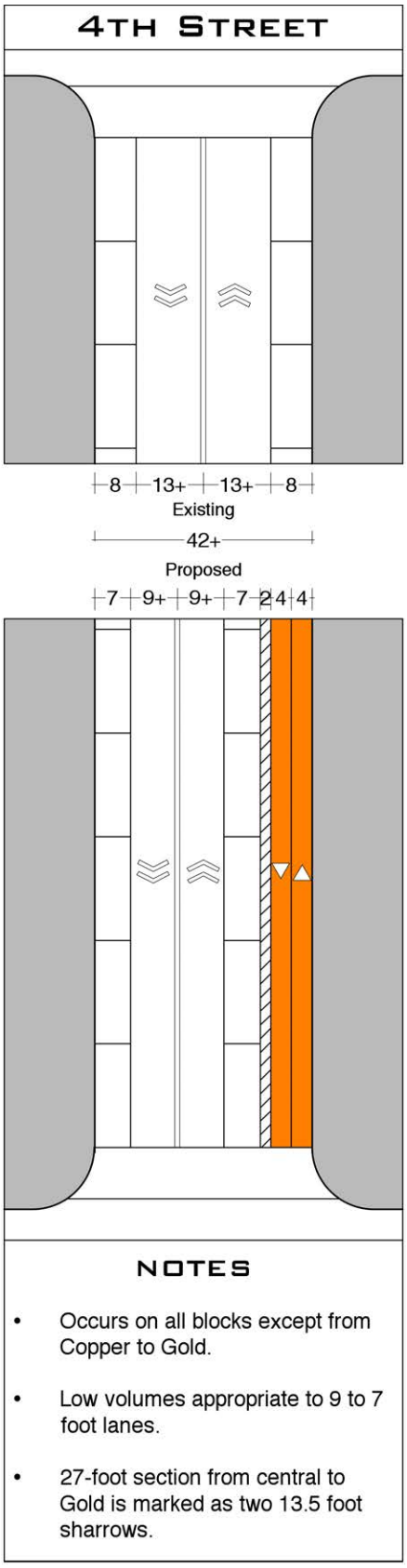
to Central, a new solution has just been built. From Central to Gold, the 27-foot cartpath should receive one flank of parallel parking, and the lanes should be marked as sharrows to indicate the continuation of the bicycle route beyond. Here, while some cyclists might prefer a 14-foot sharrow rather than a 10 foot lane against parking, the latter alternative is recommended for the lower driving speeds that it is likely to encourage and the benefits of parking to local businesses.

The cycle track can typically be two 4-foot lanes with a 2-foot buffer on one flank of a street containing parallel parking on both sides of the roadway. This design only becomes controversial in those places where the street narrows to 42 feet, resulting in 9-foot driving lanes and 7-foot parking lanes. Fortunately, we have the example of 7th street, which has lanes of just this size.

Recommendation

North of Marquette and south of Gold, restripe 4th Street to include two driving lanes flanked by two sides of parallel parking, with a two-way cycle track against one curb. From Central to Gold, restripe 4th Street to include two driving lanes flanked by one side of parallel parking, with prominent sharrows placed in the center of each driving lane near both intersections.

As discussed ahead under Signalization, the traffic signals at Roma, Marquette, Tijeras, and Silver Avenues should eventually be replaced by all-way stop signs, eliminating any left-hand turn lanes in these locations.



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5th Street

Current Condition

Except for the stretch from Roma to Copper, 5th Street has a cartpath that stays between roughly 39 and 42 feet in width. This section, at its best, holds two driving lanes flanked by two parking lanes, with the parking dropping off at intersection approaches, resulting in three driving lanes of at least 13 feet in width. However, in many places, parking disappears from one or both sides of the street, resulting in an extra driving lane, an odd striped no-drive zone in the center of the roadway, or driving lanes of enormous width. These conditions also occur from Roma to beyond Copper, where the cartpath is closer to the Albuquerque standard of 45 feet.

Analysis

4th Street is designated as a minor arterial despite holding moderate traffic, nowhere more than 550 cars per peak hour—about half of what a two-lane street can handle. Its configuration, unfortunately, presents a object lesson in how to stripe a moderate-volume city street to encourage illegal speeds.

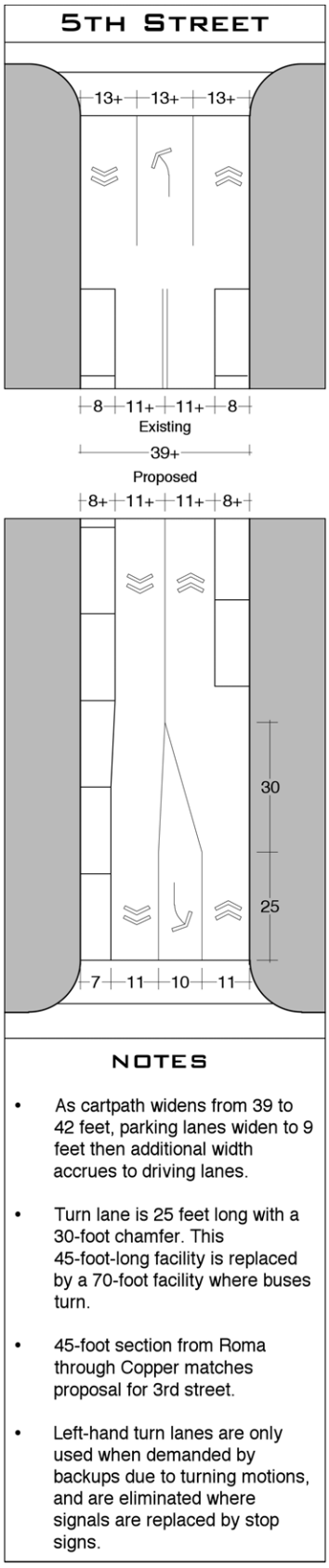
Once again, the goal is to provide driving lanes of the proper number and width, and to put the remaining asphalt to best use. The streets varying width makes it a difficult choice for a cycle track, and nor is one probably desired, for the same reasons discussed above under 3rd Street. Indeed, for its 45-foot sections, the same solution as 3rd Street (north of Central) seems most wise: three driving lanes (including a continuous center turn lane) continuously flanked by two lanes of parking. However, where it becomes narrower, the center lane should go away, to only reappear on (signalized) intersection approaches, where its presence results in one flank of parking dropping away. In these locations, the turn lane should not be longer than needed—probably no more than 25 feet plus a 30-foot chamfer, similar to what can currently be found on 5th Street's approaches to Central Avenue.

Recommendation

Where the cartpath is approx. 45 feet wide, restripe 5th Street to include a continuous center turn lane and two driving lanes flanked by parallel parking. For narrower segments, restripe to two driving lanes flanked by parallel parking. As the street widens beyond 38 feet, the additional width should accrue to the parking spaces first, and the driving lanes should only widen beyond 11 feet once the parking spaces have reached 9 feet in width. Within these segments, where signalized intersections are burdened by cars turning left, introduce a short left-hand turn lane by briefly eliminating one flank of parallel parking. Note that if this report's signalization recommendation is followed, no left-hand turn lanes should be provided at Roma, Gold, or Silver Avenue. (In the case of Roma, this would mean simply striping out the center turn lane on both Roma approaches.)

As discussed ahead under Signalization, the traffic signals at Roma and Silver Avenues should eventually be replaced by all-way stop signs, eliminating any left-hand turn lanes in these locations.

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NOTES

- As cartpath widens from 39 to 42 feet, parking lanes widen to 9 feet then additional width accrues to driving lanes.
- Turn lane is 25 feet long with a 30-foot chamfer. This 45-foot-long facility is replaced by a 70-foot facility where buses turn.
- 45-foot section from Roma through Copper matches proposal for 3rd street.
- Left-hand turn lanes are only used when demanded by backups due to turning motions, and are eliminated where signals are replaced by stop signs.

6th Street

Current Condition

From Lomas to Copper, 6th Street consists of four driving lanes in a 45-foot cartpath. South of Copper, it is reduced to two driving lanes with a variety of parking solutions in a cartpath that varies from approx. 32 to 47 feet in width. As a result, driving lanes in some places are exceptionally wide.

Analysis

6th Street is designated as a minor arterial and handles moderate loads—slightly more in its northern segments than 5th Street. In this area, it is striped with four lanes despite its moderate traffic—nowhere more than 750 cars per peak hour—about one third of what a three-lane street can handle. As discussed in the context of 2nd Street, there is no reason why the street's four-lane segments should not be restriped to three lanes, which handle just as much traffic with greater safety. For that reason, it makes sense to apply the same solution on 6th street as on 2nd, introducing a second two-way cycle track to the downtown core.

As with 2nd Street, the proposal that seems to best use the available pavement places a cycle track on the east flank. Left-hand turn lanes are provided on intersection approaches only, allowing a lane of parallel parking to buffer the cycle track at midblock.

The above solution is appropriate from Lomas to Copper, and also between Silver and Lead, where the street is a similar width. In all other segments, however, there is not room for both a

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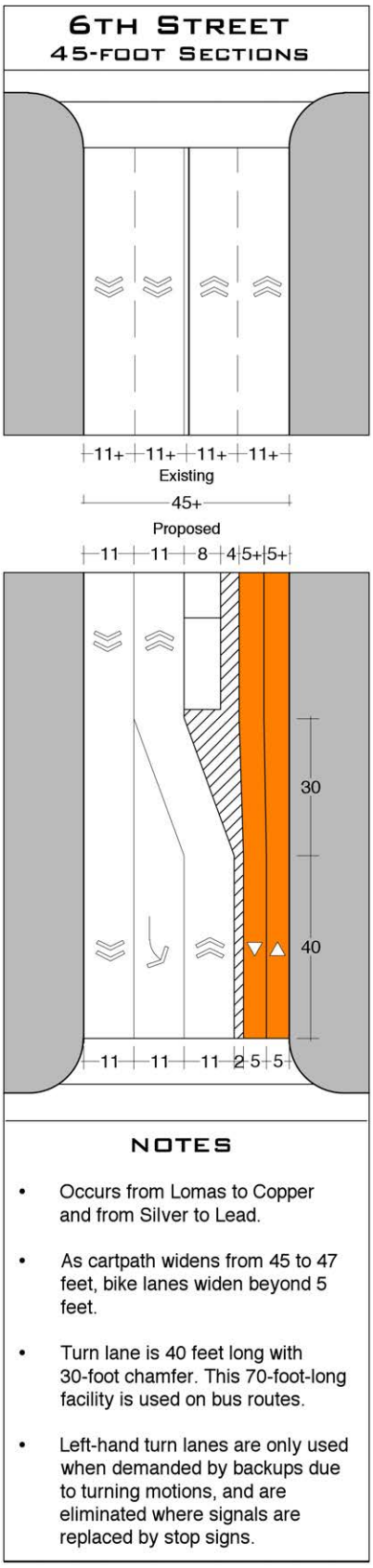
dedicated cycle track an on-street parking. These segments handle considerably less traffic, so if the road dimensions do not invite speeding, it is reasonable to expect bikes to mix with traffic on them.

Currently, these lower segments of 6th Street all contain two very wide lanes, plus varying-width shoulders, in a cartpath that varies from roughly 32 to 36 feet. They should be restriped to contain one flank of parking when less than 36 feet, and to receive a second flank of parking at 36 feet and beyond. The driving lanes should be marked with sharrows to indicate the continuation of the cycle facility.

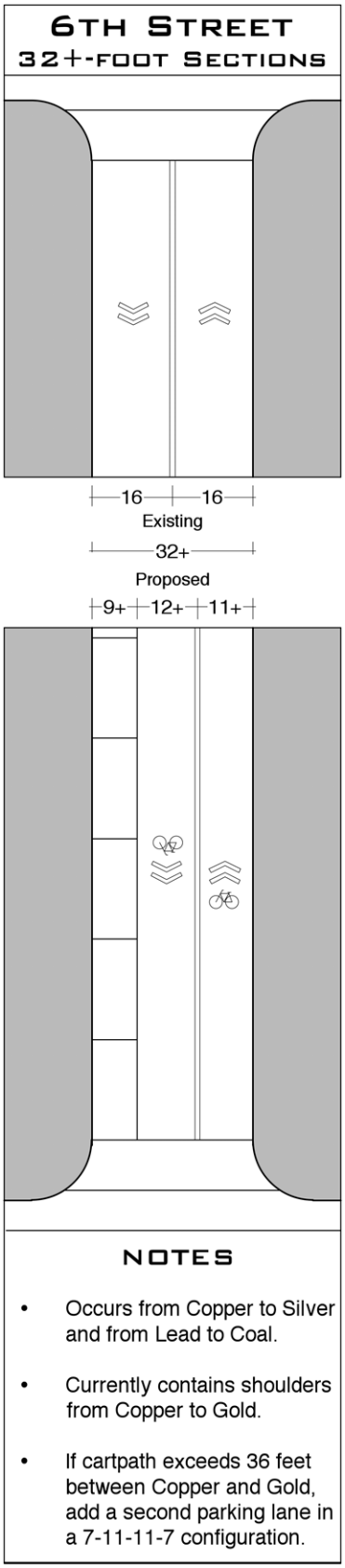
Recommendation

From Lomas to Copper and from Silver to Lead, restripe 6th Street with a two-way cycle track along its east flank. Limit the center turn lane to locations at signalized intersections, where it should not be longer than needed—probably no more than 40 feet plus a 30-foot chamfer. Where no center turn lane is present, place parallel parking between the cycle track and the roadway. Note that if this report's signalization recommendation is followed, no left-hand turn lane should be provided at Silver Avenue.

From Copper to Silver and from Lead to Coal, restripe 6th street to contain two driving lanes plus one flank of parallel parking—or two where the section reaches 36 feet in width—with prominent sharrows placed in the center of each driving lane near all intersections.



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As discussed ahead under Signalization, the traffic signal at Silver Avenue should eventually be replaced by an all-way stop sign, eliminating any left-hand turn lanes in this location.

7th Street

Two locations along 7th Street require changes to encourage calmer driving. First, between Gold and Silver, an approx. 45-foot cartpath holds two roughly 15-foot driving lanes flanked by parallel parking. These driving lanes can be right-sized by introducing one flank of 45-degree angle parking as already proposed for the southern stretch of 3rd Street, in an 8-10-11-16 configuration.

Second, north of Copper, parallel parking is disallowed from 7th Street for a great distance from the corner, perhaps 30 feet, when a standard sight-triangle rule would require a distance closer to 10 feet. Allowing additional parallel parking along the curb will create a condition in which drivers are less likely to speed around the corner.

8th Street

There are a few segments of 8th Street where driving lanes are too wide, and the insertion of additional parking can calm traffic:

- From Tijeras to Copper, an approx. 32-foot cartpath holds parking on only one flank. This same width holds parking on both flanks on parts of 7th Street, in a 7-9-9-7 configuration. Since this part of 8th Street holds very little traffic, there is no reason

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why that same configuration should not be applied here.

- From Copper to the Central roundabout, an approx. 39-foot cartpath holds parking on only one flank, when it should hold parking on both flanks.

- From the Central roundabout to Gold, a cartpath of 35 feet or more holds no parallel parking at all, when it is wide enough to hold parallel parking on both flanks. This parking was likely eliminated with the goal of improving safety at the roundabout, but it has the opposite effect, as it encourages speeding on the roundabout approach.

- From Lead to Coal, there seems to be no parking allowed in an approx. 32-foot cartpath. If this is the case, one flank of parking should be added.

As discussed ahead under Signalization, the traffic signals at Silver, Lead, and Coal Avenues should eventually be replaced by all-way stop signs, eliminating any left-hand turn lanes in these locations.

EAST-WEST THROUGHFARES

Lomas Boulevard

Current Condition

Lomas Boulevard is the largest thoroughfare in downtown Albuquerque. Its approx. 84-foot cartpath holds seven roughly 11-foot lanes, a 3-foot median, and gutter pans.

Analysis

The daily traffic counts on Lomas peak below 25,000 cars. This volume can typically be handled fairly easily on a 5-lane road, so it would seem that two of Lomas' lanes are not needed. That said, we have to ask what motivation there might be to remove lanes from the street, since there is little reason for people to walk along it. The only real exception to this condition is perhaps between 3rd and 8th Streets, where the urban quality is somewhat better than elsewhere, and where its intersecting cross streets are also fairly walkable. Here, too, car counts are somewhat lower, ranging from 16,900 to 21,300 per day. As we have seen, these counts can be commonly found on three-lane streets, so we can be confident that five lanes will support them with ease.

For this reason, and in the interest of inviting more pedestrian activity around this major government center, it is recommended that two driving lanes be converted to parallel parking between 3rd and 8th Streets. Given the extra room in the roadway, these parking spaces should be 10 feet wide, so that the remaining driving lanes do not exceed 12 feet.

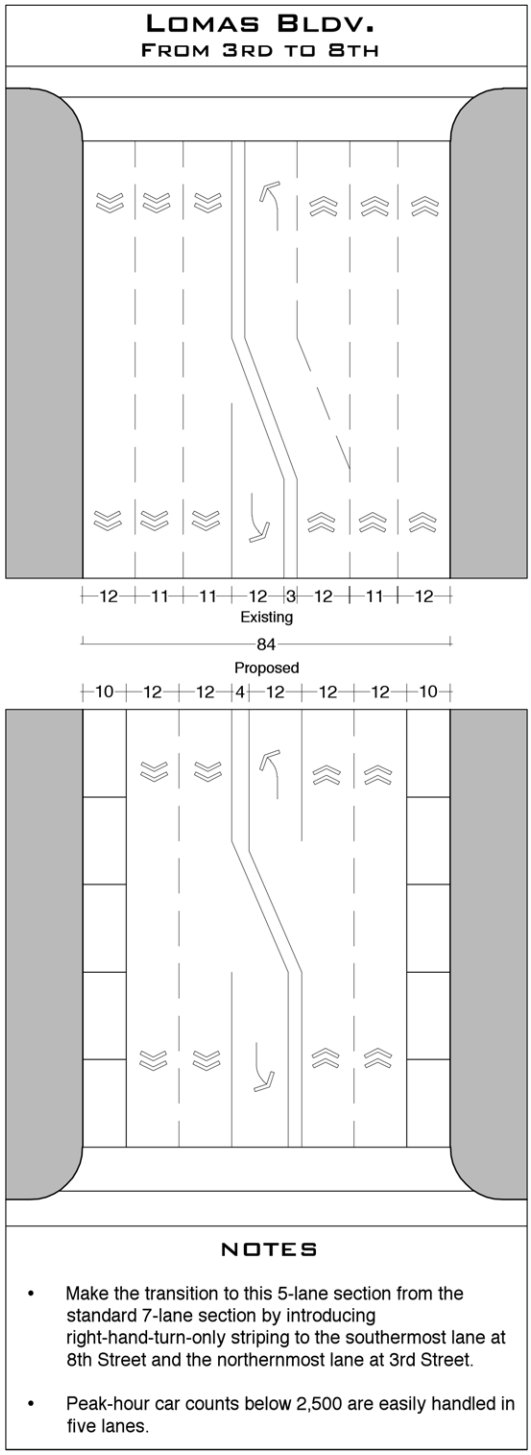
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For the remainder of Lomas, another solution is warranted. Even without removing lanes, the sidewalk could be made to feel safer by a striped shoulder inserted between it and the roadway. Moreover, cars could be encouraged to drive the posted speed by narrowing all of the driving lanes to 10 feet, except for an outer 11-foot lane for buses. Narrowing the lanes in this fashion creates the room needed for the shoulders. Given the evidence supporting the greater safety of 10-foot lanes, there is no reason not to restripe the entirety of Lomas to this new standard when it is next repaved.

