WMPO Bicycle and Pedestrian Modal Subcommittee Meeting Agenda

TO: WMPO Bicycle and Pedestrian Modal Subcommittee Members
FROM: Abby Lorenzo, Senior Transportation Planner
DATE: November 28th, 2018
SUBJECT: December 4th, 2018 Meeting

A meeting of the WMPO Bicycle and Pedestrian Modal Subcommittee will take place on Tuesday, December 4th, 2018 at 3pm. The meeting will be held in the Harrelson Building 5th floor conference room located at 115 N. 3rd Street, Wilmington.

The following is the agenda for the meeting:

- Call to Order
- Approval of the Agenda
- Approval of minutes from November 13th, 2018
- Cape Fear Moving Forward 2045 Bicycle and Pedestrian Project List Development
  - Action: Review additional subcommittee selected projects
  - Action: Review additional selected projects limits and scope
  - Action: Confirm final 150 preliminary projects
- Cape Fear Moving Forward 2045 Bicycle and Pedestrian Criteria Development
  - Action: Committee discusses and completes goals and objectives ranking and weighting activity
- Election of 2019 Chairman and Vice Chairman (Standing Committee)
  - Chairwoman Nominee: Carol Stein
  - Vice Chairwoman Nominee: Katie Ryan
- 2019 Bicycle and Pedestrian Committee Work Plan (Standing Committee)
  - Action: Review and adopt 2019 work plan
- 2019 Meeting Dates (Standing Committee)
  - Action: Review 2019 meeting dates, consider any meeting day changes, and adopt.
- Next Meeting: January 8th, 2019 at 3pm*
• Adjournment

Attachments:

• Minutes from the November 13th, 2018 meeting
• Bicycle and Pedestrian Subcommittee selected projects
• Bicycle and Pedestrian Subcommittee additional submitted project list
• Bicycle and Pedestrian Carryover Projects
• Bicycle and Pedestrian Draft Cross Sections
• Bicycle and Pedestrian Goals and Objectives Worksheet
• Criteria Flowchart
• 2019 Bicycle and Pedestrian Committee Work Plan
• *Draft* 2019 Committee Meeting Dates
WMPO Bicycle and Pedestrian Advisory Committee Meeting Minutes
Tuesday, November 13th, 2018 at 3pm
Room 611 at 320 Chestnut St.

Members Present
John Williams, Cape Fear Public Transportation Authority
Karin Mills, City of Wilmington
Shawn Spencer, New Hanover County
Carol Stein, Pender County
Joe Boyd, Town of Belville
Steve Whitney, Brunswick County
John Sneed, Visitors Bureau
Katie Ryan, Town of Wrightsville Beach
Barnes Sutton, Town of Navassa
Nick Cannon, TDM Coordinator WMPO
Al Schroetel, Cape Fear Cyclists
Vanessa Lacer, WAVE Transit
John Carter, Town of Leland

Staff and Guests Present
Abby Lorenzo, WMPO
Katie Moore, WMPO
Zach Manfredi, WMPO

1. Call to Order
S. Spencer called meeting to order.

2. Approval of Agenda
K. Ryan made a motion to approve agenda, seconded by J. Sneed

3. Approval of October 9, 2018 Minutes
Revise the minutes to list John Carter, Town of Leland as a Member Present.
A Schroetel made a motion to approve agenda as revised, seconded by K. Ryan

4. Cape Fear Moving Forward 2045 Bicycle and Pedestrian Project List Development
S. Spencer introduced the item as the list of projects selected by committee members
A. Lorenzo shared the limit to submit up to 200 projects to a consultant for cost estimate. The spreadsheet was designed for a discussion on how to build the list from the existing 118 to at least 150 projects. To submit the list to the consultant, each project needs limits and scope at a conceptual level.
A. Lorenzo shared that staff has identified several projects that are currently associated with a roadway project and those projects can remain on this committee's list until the final design is chosen for those projects and it is found that the work addresses the need of the project. NCDOT will be holding public meetings for roadway projects once the design process is underway and that is a good time to connect with the project to discuss the need and planned bike/ped facilities.
S. Spencer began moving the committee through the list of projects with brief discussion on the need and/or rationale for selection. Committee discussed the limitations for adding bicycle and pedestrian crossings to existing controlled access bridges and an idea to consider the facilities within any new
crossing of the Cape Fear whether it is a roadway, rail, or dedicated pedestrian. Committee is committed to advocating for a crossing with connections on either side for bike/ped. A. Lorenzo shared that the Cape Fear Crossing project is planned to include those facilities. WMPO staff could work with NCDOT to determine a feasible connection between Brunswick County and Downtown Wilmington.

It was determined that moving through the list may not be necessary. Committee agrees to leave all projects selected in the list except the City Bond projects and fully committed projects planned for completion prior to the 2020 plan year.

Committee carried a motion to accept all selected projects except those identified as infeasible, City Bond projects, or projects committed prior to the 2020 plan horizon and to add a project for a bicycle and pedestrian crossing of the Cape Fear River.

Committee began to discuss how to choose more projects. A. Lorenzo demonstrated the use of the Map Tool Heat Map layer that shows the intensity of public comments by project location.

Idea shared to list projects that phase the completion of the Downtown Trail starting with the segment within the abandoned rail corridor near new multimodal center and the planned North Waterfront Park. The segments can be scored and funded separately. WMPO staff can recommend a method.

Project idea to improve the Salisbury St. Bridge to Wrightsville Beach to widen the sidewalk on the more heavily travelled side (south) that connects to sidewalks on either end.

Rather than try to determine additional projects at this meeting the committee agreed to individually select an additional 5 projects each for review at the December meeting. A. Lorenzo clarified that the default setting for the Map Tool is to open with selected projects shown in red. To turn on the full project list, the layers for “2045 Proposed Projects” need to be checked to be shown.

Committee received information on the limits of a project drawn inaccurately for the new Pine Valley Branch Library to be built at 17th St and College Road (corner enclosed by Satara Dr).

A. Lorenzo would like to submit a minimum of 150 projects to the consultant for cost estimate. At the next meeting the committee will work to identify up to 200 projects. WMPO staff will bring recommendations for projects to discuss.

S. Spencer prompted discussion about a recent newspaper article covering the death of a cyclist due to a driver charged with a DUI. Committee agreed that more education is needed for the community and more specifically the reporter as the story implied that cycling on neighborhood roads is unsafe.

S. Spencer adjourned the modal subcommittee as the remainder of agenda items are for the Bicycle and Pedestrian Standing Committee to review. Those members of the MTP modal subcommittee were excused from attendance.

5. Discussion on Elections for Chairman and Vice Chairman for 2019 (Standing Committee)
A. Lorenzo introduced the item as a prompt for the committee to consider nominations for Chair and Vice Chair of the Bicycle and Pedestrian Committee.

K. Ryan shared willingness to remain as Vice Chair. Committee accepts K. Ryan as Vice Chair for 2019.

S. Spencer shares a preference to conduct nominations and vote for Chair for 2019.

Committee agrees to send nominations for Chairman/Chairwoman to Abby by November 28, 2018.

6. Review 2019 Bicycle and Pedestrian Committee Work Plan (Standing Committee)
A. Lorenzo presented information on the Draft 2019 Work Plan and explained the items by month. Committee discussed items to consider for the next work year, including:

- continuing development of language to support local ordinance adoption
- regular NCDOT project updates to increase awareness and participation of the subcommittee
- addition/discussion of a Fall bike ride event in the Spring (February/March item)

Committee agrees to submit revisions and comments to Abby by November 28, 2018.
A. Lorenzo asked for the committee to determine a date for the 30th River to Sea. Proposed date of Saturday, May 4th with an earlier start of 7am. Planning for the event will begin in January.

7. Approval of Date and Time for December Meeting
A. Lorenzo asked the committee to consider changing the December meeting to fall one week earlier, on December 4th, 2018 (scheduled for December 11th, 2018).
Committee agrees to change the December meeting date to December 4, 2018 and the committee will be meeting in the Harrelson Conference Room located at 115 N. 3rd Street on the 5th Floor of the CresCom Building (former BB&T Building).

