Transforming Communities

To make healthy living easier

The Built Environment
An Assessment Tool and Manual
(An Adaptation of MAPS)

July 12, 2015

CDC

Acknowledgements

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Appendices

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1. Introduction

A wide array of tools exists for measuring different features of the built environment, many of them well validated. These existing tools fall into three categories: 1) interview or self-administered questionnaires which primarily measure perceptions, 2) tools that collect archival (existing) data, often using GIS, and 3) systematic observation or audit tools (Brownson et al., 2009). It is often difficult for local program staff and evaluators to know which features of the built environment are most important to measure on the basis of the health behaviors and outcomes they are trying to affect. It is also difficult to know which tool(s) to choose to most accurately and feasibly assess those features.

The Built Environment Assessment Tool (BE Tool) (an adaptation of MAPS) (Appendix D) is a direct systematic observation data collection instrument for measuring the core features and quality of the built environment related to behaviors that affect health, especially behaviors such as walking, biking, and other types of physical activity. There are many aspects of the built environment. The built environment includes the buildings, roads, sidewalks, utilities, homes, transit, fixtures, parks and all other man-made entities that form the physical characteristics of a community. The built environment can impact human health by affecting rates of physical activity, air pollutants such as ozone and particulate matter that can exacerbate asthma and respiratory disease, and emissions of carbon dioxide that contributes to climate change.

The BE Tool was not designed to assess every aspect of the built environment. Rather the tool assesses a core set of features agreed upon by subject matter experts to be most relevant. The core features assessed in the BE Tool include: built environment infrastructure (e.g., road type, curb cuts/ramps, intersections/crosswalks, traffic control, transportation), walkability (e.g. sidewalk/path features, walking safety, aesthetics & amenities), bikeability (e.g., bicycle lane/path features), recreational sites and structures, and the food environment (e.g., access to grocery stores, convenience stores, farmers markets, etc). Additional questions or modules could be added by users if more detail about an aspect of the built environment, such as the nutrition environment or pedestrian environment, is desired.

This Manual (main section of this document) provides a brief overview on the importance of measuring and understanding the built environment, describes the training and management of data collectors (or raters) and data for the BE Tool, provides instructions for selecting and assessing street segments, and provides guidance on data management and analysis procedures. In addition, in the appendices can be found background on the development of the tool (Appendix A), the list of experts who contributed to the development of the tool (Appendix B), links to resources on source tools (Appendix C), the tool itself (Appendix C), instructions for using the tool (Appendix E), and a data coding and scoring table to guide analysis (Appendix F).

2. Measuring the Built Environment

This section provides some background on the built environment and why measuring the features of the built environment related to walking, biking, and other physical activity is relevant for public health work that seeks to reduce obesity and other types of physical activity.

2.1. Why Measure the Built Environment?

In an effort to improve health, many public health practitioners are shifting their focus from programs aimed at producing individual behavior change to those affecting entire communities. Public health practitioners understand that the choices people make are influenced by the environments in which they live. This includes policies and systems that impact their health, and the built environment in which they live. As a result, many public health practitioners have become interested in making improvements to the built environment to improve public health outcomes. They are broadening their partnerships to include local government leaders from a variety of disciplines (e.g., planning, transportation, infrastructure, parks and recreation) and nongovernmental entities (e.g., neighborhood associations, nonprofit community development groups, schools, businesses, and religious organizations).

Improving the built environment is a difficult process that involves a number of different stakeholders: elected officials who direct planners and engineers to plan land development; developers who choose whether and where to build houses, offices, and retail spaces; and concerned residents who help shape community decisions. Creating a healthy built environment means learning how the built environment can affect health; finding the many options available to make built environments healthier; and understanding which options are right for a particular community based on its needs and resources.

Measuring the built environment in a specific area can help to assess baseline conditions; assess needs and set priorities for improving the built environment; and collect measures over time to assess changes in the features of the built environment related to obesity and other negative health outcomes. The BE Tool facilitates direct observation of the built environment using objective measures. In determining whether an observational assessment tool to measure the built environment is the best use of your time and resources, it is a good idea to first collect as much existing information about the built environment as possible. This will help you to decide whether to conduct a more in-depth and detailed assessment through systematic observation.

2.2. Resources on the Built Environment and Health

This section describes a number of other resources you can use to learn more about the relationship between health and the built environment and what options are available to make the built environment healthier. It also provides some existing sources of data you may want to collect prior to using the BE Tool.

A number of resources explain the relationships between the built environment and health.

- A great place to start is with the Centers for Disease Control and Prevention (CDC)'s Healthy Places Web site. This site has links to over a dozen areas concerning healthy community design and public health issues such as physical activity, healthy food, and injury. It also includes healthy planning tools, links to related organizations, and relevant conferences and events.

- The American Public Health Association's [Transportation Issues from the Public Health Perspective](#) has a comprehensive number of resources related to how transportation may affect public health and health equity concerns.
- The [Action Strategies Toolkit](#), by the Leadership for Healthy Communities, was written for local and state leaders and has a focus on policy improvements. It also includes information on how communities may be contributing to obesity levels and how they can help prevent obesity through improvements to transportation systems, healthy eating opportunities, and the built environment.
- New York City's [Active Design Guidelines](#) provide a manual for architects and urban designers of evidence-based strategies for creating healthier buildings, streets, and urban spaces that can encourage regular physical activity and healthy eating.
- American Planning Association (APA)'s [Policy Guide on Community and Regional Food Planning](#) describes recommendations that can increase opportunities for healthy eating for residents. Their [Healthy Plan Making Report](#) may also serve as a good informational resource.
- [Creating a RoadMap for Producing & Implementing a Bicycle Master Plan](#) provides strategies to plan, develop, and implement a bike master plan. It was developed by the National Center for Bicycling & Walking and the Active Living Resource Center.
- The US Department of Justice's [Crime Prevention through Environmental Design Guidebook](#) provides safety design measures in various types of locations such as schools, shopping districts, and downtowns.

2.3. Existing Information on the Built Environment

Before you commit the time it will take to complete a systematic observational assessment of the built environment, you might want to spend a little time researching your community's built environment and learning more about both the policies that shape it and how well it is providing an environment for its residents to live healthy lifestyles. You will probably be interested in policies related to physical activity and infrastructure that supports people walking, biking, or having space to play or exercise in parks and recreation areas. You also may be interested in policies related to healthy food access, for example, promotion of healthy food; government procurement guidelines to ensure healthy foods are served in public agencies; incentive programs to bring in grocery stores or add fresh fruits and vegetables to corner stores; or restrictions on fast food restaurants near schools.

Most land use policies are set at the local level because of the many unique characteristics that shape different parts of the country. Typically, transportation policies are set at the local, state, and national levels because the transportation system crosses jurisdictional lines to link communities together.

The kinds of policies in place, and how comprehensive they may be, will depend on the location. Cities tend to have more regulations than counties because they have more people living in close proximity. Further, the political climate and history of regulation also will determine whether particular plans or policies are required or not. Public sector Web sites will provide relevant policy documents to help you learn more about the policy landscape in your community.

A **comprehensive plan** is a visioning document that lays out a community's expectations for future growth, its priorities for development, and its goals to achieve that vision. It usually has a 20- to 30-year horizon. The goals are detailed in a **land development or zoning code**, which may include any requirements for parks, open space, sidewalks, or bike

infrastructure in new development. It may have permitting information for farmers markets that specifies in which zoning districts they may be placed. You also may find a **transportation plan** that describes how the road network will accommodate future growth. The plan is likely to include language that shows the level of priority of walking and bicycling in new infrastructure. A city may also have a **Complete Streets policy** or **food access policy** that covers additional areas related to public health. Incentive programs like matching funds for using the Supplemental Nutrition Assistance Program (SNAP) or Special Supplemental Nutrition Program for Women, Infants and Children (WIC) at farmers markets may be listed on the Web site as well, possibly in a community development or economic development department.

There are a number of different Web sites you may want to review. If you are in an incorporated city, you may want to start with its Web site. You also may review your county's Web site. A larger urbanized area may have a Metropolitan Planning Organization (MPO) that has the authority to set plans. If you are interested in active transportation, review any transportation plans that a regional or state transportation agency may have. A few other good sources of information include the following:

- County Health Rankings include detailed health information down to the county level.
- Walkscore shows how walkable an address, neighborhood, or community is, based on the number of amenities such as restaurants, groceries, and parks that are in walking distance. It also provides a bike score, which measures the available bike infrastructure (lanes, trails), and geographic features such as hills, destinations, and road connectivity, along with the number of bike commuters in an area.
- USDA Food Access Research Atlas allows user to map food deserts down to the census tract and show where residents may be experiencing lack of healthy food options.
- USDA Farmers Market Search will show you where farmers markets are located in your community and whether they accept SNAP or WIC payments.

3. Management and Training of Raters

This section describes methods for coordinating, managing, and training data collectors (raters), as well as methods for maintaining inter-rater reliability.