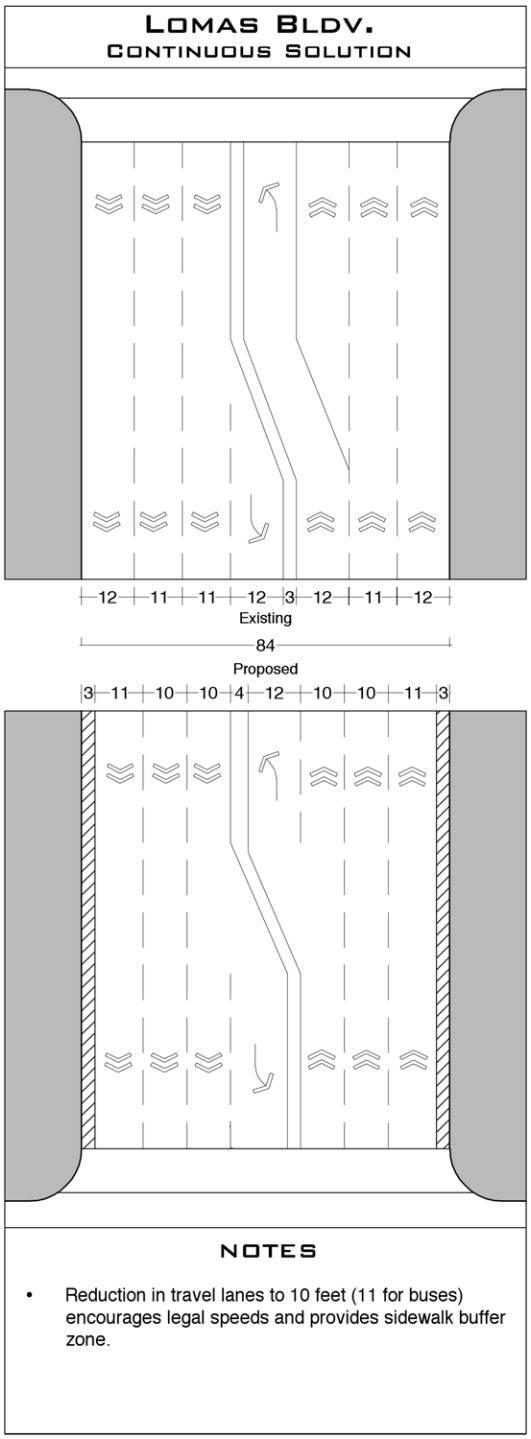
Recommendation

From 3rd to 8th Streets, restripe Lomas to include 10-foot parking lanes on each flank. Make the transition to this 5-lane section from the standard 7-lane section by introducing right-hand-turn-only striping to the southernmost lane at 8th Street and the northernmost lane at 3rd Street.

Elsewhere, restripe all through lanes to a 10-foot standard, except for outer bus lanes of 11 feet. Insert a 3-foot striped buffer between the sidewalk and this outermost lane.



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Fruit Avenue

Just west of 7th Street, parallel parking is disallowed from Fruit avenue for a great distance from the corner, perhaps 60 feet, when a standard sight-triangle rule would require a distance closer to 10 feet. Allowing additional parallel parking along the curb will create a condition in which drivers are less likely to speed around the corner.

Roma Avenue

Current Condition

West of 7th Street, Roma Avenue is a classic residential "Yield Street", with two flanks of parking and a two-way driving lane all held in a cartpath of approximately 25 feet. Here, Roma functions quite well, as is does one block further east. From 6th to 5th, Roma contains two lanes of traffic and one flank of parking in a roughly 36 foot cartpath. From 5th to 2nd, Roma contains a variety of wide-lane configurations in a roughly 45-foot cartpath which is expanded to approx. 55 feet by two parking cutouts across the street from the Correctional Center. From 2nd to beyond 1st, the cartpath narrows from approx. 45 to 38 feet, with wide lanes, parking disallowed along certain curbs, and an odd striped median wedge.

Analysis

The segment of Roma Avenue west of 7th Street, completely illegal according to the Development Process Manual, is the street in the study area that most people would identify as the best place to raise a family. It sits in indictment of the City's current coding regime, as does the bright orange traffic sign placed

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upon it telling drivers to "Be Prepared to Yield," as if that wasn't perfectly obvious. This street should serve as a model to be emulated when creating a new Uniform Development Code.

From 6th to 5th Street, Roma should regain its southern flank of parallel parking, which has been eliminated in favor of high-speed driving lanes.

As Roma heads east from 5th street, applying the technique reallocating unnecessary lanes and extra lane width results in a very different street. First, we must acknowledge that Roma handles so little traffic that the City does not even bother to count it, so we know that left-hand turn lanes are not warranted. Second, all lanes are wider than 10 feet, and some surpass 20 feet in width. For the 45-foot wide segments of Roma—not a promising bike route due to its eastern discontinuity—the best solution seems to be the one already proposed for 3rd Street, in which one side of the street receives angle parking while the other remains parallel, resulting in driving lanes of the proper width. For the narrower segments east of 2nd Street, Roma should receive continuous parallel parking on both sides, for which there is ample space.

Recommendation

Wherever its cartpath is less than 45 feet, restripe Roma to include parallel parking on both flanks. Where its cartpath is roughly 45 feet, restripe Roma with parallel parking on the south side and 45-degree angle parking on the north. This parking is shown as back-in, which is much safer for cyclists than head-in.

As with 3rd Street, a second alternative is also shown here. If angle parking remains disallowed—a bad idea—the best alternative for Roma's 45-foot segments is probably to use up the extra 10 feet of roadway with two bicycle lanes. This configuration is described in more detail under 3rd Street above. Even though it is not a good bike route, having these lanes is better than having high-speed over-wide driving lanes.

Whatever the solution, the sidewalk cut-ins across from the correction center should simply be filled in—or they can be kept as is, in order to turn their adjacent parking spaces into handicap spaces.

As discussed ahead under Signalization, the traffic signals at 4th and 5th Streets should eventually be replaced by all-way stop signs, eliminating any left-hand turn lanes in these locations.

Marquette and Tijeras: Two Way?

Marquette and Tijeras Avenues function as a one-way pair through downtown. The configuration of each street will be discussed in detail below, but first we must consider whether these streets should be reverted to two-way traffic.

Whether or not Marquette and Tijeras should be restriped to two-way is the biggest question regarding traffic patterns in downtown Albuquerque. 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, exacerbating the disconnection between

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the two sides of the railroad tracks, 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 Albuquerque—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. Currently, Marquette and Tijeras handle approximately 4,100 daily trips eastbound and 5,400 daily trips westbound. 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 Marquette and Tijeras would be approximately 20,000 daily trips total, which is more than twice the current traffic volume. Peak hour volumes of 588 and 868 also suggest that two 2-lane facilities will be more than sufficient. 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.

For those for whom that evidence is not enough, it should be repeated that Lomas Boulevard has a tremendous amount of excess capacity in this area. Additionally, as discussed below, Copper Avenue is poised to be connected across the railroad tracks, creating another 10,000 daily trips of east-west capacity. Simply put, the evidence suggests clearly that eliminating the one way pair, while eliminating the "green wave" of

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consecutively timed signals will not cause undue congestion.

To be sure, there are some issues to be resolved, specifically the two large parking garages that have been configured based upon the current one-way flows. These are actually quite easy and inexpensive to fix, as follows:

- The garage under civic plaza now contains ramps in and out on both Marquette and Tijeras, and these ramps are heading the wrong way to intersect with those streets in a two-way configuration. This problem is solved by turning each in-ramp into an out-ramp, and vice versa, and flipping the entry and exit gates correspondingly. Furthermore, as the flow is reversed in the ramps that connect the garage's two stories, the result will be that drivers landing on the lower level will find themselves on the wrong (British) side of the drive aisle, facing oncoming traffic. While there are a dozen expensive constructed ways to resolve this issue—concepts that must be rejected—it can be fixed at almost no cost with some bold signage and stripes in the roadway redirecting drivers to the right-hand side.

- The ramp that takes drivers in and out of the Convention Center garage from Broadway, which branches off of the Marquette bridge, will create an extremely awkward intersection with the bridge if Marquette becomes two-way. This intersection must receive special signalization so that cars entering the facility from the east do not come into conflict with cars heading east on Marquette, whose path they must cross. This signal must be timed to coordinate with the signal at Marquette and Broadway.

These two problems resolved, the only real argument for keeping Marquette and Tijeras in their current configuration is the green wave, which clearly provides a slight convenience to hurried travelers. Whether Albuquerque's leadership places the desires of those travelers over the safety and vitality of its downtown will say a lot about what kind of city Albuquerque wants to be.

Marquette

Current Condition

Marquette is currently a two way street from 6th west, where it holds two driving lanes and one occasional lane of parking in a roughly 32-foot cartpath. From 6th Street to Broadway, it is one-way west, holding two to three driving lanes flanked intermittently by one or two sides of parallel parking, which in places is replaced by an empty shoulder or loading zone. These driving lanes are 12 feet wide and considerably wider. As it bridges over the railroad tracks, Marquette contains two 13-foot lanes, a left shoulder, and an ample bike lane. This lane continues one block west from 2nd to 3rd Street, where it disappears.

Analysis

As discussed above, any study which focuses on making downtown more walkable and vital must by definition

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advocate for reverting Marquette to two-way traffic. Peak hour traffic counts of 868 on the busiest segment (west of Broadway) suggest that only two lanes of traffic are needed, however, adding left-hand turn lanes at intersections should help allay any fears of congestion.

Given that it is the westward continuation of the MLK cycle facility, Marquette is poised to receive a cycle track all the way to 6th Street. Whether this track is one-way or two-way depends on the ultimate fate of Tijeras Avenue, discussed at length below. As will become clear, there is a strong argument for eliminating the wide, curving stretch of Tijeras that passes under the railroad tracks, shifting its traffic to the older, narrower facility that runs to its north. If this happens, then it will make sense to move eastbound bike traffic off of Tijeras to Marquette, where there is ample room for it.

In this scenario, a two-way cycle track would occupy the streets northern flank, protected by parallel parking at midblock. At signalized intersections, this parking would drop off to create room for a left-hand turn lane.

If the newer stretch of Marquette is kept, then Tijeras need only contain a one-way cycle track westbound. In this scenario, the street's configuration would similar to above, but with the addition of a continuous southern flank of parallel parking, made possible by the fact that a one-way cycle track is narrower than a two way cycle track.

Recommendation

From 7th to 6th, add parallel parking to one flank of Marquette. Eliminate small center island at 6th.

Then:

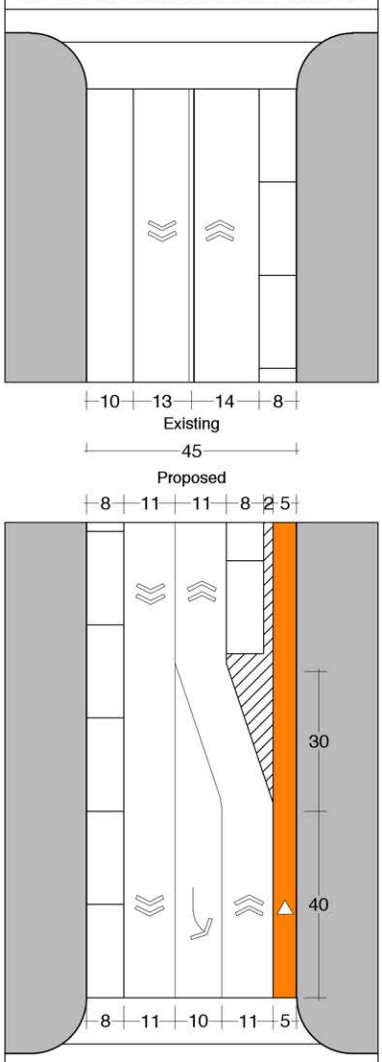
If New Tijeras Avenue is Eliminated:
Restripe Marquette from 6th to 2nd to two-way traffic in 11-foot lanes, with a two-way cycle track on its northern flank, protected by parallel parking at midblock. At signalized intersections, drop off the parking to create room for a left-hand turn lane, which should not be longer than needed—probably no more than 40 feet plus a 30-foot chamfer. On the bridge from 2nd to Broadway, limit the driving lanes to 11 feet, creating an ample buffer for a continuation of the 2-way cycle track.

If New Tijeras Avenue is Kept:
Restripe Marquette from 6th to 2nd to two-way traffic in 11-foot lanes, with a one-way westbound cycle track on its northern flank, protected by parallel parking at midblock, and with a continuous southern flank of parallel parking. At signalized intersections, drop off the north-side parking to create room for a left-hand turn lane, which should not be longer than needed—probably no more than 40 feet plus a 30-foot chamfer. On the bridge from 2nd to Broadway, limit the driving lanes to 11 feet, creating an ample buffer for a continuation of the 1-way cycle track.

As discussed ahead under Signalization, the traffic signal at 4th Street should eventually be replaced by all-way stop signs, eliminating any left-hand turn lanes in this location.

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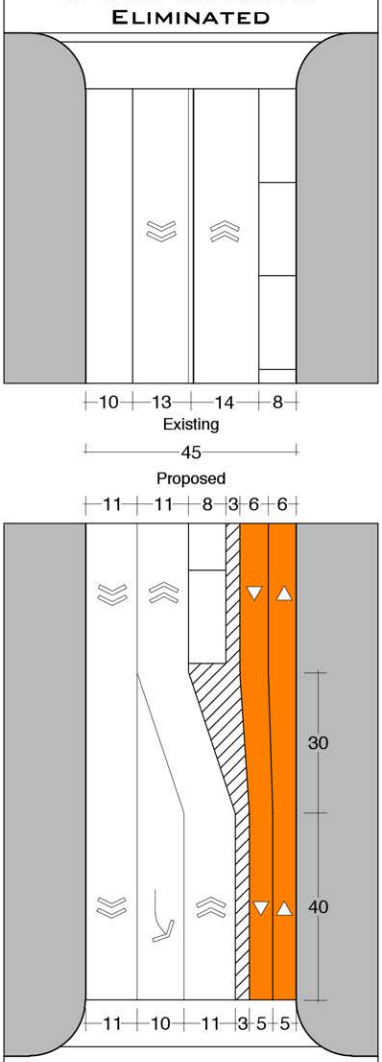
MARQUETTE AVE.
IF NEW TIJERAS IS KEPT



NOTES

- Occurs from 2nd to 6th.
- Current configuration varies but often includes broad shoulder.
- Street reverted to two-way.
- Civic Plaza parking garage gates reversed and floor striping modified.
- Westbound cycle track matched by eastbound track on Tijeras.
- Left-hand turn lanes are only used when demanded by backups due to turning motions, and are eliminated where signals are replaced by stop signs.

MARQUETTE AVE.
IF NEW TIJERAS IS ELIMINATED



NOTES

- Occurs from 2nd to 6th.
- Current configuration varies but often includes broad shoulder.
- Street reverted to two-way.
- Civic Plaza parking garage gates reversed and floor striping modified.
- If New Tijeras is replaced by old Tijeras, this cycle track must handle both eastbound and westbound travel.
- Left-hand turn lanes are only used when demanded by backups due to turning motions, and are eliminated where signals are replaced by stop signs.

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Tijeras Avenue

Current Condition

From 8th Street to 6th Street, Tijeras contains one driving lane in each direction in a roughly 40-foot cartpath. From 8th to 7th, the street includes parallel parking on both sides, but from 7th to 6th parking is eliminated, apparently due to the presence of St. Mary's Catholic School. From 6th to 2nd, Tijeras is one-way east, holding two to four driving lanes flanked intermittently by one or two sides of parallel parking, which in places is replaced by an empty shoulder. These driving lanes are 12 feet wide and considerably wider. As it curves under the railroad tracks in a relatively new construction (called "New Tijeras" here), Tijeras contains two 13-foot lanes, a small shoulder, and a bike lane that actually begins one block west, at 3rd Street. After passing under the railroad tracks, it curves northeast to intersect Broadway at Martin Luther King Avenue.

Analysis

Independent of the one-way/two way discussion, another large question surrounds the trajectory of Tijeras Avenue, which is whether it should continue its current trajectory northeast from the railroad tracks to MLK Avenue, where it makes its surrounding properties unattractive for development. Both the earlier EDo master plan and current conversations surrounding Innovate ABQ have contemplated eliminating the diagonal stretch southwest of Broadway, and asking eastbound traffic on Tijeras to shift northward one block on Broadway before heading east on MLK. While it will require careful attention to signal timing, such a solution, which connects eastbound Tijeras back to itself, seems well justified by its impact on property values and livability.

It should also be noted that reverting Marquette and Tijeras to two-way traffic will take considerable pressure off this configuration, since much of Tijeras' eastbound traffic is likely to relocate to Marquette Avenue. And opening up Copper Avenue across the railroad tracks, discussed below, will also play a positive role.

However, a more radical solution also merits discussion. As the subsequent section on Innovate ABQ will make clear, it is not only the easternmost stretch of Tijeras that inhibits the successful development of this site. If it is to receive a proper street grid, with Union Square (also called John Street) connecting north across Central Avenue to reach Commercial Street, then a superior solution would be to close New Tijeras entirely and reroute its traffic onto its older neighbor to its immediate north. This narrow street, which we can call Old Tijeras, is wide enough to contain two lanes of traffic, particularly if it is repaved to include its gutter pans within the roadway—it is about 21 feet from curb to curb. If its configuration at 2nd Street is reshaped, this street can replace New Tijeras in carrying traffic under the railroad tracks.

The principal reason that Old Tijeras creates a better street grid than New Tijeras is because New Tijeras begins its dive downwards under the tracks considerably further east than Old Tijeras, making a simple intersection impossible at Union Square. If a street

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is brought north-south across the Innovate ABQ site connecting Union Square to Commercial Street, it would have to dive downward to meet the depressed New Tijeras, while Old Tijeras remains at grade in this location.

Before dismissing this solution as ridiculous for all of the recent investment it throws away—New Tijeras from 2nd to Broadway would simply be filled with dirt—we should consider how much value it will create. Looking only at land east of the railroad tracks, the amount of buildable property gained by eliminating New Tijeras and its landscape buffer approaches 1.5 acres. This free land, plus the rationality that it would bring to the Innovate ABQ grid, may make burying New Tijeras the most conservative solution.

If Tijeras' future 2-way traffic is limited to the narrower Old Tijeras, then there is not adequate room for Tijeras to include a cycle track. That is why a two-way cycle track is discussed along Marquette, where it makes great sense as the proper continuation of the MLK facility. In this case, Tijeras, as it continues west from 2nd to 6th, could be restriped as a simple 3-laner, with a continuous enter turn lane and parallel parking on both sides.

If however, New Tijeras is kept, then it makes sense to keep it as an eastbound cycle facility, and include a one-way cycle track along its full length from 6th Street to Broadway. In this instance, the striping of Tijeras through downtown would be the same as Marquette, but with the cycle track heading east instead of west. This solution should include a restriping of New Tijeras under the railroad tracks, with proper 11-foot lanes and wider cycle facility.

Finally, it is worth discussing the absence of parking alongside the St. Mary's school, apparently eliminated to ease drop-offs and improve safety. Far from making children safer, this configuration's super-wide lanes encourage speeding, and should be calmed by marking parking spaces on both sides of the street. If those spaces must be kept empty at certain limited hours to ease drop-offs, then that restriction can be clearly signed and enforced.

Recommendation

Restripe Tijeras from 7th to 6th to include parallel parking on both sides, with no parking allowed only at times when the curbs are needed for drop-offs. Revert Tijeras to two-way traffic. Eliminate the Tijeras extension connecting Commercial Street to MLK Avenue, rerouting the traffic onto the old Tijeras trajectory, and carefully re-signaling Broadway to ease flows in this location. Consider eliminating New Tijeras from 2nd Street to Commercial Street, turning it into developable property, and rerouting traffic onto the old Tijeras right-of-way to its north.

If New Tijeras Avenue is Eliminated:
Restripe Marquette from 6th to 2nd to two-way traffic with a continuous center turn lane and parallel parking on both flanks. Repave Old Tijeras from curb to curb to create a two-way street with two 10.5-foot lanes. Reconfigure the Tijeras / 2nd Street intersection.