8. Next Meeting
**December 4, 2018 at 3PM**

9. Adjournment
S. Spencer made a motion to adjourn, seconded by K. Ryan.

Follow-up and Action Items:
a. Committee members to select an additional 5 projects each for review at December meeting.
b. Standing Committee members to send nominations for Chair to Abby by November 28.
c. Standing Committee members to send comments or changes to the Work Plan by November 28
d. WMPO staff to recommend projects for discussion, as needed, from the proposed projects
e. WMPO staff will discuss options for phasing of projects and report back at December meeting
f. WMPO to send out date, time, and location update to the committee
<table>
<thead>
<tr>
<th>BP #</th>
<th>Submitter</th>
<th>Project</th>
<th>Rationale</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP- 1</td>
<td>Vanessa Lacer</td>
<td>GREENFIELD LAKE PARK bike lane</td>
<td>Connection between new Downtown Transit Center (N 3rd St and Campbell St), Greenfield Park, and neighborhoods Inbetween.</td>
<td>2040 MTP</td>
</tr>
<tr>
<td>BP- 13</td>
<td>Steve Whitney</td>
<td>MUP From West Gate to Brunswick Nature Park connector</td>
<td>This MUP can be developed to connect to commercial and residential areas along Rte 17</td>
<td>2040 MTP</td>
</tr>
<tr>
<td>BP- 14</td>
<td>Al Schroetel, John Williams</td>
<td>Independence Blvd. BikePed Improvements (Carolina Beach Rd to River Rd) MUP</td>
<td>Connect with the newly purchased City and County park at Echo Farms and River Road Bike Lanes. Enhances the East Coast Greenway.</td>
<td>2040 MTP</td>
</tr>
<tr>
<td>BP- 15</td>
<td>Al Schroetel</td>
<td>Independence Blvd. BikePed Improvements (S. 1st St to Carolina Beach Rd)</td>
<td>Connect with existing bike/ped facilities that end at the Cameron Art Museum. Enhances the East Coast Greenway. Also connects with the Cross City Trail 1/2 block to Northeast</td>
<td>2040 MTP</td>
</tr>
<tr>
<td>BP- 16</td>
<td>Nick Cannon, Karin Mills</td>
<td>Independence Blvd Extension (Randall to MLK)</td>
<td>Easy extension of the Cross City Trail that greatly increases the amount of places people can go using a MUP.</td>
<td>2040 MTP</td>
</tr>
<tr>
<td>BP- 17</td>
<td>Al Schroetel</td>
<td>Independence Blvd. BikePed Improvements (Rand to New Centre)</td>
<td>Major expansion will occur in this area in both New Hanover and Pender Counties. Near I-140 and I-40 for future potential developments and commercial growth. Sidbury will be widened.</td>
<td>2040 MTP</td>
</tr>
<tr>
<td>BP- 18</td>
<td>Karin Mills</td>
<td>Causeway Dr BikePed Improvement (Airlie to Waynick)</td>
<td>Bike facilities on Murrayville Rd Ext &amp; Old Plantation Road from N. College to the Military Cutoff Extension. Links existing sub-divisions and projected expansion. Bridge will be widened.</td>
<td>2040 MTP</td>
</tr>
<tr>
<td>BP- 19</td>
<td>John Carter</td>
<td>Old Fayetteville Rd. A MUP</td>
<td>Bike/Ped connection between Leland town center and two major schools</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 20</td>
<td>Nick cannon</td>
<td>Wilshire Blvd BikePed Improvement</td>
<td>Dozens of older citizens and members of lower income homes are along this road and use a bike or walk as a primary source of transportation. You can see the “goat paths” on this road.</td>
<td>2040 MTP</td>
</tr>
<tr>
<td>BP- 21</td>
<td>Karin Mills</td>
<td>Independence Blvd Extension (Hawthorne to 42nd)</td>
<td>Major expansion will occur in this area in both New Hanover and Pender Counties. At I-140 and I-40 for future potential developments and commercial growth. Sidbury will be widened.</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 22</td>
<td>Al Schroetel</td>
<td>Plantation Road Bike Lanes &amp; MUP</td>
<td>Bike/Ped access across Greenfield Lake (MUP)</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 23</td>
<td>Bill Toohey</td>
<td>Island Creek Rd BikePed Improvement</td>
<td>Do not forget to include some connection between Wilmington and Leland to recognize future needs for this transportation corridor. Bike/Ped connection between Leland and Wilmington is critical to area-wide connectivity</td>
<td>2045 Public Input</td>
</tr>
<tr>
<td>BP- 24</td>
<td>Carol Stein, Al Schroetel, John Williams, Shawn Spencer</td>
<td>Sibury Road NH/ Pend Bikeped Improvement</td>
<td>Connection between US-17 and Brunswick Nature Park mountain bike trails.</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 25</td>
<td>Steve Whitney</td>
<td>Bike/ped access across Greenfield Lake (MUP)</td>
<td>This connection provides safe and convenient access between Sunset neighborhood and Hospital. The bridge across Lake makes walking path more useable with shorter routes.</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 26</td>
<td>Carol Stein, Al Schroetel, John Williams, Shawn Spencer</td>
<td>Sibury Road NH/ Pend Bikeped Improvement</td>
<td>Major expansion will occur in this area in both New Hanover and Pender Counties. Near I-140 and I-40 for future potential developments and commercial growth. Sidbury will be widened.</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 27</td>
<td>Nick Cannon</td>
<td>Lake Ave (Halifax to College) BikePed Improvement</td>
<td>Access to US 17 corridor(Hampstead) with current /future developments along route</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 28</td>
<td>Nick Cannon</td>
<td>Island Creek Rd BikePed Improvement</td>
<td>Major expansion will occur in this area in both New Hanover and Pender Counties. Near I-140 and I-40 for future potential developments and commercial growth. Sidbury will be widened.</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 29</td>
<td>John Carter</td>
<td>Old Fayetteville Rd. A MUP</td>
<td>Increase the opportunity for people to safely shop to their biking needs at the mall and the adjacent shopping center.</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 30</td>
<td>Steve Whitney</td>
<td>Sibury Road NE Bike/Ped Path</td>
<td>This short connection connects two neighborhoods and provides access between Poof Road and River Road (Rte 133)</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 31</td>
<td>Bill Toohey</td>
<td>Brunswick Park Connector MUP</td>
<td>This MUP can be developed as part of new residential construction. The connector follows Duke Power easement but can be constructed in easement area. Connect between US-17 and Brunswick Nature Park mountain bike trails.</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 32</td>
<td>Steve Whitney, John Carter</td>
<td>MUP from Rte 17 to BF, MC, and Brunswick Nature Park</td>
<td>This MUP can be developed as part of new residential construction. The connector follows Duke Power easement but can be constructed in easement area. Connect between US-17 and Brunswick Nature Park mountain bike trails.</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 33</td>
<td>John Carter</td>
<td>Blackwell Rd SE BikePed Improvement</td>
<td>Improve connectivity between Village Road and US17 corridor areas of Leland</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 34</td>
<td>Carol Stein</td>
<td>Sloop PL Loop Rd MUP</td>
<td>High populated area, Alternative to travelling via US17 273(Country Club) &amp; 247(Sloop Point)</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP- 35</td>
<td>Steve Whitney, Joe Boyd, John Carter, Duncan McCabe, John Williams</td>
<td>Leland/Wilmington bike/ped connection</td>
<td>Do not forget to include some connection between Wilmington and Leland to recognize future needs for this transportation corridor. Bike/Ped connection between Leland and Wilmington is critical to area-wide connectivity</td>
<td>2045 Public Input</td>
</tr>
<tr>
<td>BP- 36</td>
<td>Neal Andrew, Duncan McCabe, John Williams</td>
<td>Masonboro Loop Rd Bike Lanes (Ncavo Trl to Carolina Beach Rd)</td>
<td>This short connection connects two neighborhoods and provides access between Poof Road and River Road (Rte 133)</td>
<td>2045 Public Input</td>
</tr>
<tr>
<td>BP</td>
<td>Name</td>
<td>MUP/Location</td>
<td>2045 Public Input</td>
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<tr>
<td>BP-270</td>
<td>Joe Boyd, John Carter</td>
<td>Burnett Blvd MUP (Kentucky to Market)</td>
<td>Improved connectivity and safety between Greenfield Lake, CFMB, and downtown</td>
<td></td>
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<tr>
<td>BP-273</td>
<td>Carol Stein</td>
<td>Country Club MUP</td>
<td>Bike accidents at highly populated residential area.</td>
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<tr>
<td>BP-276</td>
<td>Carol Stein, Joe Boyd, John Carter, Duncan McCabe, John Williams</td>
<td>Rt 133 Bike Path-Southport</td>
<td>No other routes to Southport - adding feature before population development will add to appeal of Southport. Connection between Leland and Southport, serving multiple destinations along the way, including Boiling Springs Lakes and Brunswick Nature Park</td>
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<tr>
<td>BP-277</td>
<td>Neal Andrew, Al Schroetel, Duncan McCabe, John Williams</td>
<td>Masonboro Loop Rd &amp; Pine Grove Rd</td>
<td>Current bike lanes are intermittent and do not meet accepted standards. Add/Maintain Bike Lanes on Masonboro Loop Road to Hugh McRae Park that meet NACTO Specifications (5 feet).</td>
<td></td>
</tr>
<tr>
<td>BP-280</td>
<td>Nick Cannon</td>
<td>College Acres MUP</td>
<td>Very high trafficked area by students</td>
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<tr>
<td>BP-282</td>
<td>Neal Andrew</td>
<td>Sander Rd MUP</td>
<td>2045 Public Input</td>
<td></td>
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<tr>
<td>BP-286</td>
<td>Joe Boyd</td>
<td>Ploof Rd Bicycle Lane</td>
<td>2045 Public Input</td>
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<tr>
<td>BP-297</td>
<td>John Carter</td>
<td>Village Road Loop Bicycle Lane</td>
<td>Dedicated bicycle lane along this route would connect the town centers of both Leland and Navassa, including areas of major development and redevelopment planned in coming years</td>
<td></td>
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<tr>
<td>BP-298</td>
<td>Joe Boyd</td>
<td>Old Leland Loop Bike Lane</td>
<td>2045 Public Input</td>
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<tr>
<td>BP-300</td>
<td>Al Schroetel</td>
<td>Porters Neck Rd Trail</td>
<td>Includes large existing sub-divisions, shopping centers and two schools. With BP-341 (Marsh Oaks &amp; Folly’s Island) links neighborhoods to south with bike/ped access to Edwater Club Rd, school</td>
<td></td>
</tr>
<tr>
<td>BP-301</td>
<td>John Williams, Carol Stein</td>
<td>I-140 East Trail (Market St to Murrayville Rd)</td>
<td>NHC Greenway Plan</td>
<td></td>
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<tr>
<td>BP-304</td>
<td>Duncan McCabe</td>
<td>Snows Cut Bridge Trail</td>
<td>NHC Greenway Plan</td>
<td></td>
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<tr>
<td>BP-305</td>
<td>Neal Andrew, Duncan McCabe</td>
<td>South Carolina Beach Rd Trail</td>
<td>NHC Greenway Plan</td>
<td></td>
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<tr>
<td>BP-306</td>
<td>Neal Andrew, Al Schroetel</td>
<td>South River Road Bike Lanes</td>
<td>Widen and Maintain Bike Lanes on River Road and bring them into NACTO Specifications (5 feet). Some section are less than 18 inches wide because of vegetation overgrowth.</td>
<td></td>
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<tr>
<td>BP-307</td>
<td>Neal Andrew, Duncan McCabe</td>
<td>Carolina Beach Rd Trail</td>
<td>NHC Greenway Plan</td>
<td></td>
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<tr>
<td>BP-308</td>
<td>Neal Andrew, John Williams</td>
<td>Shipyard Trail</td>
<td>NHC Greenway Plan</td>
<td></td>
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<tr>
<td>BP-322</td>
<td>John Carter</td>
<td>Western Rail Corridor Trail Greenway</td>
<td>Northern connection around the WMPD area, hopefully including another CF River crossing (not depicted)</td>
<td></td>
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<tr>
<td>BP-324</td>
<td>John Williams</td>
<td>US Hwy 421 Trail (Cape Fear River to Cape Fear Soccerplex)</td>
<td>NHC Greenway Plan</td>
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<tr>
<td>BP-326</td>
<td>Duncan McCabe</td>
<td>Rogersville Rd Trail</td>
<td>NHC Greenway Plan</td>
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<tr>
<td>BP-341</td>
<td>Al Schroetel</td>
<td>Bayfield Dr to Porters Neck Connection</td>
<td>Creates an off-Market Street route from Bayshore to the Porters Neck residential &amp; commercial areas &amp; to new elementary school. Uses an existing utility property and 1/10 mile MUP</td>
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<tr>
<td>BP-344</td>
<td>Carol Stein</td>
<td>Blue Clay Rd Bicycle Lane (Sidbury to Holly Shelter Rd)</td>
<td>Bike lane give option to avoid Rt 117 and connects Sidbury to Holly Shelter both roads seeing increased rural development, Connects two large routes BP-376 (Holly Shelter) &amp; BP-178 (Sidbury)</td>
<td></td>
</tr>
<tr>
<td>BP-345</td>
<td>Carol Stein</td>
<td>Blue Clay Rd Bicycle Lane (Sidbury to PropTrail at Rail Corridor)</td>
<td>Area of increasing growth of new neighborhoods connection to CFCC. This connection with Sidbury Rd give access to US17</td>
<td></td>
</tr>
<tr>
<td>BP-373</td>
<td>Carol Stein, Joe Boyd, Al Schroetel</td>
<td>Gordon Rd, Bicycle Lane</td>
<td>Heavy commercial, residential and school road, with 4 accidents on report reviewed. Updated road with lane will improve safety. This area already has many residential and commercial facilities, a school and a major County park. Much larger residential communities are planned. Widening of Gordon Road already planned</td>
<td></td>
</tr>
<tr>
<td>BP-376</td>
<td>Carol Stein</td>
<td>Holly Shelter Rd Bicycle Lane (Prop Rail Trail to Blue Clay Rd)</td>
<td>Access to 17 corridor (Hampstead) with current /future developments along route</td>
<td></td>
</tr>
<tr>
<td>BP-396</td>
<td>Katie Ryan, Shawn Spencer</td>
<td>Military Cutoff (Eastwood to Wrightsville Bicycle Lane)</td>
<td>Connectivity to trails, library, businesses, shopping, route to beach, residences, new development</td>
<td></td>
</tr>
<tr>
<td>BP</td>
<td>Name</td>
<td>Location/Description</td>
<td>Notes</td>
<td></td>
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<tr>
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<tr>
<td>397</td>
<td>Carol Stein</td>
<td>New Centre Dr Bicycle Lane (College to Clear Run Dr Trail)</td>
<td>Connects a very populated student area with commercial area. Assist in reduction of last report of 4 bike accidents. NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>398</td>
<td>Nick Cannon</td>
<td>New Centre Dr Bicycle Lane (Columb to College)</td>
<td>This would be very beneficial for everyone wh</td>
<td></td>
</tr>
<tr>
<td>406</td>
<td>Joe Boyd</td>
<td>Princess St Sharrow (5th Ave to 20th St)</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>411</td>
<td>Carol Stein, John Williams</td>
<td>Sidbury Road NH/ Pend Bicycle Lane</td>
<td>Major expansion will occur in this area in both New Hanover and Pander Counties. Near I-140 and I-40 for future potential developments and commercial growth. Sidbury will be widened</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>423</td>
<td>Al Schroetel, Duncan McCabe</td>
<td>Market Street Rail Trail</td>
<td>Creates an off-Market St. bike / ped facility and more direct route from Gordon Rd/ Cape Harbor Drive to Porters Neck Rd.. Could be an option to BP-341</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>426</td>
<td>Joe Boyd, John Sneed</td>
<td>North Smith Creek Trail (Greenway from Smith Creek Park to Northchase Pkwy)</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>430</td>
<td>Neal Andrew</td>
<td>North River Rd Trail (Independence to Sanders)</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>433</td>
<td>Neal Andrew, Duncan McCabe</td>
<td>Myrtle Grove Rd Trail (Carolina Beach Rd to Carolina Beach Rd)</td>
<td>Improve safety for bikes along congested Lumina Drive</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>442</td>
<td>John Carter</td>
<td>Lumina Ave Sharrow</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>456</td>
<td>Nick Cannon</td>
<td>College Rd Bike Lane (Market to Shippyard)</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>458</td>
<td>Nick Cannon</td>
<td>Wrightsville Ave Bike Lane</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>464</td>
<td>Neal Andrew, Duncan McCabe, John Williams</td>
<td>Carolina Beach Bike Lane (3rd St to St Andrews)</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>468a</td>
<td>John Carter</td>
<td>Downtown Trail Greenway (Phase I, Riverfront Boardwalk to Bess St)</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>468b</td>
<td>Downtown Trail Greenway (Phase II, Nutt St to Burnt Mill Creek)</td>
<td>NHC Greenway Plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>468c</td>
<td>Downtown Trail Greenway (Phase III, Burnt Mill Creek to Colonial Dr)</td>
<td>NHC Greenway Plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>556</td>
<td>Neal Andrew, Al Schroetel</td>
<td>17th St/NHC Library Connection</td>
<td>Connect to Navaho Trail improvements and from there to S. 17th. This links BP-165, BP-275 and BP-556 into a bike/ped facility that connects a huge residential area to the library &amp; X-City Trail</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>559</td>
<td>Carol Stein, Nick Cannon, Karin Mills</td>
<td>Complete Cross City Trail</td>
<td>Cross City Trail needs completed. Can only travel one way - high bike crashes (9). Kerr Ave will have bike lanes will connect a large length of bike avenues. I agree that the multilane path should continue along randal and not just be a bike lane for people to travel the wrong way in</td>
<td>2045 Public Input</td>
</tr>
<tr>
<td>560</td>
<td>Patrick Boykin</td>
<td>Carolina Beach Rd and Myrtle Grove Rd Crossing Improvement</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>561</td>
<td>Patrick Boykin</td>
<td>Carolina Beach Rd and Myrtle Grove Rd Crossing Improvement</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>563</td>
<td>Katie Ryan, John Sneed</td>
<td>Causeway Drive &amp; Salisbury Street</td>
