

# “(In)Complete Streets”

## *Rating 46 Recent Chicago Area Road Designs For Pedestrian and Bicyclist Safety*

League of Illinois Bicyclists  
October 2009

### BACKGROUND

“Complete Streets” are designed to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders are all able to safely move along and across a complete street<sup>1</sup>.

For decades, many towns, counties, and states built their roads neglecting the safety of non-motorized roadway users. Too often, the outcomes have been hazardous for those who bike or walk either by *choice* or by *necessity* due to age, economics, etc. As traditional street grid systems have been replaced by suburban-style development of isolated subdivisions with fewer connecting roads, reliance on arterial roads has grown tremendously. This magnifies the need for our main streets to be complete streets, because oftentimes they are the only options for getting from point A to point B.

How have we done lately? Are those major roads, so important in getting to and around town, being built to be “complete”? The answer depends on who is doing the building. Some agencies are providing for bicyclists and pedestrians as they redesign their roads. However, others continue to ignore the inherent non-motorized transportation demand in towns and place our roadways’ most vulnerable users in peril. This report examines a significant collection (46) of recently-constructed roads in the Chicago area.

Since 2007, the League of Illinois Bicyclists (LIB) has conducted a “Complete Streets Audit” program. Forty-six road reconstruction projects built by 25 agencies have been reviewed according to a 100-point scale developed by LIB<sup>2</sup>. The Complete Streets Audit rates individual roads on how well they accommodate bicyclists and pedestrians, taking into account each road’s particular context. A quiet farm roadway or residential cul-de-sac might be fine for bicycling and walking as-is, but a major suburban arterial needs additional features such as sidewalks, improved intersection crossings, and possibly bike lanes or a sidepath trail. Higher scores indicate better accommodations and safer travel for bicyclists and pedestrians.

Each Complete Streets Audit rates pedestrian travel *along* the road, bicycle travel *along* the road, *crossings* of the road, and other *context-sensitive* factors. The methodology (Appendix 2) uses objective tools such as the Federal Highway Administration’s sidewalk installation guidelines<sup>3</sup>, Bicycle Level of Service<sup>4,5</sup>, and LIB’s Sidepath Suitability Score<sup>6,7</sup>. Other aspects of an ideal “Complete Street”, such as the particular accommodation needs of transit riders, the elderly, children, and people with disabilities, are not covered specifically in the methodology.

## RESULTS

A table summarizing audit results is on the next page. Listed are each road's pedestrian score, bike score, crossings score, context score, total score, and the road-building agency.

The audit scores had a wide distribution (average 52.1, standard deviation 24.9) and range. Skokie's Howard Street project ranked best (98) and IDOT's Illinois Route 59 project worst (6). Six projects (13%) were rated with an "A" grade, fourteen (30%) received a "B", eleven (24%) got a "C", nine (20%) scored a "D", and six (13%) were given an "F".

Photographs from six audits, including Howard Street and Illinois Route 59, are included in Appendix 1. The audits are available on LIB's website, [www.bikelib.org](http://www.bikelib.org).

## ANALYSIS AND RECOMMENDATIONS

### **Pedestrian accommodations along the road – average 25.9 of 40**

Sidewalks are the most basic and recognized accommodation for non-motorized roadway users. In the early decades of the 20<sup>th</sup> century, sidewalks were a routine part of road construction. This was less true starting in the 1950's, particularly along the busier roads in suburban-style development. While sidewalks are making a comeback, too many agencies still do not recognize this integral part of an urbanized road project. Also, a reliance on developer construction of sidewalks has often led to gaps at undeveloped land parcels – or sidewalk requirements being waived during developer negotiations.

The Complete Streets Audit scores reflect whatever sidewalks are present on one or both sides – whether they existed previously or were added in as part of the recent road project. Twenty-two of the roads (48%) met the highest level of federal sidewalk suggestions. Six others (13%) met a lower recommendation level, while four more (9%) had sidewalks on one side when two sides were considered necessary. Fourteen roads (30%) had no or only fragments of sidewalks.

