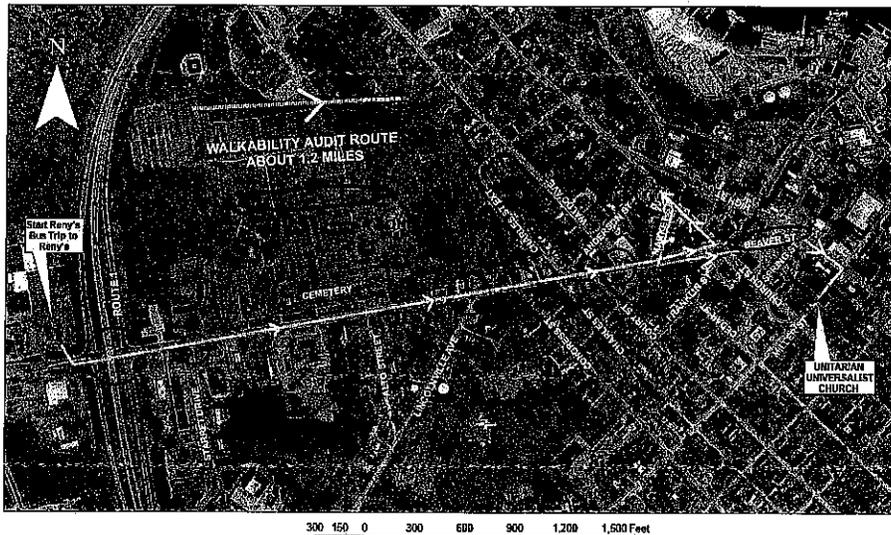


Walkability Audit

Belfast, Maine

CITY OF BELFAST - WALKABILITY AUDIT - MARCH 10, 2014



March 10, 2014

Sponsored by

Friends of Midcoast Maine

In collaboration with

The Walkable and Livable Communities Institute,

The City of Belfast, Maine and

The Community Transformation Grant of
the Midcoast Public Health District



Walkable and Livable
Communities Institute



Communities
Transforming

To make healthy living easier

FRIENDS OF
MIDCOAST
MAINE



On March 10, 2014, the City of Belfast and its Pedestrian, Biking and Hiking Committee, and the larger Belfast Active Community Environment Team (ACE Team) hosted a morning and afternoon walkability workshop in Belfast, Maine. In collaboration with Friends of Midcoast Maine, the workshop focused on the Route 3/Main Street corridor from the Renys Plaza into downtown Belfast. The workshop was funded by the Midcoast Public Health District's Community Transformation Grant, a federal grant program created by the Affordable Care Act. The six-hour, hands-on workshop featured Dan Burden, Director of Inspiration and Innovation of the Walkable and Livable Communities Institute, who was hired by Friends of Midcoast Maine to lead a walk-audit along the Route 3/Main Street corridor and to assess the opportunities for improvements to walkability and bikeability, public health and safety.

The workshop was advertised as "***Sidewalks, streets, and a healthy community: Ideas for a thriving downtown and healthy walkable community from the Walkable & Livable Communities Institute***". City staff, committee members and FMM staff took advantage of the local newspaper, the public access television, the City website, Facebook, posters and word of mouth to advertise the workshop in advance.

Approximately 35 people attended the workshop which was held from 8:30 p.m. until 2:30 p.m. on a crisp cloudy winter day at the Unitarian Universalist Church on Miller Street in downtown Belfast. Attendees included men and women, young and older, a mother with a young toddler and a visually impaired person with a seeing-eye dog. This range of abilities gave the workshop particular depth and breadth into the challenges of existing conditions and the opportunities to address a range of walking needs. This report summarizes:

- The existing conditions
- What we heard from the community
- Recommendations for the community from Dan Burden
- Appendices with technical information

A special thank you is given to all the participants who made this day a success as well as the following people who contributed organizational time and effort.

- Pedestrian, Biking and Hiking Committee and ACE Team Members
 - Glenn, Montgomery, Chair
 - Skip Pendleton
 - Liz Townsend, Secretary
 - James Merkel
 - Elizabeth Fitzsimmons
- Additional ACE Team Members
 - City Planner Wayne Marshall
 - Assistant City Planner Sadie Lloyd
 - Sarah O'Blenes, Waldo County Hospital
 - Barbara Crowley, Waldo County Hospital

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- Carole Hallundbaek Waldo County Hospital
- Andrea Chartier, resident

- Belfast City Council
 - Walter Ash, Jr., Mayor
 - Mary Mortier
 - Roger Lee
 - Eric Sanders
 - Michael Hurley
 - Nancy Hamilton

At the workshop

- Trudie Young, FMM Volunteer

Special thank you to

- The Unitarian Universalist Church of Belfast
- The Belfast School system for the donation of shuttle bus and driver

Appreciation is also given to the members and donors to FMM for support of this work and in-kind support from the Walkable and Livable Communities Institute.



*Belfast Maine Walkability Workshop and Audit
City of Belfast, Maine*

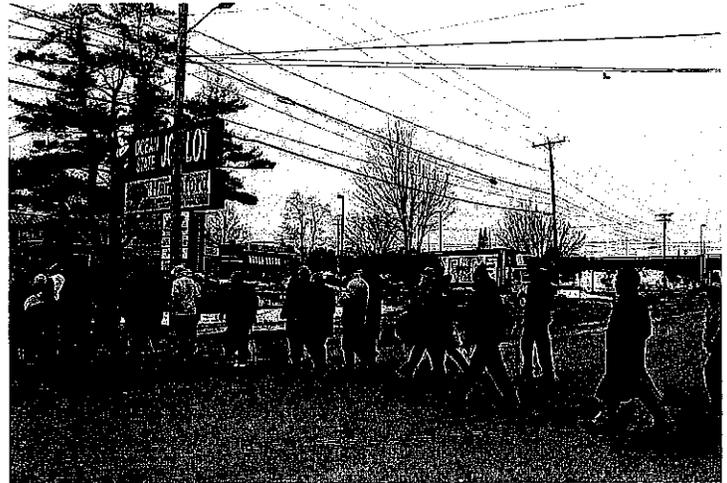
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Existing Conditions

The Audit

The Belfast Walk Audit began with a short bus ride from the Unitarian Church on Miller Street to the Renys Plaza parking lot on Route 3 and proceeded on foot along Main Street into the center of the City's downtown. The walking portion was approximately 1.2 miles. The audit diverged from the straight route to include the triangle of Market Street and Church Street, and returned to the Unitarian Church on Miller Street via Beaver Street and High Street. The walk audit was approximately two hours of outside walking time.



Downtown Belfast

Downtown Belfast is a compact area of a few dozen blocks of intersecting two way and one way streets. The Main Street heads to the river and terminates at the waterfront, boat launch and park area. The commercial and retail area is a robust and highly walkable due to increased city, business and resident attention to walkability, bikeability, and amenities for human comfort such a tree cover, pedestrian signals, crosswalks and benches.

The Route 3/Main Street Area

The 1.2 mile corridor study area includes a high traffic corridor along Route 3/Main Street, older shopping centers and car dealers, the Route One overpass, on and off ramps, a City fire station, large retail businesses such as Hannaford entry drive, Walgreens and Rite Aid, McDonalds and automobile repair shops. The study area quickly transitions to a mixed area with a cemetery, residential units, and additional shopping centers with automobile drive through conveniences. It terminates at the compact, historic downtown village.