<td>Congested area with bike, ped, and vehicle traffic making their way to businesses, beach, and residences</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>574</td>
<td>Shawn Spencer</td>
<td>Drysdale and Military Cutoff Crossing</td>
<td>Very critical ped crossing as this will be the future Drysdale Extension and needs to allow Gary Shell XC trail users to easily access East side of Military Cutoff.</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>577</td>
<td>Shawn Spencer</td>
<td>Bayshore Dr and Market St Crossing Improvement</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>579</td>
<td>Shawn Spencer</td>
<td>Military Cutoff &amp; Station Rd Crossing Improvement</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>581</td>
<td>Patrick Boykin, Vanessa Lacer</td>
<td>Carolina Beach Rd and S. College Rd Crossing Improvement</td>
<td>Crosswalk improvement would allow safe passage from the south to the Monkey Junction Super Stop (located near McDonalds) which is served by 3 bus routes including route 201 which has the 2nd highest ridership of all 16 routes.</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>584</td>
<td>Vanessa Lacer</td>
<td>College Rd &amp; Shopping Center Entrance</td>
<td>NHC Greenway Plan</td>
<td></td>
</tr>
<tr>
<td>590</td>
<td>Shawn Spencer, Katie Ryan</td>
<td>Military Cutoff and Wrightsville Ave</td>
<td>this is a very active or could be an active pedestrian and cyclist crossing since Eastwood and Military project are going to make crossing there impossible. Connectivity to trails, library, businesses, shopping, route to beach, residences, new development</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>BP</td>
<td>591</td>
<td>Katie Ryan, Duncan McCabe</td>
<td>Greenville Loop Road &amp; Oleander</td>
<td>Connectivity to trails, library, businesses, shopping, route to beach, residences, new development</td>
</tr>
<tr>
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</tr>
<tr>
<td>BP</td>
<td>597</td>
<td>Vanessa Lacer</td>
<td>17Th St &amp; Glen Meade Rd</td>
<td>Crosswalk improvements would allow safe passage to access bus stops on both sides of the street. These stops are served by 3 routes (105, 205, 209).</td>
</tr>
<tr>
<td>BP</td>
<td>604</td>
<td>Patrick Boykin</td>
<td>Lake Park Blvd and Lewis Dr Crossing Improvements</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>BP</td>
<td>619</td>
<td>Vanessa Lacer</td>
<td>Carolina Beach Rd &amp; Antoinette Dr</td>
<td>routes including route 201 which has the 2nd highest ridership of all 16 routes.</td>
</tr>
<tr>
<td>BP</td>
<td>625</td>
<td>Patrick Boykin</td>
<td>Sanders and River Road Crossing Improvements</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>BP</td>
<td>626</td>
<td>Patrick Boykin, Vanessa Lacer</td>
<td>River Rd and Carolina Beach Rd Crossing Improvement</td>
<td>Crosswalk improvement would allow safe crossing for bus passengers accessing route 301 which has a bus stop on both sides of the street at CB Rd and River Rd.</td>
</tr>
<tr>
<td>BP</td>
<td>627</td>
<td>Patrick Boykin</td>
<td>Piner and Myrtle Grove Crossing Improvement</td>
<td>NHC Greenway Plan</td>
</tr>
<tr>
<td>BP</td>
<td>633</td>
<td>Shawn Spencer</td>
<td>Military Cutoff &amp; Camyam Ct Crossing Improvement</td>
<td>this Crosswalk would allow access from West side of Military to the Cross City Trail</td>
</tr>
<tr>
<td>BP</td>
<td>635</td>
<td>Katie Ryan, Shawn Spencer</td>
<td>Parker Farm Drive &amp; Military Cutoff</td>
<td>Connectivity to trails, library, businesses, shopping, route to beach, residences, new development</td>
</tr>
<tr>
<td>BP</td>
<td>636</td>
<td>Shawn Spencer</td>
<td>University Dr &amp; College Rd Crossing Improvements</td>
<td>There has been a need for ped crossing here since UNCW was built. Safety of Students is paramount</td>
</tr>
<tr>
<td>BP</td>
<td>639</td>
<td>Vanessa Lacer</td>
<td>S 21st St &amp; Market St</td>
<td>A pedestrian crossing signal/traffic light would allow safe passage across Market St. to access bus stops on either side of Market and 21st St.</td>
</tr>
<tr>
<td>BP</td>
<td>642</td>
<td>Shawn Spencer</td>
<td>Eastwood Rd &amp; Bay Creek Dr Crossing Improvement</td>
<td>This is necessary since it connects Rodgersville To The North side of Eastwood Multi Use Sidewalk</td>
</tr>
<tr>
<td>BP</td>
<td>644</td>
<td>Katie Ryan</td>
<td>Causeway Drive &amp; S. Lumina</td>
<td>Congested area with bike, ped, and vehicle traffic making their way to businesses, beach, and residences</td>
</tr>
<tr>
<td>BP</td>
<td>646</td>
<td>Karin Mills</td>
<td>College Rd and Oleander Dr Crossing Improvements</td>
<td>Walk Wilmington</td>
</tr>
<tr>
<td>BP</td>
<td>647</td>
<td>Joe Boyd, Shawn Spencer</td>
<td>Market St &amp; Gordon Road Crossing Improvements</td>
<td>This will be necessary when the MUP along Gordon Road is built.</td>
</tr>
<tr>
<td>BP</td>
<td>648</td>
<td>Katie Ryan</td>
<td>Military Cutoff &amp; Eastwood</td>
<td>Crossing/Pedestrian Signal</td>
</tr>
<tr>
<td>BP</td>
<td>649</td>
<td>Duncan McCabe</td>
<td>New Centre and College Rd Crossing Improvements</td>
<td>Walk Wilmington</td>
</tr>
<tr>
<td>BP</td>
<td>661</td>
<td>Carol Stein, Karin Mills</td>
<td>College Rd &amp; Randall Crossing Improvement</td>
<td>High bike and pedestrian traffic</td>
</tr>
<tr>
<td>BP</td>
<td>669</td>
<td>Shawn Spencer</td>
<td>3rd St and Dawson St Crossing Improvement</td>
<td>There needs to be a ped/Bike crossing here to set the tone for travelers entering the city via this route.</td>
</tr>
<tr>
<td>BP</td>
<td>681</td>
<td>Vanessa Lacer</td>
<td>OLEANDER DR &amp; DAWSON ST Crosswalk Improvement</td>
<td>Residents of the nearby WHA property need a safe crossing to access food, medicine, etc at the shopping center. A majority of the residents of Hillcrest residents are elderly and do not drive.</td>
</tr>
<tr>
<td>BP</td>
<td>700</td>
<td>Duncan McCabe</td>
<td>Market St &amp; Lullwater Dr</td>
<td>2040 MTP (NI)</td>
</tr>
<tr>
<td>BP</td>
<td>722</td>
<td>Vanessa Lacer</td>
<td>3RD ST N &amp; RED CROSS ST</td>
<td>Crosswalk improvements would allow safe passage from the Downtown business district to the new Downtown Transit Center (to be located at North 3rd and Campbell St).</td>
</tr>
<tr>
<td>BP</td>
<td>744</td>
<td>Vanessa Lacer</td>
<td>10TH ST &amp; DAWSON ST</td>
<td>Crosswalk improvements important for safe access to bus stops and neighborhood resources in a low resource community with many transit dependent residents.</td>
</tr>
<tr>
<td>BP</td>
<td>765</td>
<td>Vanessa Lacer</td>
<td>10TH ST &amp; WOOSTER ST</td>
<td>Crosswalk improvements important for safe access to bus stops and neighborhood resources in a low resource community with many transit dependent residents.</td>
</tr>
<tr>
<td>BP</td>
<td>774</td>
<td>Katie Ryan</td>
<td>Military Cutoff &amp; 5th Tyler</td>
<td>Connectivity to trails, library, businesses, shopping, route to beach, residences, new development</td>
</tr>
<tr>
<td>BP</td>
<td>775</td>
<td>Katie Ryan</td>
<td>Military Cutoff &amp; Destiny Way</td>
<td>Connectivity to trails, library, businesses, shopping, route to beach, residences, new development</td>
</tr>
<tr>
<td>BP</td>
<td>792</td>
<td>Karin Mills</td>
<td>Market St &amp; New Meadows Dr Crossing Improvement</td>
<td>Walk Wilmington</td>
</tr>
<tr>
<td>BP</td>
<td>795</td>
<td>Shawn Spencer</td>
<td>Gordon Rd &amp; Netherlands Dr Crossing Improvement</td>
<td>When Gordon Rd gets the MUP this will help people get to and from Park</td>
</tr>
<tr>
<td>BP</td>
<td>834</td>
<td>Patrick Boykin</td>
<td>Ocean Ave and Island Greenway Crossing Improvement</td>
<td>Walk Wilmington</td>
</tr>
<tr>
<td>BP</td>
<td>838</td>
<td>Steve Whitney, Joe Boyd</td>
<td>Intersection of Rte 17 and Waterford Way/Ploof Road Crossing</td>
<td>This intersection was recently improved but failed to include pedestrian crossing signal. Not a safe crossing of Rte 17. Major new commercial and residential development occurring at this location</td>
</tr>
<tr>
<td>BP-</td>
<td>839</td>
<td>Steve Whitney</td>
<td>Intersection of Rte 17 and West Gate and Grandflora Blvd Crossing</td>
<td>This intersection connects major residential and commercial development. This is currently not a safe bike/ped crossing</td>
</tr>
<tr>
<td>BP-</td>
<td>843</td>
<td>Patrick Boykin</td>
<td>K Ave &amp; US 421 Crossing Improvements</td>
<td></td>
</tr>
<tr>
<td>BP-</td>
<td>845</td>
<td>Patrick Boykin</td>
<td>Harper and Canal Dr Intersection Improvements</td>
<td></td>
</tr>
<tr>
<td>BP-</td>
<td>846</td>
<td>Patrick Boykin</td>
<td>St Joseph and Lake Park Blvd Intersection Improvements</td>
<td></td>
</tr>
<tr>
<td>BP-</td>
<td>854</td>
<td>Patrick Boykin</td>
<td>Harper Ave and 7th Street Intersection Improvements</td>
<td></td>
</tr>
<tr>
<td>BP-</td>
<td>NA</td>
<td>Steve Whitney</td>
<td>Belville Elementary Connector in Belville (MUP)</td>
<td>This project would connect Belville Elementary School to residential areas in Belville, Leland and County</td>
</tr>
<tr>
<td>BP-</td>
<td>NA</td>
<td>BPAC</td>
<td>Wrightsville Beach Bridge Sidewalk Realignment</td>
<td>Remove sidewalk from north side of bridge, shift travel lanes, provide 8' vertically separated sidewalk on south side.</td>
</tr>
<tr>
<td>BP-</td>
<td>NA</td>
<td>Steve Whitney</td>
<td>Brunswick Forest to Town Creek Park and Schools (MUP)</td>
<td>This MUP would make use of a new road from Brunswick Village Blvd. to Hewlett Burton Road, existing Hewlett Burton, Hazel's Branch Road, Zion Church Road, and new bike/ped paths along Rte 17. A pedestrian signal at Governors Road would lead to bike/ped path to Town Creek park and elementary and middle schools.</td>
</tr>
<tr>
<td>BP #</td>
<td>Submitter</td>
<td>Project Description</td>
<td>Rationale</td>
<td></td>
</tr>
<tr>
<td>------</td>
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<td></td>
</tr>
<tr>
<td>BP-49</td>
<td>Barnes Sutton</td>
<td>Peachtree Ave Bike/Ped Improvement</td>
<td>Provides designated connection from S Kerr (BP 457) to Hugh McRae and the Municipal Golf Course</td>
<td></td>
</tr>
<tr>
<td>BP-150</td>
<td>Barnes Sutton</td>
<td>Hallfax Rd Bike/Ped Improvement</td>
<td>Based on the redevelopment of the mall to include residential and medical uses, a connection to Hugh McRae would be beneficial.</td>
<td></td>
</tr>
<tr>
<td>BP-194</td>
<td>Barnes Sutton</td>
<td>Independence Mall Fromage</td>
<td>Based on the redevelopment of the mall to include residential and medical uses, a connection to Hugh McRae would be beneficial.</td>
<td></td>
</tr>
<tr>
<td>BP-212</td>
<td>Carol Stein</td>
<td>US Hwy 117 Bike/Ped Improvement</td>
<td>Connects a growing area with businesses, schools, churches along this route. Provides safe and convenient route for area - needs to be included for future road enhancements to handle increasing volume</td>
<td></td>
</tr>
<tr>
<td>BP-246</td>
<td>John Carter</td>
<td>Fort Fisher Blvd Bike/Ped Improvement</td>
<td>Better bikeway connection from ferry terminal to Fort Fisher Rec area and Kure Beach</td>
<td></td>
</tr>
<tr>
<td>BP-248</td>
<td>John Carter</td>
<td>Chappell Loop Rd Bike/Ped Improvement</td>
<td>Connectivity completion (filling gap among other projects in Leland)</td>
<td></td>
</tr>
<tr>
<td>BP-261</td>
<td>Barnes Sutton</td>
<td>Cedar Hill Rd MUP</td>
<td>Providing a MUP in an area of proposed high intensity commercial as well as high density residential where no current bicycle/pedestrian facilities exist</td>
<td></td>
</tr>
<tr>
<td>BP-273</td>
<td>Al Schroetel</td>
<td>Landdown Rd MUP</td>
<td>Creates a safe passage from Navaho Trail to S. College. Connects with BP-165 to create a safe passage form Masonboro Loop to S. College</td>
<td></td>
</tr>
<tr>
<td>BP-281</td>
<td>John Sneed</td>
<td>Waynick Blvd</td>
<td>Increased safety for a high bike/ped traffic area</td>
<td></td>
</tr>
<tr>
<td>BP-303</td>
<td>John Sneed</td>
<td>Chow Road Trail</td>
<td>Increased connectivity for Measure Island</td>
<td></td>
</tr>
<tr>
<td>BP-325</td>
<td>John Sneed</td>
<td>Wrightsville Beach Trail</td>
<td>Increased connectivity to Beach</td>
<td></td>
</tr>
<tr>
<td>BP-337</td>
<td>Patrick Boykin</td>
<td>Alabama Ave MUP</td>
<td>CB Ped Plan</td>
<td></td>
</tr>
<tr>
<td>BP-339</td>
<td>John Sneed</td>
<td>Cape Fear Blvd</td>
<td>Increased connectivity for Measure Island</td>
<td></td>
</tr>
<tr>
<td>BP-355</td>
<td>Carol Stein</td>
<td>Castle Hayne Rd Bike Lane (I-40 - Kerr)</td>
<td>This route is becoming an area of newer residential development. This is a very busy corridor that has seen several bike accidents as the road has no accommodations. A Church, School and many businesses are on this route.</td>
<td></td>
</tr>
<tr>
<td>BP-370</td>
<td>John Carter</td>
<td>Front St Sharrow</td>
<td>Bike friendly improvements in high bike/ped use area</td>
<td></td>
</tr>
<tr>
<td>BP-381</td>
<td>Al Schroetel</td>
<td>John D Barry Sharrow or Bike Lane</td>
<td>Links large area of Pine Valley to the new Pine Valley Library and also to BP-556 for safe passage to large communities further south without going on S. College Rd</td>
<td></td>
</tr>
<tr>
<td>BP-409</td>
<td>Patrick Boykin</td>
<td>Saint Joseph St Bike Lanes and Sidewalk</td>
<td>CB Ped Plan</td>
<td></td>
</tr>
<tr>
<td>BP-470</td>
<td>John Sneed</td>
<td>South Smith Creek Trail</td>
<td>Better access to SCP, the cross point for I-40/College at exit 420 would be better if it could be an underpass following the creek</td>
<td></td>
</tr>
<tr>
<td>BP-441</td>
<td>John Sneed</td>
<td>Causeway Dr</td>
<td>Increased connectivity DT to Beach</td>
<td></td>
</tr>
<tr>
<td>BP-471</td>
<td>John Sneed</td>
<td>Kearns Rd Bike Lane (Patrick to Wrightsville)</td>
<td>A route running parallel to College with the assumption that College will continue to be the main artery for automobile traffic.</td>
<td></td>
</tr>
<tr>
<td>BP-489</td>
<td>Patrick Boykin</td>
<td>Ocean Blvd MUP</td>
<td>CB Ped Plan</td>
<td></td>
</tr>
<tr>
<td>BP-471</td>
<td>John Sneed</td>
<td>Front St Sharrow</td>
<td>Bike friendly improvements in high bike/ped use area</td>
<td></td>
</tr>
<tr>
<td>BP-500</td>
<td>John Sneed</td>
<td>Kerr Ave Bike Lane (Patrick to Wrightsville)</td>
<td>Increased connectivity DT to Beach</td>
<td></td>
</tr>
<tr>
<td>BP-551</td>
<td>Patrick Boykin</td>
<td>Central Lake Park Blvd Sidewalks (Atlanta to Alabama)</td>
<td>CB Ped Plan</td>
<td></td>
</tr>
<tr>
<td>BP-580</td>
<td>Patrick Boykin</td>
<td>Carolina Beach Rd &amp; Market Dr Crossing Improvement</td>
<td>Crosswalk improvements would provide safer access to this intersection which is served by 3 bus routes. This intersection has also been the site of 21.5 pedestrian crashes.</td>
<td></td>
</tr>
<tr>
<td>BP-592</td>
<td>Vanessa Lacer</td>
<td>Carolina Beach Rd &amp; Shipyard Crossing Improvement</td>
<td>Crosswalk improvements would provide safer access to this intersection which is served by 2 bus routes. This intersection is also the site of 21.5 pedestrian crashes.</td>
<td></td>
</tr>
<tr>
<td>BP-569</td>
<td>Vanessa Lacer</td>
<td>Market St &amp; Barclay Hills Dr Crossing Improvement</td>
<td>Crosswalk improvements would provide safer access across this intersection which is served by 1 bus route (101), and provides food store access.</td>
<td></td>
</tr>
<tr>
<td>BP-744</td>
<td>Vanessa Lacer</td>
<td>Princess Place Dr &amp; 30th St Crossing Improvement</td>
<td>Crosswalk improvements would provide safer access across this intersection which is served by the highest ridership route (101) and has been the site of 30.5 pedestrian crashes.</td>
<td></td>
</tr>
<tr>
<td>BP-786</td>
<td>Vanessa Lacer</td>
<td>3rd St &amp; Brunswik Street Crossing Improvement</td>
<td>Crosswalk improvements would allow safe passage from the downtown business district to the new Downtown Transit Center (to be located at North 3rd and Campbell St)</td>
<td></td>
</tr>
<tr>
<td>BP-849</td>
<td>Patrick Boykin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP-812</td>
<td>Patrick Boykin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP-852</td>
<td>Patrick Boykin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP-179/209</td>
<td>Carol Stein</td>
<td>Hampstead Bypass Path</td>
<td>A multi-use Path following an existing powerline easement. Increased population in Pender County will benefit from a section of the county dedicated to exercise and avoids the US-17 business routings.</td>
<td></td>
</tr>
<tr>
<td>BP-182</td>
<td>Shawn Spencer</td>
<td>Apache Trail MUP</td>
<td>Creates a way to get from Mohican Tr to Navaho Tr without going on Masonboro Loop. Links with BP-275 and BP-165 for safe way from Masonboro Loop to College Ave and to schools/new library</td>
<td></td>
</tr>
<tr>
<td>BP-183</td>
<td>Al Schroetel</td>
<td>Cape Fear River Crossing</td>
<td>Link with BP-268 to permit safe and convenient travel for cyclists and pedestrians between Leland / Navassa and Wilmington</td>
<td></td>
</tr>
<tr>
<td>Staff Notes</td>
<td>Project</td>
<td>Rationale</td>
<td></td>
<td></td>
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<td>------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DA Project</td>
<td>Clarendon Ave MUP</td>
<td>CB Ped Plan, Application for FY 2019 TASA-DA Funding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DA Project</td>
<td>Belville Elementary MUP</td>
<td>TIP: U-5527E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DA Project</td>
<td>College Rd and Holly Tree Ped Crossing</td>
<td>TIP: U-5534Q</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DA Project</td>
<td>Rice Hope MUP</td>
<td>TIP: U-5534V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018-2027 STIP</td>
<td>S. 17th Street MUP</td>
<td>TIP: EB-5600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018-2027 STIP</td>
<td>Peachtree Avenue Bicycle Lane</td>
<td>TIP: EB-5719</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project #</td>
<td>Project Name</td>
<td>Project Type</td>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------</td>
<td>--------------</td>
<td>------</td>
<td>----</td>
</tr>
<tr>
<td>BP-1</td>
<td>5th Ave Bike Lane</td>
<td>On Street Bike Lane</td>
<td>Eramell Street</td>
<td>Greenfield Lake Park</td>
</tr>
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<td>Stappo Loop Rd SE</td>
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<td>Cape Harbour Dr</td>
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</table>