#### *Recommended actions:*

- Adopt the Federal Highway Administration's "New Sidewalk Installation Guidelines"<sup>3</sup> as policy for all roadway projects. This specifies sidewalks on one or both sides as a function of road classification and land use.
- Adopt policies to prevent sidewalk gaps at undeveloped parcels.
- Where sidewalks cross wide, multi-lane intersections, use raised corner islands and/or median islands. This improves safety by: a) breaking the crossing into segments, each with fewer traffic conflicts and turning movements; and b) enabling crosswalks closer to the parallel road, nearer to where traffic is more likely to stop.
- Adopt as standards other sidewalk design and maintenance details listed in the methodology and in AASHTO's Guide for the Planning, Design, and Operation of Pedestrian Facilities<sup>8</sup>.

Street Name	Location	Agency name	Ped Score	Bike Score	Crossing Score	Context Score	Total Score
Howard St	Niles Center to Keystone (Skokie)	Skokie	39	35	14	10	98 (A)
Bode/Springinsguth	Barrington to Schaumburg (Schaumburg)	Schaumburg	39	32	15	10	96 (A)
Oak Park Ave	111th to 115th (Worth)	Worth	39	30	15	10	94 (A)
Huntington Dr	Hanson to IL 31 (Algonquin)	Algonquin	39	30	14	9	92 (A)
Moon Lake Blvd	IL 72 to IL 58 (Hoff. Estates, Schaumburg)	Hoff. Estates	38	21	14	9	82 (A)
Hillgrove Ave	Gilbert to Kensington (La Grange)	La Grange	40	17	15	8	80 (A)
Techny Rd	Shermer to N Br Chicago Riv (Northbrook)	Cook Co.	30	32	7	8	77 (B)
Orchard Rd	Sullivan to Prairie (Aurora)	Kane Co.	29	30	9	9	77 (B)
Gross Point Rd	Main to Oakton (Skokie)	Skokie	40	13	15	8	76 (B)
Washington Ave	Prairie to Kemman (Brookfield)	Brookfield	40	12	15	5	72 (B)
Jewell Rd	Gary to County Farm (Wheaton, Winfield)	DuPage Co.	38	13	12	9	72 (B)
Kedzie Ave	Vollmer to US 30 (Olympia Fields)	Cook Co.	14	35	12	8	69 (B)
Van Dyke Rd	Lockport to EJ&E RR (Plainfield)	Plainfield	28	23	10	5	66 (B)
St. Charles Rd	I-290 to Wolf (Berkeley)	IDOT	40	5	15	5	65 (B)
Wilmette Ave	Ridge to Green Bay (Wilmette)	Wilmette	39	7	14	5	65 (B)
Fairway Dr	Huron to Greenview (Vernon Hills)	Vernon Hills	34	10	13	7	64 (B)
103rd St	Cicero to Pulaski (Oak Lawn)	Oak Lawn	39	5	15	5	64 (B)
73rd St	Oak Park to Meades (Bedford Park)	Bedford Park	37	17	5	5	64 (B)
Main St	Bonnie Brae to IL 47 (Huntley)	Huntley	37	1	15	9	62 (B)
191st St	Wolf to Everett (Mokena)	Mokena	32	9	12	7	60 (B)
IL 38	Myrtlewood to IL 53 (Wheaton, Glen Ellyn)	IDOT	38	0	13	8	59 (C)
Army Trail Rd	Regency to Swift (Bloomington, Addison)	DuPage Co.	35	8	6	9	58 (C)
Maple/Chicago	Cumnor to IL 83 (Clarendon Hills)	DuPage Co.	29	9	11	8	57 (C)
Hillgrove Ave	Wolf to Gilbert (Western Springs)	W. Springs	23	11	15	5	53 (C)
Washington St	US 45 to Hunt Club (Gurnee)	Lake Co.	33	0	13	5	51 (C)
IL 64	IL 53 to Villa (Lombard, Villa Park)	IDOT	32	1	11	5	49 (C)
Medinah Rd	Crest to Lake (Medinah)	DuPage Co.	30	8	5	5	48 (C)
IL 21	Washington to IL 120 (Gurnee)	IDOT	21	17	5	5	48 (C)
88th	79th to 87th (Justice, Hickory Hills)	Cook Co.	30	5	6	7	48 (C)
US 20	Addison to Walnut (Addison, Elmhurst)	IDOT	36	0	5	6	47 (C)
Darmstadt Rd	IL 56 to Wolf (Hillside)	Hillside	4	30	5	3	42 (C)
123rd St	Cicero to Kedzie (Alsip)	Cook Co.	21	0	9	8	38 (D)
Lake Ave	Huntley to Riverside (Lakewood)	Lakewood	0	25	4	5	34 (D)
US 34	Douglas to US30 (Oswego)	IDOT	20	0	10	2	32 (D)
Barrington Rd	Old Higgins to I-90 (Hoffman Estates)	IDOT	20	0	10	2	32 (D)
111th St	IL 59 to Naperville/Plainfield (Plainfield)	Will Co.	15	10	5	2	32 (D)
Lake Marian Rd	IL 25 to Washington (Carpentersville)	Carpentersville	18	6	5	2	31 (D)
Michigan City Rd	154th to Indiana State Line (Calumet City)	Cook Co.	12	9	5	3	29 (D)
IL 72	IL 68 to IL 25 (East Dundee)	IDOT	19	0	0	3	22 (D)
Richton Rd	State to Velbrecht (Crete)	Will Co.	1	10	6	3	20 (D)
Veterans Pkwy	Remington to Crossroads (Bolingbrook)	Bolingbrook	19	0	0	0	19 (F)
IL 38	US 20 to I-294 (Westchester)	IDOT	13	0	4	0	17 (F)
Northwest Ave	IL 64 to Grand (Northlake)	Northlake	1	4	5	0	10 (F)
US 30	Larkin to Essington (Joliet)	IDOT	8	0	0	2	10 (F)
IL 53	Army Trail to IL 64 (Addison, Lombard)	IDOT	2	0	2	5	9 (F)
IL 59	IL 126 to 111th (Plainfield, Naperville)	IDOT	2	0	2	2	6 (F)
<b>AVERAGE</b>			<b>25.9</b>	<b>11.5</b>	<b>9.1</b>	<b>5.6</b>	<b>52.1</b>
<b>MAXIMUM</b>			<b>40</b>	<b>35</b>	<b>15</b>	<b>10</b>	<b>100</b>

