

City of Beacon: Beekman Street Complete Streets Analysis

A. Introduction

The Beacon waterfront is home to several key destinations, including the Metro-North train station, Long Dock Park, the Beacon-Newburgh Ferry dock, the Beacon Farmers Market, and Riverfront Park, as well as a local trail system. However, the waterfront is separated from Main St by a half-mile with a substantial hill, and there is not a direct walking or bicycling route connecting them.

To address this, the City of Beacon requested that the DCTC evaluate ways to improve walking and bicycling access and safety between Main Street and the Beacon train station. The City specifically requested an evaluation of Beekman Street between Route 9D and Red Flynn Drive/Long Dock Park Road. DCTC also evaluated West Main Street and other potential connections.

Improving connections between the train station and Main Street is especially critical given the amount of current and proposed development in the area, including planned transit-oriented development (TOD) around the train station. Our recommendations include new and improved sidewalks, shorter and more visible crosswalks, dedicated street space for bicycles, bicycle parking, and consistent wayfinding signage. Using these tools, the City can make the Beekman Street area safer, more accessible, and more comfortable for everyone, regardless of how they choose to travel.

B. Existing Conditions

We evaluated existing conditions on Beekman St, West Main St, and the train station area in early May, 2017. This included taking measurements and photographs, and observing people using the streets. We also collected background data from the DCTC's traffic count database and other sources. Traffic count reports are provided in the Appendix; see also the Existing Conditions map and Existing Street Sections graphics at the end of this report.

Beekman Street

- Annual Average Daily Traffic volume (AADT): about 5,500 (evenly split northbound/southbound)
 - o Peaks: 6-7 am southbound (downhill); 6-7 pm northbound (uphill)
 - o Heavy vehicles: about 2.5% of traffic
- Speed limit: 30 mph; 85% speed: 36 mph uphill, 37 mph downhill; average speed: 27 mph uphill, 31 mph downhill
- Average slope: 3.5% (ranges from 1.5% to 4.6%)
- Pavement width: 35-36 feet between Route 9D and River St; 33 feet between River St and Railroad Dr; 38 feet between Railroad Dr and Red Flynn Dr.
 - o Travel lanes: typically 12-15 feet adjacent to parking; 12 feet in opposite direction
- On-street parking: train-station permit/metered parking on one side (east between 9D and River St; west south of River St; none south of Railroad Dr)
 - o Marked spaces, 8 feet wide x 21 feet long
- Sidewalks: on both sides between 9D and West Main; on east side only between West Main St and Ferry St; on west side only south of Ferry St.
 - o Typically 5 feet wide; with a 3-foot brick buffer between 9D and a point 300 feet south of West Main St; 5 feet with no buffer south of that point.

- Utilities:
 - o Light poles on the west side, typically about 10 feet behind the curb (some are closer)
 - o Utility poles on the east side, 15-20 feet behind the curb (from 9D to north of West Main St)
 - o Guard rail on the west side; behind sidewalk from 9D to 350 feet south; about 10 feet behind the curb from 200 feet south of West Main St to 130 feet north of River St.

West Main Street

- Annual Average Daily Traffic volume (AADT): about 1,600 (84% westbound)
 - o Peaks: 6-7 am westbound (downhill); 3-4 pm eastbound (uphill)
 - o Heavy vehicles: about 5.5% of traffic
- Speed limit: 25 mph; 85% speed: 34 mph uphill, 36 mph downhill; average speed: 24 mph uphill, 29 mph downhill
- Average slope: 6.6% (ranges from about 4% to more than 9%)
- Pavement width: about 34 feet (24 feet near the train station)
 - o Travel lanes: about 10 feet in areas with parking; wider in areas with no parking
- On-street parking: unmarked, but allowed on both sides in middle segment (from about 330 feet south of Beekman St to the MTA property line south of the auto repair business).
 - o Some restrictions for driveways/intersections
 - o 4 hour limit on weekdays
- Sidewalks: on north side only
 - o 8 feet wide with no buffer between Beekman St and Bank St; 5 feet with a 3-foot grass buffer between Bank St and the MTA property line; 4-6 feet with no buffer in the train station area.
- Utilities:
 - o Utility/light poles on the south side, about 3 feet behind the curb (Beekman St to Bank St)
 - o Utility/light poles on the north side, in sidewalk buffer (River St to train station area)

C. Observations

As part of our fieldwork in May 2017, we observed the condition of existing facilities, people walking, and evidence of ‘desire lines’ (worn paths in the grass, which reflect people’s preference to take the shortest path to their destination). Key observations are listed below.

Infrastructure

1. Sidewalks:

- Sidewalks are typically in good condition, except for some lifting due to tree roots (in particular, north of Ferry St, and north of River St)
- One obstruction was noted – a hydrant in the middle of the Beekman St sidewalk north of River St. In two places, the sidewalk was widened to provide (minimal) clearance around a light pole.

2. Buffers:

- The brick buffer on Beekman St is broken in areas (e.g., on the west side near Route 9D and the east side between High St and West Main St).
- Many sidewalks lack a buffer (most of Beekman St south of West Main St; West Main St north of Bank St).

3. Crosswalks:

- Most of the crosswalks outside of MTA property are standard crosswalks (two parallel lines), rather than high-visibility ladder crosswalks, such as the crosswalk below the MTA stairs.

- Several crosswalks are unnecessarily long, due to their placement.
- Crosswalks in the MTA area are red stamped concrete (faux brick) with two parallel white lines.
- A crosswalk is missing across the upper portion of Municipal Plaza to connect to the path to 9D/Main St.
- A standard crosswalk was marked on Beekman St north of Ferry St after our field observations; however, it lacks a curb ramp on the west side. An In-Street Pedestrian Crossing sign was later placed near the crosswalk.
- Two crosswalks lack ramps: the east side of the Beekman St crosswalk at River St, and the west side of the Beekman St crosswalk at Ferry St.
- Many crosswalk ramps lack detectable warning surfaces.

4. Warning signs

- There are four signs in the City Police parking lot warning pedestrians to look for emergency vehicles.
- The warning signs at the uncontrolled West Main St crossing are non-standard and hard to read, while the uncontrolled crosswalk at River St lacks pedestrian warning signs. The recently-installed In-Street Pedestrian Crossing sign at Ferry St is placed outside of the crosswalk (rather than in the center), and may be prone to damage.
- There is a standard pedestrian crossing warning sign (MUTCD W11-2) at the train station exit, with flashing beacons. However, it was unclear how the beacons were activated; no buttons were present, but it was unclear whether it could detect pedestrians passively.

5. Wayfinding signs

- There are at least four different types and styles of wayfinding signs. Only one has a map, and it is hard to read.

6. Amenities

- There are very few streetscape amenities outside of the train station area. There is no pedestrian-scale lighting, trashcans or bicycle parking racks along Beekman St or West Main St. The only benches we observed were in front of a building on the north side of West Main St. There are trees behind the sidewalk on portions of Beekman St, but no street trees in the sidewalk buffer area.

7. Bicycle Facilities

- There are no bicycle facilities (bike paths or lanes) and no bicycle-related lane markings or signs in the study area. There is limited short-term bicycle parking on the east side of the station near the entrance (wave racks with about 12 spaces), as well as one small rack on the west side, near the ferry dock (about 5 spaces). There are no bike lockers or other long-term bike parking.

Behavior

- 8. Walking:** People walking from Main St to the train station generally cut through the City Police parking lot (using 3 flights of stairs), cut through the grass to Beekman St, cross Beekman St near High St, then cut through the grass to West Main St, and walk down West Main St to the station. This route is reversed for people walking from the station to Main St.

We observed a desire-line trail from the end of Ferry St to Route 9D. We expect that this reflects people who live south of Main St walking on 9D to Ferry St (via the trail), and then to the station via Railroad Dr.

On West Main St, we observed people walking in the street rather than on the sidewalk, possibly because the sidewalk on the western end of the street is relatively narrow.

- 9. *Parking and Walking:*** People who park in the MTA spaces on northern Beekman St tend to access the station via West Main St, as described above. Those who park in the MTA spaces on Beekman St south of West Main St tend to walk to the station via Beekman St, the stairs just north of Ferry St, and Railroad Dr. We observed a desire line in the grass on the west side of Beekman St near the MTA Police building, indicating that some people take the stairs and walk through the grass to their car (if they parked near the MTA building), or walk to River St and the sidewalk on the east side of Beekman St, using the crosswalk at River St.
- 10. *Bicycling:*** The only bicyclists we observed were riding south on Beekman St. They appeared to be on a recreational ride, based on their attire. According to City staff, some bicyclists access the train station on the river side, using Beekman St and Red Flynn Dr. Based on discussions with some residents, local bicyclists often access the station via West Main St and use the overpass to access the platform (this is also evidenced by the number of bikes parked along the fence by the overpass). Others ride to the main entrance (non-river side), and park there, or bring their bike on the train. For the return, some bicyclists use West Main St, either riding a short distance against traffic, using the sidewalk, or walking their bike until the street becomes two-way. Others prefer the less steep hill on Beekman St, and return via Railroad Dr and Beekman St. This can involve navigating heavy traffic leaving the station, particularly at the end of the workday. One resident noted that he rides on the sidewalk from the station to Beekman St to avoid conflicts with vehicle traffic and “crazy” drivers. He also noted that riding uphill on Beekman St is “a little dicey” and more room for bicyclists would be helpful.

D. Route Options

Walking

Since most people prefer to take the shortest path when walking, we measured various route options between the train station area and Main St. A table of each route is included in the Appendix; see also the Walking Route Options map.

For comparison purposes, we assumed that people walk between the central train station building and the southeast corner of Main St and Route 9D. For an accessible route, using sidewalks but no stairs or shortcuts through the grass, walking via Beekman St and walking via West Main St are the same distance (both 0.63 mile). However, the Beekman St route is not fully accessible, as the crossing just north of Ferry St lacks a curb ramp (and is uncontrolled). If using stairs and shortcuts, walking via Beekman St is just 50 feet shorter than West Main St (0.51 mile vs 0.52 mile).

The planned path between Beekman St and Route 9D will include stairs, so it is not an accessible option. Using the MTA stairs and planned path/stairs would be about 225 feet longer than the standard Beekman St ‘shortcuts’ route, which cuts through the Municipal Plaza (0.55 mile vs 0.51 mile). Similarly for West Main St, using the planned path would be longer than the West Main St ‘shortcuts’ route, which cuts through the Municipal Plaza (0.59 mile vs 0.52 mile). However, this planned path (or the planned path and stairs at the end of Ferry St) would be a good option for destinations south of Main St.

If people are able to start or end at the train station overpass, walking via West Main St is by far the shortest route—about 0.40 mile using stairs and shortcuts, and 0.46 mile using the planned path. However, this option is inherently inaccessible because it relies on using the train station overpass.

Based on this analysis and our observations, **we recommend focusing pedestrian improvements on Beekman St,** and considering potential improvements on West Main St. In particular, **improving accessibility** will enable people of all ages and abilities to travel safely between Main St and the train station area. Specific recommendations are listed in Part F below.