3.1. Coordination and Management of Data and Raters

To coordinate data collection, the assignment of street segments to raters, and tracking the progress of data collection, create a management database in Epi-Info, Excel or Access. Some suggestions for fields in the database are:

- Segment ID
- Census tract or block group
- Street name
- Intersection street names
- Zoning
- Primary direction of street segment
- Assigned to rater? (yes/no)
- Rater # assigned to
- Rated? (yes/no)
- Date rated
- Complete? (yes/no)
- Inter-rater reliability assignments
  - » Rater
  - » Assigned?
  - » Completed?
- Comments

This database can be used to track overall data collection, assign segments to raters, track progress, and track inter-rater reliability procedures. The data collection manager may want to have a map of the entire area that is being assessed, with all segments to be assessed marked, and use that map to visually track what has been rated and what still needs to be completed.

3.2. Training of Raters

Raters can be anyone with interest in the topic and an understanding of the importance of the reliability and consistency of data collection. Training of raters is very important for building a level of understanding about the built environment, particularly those features that will be assessed using the tool, and how to carry out all aspects of data collection. Training also should include in-field training that consists of supervised data collection, and a certain number of practice runs, with an inter-rater reliability test at the end of training. Appendix E contains an instruction guide with pictures to help

raters complete the tool. Currently, CDC does not provide training for the BE Tool. However, additional information on the training and certification of raters, and additional pictures of built environment features, can be found in the MAPS manual available at this Website: http://sallis.ucsd.edu/measure_maps.html.

Step 1: The first step of training should be classroom training on the project goal, overall purpose for measuring the built environment, description of the area to be measured and why, all to set the stage for why the rater will be collecting data on the built environment. This puts the project and data collection tasks into context and helps the rater go into the field with a good understanding of the purpose. This also helps the rater to answer questions from anyone he or she encounters while collecting data.

Step 2: The second step of training also should be in-office, consisting of an in-depth description of each built environment feature the tool measures and how to use the tool to measure it. The use of pictures and other media should be used to reinforce understanding of these features. This in-office step also should include a description of how raters will carry out the following tasks:

- Being assigned street segments to rate and preparing the tools prior to going into the field
- Walking a street segment and using the tool
- Recording and managing field data
- Managing the completed tools and delivering them to the data collection manager
- Handling inter-rater reliability

Step 3: The third step of training should be in-field practice sessions, directly supervised by the data collection manager or trainer. This step should consist of allowing the rater to complete all the preparatory steps in-office before going into the field; finding assigned street segments; and completing at least one tool for a variety of types of street segments (e.g., commercial, residential, rural). The supervisor should discuss all aspects of the tool and procedures during the practice runs, since this is not a test of the rater's abilities, but instead is still part of learning.

The above three steps can be completed via a one-on-one process (supervisor and rater) or as a group (supervisor and group of trainees).

Step 4: The next step in training is to assign the raters a set of street segments to assess and send them out on their own to do it. This may best be done as a group, so that each can complete tools for a street segment, and then discuss the ratings (and any variations) as a group, onsite. They can then move to another street segment and repeat the process. At the end of this step, the raters should turn in all of their completed tools to the data collection manager, who will review them to identify variations in assessments, and rate the level of inter-rater agreement.

Step 5: Finally, raters should be sent out individually to assigned street segments to complete the tool. Again, this also can be done for different types of streets, such as commercial, residential, or rural. The data collection supervisor can then assign those same segments to either the trainer or someone who has completed training, to assess the same segments for the purpose of inter-rater reliability testing. If the level of inter-rater agreement is not sufficient, the supervisor or trainer can sit down with the rater to discuss what he or she got wrong and how to correctly measure it. When a rater is trained and achieves a predetermined rate of inter-rater reliability, he or she is ready to be a rater in the project. Ongoing inter-rater reliability checks also should be completed at set times and amounts throughout the project period.

3.3. Inter-Rater Reliability

Inter-rater reliability audits should be conducted periodically throughout the data collection period. Once raters are trained, inter-rater reliability audits should be conducted on approximately 10% of all segments he or she rates. Inter-rater reliability audits should take place no more than 1 week after original data collection occurred.

Each rater should complete the same number of inter-rater reliability audits. The data collection manager should select street segments completed by a rater, and assign those segments to a second trained rater to complete a new audit of the segment. The auditor should complete a tool for the same segment completed by the first rater, and the data collection manager should review it for level of agreement or variation. The manager should sit down with the rater (and auditor) to discuss areas of agreement or variation, and make sure that any clarifications are provided so that the rater and auditor would complete the tool in the same way in the future. Feedback on inter-rater reliability audits should be provided to the raters as soon as possible, so that any mistakes or misunderstandings about procedures or definitions can be clarified.

4. Segment Selection and Field Procedures

This section describes the steps in the process of identifying and selecting street segments to assess, and measuring each street segment, as well as suggestions for field preparation and personal safety.

4.1. Identifying Street Segments to Assess

Deciding which street segments to assess with the BE Tool depends on your purpose for assessing the built environment. If your goal is to get a general picture of the built environment in a geographic area, then you should select a sample of street segments that best represents that area. If your goal is to conduct a built environment needs assessment, or to collect baseline data in an area where a built environment intervention is planned, then it is best to select street segments that represent the streets and areas where the intervention will take place. If the location of an intervention is not yet determined, it is advisable to use existing data to determine the area or areas where built environment improvements would have the most impact. These can be areas with populations in the most need of good walking environments, such as areas with the lowest car ownership, areas with the highest number of pedestrian or bicycle crashes with motor vehicles, and/or areas with the highest levels of poverty, and/or areas with highest obesity rates. You may then want to use the BE Tool to assess street segments in those areas.

If your interest is in a particular commercial corridor, then the best use of the tool may be to assess all street segments along that corridor. This may consist of assessing the street segments on the main street of the corridor, or could be supplemented by also assessing the first segment of the cross streets on either side of the main street of the corridor, to get a more detailed picture of the full segment.

Commercial Corridor
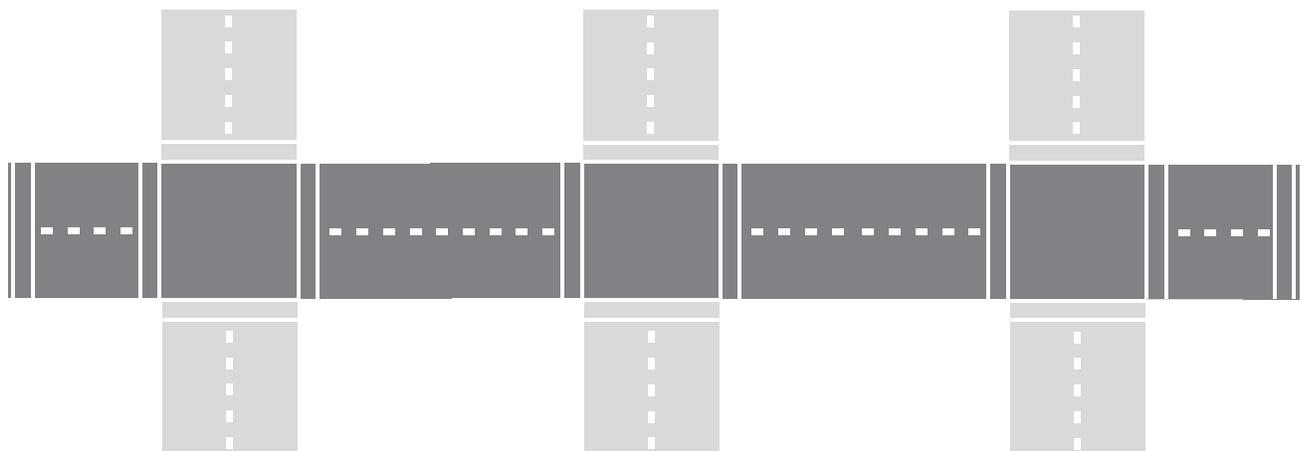
Commercial Corridor (with Cross Streets)
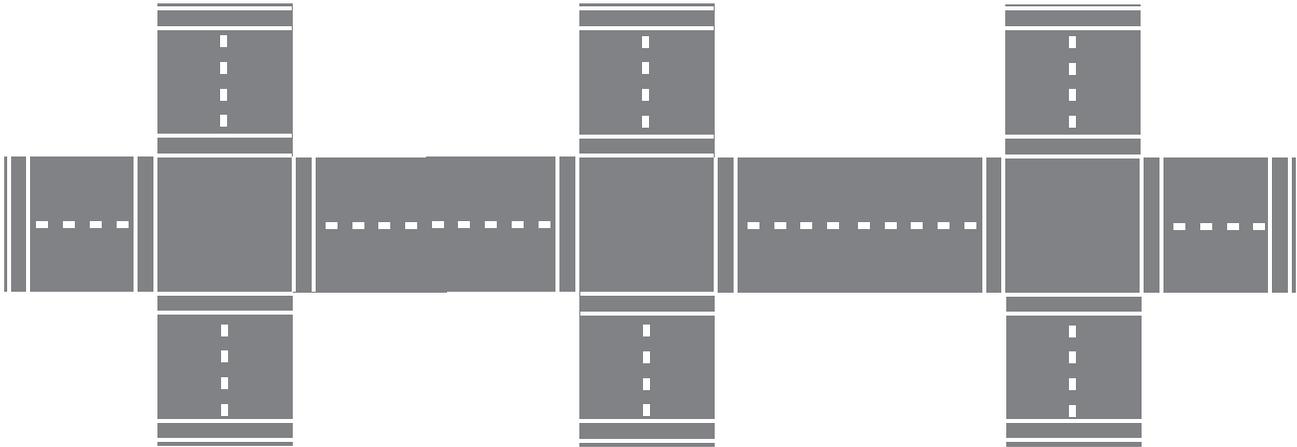
If your interest is in the built environment around an intersection (or set of intersections), then you may want to use the tool for each segment around the intersection. By doing this, you will assess the intersection, all crossings around the intersection, and the street segments leading to the intersection. For a 4-way intersection, four separate tools would be used, with the questions on intersection geometry and intersection control overlapping.