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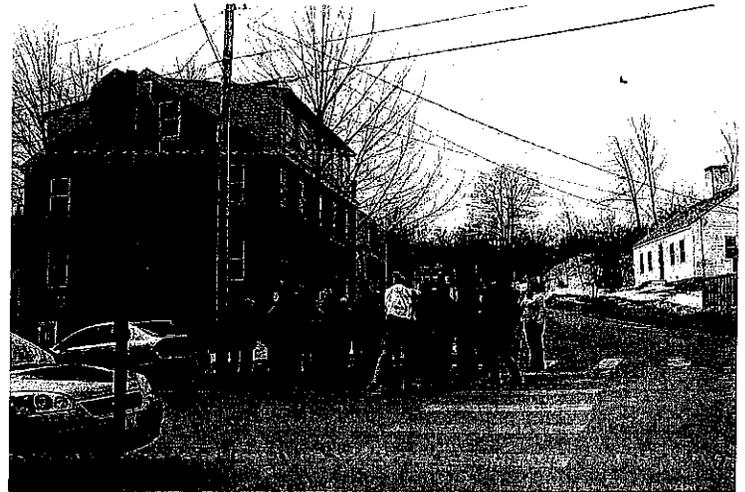
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The road ranges in widths, pedestrian accommodations, vehicular accommodations, pavement striping, and on street parking spaces with no uniform treatment in any one area. Particular attention was given to driveway widths, parking spaces, vehicular speeds, safety, pavement width, and vehicular turning movements-all which influence and affect pedestrian safety and propensity to walk or not.

The following summarizes the community input and the recommendations from Dan Burden of the Walkable and Livable Communities Institute collected on March 10, 2014 during a morning and afternoon walkability workshop along the Route 3-Main Street neighborhood and commercial corridor, west of downtown Belfast, Maine. The workshop was held in collaboration with the Belfast Pedestrian Biking and Hiking Committee, the City of Belfast and Active Community Environment Team of Belfast and was sponsored by Friends of Midcoast Maine.



What We Heard from the Community

These notes summarize the four groups reporting out from small group work after the walk audit and presentations by Dan Burden.

Group #1 -

Recommendations/Suggestions

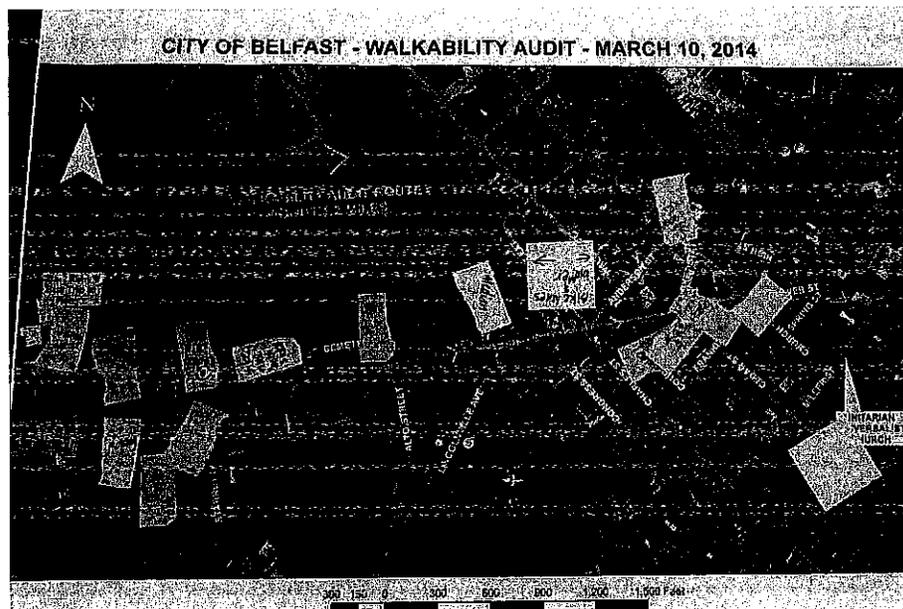
- Renys shopping plaza needs pedestrian sidewalks to the entrance along Route 3 and within the parking lot to give pedestrians safe access to and through the property and storefronts.
- The Route 3 intersection with Route 1 should be studied for a gateway single lane roundabout (one on either side of the overpass). Special consideration to bikes, pedestrians, and autos should be given.



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- There should be pedestrian signs (WB11) should be installed at the crosswalks off Route One.
- Consider a well-lit sensitive pedestrian crossing.
- At Starrett Drive/Main Street intersection, advance crosswalk and cross walk signs should be installed.
- A mini-roundabout should be considered at Starrett Drive/Main Street intersection.
- Bike lanes should be striped on both sides of Route 3 and Main Street into the downtown.
- At the cemetery there should be sidewalks on both sides of Main Street.
- A crossing median island should be added at Hannaford-Lincolville Avenue intersection
- There is a blind turn at Lincolville Avenue and this should be addressed.
- At the back side of the Belfast Plaza shopping center, by Franklin Street, bump outs should be added by the retaining wall to create pedestrian safety.
- Curb extensions should be installed to protect parking spots. This will create inset parking.
- Make the parking lot one entrance and 1 exit, not two of both.
- Move the crosswalks to Market Street, make them well defined and signed. They run into the retaining wall now.

ADDITIONAL MAP NOTES



Group 1 Map

- At Renys, add plantings and walkways

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- Consider a round-about at the overpass area
- Add crosswalk signals at Starrett Drive
- Add pedestrian lights at the crosswalks
- Consider a low rotary with low lights at Starrett Drive
- Add bike lanes to both sides of Main Street
- Add a median at Lincolnville Ave/Main Street intersections
- At the Dollar Store entrance, add trees, and plantings
- Improve the Market Street intersection area and park with trees and plantings, crosswalks and curb extensions with trees in them
- Add a harbor sign at top of hill so people have better directions

Group #2 - Recommendations/Suggestions

- Add a round-about at the Route 3-Route 1 intersection
- Move the south bound Route One ramp to behind and west of Renys, to exit at the signal
- Incorporate Starrett Drive and eliminate ramps
- Between Lincolnville Avenue and Charles Street along Main Street, a sidewalk is needed on both sides
- Could a path wind through the cemetery?
- Create more walkability by Lincolnville Avenue
- In downtown, add plantings that are native species or possibly food sources.
- Incorporate the McDonalds parking, connect the entrances, and relocate the access drives to McDonalds to Starrett Drive
- Eliminate 1 entrance at Belfast Plaza; the Waldo Avenue intersection is complicated; shift the eastern most entrance to a more central location
- At Church and Main Street, add curb extensions
- Add dotted lines downtown to show the path a vehicle must travel and to indicate the flow
- The stop line is far back from the actual intersection at Main Street/Church Street/Beaver Street for vehicles entering on to Main Street from Church Street. (Dan Burden felt this was an asset because it requires cars to inch slowly forward into the intersection.)