Legend:
- **BP-** Project Code
- **MUP** Municipal Use Plan
- **US** United States
- **WMPO** Wake Metropolitan Planning Organization
- **NHC** New Hanover County
- **Leland** Leland
- **Porter's Neck** Porter's Neck
- **Bicycle Lanes** Bicycle Lanes
- **Bicycle Lanes/Sharrows** Shoulder Bicycle Lanes/Sharrows
- **Sharrows** Sharrows
- **Bike/Ped Bridge** Bike/Ped Bridge
- **Bike/Ped Improvements** Bike/Ped Improvements
- **MHP** Municipal Highway Plan
- **Porter’s Neck Plan** Porter’s Neck Plan
- **Pender County Collector Street Plan** Pender County Collector Street Plan
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Multi-Use Paths

A multi-use path (also known as a greenway or shared-use path) allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles. Path facilities can also include amenities such as lighting, signage, and fencing (where appropriate).

Key features of multi-use paths include:

- Frequent access points from the local road network.
- Directional signs to direct users to and from the path.
- A limited number of at-grade crossings with streets or driveways.
- Terminating the path where it is easily accessible to and from the street system.
- Separate treads for pedestrians and bicyclists when heavy use is expected.

This Section Includes:

- General Design Practices
- Trails in River and Utility Corridors
- Trails in Abandoned Rail Corridors
- Trails in Existing Active Rail Corridors
- Shared Use Paths along Roadways
- Natural Surface Trails
- Boardwalks
- Trail Bridges
- Local Neighborhood Accessways
Multi-Use Paths

General Design Practices

Description
Multi-use paths can provide a desirable facility, particularly for recreation, and users of all skill levels preferring separation from traffic. Bicycle paths should generally provide directional travel opportunities not provided by existing roadways.

Guidance

Width
• 8 feet is the minimum allowed for a two-way path and is only recommended for low traffic situations or under certain design constraints.
• 10 feet is recommended in most situations and will be adequate for moderate to heavy use.
• 12 feet is recommended for heavy use situations with high concentrations of multiple users. A separate track (5’ minimum) can be provided for pedestrian use.

Lateral Clearance
• A 2 foot or greater shoulder on both sides of the path should be provided. An additional foot of lateral clearance (total of 3’) is required by the MUTCD for the installation of signage or other furnishings.
• Where there is not enough shoulder to meet off-sets at the top of a slope, consider the use of dense shrubbery (see image at right).

Overhead Clearance
• Clearance to overhead obstructions should be 8 feet minimum, with 10 feet recommended.

Striping
• When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines.
• Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.

Discussion
The AASHTO Guide for the Development of Bicycle Facilities generally recommends against the development of shared use paths along roadways. Also known as “sidepaths”, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding when either entering or exiting the path.

Additional References and Guidelines

Materials and Maintenance
Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.
Multi-Use Paths

Paths in River and Utility Corridors

Guidance
Multi-use paths in utility corridors should meet or exceed general design practices. If additional width allows, wider paths, and landscaping are desirable.

Access Points
Any access point to the path should be well-defined with appropriate signage designating the pathway as a bicycle facility and prohibiting motor vehicles.

Path Closure
Public access to the path may be prohibited during the following events:

- Canal/flood control channel or other utility maintenance activities
- Inclement weather or the prediction of storm conditions

Duke Energy/Progress Energy Transmission ROWs

Description
Utility and waterway corridors often offer excellent path development and bikeway gap closure opportunities. Utility corridors typically include powerline and sewer corridors, while waterway corridors include canals, drainage ditches, rivers, and beaches. These corridors offer excellent transportation and recreation opportunities for bicyclists of all ages and skills.

Discussion
Similar to railroads, public access to flood control channels or canals is undesirable by all parties. Hazardous materials, deep water or swift current, steep, slippery slopes, and debris all constitute risks for public access. Appropriate fencing may be required to keep path users within the designated travel way. Creative design of fencing is encouraged to make the path facility feel welcoming to the user.

Additional References and Guidelines

Materials and Maintenance
Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.
Multi-Use Paths

Paths in Abandoned Rail Corridors

Guidance

Multi-use paths in abandoned rail corridors should meet or exceed general design practices. If additional width allows, wider paths, and landscaping are desirable.

In full conversions of abandoned rail corridors, the subbase, superstructure, drainage, bridges, and crossings are already established. Design becomes a matter of working with the existing infrastructure to meet the needs of a rail-trail.

If converting a rail bed adjacent to an active rail line, see Paths in Existing Active Rail Corridors.

Description

Commonly referred to as Rails-to-Trails or Rail-Trails, these projects convert vacated rail corridors into off-street paths. Rail corridors offer several advantages, including relatively direct routes between major destinations and generally flat terrain.

In some cases, rail owners may rail-bank their corridors as an alternative to a complete abandonment of the line, thus preserving the rail corridor for possible future use.

The railroad may form an agreement with any person, public or private, who would like to use the banked rail line as a trail or linear park until it is again needed for rail use. Municipalities should acquire abandoned rail rights-of-way whenever possible to preserve the opportunity for trail development.

Discussion

It is often impractical and costly to add material to existing railroad bed fill slopes. This results in trails that meet minimum path widths, but often lack preferred shoulder and lateral clearance widths.

Rail-to-trails can involve many challenges including the acquisition of the right of way, cleanup and removal of toxic substances, and rehabilitation of tunnels, trestles and culverts. A structural engineer should evaluate existing railroad bridges for structural integrity to ensure they are capable of carrying the appropriate design loads.

Additional References and Guidelines


Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.
Multi-Use Paths

Paths in Existing Active Rail Corridors

Guidance

Multi-use paths in utility corridors should meet or exceed General Design Practices. If additional width allows, wider paths, and landscaping are desirable.

If required, fencing should be a minimum of 5 feet in height with higher fencing usual next to sensitive areas such as switching yards. Setbacks from the active rail line will vary depending on the speed and frequency of trains, and available right-of-way.

Discussion

Railroads typically require fencing with all rail-with-trail projects. Concerns with trespassing and security can vary with the amount of train traffic on the adjacent rail line and the setting of the bicycle path, i.e. whether the section of track is in an urban or rural setting.

Additional References and Guidelines


Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.
Shared Use Paths Along Roadways

Description
A shared use path allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles.

Along roadways, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding where bicyclists enter or leave the path.

The AASHTO Guide for the Development of Bicycle Facilities generally recommends against the development of shared-use paths directly adjacent to roadways.

Guidance
- 8 feet is the minimum allowed for a two-way bicycle path and is only recommended for low traffic situations or under certain design constraints.
- 10 feet is recommended in most situations and will be adequate for moderate to heavy use.
- 12 feet is recommended for heavy use situations with high concentrations of multiple users such as joggers, bicyclists, rollerbladers and pedestrians. A separate track (5’ minimum) can be provided for pedestrian use.
- Bicycle lanes should be provided as an alternate (more transportation-oriented) facility whenever possible.

Discussion
When designing a bikeway network, the presence of a nearby or parallel path should not be used as a reason to not provide adequate shoulder or bicycle lane width on the roadway, as the on-street bicycle facility will generally be superior to the “sidepath” for experienced bicyclists and those who are cycling for transportation purposes.

Additional References and Guidelines

Materials and Maintenance
Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.
**Multi-Use Paths**

**Natural Surface Trails**

**Guidance**

Trails can vary in width from 18 inches to 6 feet or greater; vertical clearance should be maintained at nine-feet above grade.

Base preparation varies from machine-worked surfaces to those worn only by usage.

Trail surface can be made of dirt, rock, soil, forest litter, or other native materials. Some trails use crushed stone (a.k.a. “crush and run”) that contains about 4% fines by weight, and compacts with use.

Provide positive drainage for trail tread without extensive removal of existing vegetation; maximum slope is five percent (typical).

**Description**

Sometimes referred to as footpaths or hiking trails, the natural surface trail is used along corridors that are environmentally-sensitive but can support bare earth, wood chip, or boardwalk trails. Natural surface trails are a low-impact solution and found in areas with limited development or where a more primitive experience is desired.

Guidance presented in this section does not include considerations for bicycles. Natural surface trails designed for bicycles are typically known as single track trails.

**Discussion**

Trail erosion control measures include edging along the low side of the trail, steps and terraces to contain surface material, and water bars to direct surface water off the trail; use bedrock surface where possible to reduce erosion.

**Additional References and Guidelines**


**Materials and Maintenance**

Consider implications for accessibility when weighing options for surface treatments.
Boardwalks

**Guidance**
- Boardwalk width should be a minimum of 10 feet when no rail is used. A 12 foot width is preferred in areas with average anticipated use and whenever rails are used.
- When the height of a boardwalk exceeds 30”, railings are required.
- If access by vehicles is desired, boardwalks should be designed to structurally support the weight of a small truck or a light-weight vehicle.

**Description**
Boardwalks are typically required when crossing wetlands or other poorly drained areas. They are usually constructed of wooden planks or recycled material planks that form the top layer of the boardwalk. The recycled material has gained popularity in recent years since it lasts much longer than wood, especially in wet conditions. A number of low-impact support systems are also available that reduce the disturbance within wetland areas to the greatest extent possible.

**Discussion**
In general, building in wetlands is subject to regulations and should be avoided. The foundation normally consists of wooden posts or auger piers (screw anchors). Screw anchors provide greater support and last much longer.

**Additional References and Guidelines**

**Materials and Maintenance**
Decking should be either non-toxic treated wood or recycled plastic. Cable rails are attractive and more visually transparent but may require maintenance to tighten the cables if the trail has snow storage requirements.
**Multi-Use Paths**

**Trail Bridges**

**Guidance**

- The clear width of the bridge should allow for 2 ft of clearance on each end of the pathway.
- Bridge deck height should match that of the path surface to provide a smooth transition.
- Bicycle and shared-use paths should include a 54” guard rail where hazardous conditions exist.
- A minimum vertical clearance of 10 ft is desirable for motor vehicle access. Minimum height is 42 inches.
- Maximum opening between railing posts is 6 inches.
- A trail bridge should support 6.25 tons if motor vehicle access is permitted. (AASHTO 2002)

**Description**

Multi-Use Trail bridges (also ‘bicycle/pedestrian bridges’ or ‘footbridges’) are most often used to provide trail access over natural features such as streams and rivers, where a culvert is not an option. The type and size of bridges can vary widely depending on the trail type and specific site requirements. Some bridges often used for multi-use trails include suspension bridges, prefabricated span bridges and simple log bridges. When determining a bridge design for multi-use trails, it is important to consider emergency and maintenance vehicle access.

**Discussion**

If a corridor already contains a bridge such as an abandoned rail bridge, an engineer should be consulted to assess the structural integrity before deciding to remove or reuse it.

All abutment design should be sealed by a qualified structural engineer and all relevant permits should be filed.

**Additional References and Guidelines**

**Multi-Use Paths**

**Local Neighborhood Accessways**

**Guidance**

- Neighborhood accessways should remain open to the public.
- Trail pavement shall be at least 8' wide to accommodate emergency and maintenance vehicles, meet ADA requirements and be considered suitable for multi-use.
- Trail widths should be designed to be less than 8' wide only when necessary to protect large mature native trees over 18” in caliper, wetlands or other ecologically sensitive areas.
- Access trails should slightly meander whenever possible.

**Description**

Neighborhood accessways provide residential areas with direct bicycle and pedestrian access to parks, trails, greenspaces, and other recreational areas. They most often serve as small trail connections to and from the larger trail network, typically having their own rights-of-way and easements.

Additionally, these smaller trails can be used to provide bicycle and pedestrian connections between dead-end streets, cul-de-sacs, and access to nearby destinations not provided by the street network.

**Discussion**

Neighborhood accessways should be designed into new subdivisions at every opportunity and should be required by City/County subdivision regulations.

For existing subdivisions, Neighborhood and homeowner association groups are encouraged to identify locations where such connects would be desirable. Nearby residents and adjacent property owners should be invited to provide landscape design input.

**Additional References and Guidelines**


**Materials and Maintenance**

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.
MULTI-USE PATHS

A multi-use path (also known as a greenway) allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles. Trail facilities can also include amenities such as lighting, signage, and fencing (where appropriate). Key features of multi-use paved trails include:

» Frequent access points from the local road network.

» Directional signs to direct users to and from the trail.

» A limited number of at-grade crossings with streets or driveways.

» Terminating the trail where it is easily accessible to and from the street system.

» Separate treads for pedestrians and bicyclists when heavy use is expected.
MULTI-USE PATHS

Description
Multi-use paths can provide a desirable facility, particularly for recreation, and users of all skill levels preferring separation from traffic. Bicycle trails should generally provide directional travel opportunities not provided by existing roadways.

Guidance

Width
» 10 feet is recommended in most situations and will be adequate for moderate to heavy use.
» 12 feet is recommended for heavy use situations with high concentrations of multiple users. A separate track (5’ minimum) can be provided for pedestrian use.

Lateral Clearance
» A 2 foot or greater shoulder on both sides of the trail should be provided. An additional foot of lateral clearance (total of 3’) is required by the MUTCD for the installation of signage or other furnishings.
» If bollards are used at intersections and access points, they should be colored brightly and/or supplemented with reflective materials to be visible at night.

Overhead Clearance
» Clearance to overhead obstructions should be 8 feet minimum, with 10 feet recommended.

Striping
» When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines.
» Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.

Discussion
Terminate the trail where it is easily accessible to and from the street system, preferably at a controlled intersection or at the beginning of a dead-end street.

Additional References

Materials and Maintenance
Asphalt is the most common surface for bicycle trails. The use of concrete for trails has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of trail users.
MULTI-USE PATHS ALONG ROADWAYS

Description

Multi-use paths along roadways, also called side-paths, are a type of trail that run adjacent to a street.