If the goal is to assess the built environment in a particular area, neighborhood, block group, census tract, zip code, or school catchment area, then selecting street segments to assess will depend on the goal of your effort. If the area has a commercial zone, it may be best to use the tool to assess the built environment along the main commercial corridor (and cross-street segments). You may then want to select other street segments in the geographic area, to get a better picture of the built environment in that area. This can be done by selecting specific routes from one part of the area to another (e.g., from a residential part of the area to a commercial corridor or school zone); by randomly selecting a designated number of segments in the area; by selecting segments that represent different typologies in the area (e.g., residential, commercial, mixed use); or by measuring all segments in the area (which may be time and resource intensive). If you are interested in assessing the area around a school, you could select street segments either by assessing all street segments in a one-quarter mile radius of the school, or by measuring segments along routes from residences to the school.

4-way Intersection

Sampling Street Segments

- All segments along commercial corridor
- All segments around an intersection
- Segments along routes
- Segments around schools
- Random selection of segments in an area
- Segments that represent typologies
- All segments in an area

The selection of street segments for observational assessment should start with a map of the area under consideration. This can be done by printing a Google map of the area, by using GIS, or by using a hard-copy map of the area. On the actual map printout, select and indicate the street segments to be assessed by marking them with a pen or highlighter. Assign each segment a unique ID number. Before assigning a rater to any set of street segments, create a list of the segments for the rater to assess, with ID number, street name, and cross streets that define the segment. Also, mark whether the street is predominately east-west or north-south in its orientation. If using GIS or other databases, you also may indicate the length of each segment and its zoning.

All of this information can be given to the rater as a list or table. Either the data collection manager or each rater should prepopulate a tool for each street segment to be assessed, with the information about each segment—segment ID, street name, segment length, primary direction, cross street names, and so forth—prior to going into the field. If a rater is going to be assessing multiple street segments along a corridor, it is helpful for the list of segments to be rated, and the prepopulated tools, to be provided in the order in which they should be rated.

If using the tool to measure a rural area where the road may extend for miles without intersections, you can break the road(s) that you will assess into one-half mile segments and use a separate tool for each one. In this case, you may want to start at an intersection and walk the half-mile segment, but not complete the items for Intersection 2. You may then use only the street segment section of additional tools for each half-mile segment that does not have an intersection at either end.

4.2. How to Measure Entire Segments

The BE Tool measures entire street segments. This includes both sides of the street and the intersections at both ends. In some cases, it may be more appropriate to consider a street segment end-point not as a street intersection, but where a significant change in pedestrian infrastructure happens (e.g., discontinuity of a sidewalk, signaled cross walk). In either case, the segments can easily be pieced together by software if GPS coordinates at each street segment end-point are recorded.

If you decide to define the street segment end-point as a place where a significant change in pedestrian infrastructure happens and it does not contain an intersection, then you would not complete the section of the BE Tool that refers to intersections.

If there is a T-intersection between two four-way intersections on a street segment, then a separate tool should be completed for each side of the T intersection (see graphic).

Each side of the street along a segment is a block face, and for many features the BE Tool collects information separately for each block face. This is useful for assessing whether features such as sidewalks and bike lanes are on one or both sides of the street, as well as differences in their size or quality on each side. A compass will be useful for confirming the direction of the street (N-S or E-W), which end of the segment intersections 1 and 2 are located, and the compass direction of each block face.

A. To measure a street segment, the rater should stand at one end of the segment at the intersection. This will be Intersection 1 in the BE Tool. The first thing to assess is the geometry of the intersection, and the type of intersection control (e.g., stop sign, traffic signal, traffic circle). These measures should apply to the entire intersection, and would be the same if taken from any corner.

B. Although the intersection may have crossings on all four sides, it is the crossing from one block face of the street segment to the other that you will assess with the tool. You will complete the questions in the tool that cover the crossing, crosswalk features, and curb cuts. For some of these questions, there are sub-questions for pre- and post-crossing, so that you will assess the crossing on both sides of the street. Be sure to indicate which side of the street the pre- and post-crossing are on. After completing this section, you will be on the opposite block face of the street segment.

C. It is at this point that you will assess what is found along the street segment. For some questions, your responses will address the entire street on both sides, while for others the responses have been split in a table format so that you can assess each block face separately. Be sure to confirm which side of the street you are on for those items so that you can indicate it on the tool, and complete the appropriate responses. Answer all of the questions relating to either the full street segment or to the side you are on. You can do this while walking the segment.

D. You should end up at the intersection on the other end of the street segment from where you started. Complete the questions about the intersection itself, and about the crossing to the opposite side of the street (the block face you started on, but at the opposite end). Follow the same procedures as you did at the other end.

E. Finally, walk that block face of the street segment and go back through the middle part of the tool to complete any questions in which the responses are separated by side of the street (items 25-28, 32-34, 38-50, and 52-61). When you have completed all sections and questions, you should end up back at the spot where you started (point A in the diagram above). You have assessed an entire street segment.
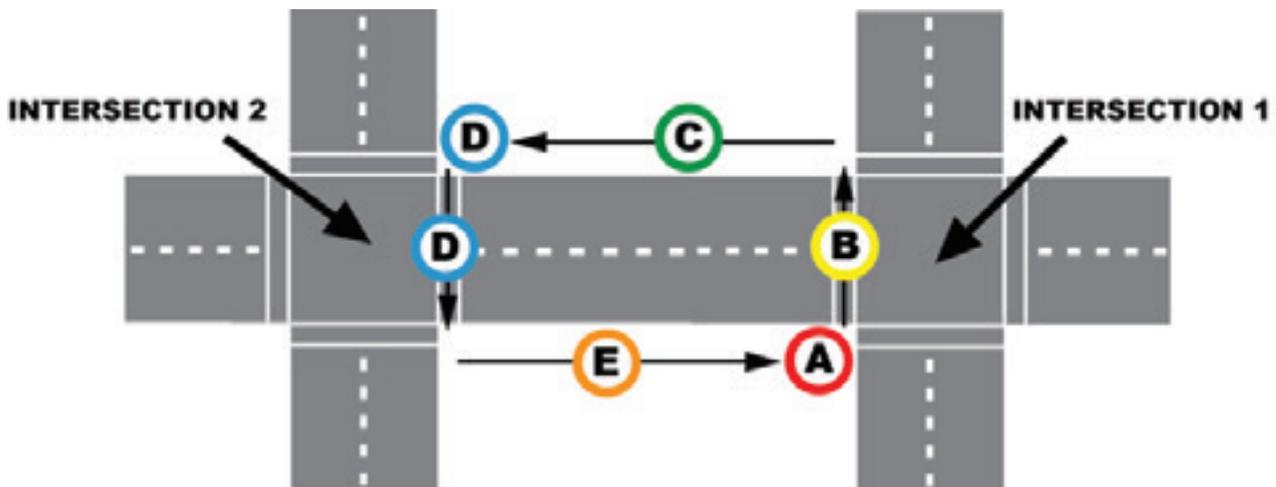
Complete every segment you have started. Don't start rating a segment unless you have enough time to complete it in one session. Once you have completed a segment, review the tool again and fill in any blank fields before leaving or moving on to another segment.

Moving to the Next Street Segment

There are options for moving on to the next street segment to measures, based on whether you are assessing a corridor with or without cross streets. If including cross streets in your assessment, the steps (A-E) described above would be repeated in the following fashion:
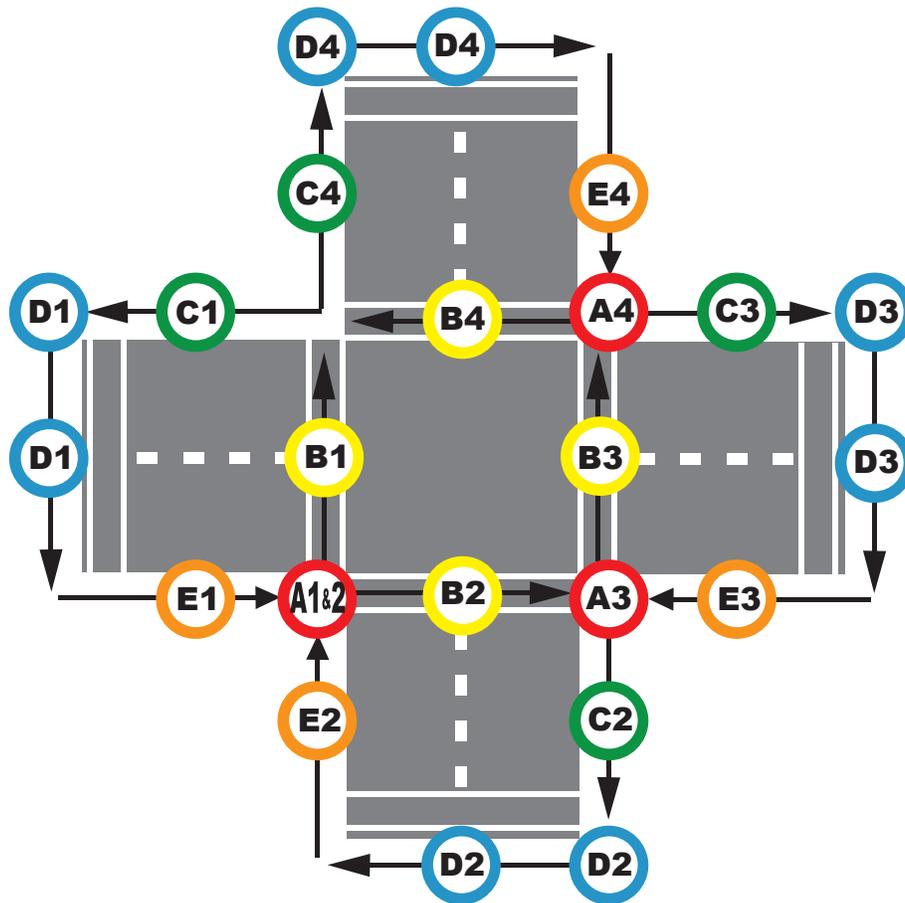
F. If the goal is to assess a corridor without including the cross streets, you will want to complete a separate pedestrian crossing section of the tool (Questions 68-78) when moving from one segment to the next (Step F), and then start a new tool.