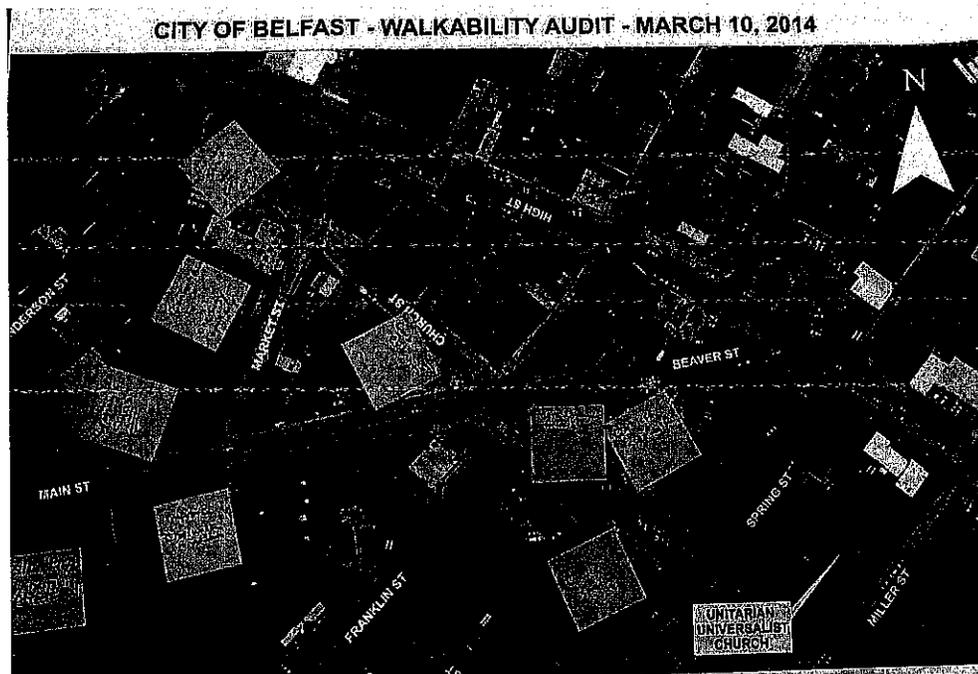


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Group # 3 - Recommendations/Suggestions

- The concept of “obstructing traffic” (for pedestrians) is a great one
- Add obstacles to slow down traffic
- Consider round-abouts on both sides of the Routes 1 and 3 intersections
- Add textured surface to the crosswalks so it is visual and tactile
- Add a level round-about at Starrett Drive
- Reroute car traffic on Route 1 to come out Starrett Drive where there is a signal.
- Narrow Main Street with an island
- Consider getting an easement through the cemetery for pedestrians on that side of the street.
- In town
 - Lower the speed limit
 - Add more stop signs
 - Add a curbless sidewalk on Beaver Street
 - Promote outdoor rooms
 - Where Market Street comes in, add walkway improvements
- Add signage at Waldo Avenue, at the pedestrian crossing at Camden National Bank plaza
- By the “crosswalk to nowhere”, at the Family Dollar Store, add crosswalks, signage and sidewalks.
- Add crosswalk signs

ADDITIONAL MAP NOTES



Group 3 Map

- Slow traffic by narrowing streets
- Improve the “crosswalk to nowhere” at The Family Dollar Store
- Add crosswalk signs at Waldo/Main Street intersection
- Convert Market Street to one way up-hill only
- Narrow Church Street and add curb extensions
- Add curb extension at Church and Main Street corner
- Move the stop sign forward at Church Street/Main Street intersection possibly
- Add a curb-less sidewalk on Beaver Street
- Lower the speed limit on Beaver Street
- Promote outdoor rooms on Church Street
- Add a curb extension on Church and Main Street corner

Group #4 - Recommendations/Suggestions

- Extended map westerly to Crocker Road to include Hutchinson Center, Bank of America and Athena Health properties
- Extend 25 mph from Crocker Road to downtown
- Enhance median area by Shell Oil, EBS and Dairy Queen
- Improved pedestrian access to and through Renys
- Install two round-abouts at the overpass
- By Bell the Cat, improve the landscaping and add trees to make this area a “place”
- Narrow the driveway at Auto Zone

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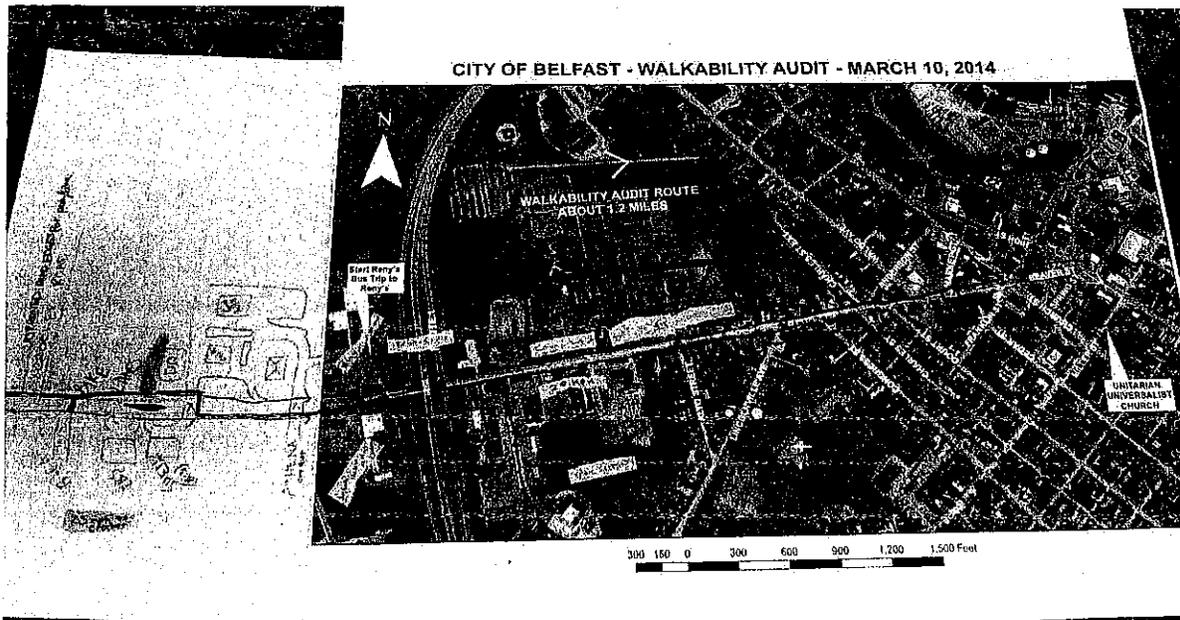
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- At McDonalds to Quirk, move the sidewalk back
- Add medians along Main Street, from Alto Street to Lincolnville Avenue
- Add sidewalks along the north and south sides of Main Street.
- Fix the crosswalks at The Family Dollar Store
- Add a sidewalk at Market Street
- Add recycling bins to trash cans
- Add trails between Starrett Drive and Lincolnville Avenue

ADDITIONAL MAP NOTES



Group 4 Map

- Include length of Route 3 between underpass and Hutchinson Center for better bike and pedestrian improvements
- Add recycling bins on streets of Belfast
- Add pedestrian improvements throughout the parking lot at Renys
- Add a pedestrian cut through from the corner of Renys and parking lot to exit ramp corner
- Add a round-about at each exit and entrance ramp
- Median or warning that traffic light at Shell has a pedestrian crossing
- Change speed to 25 mph from the underpass to downtown
- Change speed limit to 25 mph from underpass out Route 3 to Hutchinson Center
- Change speed to 25 or 35 mph on Crocker Road
- Sidewalks and trees on both sides of road between underpass and Lincolnville Avenue
- Median islands or warning of pedestrian crossings at Alto Street and Lincolnville Avenue