## **Bicycle accommodations along the road – average 11.5 of 35**

Accommodating bikes and pedestrians is similar in some respects, but different in others. For all but the slowest cyclists, higher speeds on sidewalks or sidepath trails mean more conflicts with motorized traffic at every intersection, driveway, and entrance. On roads with lower speed limits and many such crossings, it is a nationally-recommended practice<sup>9</sup> to plan for on-road bicycling, often with special lane markings and signage. Surprising to many, doing so is actually safer, as most car-bicycle crashes on this type of road are due to lack of visibility at intersections – not from bikes being hit from behind. Off-road bicycle accommodations are more appropriate along higher-speed, higher-traffic roads with few crossings.

The Complete Streets Audit methodology rates any and all on-road or off-road accommodations that may exist for cyclists, awarding the highest score received from the most suitable option.

Overall, bicycles were not accommodated as well as pedestrians in the audited projects. For some higher-speed roads with few crossings and pedestrian conflicts, sidewalks were adequate for the majority of cyclists. On other roads, sidewalks were considered less suitable as the number of crossings increased.

Some road-building agencies were proactive in building sidepath trails (widened sidewalks). While some sidepaths were built where appropriate, on-road bikeways would have been more suitable in other locations. The best approach would be to evaluate which type of facility (on-road or off-road) would work best for each roadway in question. Too often, though, agencies have embraced one approach and largely rejected the other.

Most of the roads audited were busier than the quiet residential streets that do not necessitate additional bike accommodations. For lower-speed roads where on-road bicycling is more appropriate, dedicated space such as bike lanes or paved shoulders improves cyclist comfort – and the methodology’s score. This was done on Howard, Huntington, Kedzie, Lake, and Techny. However, other agencies did not add these accommodations.

### *Recommended actions:*

- Adopt roadway design standards to accommodate bicycles where there is existing or latent need. IDOT’s bike policy<sup>10</sup> provides excellent guidance on this, including in its “warrants” the broad category of roads in urbanized areas.
- Adopt road standards with bicycle accommodation determined by traffic speed and counts, road classification, and number of crossings (e.g., Crystal Lake’s development ordinance<sup>11</sup>, several towns’ bicycle plans). Resources include the AASHTO Guide for the Development of Bicycle Facilities<sup>9</sup> and planning tools such as Bicycle Level of Service, Sidepath Suitability Score, and the methodology used here.
- For rural cross-section roads in urban areas, adopt IDOT’s paved shoulder policy<sup>10</sup> with width varying according to traffic counts. Avoid rumble strips, but if they are included, use bicycle-friendly designs.