G. In order to assess all crossings on the street corridor, you will also want to repeat another pedestrian crossing section of the tool for the corridor crossing on the other side of the street (Step G). See the graphic below for how to use the tool to assess a street corridor without including cross streets.
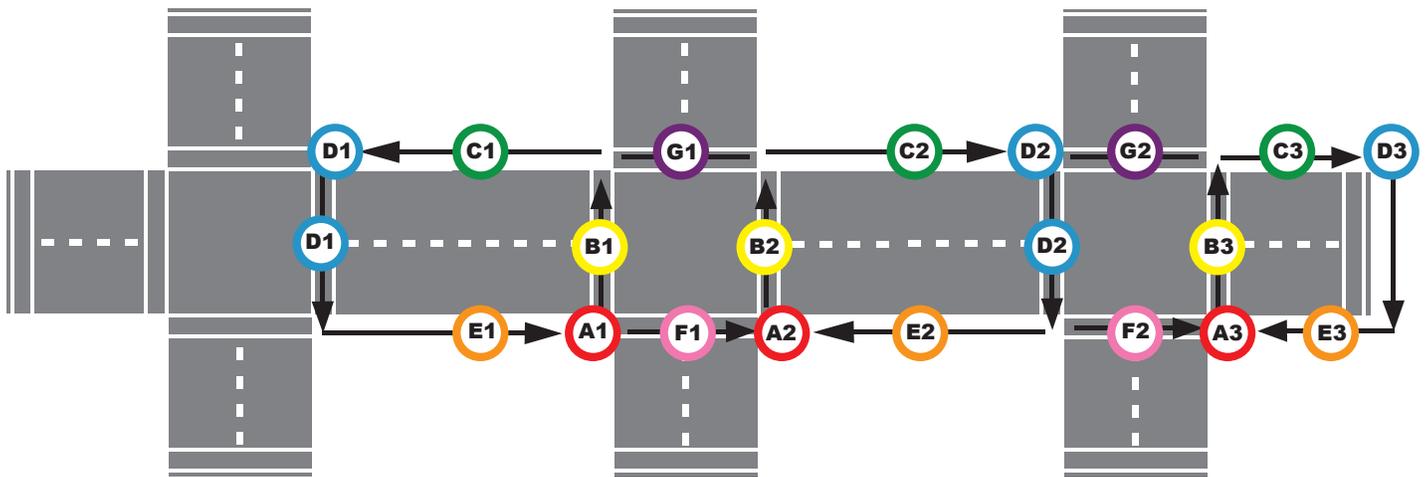
As represented in the above graphics, assessing an intersection will require completing four BE Tools and assessing the corridor as shown above would require three BE Tools plus extra crossing sections for F1, G1, F2, and G2. When moving from one segment to the next, either as a corridor or as intersections, some sections of the tool will not need to be repeated. By completing one tool you will have already assessed the intersection geometry and controls, and will not need to repeat that assessment for the same intersection. For example, when assessing the segments around an intersection, A1 is sufficient for assessing the intersection, and A2-4 would be unnecessary to repeat. For the corridor, A1 assesses the intersection so that it is not necessary to repeat it in A2, while D2 assesses the next intersection so that A3 is not necessary. In these cases, you may either repeat the intersection questions so they can be combined later, or make a note that it is already assessed in Segment ID#_____.

4.3. Personal Safety

- Check weather conditions before going to your assigned segments and prepare for adverse weather conditions, as appropriate.
- Conduct all observations during daylight.
- If you feel uncomfortable or unsafe, leave immediately and, if necessary, call the police to report a dangerous situation.
- If there is no safe place to walk, conduct the observation from a vehicle, or find a safe vantage point.

4.4. Field Preparation Checklist

- Budget 30–45 minutes for each segment.
- At the end of your shift, submit all of your tools and maps and discuss your work and any questions with your supervisor.

The following items are <u>necessary</u> to bring into the field:

- Map(s) with assigned street segments clearly marked
- List of assigned street segments
- Copies of the tool (with identifying information for each segment prepopulated)
- Clip board, note paper, pen/pencil

The following items are <u>suggested</u> to bring into the field:

- Compass
- Tape measure
- Level
- Stop watch
- Comfortable clothes and shoes
- Water and snacks
- Cell phone
- Camera
- Sun protection and hat
- Traffic safety vest
- As few other personal belongings as possible

5. Data Coding, Scoring and Interpretation

5.1. Data Coding and Scoring

As noted elsewhere, DCH found the MAPS tool (http://sallis.ucsd.edu/measure_maps.html) to be the best source for questions, response options, and well-developed scoring guidance to address BE Tool expert panel recommendations. DCH, in turn, organized the BE Tool to align with MAPS structure and scoring system for which documentation can be found at the above link. This alignment enabled DCH to adopt MAPS variable naming conventions for the large number of BE Tool items adopted from MAPS. The data scoring and analysis of the BE Tool is also designed to fit within the MAPS scoring structure so that the tools produce comparable data. The BE Tool Data Coding and Scoring Table provided in Appendix F provides recommended variable names, coding rules and a scoring approach. The table also includes MAPS variable names (where applicable) to enable users to cross-reference BE Tool and MAPS items and facilitate the use of MAPS scoring syntax for analyses.

Coding and scoring for non-MAPS items. As summarized in Appendix A, a relatively small number of the 81 BE Tool items were adopted from non-MAP Tools including the PRC-HAN, Analytic Audit, QPAT, and BRAT-DO tools. Please refer to Appendix C for web links to each of these tools and related coding and scoring resources. DCH also applied the MAPS variable nomenclature to these non-MAPS items. These variable names (along with coding and scoring recommendations) are also included in the Data Coding and Scoring Table (Appendix F). For example, when items related to Crossings are non-MAP items and do not appear on the MAPS Tool. The variable name became C1_B12 "C" indicates the item is assessing Crossing; "1" is the crossing at first Intersection (as a means to differentiate between 2 crossings in a segment); "B" is included as a reminder that the variable is for an item appearing on the BE Tool; and "12" indicates the item number on the BE Tool.

Revised response format to increase flexibility. While items appearing on the BE Tool are largely a subset of the MAPS Tool, the response format for some of these items is more similar to those for the PRC-HAN Tool where the response format allows for separate assessment and scoring of the walkability and bikeability (e.g., sidewalks, bike lanes, curb cuts) of each side of a street segment. The BE Tool adopts the PRC-HAN response format to allow for separate or combined scores for each side of a street segment. For those BE Tool items with modified MAPS response format, each side of the street can be assigned a separate score using MAPS guidance. However, the BE Tool also provides the option to have a single score for the two-sided street segment. For example, an item that measures the presence of sidewalks might receive a higher score for having sidewalks on both sides of the street than for having them only on one or the other side, which in turn would receive a higher score than if no sidewalks are present. These combined scores can be found in Appendix F.

Getting Started

Step 1. Refer to the MAPS Tool data coding and scoring information. Many of the items selected by the Subject Matter Expert Panel for this built environment assessment instrument were adopted from MAPS. Please refer to Appendix A to determine which items were adopted from MAPS and for a description of any modifications to assessment items resulting from expert panel recommendations during the instrument development process. To help you use the BE Tool, we provided a BE Tool Data Coding and Scoring Table in Appendix F, with coding and scoring recommendations for each item. Also, to reduce redundancy and improve comparability with built environment studies, users of the BE

Instrument are referred to the MAPS scoring system for the adopted items. The MAPS data coding and scoring system is well developed and validated (Cain, Millstein, & Geremia, 2012; Millstein, et al., 2013) and is available to the public (http://sallis.ucsd.edu/Documents/Measures_documents/MAPS%20Manual_v1_010713.pdf). The psychometrics of the items and subscales used in the MAPS tool are described in detail in their manual referenced above.