Bicycling

Bicyclists are typically willing to take a slightly longer route if it feels safer and more comfortable. The “Level of Traffic Stress” (LTS) is the current state of the practice measurement of bicycle comfort. The LTS is based on a street’s traffic volume and traffic speed, as well as the type of bicycle facility, if one exists. Levels of traffic stress range from 1 to 4. Lower-stress streets have lower speeds, volumes, and fewer lanes, or have separated bike paths or protected bike lanes/cycle tracks. LTS 1 represents streets that are suitable for all ages and abilities; LTS 2 represents streets that most adults can ride on comfortably; LTS 3 represents streets that experienced and confident riders can feel comfortable on; LTS 4 represents streets where only the most fearless riders would feel comfortable. In their current condition, based on the traffic data above, Beekman St would be classified as LTS 3 or 4, while West Main St would be classified as LTS 1 or 2.¹

The LTS methodology explains, “Stress is lower if average daily traffic (ADT) is 3,000 or less **and** no centerline is marked. (Most quiet, local streets have both of these characteristics.) On such streets, cars tend to drive in the middle of the street, moving to the side when meeting an oncoming vehicle. It’s far less stressful sharing a road with cars where the cars are actively sharing the road with each other in the same way.”

Based on existing conditions, West Main St would be the preferred bicycle connection between Main St and the train station. However, a route is only as good as its weakest link—a high stress segment makes the entire route more stressful. Currently, bicyclists need to ride on a short portion of 9D (or cut through the Municipal Plaza) and the northern portion of Beekman St to access West Main St. In addition, Railroad Dr between West Main St and the train station entrance is one-way westbound/southbound. Finally, West Main St has a substantial grade, making the uphill direction difficult for many potential bicyclists. For the West Main St route to be more functional, Railroad Dr should be redesigned to allow eastbound bicycle access, at least from the overpass to West Main St. Longer-term, Railroad Dr could be redesigned to allow two-way bicycle access between West Main St and the main station entrance. This may be feasible in coordination with future redevelopment of the train station area. In the interim, bicyclists may choose to use West Main St to access the station, and return via Beekman St.

We understand that many bicyclists cross Route 9D from Main St and ride through the Municipal Plaza to Beekman St. However, this is not recommended due to potential conflicts with drivers entering and exiting parking spaces, as well as the uncontrolled turn across Beekman St (heading south). Any redesign of the Municipal Plaza property should incorporate a safe bicycle access route, such as a path separate from parking areas.

Based on NYSDOT data, traffic volumes and speeds on Route 9D south of Main St are slightly higher than on Beekman St (approximately 6,500 AADT vs 5,500, and 85% speeds of 37-39 mph, vs 36-37 mph), while volumes and speeds on Route 9D north of Main St are significantly higher (approximately 23,000 AADT and 85% speeds of 40 mph). However, the data for the northern section is based on a count taken just south of I-84, so it is likely that the volume between Main St and Beekman St is substantially lower than NYSDOT’s estimate.

¹ See <http://www.northeastern.edu/peter.furth/research/level-of-traffic-stress/>

Based on the evaluation above, we recommend focusing bicycle infrastructure improvements on Beekman St, with connections to the train station via Railroad Dr and Red Flynn Dr. Longer-term, we recommend pursuing two-way bicycle access along Railroad Dr and a bike path connecting Main St to Beekman St.

E. Bicycle Facility Options

We evaluated the following bicycle facilities, based on recent best practice guidance.² We assumed no changes to the existing roadway widths and no removal of on-street parking. A summary spreadsheet is included in the Appendix.

- **Shared Street/Bicycle Boulevard:** Per guidance from the National Association of City Transportation Officials (NACTO), shared streets work best when target vehicle speeds³ are below 10 mph. However, bicycle boulevards can work on streets with target speeds up to 25 mph and average daily traffic (ADT) up to 1,500, if there are fewer than 50 vehicles per hour in the peak hour and peak direction. Bicycle Boulevards include sharrows (shared lane-use markings) to highlight bicyclists' right to ride in the travel lane, wayfinding signs, and traffic calming treatments.
- **Bicycle Lanes/Buffered Bike Lanes:** Bike lanes provide dedicated on-street space for bicyclists. Per NACTO, bike lanes work best if target speeds do not exceed 25 mph and ADT does not exceed 6,000. Bike lanes should be at least 5 feet wide. Buffered bike lanes include a striped buffer of at least 18 inches between the bike lane and the adjacent travel lane and/or parking lane.
- **Protected Bike Lanes/Cycle Track:** NACTO recommends protected bike lanes (also called cycle tracks) for streets with target speeds above 26 mph or ADT above 6,000. Protected bike lanes are physically separated from the adjacent travel lane by parking, planters, bollards, or a raised curb. Protected bike lanes can be one-way or two-way (on one side of the street). One-way cycle tracks should be at least 5 feet wide with a 3 foot separation from the travel or parking lane, while two-way cycle tracks should be at least 8 feet wide (12 feet is preferred) with a 3 foot separation from the travel or parking lane.
- **Bike Path/Shared-Use Path:** Separated paths, either for bicycles only or shared with pedestrians, work best where there are few intersections or driveways-- some guidance suggests fewer than five per mile. Per NYSDOT guidance, paths should be at least 10 feet wide (12 feet or wider is preferred) and set back at least 5 feet from an adjacent roadway.

A description of our analysis of bicycle facility options for each street follows.

Beekman St: Based on NACTO guidance and current traffic volumes and speeds, the recommended treatment for Beekman St would be a protected bike lane. However, given the road width, this would be feasible in one direction only. There is insufficient width for a two-way protected bike lane (or for two separate bike lanes) unless the on-street parking was removed.

Therefore, we recommend a **bike lane (protected where feasible) in the uphill/northbound direction, and sharrows in the downhill/southbound direction.** A bike lane gives bicyclists dedicated space uphill, when they are

² See the NACTO Urban Bikeway Design Guide at <https://nacto.org/publication/urban-bikeway-design-guide/> and [NACTO's Designing for All Ages & Abilities](https://nacto.org/publication/urban-bikeway-design-guide/designing-ages-abilities-new/) guidance at <https://nacto.org/publication/urban-bikeway-design-guide/designing-ages-abilities-new/>.

³ NACTO defines target speed as the posted or 85th percentile speed, but encourages use of the 95th percentile speed.

traveling significantly slower than motor vehicles, while sharrows encourage them to ‘take the lane’ if needed when they are traveling downhill, at speeds more consistent with motor vehicles. Sharrows should be placed in the center of the ‘effective lane’ (see NYSDOT’s Shared Lane Marking Policy in the Appendix).

From River St to 9D (northbound), there is room for a protected bike lane. It would be located adjacent to the curb, with a striped buffer between it and the parking lane. If the travel lanes were reduced to 10 feet, there would be room for a five-foot bike lane and three-foot buffer adjacent to the 8 foot parking lane. These widths are consistent with NACTO’s guidance (they also recommend a 7-foot bike lane on uphill sections to allow bicyclists to pass each other, but that is infeasible given existing conditions and likely unnecessary). Sharrows would be marked in the southbound travel lane, adjacent to the curb.

At intersections, parking should be limited to improve visibility and allow bicycle access between the bike lane and the side street. Parkers would also need to be educated to look for bicyclists before crossing to the sidewalk. That said, conflicts are less likely here than on a commercial street with on-street parking, given the low turnover of the spaces and the relatively slow speed of bicyclists riding uphill. At the 9D intersection approach, a ‘mixing zone’ (combined bike lane/turn lane) may be needed.⁴ This would require NYSDOT approval.

From Ferry St to River St (northbound), there is room for a conventional five-foot bike lane if travel lanes are narrowed to ten feet (as above). The bike lane would be placed between the curb and the travel lane. Sharrows would be marked in the southbound direction, adjacent to the 8 foot parking lane.

From Red Flynn Dr to Ferry St (northbound), there is room for a buffered bike lane. The buffer would separate the five-foot bike lane from the travel lane. The buffer should be two to three feet, depending on the width of the travel lanes. Sharrows would be marked in the southbound lane/right turn lane to access riverside destinations.

We recommend ten-foot travel lanes to help calm traffic and provide enough bike lane and buffer space for bicyclist comfort. However, 10.5-foot lanes could be used if the City feels wider lanes are needed to accommodate buses, trucks, or other vehicles. In that case, the parking lane would be reduced to 7 feet. Note that this would fall short of NACTO’s recommended combined 11 foot width for the parking lane and buffer for parking-protected bike lanes. A narrower parking lane could also be less comfortable for southbound bicyclists riding next to the parking lane between River St and Railroad Ave, though these spaces have low turnover.

These treatments assume that there will continue to be on-street parking on one side of Beekman St. If the on-street parking were removed, protected bike lanes could be provided in both directions between Ferry St and 9D, with up to three-foot buffers (bollards, curbing, or planters could be used). A two-way protected bike lane would also be possible, but would require careful design treatments at intersections.

West Main St: Based on NACTO guidance and current traffic volumes and speeds, the preferred treatment would be a bike lane, ideally protected, but possibly conventional or buffered. However, there is insufficient width for bike lanes unless on-street parking were removed. As a basic improvement, we recommend **sharrows and signage** on West Main St, connecting to the station entrance in the downhill direction, and at least from the MTA property line to Beekman St in the uphill direction. Longer-term, Railroad Dr could be reconfigured to allow two-way bicycle access between the main station entrance and West Main St (such as with a bicycle path).

⁴ See <https://nacto.org/publication/urban-bikeway-design-guide/intersection-treatments/cycle-track-intersection-approach/> for more details.

Route 9D: Based on NACTO guidance and current traffic volumes and speeds, the preferred treatment would be protected bike lanes or a separate path. However, there is insufficient width for bike lanes. A path on the west side of Route 9D may be feasible, either as part of a redesign of the Municipal Plaza, or wrapping around the Municipal Plaza parking to the north, to connect Main St to Beekman St.

If a path were to be constructed, we suggest considering stop signs on Beekman St to control traffic for bicyclists exiting from the connecting path onto southbound Beekman St. At a minimum, sight distance at that location would need to be evaluated to ensure that exiting bicyclists and approaching drivers have a clear view, and bicycle crossing warning signs installed.

As a basic, interim improvement, **sharrows and signage** could be marked on Route 9D in both directions between Main St and Beekman St. This would require NYSDOT approval. In addition, NYSDOT should improve the traffic signals at the 9D/Main St and 9D/Beekman St intersections to improve detection and timing for bicyclists.

Railroad Dr & Red Flynn Dr: We did not evaluate these streets in detail, but based on estimated roadway widths, it appears that both could accommodate a bike lane on one side of the street if travel lanes were narrowed. To provide consistency with the other recommendations, we suggest a **bike lane in the uphill direction (away from the station), and sharrows in the downhill direction (towards the station).**

A summary of the recommendations are listed in Part F below and shown in the Pedestrian Recommendations map, Bicycle Recommendations map, and Proposed Street Sections at the end of this report.