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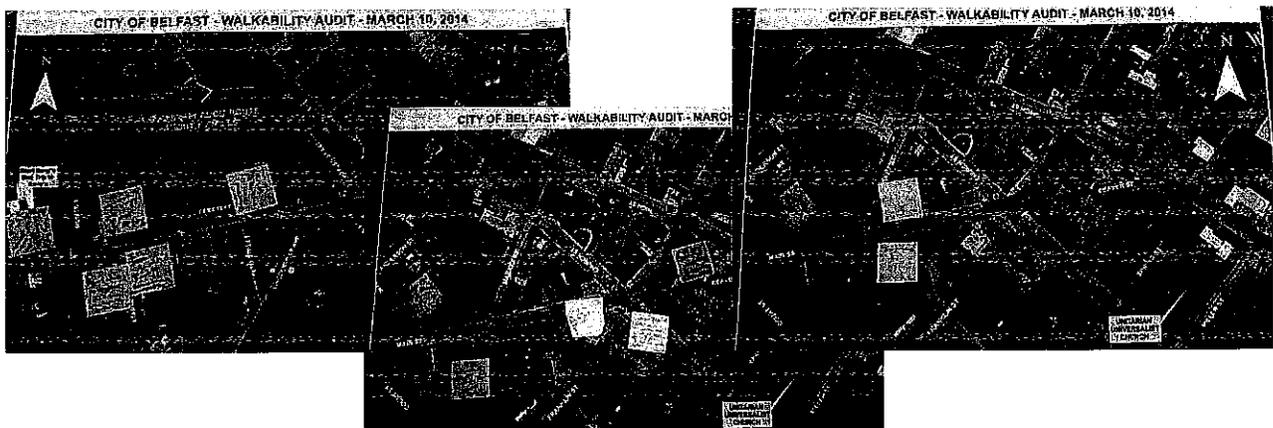
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- Bike lanes along Main Street/Belmont Avenue from downtown to Hutchinson Center
- Use exit ramp at Underpass as gateway to downtown Belfast
- Dress up Starrett Drive with trees and outdoor seating for restaurants
- From underpass to Quirk Auto business, push sidewalk back from road edge (like it already is at Walgreens)
- Address The Family Dollar Store Strip Mall with a pedestrian crosswalk
- Add a pedestrian trail from Lincolnville Avenue to Starrett Drive
- Sidewalk from Family Dollar to the Post Office



Additional comments

- At the park on the corner of Lincolnville Avenue, add better signage, landscaping; it is under-used and hard to reach on foot.
- Add the sidewalk to the post office side of the street, add sidewalks up to Family Dollar
- Try to maintain on street parking as much as possible
- There is a short cut behind the Chinese restaurant, keep it open.
- Use low lighting in the median strips by Alto Street and Starrett Drive
- The entrance at fire station is too wide
- Narrow Main Street near Alto Street and Cemetery to include an island to reduce speeds



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Walk Audit Recommendations from Dan Burden

Comments made by Dan Burden were captured via video camera and are transcribed here.

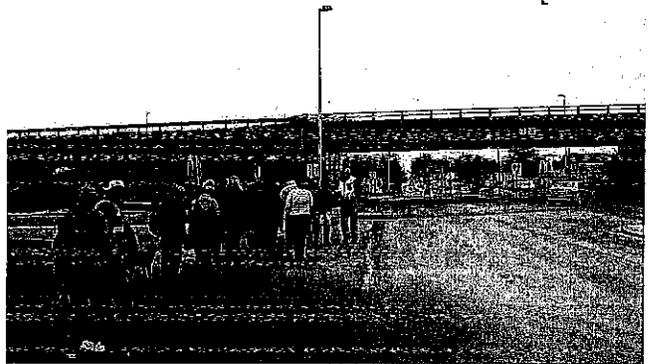
At Renys Plaza area:

- This is an older 1960's commercial retail strip. There is very little attention given to the pedestrian. In new strip commercial areas, if you are still permitting them, more attention should be given to get the pedestrian from the sidewalk area to the storefronts with more safety and security. This can be addressed in two ways: bring a length of buildings to connect to Route One, or create an attractive separate route of travel through the parking area.



At overpass area:

- At the off ramp by Renys, consider a raised island for the pedestrian. The current situation leaves the pedestrian exposed. The turning radii can still accommodate big trucks with large loads like logging trucks or carrying windmill blades, but the pedestrian needs to have a safety zone.
- Put in the properly scaled and designed geometry to start with rather than try to correct a bad situation with a signal. A signal just to cross a leg of a street is not a good idea. If a signal is needed just to correct the geometry of a street or road, it is a bad situation.
- Consider two roundabouts, one on each side) to replace the on and off at the traffic ramps. They can be designed for large 18 wheeler trucks and can still carry large volumes of traffic. They will help provide a better gateway to Belfast.
- There are significant problems for pedestrians trying to cross anywhere in this area. The driveways are wide; there are no signals or crosswalks.



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By gas station area:

- There are utility poles in the middle of the sidewalk. The sidewalks do not seem to have a good base under them. (City Planner Wayne Marshall noted that there are plans to move the poles back and the City is gradually rebuilding sidewalks with better bases, rather than just resurfacing them.)

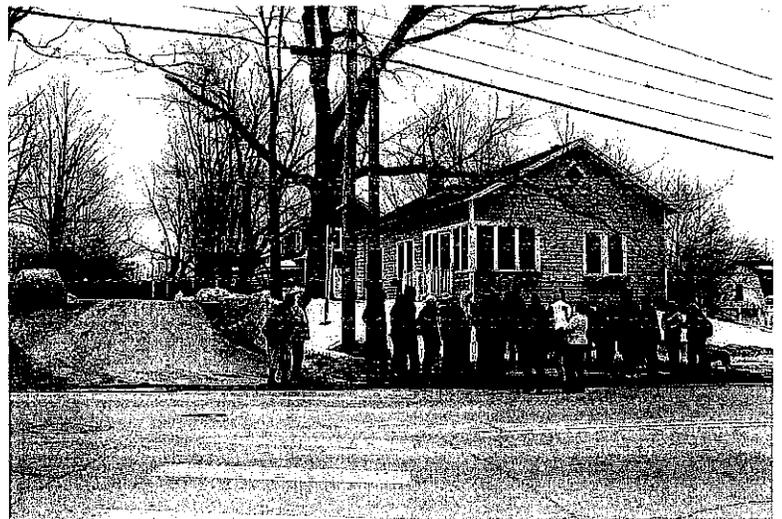


By Rite Aid area:

- There is excess width in the travel lanes right now. The extra width is allowing cars to speed. It is serving cars and speed rather than other users of the road. It will cost money to give back to the other users, just as it cost money to take it away from them.
- Consider adding a 5 or 6 foot wide bike lane with a painted buffer between the vehicular travel lane and the bike lane. This helps make things safer for the vehicular driver, the bicyclists, and the pedestrian on the street. There is width enough presently for an eleven foot vehicular travel land and a buffered bike lane.
- When asked about snow removal or snow placement, Dan. Burden suggested this was a community decision about how they want to accommodate all users. Many towns choose to remove the snow to accommodate all users in all seasons.