Step 2. Refer to the BE Tool Data Coding and Scoring Table for non-MAPS items. A smaller number BE Tool items selected by the Subject Matter Expert Panel were adopted from other assessment instruments. This was necessary to assess other domains and specific characteristics of the built environment not addressed by MAPS. Please refer to Appendix A of the Built Environment Assessment Tool Manual to identify the original instrument an item was adopted from and a description of any modifications to items. Appendix F provides an approach you can use to code each of these items. For more detailed coding and scoring information on non-MAPS items, please refer to the original instruments these items were selected from.

Step 3. Factors to consider. The following are some factors to consider as you code and score your results.

- *Items were selected from other existing instruments.* Therefore, it is not possible to guarantee any individual item (or group of items) will have the same psychometric properties as the original instrument from which the item was adopted. However, we are confident the level and quality of SME input resulted in a content valid instrument. We plan to refine it over time and in ways that incorporate user feedback.

- *Users are referred to original instruments for detailed coding and scoring guidance.* DCH has included a data coding and scoring approach in Appendix F to help ensure that data collection is systematic. We are referring users to the original instrument documentation from which items were adopted for more detailed coding and scoring information. This has a number of advantages. First, instruments from which items were adopted have made a wide variety of resources freely available to support their use. Second, referring potential BE Tool users to the original instruments for guidance helps ensure that users have access to detailed documentation. Third, as a federal government entity, we are minimizing duplication as a matter of good stewardship of public funds. Finally, in this way, we help ensure that users are more fully informed regarding the content of the original instruments that, in some cases, may better meet their specific assessment needs.

- *Some items and response options were revised.* Any modifications to items adopted from other instruments were made with considerable thought. Modifications to items are found in Appendix A.

- *The BE Tool is not organized by MAPS sections including route, segment, and crossing.* While this is important to consider when referencing the original MAPS documentation, DCH determined this was a necessary change to increase the tool's feasibility. Specifically, the tool is organized in a way that reflects how a rater would walk a street segment on both sides of a street and allows for crossing at both ends. While we acknowledge the built environment may not be structured this way, the BE Tool is flexible enough to enable users to tailor their rating approach to meet their needs.

5.2. Interpreting the Data

The information collected from the BE Tool can be examined in a variety of ways depending on how you plan to use the data. This can be done using overall segment scores, descriptive analyses, or a combination of both.

The overall segment score sums all ratings for all features assessed using the BE Tool. The overall segment score may

be helpful in identifying street segment that are less walkable and safe than others, and providing a high-level picture of where built environment disparities exist. This could be helpful to decision makers from a broad perspective as they consider what neighborhoods, communities or streets to focus on making built environment improvements. While the overall segment scores can paint a broad picture, they should not be your only source of information for making decisions because the overall segment scores weights all features assessed equally. This could be slightly mis-leading since not all built environment features are equal in terms of which may be more important to address than others if you want to make a street or community safe and walkable.

For this reason, we suggest you also use descriptive analyses. Descriptive analyses might include the frequency of the presence and absence of specific items / features measured by the assessment, average ratings of features, how much variability there is in these ratings, and so on. This could be examined for an individual segment or for a group of segments depending on your interest. The descriptive analysis can help with interpretation of overall segment scores or sub-scale scores which sum or average multiple features by highlighting the feature(s) with the highest or lowest rating. Descriptive analyses can help decision makers understand exactly what features are being grouped together and to consider where caution may be most warranted in using overall segment or sub-scale scores to drive local decisions and considering the features of your particular built environment. When a score appears to be surprising or counterintuitive, looking back at the descriptive analysis can help everyone better understand what in the ratings may account for these findings. Overall, the descriptive steps are important for making meaning from the data in a way that is sensitive to your local context. They will help you better understand where it may be helpful, for example, to use frequencies, totals, or average ratings of individual features of the built environment to inform local decision making and where calculating an overall score that compiles information from multiple features makes sense.

5.3. Evidence-based Approaches to Promote Safe and Active Built Environments

Environmental and policy approaches, such as community and street design, are intended to provide opportunities, support, and cues to help people be more physically active. The Guide to Community Preventive Health (http://www.thecommunityguide.org/pa/environmental-policy/index.html)provides a good starting place to understand what environmental and policy approaches are shown to be effective in increasing physical activity.

According to the Guide to Community Preventive Services increases in physical activity can be achieved by:

- improving the design of communities – this includes having residences in close proximity to stores, having well-connected, safe, and attractive sidewalks or paths between destinations, shorter blocks, and more intersections (Berrigan, Pickle and Dill, 2010; Heath et al, 2006; McCormack and Shiell, 2011; Saelens and Handy, 2008; Schulz et al, 2013; The Guide to Community Preventive Services, 2014).

- improving the design of streets – this includes improved street lighting, landscaping, traffic calming, sidewalks and features that separate walkers from motor vehicles, and increasing the number of safe pedestrian crossings (Berrigan, Pickle and Dill, 2010; Heath et al, 2006; Karsch, Hedlund, Tison and Leaf, 2012; Laplante and McCann, 2008; National Complete Streets Coalition, 2010; Pollack et al, 2014; Retting, Ferguson and McCartt, 2003; The Guide to Community Preventive Services, 2014; U.S. Department of Transportation Federal Highwy Administration).

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Appendix A

Development of the BE Tool

Appendix A: Development of the BE Tool

This section describes the background for developing the BE Tool, the expert input process, and the sources for the questions and response choices in the tool, along with modifications made to standardize the tool.

Background

The impetus for the development of the BE Tool was related to requests by DCH awardees for a tool that assesses features of the built environment related specifically to health behaviors that impact obesity. A wide array of tools exists for measuring different features of the built environment, many of them well validated. However, it is often difficult for DCH's local program staff and evaluators to know which features of the built environment are most important to measure on the basis of the health behaviors and outcomes they are trying to affect. It is also difficult to know which tool or tools to choose to best assess those features, and the feasibility of assessing them given limited resources. For this reason, the BE Tool was developed to provide an observational tool that DCH awardees and others can use to assess core features of the built environment related specifically to health behaviors that impact obesity.

This effort builds on a CDC-funded project that reviewed the existing built environment assessment tools to determine which features of the built environment are measured by these tools; which tools measured which features; and which tools are well validated (UIC, 2009). We used the list of built environment features from the UIC report, supplemented by subject matter experts, to guide the expert input process.

Expert Input Process

The team that developed this tool recruited a group of experts in subjects such as measuring the built environment, the built environment and physical activity, food systems, planning, injury/violence, and obesity. The list of experts who provided input can be found in Appendix B.

The project team developed an initial list of built environment features was based on the four major areas (built environment infrastructure, walkability, bikeability, and recreational sites and structures) identified in the UIC report. A list of domains and sub-domains for each major area as identified by UIC was included, plus additional built environment features related to the food environment and injury/violence.

The project team sent the list of built environment features to the experts and asked them to select which features to include in the BE Tool. Key considerations included whether each built environment feature affects health-related behaviors and outcomes; whether it is an objective measure; and whether it is best measured through direct observation. Experts were also encouraged to identify additional built environment features for potential inclusion.

The expert input process had two goals: (1) to provide input on which features of the built environment should be measured by the tool; and (2) which questions/responses best measure each of the built environment features included in the tool. The expert input process had three main steps to achieve the goals:

1. Experts were provided with the list of built environment features in a format that allowed them to provide the following input, when possible:

   a. Importance for inclusion in the tool

   b. Health behaviors related to each feature

c. Health outcomes related to each feature

d. Publications that provide evidence for inclusion of each feature

e. Existing assessment tools that measure each feature

2. The second step of expert input was a series of moderated group telephone discussions/Webinars about the compiled written input from step one, to clarify and further explore the rationale for inclusion of built environment features. The result of the first two steps of expert input was a final list of built environment features the tool should measure. The first two steps of expert input also provided a handful of new built environment features the tool should measure that were not included in the original list, such as features related to injury/ violence and the food environment.

3. The project team then reviewed a wide variety of existing built environment observational assessment tools and pulled relevant questions from them for each built environment feature. This list of possible questions and responses for each feature was sent to the experts to provide input on which question (or set of questions) best measures that feature. Experts also were provided space to offer comments or suggestions for modifications for any question selected. This third step of input was compiled and used to select the questions and responses to include in the tool.

The questions and responses were further refined in the process of finalizing the BE Tool. These refinements primarily had to do with adding clarifying language; modifying questions to match the overall format of the tool; and changing the format of response options to measure both sides of each street segment separately, when applicable. The questions and responses included in the BE Tool were adapted from a set of five existing built environment assessment tools, in order to build on validation work completed by the teams that developed the existing tools.

Sources

The third step of expert input helped to select questions for each built environment feature. The questions selected for inclusion in the BE Tool were adapted from five existing built environment assessment tools. For further information, links to the Web sites for these tools can be found in Appendix C.

- MAPS (Microscale Audit of Pedestrian Streetscapes)

- PRC-HAN (Prevention Research Centers Healthy Aging Research Network) Environmental Audit Tool

- Analytic Audit Tool (St. Louis University)

- QPAT (Quick Pathways Accessibility Tool)

- BRAT-DO (Bedimo-Rung Assessment Tools – Direct Observation)

The top three tools from which questions were taken are closely related to each other. The PRC-HAN tool and MAPS tool were developed as refinements of the Analytic Audit Tool, with the MAPS tool also building on the PRC-HAN tool. Because of this progression of refinement and validation, and through our process of expert input, we found that the MAPS tool was the best source for questions, response options, and well-developed scoring guidance. A majority of questions taken from the MAPS tool, however, were modified so that the response options were from MAPS but the response format was similar to PRC-HAN, in order to rate both sides of the street segment separately for certain items. This modification was made because for some features of the built environment the MAPS tool only assesses one side of the street, and many of these features are related to walkability and bikability (e.g., sidewalks, bike lanes, curb cuts),

which the BE Tool will assess on both block faces of the street segment. A smaller number of questions were taken from the PRC-HAN tool and Analytic Audit Tool; the QPAT tool was used for the basis of a question related to curb cut accessibility; and the BRAT-DO tool was used for a question on park amenities.