F. Recommendations

Specific recommendations are outlined below. Priority items are *starred and **bolded**.

A. Pedestrian Access and Safety

Improve access through the Municipal Plaza:

The City should improve pedestrian access and safety through the Municipal Plaza, while also promoting alternate routes, such as the planned path to 9D. As noted above, the ‘shortcut’ routes through the Municipal Plaza are the most direct, and people will likely continue to use them. However, they are not accessible, and walking through the police parking lot presents potential conflicts with vehicles entering and exiting parking spaces.

- Mark a walking path through the parking area to increase drivers’ awareness of pedestrians.
- Mark a high-visibility ladder crosswalk across Municipal Plaza between the stairs at the top and the path to Route 9D.
- Pave/formalize the desire line in the grass at the southwest corner of Beekman St and Municipal Plaza. This appears to include a small piece of Central Hudson property, but the paved path could be aligned to include only City property.

- ***Explore a re-design of the property to provide accessible alternatives to the stairs,** such as the concept shown in the Appendix to the City’s 2007 Comprehensive Plan⁵.

Complete missing connections:

- ***Install a sidewalk on the west side of Beekman St between West Main St and the MTA stairs** (approximately 1,150 feet). This sidewalk should be at least 5 feet wide, and include a 5-foot buffer with street trees where feasible. Based on our observations, at least two light poles (in front of the MTA building, and north of River St), and two hydrants (just south of West Main St, and halfway to River St) would need to be relocated.
- Longer-term, pursue pedestrian access through the MTA Police building parcel, as envisioned in the Comprehensive Plan. The police building is located directly between the train station and Beekman St. Access through this parcel would substantially shorten the walking route between the train station and Beekman St.

Improve Infrastructure:

- Repair sidewalk lifts and cracks through shaving or replacement. Focus in particular on lifts on Beekman St between River St and Ferry St/Railroad Dr.
- Replace the brick buffer on Beekman St with a more durable and stable material, such as stamped concrete, or with grass.
- Remove obstructions or widen the sidewalk around obstructions. Maintain a minimum 3-foot clearance (wider if possible). Specifically:
 - Widen the sidewalk around the hydrant on the east side of Beekman St just north of River St.
 - Check clearance around the pole on the east side of Beekman St just south of River St, and widen if possible.
- On West Main St, consider the following sidewalk improvements as long-term options in coordination with future land use changes (we understand that on-street parking will likely be needed on both sides of the street to serve existing and future development):
 - Widen the 5-foot sidewalk west of Bank St to 8 feet, consistent with the segment east of Bank St, to accommodate increased pedestrian activity.
 - If feasible, install a consistent buffer between the sidewalk and curb for the entire length of the street.

Make Safer Crosswalks:

- ***Stripe all crosswalks with high-visibility white ladder markings** (such as across Municipal Plaza at Beekman St). Avoid using red crosswalks, as they are less visible than white at night.
- ***Install consistent signage for all uncontrolled crosswalks,** such as advance Pedestrian Crossing and Pedestrian Crossing warning signs ([MUTCD](#) sign W11-2; see Section 2C.50). In-Street Pedestrian Crossing

⁵ See the conceptual plan entitled ‘Connecting Beacon’s Main Street with the Hudson River and Railroad Station.’

signs (MUTCD sign R1-6; see Section 2B.12) may be used but often become damaged. Encourage MTA/Metro-North to install consistent signs at uncontrolled crosswalks within their property as well.

- ***Shorten crossings as much as possible to maximize safety and convenience.** Specifically:
 - Crossing Beekman St at Route 9D – Reduce the curb radii and/or re-locate the crosswalk to the west to reduce the crossing length. Reconfigure the ramps to direct people into the crosswalk rather than the center of the intersection.
 - Crossing Beekman St at West Main St – Redesign the crosswalk to be straight instead of diagonal, reducing the crossing distance. This would involve replacing the ramp on the east side.
 - Consider an all-way stop at this intersection to improve safety at the crosswalk (and access from West Main St to Beekman St).
 - Crossing Beekman St at River St – Reduce the curb radius on the west side to shorten the crossing. Add a curb ramp on the east side.
 - Crossing Beekman St at Ferry St/MTA stairs – Upgrade the recently marked crosswalk to a high-visibility ladder crosswalk, install a curb extension on the west side to make pedestrians visible between parked cars and to help pedestrians see oncoming traffic, and construct a curb ramp on the west side of the crosswalk.
 - Crossing the MTA parking lot at Railroad Dr – Work with Metro-North/MTA to realign the diagonal crosswalk to connect directly to the stairs.
 - Install detectable warnings on all curb ramps to alert vision-impaired pedestrians of the transition to the street.
- Mark high-visibility crosswalks on side streets to increase driver awareness of pedestrians. Recommended locations include:
 - Across West Main St at Beekman St (in coordination with the recommended sidewalk on the west side of Beekman St).
 - Across River St at Beekman St (in coordination with the recommended sidewalk on the west side of Beekman St).
 - Across Bank St at West Main St.

The City asked about using raised crosswalks to slow traffic and increase yielding to pedestrians at uncontrolled marked crossings (such as Beekman St at West Main St, River St, and Ferry St/MTA stairs). However, raised crosswalks are typically used at mid-block crossings with very high pedestrian volumes or above-average pedestrian crash rates, and are usually not appropriate on bus routes or segments with steep grades.⁶

Provide Amenities and Wayfinding Signage:

- ***Develop a consistent format for pedestrian wayfinding signs throughout the study area.** Signs should clearly show destinations and recommended walking routes. In particular, provide wayfinding signage to direct people from the train station to Main Street via West Main St, and vice versa (existing signs at the train station direct people via Railroad Dr). New public walking paths/routes should also be promoted with wayfinding signage.

⁶ See http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=7.

- Develop one preferred accessible route, and clearly sign it to assist those with mobility limitations. Until the missing curb ramp is installed on Beekman St north of Ferry St and/or other accessibility improvements are made, the only fully accessible route is via West Main St. However, it has a significant grade.
- Install amenities along Beekman St, West Main St, and other routes as needed, including consistent street trees and pedestrian-scale lighting, as well as trash/recycling cans and benches at key locations.
- Snow plowing: We did not observe conditions during the winter, but understand from some residents that sidewalk plowing could be improved. On Beekman St, snow could be stored in the buffer area (where one exists) or behind the sidewalk. On West Main St, the existing and proposed buffer areas could be used for snow storage. Particular attention should be focused on plowing at curb ramps and crosswalks to maintain accessibility.

B. Bicycle Access and Safety

Beekman St:

- ***In the northbound (uphill) direction, install a buffered bike lane from Red Flynn Dr to Ferry St, a conventional bike lane from Ferry St to River St, and a parking-protected bike lane from River St to 9D.** Reduce the travel lanes to 10 feet to allow room for five-foot bike lanes and three-foot buffers (where feasible).
- Mark sharrows in the southbound (downhill) lane.

West Main St:

- Mark sharrows in both directions between Beekman St and the MTA property line.

Municipal Plaza:

- ***Construct a bicycle path connecting Main St and Beekman St, outside of the parking area.**

Route 9D (these improvements would need to be approved by and coordinated with NYSDOT):

- Mark sharrows between Main St and Beekman St.
- Upgrade the traffic signal detectors at the 9D/Main St and 9D/Beekman St intersections to consistently detect bicycles. This may entail adjusting the detectors' sensitivity, or replacing the loops with a more bicycle-friendly design (such as diagonal quadrupole loops) or technology (such as video detection).⁷ If loop detectors are used, paint bicycle symbols and install signs on each approach to show bicyclists where to position themselves to be detected.⁸ Note that NYSDOT has not yet approved video detection and would have to review any other detection technology prior to installation.

⁷ See Walk Bike Dutchess, Chapter 3, part L for more detail on signal timing for bicyclists.

⁸ See [MUTCD](#) Sections 9C.05 and 9B.13 and Figures 9C-7 and 9B-2 (sign R10-22).

- Adjust the signal timing at the 9D/Main St and 9D/Beekman St intersections to allow sufficient minimum green time, a longer green extension time for bicycles (if possible) and more all-red clearance time if needed.

Railroad Dr:

- Work with MTA to mark sharrows in the downhill direction from Beekman St to the train station, and to provide a bike lane in the uphill direction to Beekman St.
- Work with MTA to mark sharrows in the southbound direction from West Main St to the train station.
- Longer-term, work with MTA to reconfigure Railroad Dr to allow two-way bicycle access between the main station entrance and West Main St.

Red Flynn Dr:

- Mark sharrows in the downhill direction from Beekman St to the train station entrance (river side), and provide a bike lane in the uphill direction from the station to Beekman St.

Provide Bike Route Signage:

- Install bike route guide signs to direct bicyclists to preferred routes between the train station and Main St.⁹

Improve Bicycle Parking:¹⁰

- ***Work with MTA to provide secure long-term bike parking**, such as a bicycle enclosure or a Bike Station, in the station area.¹¹ We recommend long-term parking for at least 70-100 bicycles.
- ***Work with MTA to provide significantly more short-term bike parking**, such as covered bike racks, at both entrances to the station and by the overpass.¹² We recommend short-term spaces for at least 30-50 bicycles.
- Work with other property owners, including the City, to provide short-term bike parking at key destinations (e.g. the farmers market, parks, and commercial buildings), as well as long-term bike parking for employees, commuters, and visitors.