» Because of operational concerns it is generally preferable to place trails within independent rights-of-way away from roadways. However, there are situations where existing roads provide the only corridors available.

» Along roadways, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding where bicyclists enter or leave the trail.

» The AASHTO Guide for the Development of Bicycle Facilities cautions practitioners of the use of two-way sidepaths on urban or suburban streets with many driveways and street crossings.

In general, there are two approaches to crossings: adjacent crossings and setback crossings, illustrated below.

Adjacent Crossing - A separation of 6 feet emphasizes the conspicuity of riders at the approach to the crossing.

Guidance

» Guidance for sidepaths should follow that for general design practices of multi-use trails.

» A high number of driveway crossings and intersections create potential conflicts with turning traffic. Consider alternatives to sidepaths on streets with a high frequency of intersections or heavily used driveways.

» Where a sidepath terminates special consideration should be given to transitions so as not to encourage unsafe wrong-way riding by bicyclists.

» Crossing design should emphasize visibility of users and clarity of expected yielding behavior. Crossings may be STOP or YIELD controlled depending on sight lines and bicycle motor vehicle volumes and speeds.

Discussion

The provision of a multi-use paved trail adjacent to a road is not a substitute for the provision of on-road accommodation such as paved shoulders or bike lanes, but may be considered in some locations in addition to on-road bicycle facilities. To reduce potential conflicts in some situations, it may be better to place one-way sidepaths on both sides of the street.

Additional References


Materials and Maintenance

Asphalt is the most common surface for bicycle trails. The use of concrete for trails has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of trail users.
**Description**

Sometimes referred to as footpaths, hiking trails or single track trails, the soft surface multi-use trail is used along corridors that are environmentally-sensitive but can support bare earth, wood chip, or boardwalk trails. Natural surface trails are a low-impact solution and found in areas with limited development or where a more primitive experience is desired.

**Guidance**

- Trails can vary in width from 18 inches to 6 feet or greater; vertical clearance should be maintained at nine-feet above grade.
- Mountain bike trails are typically 18-24 inches wide and have compacted bare earth or leaf litter surfacing.
- Base preparation varies from machine-worked surfaces to those worn only by usage.
- Trail surface can be made of dirt, rock, soil, forest litter, or other native materials. Some trails use crushed stone (a.k.a. “crush and run”) that contains about 4% fines by weight, and compacts with use.
- Provide positive drainage for trail tread without extensive removal of existing vegetation; maximum slope is five percent (typical).

**Discussion**

Trail erosion control measures include edging along the low side of the trail, steps and terraces to contain surface material, and water bars to direct surface water off the trail; use bedrock surface where possible to reduce erosion. Due to their narrow width and ability to contour with the natural topography, single-track mountain bike trails typically require the least amount of disturbance and support features of all types of trails.

**Additional References**

IMBA. Managing Mountain Biking. 2007.

**Materials and Maintenance**

Consider implications for accessibility when weighing options for surface treatments.
**BOARDWALKS**

**Description**
Boardwalks are typically required when crossing wetlands or other poorly drained areas. They are usually constructed of wooden planks or recycled material planks that form the top layer of the boardwalk. The recycled material has gained popularity in recent years since it lasts much longer than wood, especially in wet conditions. A number of low-impact support systems are also available that reduce the disturbance within wetland areas to the greatest extent possible.

**Guidance**
- Boardwalk width should be a minimum of 10 feet when no rail is used. A 12 foot width is preferred in areas with average anticipated use and whenever rails are used.
- When the height of a boardwalk exceeds 30”, railings are required.
- If access by vehicles is desired, boardwalks should be designed to structurally support the weight of a small truck or a light-weight vehicle.

**Discussion**
In general, building in wetlands is subject to regulations and should be avoided. The foundation normally consists of wooden posts or auger piers (screw anchors). Screw anchors provide greater support and last much longer.

**Additional References**

**Materials and Maintenance**
Decking should be either non-toxic treated wood or recycled plastic. Cable rails are attractive and more visually transparent but may require maintenance to tighten the cables if the trail has snow storage requirements.
TRAIL/ROADWAY CROSSINGS: ROUTE USERS TO SIGNALIZED CROSSINGS

Description
Trail crossings within approximately 400 feet of an existing signalized intersection with pedestrian crosswalks are typically diverted to the signalized intersection to avoid traffic operation problems when located so close to an existing signal. For this restriction to be effective, barriers and signing may be needed to direct trail users to the signalized crossing. If no pedestrian crossing exists at the signal, modifications should be made.

Guidance
» Trail crossings should not be provided within approximately 400 feet of an existing signalized intersection. If possible, route trail directly to the signal.

Discussion
In the US, the minimum distance a marked crossing can be from an existing signalized intersection varies from approximately 250 to 660 feet. Engineering judgement and the context of the location should be taken into account when choosing the appropriate allowable setback. Pedestrians are particularly sensitive to out of direction travel and jaywalking may become prevalent if the distance is too great.

Additional References

Materials and Maintenance
If a sidewalk is used for crossing access, it should be kept clear of snow and debris and the surface should comply with ADA and PROWAG requirements and guidance.
TRAIL/ROADWAY CROSSINGS: OVERCROSSINGS

Description
Bicycle/pedestrian overcrossings provide critical non-motorized system links by joining areas separated by barriers such as deep canyons, waterways or major transportation corridors. In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist. There are no minimum roadway characteristics for considering grade separation. Depending on the type of facility or the desired user group grade separation may be considered in many types of projects. Overcrossings require a minimum of 17 feet of vertical clearance to the roadway below versus a minimum elevation differential of around 12 feet for an undercrossing. This results in potentially greater elevation differences and much longer ramps for bicycles and pedestrians to negotiate.

Guidance
» 8 foot minimum width, 14 feet preferred. If overcrossing has any scenic vistas additional width should be provided to allow for stopping. A separate 5 foot pedestrian area may be provided for facilities with high bicycle and pedestrian use.
» 10 foot headroom on overcrossing; clearance below will vary depending on feature being crossed.
» Roadway: 17 feet
  Freeway: 18.5 feet
  Heavy Rail Line: 23 feet
» The overcrossing should have a centerline stripe even if the rest of the trail does not have one.

Discussion
Overcrossings for bicycles and pedestrians typically fall under the Americans with Disabilities Act (ADA), which strictly limits ramp slopes to 5% (1:20) with landings at 400 foot intervals, or 8.33% (1:12) with landings every 30 feet. Overcrossings pose potential concerns about visual impact and functional appeal, as well as space requirements necessary to meet ADA guidelines for slope.

Additional References

Materials and Maintenance
Potential issues with vandalism.
Overcrossings can be more difficult to clear of snow than undercrossings.
**Description**

Greenway trail bridges are most often used to provide user access over natural features such as streams and rivers, where a culvert is not an option or the span length exceeds 20 feet. The type and size of bridges can vary widely depending on the greenway trail and specific site requirements. Bridges often used for greenway trails include suspension bridges and prefabricated clear span bridges. When determining a bridge design for greenway trails, it is important to consider emergency and maintenance vehicle access. Greenway trails that are poorly designed through water features can impact wetlands and streams, and become conduits for delivering sediments, nutrients, and pathogens to the watershed. Greenway trails that cross streams can exhibit bank and streambed erosion if not properly constructed.

**Guidance**

- The clear span width of the bridge should include 2 feet of clearance on both ends of the bridge approach for the shoulder.
- Bridge deck grade should be flush with adjacent greenway trail tread elevation to provide a smooth transition.
- Railing heights on bridges should include a 42 inch minimum guard rail, and 48 inches where hazardous conditions exist.
- A minimum overhead clearance of 10 feet is desirable for emergency vehicle access. Maximum opening between railing posts is 4 inches.
- A greenway trail bridge should support 10 tons for 10 foot wide greenway trails, and 20 tons for wider than 10 feet for emergency vehicle access.
- Bridges along greenway trails that allow equestrian use should be designed for mounted unit loadings.
- When crossing small headwater streams, align the crossing as far upstream as possible in the narrowest section of stream channel to minimize impact.
- Greenway trail drainage features should be constructed to manage stormwater before the greenway trail crosses the watercourse.
- All abutment and foundation design should be completed and sealed by a professional structural engineer licensed in the State of North Carolina.
- All greenway trail bridges will require local building permits, stormwater and land disturbance permits, floodplain development permits, and FEMA approval. Length and height of the bridge cords are governed by the width of the floodway and impacts to the base flood elevation of streams.
## APPENDIX B: FUNDING SOURCES

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OVERVIEW
When considering possible funding sources for bicycle and pedestrian projects, it is important to remember that not all construction activities or programs will be accomplished with a single funding source. It will be necessary to consider several sources of funding that together will support full project completion. Funding sources can be used for a variety of activities, including: programs, planning, design, implementation, and maintenance. This appendix outlines the most likely sources of funding from the federal, state, and local government levels as well as from the private and non-profit sectors. Note that this reflects the funding available at the time of writing. Funding amounts, cycles, and the programs themselves may change over time. The town of Leland should utilize WMPO for guidance on available federal funding sources.

FEDERAL FUNDING SOURCES
Federal funding is typically directed through state agencies to local governments either in the form of grants or direct appropriations. Federal funding typically requires a local match of five percent to 50 percent, but there are sometimes exceptions. The following is a list of possible Federal funding sources that could be used to support construction of pedestrian and bicycle improvements.

FIXING AMERICA’S SURFACE TRANSPORTATION (FAST ACT)
In December 2015, President Obama signed the FAST Act into law, which replaces the previous Moving Ahead for Progress in the Twenty-First Century (MAP-21). The Act provides a long-term funding source of $305 billion for surface transportation and planning for FY 2016-2020. Overall, the FAST Act retains eligibility for big programs - Transportation Investments Generating Economic Recovery (TIGER), Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), and Highway Safety Improvement Program (HSIP) - and funding levels between highways and transit.

In North Carolina, federal monies are administered through the North Carolina Department of Transportation (NCDOT) and Metropolitan Planning Organizations (MPOs). Most, but not all, of these programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Federal funding is intended for capital improvements and safety and education programs, and projects must relate to the surface transportation system. For more information, visit: https://www.transportation.gov/fastact

Transportation Alternatives
Transportation Alternatives (TA) is a funding source under the FAST Act that consolidates three formerly separate programs under SAFETEA-LU: Transportation Enhancements (TE), Safe Routes to School (SRTS), and the Recreational Trails Program (RTP). These funds may be used for a variety of pedestrian, bicycle, and streetscape projects including sidewalks, bikeways, multi-use paths, and rail-trails. TA funds may also be used for selected education and encouragement programming such as Safe Routes to School, despite the fact that TA does not provide a guaranteed set-aside for this activity as SAFETEA-LU did.

Funding for the Surface Transportation Block Grant Program (STPBG) will grow from the current level of $819 million per year to $835 million in 2016 and 2017 and to $850 million in 2018 through 2020.

The FAST Act provides $84 million for the Recreational Trails Program. Funding is prorated among the 50 states and Washington D.C. in proportion to the relative amount of off-highway recreational fuel tax that its residents paid. To administer the funding, states hold a statewide competitive process. The legislation stipulates that funds must conform to the distribution formula of 30% for motorized projects, 30% for non-motorized projects, and 40% for mixed...
Shared Roadways

On shared roadways, bicyclists and motor vehicles use the same roadway space. These facilities are typically used on roads with low speeds and traffic volumes, however they can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

Shared roadways employ a large variety of treatments from simple signage and shared lane markings to more complex treatments including directional signage, traffic diverters, chicanes, chokers, and/or other traffic calming devices to reduce vehicle speeds or volumes.

Bicycle Boulevards

Bicycle boulevards are a special class of shared roadways designed for a broad spectrum of bicyclists. They are low-volume local streets where motorists and bicyclists share the same travel lane. Treatments for bicycle boulevards are selected as necessary to create appropriate automobile volumes and speeds, and to provide safe crossing opportunities of busy streets.

This section includes:

- Signed Shared Roadway
- Marked Shared Roadway
Shared Roadways

Signed Shared Roadway

Guidance
Lane width varies depending on roadway configuration. Bicycle Route signage (D11-1) should be applied at intervals frequent enough to keep bicyclists informed of changes in route direction and to remind motorists of the presence of bicyclists. Commonly, this includes placement at:

- Beginning or end of Bicycle Route.
- At major changes in direction or at intersections with other bicycle routes.
- At intervals along bicycle routes not to exceed ½ mile.

Description
Signed Shared Roadways are facilities shared with motor vehicles. They are typically used on roads with low speeds and traffic volumes, however can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

Discussion
Signed Shared Roadways serve either to provide continuity with other bicycle facilities (usually bike lanes) or to designate preferred routes through high-demand corridors. This configuration differs from a Bicycle Boulevard due to a lack of traffic calming, wayfinding, pavement markings and other enhancements designed to provide a higher level of comfort for a broad spectrum of users.

Additional References and Guidelines

Materials and Maintenance
Maintenance needs for bicycle wayfinding signs are similar to other signs, and will need periodic replacement due to wear.
Shared Roadways

Marked Shared Roadway

Guidance

• In constrained conditions, preferred placement is in the center of the travel lane to minimize wear and promote single file travel.

• Minimum placement of SLM marking centerline is 11 feet from edge of curb where on-street parking is present, 4 feet from edge of curb with no parking. If parking lane is wider than 7.5 feet, the SLM should be moved further out accordingly.

Description

A marked shared roadway is a general purpose travel lane marked with shared lane markings (SLM) used to encourage bicycle travel and proper positioning within the lane.

In constrained conditions, the SLMs are placed in the middle of the lane to discourage unsafe passing by motor vehicles. On a wide outside lane, the SLMs can be used to promote bicycle travel to the right of motor vehicles.

In all conditions, SLMs should be placed outside of the door zone of parked cars.

Discussion

Bike Lanes should be considered on roadways with outside travel lanes wider than 15 feet, or where other lane narrowing or removal strategies may provide adequate road space. SLMs shall not be used on shoulders, in designated Bicycle Lanes, or to designate Bicycle Detection at signalized intersections. (MUTCD 9C.07)

This configuration differs from a Bicycle Boulevard due to a lack of traffic calming, wayfinding, and other enhancements designed to provide a higher level of comfort for a broad spectrum of users.

Additional References and Guidelines


Materials and Maintenance

Placing SLMs between vehicle tire tracks will increase the life of the markings and minimize the long-term cost of the treatment.

Additional References and Guidelines


Bicycle Boulevards

Bicycle boulevards are low-volume, low-speed streets modified to enhance bicyclist by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic.

Jurisdictions throughout the country use a wide variety of strategies to determine where specific treatments are applied. While no federal guidelines exist, several best practices have emerged for the development of bicycle boulevards. At a minimum, bicycle boulevards should include distinctive pavement markings and wayfinding signs. They can also use combinations of traffic calming, traffic diversion, and intersection treatments to improve the bicycling environment. The appropriate level of treatment to apply is dependent on roadway conditions, particularly motor vehicle speeds and volumes.

Traffic conditions on bicycle boulevards should be monitored to provide guidance on when and where treatments should be implemented. When motor vehicle speeds and volumes or bicyclist delay exceed the preferred limits, additional treatments should be considered for the bicycle boulevard.