There are 81 total questions in the BE Tool, 65 of which are distinct questions not repeated. The last 13 questions in the tool (questions 66–78; Intersection 2) are a repeat of questions 2–14 (Intersection 1), those having to do with the intersection and crossing. This repetition of questions is to assess the intersection and crossing at both ends of the street segment. A large majority of the distinct questions in the BE Tool were taken from the MAPS tool. The following figure shows the number and percentages of BE Tool questions taken from the five source tools, and how many were modified or used as is.

- 65 Distinct questions in the BE Tool
- 46 Questions from MAPS
    - » 19 had no modifications from the MAPS tool.
    - » 21 had the response option format changed to one similar to PRC-HAN, which measures each side of the street separately for certain built environment features.
    - » 6 had changes to wording in the question or response options, or in clarifying language.
- 9 Questions from PRC-HAN
    - » 6 had no modifications from the PRC-HAN tool.
    - » 3 had changes to wording in the question or response options, or in clarifying language.
- 7 Questions from Analytic Audit Tool
    - » All 7 had the response option format changed to one similar to PRC-HAN, which measures both sides of the street separately for certain built environment features.
- 1 Question adapted from QPAT
    - » The question is an adaptation of a question from the QPAT tool, with the question and response options modified to address ADA-compliance with curb ramp slope, and with response option format changed to measure both sides of the street separately.
- 3 Questions from BRAT-DO
    - » These questions were not changed from the BRAT-DO tool.
- 1 New question
    - » The new question is an adaptation of parts of a question from the MAPS and PRC-HAN tools.

Each of these tools is an excellent resource, with the MAPS tool as the most advanced in its development of detailed data collection, management, and analysis processes and resources. See Appendix C for links to resources on these source tools. The primary difference between the BE Tool and these other tools is that the specific set of built environment features being measured by the BE Tool was chosen through an expert input process to be directly related to obesity, and the method of field data collection is segment-based rather than route-based. The BE Tool is an amalgam of these source tools, but draws most heavily on the MAPS tool. Table 1 lists the source of each question included in the tool, along with any modifications made to the questions or responses.

Table 1 – Source Tools for BE Tool Questions, with Modification Made

Questions #	Source	Modifications
1	MAPS	None
2–3	PRC-HAN	None
4	PRC-HAN	"None of the above" added as option (from MAPS).
5	MAPS	None
6	MAPS	"Features" changed to "crossing features."
7–11	MAPS	None
12	New Question	New question wording, adapted from PRC-HAN and MAPS. Response options modified to count tactile paving (truncated domes) on curb cuts.
13	MAPS	Words (in question cell) added to clarify purpose of question.
14	QPAT	Question adapted from QPAT, but changed to include curb ramp slope options in addition to curb ramp broken area options. Response options format modified to assess both sides of the street.
15	MAPS	None
16	PRC-HAN	None
17	MAPS	None
18	MAPS	Response option "special zone (school, construction)" changed to "special school zone," to address SRTS recommendations.
19	MAPS	Next to drainage ditches, changed to count "both sides of street."
20	PRC-HAN	None
21	PRC-HAN	Clarifying language about benches added from MAPS tool. Response options added to determine if covered shelter has room for mobility device.
22	MAPS	Added response option "bicycle rack(s) in front of school" to address SRTS recommendations.
23–24	MAPS	None
25–28	MAPS	Response options format modified to assess both sides of the street.
29–31	MAPS	None
32–34	MAPS	Response options format modified to assess both sides of the street.
35–36	MAPS	None
37	MAPS	Response options changed from "Yes/No" to "None, N/E, or S/W," to assess both sides of the street.
38	MAPS	Response option "3–5 ft" changed to "3 to <5" and ">5 ft" changed to "≥5 ft," for more accuracy. Response options format modified to assess both sides of the street.
39	PRC-HAN	None
40	MAPS	Response option "3–5 ft" changed to "3 to <5" and ">5 ft" changed to "≥5 ft," for more accuracy. Response options format modified to assess both sides of the street.
41	MAPS	Response options format modified to assess both sides of the street.

Questions #	Source	Modifications
42	MAPS	Question and response options taken from MAPS, but categories of minor and major removed and responses formatted to assess both sides of the street.
43	MAPS	The question is from MAPS, but the response options and response format are from PRC-HAN.
44–45	MAPS	Response options format modified to assess both sides of the street.
46	PRC-HAN	None
47–50	MAPS	Response options format modified to assess both sides of the street.
51	MAPS	None
52	PRC-HAN	Clarifying language from MAPS added. Removed words "from both sides" from the question, because response options measure each side separately.
53	MAPS	Response options format modified to assess both sides of the street.
54	Analytic Audit Tool	Response options format modified to assess both sides of the street.
55	MAPS	Response options changed from yes/no to none, N/E, or S/W, to assess both sides of street.
56	Analytic Audit Tool	Response options format modified to assess both sides of the street.
57	Analytic Audit Tool	Added the words "in bike lane." Response options format modified to assess both sides of the street.
58	Analytic Audit Tool	Removed the words "non-concrete" from the question. Response options format modified to assess both sides of the street.
59	Analytic Audit Tool	Response option >6 ft changed to ≥ 6 ft. Response options format modified to assess both sides of the street.
60–61	Analytic Audit Tool	Response options format modified to assess both sides of the street.
62–63	MAPS	None
64	MAPS / PRC-HAN	Added food environment options of community garden, farmer's market, green carts, food trucks. Recreation facilities options taken from PRC-HAN, with MAPS scale.
65	BRAT-DO	None
66–78	Same as Q2–14	
79–81	BRAT-DO	None

Appendix B

Experts Who Participated in the BE Tool Development Process

Appendix B:
Experts Who Participated in the BE Tool Development Process

Tegan K. Boehmer, PhD, MPH, Centers for Disease Control and Prevention, National Center for Environmental Health

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Susan Handy, PhD, Department of Environmental Science and Policy, University of California at Davis

Allison Karpyn, PhD, The Food Trust

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Heather Wooten, MCP, ChangeLab Solutions

Appendix C

Built Environment Assessment Sources Used to Inform the Development of the BE Tool

Appendix C: Links to Resources on Source Tools

MAPS (Microscale Audit of Pedestrian Streetscapes)

- http://sallis.ucsd.edu/measure_maps.html

PRC-HAN (Prevention Research Centers Healthy Aging Research Network) Environmental Audit Tool

- http://www.prc-han.org/tools-environment

Analytic Audit Tool (St. Louis University)

- http://activelivingresearch.org/node/10616

QPAT (Quick Pathways Accessibility Tool)

- http://chp.ahslabs.uic.edu/tools/

BRAT-DO (Bedimo-Rung Assessment Tools – Direct Observation)

- http://publichealth.lsuhsc.edu/Faculty_Pages/rung/index_files/page0004.htm

Appendix D

Built Environment Assessment Tool (BE Tool)

Built Environment Assessment Tool

Date: _____

Day of week: _____

Start time: _____ **AM/PM**

End time: _____ **AM/PM**

Data collector: _____

STREET SEGMENT INFORMATION

Street name: _____

Segment ID: _____

Segment length: _____

Segment primary direction:

☐ North-South ☐ East-West

Cross streets at intersections:

Intersection 1:

Street name: _____

(at N E S W end of street. Circle one)

Intersection 2:

Street name: _____

(at N E S W end of street. Circle one)

Zoning type: _____

1) How is audit information collected?

☐ Foot (walked route)
☐ Auto (drove route)
☐ Both (walked & drove route)

Segment ID# _____

INTERSECTION 1

2) Intersection Geometry

Number of legs intersecting: Check one

☐ T-intersection
☐ 4-way intersection
☐ 5-way star
☐ 6-way (e.g., three streets)

3) Intersection Control

Check all that apply

☐ Yield signs/Flashing yellow
☐ Stop signs/Flashing red light
☐ Traffic signal
☐ Traffic circle, Roundabout

☐ None

PEDESTRIAN CROSSING AT INTERSECTION 1

Crossing from N S E W to N S E W

4) Signalization (if traffic signal present)

Check all that apply

☐ All traffic signals have green arrows for dedicated vehicle turns
☐ Pedestrian "Walk" signals present
☐ Pedestrian push buttons present
☐ Countdown signal
☐ Audible walk signal
☐ None of the Above

5) Crosswalk treatment

Check all that apply

☐ Marked crosswalk
☐ High-visibility striping
☐ Stop lines on road or additional crosswalk warnings
☐ Raised crosswalk
☐ Different material than road
☐ None of the Above

6) Crossing features

Check all that apply

☐ Specifically identified lanes **turning into crossing**
  ☐ Right turn ☐ Left turn
☐ Protected refuge islands
☐ One-way streets **through crossing**
☐ Curb extension
☐ None of the Above

7) Gutters present in crossing

Within possible path of crossing pedestrians

☐ Yes ☐ No

8) Other characteristics of crossing

Check all that apply

☐ Steep slope or steep cross-slope at intersection
☐ Temporary obstructions
☐ Crossing aids (e.g., flags)
☐ None of the Above

9) Miscellaneous problems

Check all that apply

☐ Lack of lampposts or overhead street lamps
☐ Poor condition of crossing surface
☐ Poor visibility at corners
☐ Faded or worn crosswalk markings
☐ Unanticipated mid-segment crossing

Reason: _____

☐ Other: _____
☐ None of the Above

10) Distance of crossing leg, including all potential parking and turn lanes

_____ lanes wide

11) Crosswalk timing: _____ **seconds**

(Length includes white "walk" time + flashing red "don't walk" time)

☐ No crosswalk ☐ No signal

CROSSWALK CURB CUTS AT INTERSECTION 1

12) Curb ramps, curb cuts, or mountable curbs?