If New Tijeras Avenue is Kept:
Restripe Tijeras from 6th to 2nd to two-way traffic in 11-foot lanes, with a one-way eastbound cycle track on its southern flank, protected by parallel

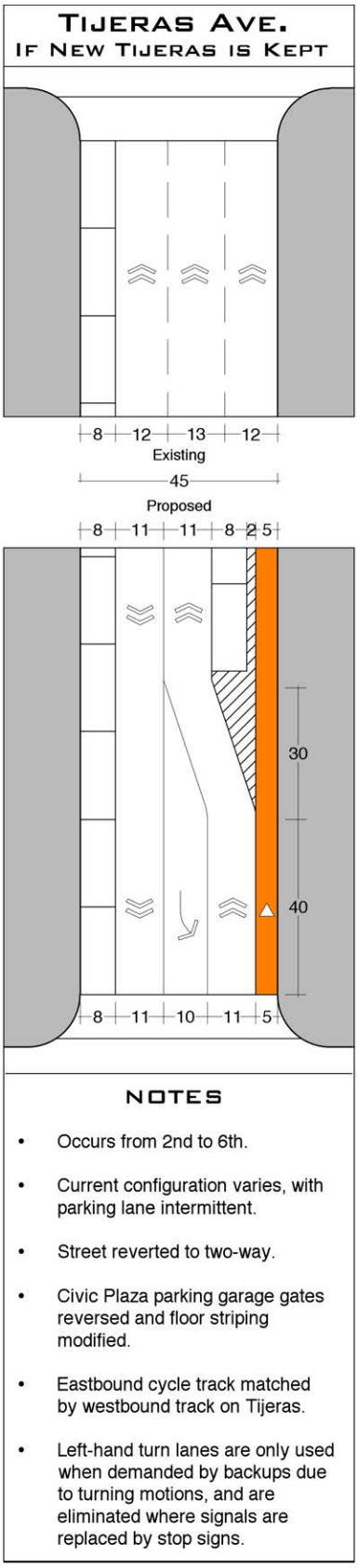
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parking at midblock, and with a continuous southern flank of parallel parking. At signalized intersections, drop off the north-side parking to create room for a left-hand turn lane, which should not be longer than needed—probably no more than 40 feet plus a 30-foot chamfer. On the stretch from 2nd Street to Commercial Street, limit the driving lanes to 11 feet, creating an ample buffer for a continuation of the 1-way cycle track.

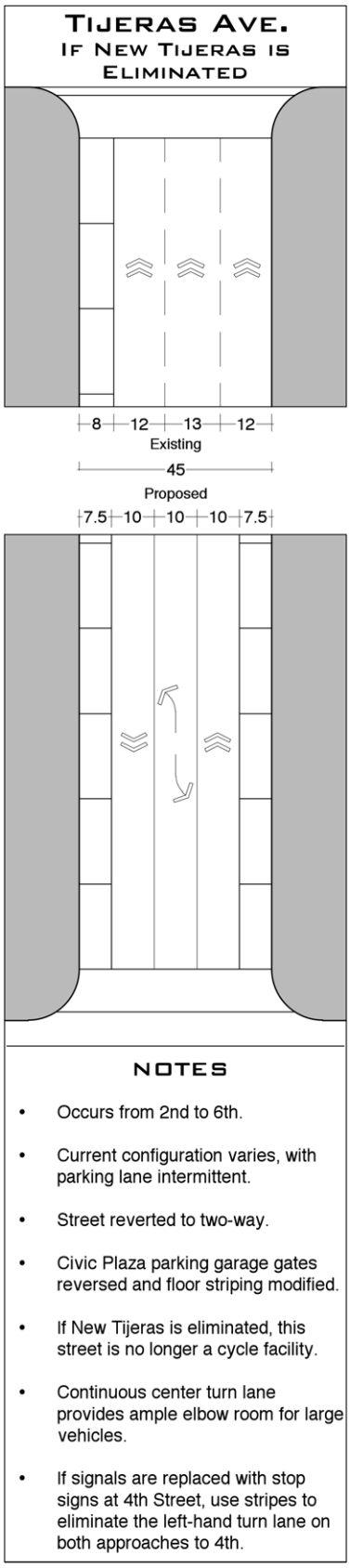
As discussed ahead under Signalization, the traffic signal at 4th Street should eventually be replaced by all-way stop signs, eliminating any left-hand turn lanes in this location.

A Short-Term Compromise

The one-way configuration of Marquette and Tijeras has negative impacts on the vitality of downtown along the entire length of its trajectory. However, of the recommendations made above, the most expensive transformations consist of the segments of these streets east of 2nd Street. Therefore, without taking our eye off the prize of a full two-way reversion, it may make sense to first pursue the short-term reversion of Marquette and Tijeras for only those segments west of 2nd Street.



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Martin Luther King Jr. Drive

Current Condition

As it heads east from Broadway, Martin Luther King Jr. Avenue contains two 13-foot travel lanes, a 6-foot bike lane, and a 3-foot buffer on each side of a planted median (the buffers hug the median). These four lanes are supplemented by an additional 13-foot left-hand turn lane that is carved out of the median at intersections.

Analysis

Speeding is common on MLK, because the street is engineered to high-speed standards. As a result, the ample bike lanes feel unsafe to all but the heartiest cyclists.

Daily car counts in this location are 19,700, a number which many roads handle in three lanes. However, there is no great justification for reducing the number of lanes on MLK, when it sits in an area that does not generate much pedestrian activity. Moreover, given all the asphalt wasted by its high-speed-inducing 13-foot lanes and shoulders, there is ample opportunity to improve MLK without reducing its capacity.

Specifically, eliminating the shoulders and right-sizing the travel lanes to 10 feet (and 11 for buses) results in a full 16 feet of asphalt (8 on each side) that can be put to better use. These lead to a more aggressive and a less aggressive solution.

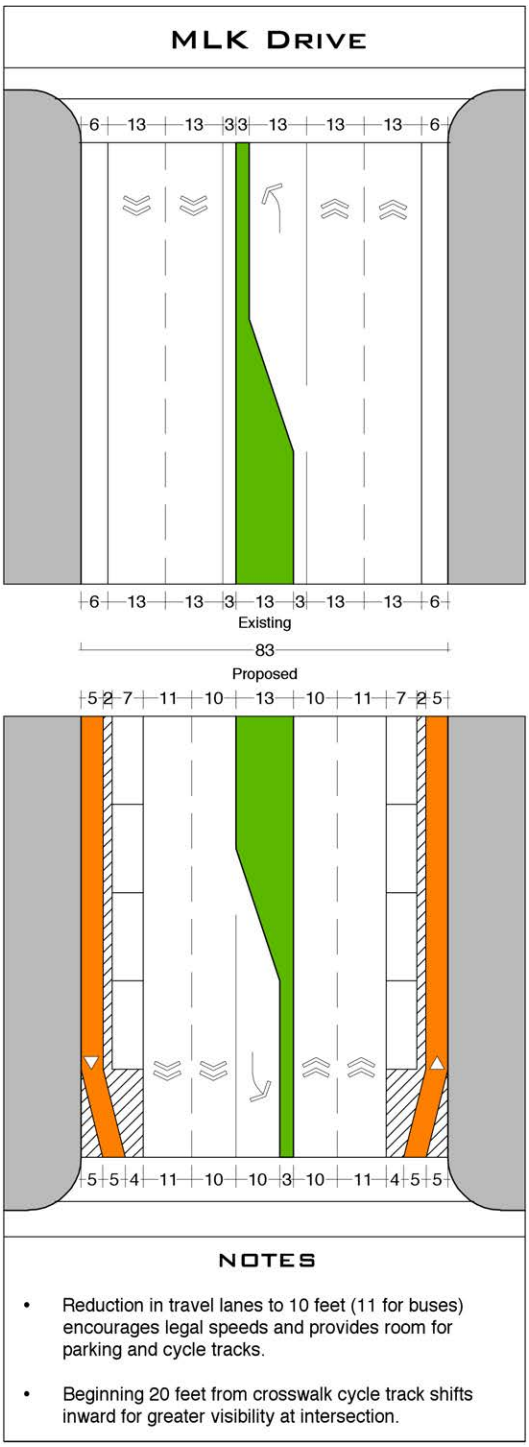
The more aggressive solution, which is clearly superior in locations where there is demand for on-street parking, is to turn the integrated bike lanes into cycle

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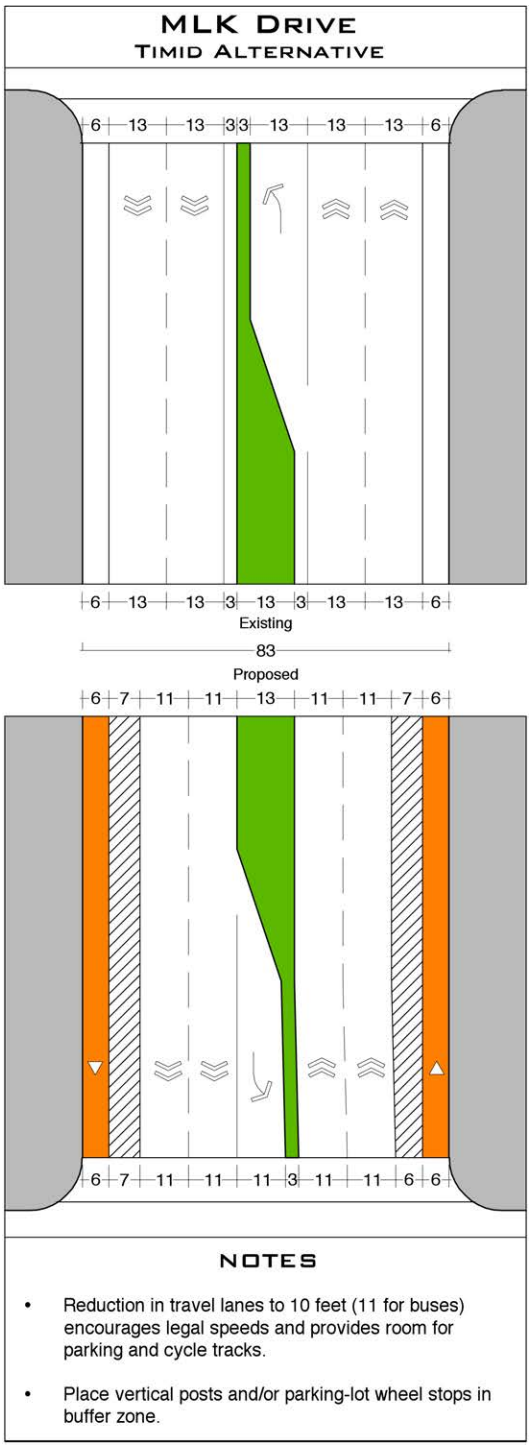
tracks, located between parallel parking and the curb. The less aggressive solution is simply to put the extra asphalt into wide buffers between each bike lane and the driving lane next to it. This solution is no better than the cycle track alternative, even if nobody chooses to park on street, but it may be more expedient politically.

Recommendation

Eliminate the 3 foot shoulder, right size driving lanes to 10 feet (and 11 for buses), and insert 7-foot parallel parking lanes separated by a 2-foot buffer from 5-foot cycle tracks along each outer curb. A timid alternative replaces the parking lanes with much wider buffers.



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Copper Avenue

Aside from the high-speed swoop that connects it to Central Avenue at 1st Street—wisely being eliminated—Copper Avenue is a properly configured street that suffers only from a lack of parallel parking in many locations where it belongs. These locations include:

- The north curb just west of 8th Street;
- Both curbs just east of 8th Street;
- Between 6th and 5th Streets, where a bus stop location on the north flank seems longer than needed;
- Between 5th and 3rd, where long stretches of the south curb are painted red or yellow without an evident reason; and
- Between 3rd and 2nd Streets, where a bus stop location on the north flank seems longer than needed.

Some of these parking bans may have justification, but it is hard to determine what that might be. If travel lanes are kept to 11 feet, then no additional space should be needed for fire truck access, so the most likely cause seems to be a lane width requirement that is too large. Copper Avenue is one of many streets that manifest the need for a comprehensive downtown missing-on-street-parking inventory in which all missing spaces are either fully justified or reinstated. Each parking space contributes to safer driving, to local retail success, and to potential residential density, so such an exercise is well justified.

As discussed ahead under Signalization, the traffic signal at 4th Street should eventually be replaced by all-way stop

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signs if the striping reconfigurations recommended in this section are completed.

The more significant opportunity concerning Copper Avenue has to do with its interruption at the railroad tracks. Much discussion has surrounded lifting up Central Avenue so that it can once again cross the railroad tracks at grade, sparing users from the noisy, smelly underpass. Given cost considerations, the current plan is to lift only its sidewalks to grade level, a reasonable solution. However, little attention has been given to the fact that Copper Avenue already sits at the same grade as the tracks, and can be made to cross it for a minimal cost.

Before Innovate ABQ selected its current site, there was little reason to reconnect Copper Avenue across the tracks. But now that this site is likely to be developed into properly sized blocks, it is clear that an ideal site plan likely includes Copper Avenue running westward across it from Broadway. Continuing this trajectory across the railroad tracks would connect it directly with its counterpart across 2nd Street.

As the Copper-1st curve is removed from the site between 2nd Street and the railroad tracks, it becomes clear that this block is poised to be rationalized as well. Rather than swooping south into 1st Street, Copper Avenue can continue due east, where it becomes the base of the ramps out of the Convention Center garage. These two ramps do not begin to gain elevation until they leave the original Copper right-of-way, so they can simply be T'ed into a reconstituted Copper that heads directly east across the tracks.

In terms of achieving a porous small-block street network, key to walkability, the biggest challenge facing downtown and EDo is the lack of connectivity between them across the railroad tracks. A reconstituted Copper Avenue would benefit both of these neighborhoods tremendously, while allowing Innovate ABQ to enjoy a much more synergistic relationship with downtown.

Central Avenue Downtown

Current Condition

From 8th Street to 1st Street, Central Avenue—downtown's main shopping street—has a 50-foot cartpath. It contains two 7-foot parking lanes flanking two13-foot driving lanes separated by a 10-foot central no-drive zone where trucks sometimes stage deliveries. As the street approaches intersections (between 8th and 2nd), 5-foot curb extensions ("bulb-outs") embrace the parking lanes, resulting in a 40-foot curb-to curb holding two 14-foot driving lanes and a 12-foot center turn lane.

Analysis

Some would say that Central avenue "ain't broke," and that our priorities should point us elsewhere for improving downtown streets. This may be a valid point, but it must be noted that, as it approaches from the west, Central Avenue is now a significant bike route, and it should be extended through downtown.

What makes the insertion of bike lanes difficult here is the presence of the middle storage lane, which certain merchants now seem to rely on. Before

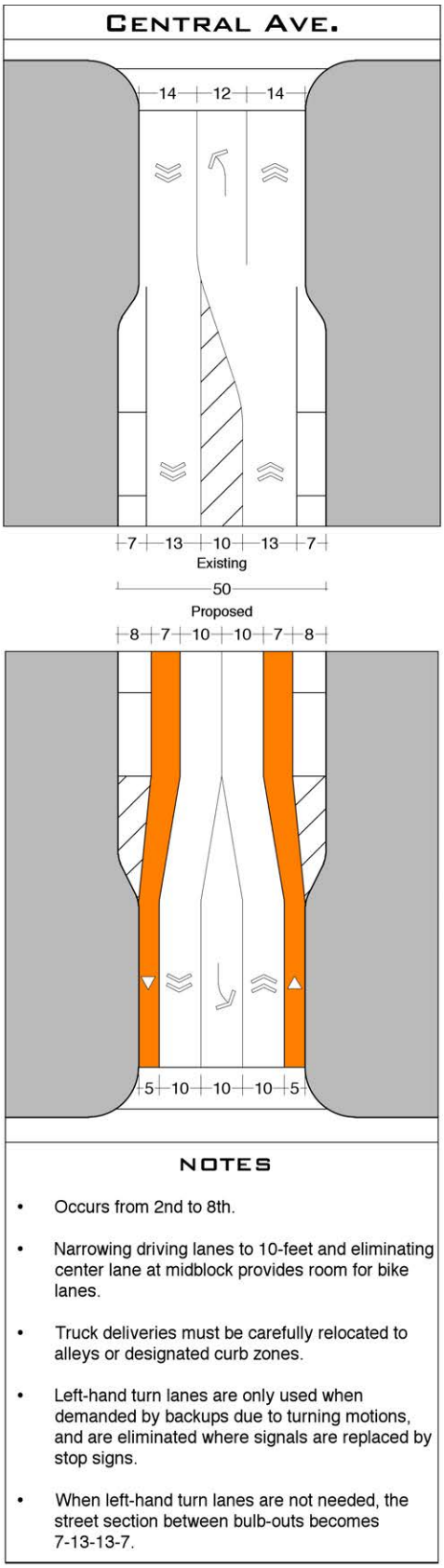
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eliminating this lane, the City must work with business owners to identify alternative loading zones within a reasonable distance. One hopes that merchants will be incited to support this effort by recent studies documenting how shops do better when bike lanes pass in front of them.

If that effort is successful, it will be fairly easy to replace the center lane with two 7-foot integrated bike lanes between the driving and parking lanes. These would narrow to 5-feet wide at intersection approaches, where all three lanes would be narrowed to 10 feet. (Central is not a bus route, but—more significantly—the bike lanes and center turn lanes will provide plenty of elbow room for wide vehicles. For standard-width vehicles, they will send the signal that high speeds are not welcome.

Recommendation

Work with merchants to relocate the middle delivery lane from Central Avenue, citing data supporting the benefits that bike lanes provide to businesses. If successful, restripe Central Avenue from 8th to 1st Streets to contain broad integrated bike lanes between 10-foot driving and 8-foot parking lanes. Between curb extensions approaching intersections, restripe the cartpath to contain two 5-foot bike lanes and three driving lanes, including a center turn lane.



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Central Avenue West of Downtown

Current Condition

As it heads west from the 8th Street roundabout, Central Avnue was recently "road dieted" to a three-lane section including bike lanes. However, the dimensions are not in keeping with typical streets of this type, with an approx. 65-foot cartpath holding travel lanes that vary from 12 to 15 feet in width.

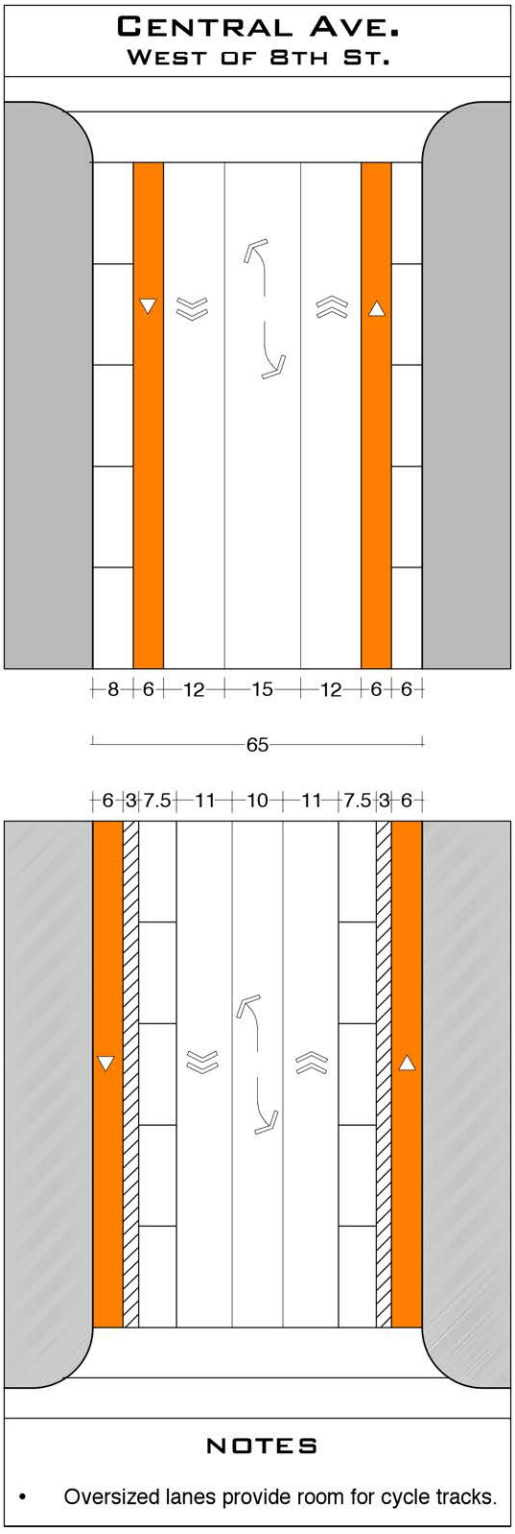
Analysis

The recent road diet on Central avenue is to be applauded. It has not caused inordinate congestion, and it has welcomed more serious cyclists to the street. However, thanks to the high-speed travel lanes, many bikers still choose to use the sidewalks rather than risk injury.