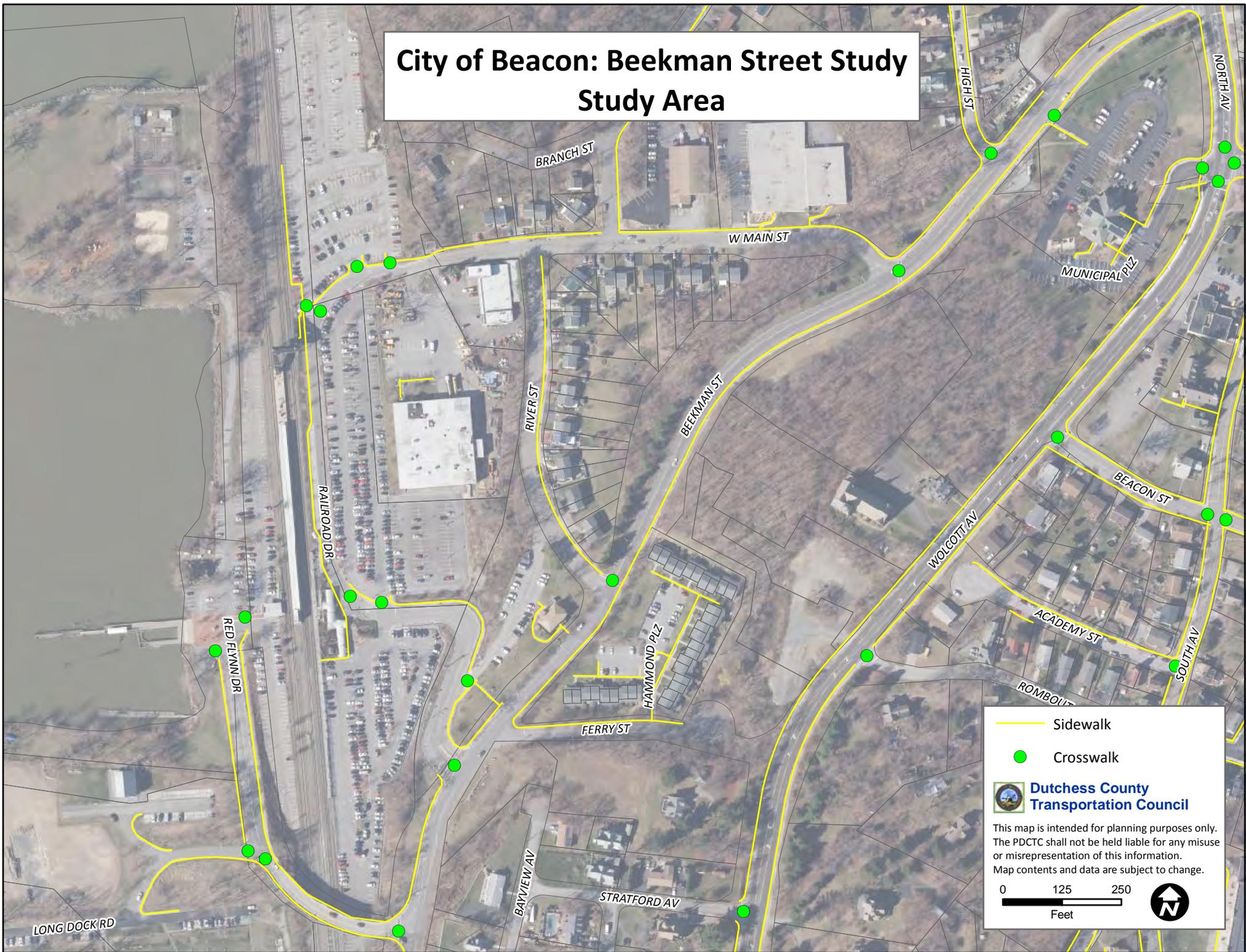
⁹ See Bike Route Guide signs in MUTCD Section 9B.20, Figures 9B-4 and 9B-6

¹⁰ Bicycle parking guidance is available online at <http://www.co.dutchess.ny.us/CountyGov/Departments/TransportationCouncil/17205.htm>.

¹¹ For images of Bicycle Enclosures, see [Google images](#). For Bike Stations, see <http://bikehub.com/caltrain-bike-station/> and <http://home.bikestation.com/>.

¹² See the County's online Bicycle Parking Finder for a current inventory of bike parking: <https://geoaccess.co.dutchess.ny.us/bicycleparking/>

City of Beacon: Beekman Street Study Study Area



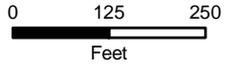
— Sidewalk

● Crosswalk

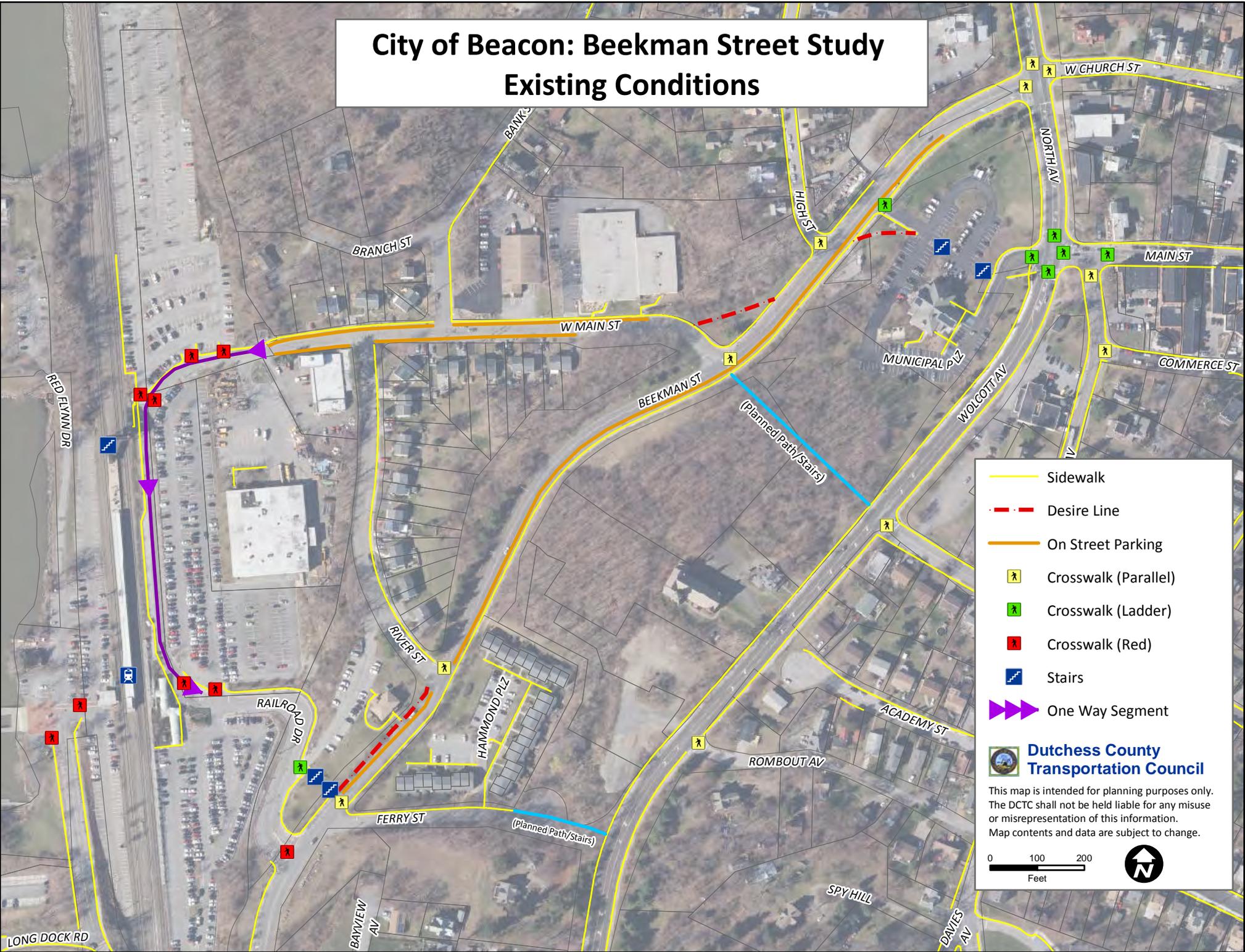


**Dutchess County
Transportation Council**

This map is intended for planning purposes only. The PDCTC shall not be held liable for any misuse or misrepresentation of this information. Map contents and data are subject to change.



City of Beacon: Beekman Street Study Existing Conditions



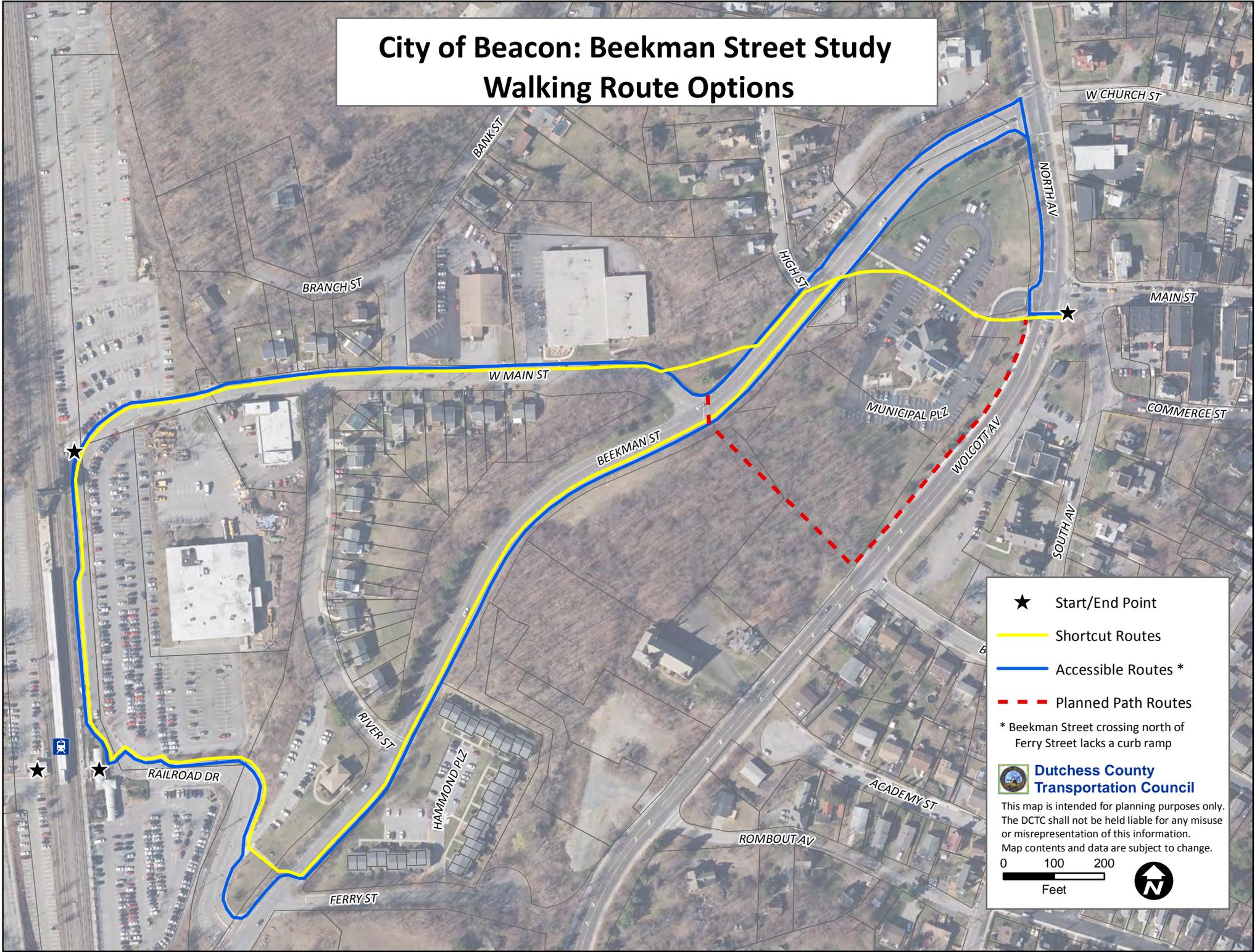
- Sidewalk
- Desire Line
- On Street Parking
- Crosswalk (Parallel)
- Crosswalk (Ladder)
- Crosswalk (Red)
- Stairs
- One Way Segment

Dutchess County Transportation Council

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0 100 200
Feet

City of Beacon: Beekman Street Study Walking Route Options



- ★ Start/End Point
- Shortcut Routes
- Accessible Routes *
- - - Planned Path Routes