## Crossings of the road – average 9.1 of 15

In recent decades, intersections – especially multi-lane suburban arterial intersections – have become increasingly hazardous for pedestrians and bicycles. Efforts to increase traffic flow through intersections, including additional turn lanes, wider turning radii for trucks, and signalization for continuous turning movements, have all come at the expense of non-motorized roadway users' safety. To compound the problem, fewer motorists yield the right of way when required by law, partially because of the engineering changes.

Improving intersection traffic flow does not have to worsen the safety of pedestrians and cyclists. For many larger intersections, it is desirable and feasible to include right-turn corner refuge islands to break a long crossing into segments with separated turning motion conflicts. Median refuge islands are often possible. Additionally, a benefit of refuge islands for road designers is that shorter segments shorten the cross-street's required "Walk" signal time.

Unfortunately, the audited projects showed that intersection refuge islands are rare in recent designs. Some agencies actively discourage them, for reasons including snowplow damage. While refuge islands presenting obstacles for snowplows are a legitimate concern for perhaps 10 days a year, eliminating them from a project that has pedestrian and ADA (Americans with Disabilities Act) crossing demands puts these users in peril for the other 355 days each year.

Curb cuts, crosswalks, and pedestrian signals were present at many locations, but often missing on at least one leg of the intersection. At numerous other places, these were completely lacking. Some road designs included proactive features such as countdown timers, curb bulb-outs, and in-street pedestrian crossing signs, particularly in areas of town with heavier pedestrian activity.

Kane County's Orchard Road project presents one example of a proactive and useful grade separation, where the heavily-used Gilman Trail crosses that major arterial road. Due to high costs and lack of space for approaches, however, bridges or tunnels are not realistic for the vast majority of lesser crossings of arterials, including all signalized intersections. Unfortunately, some agencies are reluctant to design at-grade pedestrian intersection features, because of safety concerns about "encouraging" such crossings. This approach unrealistically disregards the people who are now and will continue to cross these streets. Proven methods are available and used successfully at other Chicago area intersections.

### *Recommended actions:*

- Adopt proactive intersection design policies including those discussed above, in the methodology, and in AASHTO's Guide for the Planning, Design, and Operation of Pedestrian Facilities.
- Recognize that in some locations, the budget will need to include grade separations. Elsewhere, routinely incorporate appropriate at-grade treatments.
- Provide more sensitive traffic loops to detect the presence of on-road bicycles (and motorcycles) at demand-actuated traffic signals. Tune and mark "trigger points" with MUTCD-approved markings<sup>12</sup>.

## Context sensitive factors – average 5.6 of 10

In the appendix, the methodology quotes IDOT’s bicycle policy “warrants”, defining factors raising the importance of a road’s non-motorized accommodations. These include high latent demand areas, unique access to destinations, crossing of a “barrier”, or transit accessibility.

Again, results were mixed. The audited non-arterial roads were, in general, more sensitive to their context. Far too many busier arterial roads scored poorly, particularly in areas where these roads are the only option for residents to travel via bike or foot to work, school, the store, etc.

### *Recommended actions:*

- Place more emphasis on non-motorized accommodation where context and need is greatest.

## Agency trends and general recommendations

Some trends emerged from specific agencies and categories of agencies.

Illinois Department of Transportation (IDOT) projects averaged 33 (grade “D”), with several of the lowest-rated projects. Findings indicate roads lacking in sidewalks and road crossings, often where the state road is the only option. Advocates including LIB have identified and called for changes to specific, current design policies, such as:

- New sidewalks and intersection crossings must now be requested by local agencies, which must (usually) pay a higher cost share for these features than for the rest of the road project. In a survey of 17 states, Illinois’ cost share requirement ranked near the bottom.<sup>13</sup>
- In the Chicago area, the typical IDOT bicycle accommodation is one extra foot of lane width, with 13ft instead of 12ft. In high speed and traffic locations, Bicycle Level of Service scores indicate this to be inadequate for even expert cyclists.
- IDOT has not yet implemented the Illinois legislature’s 2007 “Complete Streets” law<sup>14</sup>, which went into full effect in July 2008. It states that “bicycle and pedestrian ways *shall* be established” in the state’s urban road projects, with certain exceptions.