The Ann Street Bicycle Boulevard in Wilmington, NC

The Ann Street Bicycle Boulevard completes the River to the Sea Bikeway from downtown Wilmington to Wrightsville Beach, therefore making the bicycle boulevard accessible to most of Wilmington’s population. According to Census 2000 data, there are about 16,000 who live in close proximity to the Ann Street Bicycle Boulevard.

This section includes:

- Route Selection
- Basic Treatments
- Minor Intersection Treatments
- Major Intersection Treatments
- Offset Intersection Treatments
Bicycle Boulevards

Route Selection

Guidance

- Streets are signed at 25 mph or less to improve the bicycling environment and decrease the risk and severity of crashes.
- Traffic volumes are limited to 3,000 vehicles per day (ideally less than 1,500) to minimize passing events and potential conflicts with motor vehicles.
- Use of streets that parallel major streets can discourage non-local motor vehicle traffic without significantly impacting motorists.
- Use of streets where a relatively continuous route for bicyclists exists and/or where treatments can provide wayfinding and improve crossing opportunities at offset intersections.
- Use of streets where bicyclists have right-of-way at intersections or where right-of-way is possible to assign to bicyclists.

In Portland, OR, the bicycle network includes a high density of bicycle boulevards parallel to streets with bike lanes.

Discussion

Bicycle boulevards should form a continuous network of streets or off-street facilities that accommodate bicyclists who are less willing to ride on streets with motorized traffic. Most bicycle boulevards are located on residential streets, though they can also be on commercial or industrial streets. Due to the presence of trucks and commercial vehicles, as well as the need to maintain good traffic flow and retain motor vehicle parking, bicycle boulevards on commercial or industrial streets can tolerate higher automobile speeds and volumes than would be desired on neighborhood streets. Vertical traffic calming can minimize impacts to large vehicles and parking.

Additional References and Guidelines


Materials and Maintenance

Repaving, street sweeping and other maintenance should occur with higher frequency than on other local streets.
Bicycle Boulevards

Basic Treatments

Description

Signs and pavement markings are the minimum treatments necessary to designate a street as a bicycle boulevard. Together, they visibly designate a roadway to both bicyclists and motorists. Signs, and in some cases pavement markings, provide wayfinding to help bicyclists remain on the designated route.

Guidance

Pavement Markings

Place symbols every 250-800 feet along a linear corridor, as well as after every intersection.

On narrow streets where a motor vehicle cannot pass a bicyclist within one lane of traffic, place stencils in the center of the travel lane.

See Marked Shared Roadway guidance for additional information on the use of shared lane markings.

A bicycle symbol can be placed on a standard road sign, along with distinctive coloration.

Signs

See Bikeway Signing for guidance on developing bicycle wayfinding signage. Some cities have developed unique logos or colors for wayfinding signs that help brand their bicycle boulevards.

Be consistent in content, design, and intent; colors reserved by the Manual on Uniform Traffic Devices (MUTCD) for regulatory and warning road signs are not recommended.

Signs can include information about intersecting bikeways and distance/time information to key destinations.

Discussion

Wayfinding signs displaying destinations, distances, and "riding time" can dispel common misperceptions about time and distance while increasing users’ comfort and accessibility to the bicycle boulevard network. Bicycle boulevards frequently include offset intersections or ‘jog’ onto another street. Signs and pavement markings can help bicyclists remain on the route. In addition, fewer businesses or services are located along local streets, and signs inform bicyclists of the direction to key destinations, including commercial districts, transit hubs, schools and universities, and other bikeways.

Additional References and Guidelines

City of Milwaukie. (2009). Milwaukie Bicycle Wayfinding Signage Plan
City of Oakland (2009). Design Guidelines for Bicycle Wayfinding Signage

Materials and Maintenance

Pavement markings should be repainted and signs replaced as needed. Wayfinding signs should be regularly updated with new major destinations and bikeways.
Bicycle Boulevards

Minor Intersection Treatments

Description
Treatments at minor roadway intersections are designed to improve the visibility of a bicycle boulevard, raise awareness of motorists on the cross-street that they are likely to encounter bicyclists, and enhance safety for all road users.

Guidance
• On the bicycle boulevard, the majority of intersections with minor roadways should stop-control cross traffic to minimize bicyclist delay. This will maximize bicycling efficiency.
• Traffic circles are a type of Horizontal Traffic Calming that can be used at minor street intersections. Traffic circles reduce conflict potential and severity while providing traffic calming to the corridor.
• If a stop sign is present on the bicycle boulevard, a second stop bar for bicyclists can be placed closer to the centerline of the cross street than the motorists’ stop bar to increase the visibility of bicyclists waiting to cross the street.
• Curb extensions can be used to move bicyclists closer to the centerline to improve visibility and encourage motorists to let them cross.

Discussion
Stop signs increase bicycling time and energy expenditure, frequently leading to non-compliance by bicyclists and motorists, and/or use of other less desirable routes. Bicycle boulevards should have fewer stops or delays than other local streets. A typical bicycle trip of 30 minutes can increase to 40 minutes if there is a STOP sign at every block (Berkeley Bicycle Boulevard Design Tools and Guidelines). If several stop signs are turned along a corridor, speeds should be monitored and traffic-calming treatments used to reduce excessive vehicle speeds on the bicycle boulevard.

Additional References and Guidelines
City of London Transport for London. Advanced stop lines (ASLS) background and research studies.

Materials and Maintenance
Vegetation in traffic circles and curb extensions should be regularly trimmed to maintain visibility and attractiveness. Repaint bicycle stop bars as needed.
**Bicycle Boulevards**

### Major Intersection Treatments

**Description**

The quality of treatments at major street crossings can significantly affect a bicyclist’s choice to use a bicycle boulevard, as opposed to another road that provides a crossing treatment.

**Guidance**

- **Bike boxes** increase bicyclist visibility to motorists and reduce the danger of right “hooks” by providing a space for bicyclists to wait at signalized intersections.
- Median islands provided at uncontrolled intersections of bicycle boulevards and major streets allow bicyclists to cross one direction of traffic at a time as gaps in traffic occur.
- **Hybrid Beacons, active warning beacons** and **bicycle signals** can facilitate bicyclists crossing a busy street on which cross-traffic does not stop.
- Select treatments based on engineering judgment; see National Cooperative Highway Research Program (NCHRP) Report # 562 Improving Pedestrian Safety at Unsignalized Crossings (2006) for guidance on appropriate use of crossing treatments. Treatments are designed to improve visibility and encourage motorists to stop for pedestrians; with engineering judgement many of the same treatments are appropriate for use along bicycle boulevards.

**Discussion**

Bicycle boulevard retrofits to local streets are typically located on streets without existing signalized accommodation at crossings of collector and arterial roadways. Without treatments for bicyclists, these intersections can become major barriers along the bicycle boulevard and compromise safety.

**Additional References and Guidelines**

Federal Highway Administration. (2004). Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations. FHWA-RD-04-100

**Materials and Maintenance**

Maintain signs, markings, and other treatments and replace as needed. Monitor intersections for bicyclist delay to determine if additional treatments are warranted.
Bicycle Boulevards

Offset Intersection Treatments

Description
Offset intersections can be challenging for bicyclists who are required to briefly travel along the busier cross street in order to continue along the bicycle boulevard.

Guidance
- Appropriate treatments depend on volume of traffic including turning volumes, traffic speeds and the type of bicyclist using the crossing.
- **Contraflow Bike Lanes** allow bicyclists to travel against the flow of traffic on a one-way street and can improve bicycle boulevard connectivity.
- Bicycle left-turn lanes can be painted where a bicycle boulevard is offset to the right on a street that has sufficient traffic gaps. Bicyclists cross one direction of traffic and wait in a protected space for a gap in the other direction. The bike turn pockets should be at least 4 feet wide, with a total of 11 feet for both turn pockets and center striping.
- **Short Bike Lanes** on the cross street assist with accessing a bicycle boulevard that jogs to the left. Crossing treatments should be provided on both sides to minimize wrong-way riding.
- **Cycle Track** can be provided on one side of a busy street. Bicyclists enter the cycle track from the bicycle boulevard to reach the connecting segment of the bicycle boulevard. This maneuver may be signalized on one side.

Discussion
Because bicycle boulevards are located on local streets, the route is often discontinuous. Wayfinding and pavement markings assist bicyclists with remaining on the route.

Additional References and Guidelines

Materials and Maintenance
Paint can wear more quickly in high traffic areas or in winter climates. Facilities should be cleared of snow through routine snow removal operations.
**Separated Bikeways**

Designated exclusively for bicycle travel, separated bikeways are segregated from vehicle travel lanes by striping, and can include pavement stencils and other treatments. Separated bikeways are most appropriate on arterial and collector streets where higher traffic volumes and speeds warrant greater separation.

Separated bikeways can increase safety and promote proper riding by:

- Defining road space for bicyclists and motorists, reducing the possibility that motorists will stray into the bicyclists’ path.
- Discouraging bicyclists from riding on the sidewalk.
- Reducing the incidence of wrong way riding.
- Reminding motorists that bicyclists have a right to the road.

**This section includes:**

- Shoulder Bikeway
- Bike Lane with No On-Street Parking
- Bike Lane Adjacent to On-Street Parking
- Buffered Bike Lane
Shoulder Bikeways

**Guidance**

- If 4 feet or more is available for bicycle travel, the full bike lane treatment of signs, legends, and an 8" bike lane line would be provided.
- If it is not possible to meet minimum bicycle lane dimensions, a reduced width paved shoulder can still improve conditions for bicyclists on constrained roadways. In these situations, a minimum of 3 feet of operating space should be provided.

**Description**

Typically found in less-dense areas, shoulder bikeways are paved roadways with striped shoulders (4'+) wide enough for bicycle travel. Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway. Shoulder bikeways should be considered a temporary treatment, with full bike lanes planned for construction when the roadway is widened or completed with curb and gutter. This type of treatment is not typical in urban areas and should only be used where constraints exist.

**Discussion**

A wide outside lane may be sufficient accommodation for bicyclists on streets with insufficient width for bike lanes but which do have space available to provide a wider (14'-16') outside travel lane. Consider configuring as a marked shared roadway in these locations.

Where feasible, roadway widening should be performed with pavement resurfacing jobs, but not exceeding desirable bike lane widths.

**Additional References and Guidelines**


**Materials and Maintenance**

Paint can wear more quickly in high traffic areas or in winter climates. Shoulder bikeways should be cleared of snow through routine snow removal operations.
Separated Bikeways

Bike Lane with No On-Street Parking

Guidance

- 4 foot minimum when no curb and gutter is present.
- 5 foot minimum when adjacent to curb and gutter or 3 feet more than the gutter pan width if the gutter pan is wider than 2 feet.
- 7 foot maximum width for use adjacent to arterials with high travel speeds. Greater widths may encourage motor vehicle use of bike lane. See buffered bicycle lanes when a wider facility is desired.

Description

Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signage. The bike lane is typically located on the right side of the street, between the adjacent travel lane and curb, and is used in the same direction as motor vehicle traffic.

A bike lane width of 7 feet makes it possible for bicyclists to ride side-by-side or pass each other without leaving the bike lane, thereby increasing the capacity of the lane.

Discussion

Wider bicycle lanes are desirable in certain situations such as on higher speed arterials (45 mph+) where use of a wider bicycle lane would increase separation between passing vehicles and bicyclists. Appropriate signing and stenciling is important with wide bicycle lanes to ensure motorists do not mistake the lane for a vehicle lane or parking lane. Consider Buffered Bicycle Lanes when further separation is desired.

Additional References and Guidelines


Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.
Separated Bikeways

**Bike Lane Adjacent to On-Street Parallel Parking**

**Guidance**
- 12 foot minimum from curb face to edge of bike lane.
- 14.5 foot preferred from curb face to edge of bike lane.
- 7 foot maximum for marked width of bike lane.
Greater widths may encourage vehicle loading in bike lane. See *buffered bicycle lanes* when a wider facility is desired.

**Description**
Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signage. The bike lane is located adjacent to motor vehicle travel lanes and is used in the same direction as motor vehicle traffic. Bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, road edge or parking lane.

Many bicyclists, particularly less experienced riders, are more comfortable riding on a busy street if it has a striped and signed bikeway than if they are expected to share a lane with vehicles.

**Discussion**
Bike lanes adjacent to on-street parallel parking require special treatment in order to avoid crashes caused by an open vehicle door. The bike lane should have sufficient width to allow bicyclists to stay out of the door zone while not encroaching into the adjacent vehicular lane. Parking stall markings, such as parking “Ts” and double white lines create a parking side buffer that encourages bicyclists to ride farther away from the door zone.

**Additional References and Guidelines**

**Materials and Maintenance**
Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.
**Buffered Bike Lane**

**Guidance**

- Where bicyclist volumes are high or where bicyclist speed differentials are significant, the desired bicycle travel area width is 7 feet.
- Buffers should be at least 2 feet wide. If 3 feet or wider, mark with diagonal or chevron hatching. For clarity at driveways or minor street crossings, consider a dotted line for the inside buffer boundary where cars are expected to cross.

**Description**

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes are allowed as per MUTCD guidelines for buffered preferential lanes (section 3D-01).

Buffered bike lanes are designed to increase the space between the bike lane and the travel lane or parked cars. This treatment is appropriate for bike lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic.

**Discussion**

Frequency of right turns by motor vehicles at major intersections should determine whether continuous or truncated buffer striping should be used approaching the intersection. Commonly configured as a buffer between the bicycle lane and motor vehicle travel lane, a parking side buffer may also be provided to help bicyclists avoid the ‘door zone’ of parked cars.

**Additional References and Guidelines**


**Materials and Maintenance**

Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.
The Town should allow alleys for vehicular and service access in pedestrian-oriented residential developments. The frontage streets in these types of developments should be designed to be pedestrian and bicyclist-friendly. Features such as medians, street trees, traffic calming techniques and devices, sidewalks, and bicycle facilities should be incorporated into the frontage street designs. Other features, such as bicycle-friendly inlet grates and adequate lighting, should also be utilized.

### 3.3 FACILITIES

As discussed above the Town cannot rely solely on new developments to provide bicycle facilities. These policies must be accompanied by an investment by the Town in bicycle facilities and connections. Given the proximity of the Town of Leland with the Towns of Belville and Navassa and the rate at which the Town of Leland is expanding into Brunswick County, coordination with adjoining communities, the County, regional planning agencies, and NCDOT is of paramount importance to ensure that future bicycle facility plans are compatible.

Detailed cost estimates are provided in Appendix D and can be recalculated at a later date if desired, utilizing updated unit cost prices.

**Loops**

To provide safe, usable, and attractive bicycle facilities, the Town of Leland should strive to develop and promote the following routes inside and immediately adjacent to the Town. These routes are shown on Figure 3.1. Please note that detailed cost estimates are included in Appendix D.