* Beekman Street crossing north of Ferry Street lacks a curb ramp

 **Dutchess County
Transportation Council**

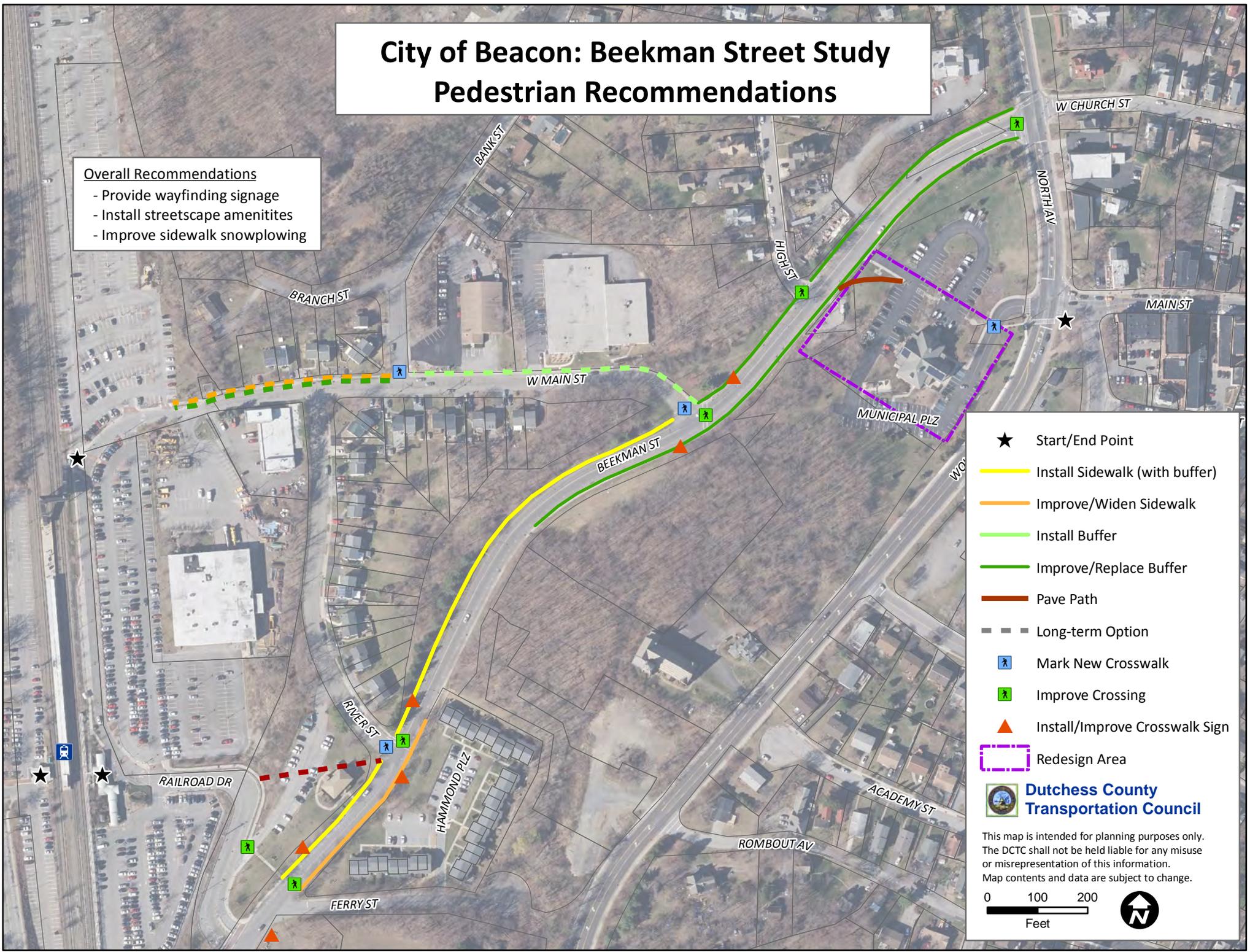
This map is intended for planning purposes only. The DCTC shall not be held liable for any misuse or misrepresentation of this information. Map contents and data are subject to change.

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Feet 

City of Beacon: Beekman Street Study Pedestrian Recommendations

Overall Recommendations

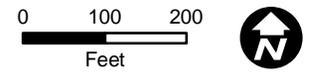
- Provide wayfinding signage
- Install streetscape amenities
- Improve sidewalk snowplowing



- ★ Start/End Point
- Install Sidewalk (with buffer)
- Improve/Widen Sidewalk
- Install Buffer
- Improve/Replace Buffer
- Pave Path
- Long-term Option
- ☒ Mark New Crosswalk
- ☒ Improve Crossing
- ▲ Install/Improve Crosswalk Sign
- ☒ Redesign Area

**Dutchess County
Transportation Council**

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City of Beacon: Beekman Street Study Bicycle Recommendations

Overall Recommendations:

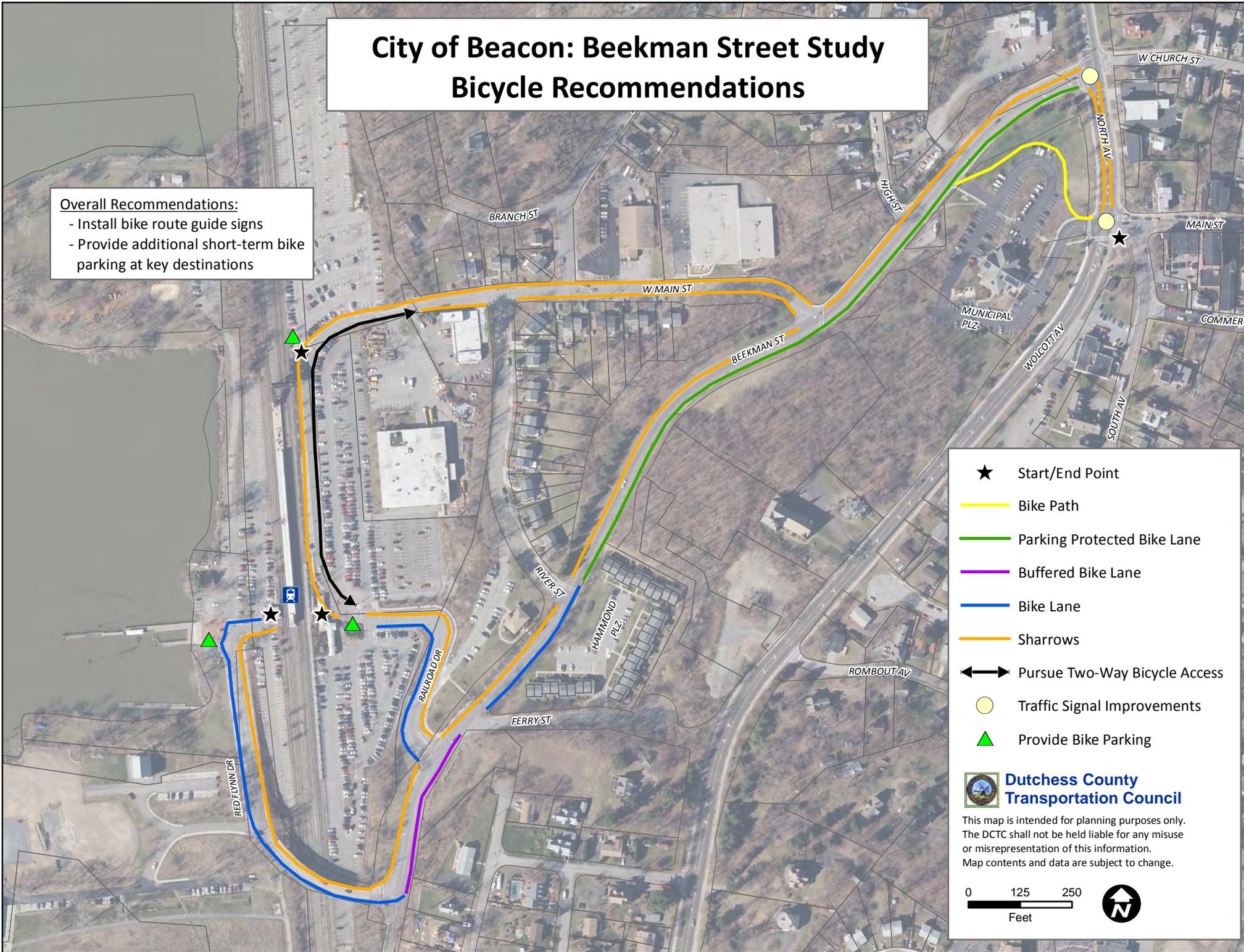
- Install bike route guide signs
- Provide additional short-term bike parking at key destinations

- ★ Start/End Point
- Bike Path
- Parking Protected Bike Lane
- Buffered Bike Lane
- Bike Lane
- Sharrows
- ↔ Pursue Two-Way Bicycle Access
- Traffic Signal Improvements
- ▲ Provide Bike Parking

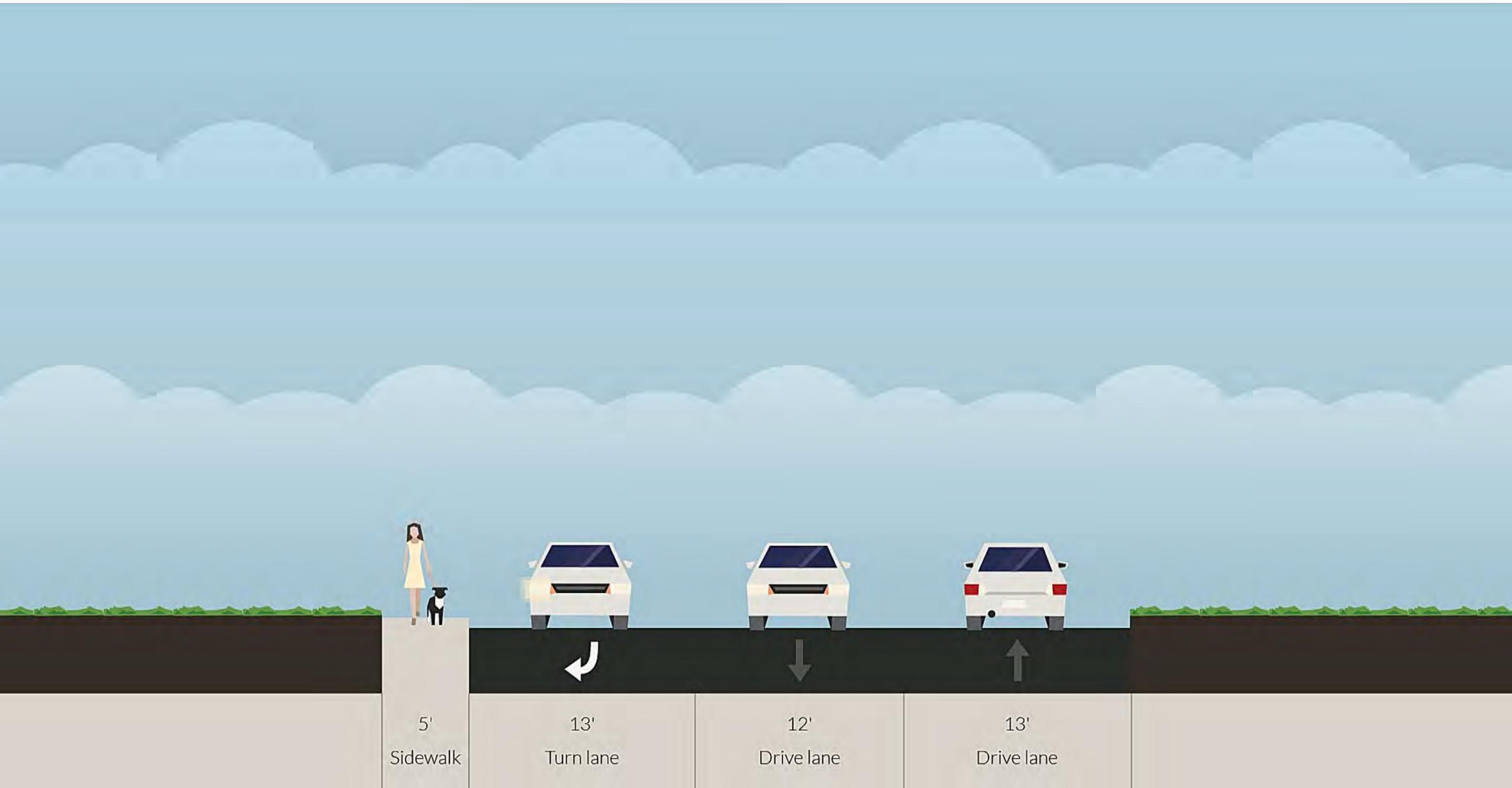
 **Dutchess County
Transportation Council**