Performance by the region’s counties has varied. Too often, little or no accommodation is provided along roads, and at-grade intersection features are not present. In many other cases, results are good to excellent. Some examples and new policies from counties:

- DuPage County has formally adopted and implemented its “Healthy Roads Initiative”, a Complete Streets policy commitment to building sidewalks and sidepaths during road projects. In addition, DuPage recently became the first Illinois county to adopt an on-road bikeway policy (e.g., Clarendon Hills Road), although it still eliminates paved shoulders occasionally (e.g., Warrenville Road).
- Kane County has several examples of proactive design features including sidepath trails, grade separations at major trail crossings (e.g., Gilman Trail at Orchard), and good intersection design with corner refuge islands (e.g., Orchard and Galena). However, other intersection designs have problems (e.g., Butterfield and Kirk).

- Lake County, which has built several sidepath trails along some of its roadways, has started a study to develop an overall Complete Streets policy.

With more than 200 municipalities in the region, there is a huge range in philosophies in designing for pedestrians and cyclists. The audited projects showed that, on average, towns were more willing to include sidewalks and sidepaths as well as proactive crossing treatments, bike lanes and curb bulb outs. Chicago has adopted a Complete Streets policy, while Schaumburg and Naperville have won and others have applied for Bicycle Friendly Community designation. To retrofit past deficiencies and build future opportunities to be friendly to walking and biking, many more towns have adopted bicycle or bike/pedestrian plans – although implementation of and adherence to these plans often needs improvement through stronger policy commitment.

In 2000, the Federal Highway Administration’s “Accommodating Bicycle and Pedestrian Travel: A Recommended Approach”<sup>15</sup> suggested that “bicycle and pedestrian ways *shall* be established in new construction and reconstruction projects in all urbanized areas”, with common sense exceptions. This model Complete Streets policy may be adopted by states, counties, and towns, with detailed road design and development standard work to follow.

For many road-building agencies, being multi-modal is in the mission statement but not sufficiently backed by allocation of money. Performance measures for agencies must include “credit” for accommodating the most vulnerable road users – in addition to lane-miles constructed. Safer walking and biking must be a significant factor in scoping and evaluating designs and in selecting projects.

Taking the “walk a mile in another’s shoes” expression literally could be quite an eye-opener in appreciating conditions faced by the growing constituency of non-motorized road users. Looking at a road design from the viewpoint of a pedestrian or cyclist contributes to a perspective of bike and pedestrian accommodation being a necessary part of a project, not an optional amenity or a diversion of road funds.

## CONCLUSION

While consciousness of the need for Complete Streets is growing and excellent work is being done by many road-building agencies, the Complete Streets Audit program has shown that the Chicago area has a long road ahead to make travel by foot or bicycle safer and more convenient.

The regional road system provides motorists with a continuous network offering multiple options for travel between two points. However, the haphazard levels of bicycle and pedestrian accommodation across jurisdictions create gaps and obstacles for non-motorized travel. This discourages the choice to bike or walk to destinations for health, economic, environmental, and other reasons, while making daily travel hazardous for those solely reliant on these modes.

Chicago area streets will not be “complete” until all of our region’s road-building agencies design for walking and biking, too.

## APPENDIX 1: SAMPLE PHOTOGRAPHS FROM AUDITS

Huntington Avenue (Algonquin) is a residential collector road that provides both bicycle and pedestrian accommodations, including bike lanes, crosswalks along and across the road, and pedestrian signage. While Huntington is a lower-traffic road, these accommodations are also appropriate for higher-traffic roads of the same type and speed limit (30 mph).



Two corners of the skewed intersection of IL 72 at IL 25 (East Dundee) have right-turn islands, which could improve the crossing for pedestrians. However, a nearby sidewalk stops short of the intersection, and there are no crossings or curb cuts to the islands. There are retail outlets on three corners of this intersection and a Pace bus route running along IL 72.

At the intersection of multi-lane arterial roads Orchard Avenue and Galena Boulevard (Aurora), right-turn islands are present at each corner, with the Orchard sidepath and Galena sidewalks using these islands to improve crossing safety for pedestrians and bicyclists. Each island is recessed from the travel lane to provide more room for left-turning trucks.