This street holds in 65 feet what many similar streets hold in 60 or less, which means that additional pavement is available to make it safer and more attractive to cyclists. This extra pavement can be used to turn the bike lanes, currently squeezed between driving and parking, into cycle tracks, located against the curb and protected from the driving lanes by parallel parking. Such a change will have no impact on traffic volumes but will encourage more reasonable driving speeds while creating a facility attractive to even inexperienced cyclists.

Recommendation

From 8th Street to San Pasquale Avenue, restripe Central Avenue to contain 11-foot driving lanes and 8-foot parking lanes. Between each parking lane and the curb, insert a 3-foot buffer and a 5-foot bike lane.



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Central Avenue EDo

The current configuration of Central Avenue in EDo—five lanes of travel with occasional parallel parking located within the sidewalk zone—is less relevant than the many proposals for its future, one of which is likely to be built before long, as Central Avenue receives Bus Rapid Transit service enhancing the already effective Rapid Ride corridor from downtown to the UNM and beyond. This corridor will only become more important with the creation of Innovate ABQ on the eastern edge of downtown.

Current proposals vary, but they all try to satisfy the competing interests of the many parties involved in a very limited 80-foot right-of way. EDo, for its part, rightly wants calm traffic, parallel parking to support businesses, and ample sidewalks, which suggests three lanes of traffic and no dedicated bus lane. ABQ Ride rightly wants dedicated lanes for their new BRT, which will help it to move quickly through EDo. Driving advocates want to maintain 5 lanes for cars for fear of encountering congestion in this corridor. How can all of these objectives be properly weighed?

First, it is useful to look at the data. The highest daily car counts in EDo reach just above 20,000, a number that we have seen satisfied on many 3-lane streets. An analysis by the traffic engineer Colin Burgett of Nelson/Nygaard suggested clearly that current bus delays on Central are principally an outcome of the long signal cycles at Broadway, and not a function of the lack of a dedicated lane.

While dedicated lanes are an important feature of Bus Rapid Transit, they are most important on the long suburban stretches reaching to and from a downtown. Within downtown areas, it must be remembered that most transit trips begin and/or end as a walk, and therefore transit that undermines downtown walkability threatens its own ridership. For this reason, downtown, including EDo, should be thought of first as a rider generation zone, and only second as a trajectory to be cleared of impediments to quick flow.

Next, and perhaps most importantly, Central Avenue must be considered in the context of the entire downtown grid. Currently, the following Avenues offer east-west access to downtown: Lomas, MLK/Marquette, Tijeras, Central, Lead, and Coal. Of those six trajectories, only one has the slightest hope of attracting more than a negligible amount of pedestrian activity along it. Only one has shops and restaurants. Only one passes by the Transportation Center, and connects directly to the heart of downtown. Simply put, Central Avenue is downtown Albuquerque's only hope for east-west walkability beyond the railroad tracks. As such, it is too important to sacrifice to any other mandate beyond providing a lively, inviting public realm.

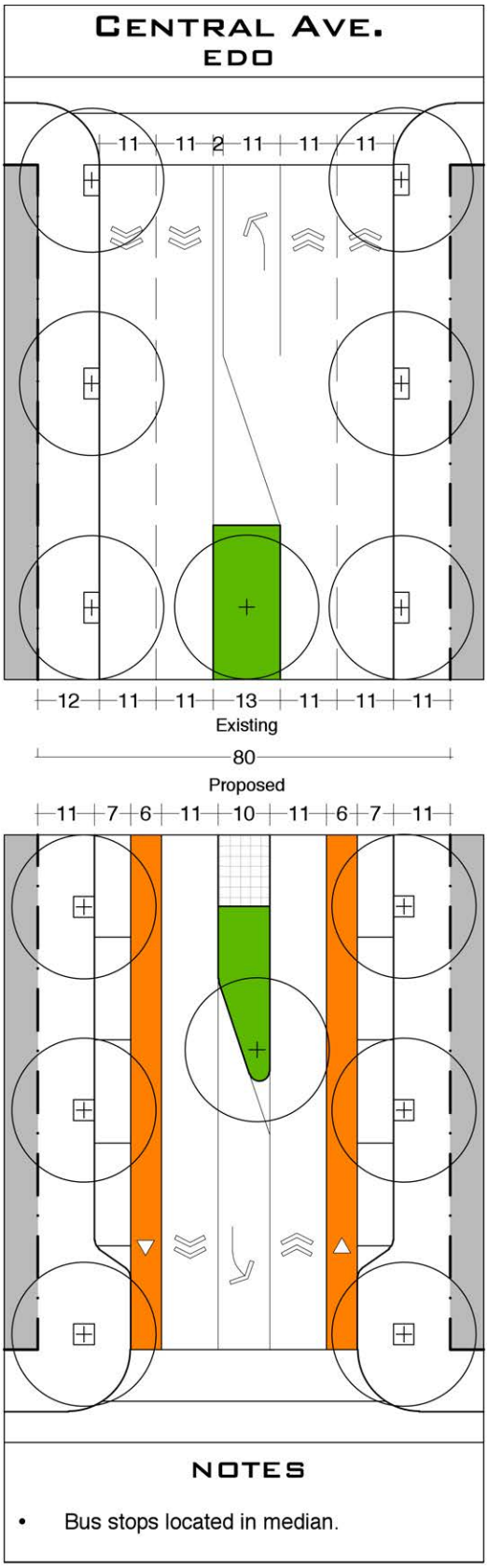
As already discussed under *The Network* above, drivers are intelligent economic actors. Each driver has, independent of Central, seventeen different lanes across the railroad tracks between Lomas to Coal, in a system that contains tremendous excess capacity. If Central becomes more congested, drivers will quickly alter their paths. An understanding of this aspect of how

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networks function allows us to support with absolute confidence a three-lane solution for Central Avenue through EDo, a solution of the type put forth in the EDo Master Plan.

As shown in a modified form here, it contains bike lanes, continuing the east-west cycle facility that this report recommends bringing all the way through downtown from its inception two miles west at San Pasquale Avenue. It also contains a treed median, ideal for holding BRT stations where needed. At intersections, the median area would be replaced by left-hand turn lanes, resulting in a capacity roughly equal to the current car counts. It is a true "complete street," combining cars, buses, bikes, pedestrians, parking, and landscape.

In conclusion, as the only street that has the potential to carry Albuquerque's downtown pedestrian activity beyond downtown, Central Avenue in EDo must not be allowed to maintain a five-lane configuration. This configuration forces a choice between adequate sidewalks and adequate curbside parking, both of which are essential to the success of commercial corridors. Fortunately, a wealth of parallel corridors give us confidence that that a three-lane Central Avenue will not cause undue congestion, and can support Bus Rapid Transit in a manner that will enhance its success by increasing the number of likely riders.



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Gold Avenue

Current Condition

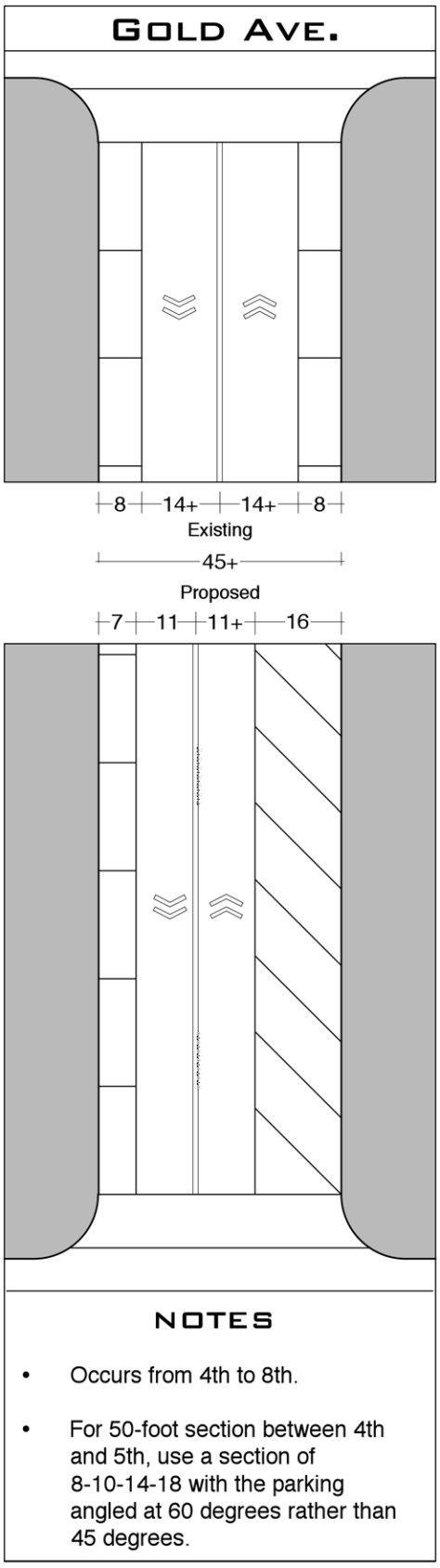
From 4th to 8th Streets Gold Avenue varies between 45 and 50 feet in width. Most of this is striped with parallel parking flanking two travel lanes of tremendous width. Parking is disallowed, however, between 4th and 5th Streets, due to the security requirements of the Federal buildings that line the road.

Analysis

First, removing the Federal on-street parking ban is an effort that should be undertaken for the benefit of all of downtown. The GSA and other government agencies are notoriously inconsistent in the application of this ban, and plenty of similar buildings around the country allow parking alongside them.

Second is the question of the over-wide driving lanes. Gold is a significant bus way, but it does not hold high traffic volumes, with a peak-hour load of 348 cars between 2nd and 3rd. It is an ideal candidate for one-sided angle parking, which will be a boon to the businesses and offices along it. Placing angle parking on one-side of the street results in 11-foot wide bus lanes, the proper standard.

Finally, for the short, low-traffic block connecting Union Square to Broadway, Gold Avenue contains one-side of parallel parking on a roughly 33-foot cartpath. This can be restriped similar to 7th Street to contain slow-flowing traffic with two flanks of parking.



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Recommendation

Pursue on-street parking from the GSA for the curbs between 4th and 5th Street. From 4th to 8th Street, restripe Gold Avenue to include two driving lanes flanked by parallel parking on one side and 45-degree angle parking on the other. From Union Square to Broadway, add a second flank of parking in a 7-9.5-9.5-7 configuration.

Silver Avenue

For most of its length, Silver Avenue does not cry out for restriping. However, the following locations merit attention:

- Just east of 5th Street, an unnecessary right-hand turn lane has removed three parking spaces from the north curb. It should be eliminated. (Traffic is so low on Silver that the City doesn't even keep count.)

- A similar condition occurs just west of 4th Street on the south curb, and should be remedied.

- In conjunction with new market planned between 3rd to 2nd, a proposal has been put forward to place rear-angle angle parking on the north side of Silver, with no parking across the street, in a 17-13-12 configuration. Such a design would be in keeping with the recommendations of this report, presuming the parking is at 60-degrees to the curb, since there is ample room for it.

Finally, the introduction of best-practices cycling infrastructure to downtown Albuquerque will make obvious Silver Avenue's inadequacy as a bike route. Once the Lead and Coal facilities are complete, the Bike Boulevard signage should be removed from Silver.

Lead Avenue

Current Condition

From 8th to 6th Street, Lead Avenue holds two 16-foot driving lanes and no parking. As it reaches 6th, the avenue widens to more than 45 feet, a dimension it keeps all the way to the bridge over the railroad tracks. For all of its length, this cartpath holds four travel lanes and no parking.

Analysis

Due to the anti-urban configuration of the housing development flanking it, Lead Avenue has little need for parallel parking west of 6th Street, which means that this segment contains roughly 10 feet of pavement that could be put to better use. East of 6th, peak-hour car counts range from 280 to 975—no more than could be handled by a two-laner without center turn lanes. For this reason, replacing the current 4-lane configuration with a 3-laner seems an extremely conservative solution. This, too frees up about 10 feet of roadway—and more than 20 feet away from intersections, where the center turn lane can drop away.

In this manner, right-sizing the travel lanes to the proper number and width creates room for a cycle track facility that can continue the railroad-bridge bike lane all the way west to 8th Street.

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Past 8th street, traffic is light enough for the bike facility to become a sharrow.

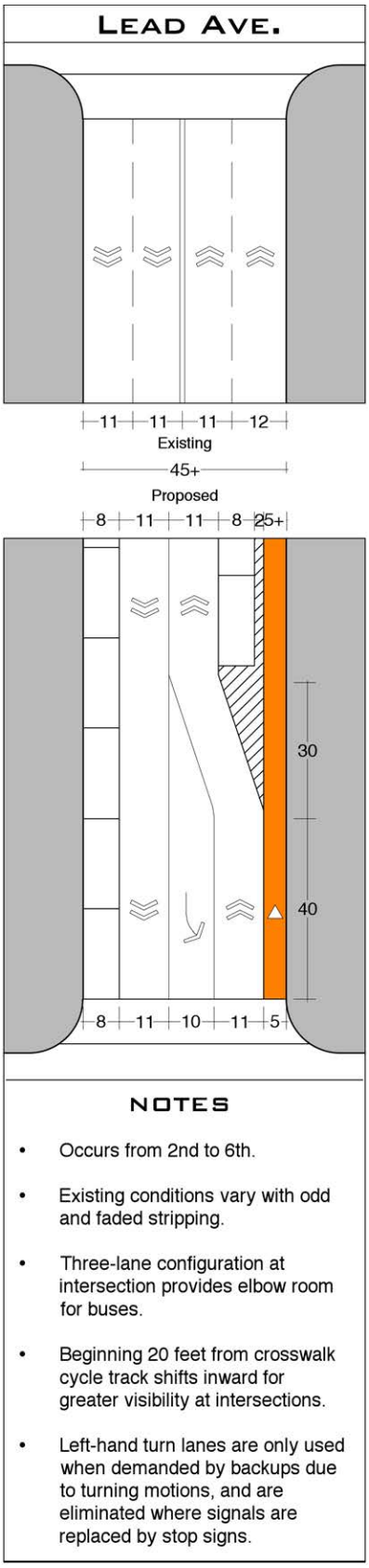
From 8th to 6th, the cycle track can consist of a 6-foot lane with a 5-foot buffer alongside two right-sized driving lanes. From 6th to 2nd, like the cycle track proposed for Marquette, this one would be located between parked cars and the northern curb, except near signalized intersections where the parking would drop away to provide room for a center turn lane. There is also room for continuous parallel parking on the southern curb.

Also worth fixing is the roughly 80-feet-extra of unjustified no-parking zone on the south side of Lead Avenue, just west of 8th Street.

Recommendation

From 8th to 6th Streets, restripe Lead Avenue to two 11-foot lanes and a 6-foot westbound bike lane beyond a 5-foot striped buffer. From 6th to 2nd Streets, restripe Lead to include two 11-foot lanes, with a one-way westbound cycle track on its northern flank, protected by parallel parking at midblock, and with a continuous southern flank of parallel parking. At signalized intersections, drop off the north-side parking to create room for a left-hand turn lane, which should not be longer than needed—probably no more than 40 feet plus a 30-foot chamfer.

Replace the missing parallel parking on the south flank of Lead Avenue just west of 8th Street.



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As discussed ahead under Signalization, the traffic signal at 8th Street should eventually be replaced all-way stop signs, eliminating any left-hand turn lanes in this location.

Coal Avenue

Current Condition

From 8th to 2nd Streets, Coal Avenue contains two travel lanes and two parking lanes along its midblock sections, and four travel lanes at each intersection approach, all in a cartpath of roughly 46 feet. At midblock travel lanes are roughly 15-feet wide.

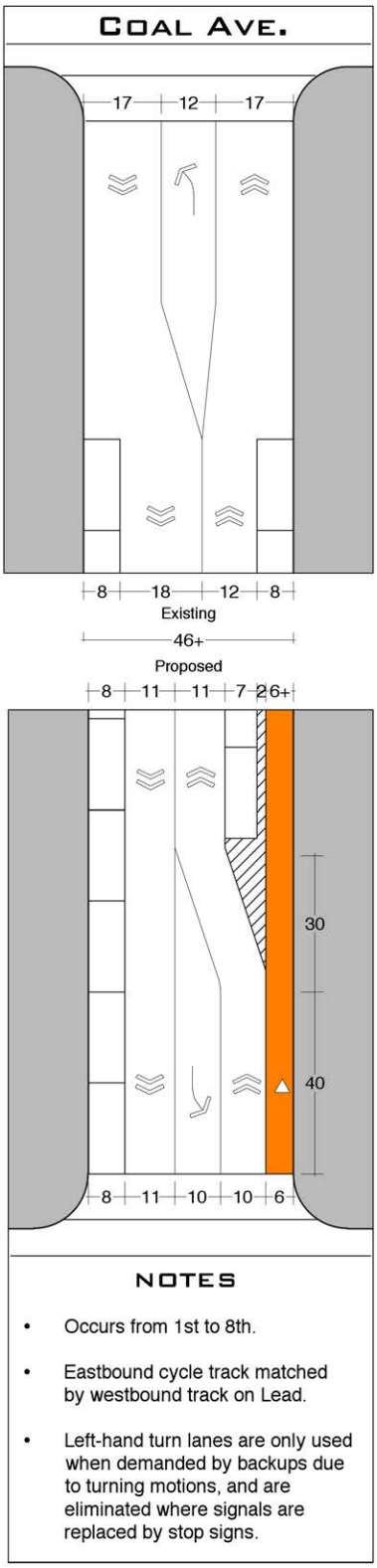
Analysis

Coal handles less traffic than Lead, so the logic applied above to mandate a dieting of Lead applies just as strongly to Coal. Coal should be restriped in the same manner as Lead, completing the bike-lane pair with an eastbound cycle track.

Recommendation

Restripe Coal to include two 11-foot lanes, with a one-way eastbound cycle track on its southern flank, protected by parallel parking at midblock, and with a continuous northern flank of parallel parking. At signalized intersections, drop off the south-side parking to create room for a left-hand turn lane, which should not be longer than needed—probably no more than 40 feet plus a 30-foot chamfer.

As discussed ahead under Signalization, the traffic signal at 8th Street should eventually be replaced all-way stop signs, eliminating any left-hand turn lanes in this location.



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Lead and Coal Bridges

Current Conditions

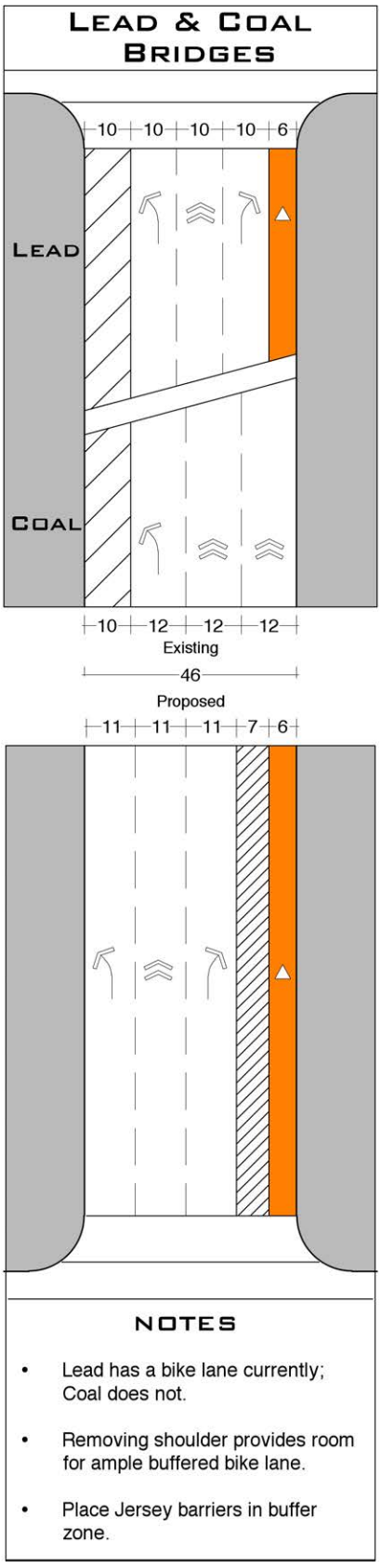
As they bridge over the railroad tracks, Lead and Coal Avenues contain a variety of lane configurations in a roughly 46-foot cartpath. Lead ranges from 2 to 3 lanes handling approx. 9800 cars per day. Coal ranges from 3 to 4 lanes handling approx. 7700 cars per day. Lead contains an westbound bike lane, while Coal awaits its eastbound twin. Large segments of lead and limited segments of Coal are striped as shoulders.