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0 125 250
Feet 



Beekman St: Red Flynn-Ferry (existing)



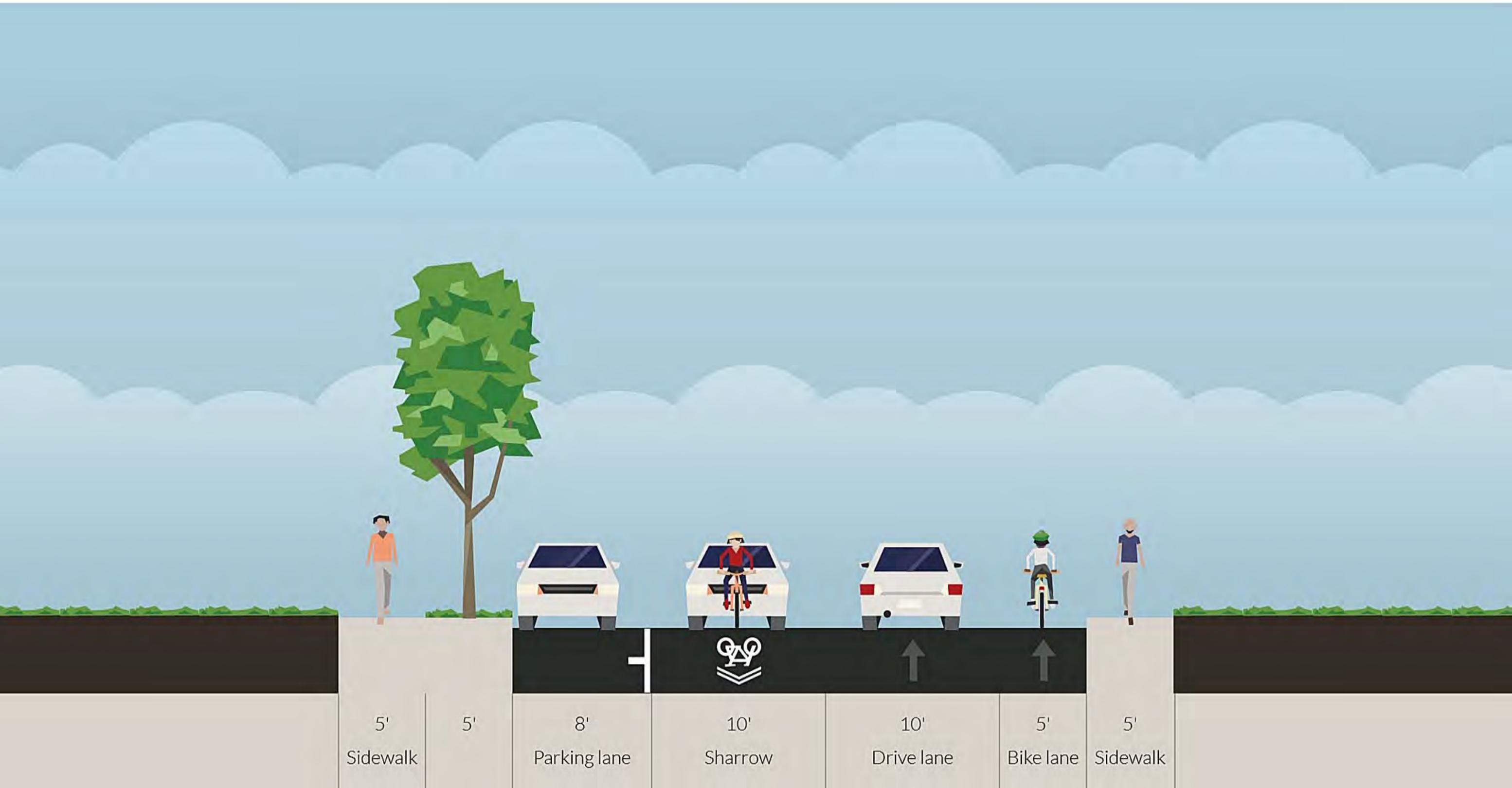
Beekman St: Red Flynn-Ferry (proposed)



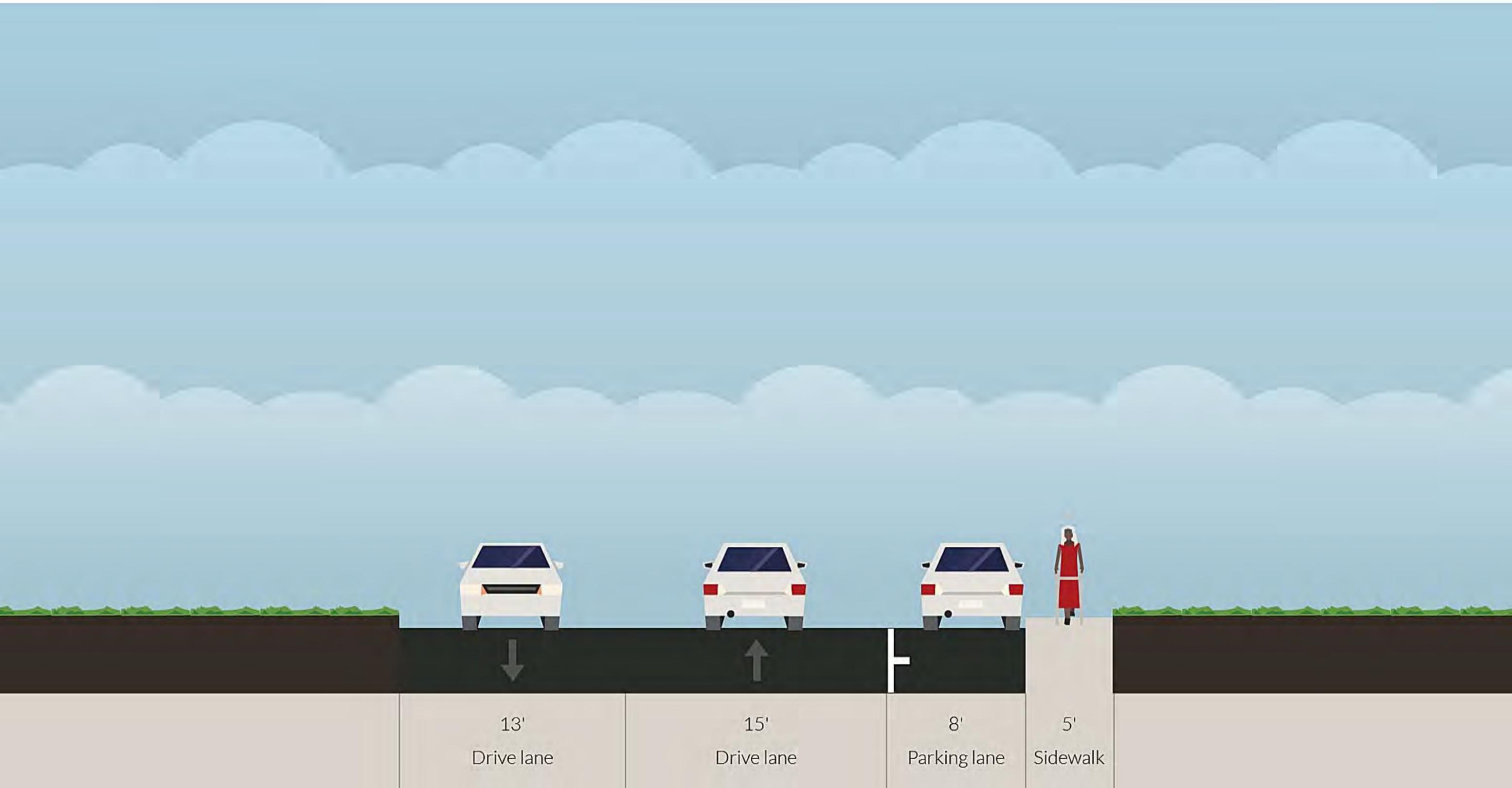
Beekman St: Ferry - River (existing)