In addition to bike lanes and sidewalks, Howard Street (Skokie) shows a good use of bulb-outs, extensions of the curb through the parking lane. This shortens crossings of the road, while putting pedestrians closer to the road where they are more visible to traffic.

On IL 59 (north Plainfield), adjacent subdivisions rely on the high-traffic, 45mph speed limit arterial road for access to commercial areas and other destinations along IL 59. While the subdivisions have interior sidewalks, IL 59 has no sidewalks or intersection crossing features. One extra foot of lane width has little effect on the very low Bicycle Level of Service rating of 4.61, an “E”.



Hillgrove Avenue (La Grange) has adequate sidewalks and other pedestrian accommodations in a place where they are needed most—near the Metra train stop. This makes it easier for people living in nearby neighborhoods to walk for a portion of their commute.

## APPENDIX 2: SCORING METHODOLOGY

The Complete Streets Audit scoring methodology is based on a 100-point scale, with the following gradations: A = 80-100, B = 60-79, C = 40-59, D = 20-39, F = 0-19. Sum the results from the sections below, including pedestrian accommodations along the road, bicycle accommodations along the road, road crossings, and other context-sensitive factors.

### Pedestrian Accommodations Along the Road

A maximum of 40 points are possible for sidewalks *along* the road being audited. “Sidepaths”, bike trails parallel to but off the road, are considered as sidewalks here.

The Federal Highway Administration (FHWA) has provided recommendations<sup>3</sup> for **sidewalk installation**, based on road classification, land use and density. These recommendations, which include suggested “required” and “preferred” conditions, are used in this section of the methodology, with the following weighting:

- 30 points if the maximum FHWA recommendation is met
- 22 points if only the “required” level is met when a “preferred” level is present
- 14 points if sidewalks are only on one side, when FHWA lists two sides as required
- 5 points if right-of-way has been preserved with flattened ground work, for future sidewalks

Deduct between 25% (minimum) and 100% of the above for incomplete sidewalks, depending on severity and/or frequency of the gaps.

Add up to 10 points for favorable **sidewalk design and maintenance details** *along* the road being audited, including:

- Sufficient sidewalk buffer strip width and/or pedestrian-friendly features such as trees
- Placement of crossings and stop bars at intersections – closer to the road is better for visibility and for more realistic car stopping location and stopline adherence
- Right-turn island and/or median refuge islands at wider, busier intersections – breaking up the crossing into segments and isolating turning motions with which to contend
- Pedestrian signals and conveniently-located push-button activation
- Sufficiently visible crosswalks at signalized intersections, including continental, ladder or zebra-style where appropriate (Figure 1)
- Maintained crosswalks, as appropriate, at street intersections
- Visual delineation (e.g., painted or color-contrasted crosswalks) at crossings of commercial entrances – in recent years, this feature is regularly omitted
- Use of right-in-right-out islands as a refuge island – allowing crossings/crosswalks and stoplines to be closer to the road (Figure 2)

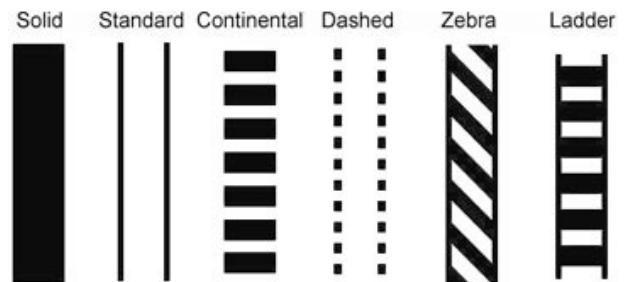


Figure 1 – Crosswalk styles.



Figure 2 – Left: *poor crossing and stop bar placement.*  
 Right: *good use of a right-in-right-out island*

- American with Disabilities Act (ADA) ramp compliance at crossings
- Links to adjacent land uses – are roadside destinations accessible from the sidewalk?
- Other proactive design factors
- Deduction for poor sidewalk condition

## **Bicycle Accommodations Along the Road**

A maximum of 35 points are possible for bicycle accommodation *along* the road being audited. The methodology compares a baseline score for the road with any dedicated on-road and/or off-road bikeway facility that may be present. The highest scoring accommodation is considered as the overall bicycle accommodation score.