At the top of the hill, above the cemetery at the crosswalk area:

- This is the most dangerous place seen so far. The cars are travelling at a pretty good rate of speed (35 mph) and the pedestrians are being asked to cross here. The desire for a motorist to yield to a pedestrian when they are travelling at this speed is very low (under 25%).
- There is a painted crosswalk. Sight lines are good but not really good. Speeds are higher than they



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should be. Pedestrians are crossing here. Consider a raised median island. A crossing island placed here would reduce the exposure time and distance to less than one-half. The roadway is 44 feet wide in many locations. With an island the exposure would be about 15-16 feet.

- Try to get the pedestrian exposure down to no more than 16 feet (11 foot lane plus a five foot bike lane). Add curb extensions.
- Add vertical height (with trees and lamps) to this island to make it very noticeable to approaching drivers. Place a minimum width eight (8) foot wide median island in the center. The crossing should be angled, as shown in the photo below.



This makes use of a 45 degree angle crossing. It bends so the pedestrian can look directly at the approaching driver, creates more storage space, and prevents running across the street.

- Add lamps and trees, making it really easy to identify this island by the person coming over the hill.
- There is only one lamp here so lighting is not fully adequate.
- Drivers are looking directly into the sun since it is an east-west road.
- If a pedestrian is given only 12-16 feet of exposure and an elderly person travels 3 feet a second, they only will have 4-5 seconds of exposure. Right now they have 40-44 feet to cross and have 14-16 seconds of exposure. A driver can only see 4 seconds away. This is a necessary place to cross so a solution here is a key safety addition.
- Participant noted it will make the driver think more beyond themselves in the vehicle, as a pedestrian always has to do.
- Asked about whether there should be a grassed planter strip between the sidewalk and the street in this location, Dan noted this would be ideal, but in this setting such a solution gets into a lot of money. Drainage would have to be re-set.

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- Consider adding the painted buffered bike lane as early as this spring for an early and quick win. When the road is reconstructed, add the other improvements such as a planted strip.

At intersection of Main Street and Lincolnville Avenue (at park area)

- Main Street is forty (40) feet wide now. Take all operations into consideration. The safety of the pedestrian is paramount. Do not sacrifice the safety of the pedestrian for the other users.
- This might be a good place for a mini-roundabout, which is flat on top. There are many turns here. Bring the speeds down and make a channelized pocket.



At Anderson Street intersection

- Asked about whether it should be made one way, Dan noted that it was a challenging intersection and alternatives should be drawn out on paper and analyzed.
- It is a difficult area for pedestrians and drivers.

At Waldo Avenue intersection by Camden National Bank

- It is really important to create a crossing which is not only marked on the pavement but also signed. There should be standard pedestrian crossing signs and they should be added right away. There should be signs on both sides of the street and double sided so that the front and back of each sign has the crossing signage. This gives the motorist really good notice.



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- When asked about flashing lights for pedestrians, Dan noted that if the signs bring 100% compliance by the drivers, you probably don't need them. If there is not 100% compliance, consider a rapid pulse beacon activated by the pedestrian. Do not have a steady pulse because motorists get used to it and do not pay attention to it.
- Dan noted that this is becoming an area of more urban form, with buildings close to the road and more compact. City Planner Wayne Marshall noted that the present code allows property owners to build to the lot line.

At the Market Street intersection proceeding easterly on Main Street

- The on-street parking makes a buffer for pedestrians.
- The bike lane will stop as you get into this urban area. The speeds will be reduced to 20 mph, and the bike lanes would become more of a problem for bicyclists in this area. Bring the speeds down instead.
- Consider adding a tree well every two or three parking spaces. This can be done without losing parking spaces.
- A tree well does create more work for snow removal and this is a community decision about its priorities.

On Market Street by Duval Auto

- Parking should be considered a controlled substance. Too much or if you overindulge, it is a bad thing. Consider it as a substance you must manage. Some communities choose to have no meters and they lose business. Take a look at your parking policies closely.
- The land uses and businesses in this area have changed over time. It is a little chaotic. Take the steps to honor the pedestrian and confine the exposure of the pedestrian to a more reasonable level.



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At Church Street/Market Street intersection

- This is an entry way to town. It is one way and turns into two way. Participants have concerns about safety for pedestrians.
- Consider a curb extension in this area.
- Parking then becomes inset and the curb extension makes a good place for sitting socializing, and makes a great visual reminder of the gateway to the downtown.
- A curb extension creates less exposure for the pedestrian.
- Consider different surfaces for pedestrian crossings. In Golden Colorado they are using hot ceramic. It lasts longer than the road itself. Consider talking with the public works departments in Golden and Boulder Co.
- Some communities add friction and rectangular glass beads so it is reflective all the time.



At Main Street, Church and Beaver Street Intersection

- Participants noted that there is a lot of honking at this intersection.
- There are so many potential conflicts here that people are behaving better. The fear of the chaos is creating better driver behavior. In Europe, communities are removing all traffic controls so drivers behave better and it is working.
- Don't make any big changes here.



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Dan Burden's Closing Remarks

- There is a lot of common sense in this community. You don't need a lot of experts to tell you what to do. You can do it yourselves. Put a plan together and then have a peer review provided by competent experts.
- Belfast has the right opportunities here. Get started on something right away.
- Create a list of things to accomplish within the first 100 days from today.
- Consider better way-finding and branding to help identify Belfast as a place and to let people know where things are. This can be a study or a way-finding and branding process.
- There is no need to have travel lanes greater than 11 feet. You already have some 9 and 10 feet travel lanes. Do not build or allow greater than 11 feet unless there is a curve and you need the radius. In some cases, ten (10) foot wide lanes will be adequate.
- Consider raised median islands to be funded and placed within 1 year. Build one and do it right. Make it a model project and then expand the number of locations for crossing islands. Make them year round raised islands that are cared for with a cut through for the crosswalk to make it safer.
- In the longer term, consider better controls at the on and off ramps, with more complete pork chop islands and round-abouts. These will create an authentic gateway to the community and it is the right place to create a public feel and tells everyone that "this is a town that cares about its people".
- Consider "parklets" around the complex intersection at Main, Beaver and Church Streets. Parklets are like a curb extension. They can totally transform a downtown and give exciting places to hang out, and enjoy the community.
- Create outdoor rooms.
- Build better gateways into town. This is a unique place. It is authentic. Give the sense of this authenticity from the moment you enter the community at the off-ramps. Consider people first.
- Get the target speed down to no more than 25 mph on the approach to downtown and to 20 mph in the downtown.