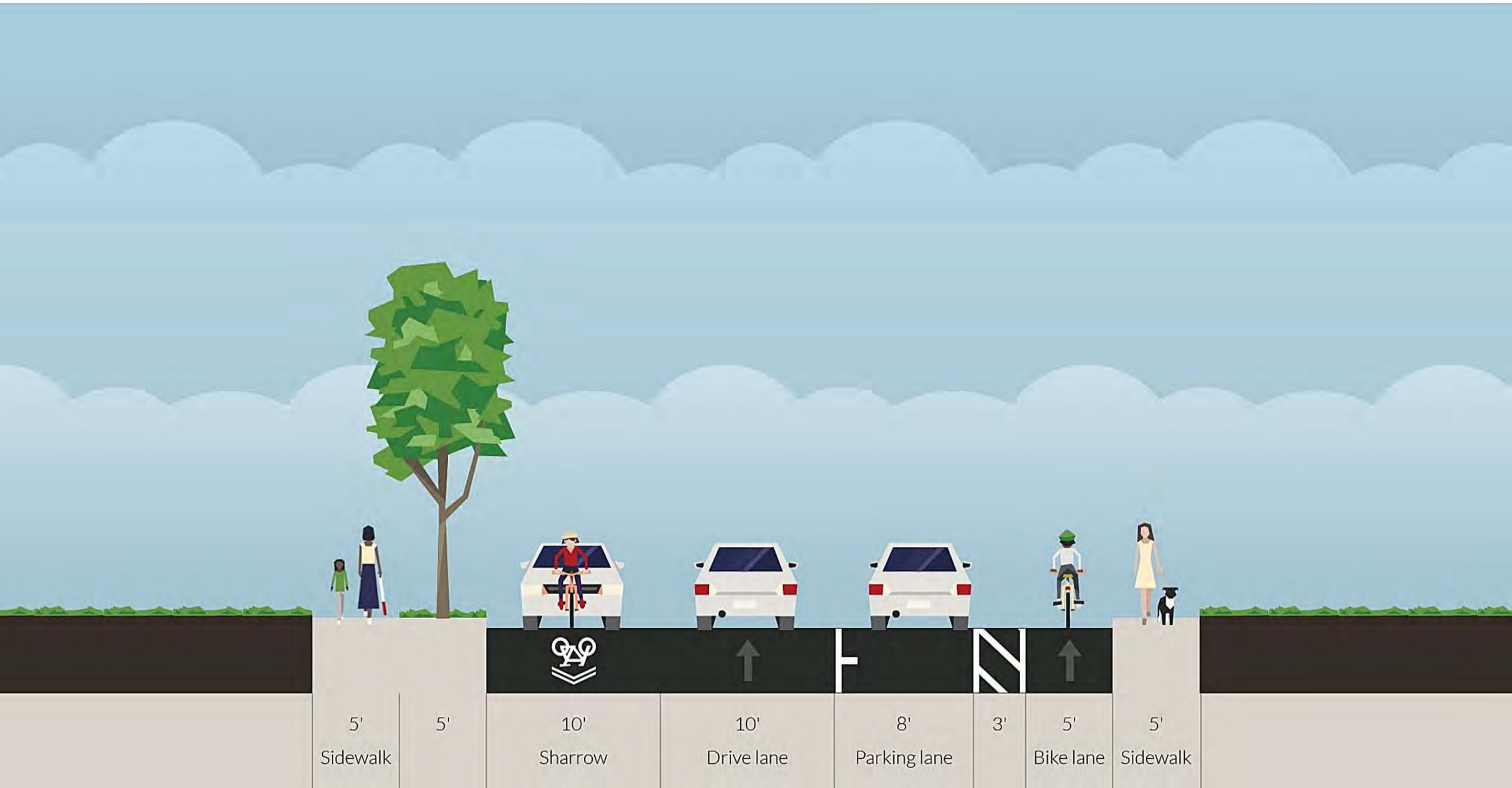
Beekman St: Ferry - River (proposed)



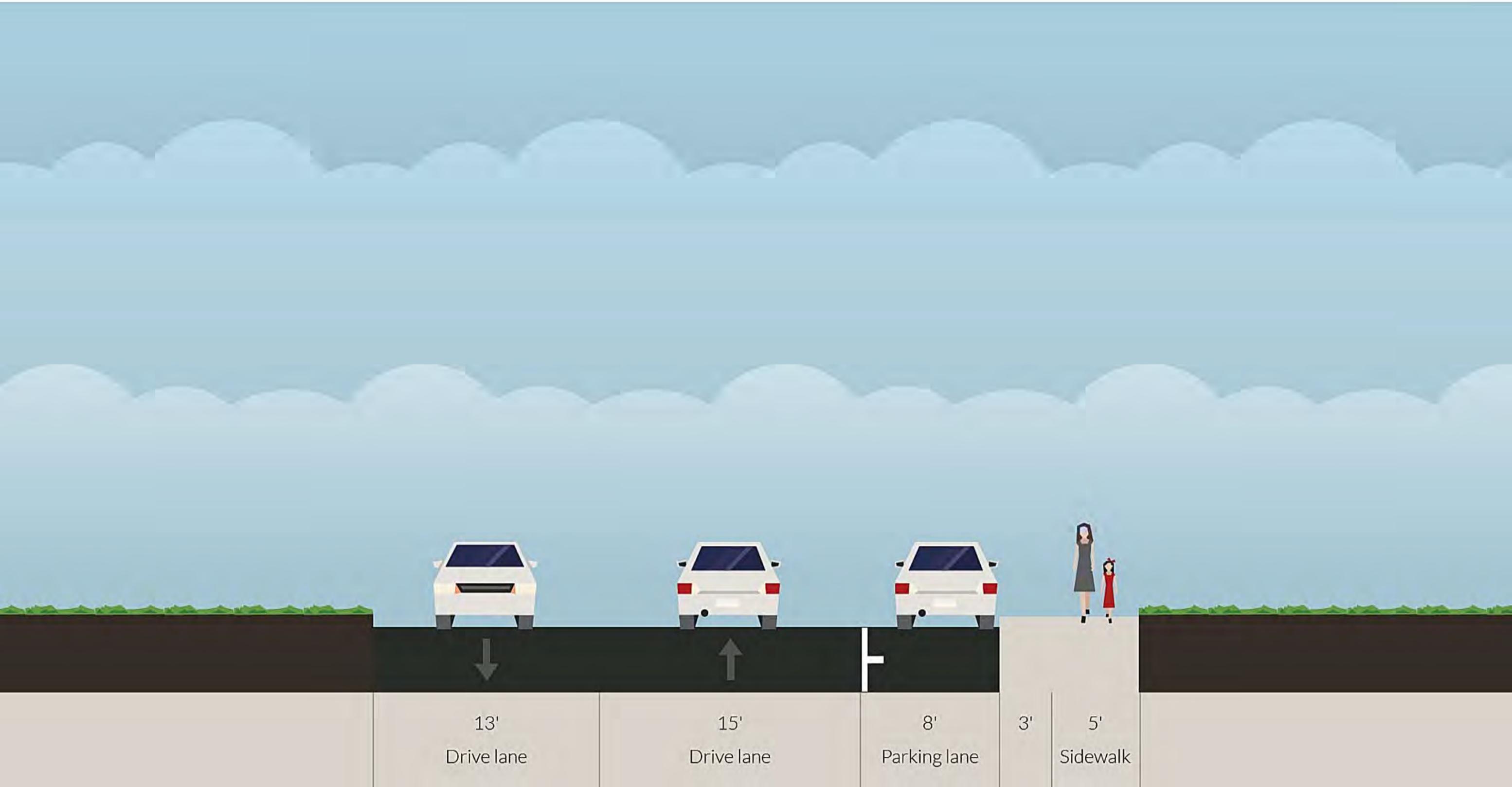
Beekman St: River-W Main (existing)



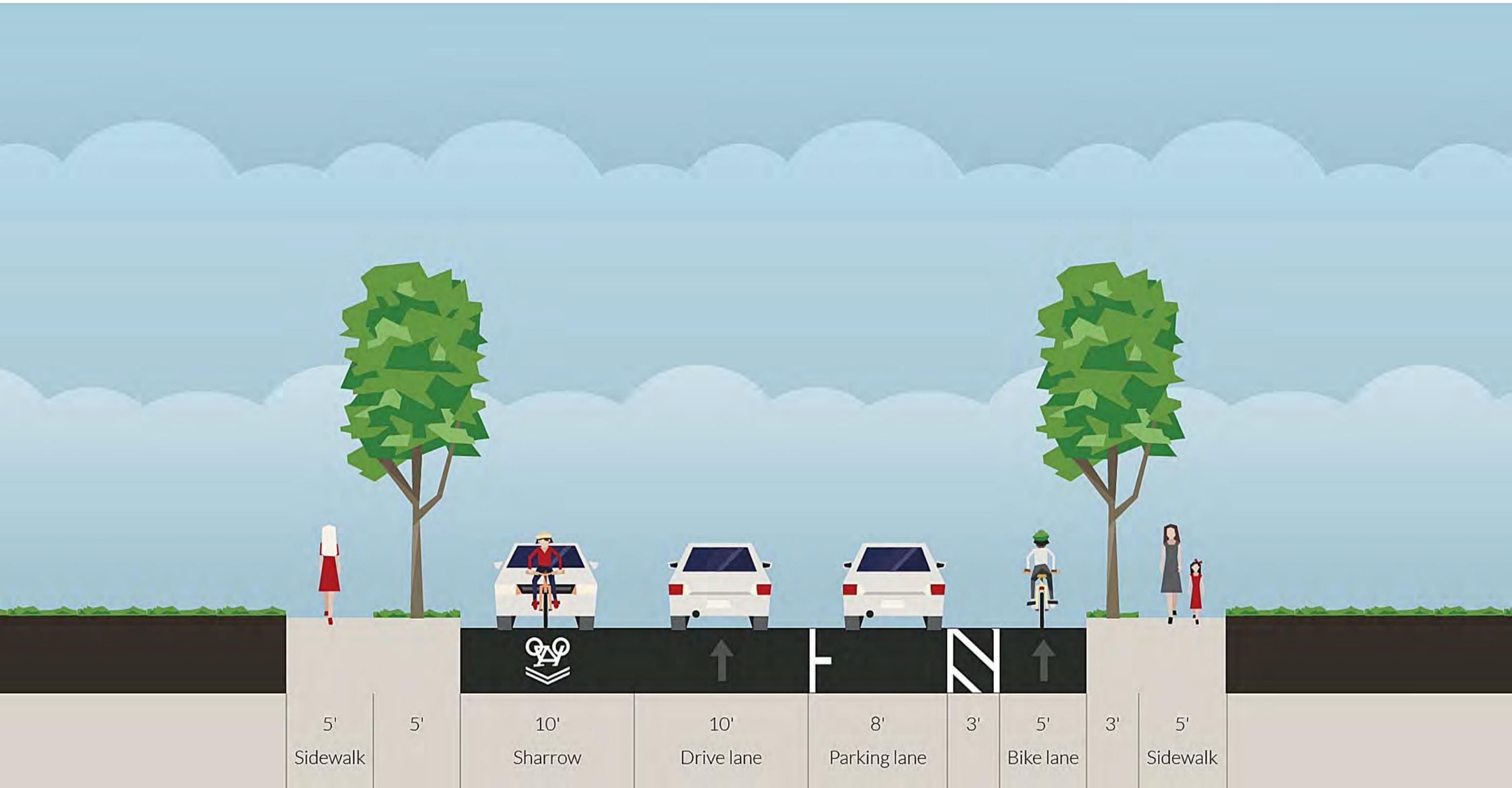
Beekman St: River-W Main (proposed)



Beekman St: south of W Main St (existing)