Analysis

The fact that Lead carries more cars than Coal in one less lane demonstrates how Coal is oversized. Indeed both streets should be able to easily handle their current traffic in two lanes. However, given all the available roadway, there is no reason not to place three lanes in both, which still leaves ample room for a buffered bike lane on the right flank.

Recommendation

Restripe both bridges to hold three 11-foot travel lanes, a 7-foot buffer, and a 6-foot bike lane. Place a Jersey Barrier in the buffer to protect cyclists from high-speed traffic.



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Lead and Coal East of Broadway

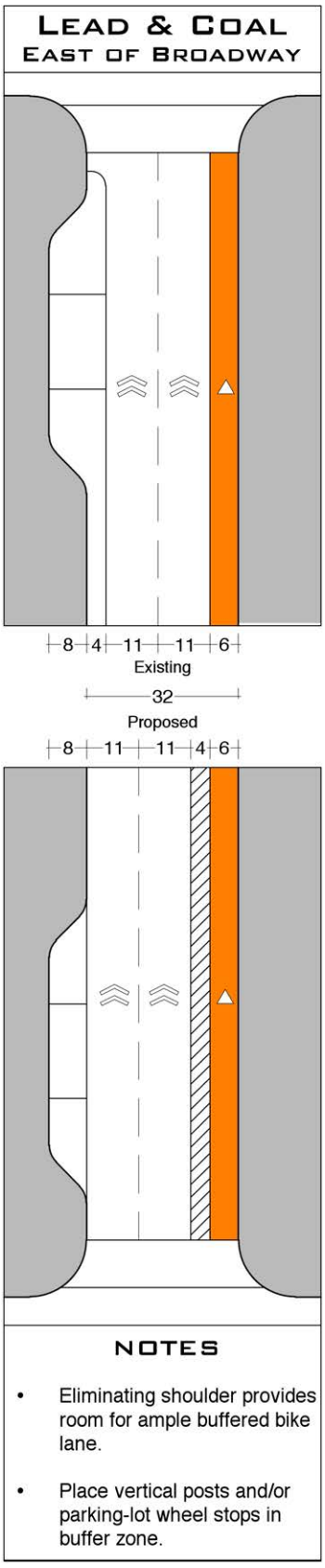
Current Conditions

A one-way pair, Lead and Coal each contain two 11-foot driving lanes, a 6-foot bike lane, and a 4-foot shoulder against pockets that have been carved out of the landscape strip for one side of parallel parking.

These two streets should be studied for reversion two-way traffic, as the current configuration invites high-speed driving. But some of that problem can be solved simply by moving the buffer to the other side of the street, between the driving and biking lanes. Placing traffic closer to parked cars will slow it down slightly and make biking feel much safer.

Recommendation

While studying a two-way reversion, restripe Lead and Coal Avenues from Broadway to I-25 to include two 11-foot driving lanes, a 6-foot bike lane, and a 4-foot striped buffer in between.



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Test, Don't Study

A final word is needed on these proposed street reconfigurations: wherever possible, they should be tested rather than studied. Studies are expensive and often inconclusive. Tests produce real results, at almost no cost.

For example: in response to the suggestion that Lomas can drop from seven lanes to five between 3rd and 8th Streets, it would be natural to call for a traffic study. But why conduct an expensive and perhaps incorrect traffic study, when the police department can simply park two police cruisers, flashers on, to create the proposed reduction in lanes during rush hour? Done for a few rush hours in a row, so that drivers grow used to it, this exercise would demonstrate very clearly whether congestion would ensue.

This same approach should be applied whenever possible to the full set of reconfigurations proposed above.

Signalization

Eliminating Unwarranted Signals

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

A review of traffic volumes in downtown Albuquerque seems to suggest that many traffic signals currently lack legitimate warrants. Generally, to earn a warrant, an intersection should process 800 vehicles at peak hour, at least 150 of which are on the lower-volume street. In the diagram on the next page, the streets marked in blue experience close to 500 peak-hour trips and the streets marked in yellow experience well below this amount. It seems highly unlikely that any of the yellow-blue or yellow-yellow intersections qualify for signals, except along Marquette and Tijeras where multilane one-ways make stop-signs dangerous.

By this logic, 17 downtown signals are likely to be unwarranted. Additionally, it would seem that the signals on 4th Street as it meets Tijeras and Marquette can also be eliminated once those streets are converted to two-way.

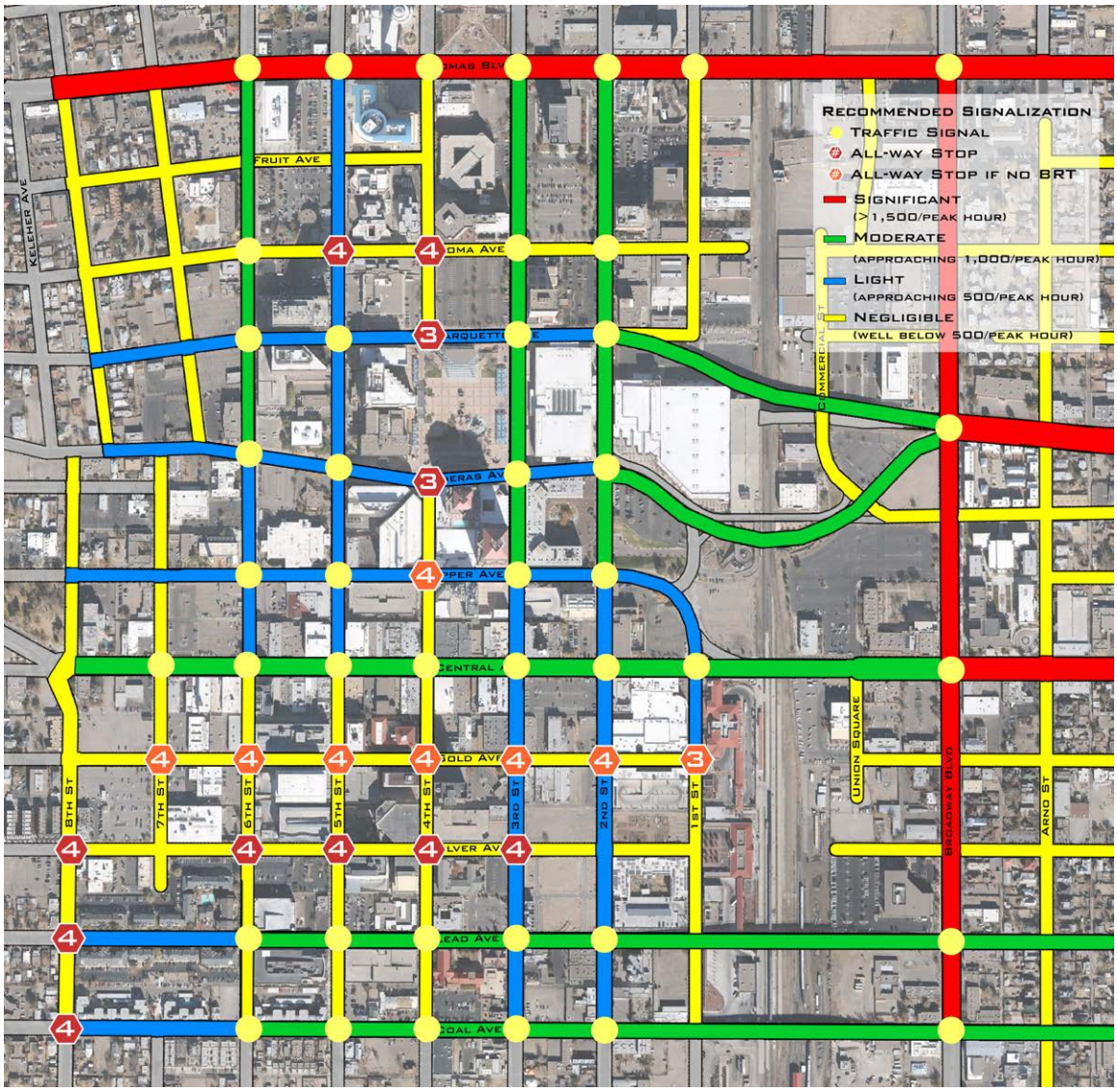
Specifically, this report recommends the removal of the following signals in favor of all-way stop signs:

- Where Roma meets 4th and 5th Streets;
- Where Marquette, Tijeras, and Copper meet 4th Street;
- Where Gold meets 1st through 7th Streets;
- Where Silver meets 3rd, 4th, 5th, 6th, and 8th Streets; and
- Where Lead and Coal meet 8th Streets.

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All in all, it would seem prudent to eliminate 19 of the study area's 62 traffic signals. However, we must consider another factor, that being the introduction of Bus Rapid Transit service to this corridor, specifically to Copper and Gold Avenues. BRT relies upon signal pre-emption for efficiency, and this cannot be achieved with stop signs. Therefore, while 4-way stops would create a safer and more pleasant pedestrian experience along these corridors, the goal of effective bus service suggests that the eight signals on these two streets not be eliminated. As a result, only 11 of the 62 downtown traffic signals are recommended for elimination, unless, for some reason, BRT does not become a reality.

Additionally, each intersection that eliminates its signals must also eliminate any left-hand turn lanes, since turn lanes are not needed or appropriate at all-way stop signs. Eliminating these lanes, as already discussed in the individual street redesign proposals, allows for a tremendous amount of pavement to be rededicated to other uses, such as curb parking or bike lanes.



Traffic volumes and recommended changes to signalization in downtown Albuquerque

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Given the interrelationship between signals and turn lanes, it is recommended that each signal in question be addressed as the streets it regulates are restriped. Removed signals can be deployed elsewhere in the city, creating a significant cost savings.

Improving the Pedestrian Experience

Consideration of the other criteria already discussed under the section on the Safe Walk leads to the following additional recommendations for downtown signalization:

- Remove pushbuttons from all signals except those along Lomas and Broadway, where longer crossing times are needed due to excess width. In those locations, working with NMDOT, allow the pushbutton request to preempt the signal cycle, so that pedestrians are not led to believe that the buttons are broken.

- Introduce Lead Pedestrian Indicators (LPIs) at intersections with high pedestrian volume, such as those along Central Avenue, especially at 1st Street.

- Working with NMDOT as necessary, shorten signal cycles to a target length of 60 seconds for the entire cycle at all signalized intersections.

- Working with NMDOT, revise the signal timing at Central and Broadway to improve the flow of buses (and all vehicles) across Broadway.

- Until they are converted to two-way, ensure that the "green wave" signal timing along Marquette and Tijeras allows speeds no faster than 25 MPH.

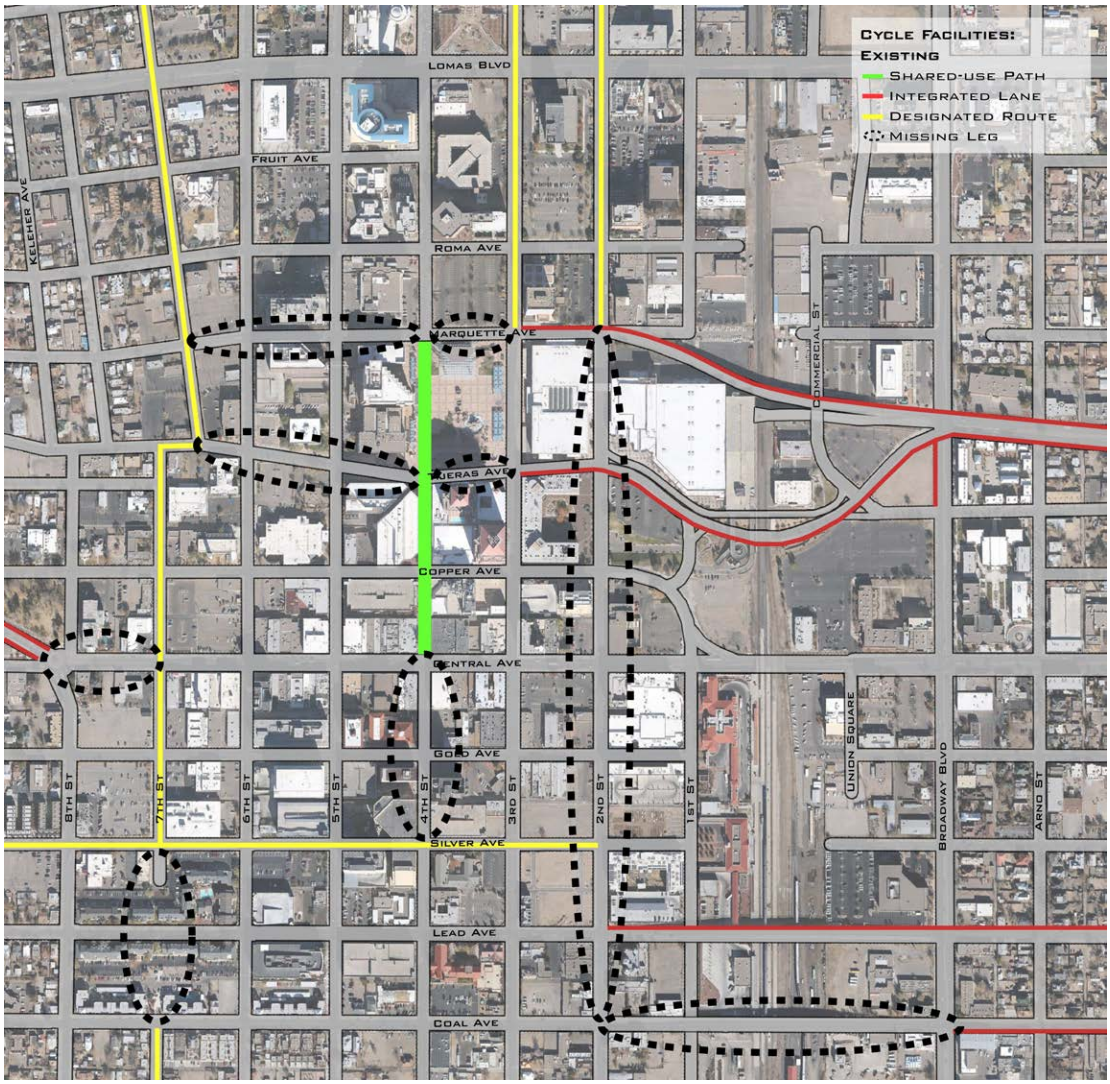
- Investigate signals to ensure consistent crossing times, as appropriate. Several citizens complained of unexpectedly short warning times (flashing orange hands) at certain intersections.

- While compliance with existing laws is not the focus of this report, it bears mentioning that many downtown intersections currently lack proper ADA facilities, a problem that should be resolved quickly.

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Cycle Facilities

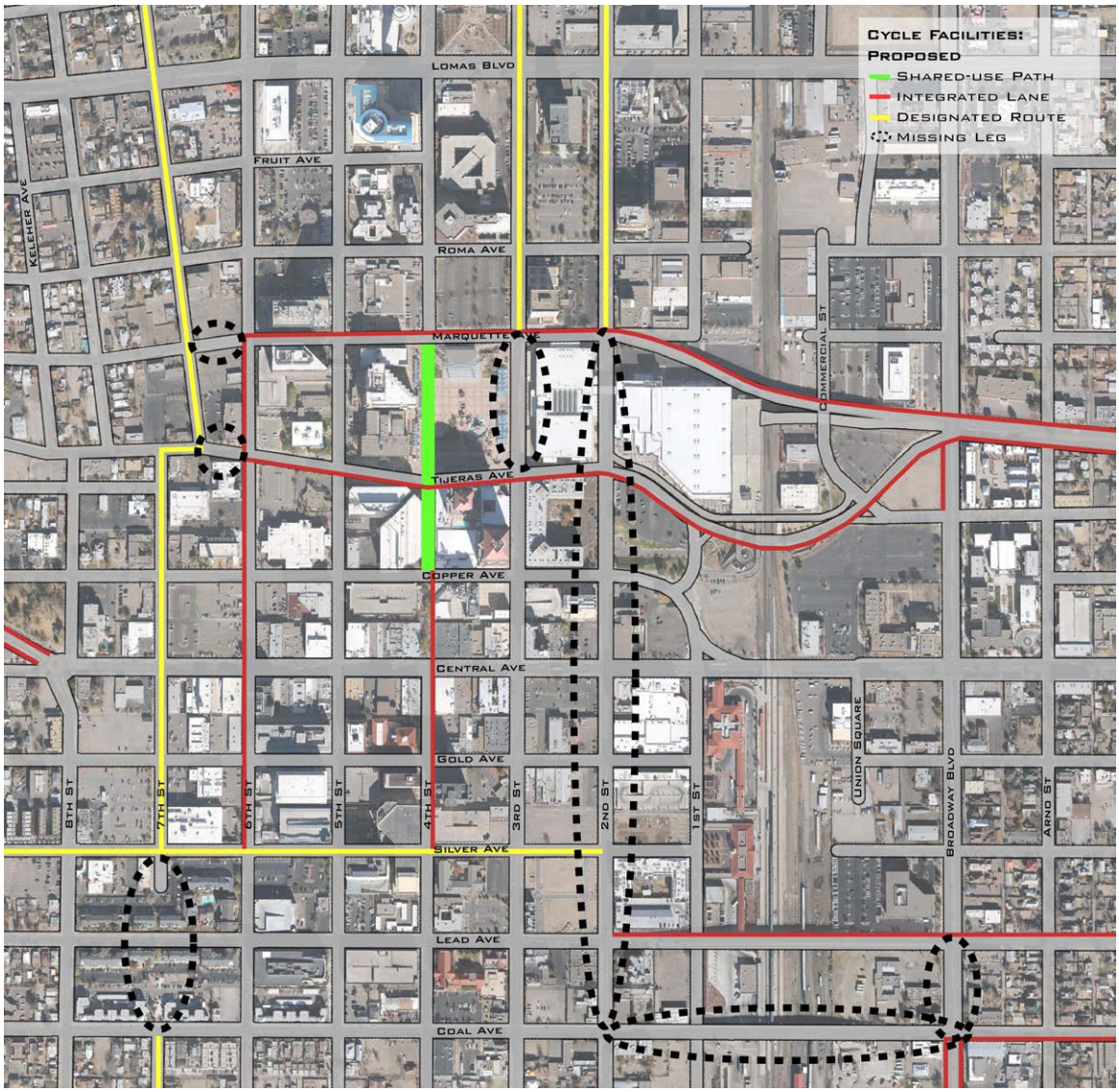
Albuquerque remarkably contains over 500 miles of bikeways, but the perception remains is that its not safe to bike in the city. This sense of danger has two main causes: the fact that so many bike lanes are located alongside high-speed traffic; and the general lack of cycling facilities downtown. Since the heart of the city is the place most likely to attract new residents who wish to embrace a cycling lifestyle, it is especially important that the regional cycling network that reaches the edges of downtown be allowed to permeate it in a robust network. Moreover, the location of a large community college campus downtown in the Galleria One building makes downtown biking all the more worthy of enhancement, as many students who struggle with transportation costs would make the choice to bike if it was not so dangerous.



The current downtown cycling network. Note the many gaps (marked), and also how few of the facilities contain dedicated street space (The Designated Routes in yellow are simply lanes shared with cars.) In these diagrams, "Shared-Use Path" refers to a trajectory that welcomes bikes and pedestrians but no cars, and "Integrated Lane" refers to an unprotected lane striped in a vehicular street. "Cycle Track," ahead, refers to a bike lane that is buffered from traffic.

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The street redesigns already proposed in this report take into consideration the goal of creating a limited network of high-quality cycling facilities, in order to invite a larger cycling population downtown. Currently, there are almost no dedicated bike facilities in downtown Albuquerque. 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.