1. Village Road Loop (3.4 miles)
   a. Navassa Road
   b. Village Road
   c. Old Mill Road

This loop would provide access to the Town Hall and its recreation opportunities, the Senior Center, Leland Community Park, and commercial areas on Village Road. Access to the planned non-motorized boat access at Appleton Way and the off-road bicycle facilities in Navassa located along Old Mill Road north of Leland would be provided. Improvements needed on this Loop are primarily related to the provision of a four-foot wide paved shoulder on Navassa Road and Old Mill Road suitable for bicycle use, and the currently planned multi-use path on Village Road (TIP R-4063). One current issue is the non-bike-friendly bridge on Old Mill Road, but this is currently planned to be replaced as part of project B-4928. However, the newly constructed bridge on Navassa Road over Sturgeon Creek only provides a three-foot offset and insufficient railing height, which may necessitate the placement of Share the Road signs at this location, as cyclists may need to enter the travel lane at this location. The completion of this Loop will require coordination with Brunswick County and the Town of Navassa. Approximate in-town cost – $1,300,000.00
2. Old Leland Loop (3.61 miles)
   a. Village Road
   b. Wayne Street
   c. Proposed New Connection between Wayne Street and Royal Street
   d. Royal Street
   e. Rampart Street
   f. Old Fayetteville Road
   g. Lossen Road
   h. Town Hall Drive

This Loop would provide travel around the core area of Leland, commonly known as “Old Leland” and would provide access to the commercial areas around Village Road, the Town Hall campus, and North Brunswick High School. The completion of this loop depends heavily on the construction of a connector (shown of Figure 3.5) between Village Road and Old Fayetteville Road that must traverse Sturgeon Creek via a bridge which could potentially be a significant cost and permitting constraint, as well as the planned improvements to Village Road as part of R-4063. A four-foot wide paved shoulder suitable for bicycle use is needed along Old Fayetteville Road, coupled with the multi-use path on Village Road planned as part of R-4063. The remaining roadways carry small volumes of traffic and should accommodate cyclists with their cross section. Approximate cost for this loop is approximately $1,900,000.00, which includes the construction of a wooden bridge to serve as the connector. This cost includes improvements along Village Road, which could be incorporated into the costs for the Village Road Loop.

3. Cedar Hill Loop (0.76 miles)
   a. Cedar Hill Road
   b. Mt. Misery Road
   c. Old Mill Road

While this Loop lies almost exclusively outside of the Town boundaries, many cyclists have indicated that this is an excellent bicycle route. The Town should encourage Brunswick County, NCDOT, and the Town of Navassa to improve the facilities by providing 4’ paved shoulders on this loop and to incorporate this loop with the Village Road Loop and Old Lanvale Road. Special concerns for this loop include the need for rubberized flangeway fillers at the railroad crossings on Mt. Misery Road and Village Road (Village Road may require additional shoulders to allow cyclists to cross the railroad tracks at a 90 degree angle) and the presence of ditches in several locations which hinder the ability to provide adequate shoulders. TIP project R-4063 is located on this route. Approximate cost in-town for paved shoulders is approximately $300,000.00.

4. Chappell Loop (5.34 miles)
   a. Blackwell Road
   b. NC 133 (River Road)
   c. Chappell Loop Road
   d. Various Neighborhood Roads
This Loop connects central Leland with the Brunswick River Park and would compliment the park by providing a bicycle route near the park facilities and includes the provision of wide paved shoulders on NC 133. If possible, a connection should be made between North Olde Towne Wynd and Night Harbor Drive to create a larger Loop as shown on Figure 3.6. Coordination with Brunswick County and the Town of Belville will be needed as this loop lies almost exclusively in their jurisdictions. The approximate cost for this loop (which includes the connection between North Olde Towne Wynd and Night Harbor Drive) is $2,000,000.00.

5. Green Hill Loop (1.91 miles)
   a. Green Hill Road
   b. Crabapple Road
   c. Cherry Tree Road

This Loop will provide access to the Town Creek District Park. The Town of Leland should encourage the County and NCDOT to improve these roadways to accommodate paved shoulders where feasible. The approximate cost for this loop is $700,000.00.

**Grandiflora / Pine Harvest / Palm Ridge Roads**

Many cyclists have indicated that these roadways are excellent cycling routes. These roadways are very important to non-motorized mobility in the area, as they allow for north-south travel through a significant portion of the Town on roadways that carry substantially less volume than Lanvale Road. While sensitivity should be given to placing signage in residential areas, these routes should be indicated in Town mapping.

The success of these roadways as viable bicycle routes depends largely on the ability to provide connections to other areas. If a connection can be provided between Grandiflora Drive and Timber Lane, as discussed on pg 3-12 and shown in Figure 3.7, access would be opened up to the neighborhoods along and north of Old Fayetteville Road. Additionally, providing non-motorized access across the US 17 superstreet will further increase access to the commercial and residential areas to the south of US 17. The costs of the route lay largely in the cost of modifying the US 17 superstreet intersections and provide the connection between Grandiflora Drive and Timber Lane, as due to the low speeds, low vehicle volume, and residential nature of these streets, no bicycle facilities are needed.

The Recommended Bicycle Loops are shown in Figure 3.1.
Cross-Sections

A series of cross-sections were developed as part of this plan, ranging from a rural cross-section (best suited to areas with low density development) to a neighborhood cross-section (designed to accommodate automobiles, pedestrians, and bicyclists in a more densely populated area). These cross-sections are presented in the following figures and are color-coded to the collectors identified on the map. Each color does not represent one cross-section, in fact, an array of cross-sections are presented for each category for flexibility in design, while still maintaining amenities for pedestrians and bicyclists. Each recommended cross section was designed based on the most current version of NCDOT’s Complete Streets Policies. This was done to ensure that each road was built to NCDOT design standards.

Land Use Intensity

A series of cross-sections were developed as part of this plan, ranging from a rural cross-section (best suited to areas with low density development) to a neighborhood cross-section (designed to accommodate automobiles, pedestrians, and bicyclists in a more densely populated area). These cross-sections are presented in the following figures and are color-coded to the collectors identified on the map. Each color does not represent one cross-section, in fact, an array of cross-sections are presented for each category for flexibility in design, while still maintaining amenities for pedestrians and bicyclists. Each recommended cross section was designed based on the most current version of NCDOT’s Complete Streets Policies. This was done to ensure that each road was built to NCDOT design standards.

Cross-Section Categories

The following tables categorize the cross-sections developed as part of this plan. The requirements reflect the minimum cross-section allowed for each roadway designation. The cross-section may be designed to any higher level designation, but must construct collector streets to the minimum standards, in accordance with NCDOT standards and to the specifications provided in the cross-sections. To avoid confusion, a sidewalk is defined as a recommended 5’ facility, a bike lane as a recommended 5’ facility, and a sidepath as a recommended 10’ facility. A sidepath is the equivalent of a multi-use path for the purposes of this plan.

Figure 30 is color-coded to match a cross-section category, indicating which cross-sections categories apply to which proposed collector street. This allows flexibility in determining which cross-section is most appropriate for the context, while ensuring that pedestrian and bicycle amenities are in fact constructed as part of collector streets. It is important to keep in mind that the exact design of each of these cross-sections will ultimately be determined with input from NCDOT, in accordance with the Complete Streets Manual.
<table>
<thead>
<tr>
<th><strong>Baseline</strong></th>
<th>This facility will include:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• two travel lanes and</td>
</tr>
<tr>
<td></td>
<td>• a 2’ to 4’ shoulder</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Baseline with Bike Lanes</strong></th>
<th>This facility will include:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• two travel lanes and</td>
</tr>
<tr>
<td></td>
<td>• two on-road bicycle lanes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Baseline with Sidewalk</strong></th>
<th>This facility will include:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• two travel lanes and</td>
</tr>
<tr>
<td></td>
<td>• a 2’ to 4’ shoulder and</td>
</tr>
<tr>
<td></td>
<td>• sidewalks on one or two sides</td>
</tr>
</tbody>
</table>

**Figure 21: Baseline**
Figure 22: Baseline with Bike Lanes

Figure 23: Baseline with Sidewalk (only required on one side)
Baseline with Sidewalk and Bike Lanes

This facility will include:
• two travel lanes,
• sidewalks on both sides, and
• two on-road bicycle lanes.

Baseline with Sidepath

This facility will include:
• two travel lanes and
• one separated sidepath.

Figure 24: Baseline with Sidewalks and Bike Lanes

Figure 25: Baseline with Sidepath
### Group 3

| Residential with Sidepath (one side) or Sidewalk (both sides) | This facility will include:  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• two travel lanes and</td>
<td>• either a sidepath on one side or</td>
</tr>
<tr>
<td>• either a sidepath on one side or</td>
<td>• sidewalks on both sides.</td>
</tr>
</tbody>
</table>

| Baseline with Sidepath                                       | This facility will include:  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• two travel lanes and</td>
<td>• one separated sidepath.</td>
</tr>
</tbody>
</table>

**Figure 26: Residential with Sidepath (one side) or Sidewalks (both sides)**

**Figure 27: Baseline with Sidepath**
### Residential Median-Divided with Bike Lanes and Sidewalk (both sides)

- a planted median;
- two travel lanes;
- two bike lanes, and
- sidewalks on both sides

### Neighborhood with Bike Lanes and Sidewalks (both sides)

- two travel lanes,
- two bike lanes, and
- sidewalks on both sides.

---

*Figure 28: Residential Median-Divided with Bike Lanes and Sidewalks (both sides)*

*Figure 29: Neighborhood with Bike Lanes and Sidewalks (both sides)*
Recommended Cross Sections

Causeway Drive

The recommended cross section for Causeway Drive is a simple shared lane marking or “sharrow” paired with wide outside lanes. Sharrows are a compromise between dedicated bicycle lanes (which are not feasible without widening or eliminating parking/travel lanes) and unmarked outside lanes (which may require additional space and often still leave motorists unaware of bicycle traffic). Shared lane markings delineate space without setting a hard boundary between vehicle and bicycle areas, and they make all roadway users aware of the potential presence of bicyclists. Placement of the sharrow allows for a door zone on the side of the road with parking and is compliant with the Manual on Uniform Traffic Control Devices (MUTCD).

The planning process also explored a long-term alternatives if improvements to the bridge crossings are completed and if the community decides fewer travel lanes are appropriate for the Town’s vision of community-focused streets. The alternatives presented here include either parking on both sides with normal travel lanes or wide lanes with parking only on the eastbound side. Before lane reduction is implemented a complete traffic study would be necessary.
GENERAL NOTES:

1. USE THE DETAILS ABOVE AND THE FOLLOWING NOTES FOR GUIDANCE IN PLACING CROSSWALK MARKINGS. REFER TO NCDOT ROADWAY STANDARD DRAWINGS, MUTCD AND ADA STANDARDS FOR ADDITIONAL GUIDANCE.

2. THE LOCATION AND TYPE OF CROSSWALK MARKINGS SHOWN ON THE ABOVE DETAILS ARE FOR REFERENCE ONLY. LOCATE CROSSWALK MARKINGS AS SHOWN ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER.

3. THE STANDARD CROSSWALK IS TWO WHITE 8" MIN. TRANSVERSE LINES WITH A 6' MIN. GAP BETWEEN THE LINES. THE HI-VISIBILITY CROSSWALK IS WHITE 24" MAX. WIDE LONGITUDINAL LINES WITH 24" MIN. GAPS BETWEEN LINES, SEE DETAIL 'C'. HI-VISIBILITY CROSSWALKS SHOULD BE A MINIMUM OF 6' WIDE.

4. STOP BARS SHOULD BE PLACED A 4' MIN. IN ADVANCE OF NEAREST CROSSWALK LINE.

5. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL IS 4' MIN.

6. BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4' X 4' MIN. SHALL BE PROVIDED WITHIN THE MARKINGS.

7. SINGLE DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 2' MIN. LONG LOCATED ON EACH SIDE OF THE CURB RAMPS AND WITHIN THE MARKED CROSSING, SEE DETAIL 'B'.

8. CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE TO THE LATEST NCDOT ROADWAY STANDARD DRAWINGS. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR DETAILS OR A SPECIAL DESIGN.
MEMO TO: Jon Nance, PE, Deputy Chief Engineer  
Kevin Lacy, PE, State Traffic Engineer  
Ricky Greene, Jr., PE, Director of Field Support  
Mike Bruff, PE, Manager, Transportation Planning Branch  
Roadway Design Unit Regional Managers  
Richard Hancock, PE, Manager, Project Development & Environmental Analysis

FROM: Debbie Barbour, PE  
Director of Preconstruction

SUBJECT: "Typical" Highway Cross Sections

The comprehensive planning and design "typical" highway cross sections have been updated in response to the Strategic Transportation Investments Law (House Bill 817) and are also consistent with SPOTOnline (used for Project Prioritization), NCDOT’s GIS-based Web Application for providing automated, near real-time prioritization scores and project costs. This guidance establishes design elements that emphasize safety, mobility, complete streets, and accessibility for multiple modes of travel. These "typical" highway cross sections should be used as guidelines for comprehensive transportation planning, project planning and project design activities. The specific and final cross section details and right of way limits for projects will be established through the preparation of the National Environmental Policy Act (NEPA) documentation and through final design preparation.

Please provide this information to your Unit staff, Division staff, and to others as appropriate for their information and immediate implementation. This guidance is intended for State Transportation Improvement Program (STIP) projects and other applicable projects. If you have any questions, please contact one of the Roadway Design Unit Regional Managers, Glenn Mumford, PE, Roger Thomas, PE, or Doug Taylor, PE at 919-707-6200.