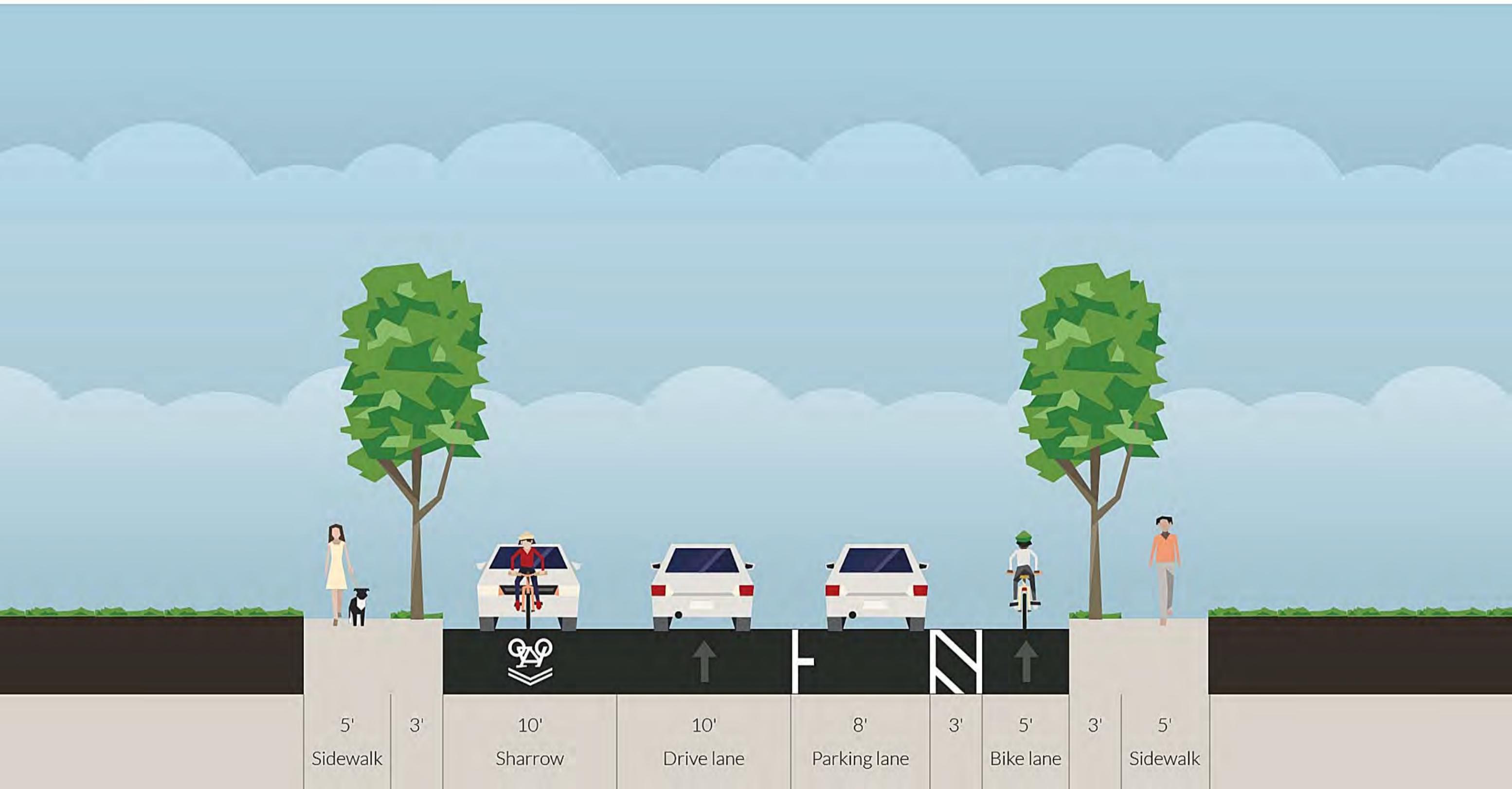
Beekman St: south of W Main St (proposed)



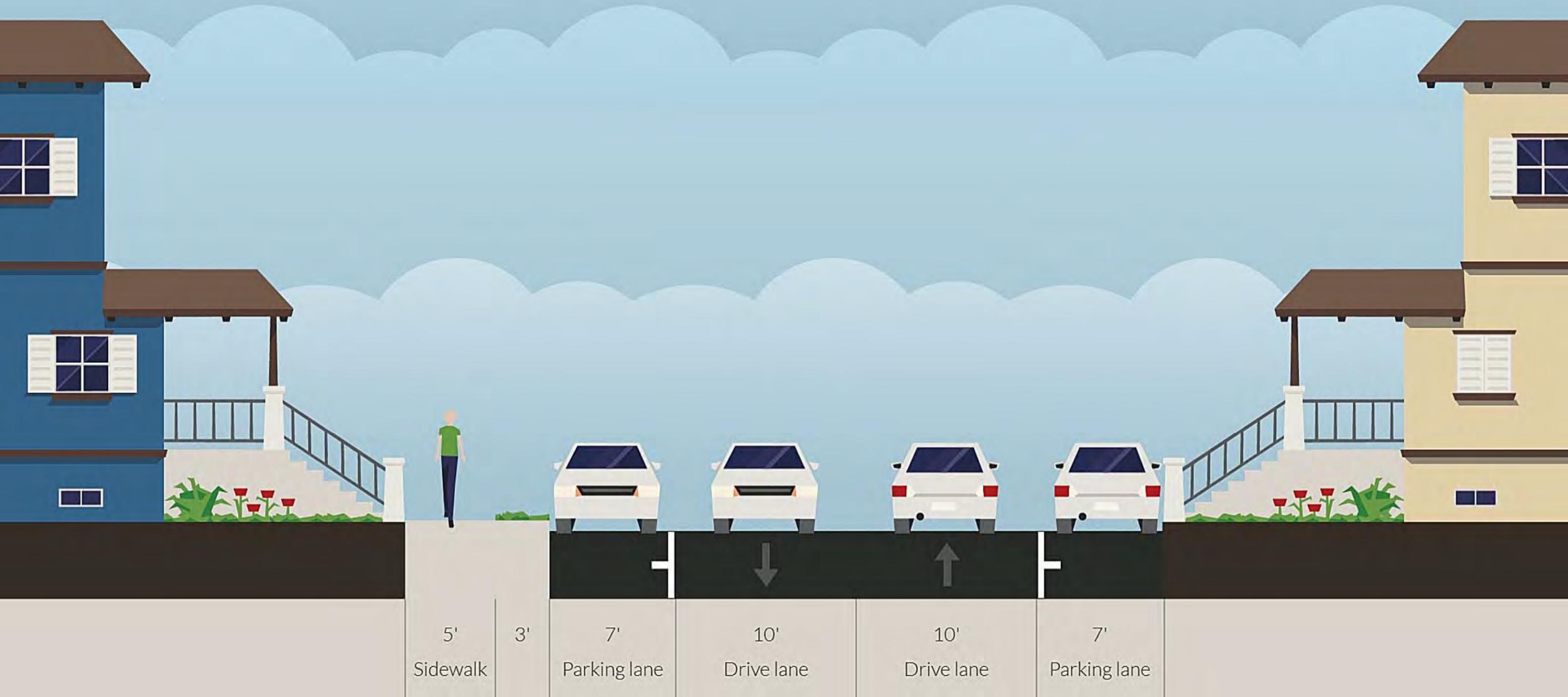
Beekman St: West Main St - 9D (existing)



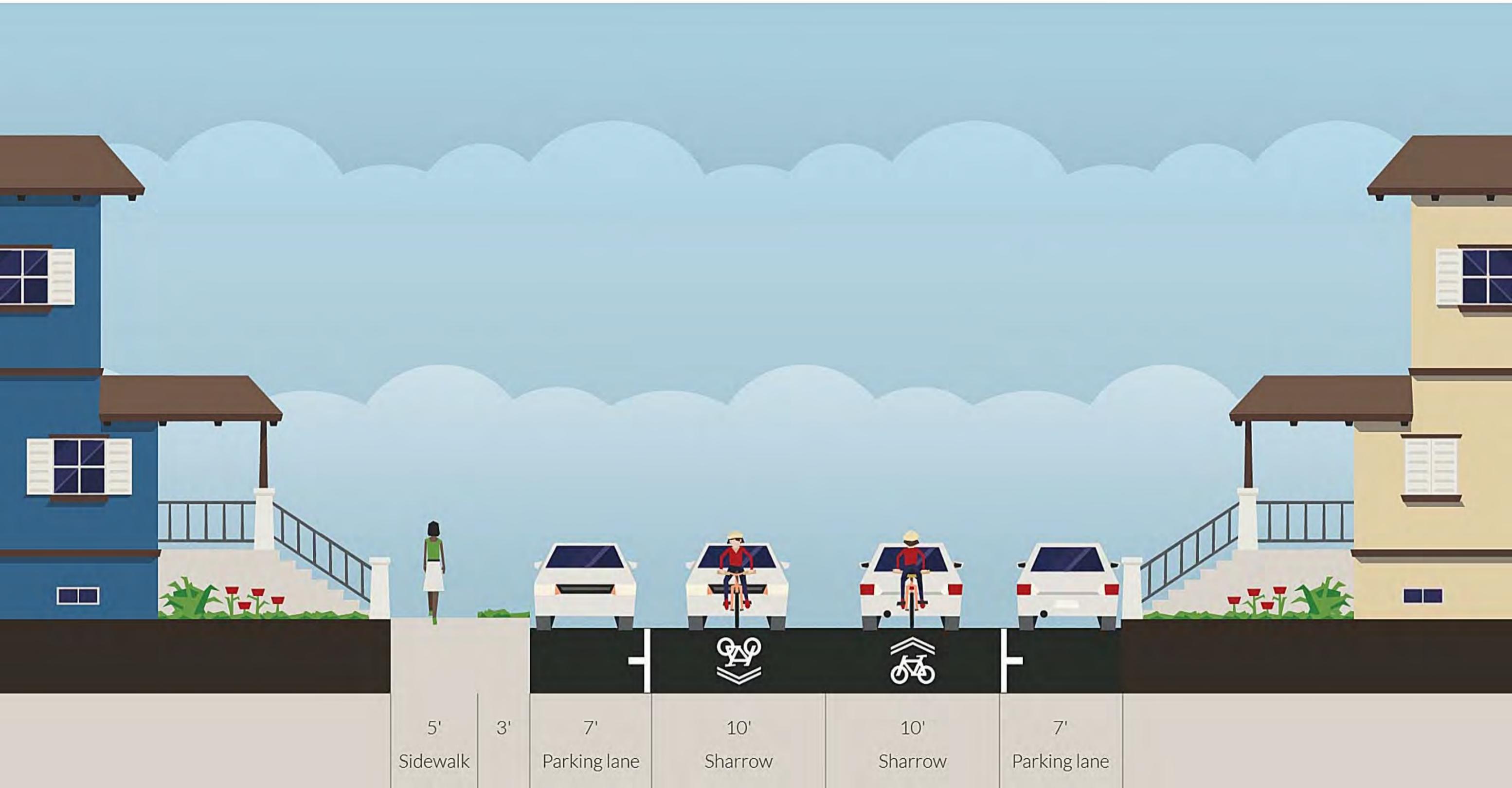
Beekman St: West Main St - 9D (proposed)



W Main St: west of Bank St (existing)



W Main St: west of Bank St (proposed)



W Main St: east of Bank St (existing)



W Main St: east of Bank St (proposed)