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- Build buffered bike lanes toward town center and going out of town but not on into downtown. Sharrows can be considered on a number of streets.
- Watch driveway widths so pedestrians are given a chance to cross these areas. Manage the driveway access.
- Consider possible Route 3/Route1 roundabouts at on and off ramps
- Consider a mini-roundabout
- Narrow to 11' lanes
- Median crossing islands, improved signing
- Improved crosswalk markings
- Eliminate triangle crossing widths
- Inset parking treatments
- Use roundabouts on either side of the over passes.
- Focus on internal pedestrian circulation
- Improve the tree-scapes
- Improve access management in near downtown
- Add curb extensions at Church and Main Streets
- Narrow travel lane widths on some streets, such as High Street

Ten Steps To Walkability

<p>Compact, lively town center</p>	<p>Low speed streets, distributed volumes</p>	<p>Many people of all ages and abilities walking many hours</p>
<p>Fine grained streets, many trails, transit links</p>	<p>Public places with inviting features: benches, restrooms, shade, water and art</p>	<p>Celebrated public space and public life, parades, markets, festivals, awards</p>
<p>Neighborhood schools and parks, within one quarter mile or one eighth mile</p>	<p>Convenient, safe and efficient crossings</p>	<p>Land use and transportation partnerships</p> <p>Affordable, inspiring, well maintained streets and homes.</p>



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Example of a raised median island



Example of Nantucket, Massachusetts roundabout

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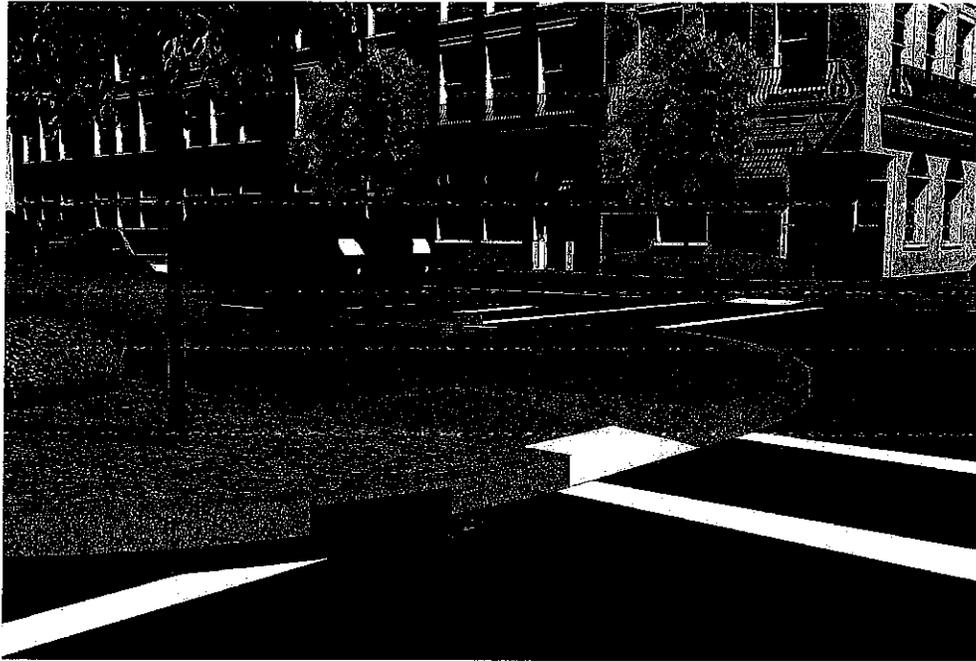
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Example of roundabout, bike lanes, buffer and on street parking

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Example of curb extensions



Example of driveway treatments

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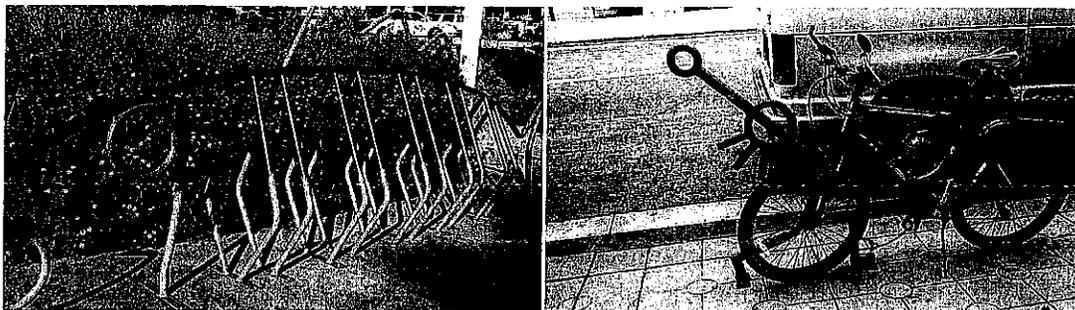
Examples of small public parks



Example of crosswalk treatments

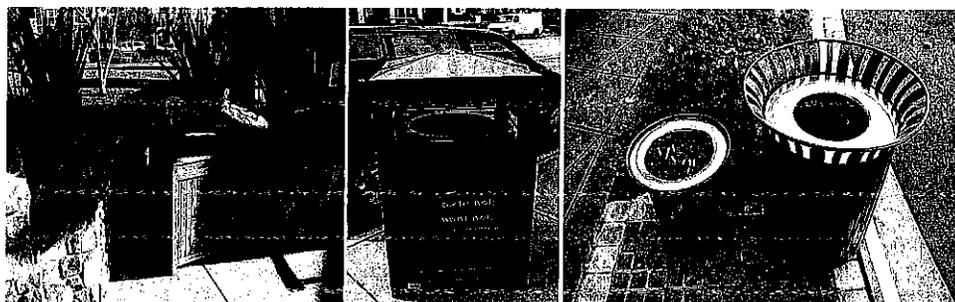
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Consider adding amenities in the public and private spaces to increase transportation mode choices for citizens, shoppers, and visitors.



Examples of creative, attractive bike racks

Consider adding public trash and recycling cans to make the place more livable.



Trash can ideas

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Principles for creating walkable communities

Goal 1: Build multi-modal communities

Prioritize development of multimodal communities that provide residents of all ages and abilities, and all economic levels with safe, reliable, comfortable and economical transportation choices.

Goal 2: Promote safety

Design, operate and manage the transportation system to reduce serious injuries, decrease the crime and violence, and ensure mobility for all ages, abilities and socio-economic levels.

Goal 3: Design for Health

Design, operate and manage streetscapes and public spaces to promote active living and lessen exposure to air and noise pollution and water and soil contamination.

Goal 4: Promote Transportation Investment as Economic Development

Invest in transportation improvements-including operational improvements that support the economic health and competitiveness of the city's businesses and the safety and general welfare of its residents.

Goal 5: Integrate Transportation and Land Use

Cities and regions should coordinate transportation infrastructure with land use and development