Many minor roads may be fine for bicyclists “as is”. For other roads, extra space may be warranted. Both off-road and on-road bikeway options are available, each appropriate in a range of cases. Scoring for four bikeway options below varies with the situation to reflect their ranges of suitability.

First, consider the road without any of these bikeway options. This will be its **minimum bike accommodation score**. Determine its Bicycle Level of Service<sup>4</sup> (BLOS), a measure of adult bicyclist comfort level as a function of roadway geometry and traffic conditions. Using an on-line BLOS calculator<sup>5</sup>, enter the number of lanes, lane width, daily traffic volume count (ADT), speed limit, and on-road parking occupancy percentage. Consider the pavement width *without any bike lane or shoulder stripes* (paved shoulder/bike lane/parking width = 0), even if such striping exists on the road. If the resulting BLOS is a “B” or “C”, calculate  $15 * (3.5 - \text{BLOS})$ . Use 30 points for a BLOS of “A” and 0 points for a BLOS of “D” or worse. Then, add up to 5 points for any bicycle-related pavement markings and/or signage that may exist (Figure 3).



*Figure 3 – Pavement Markings and Signage: “Sharrows” – indicates proper bike position in the presence of on-road parking; on-road traffic signal actuation for bicycles; Bike Route signage with wayfinding; Share the Road signage.*

Next, consider any specific bikeway or other accommodation that may be part of the road design. If any of the four types below exist, find its score:

1) **Bike Lanes** (Figure 4) provide dedicated space for bikes. Each 5-6 foot bike lane should be one-way, on each side of two-way roads. Urban arterials (usually low to medium speed) and collectors are the most appropriate places for bike lanes. Results include higher bike usage and lower crash rates – even among car-car crashes.



Award 30 points for bike lanes designed per AASHTO<sup>9</sup> guidelines. Deduct up to 15 points if the lanes are poorly maintained or swept, or if they do not meet guidelines. Add up to 5 points for relevant pavement markings, such as those for signal actuation, proper striping at intersections<sup>9</sup>, and lane positioning to avoid parked cars’ doors.



*Figure 4 – Bike Lanes.*

2) **Paved Shoulders** provide space for bicycles, improve safety for cars, and reduce road maintenance needs. IDOT’s bicycle policy<sup>10</sup> specifies 4-foot shoulders for daily ADT traffic count between 1000 and 2999, 4-6 feet over 3000 ADT – with 6-foot shoulders for 55 mph roads or 45 mph roads with high truck traffic. Bicycles can not ride on shoulder rumble strips. However, designs with periodic longitudinal breaks and at least four feet of (swept) space clear of rumble strips can be bike-friendly.

Award 30 points if paved shoulders on both sides of the road meet IDOT’s bicycle policy. Award 15 points for paved shoulders of 3 or more feet but not meeting these standards. Deduct up to 50% if the shoulders are poorly maintained or full of debris. Deduct up to 100% for rumble strips, depending on their bicycle-friendliness. Add up to 5 points for bike-related pavement markings and/or signage, as shown in Figure 3.

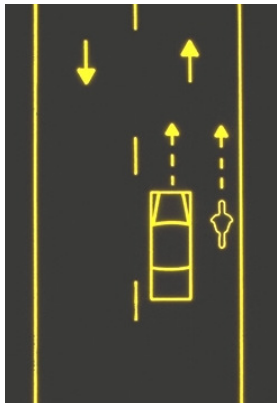


Figure 5 – Wide outside curb lanes.

3) **Wide Outside Curb Lanes** (Figure 5) allow cars to pass bikes within the same lane, with at least three feet clearance. These serve experienced cyclists on lower speed urban roads, but are less adequate for other users and on other roads.

Award 10 points for an outside curb lane width of 13 feet, 15 points for 14 feet, and 20 points for 15 feet or more. Deduct 25% of this for every 5 mph speed limit increment over 30 mph. Deduct another 1% for every 1000 in its daily traffic count (ADT). As an example, 14-foot lanes on a 30 mph road with 3000 ADT score 12 points, while the minimum of 0 points is given for the same road with 45 mph *or* 15000 ADT. Add up to 5 points for bike-related pavement markings and/or signage, as shown in Figure 3.