(a) Pre-crossing curb (on N E S W side of street)
- ☐ Yes (with tactile paving/truncated dome)
- ☐ Yes (with NO tactile paving)
- ☐ No

(b) Post-crossing curb (on N E S W side of street)
- ☐ Yes (with tactile paving/truncated dome)
- ☐ Yes (with NO tactile paving)
- ☐ No

13) Alignment of curb cut/ramp and crossing?

(Even if there is no marked crosswalk, there is still a crossing)

(a) Pre-crossing curb (on N E S W side of street)

Check one
- ☐ Ramp lines up with crossing
- ☐ Ramp does not line up with crossing
- ☐ No ramp

(b) Post-crossing curb (*on N E S W side of street*)

Check one
- ☐ Ramp lines up with crossing
- ☐ Ramp does not line up with crossing
- ☐ No ramp

14) Rate the condition and quality of curb cut/ramp.

(a) Pre-crossing curb (on N E S W side of street)
- ☐ Ramp is passable for mobility device (e.g., wheelchair)

Check all that apply
- ☐ ADA-compliant slope (8.3% or less)
- ☐ No broken area
- ☐ Broken area passable with little or no effort
- ☐ Ramp is impassable for mobility device (e.g., wheelchair)

Check all that apply
- ☐ ADA-non-compliant slope (over 8.3%)
- ☐ Broken area impassable or only passable with high effort
- ☐ No ramp

(b) Post-crossing curb (on N E S W side of street)
- ☐ Ramp is passable for mobility device (e.g., wheelchair)

Check all that apply
- ☐ ADA-compliant slope (8.3% or less)
- ☐ No broken area
- ☐ Broken area passable with little or no effort
- ☐ Ramp is impassable for mobility device (e.g., wheelchair)

Check all that apply
- ☐ ADA-non-compliant slope (over 8.3%)
- ☐ Broken area impassable or only passable with high effort
- ☐ No ramp

ROAD CONFIGURATION

15) Is the street segment predominantly one-way or two-way?
- ☐ 1-way   ☐ 2-way

16) What type of road is present?

Check one
- ☐ Divided highway > 4 lanes
- ☐ Undivided > 4 lanes
- ☐ 3 lanes (or two plus center turn lane)
- ☐ 2 marked lanes
- ☐ No marked lanes
- ☐ Unpaved roadway

NUMBER OF TRAFFIC LANES

17) How many traffic lanes are present (include all lanes that traffic can use; <u>choose most predominant</u>)?
- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7+

SPEED LIMIT

18) Is there a posted speed limit along the route?

If multiple, select the highest

Regular
- ☐ Yes _____ mph   ☐ No

Special school zone
- ☐ Yes _____ mph   ☐ No

VEHICULAR TRAFFIC CONTROL

19) What other street characteristics are present?

Check all that apply and specify the # of each type
- ☐ Traffic calming (signs, circles, speed tables, speed humps, curb extension) _____
- ☐ Roll-over curbs
- ☐ Drainage ditches _____ (count both sides of street)
- ☐ Instructional signs for pedestrian+s _____
- ☐ Crosswalk signage or other pedestrian signage (for drivers) _____
- ☐ None of the Above

TRANSIT AVAILABILITY

20) Is there a public transit stop on this segment?

Check all that apply
- ☐ None
- ☐ Bus stop
- ☐ Light Rail/Other Transit
- ☐ Senior transit/paratransit

If none, skip to Q22

21) Is there a bench or covered shelter at the transit stop?

(Only count benches that users could be easily identified by bus drivers as waiting to ride the bus.)

Check all that apply
- ☐ None
- ☐ Bench
- ☐ Covered shelter (with no room for mobility device)
- ☐ Covered shelter with room for mobility device (5ft clearance)

STREET AMENITIES

22) Presence of street amenities

Check all that apply
- ☐ Building overhangs that provide shelter from inclement weather in public space (e.g., sidewalks)
- ☐ Trash bins (public)
- ☐ Benches or other places to sit
- ☐ Bicycle racks (non-school)
- ☐ Bicycle rack(s) in front of school
- ☐ Working drinking fountain
- ☐ Working public telephones
- ☐ Kiosks or information booths
- ☐ None of the Above

23) Do you observe pleasant hardscape features, such as fountains, sculptures, or art (public or private)?

☐ Yes ☐ No

24) Do you observe softscape features such as gardens or landscaping (e.g., Public: bodies of water, designated viewpoints; Private: retaining walls, bark, ponds)?

☐ Yes ☐ No

---

25) Are the buildings well maintained?

North/East	South/West
☐ 0%	☐ 0%
☐ 1-49%	☐ 1-49%
☐ 50-99%	☐ 50-99%
☐ 100%	☐ 100%

26) Is landscaping well maintained?

North/East	South/West
☐ 0%	☐ 0%
☐ 1-49%	☐ 1-49%
☐ 50-99%	☐ 50-99%
☐ 100%	☐ 100%

27) How many trees exist within 5 feet of either side of the sidewalk/pathway?

(Can be in buffer or setback; also count trees that are more than 5 feet away if they provide shade for the sidewalk/pathway)?

North/East	South/West
☐ 0 or 1	☐ 0 or 1
☐ 2-5	☐ 2-5
☐ 6-10	☐ 6-10
☐ 11-20	☐ 11-20
☐ 21+	☐ 21+
☐ N/A	☐ N/A

28) What percentage of the length of the sidewalk/walkway is covered by trees, awnings or other overhead coverage?

North/East	South/West
☐ 1-25%	☐ 1-25%
☐ 25-50%	☐ 25-50%
☐ 51-75%	☐ 51-75%
☐ 76-100%	☐ 76-100%
☐ No coverage	☐ No coverage
☐ N/A	☐ N/A

PHYSICAL MAINTENANCE/DISORDER

29) Which of the following physical disorders are present?

Check all that apply
- ☐ Graffiti/tagging (not murals)
- ☐ Abandoned cars
- ☐ Buildings with broken/boarded windows
- ☐ Drug paraphernalia
- ☐ Broken glass
- ☐ Beer/liquor bottles/cans
- ☐ Litter in yards
- ☐ Noticeable/excessive litter in street/sidewalk
- ☐ Neighborhood watch signs
- ☐ Signage for commercial destinations or parks
- ☐ None of these

30) Rate the extent of physical disorder (e.g., litter, graffiti, broken glass, abandoned cars).
- ☐ None
- ☐ A little (physical disorder is present)
- ☐ Some (disorder is very noticeable)
- ☐ A lot (disorder is overwhelming)

31) Rate the extent of social disorder (e.g., stray dogs, gangs, prostitution, hostile behaviors, drug dealing, panhandlers, etc.)?
- ☐ None
- ☐ A little (social disorder is present)
- ☐ Some (disorder is very noticeable)
- ☐ A lot (disorder is overwhelming)

LINE OF SIGHT

32) Estimate the proportion of street segment that has ground floor or street-level windows within 40 feet of sidewalk/walkway (or street if no sidewalk/walkway).

North/East	South/West
☐ 1-25%	☐ 1-25%
☐ 26-50%	☐ 26-50%
☐ 51-75%	☐ 51-75%
☐ 76-100%	☐ 76-100%
☐ No windows	☐ No windows

BUILDING SETBACKS

33) What is the smallest building setback from the sidewalk?

North/East	South/West
☐ No building	☐ No building
☐ <10 feet	☐ <10 feet
☐ 10-20 feet	☐ 10-20 feet
☐ 21-50 feet	☐ 21-50 feet
☐ 51-100 feet	☐ 51-100 feet
☐ >100 feet	☐ >100 feet

34) What is the largest building setback from the sidewalk/walkway?

North/East	South/West
☐ No building	☐ No building
☐ <10 feet	☐ <10 feet
☐ 10-20 feet	☐ 10-20 feet
☐ 21-50 feet	☐ 21-50 feet
☐ 51-100 feet	☐ 51-100 feet
☐ >100 feet	☐ >100 feet

35) What is the average height of buildings?

Count both sides of the street

☐ No building
☐ 1-2 stories
☐ 3-5 stories
☐ 6-10 stories
☐ >10 stories

PARKING

36) What parking facilities are present?