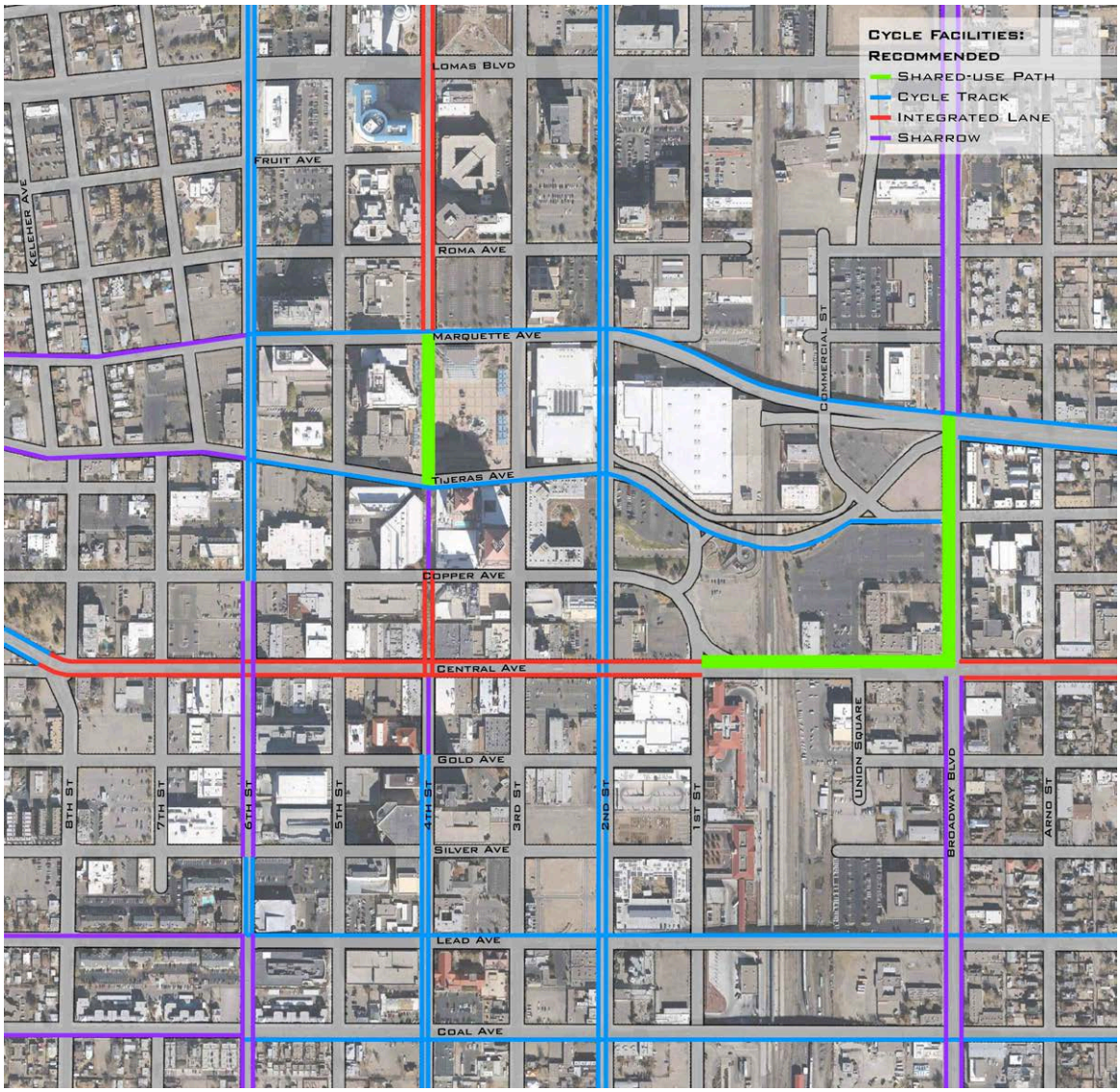


As far as can be determined, the currently proposed cycling network. Many gaps remain, and designated bike lanes are still few.

Current plans underway to improve downtown cycling are to be lauded, but they do not seem to have been executed with a full understanding of how driving lanes might be reduced in number and width in order to provide a more robust outcome. As might be expected, they politely do their best to make use of currently available space. In contrast, this report has taken the additional steps of identifying exactly where pavement can be converted from driving to cycling use without adversely impacting car traffic, and also

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noting where such changes are needed to encourage more lawful driving behavior. The result is inevitably a much more ambitious proposal.



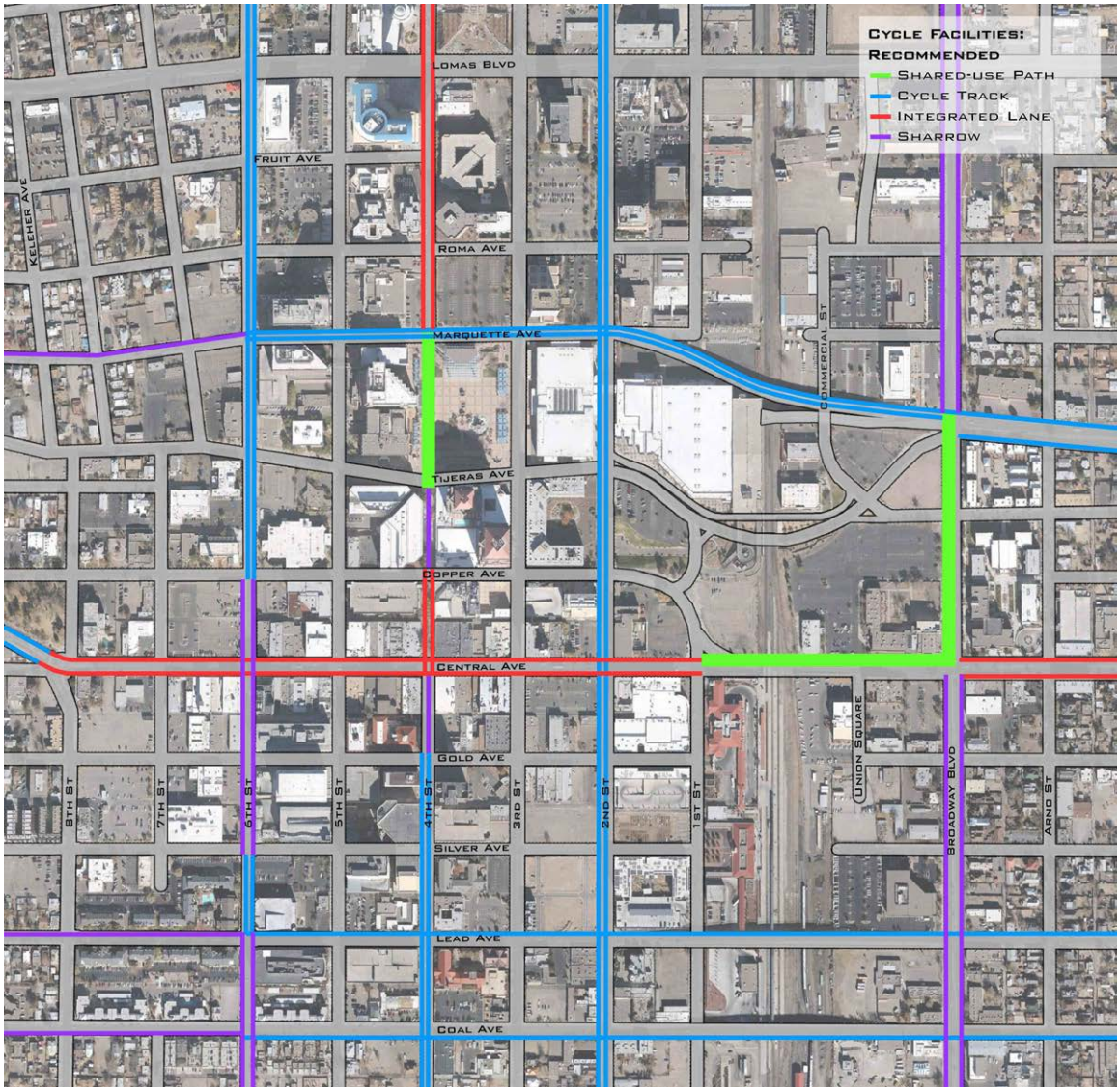
The recommended cycling network. This first version corresponds with the proposed street redesigns if New Tijeras is not eliminated.

The result of this effort is a robust but not excessive framework of high-quality cycle facilities. Far from suggesting bike lanes on every street, we have inserted 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—2nd, 4th, and 6th Streets—and three east-west bikeways—Central, the Marquette/Tijeras pair, and the Lead/Coal pair. These are supplemented by the low-speed slip lanes of Broadway if and when than highway becomes a multi-way boulevard as currently hoped.

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As noted, a second version of this network must also be shown, since the possible closing of new Tijeras Avenue alongside the Convention Center would result in the Marquette/Tijeras two-way pair being placed entirely on Marquette.



The recommended cycling network. This second version corresponds with the proposed street redesigns if new Tijeras is eliminated (and also assumes that Marquette and Tijeras are reverted to two-way).

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. 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 Albuquerque is to achieve a similar success.

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As can be seen in the diagrams, cycle tracks are provided in those locations where they fit easily: on the Marquette/Tijeras and Lead/Coal pairs and 2nd Street, and on the wider segments of 4th and 6th Streets. The remainder of these trajectories receive integrated lanes or sharrows as space permits.

Aside from NMDOT-dependent Broadway, the other large question mark is Central Avenue, which already has integrated lanes reaching from the west to 8th Street—lanes that can easily be turned into a cycle track, as already discussed. This facility threatens to end with a whimper at 8th, unless the middle service lane can be eliminated from 8th to 1st, providing room for integrated bike lanes. If this effort fails, that segment should be marked with sharrows, since traffic is slow enough for more confident cyclists to still feel comfortable there. East of 1st, however, dedicated lanes will be necessary to keep cycling viable into EDo, where it is so needed, as already discussed.

Finally worth noting in the diagrams is the green L along the east and south flanks of Innovate ABQ. Given that this site will be redeveloped, it makes sense to include a two-way off-street path on its edges against Broadway and Central. Such a facility typically consists of about 10 feet of pavement between the curb and the sidewalk's tree strip, such that trees separate cyclists from pedestrians. This facility should continue west across the railroad tracks to reach 1st street along the new raised-sidewalk facility being planned there.

While the recommended cycling network diagrammed above is necessarily limited to this report's study area, it is designed to be integrated into the larger regional cycling infrastructure. That infrastructure is currently being modified by a new Bikeways and Trails Master Plan, which it is hoped will incorporate the above diagram in two ways: first, by replacing its current downtown proposal with the one shown above, and second by designing the proper connections between this downtown network and the larger regional system. In so doing, it is hoped that the Plan will continue the facilities shown here beyond the study area with no diminishment in quality, for as long a distance as possible.

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PART III. A USEFUL, COMFORTABLE, AND INTERESTING WALK

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. Albuquerque has already wisely eliminated the on-site parking requirement in its downtown. We will address the other two concepts here briefly.

The Right Price

Where Albuquerque falls behind other cities is in the pricing of its parking. The current regime seems to be working against the success of downtown's busiest areas, 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.

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,

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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 Albuquerque is going to work to the benefit of downtown Albuquerque, then a commitment to the above three basic principles of parking policy must explicitly guide City efforts. Such an approach does not mean placing meters everywhere, or increased costs in most locations; it only applies to those places where (and times when) demand for curb parking exceeds supply, resulting in an inconvenient shortage of parking spaces.

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. Albuquerque 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

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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

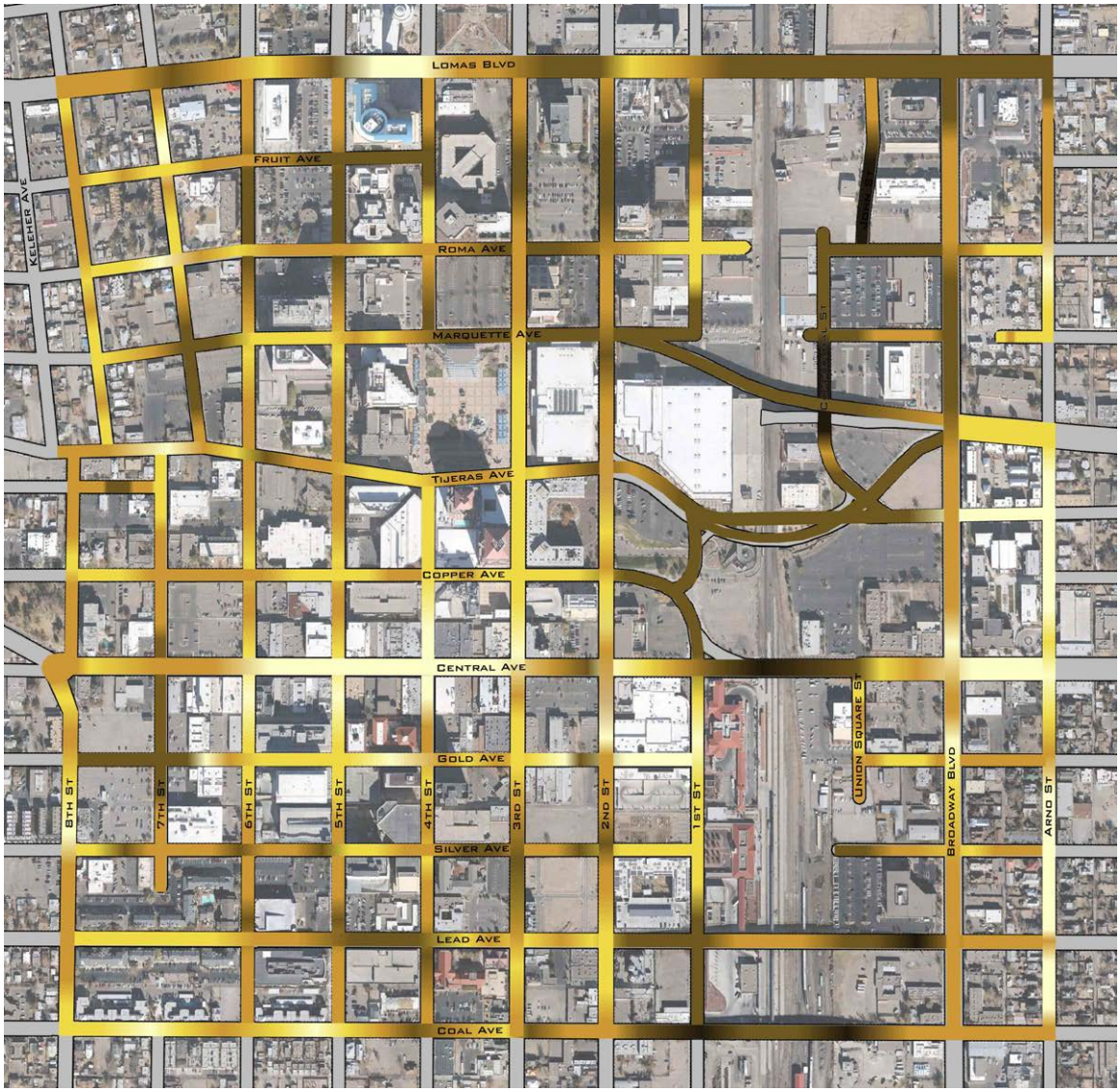
The drawing below is a Street Frontage Quality Rating for the study area. This map rates each street segment subjectively in terms of its pedestrian quality, based on the criteria of use, comfort and interest. Lighter-colored areas are generally useful, comfortable and interesting, and therefore capable 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.

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 below—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 Albuquerque has a clear core of reasonably inviting downtown frontages, with a sweet spot that is roughly bounded by Copper, Gold, 2nd, and 6th Streets, and focused upon Central Avenue. 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.

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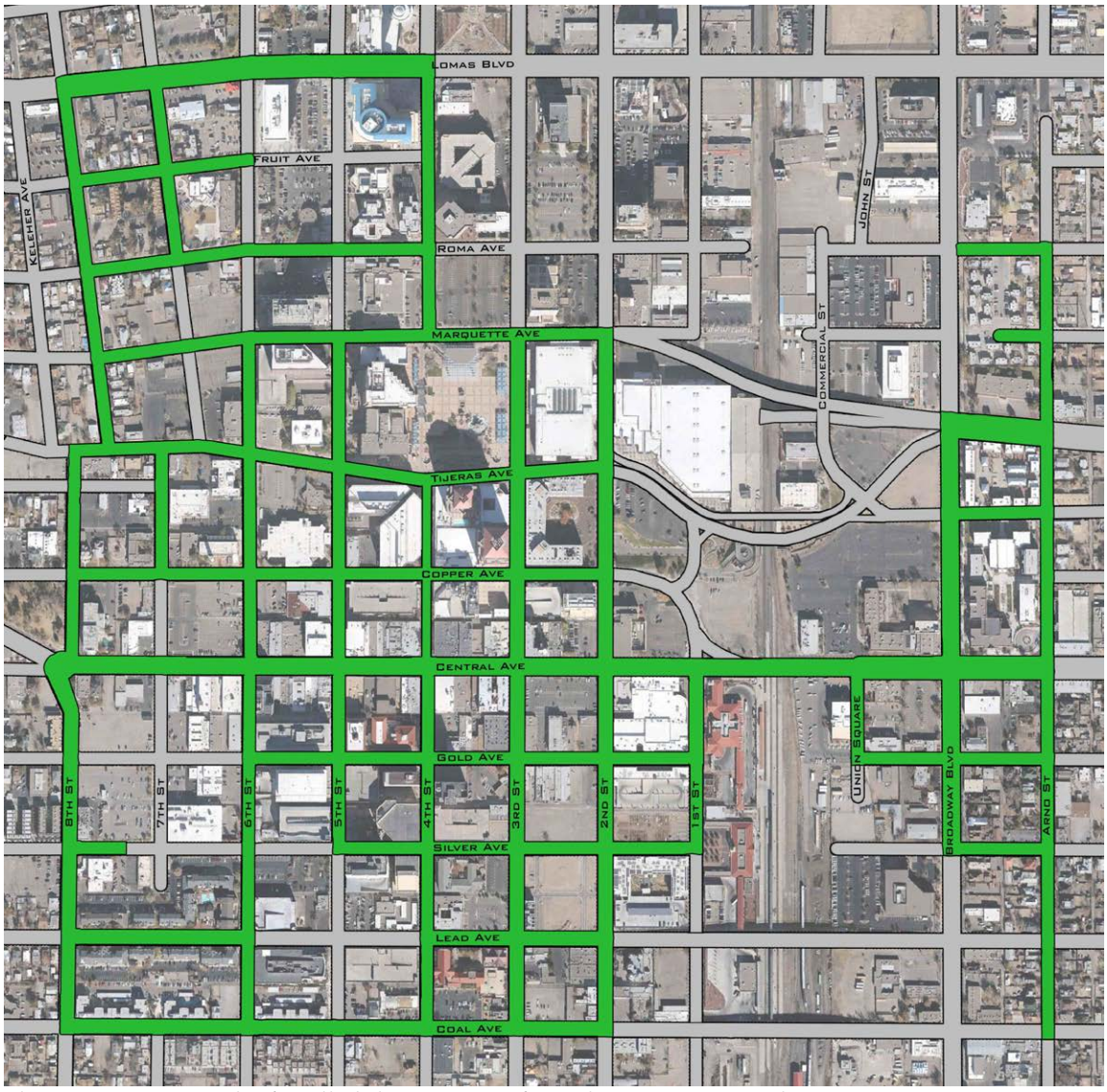
The Street Frontage Quality Rating ignores Safety and instead focuses on the Usefulness, Comfort, and Interest of the street space.

The Primary Network 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 other pieces of itself.

As diagrammed on the next page, trajectories shown in 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 green web is the Primary Network of Walkability.

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The Primary Network of Walkability emerges from the Frontage Quality Assessment.