4) **Sidepaths** are bike trails adjacent to but off the road (Figure 6), basically widened sidewalks. Because of conflicts at intersections (illustrated in Figure 7), sidepaths are more appropriate along roads where there are fewer crossings. This commonly occurs on higher-speed and (often) busier roads with more access control. Despite advice from AASHTO, many towns use sidepaths in less appropriate places with numerous crossings. This often is *less* safe than riding on-road – a surprising result to many.



Figure 6 – Sidepath.

Start with 30 points for a sidepath – or a sidewalk, which is also considered here for its utility as a place to bike. Deduct 3 points for each foot of width under 8 feet, as this creates pedestrian conflicts. Deduct 4 points for every Sidepath Suitability Score<sup>6,7</sup> (SSS) over 6 points. The SSS is used to gauge appropriateness and design factors of the sidepath (or sidewalk).

Deduct 50-100% of what remains, for gaps of varying severity. If there are no gaps, deduct up to 50% if the sidepath (or sidewalk) is poorly maintained and swept. Also, factor in the sidepath in the sidewalk design and maintenance detail score above.

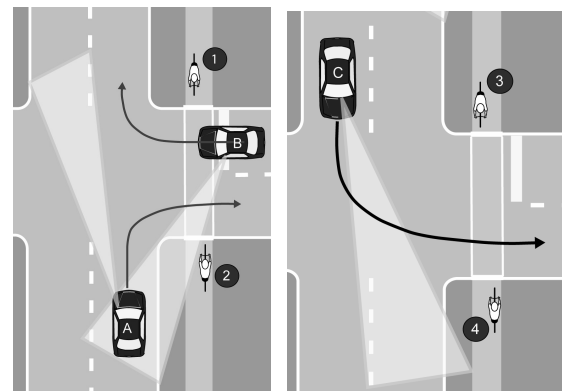


Figure 7 – Sidepath crossing problems. Sidepath users, especially contra-flow cyclists 1 and 3, are often not seen. On-road cyclists are within turning motorists' viewing areas.

Select the highest score among these four bikeway accommodation types above, or 0 if none of them exist. The result becomes the **bikeway facility accommodation score**.

The higher of (1) the minimum bike accommodation score (the baseline) and (2) the bikeway facility accommodation score becomes the **overall bike accommodation score**, to be added to the total.

## Road Crossing Accommodations

The pedestrian section considered travel *along* the rated road, including crossings of side streets, entrances, and driveways intersecting the road. But, how easy is it for bicyclists and pedestrians to *cross* the road being rated? As a road gets busier and wider, it can become more difficult, especially when certain design features are absent.

Score up to 15 **road crossing** points for well-designed crossings suitable for the particular road. Considerations may include factors mentioned earlier and more:

- Right-turn and/or median refuge islands at wider, busier intersections
- Median refuge islands, high-visibility crosswalks, warning signage, and other features at significant non-motorized mid-block crossings
- At signalized intersections, pedestrian signals with conveniently-placed actuation and highly visible crosswalks
- If appropriate, raised crosswalk crossings and bulb-outs that shorten crossing distance
- Signal actuation for on-road cyclists – either MUTCD-approved Bicycle Detector Pavement Markings on-road (preferred), or accessible off-road placement
- ADA ramp compliance at crossings
- Access to the off-road sidepath trail or sidewalk from road entrances on the other side (Figure 8)
- Other proactive design factors



Figure 8 – Access to far-side sidepath or sidewalk at T-intersection.

## Other Context-Sensitive Factors

Certain roads have factors making adequate bike and pedestrian accommodation even more important. Access to destinations, adjacent land use, and availability of alternative routes all affect the *latent* demand of non-motorized use. Some of the following factors are adapted from IDOT's bicycle policy<sup>10</sup> in its design manual.

Start with 10 **other factors** points. Deduct points for *not meeting* any special context of the road's corridor, such as:

- Does this road provide the only access to significant destinations such as a park, recreational area, school, transit, shopping/commercial area, or employment center?
- Does the road provide unique access across a natural or man-made barrier (e.g., bridges over rivers or expressways)?
- Are there alternative, *nearby*, *useable* routes that also provide access to the destinations along the road being rated?
- Is the road in an area where many more non-motorized users would be expected, based on density, land uses, parking availability, economics, and other reasons?
- Does the road impact an independent trail or connectivity to a trail?

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*Appendix 2 photo credits: [www.bicyclinginfo.org](http://www.bicyclinginfo.org), Dan Burden, Active Transportation Alliance.*