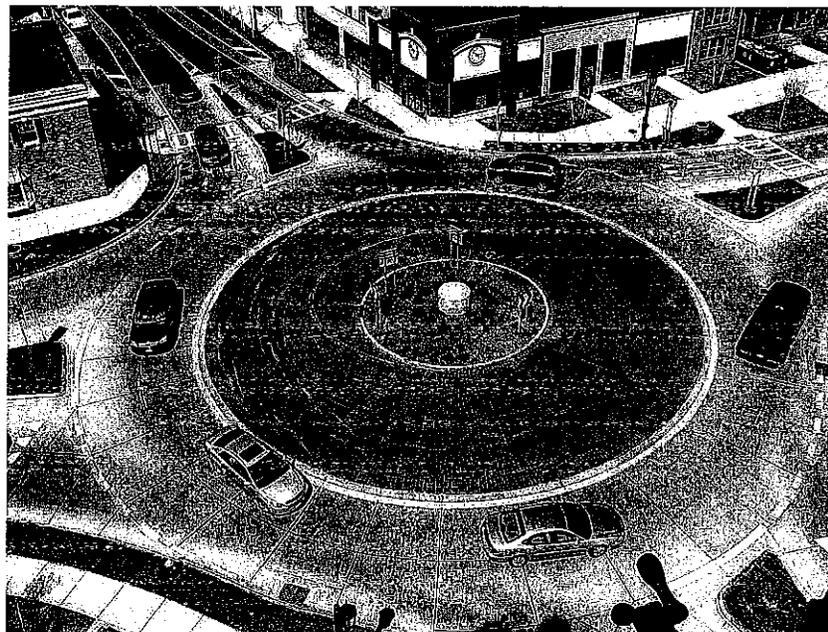
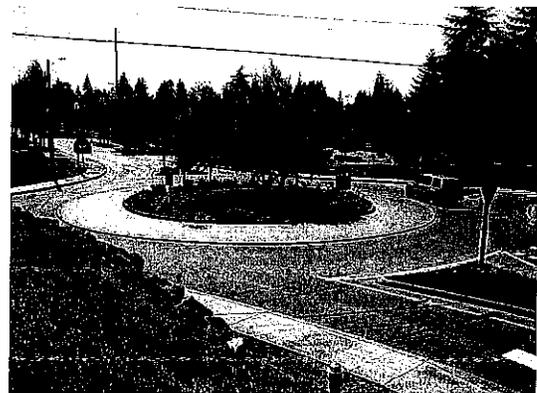
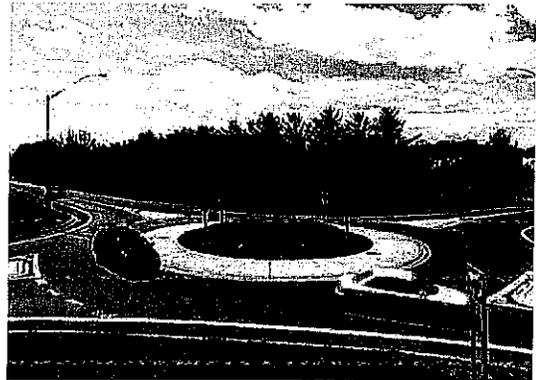
Goal 6: Embrace streets as civic space

City streets will be regarded as important spaces for civic engagement and will be developed to promote health, economic vitality and well-being while reflecting a city's unique character.

Appendix 1 Definitions

Roundabouts

Roundabouts facilitate through-traffic and turning movements without requiring a signal control. Roundabouts allow vehicles to circulate around an island that is often used for landscaping, a gateway or for other decorative features, like artwork. The circulating roadway is typically wider than the approach roadways and features an additional 'apron' against the edges of the island; both of these features allow for fire trucks, ambulances and other large vehicles. Roundabouts increase intersection carrying capacity by up to 30 percent. As the only requirement for yielding the right-of-way is to traffic already in the circulating roadway, roundabouts also reduce delays for everyone.



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Mini Circles

Mini Circles are one of the most popular and effective tools for calming traffic in neighborhoods. Seattle has 1,200 Mini Circles and this has led to a reduction in intersection crashes. They are the best neighborhood safety feature of any treatment type. These inexpensive features do not interrupt drainage. Mini Circles work outward from intersections on all three or all four legs of approaching traffic. Mini Circles bring speeds down to levels where motorists are more courteous to pedestrians; they allow all types of turns, including U-turns, which can assist with school area traffic management. A common engineering mistake is to put in four way stops around a mini circle. Mini Circles require yield signs instead.



Road Diet

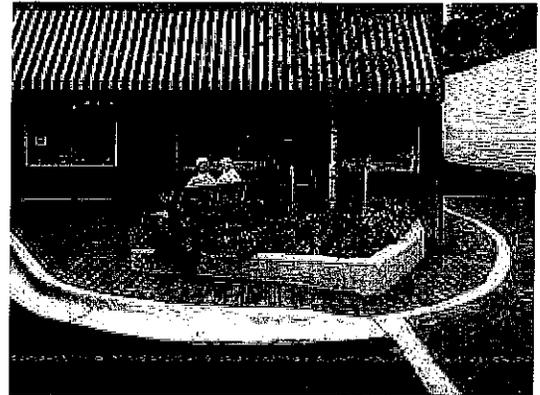
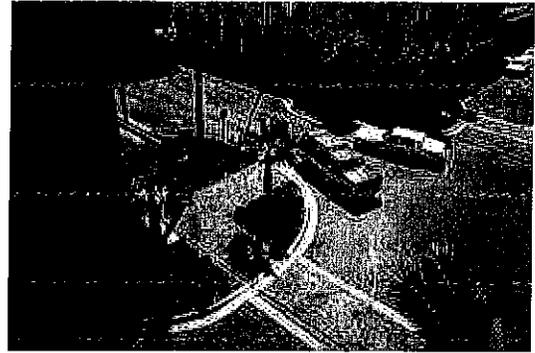
A road diet involves eliminating travel lanes to improve safety for pedestrians, bicyclists and motorists. Motorist crashes are typically reduced 12 to 30 percent, with some drops as high as 70 percent. High end speeds, especially, are reduced. While there can be more than four travel lanes before treatment, road diets are generally conversions of four-lane, undivided roads into three lanes—two through-lanes plus a center turn lane or median island. The fourth lane may be converted into bicycle lanes, sidewalks, planter strips for street trees, a bus stop, a separated multi-use trail, a wider outside lane or for on-street parking.

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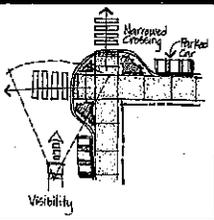
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Curb Extensions

Curb extensions are a nearly universal tool for school areas. In transforming overly wide streets, curb extensions (also known as bulb outs, elephant ears and nibs) bring down right turning speeds, identify important crossings, and make it much easier for motorists to see children and for children to see motorists. When used in a series, curb extensions can significantly bring motorist speeds to acceptable levels. Curb extensions can be used at intersections, mid-block, inside of parking strips (tree wells) and other locations. Although many curb extensions are kept plain in appearance, at the entry to a neighborhood, they can be landscaped to serve as attractive gateways.

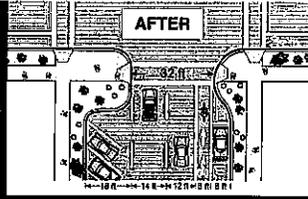


Curb-Extension (Advantages)



- ┆ Motorists no longer block sight lines
- ┆ Ground cover is kept trimmed to 24 inches
- ┆ Trees are undercut to seven feet
- ┆ Motorists can pull forward to see past parked cars
- ┆ Motorists are able to see pedestrians standing in a prominent location

Most factors seen in reduced crossing distance

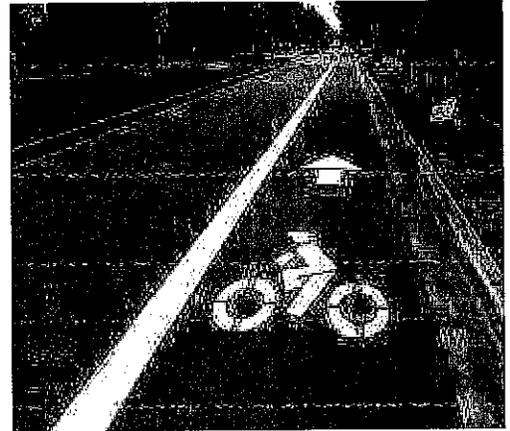


- Better visibility between peds and motorists
- Traffic calming
- Room for street furniture

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Bike Lanes

One of the most cost effective ways to reduce speed while improving overall vehicular flow and creating improved conditions for bicycling and walking, is the conversion of overly wide roads to bike lanes. Generally, travel lanes can be reduced to 10 feet. Narrower travel and storage lanes are proving to be slightly safer. Motorists appear to become more attentive when lanes are narrowed from 11-12 feet to 10 foot travel lanes. Bike lanes should be at least 5 feet wide and seamless. Thick striping and regular markings remind drivers to anticipate bicyclists. Bike lanes have an added benefit to pedestrians in that they provide a buffer to moving traffic.



