



July 6, 2017

Mr. Brian Carlson and Ms. Marla Kindred
Illinois Department of Transportation
201 W. Center Ct.
Schaumburg, IL 60196

Dear Mr. Carlson and Ms. Kindred,

Earlier this year, you provided Ride Illinois with a list of pre-design IDOT D1 FY2018-2023 resurfacing projects, so that we could analyze current conditions and needs for bicyclists and provide input on prioritized improvements.

We have reviewed 215 projects early in the process, with target letting later than 01CY19. The enclosed spreadsheet summarizes our assessments of conditions now, suggestions (if any), and priorities. Fuller descriptions of the various suggestion types are below.

We recognize the limited scope of resurfacing projects, as well as IDOT's challenging financial situation. Many of our suggestions are low cost, especially if added as part of roadwork already being done. However, other recommendations costing more are included, since it may be many years before another chance to mitigate bicycle (and pedestrian) safety concerns along these streets. So, we ask IDOT to carefully consider the ideas and prioritizations we have offered.

While we have considered several factors in our analyses, we could look more in-depth at particular projects, if that is useful. Also, our review only considered resurfacing projects, not reconstruction or expansion projects, for which we may provide input at a later date.

Thank you for the opportunity to provide suggestions for IDOT engineers who will be planning these projects. We appreciate being able to constructively add input to the design process.

Sincerely,

Ed Barsotti, Chief Programs Officer

Cc: Jon McCormick, IDOT Bicycle and Pedestrian Policy Engineer
Randy Blankenhorn, IDOT Secretary
Anthony Quigley, IDOT District 1 Engineer

Working Statewide for Better Bicycling

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Ride Illinois input for IDOT District 1 FY2018-2023 resurfacing projects

Process:

For each project, Ride Illinois examined existing roadway conditions, land use and destinations, and bicycle travel patterns in the area. Tools included Google satellite and Street View imagery, traffic counts from IDOT's IRIS data, IDOT's 2014-2015 bicycle crash data, Strava's bicycle heat map, and local bicycle plans – where available and known.

Strava's map aggregates bike trip data from users of its smart phone app. It is a helpful tool filling a huge data gap, as bike counts are almost non-existent. The free, online map is good for estimating relative levels of bike usage on roads and trails in any area. (More detailed data can be purchased.) However, the Strava map is certainly not perfect, skewing heavily to more experienced bicyclists (the 20% who bike 80% of all miles biked) and missing most of those who bike out of transportation necessity. Street View sometimes gives clues on the latter, where off-road bike riders and peds wear "goat paths" in grass along roads, if sidewalks are missing.

Our recommendations use national bikeway design standards and references including the AASHTO [Guide for the Development of Bicycle Facilities](#), NACTO's [Urban Bikeway Design Guide](#), the MUTCD, and other FHWA documentation.

The assigned priorities of our suggestions are based on need, assumed feasibility of implementation, and cost – to some degree. While some improvements may be possible on projects listing "None", their priority is considered not high enough to justify a recommendation.

Recommendation types:

Work with local agency on bike plan implementation:

For several communities, local bike plans were reviewed for possible implementation opportunities with the IDOT project. This involves collaborating with the local agency.

Add bike lanes (traditional or buffered):

Satellite imagery estimates of pavement width are used to suggest where traditional bike lanes (single line delineation from both traffic and parking lanes) or buffered bike lanes (two line delineation with buffer space) are feasible, whether to add new bike lanes or retrofit existing bike lanes with buffers. The NACTO guide provides detailed guidance of the specifics of each.

Add shared lane markings:

Shared lane markings (aka "sharrows") are recommended in selected (≤ 35 mph) locations for these cases: 1) bike lane temporarily drops at an intersection approach due to a turn lane and inadequate width; 2) backup option when there's not enough room for bike lanes – centered 11' from curb if there is on-road parking, in the center or left of the travel lane if the parking is diagonal. For (1), shared lane markings should be in the straight-ahead lane if there is only a

left-turn lane. SLMs *may* be in the left part of a right-turn lane, per the FHWA/MUTCD and NACTO.

Narrow lanes to provide space for shoulders, bike lanes, or wide curb lanes:

In many situations, without negative safety or operational effects, lanes can be narrowed somewhat from 12' to help in providing bike accommodations. Turn lanes and painted medians are another source of extra width, when needed. Paved shoulders or bike lanes are usually preferred by bicyclists, but often there is not enough existing or potential width to implement these. On moderate-to-higher ADT roads with no other options that are frequented by more traffic-tolerant cyclists, narrowing other lanes to create wide outside curb lanes is a much lesser fallback option that is better than nothing. AASHTO now uses 14' as the minimum lane width within which motorists can pass bicyclists with at least the 3' (Illinois minimum legal) clearance.

Road diet with bike lanes:

In addition to Ride Illinois recommendations, a couple towns' bike plans also call for this. Lane reductions on over-capacity multilane roads can improve left-turning motorist safety while often providing width for bike lanes. Roads with moderate ADTs (12000? or less) are good candidates for a road diet study including intersection effects - FHWA's road diet guide can help.

Paved shoulders – add or widen:

In prioritized locations, many already having gravel shoulders, paved shoulders of 4' (or more) are recommended. 3' is helpful, but 4' is the FHWA-recommended minimum. Per IDOT's pre-2010 BDE policy, that minimum width increases with overall and truck ADTs and other factors.