DMB/mb

Attachments

cc w/attachments: Mike Holder, PE  
Susan Pullium  
Rodger Rochelle, PE  
Calvin Leggett, PE  
Terry Gibson, PE
Division Engineers
Don Voelker
Tom Childrey
Debbie Collins
Lauren Blackburn
Ron Hancock, PE
Division Design Engineers
“Typical” Highway Cross Sections

2A
2 Lane Undivided with Paved Shoulders
Posted Speed 55 MPH

2B
2 Lanes Undivided
Posted Speed 45 MPH or Less

2C
2 Lane Undivided with Paved Shoulders
Posted Speed 25 - 35 MPH
"Typical" Highway Cross Sections

2D
2 LANE UNDIVIDED WITH PAVED SHOULDERS AND SIDEWALKS
POSTED SPEED 25-45 MPH

2E
2 LANE UNDIVIDED WITH CURB & GUTTER, BIKE Lanes, AND SIDEWALKS
POSTED SPEED 25-45 MPH

2F
2 LANE UNDIVIDED WITH PAVED SHOULDERS AND SIDEWALKS
IN CAMA COUNTIES
POSTED SPEED 25-45 MPH
“Typical” Highway Cross Sections

2G
2 LANE UNDIVIDED WITH CURB & GUTTER, PARKING BOTH SIDES, BIKE LANES, AND SIDEWALKS
POSTED SPEED 25-45 MPH

2H
2 LANE UNDIVIDED WITH CURB & GUTTER, PARKING ONE SIDE, BIKE LANES, AND SIDEWALKS
POSTED SPEED 25-45 MPH

2I
2 LANE DIVIDED (23’ RAISED MEDIAN) WITH CURB & GUTTER AND SIDEWALKS
POSTED SPEED 25-45 MPH
"Typical" Highway Cross Sections

2J

2 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER, BIKE LANES, AND SIDEWALKS
POSTED SPEED 25-45 MPH

2K

2 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH CURB & GUTTER AND SIDEWALKS
POSTED SPEED 25-45 MPH

2L

2 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH CURB & GUTTER, BIKE LANES, AND SIDEWALKS
POSTED SPEED 25-45 MPH
“Typical” Highway Cross Sections

3A
2 LANE WITH TWO WAY LEFT TURN LANE, AND PAVED SHOULDERS
POSTED SPEED 25-55 MPH

3B
2 LANE WITH TWO WAY LEFT TURN LANE, CURB & GUTTER, AND SIDEWALKS
POSTED SPEED 25-45 MPH

3C
2 LANE WITH TWO WAY LEFT TURN LANE, CURB & GUTTER, BIKE LANE, AND SIDEWALKS
POSTED SPEED 25-45 MPH
"Typical" Highway Cross Sections

4A

4 Lane Divided (46' Depressed Median) with Paved Shoulders
Posted Speed 45-70 MPH

4B

4 Lane Divided (23' Raised Median) with Paved Shoulders and Sidewalks
Posted Speed 55-55 MPH

4C

4 Lane Divided (23' Raised Median) with Curb & Gutter, Wide Outside Lanes, and Sidewalks
Posted Speed 35-45 MPH
"Typical" Highway Cross Sections

**4D**

4 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER, WIDE OUTSIDE LANES, BIKE LANES, AND SIDEWALKS

POSTED SPEED 35-45 MPH

**4E**

4 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH PAVED SHOULDERS AND SIDEWALKS

POSTED SPEED 35-55 MPH

**4F**

4 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH CURB & GUTTER, WIDE OUTSIDE LANES, AND SIDEWALKS

POSTED SPEED 35-45 MPH
"Typical" Highway Cross Sections

4G

4 LANE DIVIDED (17'6" RAISED MEDIAN) WITH CURB & GUTTER, BIKE LANES, AND SIDEWALKS
POSTED SPEED 35-45 MPH

5A

4 LANE WITH TWO WAY LEFT TURN LANE, CURB & GUTTER, AND SIDEWALKS
POSTED SPEED 35-45 MPH
"Typical" Highway Cross Sections

6A
6 lane divided (46' depressed median) with paved shoulders
Posted speed 45-70 MPH

6B
6 lane divided (27' median with Jersey barrier) with paved shoulders
Posted speed 55-70 MPH
"TYPICAL" HIGHWAY CROSS SECTIONS

6C

6 LANE FREEWAY (27' MEDIAN WITH JERSEY BARRIER) WITH PAVED SHOULDERS
AND 2 LANE ONE-WAY SERVICE ROADS EACH SIDE
POSTED SPEED 55-70 MPH

6D

6 LANE FREEWAY (4 GENERAL PURPOSE LANES, 2 MANAGED LANES, AND 27' MEDIAN
WITH JERSEY BARRIER) WITH PAVED SHOULDERS
POSTED SPEED 55-70 MPH
“Typical” Highway Cross Sections

6E  6 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER, 
WIDE OUTSIDE LANES, AND SIDEWALKS 
POSTED SPEED 35-45 MPH

6F  6 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH CURB & GUTTER, 
WIDE OUTSIDE LANES, AND SIDEWALKS 
POSTED SPEED 35-45 MPH
"Typical" Highway Cross Sections

**MA**
- Travel Lane: 12' + 4' FS + 6'
- Right of Way: 40' min. additional right of way
- Clear Zone

Multi-Use Path
Adjacent to Right of Way or Separate Pathway

**MB**
- Travel Lane: 11'-12' + 6'
- Additional ROW may be required

Multi-Use Path Adjacent to Curb and Gutter

R/W
Right of Way
Minimum Right of Way Limit
For Placement of 6' Sidewalk
"Typical" Highway Cross Sections

8A
8 LANE DIVIDED (46' DEPRESSED MEDIAN) WITH PAVED SHOULDERS
POSTED SPEED 45-70 MPH

8B
8 LANE DIVIDED (27' MEDIAN WITH JERSEY BARRIER) WITH PAVED SHOULDERS
POSTED SPEED 55-70 MPH
"Typical" Highway Cross Sections

**8E**
8 LANE FREeways (4 General Purpose Lanes, 4 Managed Lanes, and 27" Median with Jersey Barrier) with Paved Shoulders
POSTED SPEED 55-70 MPH

**8F**
8 LANE DIVIDED (23' Raised Median) with Curb & Gutter, and Sidewalks
POSTED SPEED 35-45 MPH
"Typical" Highway Cross Sections

8G
8 Lane Divided (17'-6" Raised Median) with Curb & Gutter, and Sidewalks
Posted Speed 35-45 MPH

10A
10 Lane Divided (27' Median with Jersey Barrier)
With Paved Shoulders
Posted Speed 55-70 MPH
"Typical" Highway Cross Sections

10B  10 LANE FREEWAY (8 GENERAL PURPOSE LANES, 2 MANAGED LANES, AND 27' MEDIAN WITH JERSEY BARRIER) WITH PAVED SHOULDERS
POSTED SPEED 55-70 MPH

10C  10 LANE FREEWAY (6 GENERAL PURPOSE LANES, 4 MANAGED LANES, AND 27' MEDIAN WITH JERSEY BARRIER) WITH PAVED SHOULDERS
POSTED SPEED 55-70 MPH
“Typical” Highway Cross Sections

12A 12 LANE FREEWAY (8 GENERAL PURPOSE LANES, 4 MANAGED LANES, AND 27’ MEDIAN WITH JERSEY BARRIER) WITH PAVED SHOULDERS
POSTED SPEED 55-70 MPH
MEMORANDUM

To: Bicycle and Pedestrian Modal Subcommittee Members  
From: Abby Lorenzo, Senior Transportation Planner  
Date: November 28, 2018  
Subject: Cape Fear Moving Forward 2045 Bicycle and Pedestrian Goals and Objectives  

Rank and Weight Activity

The following goals and objectives have been developed by the Bicycle and Pedestrian Modal Subcommittee for the Cape Fear Moving Forward 2045 Metropolitan Transportation Plan. This activity sheet is to be completed as a committee utilizing the accompanying criteria flowchart handout as a guide.

Bicycle

Rank_____Weight_____% Goal A: Safety, Education, and Enforcement

Objectives:

___ Promote a campaign to educate law enforcement officers, motorists, bicyclists and pedestrians on laws & etiquette of sharing the road

___ Encourage law enforcement efforts to increase cyclist safety

___ Build facilities and traffic engineering solutions that prioritize cycling safety (signage, smart traffic lights, etc.) while considering the nature of adjacent traffic and the presence of any conditions hazardous to cycling (bridge gratings, discontinuous bike lanes, etc)

___ Increase driver education on motoring safely and legally with cyclists

___ Increase cyclist education on riding safely and legally with motorists

___ Contribute to a comprehensive, integrated, and validated reporting system for documenting bicycle (and pedestrian) crash data (including frequency, severity, location, and time of day and atmospheric conditions)

___ Promote the development of laws and ordinances to promote bicyclist safety
Rank_____Weight_____% Goal B: Multimodal Connectivity

**Objectives:**

- Distribute information to increase bike trail and connection awareness through various public and private opportunities.
- Improve connections between bicycling & other modes of transportation (public transportation & ferries)
- Develop programmatic elements (such as increasing the capacity of bicycles on buses & the creation of bicycle amenities at bus stops) to ease the transition between bicycling & public transportation
- Implement a bike share program that is integrated with the fixed-route public transportation network

Rank_____Weight_____% Goal C: Built Environment, Land use, and Connectivity

**Objectives:**

- Build bicycle facilities and remove barriers in areas with high employment density such as medical campuses and retail centers
- Increase bicycling facilities that fall within 1 mile of school campuses
- Increase bicycle connections between parks & residential areas
- Increase bicycle facility connections to grocery stores and resource centers
- Increase connections to existing bicycling facilities including school campuses
- Increase accommodation of older adults, persons with disabilities, young and low-income populations during the design of bicycle facilities and amenities (ie age-friendly design features)
- Build bicycle facilities that allow safe usage of bridges, roundabouts, overpasses and other geographical barriers
- Build bicycle facilities that mitigate barriers in existing built environment
- Build trail connections that fill gaps in the roadway system that will allow for an uninterrupted bicycle route
- Create off-road and recreational trails

Rank_____Weight_____% Goal D: Health

**Objectives:**

- Provide health indicators and data along branded trails
- Designate signed exercise loops for bicycling

Rank_____Weight_____% Goal E: Economic Development

**Objectives:**
Increase bicycle tourism in our region
Increase access and mobility projects targeting identified areas of low-income and minority residents
Incentivize public/private development around biking
Develop sponsorship policies and identify sponsorship opportunities (ie adopt-a-roadway program)
Develop a program to recognize bicycle friendly businesses
Incorporate mobile technology into the trail system
Increase accommodation of major cycling events in facility design

**Pedestrian**

**Rank_____ Weight_____ % Goal A: Safety, Education, and Enforcement**

**Objectives:**

- Increase the number of crosswalks at existing signals, focusing on high traffic areas
- Increase the use of audible pedestrian signals and flashing lights
- Increase driver education specifically related to turning movements and crosswalk compliance
- Promote law enforcement efforts to increase pedestrian safety
- Prioritize pedestrian projects that occur at, or seek to improve the safety of, identified high risk/high crash locations
- Contribute to a comprehensive, integrated, and validated reporting system for documenting bicycle and pedestrian crash data
- Promote roadway and sidewalk design/redesign that increases pedestrian safety (adequate crossing times, medians, street trees, brick crossings, lighting, emergency call boxes, etc.)
- Increase visual cues that prioritize pedestrian safety (traffic calming, “legally required to stop” cones, etc.)

**Rank_____ Weight_____ % Goal B: Transportation Choice**

**Objectives:**

- Improve sidewalk and crosswalk conditions depending on the nature of adjacent traffic
- Evaluate the installation sidewalks and crosswalks based on residential and employment density
- Install crosswalks near bus stops
Increase/Improve sidewalk and crosswalk connections between transit facilities and medical services

**Goal C: Built Environment, Land use, and Connectivity**

**Objectives:**
- Increase pedestrian facilities that fall within 1 mile of school campuses
- Increase pedestrian connections between parks & residential areas
- Increase pedestrian facilities around libraries, community centers/senior centers, courthouses, local government centers
- Increase pedestrian facility connections around grocery stores/farmers markets/resource centers
- Increase connections between existing pedestrian facilities
- Increase direct connections to public transportation and paths of travel from bus stops to surrounding destinations
- Use traffic impact analyses (TIAs) to increase pedestrian connectivity
- Plan for pedestrian facilities with the installation and upgrade of other transportation facilities
- Create trail links that fill gaps between low traffic roadways to allow for pedestrian use while continuing to preserve the low traffic status of those roadways.
- Build pedestrian facilities that mitigate barriers in existing built environment

**Goal D: Health**

**Objectives:**
- Incorporate health statistics and case studies in the promotion of transportation demand management (TDM) programs and wellness programs
- Designate exercise loops for walking

**Goal E: Economic Development**

**Objectives:**
- Create and promote walking tours in our region through initiatives
- Include pedestrian facility design in new developments
- Create sponsorship policies for walking trails and identify sponsorship opportunities
- Develop a program to recognize pedestrian friendly development
- Incorporate mobile technology into the trail system
- Include accommodation of major events in facility design
- Develop downtown pedestrian friendly shopping areas
Goal A: Economic Development  
**Objectives:**
1. Improve commercial aviation service for business travelers
2. Provide freight rail service to ILM *reword as criteria
3. Serve the needs particular to the region’s target industries *reword as criteria
4. Develop aviation infrastructure to encourage additional commercial carrier, general aviation, and freight services

Goal B: Regional Accessibility  
**Objectives:**
1. Provide additional direct flight services to and from business centers and/or hubs *reword as criteria
2. Lower fare costs and maximize market shares for ILM in the region Project accommodates budget airlines at ILM
3. Provide multimodal transportation services to and from ILM to meet the needs of the area’s target industries, such as:
4. Coordinate with roadway network projects that support the development of ILM to include accommodations necessary for truck/rail freight transportation to/from site *reword as criteria
5. Support international cargo operations, utilizing ILM’s free trade zone status

Notes:
- Criteria should be written such that anybody can complete them and come to the same score for each project
- When attempting to turn abstract or vague objectives into criteria think “how can this objective be measured” see objective B2 as an example
MEMORANDUM

To: Bicycle and Pedestrian Advisory Committee
From: Abby Lorenzo, Senior Transportation Planner
Date: November 29, 2018
Subject: WMPO Bicycle and Pedestrian Advisory Committee 2019 Work Plan

The Bicycle and Pedestrian Advisory Committee is responsible for providing the WMPO Board with recommendations with regard to bicycle and pedestrian accommodations. The following work plan outlines the tasks the committee will undertake during 2019.

<table>
<thead>
<tr>
<th>Month</th>
<th>Tasks</th>
</tr>
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</table>
| January| - MTP Project Criteria Development  
          - R2SBR & B2WW Presentations  
          - R2SBR & B2WW Subcommittee assignments  
          - Review recommended station locations for Wilmington bike share |
| February| - Finalize MTP Project Criteria Development  
          - R2SBR & B2WW Progress Update  
          - Fall Bike Ride/Educational Outreach Event discussion |
| March  | - MTP Policy Development  
          - R2SBR & B2WW Progress Update |
| April  | - Presentation on DA Program application and project process  
          - Update on Draft STIP  
          - Discussion on potential “Did you know?” Educational Outreach Campaign |
| May    | No BPAC meeting – River to Sea and Bike to Work Week participation encouraged! |
| June   | - River to Sea recap  
          - Bike to Work Week recap |
<p>| July   | No BPAC meeting |</p>
<table>
<thead>
<tr>
<th>Month</th>
<th>Activities</th>
</tr>
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<tbody>
<tr>
<td>August</td>
<td>• P6.0 Project Submittal Update and Presentation on Process</td>
</tr>
</tbody>
</table>
| September | • Potential “Build a Better Block” Demonstration in partnership with WMPO TDM Program  
           • Potential Fall Bike Ride/Educational Outreach Event                    |
| October   | • Review of Bicycle and Pedestrian Project Database                          |
| November  | • Continued Review of Bicycle and Pedestrian Project Database                
           • 2020 Work Plan and Calendar preparation                                 
           • Nominations for Election of officers for 2020                          |
| December  | • Election of officers for 2020                                             
           • 2020 Calendar review and approval                                       
           • 2020 Work Plan review and approval                                       |

The committee is encouraged to suggest additional topics or activities for the committee to pursue over the course of the year. Staff will make adjustments to the above work plan to accommodate additional requests by the committee.
MEMORANDUM

To: Bicycle and Pedestrian Advisory Committee Members
From: Abby Lorenzo, Senior Transportation Planner
Date: November 29, 2018
Subject: Draft 2019 Meeting Calendar

The following table lists the second Tuesday of the month meeting dates.

<table>
<thead>
<tr>
<th>2019 Bicycle and Pedestrian Advisory Committee Calendar</th>
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<tbody>
<tr>
<td>8-Jan</td>
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<tr>
<td>12-Feb</td>
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<td>12-March</td>
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<td>9-Apr</td>
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<tr>
<td>May - No monthly meeting</td>
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<tr>
<td>Bike Month Events</td>
</tr>
<tr>
<td>11-Jun</td>
</tr>
<tr>
<td>July – No monthly meeting</td>
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<tr>
<td>13-Aug</td>
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<td>10-Sep</td>
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<tr>
<td>8-Oct</td>
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<td>12-Nov</td>
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<td>10-Dec</td>
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