As can be seen in the Diagram, the Primary Network of Walkability includes most of the streets in the heart of the downtown. Indeed, it is so pervasive that it is more useful to note those street segments that have been excluded. Most notable among there are the following:

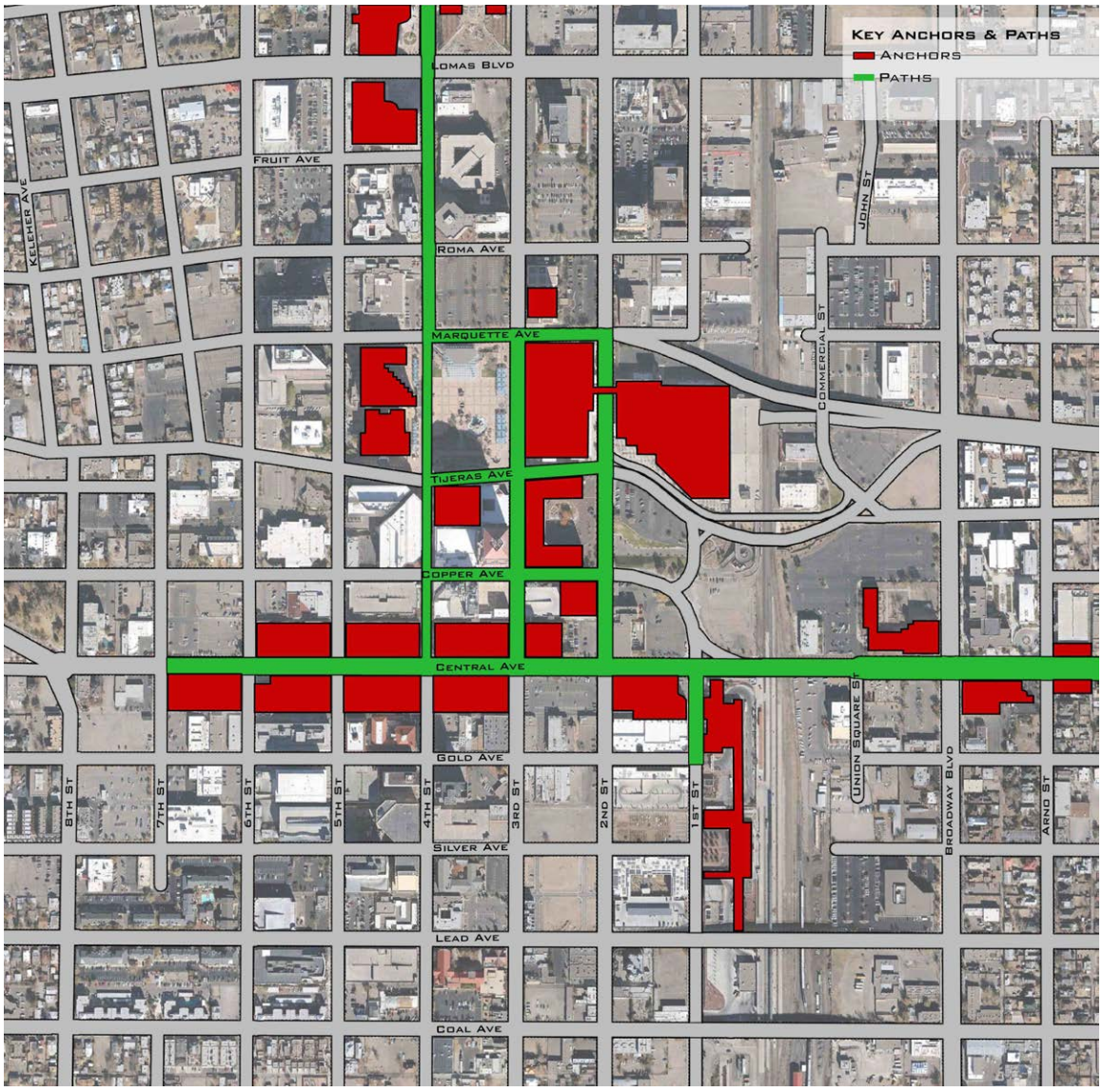
- Lomas Avenue east of 4th Street. While pedestrian motions across Lomas must be made safer, this street s unlikely to attract much pedestrian activity east of the Courthouse district.

- All trajectories across the railroad tracks except Central Avenue. None of the crossings above or below the tracks are comfortable for pedestrians, and only Central Avenue in EDo has enough pedestrian activity to generate much walking. For this reason, it is the trajectory that would most benefit from investment.

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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. But as a guideline for infill development, the above drawing has a problem: it is too large. Developing every empty site in this Network would take many decades. 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. These anchors are chosen for practical purposes—like connecting a convention center to its hotels—and for social

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purposes—like connecting a transit hub to a government center. 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.

The key downtown anchors include the following:

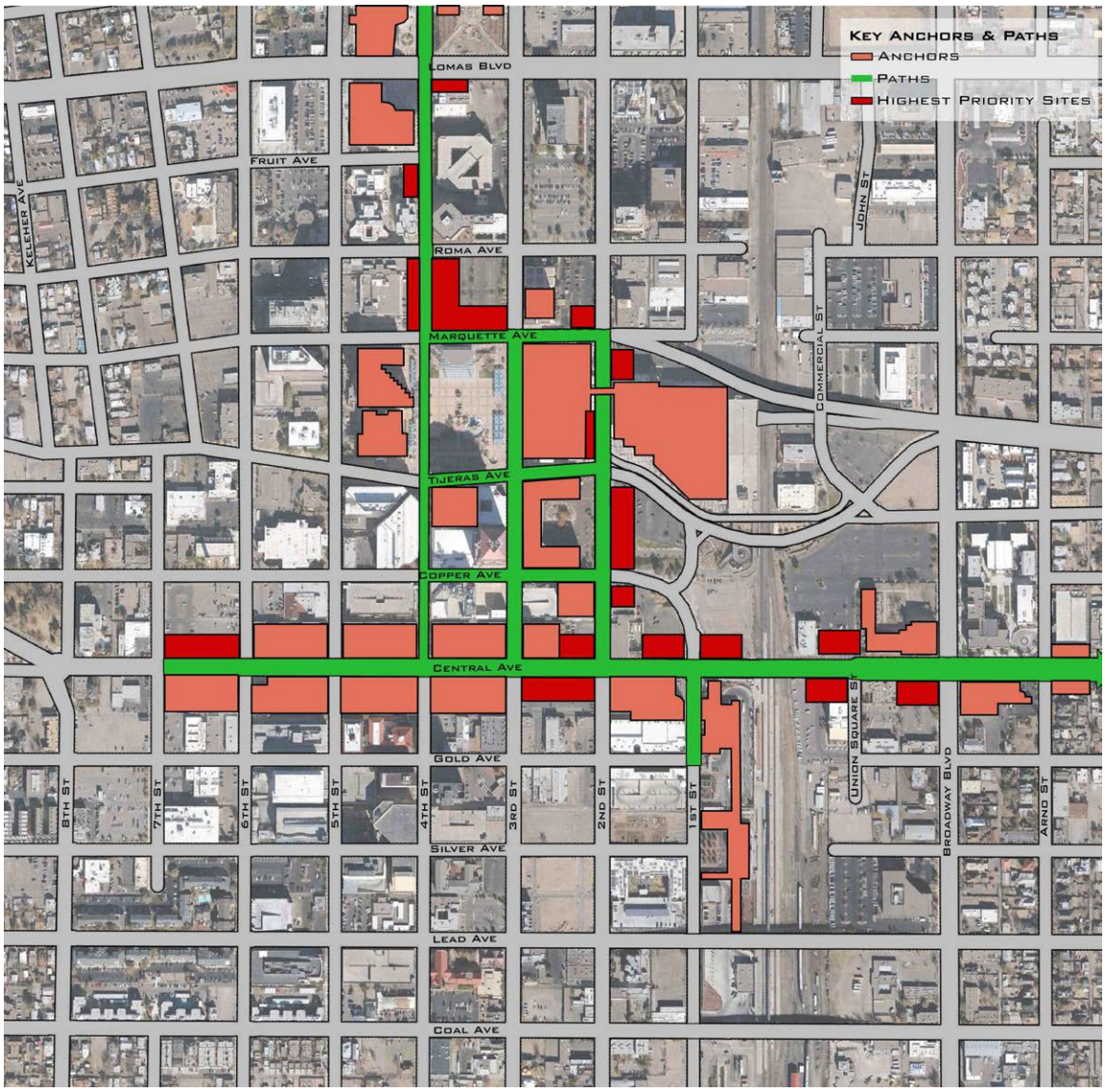
- Central Avenue on both sides of the railroad tracks;
- The Albuquerque Alvarado Transportation Center;
- The Galleria One Building;
- The Albuquerque Convention Center;
- The Hyatt Regency, DoubleTree, and Andaluz Hotels;
- The City and County complex; and
- The Courthouse district.

As can be seen in the diagram, properly connecting these anchors to each other relies upon excellent pedestrian trajectories along major segments of Central Avenue and 4th Street, along all the street segments located in the rectangle bound by Marquette, Central, 2nd, and 4th, and along one short block of 1st Street. These few street segments can be considered the most important in downtown, and should be prioritized, both for physical improvement (restriping) and for private investment.

In terms of private investment—and public investment in vertical construction—the next diagram takes the Anchors and Paths diagram one step further, to indicate the non-roadway construction that is necessary to make the key downtown paths truly walkable. This construction fills in missing teeth, hides parking lots, and otherwise turns unfriendly street edges into friendly ones. When combined with the thoroughfare redesigns already outlined, these changes will add comfort and interest to these streets' planned improvements in safety.

Creating this diagram, titled Highest Priority Sites, is a simple mechanical exercise, in which all missing teeth are replaced by buildings. Shown in red below are the seventeen buildings—some quite small—that are needed to perfect the 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.

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

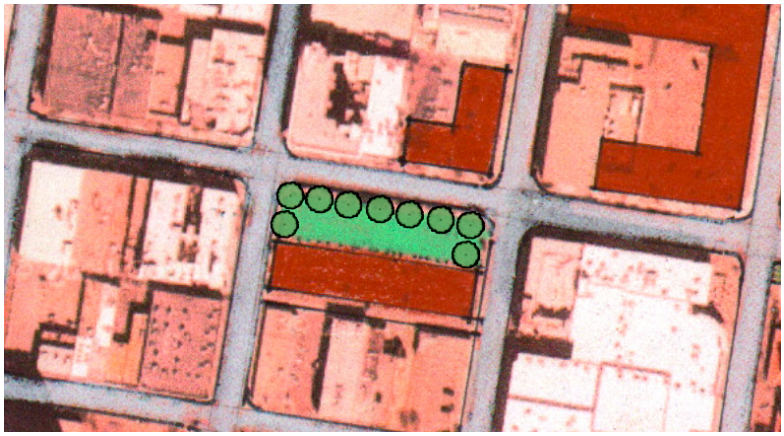
A couple of technical issues merit discussion. First, there is no reason why each red rectangle in the drawing below must be a building; in some cases a public green or other amenity may make more sense. However, any public open space must be well shaped, with buildings at its edges, if it is to be successful. Second, while the street segments marked in green are the most important for walkability, a focus on bike-ability would suggest that key cycling corridors be improved beyond just the segments shown here, since bike lanes are only useful when they reach a significant distance.

Key among the seventeen building sites highlighted above are the following:

- The missing teeth along Central Avenue, especially between 1st and 3rd Streets;
- The missing teeth on the east side of 2nd Street;
- The setback along the Convention Center's blank wall against 2nd Street; and
- The parking lots lining Marquette and 4th Street just north of Civic Plaza.

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To the degree that the City or other organizations are able to sponsor or incentivize building construction in downtown, the seventeen 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.



The best solution for the 200 block of Central would perhaps be a new building set back behind a small public green.

The drawing above shows how the infill sites need not be filled entirely with buildings, as long as the resulting space is well shaped by buildings at its edges. The ideal location for a building set back behind a green would seem to be the missing tooth on the south side of Central Avenue between 2nd and 3rd Streets. This site has some foundational issues that may cause the building to take a different footprint, but the configuration shown would provide a much needed respite from the continuous hardscape of a downtown that is largely lacking in such amenities.

A Strategy for Leverage

Placing buildings upon the Infill Sites described above is an instrumental strategy for improving street life in Albuquerque, and also for bringing more housing into the downtown. Unfortunately, real estate developers are finding it difficult to provide large quantities of 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.

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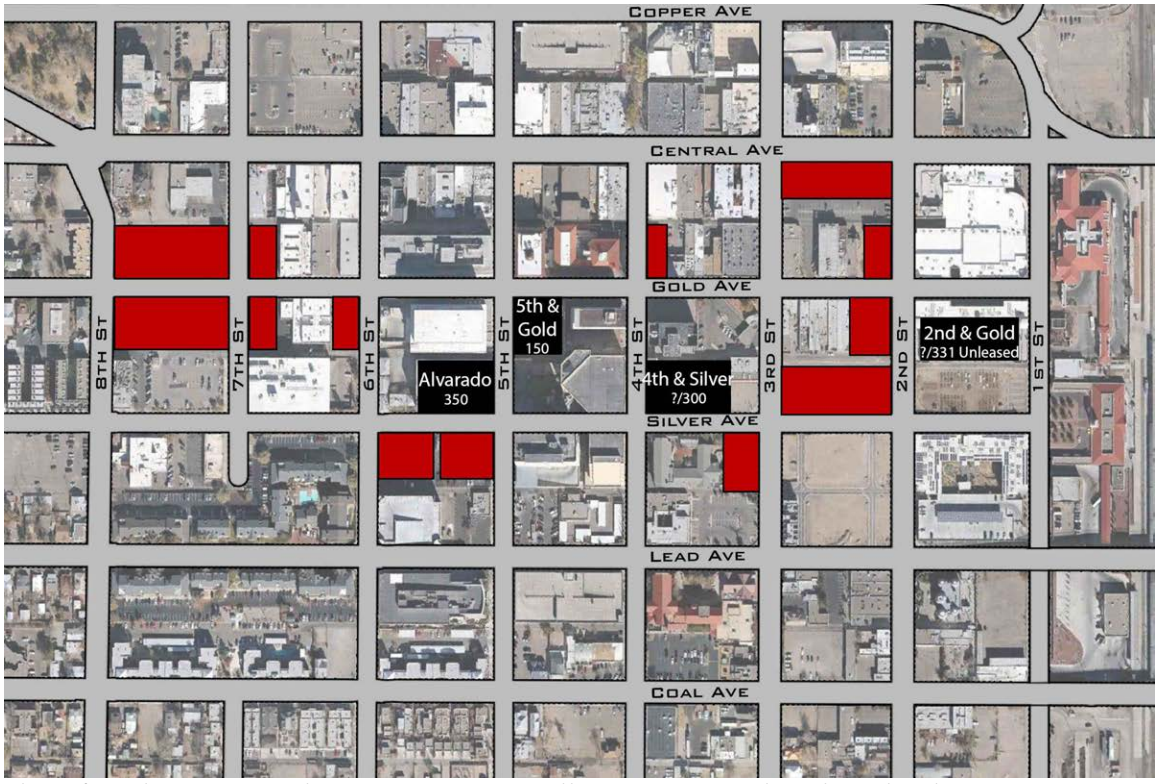
Specifically, rather than having to build new lots to satisfy their lenders' demands for parking, the city explicitly assisted developers in identifying parking spaces that were already sitting empty in the City's garages.

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 20% lower than it would have been otherwise. A similar discount could go a long way toward making middle-class housing more possible in downtown Albuquerque.

At the time of this effort, only limited data was available on Albuquerque's downtown garages. While we have no clear data on actual vacancies, there are many spaces in downtown garages which are not leased. Some of these are in City garages, and others are in private garages; both are worth investigating because the City can act as an intermediary between private lot-owners and residential developers.

Using the unleased spaces as a stand in for vacancies, we see the following:

- The Alvarado lot has approximately 350 un-leased spaces.
- The 5th & Gold lot has approximately 150 un-leased spaces.
- The 4th & Silver lot has a capacity of 300, some un-leased.
- The 2nd & Gold lot has a capacity of 331, some un-leased.



These four downtown parking garages potentially contain enough underutilized capacity to support the construction of a large number of apartments.

So, while a total is not available, it is possible that downtown parking structures contain enough underutilized capacity to lower the cost of construction on at least 500 new

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housing units downtown, and perhaps considerably more. It is important to note that this housing must be located within a short walk of the underutilized garages. That mandate leads to the drawing above, indicating which missing teeth downtown can be developed with housing that is served by the existing garages. 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.

The rudimentary study above is done for illustrative purposes only. To be executed effectively, this effort must begin with a proper inventory of vacant parking spaces in downtown lots--not just unleased, but unused. To qualify for dedication to residential use, spaces must be empty at night, and a fraction--perhaps a third--empty during the day as well, since not all residents' cars are driven to work each day. Once actual vacancies are tallied, the true opportunity will become known.

One other important note: this diagram suggests that the underutilized parking spaces should be used to support the construction of new buildings. However, the most promising opportunity for new housing may not be new buildings, but the reuse of vacant office buildings. Of the approximately 2.3 million square feet of office space downtown, over 30 percent is currently vacant, and more than a third is Class C. This section's recommendation for leveraging structured parking could apply to the renovation of these buildings as well.

The Railroad Seam and Innovate ABQ

There exists a strong general understanding that that the greatest interruption to walkability in downtown Albuquerque is the seam represented by the railroad tracks. What is less well understood, however, is how that seam is doubly destructive to pedestrian activity due to the design of the blocks on either side of it. Railroad tracks interrupt downtowns throughout the U.S. with only limited impact, but in Albuquerque, a full quarter-mile of property surrounding the tracks has been transformed by highway-style engineering into a place that renders pedestrian activity extremely unlikely.

West of the tracks, the Central-to-2nd high-speed swoop has destroyed that area's traditional rectilinear block structure. East of the tracks, what should be four urban blocks (north of Central) has been consolidated into a single megablock. And crossing the entire sector, the new trajectory of Tijeras swoops speedily south around the Convention Center, and then north to connect directly to MLK Boulevard. Forced to meet it at a right angle, Commercial Street also curves from north-south to east-west, in a trajectory more appropriate to a shopping mall access road than to a city street.

Looking back to page 15, at the ten criteria for creating safe walks, it becomes clear that almost every one has been violated with gusto in this area. For this reason, it is essential to move this discussion beyond the tracks to the streets surrounding the tracks, and to acknowledge that any serious effort to reknit downtown Albuquerque east and west must reform not only the path across the tracks but also the street network of this entire sector.

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The current configuration of the blocks surrounding the railroad tracks.

Good Ideas

Several good ideas are already being pursued. The first, already funded, is to remove the Central-to-2nd swoop, just as its twin to the south was eliminated a number of years ago. Just as that change laid the groundwork for the development of the Transportation Center and the Cinemark Theatre, this reconfiguration will ready the two blocks north of Central for redevelopment. The City is already soliciting developer interest for these blocks, which makes sense, but it is essential that developers be asked to fully reconstitute the urban grid in this area, bringing 1st Street straight north to Tijeras and bringing Copper Avenue straight east to the railroad tracks—and hopefully across them as well. Unless the rectilinear block network is reintroduced to this area, it will remain automotive and anti-pedestrian in character.

The second good idea, now seeking funding, is to bring the sidewalks of Central Avenue up to the grade of the railroad tracks—essentially even with the surrounding city—so that pedestrians are no longer required to walk through the dark, noisy, smelly tunnel that currently deters so much east-west activity along Central. This seems a wise compromise

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between raising the entire street up to grade and doing nothing at all, and deserves our ardent support.



The City is currently seeking funding to lift the sidewalks of Central avenue back up to grade, so that people may walk across rather than beneath the railroad tracks.

That said, it must be stressed that the current proposal, pictured above, fails to capitalize upon its newly created walkability by placing buildings with windows and door against this new sidewalk. Instead, it proposes an odd, gray, fenced no-man's land enfronting blank-walled buildings to the north. This sort of suburban site design will hardly entice pedestrians along the sidewalk. A proper urban solution, as shown ahead, lines the sidewalks with multi-story buildings in a normative downtown manner.

Another smart idea being considered is narrowing the train platform from its current width to its functional width of only three tracks. This change has its greatest impacts, however, on the developable properties south of Central, which it will enlarge. One would hope that this change could be funded by the parties that stand to benefit from gaining the extra land.

Innovate ABQ

While all of these ideas should be pursued, the most promising development for this sector is the plan for Innovate ABQ, which will bring a large outpost of the University of New Mexico to the blocks north of Central Avenue, just east of the railroad tracks. While technically limited to the area bounded by Central, Tijeras, Broadway, and the tracks, Innovate ABQ is expected to seed a good amount of spinoff development, and the City should prepare for this eventuality by having a plan in place to accept it properly.

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Two proposals are presented here, as first suggestions, for bringing walkability and urbanism back to this important sector. These plans reach from Broadway all the way west to 2nd Street, since that is the area most in need of improvement.

Both of these plans share the following important features:

- West of the tracks, 1st Street and Copper Avenue have been straightened due north and south, creating properly-shaped blocks and urban intersections. The two parking lot ramps connect directly to Copper avenue.

- Although it will require some work, Copper Avenue has been taken directly across the railroad tracks. There is some question whether this is possible given current train-staging dynamics, but this issue merits investigation *with an open mind.* A connected Copper Avenue will truly integrate Innovate ABQ with the heart of downtown.