Rumble strip recommendations:

We recognize paved shoulder rumble strips' benefits for motorist run-off-the-road crashes. However, when rumble strips are designed without at least 3' (preferably 4') of clear shoulder space to their right (or that space is not routinely swept), bicyclists are unable to ride on the shoulder. We believe that paved shoulders with such rumbles are worse for cyclist safety than no shoulder at all, due to some motorists expecting cyclists to move onto the shoulder as they approach. For selected projects in this list, where poor rumble strips exist now or could potentially be added to existing paved shoulders, we call for the use of IDOT's bike-friendly rumble strip design detail (8" width, 4" from fogline, longitudinal gaps) – but only if 3' or more clear shoulder space can be provided.

On-road bicyclists triggering demand-actuated signals:

In town after town, bicyclists (and motorcyclists) cite their inability to trigger a green when the quieter road they are using (e.g. lower ADT collector) crosses a busy road at a demand-actuated stoplight. Plus, motorists usually stop too far behind a bike to trigger the detector themselves. If off-road pedestrian activation exists, it is usually inaccessible (up the curb, away from the intersection) for both on-road bicycle and motorcycle riders. The AASHTO and NACTO guides describe detection methods that could be retrofit (e.g., D1's bicycle detector at Mack/IL 59 in Warrenville), but often an existing detector works if cyclists know where to position themselves. Testing with a bike wheel could identify a "sweet spot" on an inductive

detector's right perimeter, which then could simply be marked and signed per MUTCD. The locations at which we ask IDOT to ensure on-road bike detection were not tested, only deduced and prioritized from bike use (via Strava or bike plans) and relatively low vehicular traffic counts.

Bike Route signage:

A couple recommendations suggest bike route wayfinding signage. The MUTCD allows for various styles of such signage (D1 series), which are more informative than the old D11-1 "Bike Route" signs.

Skew railroad crossings – add pavement:

As shown by AASHTO, adding pavement outside of the lane allows on-road bicyclists to cross skewed railroad tracks perpendicularly, without needing to go far into the travel lane to do so.

Adding a trail link:

Occasionally, a parallel trail adjacent to the road is inaccessible to a side street ending at a T-intersection on the other side of that road. Or, a "goat path" indicates a desired connection to a nearby trail. Being an off-road treatment, this recommendation likely requires local agency collaboration.

Adding sidewalks (or sidepaths) or just filling sidewalk gaps:

These recommendations definitely entail working with the local agencies and are added here due to possible cost savings over stand-alone sidewalk retrofit projects. The cost could be fairly substantial depending on how much sidewalk is added. Especially along higher speed and ADT roads with fewer side street, driveway, and commercial entrances, in less dense land use having fewer pedestrians, a sidewalk can serve fairly well as an unofficial accommodation for many – but not all – bicyclists. Prioritization is done here based on road conditions, land use, availability of alternative routes – and whether "goat paths" exist to demonstrate higher need.

Sidewalks and crossings too far back:

Sidewalks are often placed at the back of right-of-way. While more comfortable for pedestrians (and sidewalk bicyclists) away from intersections, this often results in intersection stoplines and crosswalks being placed too far back, at unrealistic locations leading to very poor motorist stopline adherence. This leads to safety problems, particularly for contra-flow bicyclists when motorists are not looking for them. It seems this issue has worsened in recent years, and more careful permitting by IDOT and municipalities is needed to ensure good sidewalk design.

Add sidewalk crossing at intersection:

In what seems like another worsening problem, curb cuts and crosswalks across an intersection are sometimes missing even though there are sidewalks on both sides. This may be caused by a "chicken-or-the-egg" situation of crossings not being added until both sides have sidewalks, but the sidewalks are installed at different times when parcels are developed. Again, more careful permitting by IDOT and towns is needed to prevent this unacceptable and unsafe situation, which requires sidewalk riders to ride down from curbs and then stop in the road to lift up their bikes over the curb on the other side.

Add right-corner island(s):

This recommendation is usually reserved (prioritized) for busy bicycle crossings – typically, major trails – at road-road intersections having large turning radii and setbacks. These corner islands (aka “pork chops”) greatly improve pedestrian and off-road bicyclist safety by isolating turning conflicts, shortening crossing distances, and allowing the placement of stoplines in more realistic locations closer to the intersection. Corner islands can be designed to accommodate turning truck traffic and to be more visible to snowplow drivers.

Trail crossing improvements – RRFBs, raised medians:

A simple crosswalk and warning sign is often not sufficient. As reported at IDOT D1’s Feb. 23, 2017 pedestrian safety workshop, the safety of popular trails’ mid-block crossings can be improved with: Rapid Rectangular Flashing Beacons (Crash Modification Factor 0.53) on both sides facing each direction; raised median islands (CMF 0.67); or even Pedestrian Hybrid Beacons (aka “HAWK” signals, CMF 0.24) – all with advance stoplines 30’ in back of the crosswalk. Our recommendations are meant as initial ideas on what might be feasible at particular locations. Instead of push-button activation unused by many trail users, automatic sensing is available in RRFBs.

Lead Pedestrian Interval:

Particularly when an adjacent, parallel trail’s crosswalk is set back a bit more (not as visible) from the road at an intersection, there is a “race condition” between right-turning motorists and straight-ahead trail users when a light turns green. A pedestrian-activated LPI is a big help in mitigating this safety concern, as reported at that recent ped safety workshop.

Relocate trail crossing or make it parallel:

For a few projects, a trail’s crossing should be moved slightly, or a skewed crossing be made perpendicular to the road, per AASHTO recommendations.

Extending project limit:

May be recommended to make a logical bike/pedestrian connection near the current terminus.