Plazas, Parks and Paseos

Transforming a street, sidewalk, plaza, square, paseo, open lot, waterfront or other space into a community source of distinction, brings joy to the community. Good places make good experiences possible and they have consequences in our lives. People want to be in attractive, well designed and cared for public places. Investment in streets and other public spaces brings added value to all buildings and homes in an area. A compelling sense of place allows the time spent there to be rewarding and memorable. Converting alleys, sidewalks and streets into pocket parks, plazas and paseos creates lively places for people to gather, celebrate, eat and enjoy being together.



Signalized Intersections

Intersection control devices are critical if walking, bicycling and motoring are to work, and work together. People who cross at intersections, when they are signaled to do so, are most predictable. Drivers appreciate predictable and compliant behavior. When intersections become so complex and challenging that signals are added, there is oft en ample justification to go beyond conventional standards to address the needs of people walking and bicycling. Signal timing should be automated for inclusion of walking cycles. Signal timing should be adjusted so that signals recall to WALK during the cycle, minus the clearance interval.

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Sidewalk Design

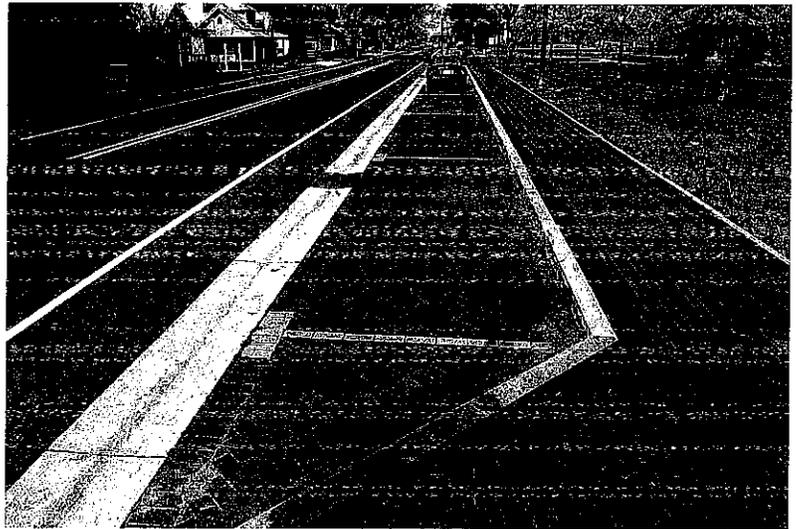
Sidewalks require high levels of design and care. It is within the protected spaces of a sidewalk where people move freely, but also spend time engaging others and enjoying their public space. Sidewalks work best when they are fully buffered from moving traffic. Color, texture, street furniture and other materials can distinguish functional areas of sidewalks. Using saw cuts rather than trowel cuts provides a better surface for wheelchairs and wheeled devices.



Sidewalks have three parts: the shy zone, furniture zone and the walk/talk zone. If driveways must interrupt, keep these to minimal widths (14 feet for one way and 26 feet for two way). Use contrasting colors and materials and keep sidewalks fully fl at across driveways.

On Street Parking

On-street and inset parking visually narrows streets and brings down traffic speeds, while providing the most sustainable and affordable parking. Speeds are brought down even more when tree wells are used to provide a canopy to the street. Since it already has its own turn radii into each spot and access, on-street parking only takes up one-third of the land of off -street parking. But the primary reason for maximizing parking on street is to help civilize streets that were overbuilt for speed. On-street parking belongs on center city streets, serving as a buffer between pedestrians and moving cars as a natural traffic calming tool.



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Back in Parking

Back-in angle parking provides motorists with better vision of bicyclists, pedestrians, cars and trucks as they exit a parking space and enter moving traffic. Back-in angle parking also eliminates the risk that is present in parallel parking situations, of a motorist may open the car door into the path of a bicyclist. Back-in angle parking also removes the difficulty that drivers, particularly older drivers, have when backing into moving traffic.



The concept has many benefits over other parking types. Some of these benefits include increased parking capacity (10 to 12 feet of lateral curb per vehicle, versus 22 feet per vehicle for parallel parking), clear sight lines when pulling out, better maneuverability on snowy days, ease of loading and unloading cargo and helping children in and out of car seats, and protection for children because the open car door now directs young children back to a point of safety rather than out into the street.



Installation and conversion to back-in angle parking requires careful site planning to ensure that the car stops before encroaching into the pedestrian space. Engines should not idle as tailpipe emissions are now directed to the sidewalk, which is particularly undesirable near a sidewalk café or other sensitive location. (See U.S. EPA listing of state and local communities with anti-idling laws at <http://www.epa.gov/SmartwayLogistics/documents/420b06004.pdf>). The change should be publicized prior to implementation, as people are more likely to accept a program that they understand. A learning curve should be expected, thus parking a city vehicle in one of the spaces each morning can help drivers understand the action.

Many communities install curb extensions to shorten pedestrian crossing distance as part of a back-in angle parking project. Typical dimensions are: 60-degree angle stalls about 10 feet wide (which works out to 11 feet of curb length), and 20 feet deep (measured perpendicular to the curb). As a general rule, back-in angle parking should be installed on side streets first. It should also be considered on non-arterial streets where speeding is a problem and increased parking is a need. Over time and with community acceptance, there may be reasons to expand the concept to major streets. Bonuses of back-in angle parking include potential calming of traffic speeds, especially around schools and in downtowns or other commercial areas. Its use on downhill grades should be studied carefully and it may have limited usefulness on single lane, one-way streets. (Source: www.walkinginfo.org)



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Recommended Books

- Urban Street Design Guide by the National Association of City Transportation Officials (2013)
- Street Design: The Secret to Great Cities and Towns, by Victor Dover and John Messengale (2014)
- Walkable City: How Downtown Can Save America, One Step at a Time, by Jeff Speck (2012)
- People Habitat: 25 Ways to Think About Greener, Healthier Cities, by F. Kaid Benfield (2014)
- Completing Our Streets: The Transition to Safe and Inclusive Transportation
- Networks, by Barbara McCann (2013)
- Thoughts on Building Strong Towns, Volume I, by Charles Marohn (2011)

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This report was prepared by Friends of Midcoast Maine. The workshop was funded by the Midcoast Public Health District's Community Transformation Grant and Friends of Midcoast Maine in collaboration with the City of Belfast and the Belfast Active Community Environment Team.

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