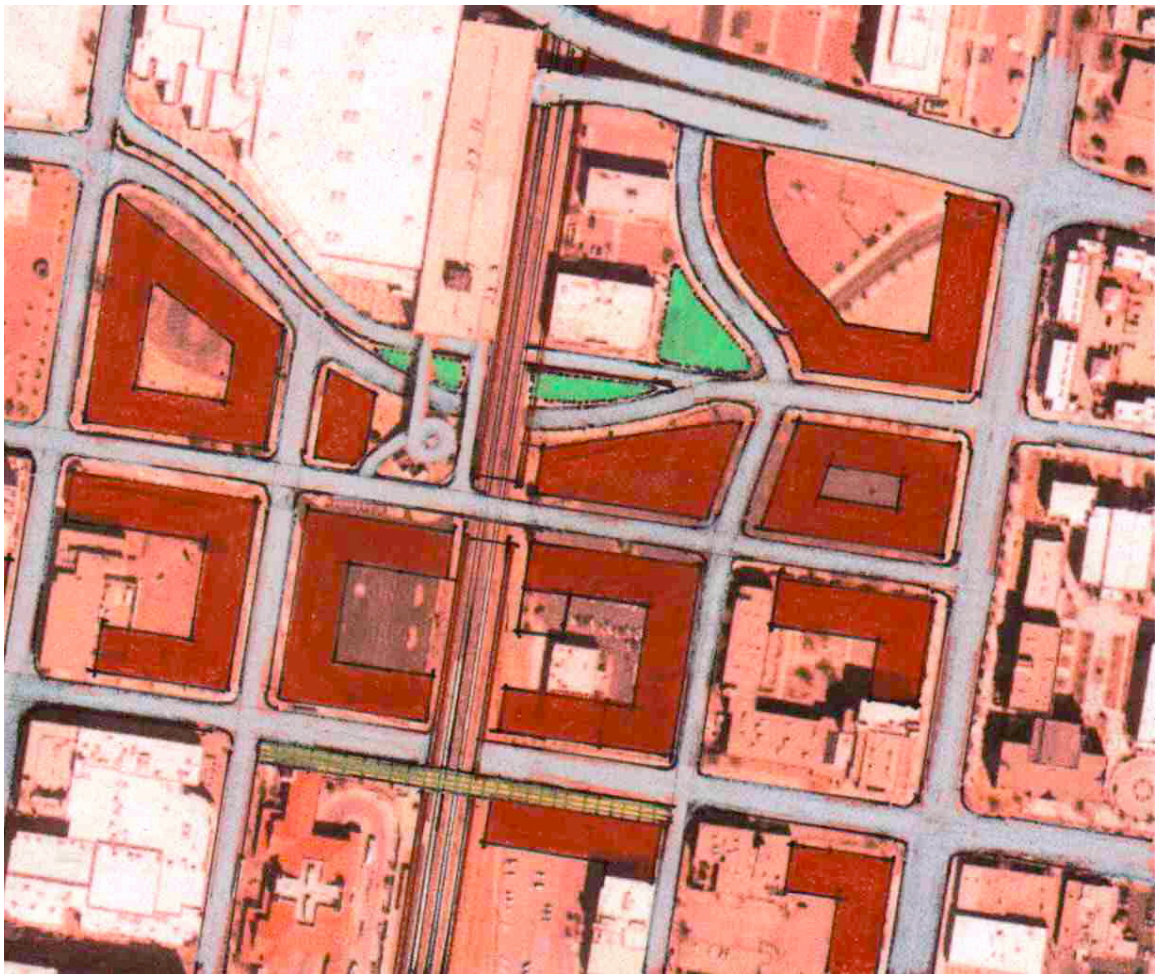
- Copper Avenue continues due east through the Innovate ABQ site, and Commercial Street and Union Square connect north-south to create a healthy block structure east of the tracks.

- As proposed in the EDo Master Plan, the Tijeras-MLK curve is eliminated, so that Tijeras intersects Broadway on axis rather than swooping northeast to cross it at MLK. Currently, Tijeras blights an otherwise developable block by slicing it in half at an awkward angle. This improvement creates significant real estate value, at the small cost of asking drivers to make two extra turns. If properly signalized, it will not add significantly to commute times through the area. This change also simplifies and improves the safety of the current MLK/Tijeras/Marquette/Parking Ramp intersection.

- The sidewalk on one side of Central is shown crossing the railroad tracks at grade. A better solution would be for both north and south sidewalks to cross the tracks, as in the proposal currently seeking funding. If only one side can be funded, it may well be that the north side, against more developable properties, makes more sense than the south.

- Essential to this or any scheme, all streets are lined by building fronts that give purpose, life, and supervision to the sidewalks. The shape or thickness of these buildings is not important—a normative 65 feet for residential is shown—but how these buildings fill their blocks is of little concern, as long as they have great edges.

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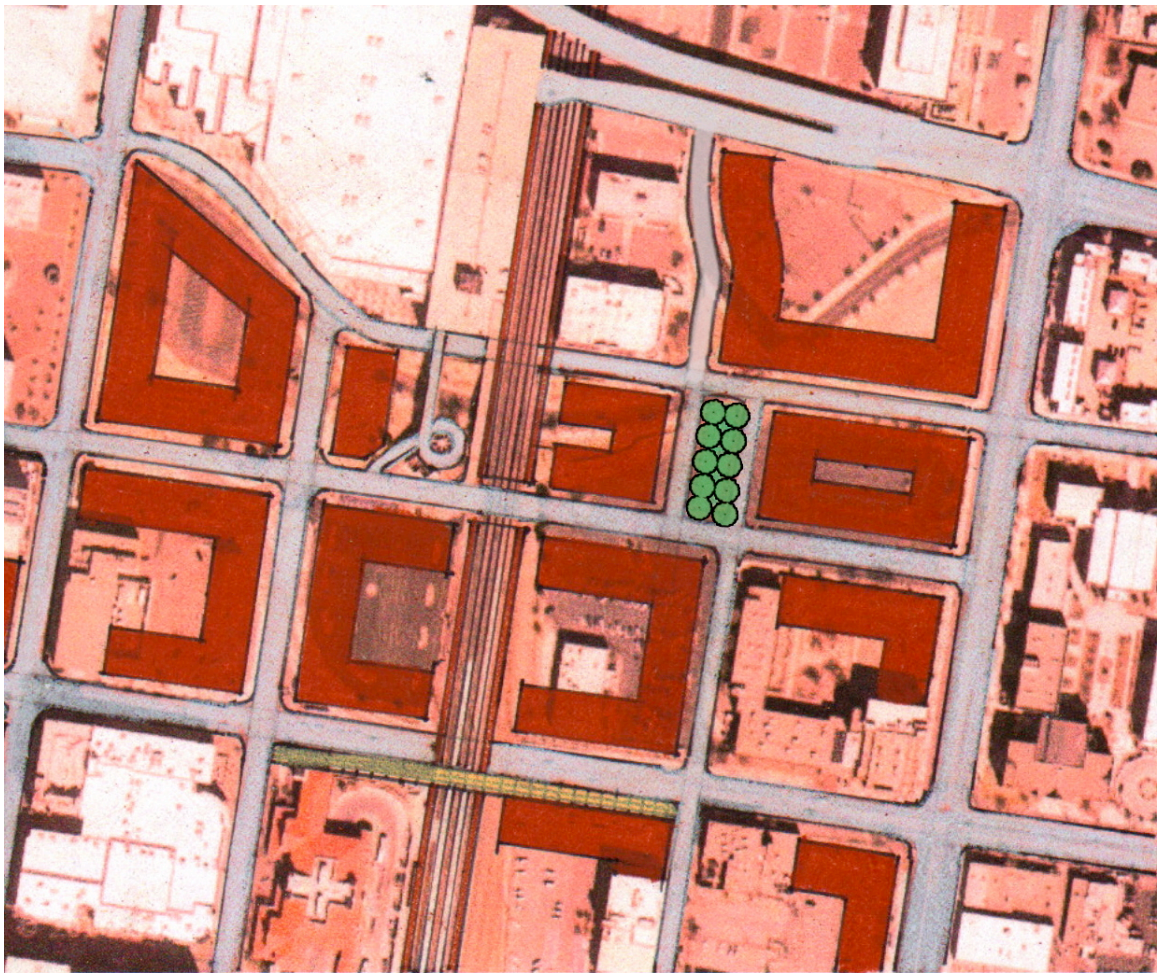


This first, less ambitious proposal for the area surrounding Innovate ABQ reconstitutes the historic city grid through the site while maintaining the current Tijeras trajectory under the tracks.

Any skilled urban designer will spot the principal flaw of the scheme above, the oddly-shaped public space at the heart of the Innovate ABQ site. This space is the outcome of keeping the current trajectory of new Tijeras in place as it dives down to pass under the railroad tracks. As can be seen, this trajectory creates a considerable amount of unusable berm space around the road, while forcing the intersection with Commercial Avenue well east of its desired path, to avoid dipping too sharply below grade.

As already discussed, the simplest solution to this problem, shown in the preferred scheme below, is to abandon Tijeras' new trajectory in favor of its old one, allowing a rational street network to be laid across the site, and gaining back a significant amount of developable property. It is possible that the value of this new property is high enough to justify the abandonment of what was certainly a very expensive road to build.

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This second, preferred proposal abandons new Tijeras in favor of old Tijeras, allowing a much more rational street network with significantly more developable area.

In this scheme, the grade of new Tijeras is brought up slightly, to the grade of old Tijeras, which could once again function as a proper city street. Once the grade is reconstituted, old Tijeras could be widened slightly to include a curb of parallel parking and a sidewalk to its south, rendering its adjacent properties more useful and valuable.

A final feature of this scheme is worth noting, the nicely-shaped square that this street network naturally creates in the heart of innovate ABQ. With slow one-way traffic on its east and west flanks, this oasis would be a welcome feature in that much-needed development. As previously discussed, all other streets in this plan would ideally be converted back to two-way traffic.

This plan was completed quickly, with limited survey information. Certain features, like the ramp east of 2nd Avenue that services the Galleria One complex, would need special attention in order to be incorporated into the proposed buildings. The City is encouraged to recognize the investment represented by Innovate ABQ as an opportunity, easily missed, to reform the worst part of downtown Albuquerque. Only a plan of this comprehensive size can be counted on to heal the current tear in the urban fabric.

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Civic Plaza

While on the subject of poor design—and how to recover from it—this report is obligated to address the unfortunate circumstance of Albuquerque's Civic Plaza, which has no simple short term solution. The most important conversation to have about the Plaza is to come to a better understanding of why it is so unsuccessful, so that we can avoid throwing good money after bad in an attempt to fix the unfixable.

The greatest disappointment surrounding the Civic Plaza is that it was built by leading designers at a time when designers had finally re-learned how to make good public plazas, yet little of that knowledge seems to have been applied to the design. By the 1980s, urban designers had learned from past failures that, to be successful, public plazas should be a limited size, capture pedestrian desire lines, and possess open, accessible edges, great tree cover, and good visibility. Civic Plaza violates all these rules.

Specifically:

- The size of two full city blocks, the plaza is too large to provide any sense of spatial containment within it. Measuring from the fronts of its surrounding buildings, the Plaza is a full five times as large as the City's historic Plaza in Old Town.

- Objects and grade changes within the Plaza make it a fairly ineffective cut-through for diagonal pedestrian trajectories through the downtown, so few people have reason to walk through it.

- Perhaps most importantly, the north- and south-side parking ramps effectively operate as moats, blocking access to the Plaza from two of its sides. To the north, the moat is supplemented by a massive wall behind the stage.

- Given the large size of the Plaza, bringing energy to its edges requires that each flank be activated and supervised by a street full of slow-moving traffic: pedestrians, bikes—and cars. For that reason, the pedestrian nature of 4th Street through the Plaza only contributes to its character as a dead zone. Due to structural defects in the underground garage, it is not possible to welcome vehicles along this axis.

- The raised bosque on the Plaza's southern edge blocks views through it, creating an "indefensible space" that raises fears of crime.

- The absence of tree cover throughout the rest of the Plaza, coupled with its unrelenting bright pavement, results in a microclimate that provides no relief from the downtown's heat and sun. Shade structures help a bit, but they fail to provide the heat sink and humidity impacts of mature trees. Adding more trees to the Plaza is not structurally possible.

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The principal lesson to be learned from this checklist of Plaza-design "don'ts" is to stop investing in the Plaza any more in its current form, at least not if those investments are likely to cause any delay in its inevitable replacement. Minor fixes like additional shade structures may be welcome, but we should not have any illusions that they will compensate adequately for the Plaza's other flaws.

A properly rebuilt plaza will be smaller, flatter, covered in trees, surrounded by streets, accessible from all edges, and not flanked by parking ramps. The smaller size may present an opportunity to ease its funding: if half of the current site is sold (or 99-year leased) to a developer for a new building, the sales price plus the resulting tax increment could both support the reconstruction. The drawing below shows such a proposal, where a new underground parking garage would be accessed through a new building to the north, with 4th Street reintroduced along with a new street segment north of the Plaza.



The current and proposed layout for the Civic Plaza. (The proposal is merely diagrammatic, but is accurate in terms of recommended size and shape.)

There are other good solutions for remaking Civic Plaza. This one is presented to start the conversation about how this deeply flawed sector of the city can be rebuilt within a reasonable timeframe into a true heart for downtown.

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Street People

The presence of the homeless, and those who appear to be homeless, on the streets of downtown Albuquerque contributes measurably to the discomfort of people walking there. They are not that many in number, but they seem ubiquitous because they form such a large percentage of the people who are walking. Seen in this light, Albuquerque does not have a homelessness problem as much as a walking problem; when more people chose to walk and bike, the homeless will become a much less dominant feature of the landscape.

Short of draconian and inhumane measures, there is little that can be done to limit homelessness in cities, except for providing the homeless with housing. This report does not concern itself with housing the underserved, but there is some useful data that merits our attention. A recent study produced by the Central Florida Commission on Homelessness found that, while providing desirable housing for a homeless person costs about $10,000 per year, taxpayers are currently paying about $31,000 per year for each person who lives on the streets. This number includes the law enforcement, jail, and hospitalization costs that result from homelessness. By this measure, it would seem that greater efforts to create free housing for the unfortunate are mandated.

Independent of that effort, there does seem to be two ways in which the presence of the homeless downtown has a greater impact than it should:

- Reportedly, when prisoners are released from jail, they are dropped off at the Regional Correctional Center and told that their wristband entitles them to a free ride from the Transportation Center to anywhere its buses go. This misinformation apparently contributes to the large number of homeless at that facility. Much better outcomes would result from these prisoners being dropped off instead at the transit facility at Central and Unser, *with* a bus ticket. It would seem well worth the limited cost of these tickets for the City to underwrite such a program.

- Union Square SE contains a probation office that is frequented by parolees who often arrive too early for their appointments. Clients are not allowed to enter the facility more than 15 minutes early, so they are sent off to wander the downtown, and usually end up at the transportation Center. While greater efforts should be taken to have clients arrive on time, a probation facility with a waiting room (with television, etc) would help to stem this problem.

Addressing both of the above issues should make a visible impact, but the post-incarcerated are only a part of Albuquerque's homeless population. Any serious effort to ending homelessness must focus on providing homes, as well as the social services to keep folks in them. If the experience in Florida is even remotely applicable to New Mexico, it would appear that such an effort would cost less, not more, than the current situation.

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The other discomfort that sometimes plagues downtown is the crowds of dangerous-looking (and, on rare occasion, dangerous) people that attend certain musical events at the Sunshine Theater. Perhaps twice a season, the Theater books acts whose fans dress and behave in a way that many people find threatening. There is considerable underage drinking, and injurious fights sometimes erupt.

The proper solution to this problem (which is almost never injurious to innocent bystanders) is not to make Central Avenue even more intimidating by causing it to look like a war zone. Adding police vehicles, bright lights, observation platforms, and officers on horseback only contributes to an atmosphere in which tensions run higher and the law-abiding flee.

One solution, which may be of limited value, is for the City leadership and Police to work more pro-actively with the Sunshine Theater owners in an attempt to steer them away from booking any bands who actively promote a violent ethos. While this smacks of censorship, a history of violence surrounding a certain band's previous concerts seems a legitimate criterion for banning a show. Whether or not that effort is successful, providing an increased police presence *on bicycles* has proved itself to be a great way to lower tensions while improving supervision. The City has already instituted bike patrols; this would seem an ideal circumstance for their use.

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 missing or dead. It would seem from a cursory review of current City regulations that street trees are not yet a high priority in Albuquerque. They are not a required feature of all new streets, and the City's new storm-water ordinance seems to be focused primarily on suburban locations. The downtown canopy has been steadily eroding over the years, and the standard construction details for tree pit size, soil composition, irrigation, and maintenance are said to be well out of date. For these reasons, a new approach to tree planting and maintenance must be a prominent feature of the City's new Unified Development Ordinance, and the funding allocated for creating and preserving the urban canopy must be reconsidered in light of the tremendous value of the ecosystem services that street trees provide.

Again, in addition to increasing the value of property and increasing returns to businesses—both of which benefit City coffers—healthy trees often mean the difference between an unwalkable and a pleasant street. Where good tree cover can be found in downtown, like alongside the Immaculate Conception church, it contributes markedly to the quality of the environment and therefore to the life of the City.

Given the difficulty and the cost of keeping trees alive in Albuquerque, efforts to reconstitute the urban tree canopy must be somehow prioritized to certain locations, lest a downtown-wide mandate become instantly bankrupting. Such a challenge is a perfect

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use for the Urban Triage exercise conducted in this report. If they are going to have the greatest possible impact on walkability, investments in improved tree cover should be applied first to the streets indicated as Key Paths in the map on page 84, and then gradually expanded to cover the entire Primary Network of Walkability.

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LAST WORD

This report's recommendations are not vague. It will become clear quickly whether or not they are being implemented. They are presented with a confidence that a city that understands walkability also understands that the transformation from a driving city to a multi-modal city does not happen by accident. It is only by embracing the practices that have generated street life in other places that a city can hope to experience similar success.

Reviewed comprehensively, the proposals contained herein are certainly momentous, and threaten to seem overwhelming. While few are particularly expensive, they all add up to a significant amount of change, perhaps too much change to implement all at once. In terms of both the sheer effort involved and the risk of a damaging backlash, there is reason to proceed with some caution.

Fortunately, this report is not a "take it or leave it" proposition. Certain, more complicated, recommendations—like the one way reversion of Marquette and Tijeras—can be planned methodically while simpler suggestions are implemented quickly. For example, the inventory and elimination of unjustified curb no-parking zones can be executed in a week, if there is desire. Street-by-street restripings can be accomplished as streets come up for repair, or sooner. Traffic signal removals can (and should) occur only when two intersecting streets achieve their recommended configuration. The recommendations for the Innovate ABQ sector should be folded into the ongoing planning of that area.

In addition to cost and political expediency, two principal factors should be considered when prioritizing this report's recommendations. The first is the Anchors and Paths diagram that documents where people are most likely to walk if improvements occur; here is where investments will have the greatest impact on street life. The second is the Recommended Cycling Network, since a truly connected collection of lanes will be necessary to create a significant biking population. Like railroad tracks, bike lanes do not work when scattered.

However, it would seem that what must happen first of all, if any change is to be possible, is the removal of the structural impediments to the standards recommended in these report. Most of these are codified in the City's Development Process Manual, an outdated document that is palpably destructive to walkability yet will not be replaced for several years. Some sort of "override" button to the DPM needs to be created quickly if we are to see progress downtown.

Is it worth the effort? Do we really want to value pedestrians and cyclists much as cars? One may as well ask whether Albuquerque wants to be a place for driving through or a place worth arriving at. No city ever became famous for its smooth traffic, and the rebirth of downtown Albuquerque, well under way, will only achieve its full potential if it becomes once again a place where daily life plays out on foot.

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ACKNOWLEDGEMENTS

Many organizations and individuals were instrumental in the effort that led to this report. I would like to thank the more than ninety people who took the time to participate in small fact-finding meetings, and the several hundred who attended the two public presentations. In addition to City Councilor Isaac Benton and his staff—especially Diane Dolan and Andrew Webb—I am particularly indebted to David Day, Susan Deischel, Rob Dickson, and Roxanna Meyers, each of whom dedicated many volunteer hours to this effort.

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