Check all that apply (both sides of street)

☐ None
☐ On-street, parallel or angled parking
☐ Small lot or garage (< 30 spaces)
☐ Medium to large lot or garage

SIDEWALKS

37) Is a sidewalk present?

☐ None   ☐ N/E   ☐ S/W

38) What is the width of the majority of the sidewalk?

North/East	South/West
☐ < 3 ft.	☐ < 3 ft.
☐ 3 to <5 ft.	☐ 3 to <5 ft.
☐ ≥ 5 ft.	☐ ≥ 5 ft.
☐ No sidewalk	☐ No sidewalk

39) Is there a buffer present?

(separation between the walkway and road; does not apply to roadway walking)

N/E	☐ Yes ☐ No	☐ N/A
S/W	☐ Yes ☐ No	☐ N/A

40) How wide is the majority of the buffer?

North/East	South/West
☐ < 3 ft.	☐ < 3 ft.
☐ 3 to <5 ft.	☐ 3 to <5 ft.
☐ ≥ 5 ft.	☐ ≥ 5 ft.
☐ No sidewalk	☐ No sidewalk

41) Is the sidewalk *continuous* within the segment?

N/E	☐ Yes ☐ No	☐ No sidewalk
S/W	☐ Yes ☐ No	☐ No sidewalk

42) Are there poorly maintained sections of the sidewalk that constitute trip hazards (e.g., heaves, misalignment, cracks, overgrowth)?

North/East	South/West
☐ None	☐ None
☐ One	☐ One
☐ A few	☐ A few
☐ A lot	☐ A lot
☐ No sidewalk	☐ No sidewalk

43) How steep is the sidewalk at the steepest point in the segment (excluding heaves)?

N/E	☐ Level ☐ Moderate	☐ Steep
S/W	☐ Level ☐ Moderate	☐ Steep

44) How much of the segment is at or near this level of steepness?

North/East	South/West
☐ Little (1-25%)	☐ Little (1-25%)
☐ Some (26-75%)	☐ Some (26-75%)
☐ Most or All (76-100%)	☐ Most or All (76-100%)
☐ No sidewalk	☐ No sidewalk

45) If answer to Q44 is "Little," provide a steepness measure that represents the majority of the segment.

N/E	☐ Level	☐ Moderate	☐ Steep
S/W	☐ Level	☐ Moderate	☐ Steep

46) Does the walkway have a cross-slope that affects walkers?

(A cross-slope is a sideways slope, like a driveway that slopes through the sidewalk. Only evaluate cross-slope that is in the path of the walkway.)

N/E	☐ Level	☐ Sloped	☐ Steep
S/W	☐ Level	☐ Sloped	☐ Steep

47) Are there permanent obstructions in the sidewalk (e.g., telephone poles, trees, café tables, shrubs, basketball hoops)?

North/East	South/West
☐ None	☐ None
☐ Some	☐ Some
☐ Many	☐ Many
☐ No sidewalk	☐ No sidewalk

48) Are there temporary obstructions in the sidewalk (e.g., parked cars, sandwich boards, garbage cans)?

North/East	South/West
☐ None	☐ None
☐ Some	☐ Some
☐ Many	☐ Many
☐ No sidewalk	☐ No sidewalk

49) If no sidewalk, is there any other place to walk that is safe from traffic?

North/East	South/West
☐ Yes	☐ Yes
☐ Unpaved pathway (goat path)	☐ Unpaved pathway (goat path)
☐ Street shoulder	☐ Street shoulder
☐ Buffer	☐ Buffer
☐ No	☐ No
☐ N/A Sidewalk present	☐ N/A Sidewalk present

50) If no sidewalk, what is the width of the place on which one could safely walk?

(Not in possible path of traffic)

North/East	South/West
☐ None	☐ None
☐ < 4 ft.	☐ < 4 ft.
☐ ≥ 4 ft.	☐ ≥ 4 ft.
☐ N/A	☐ N/A

PEDESTRIAN CURB CUTS ON SEGMENT (NON-INTERSECTION)

51) Presence of any mid-segment street crossing, where an individual could safely cross (marked by sign or crosswalk)?

☐ Yes ☐ No

DRIVEWAY CURB CUTS

52) How many driveways or alleys are there?

(Count only alleys that are wide enough to be used by cars or other vehicles that could impede pedestrian traffic.)

North/East	South/West
☐ None	☐ None
☐ 1–2	☐ 1–2
☐ 3–5	☐ 3–5
☐ 6 or more	☐ 6 or more

PEDESTRIAN LIGHTING

53) Are street lights installed?

North/East	South/West
☐ None	☐ None
☐ Some (e.g., overhead street lights on utility poles with wide spacing)	☐ Some (e.g., overhead street lights on utility poles with wide spacing)
☐ Ample (e.g., regularly spaced pedestrian lampposts)	☐ Ample (e.g., regularly spaced pedestrian lampposts)

BICYCLE LANE

How would you rate the bikability of this segment?

54) Location of bike lane (marked lane)?

North/East	South/West
☐ Does not apply	☐ Does not apply
☐ No shoulder (no marked lane)	☐ No shoulder (no marked lane)
☐ Narrow paved (<3ft) shoulder (no marked lane)	☐ Narrow paved (<3ft) shoulder (no marked lane)
☐ Wide paved (>3ft) shoulder (no marked lane)	☐ Wide paved (>3ft) shoulder (no marked lane)
☐ Narrow (<3ft) marked lane	☐ Narrow (<3ft) marked lane
☐ Wide (>3ft) marked lane	☐ Wide (>3ft) marked lane

55) Are there any signs indicating bicycle use (share the road, etc.)?

☐ None ☐ N/E ☐ S/W

56) Levelness and condition of bike lane (e.g., heaves, alignment, cracks, broken sections, weeds)?

North/East	South/West
☐ Does not apply	☐ Does not apply
☐ None	☐ None
☐ A little	☐ A little
☐ Some	☐ Some
☐ A lot	☐ A lot

57) Obstructions in bike lane (e.g., artificial – cars, rumble strips, drainage grates – or natural – trees, bushes, rocks)?

North/East	South/West
☐ Does not apply	☐ Does not apply
☐ None	☐ None
☐ A little	☐ A little
☐ Some	☐ Some
☐ A lot	☐ A lot

BIKE/PED PATH

How would you rate the availability of trails or paths for this segment?

58) Presence of path or trail (e.g., multi-use, biking, walking route)?

N/E	☐ Yes	☐ No
S/W	☐ Yes	☐ No

59) Width of path or trail?

North/East	South/West
☐ Does not apply	☐ Does not apply
☐ 0 to 3 ft	☐ 0 to 3 ft
☐ >3 to < 6 ft	☐ >3 to < 6 ft
☐ ≥ 6 ft	☐ ≥ 6 ft

60) Levelness and condition of path or trail (e.g., heaves, alignment, cracks, broken sections, weeds)?

North/East	South/West
☐ Does not apply	☐ Does not apply
☐ None	☐ None
☐ A little	☐ A little
☐ Some	☐ Some
☐ A lot	☐ A lot

61) Obstructions in path or trail (e.g., artificial – cars, trash cans– or natural – trees, bushes, rocks)?

North/East	South/West
☐ Does not apply	☐ Does not apply
☐ None	☐ None
☐ A little	☐ A little
☐ Some	☐ Some
☐ A lot	☐ A lot

LAND USES AND DESTINATIONS

62) What types of residential uses?

Check all that apply

☐ Single family houses
☐ Multi-unit homes (duplex, 4-plex, row house)
☐ Apartments or condominiums
☐ Apartments above street retail
☐ Retirement/senior living facility
☐ Other (mobile home, dormitory)
☐ None

63) Shopping Centers

Check all that apply

☐ Shopping Mall
☐ Strip Mall
☐ Shopping Arcade
☐ None of the above

64) How many of the following types of non-residential destinations are present? (Count both sides of street. Do not double count.)

Food-related land uses

a. Fast food restaurant (national or local chain, primarily sells burgers, fried chicken, pizza, or "Americanized" Mexican, Chinese, etc.)

☐ 0 ☐ 1 ☐ 2+

b. Sit-down restaurant

☐ 0 ☐ 1 ☐ 2+

c. Grocery/supermarket

☐ 0 ☐ 1 ☐ 2+

d. Convenience store (may also be a gas station)

☐ 0 ☐ 1 ☐ 2+

e. Café or coffee shop

☐ 0 ☐ 1 ☐ 2+

f. Liquor/alcohol store (primarily sells alcohol, wine bar, strip club)

☐ 0 ☐ 1 ☐ 2+

g. Big box store (e.g., Home Depot, Best Buy, Sears, Super Walmart, Target)

☐ 0 ☐ 1 ☐ 2+

h. Specialty Food Store (e.g., ice cream, candy, bakery)

☐ 0 ☐ 1 ☐ 2+

i. Community garden

☐ 0 ☐ 1 ☐ 2+

j. Farmers market

☐ 0 ☐ 1 ☐ 2+

k. Green carts

☐ 0 ☐ 1 ☐ 2+

l. Food trucks

☐ 0 ☐ 1 ☐ 2+

65) What activity areas are in the park?

Mark all that apply
- ☐ Tennis Courts
- ☐ Basketball Courts
- ☐ Other Courts (specify)

- ☐ Baseball Fields
- ☐ Football Fields
- ☐ Soccer Fields
- ☐ Other Fields (specify)

- ☐ Paths
- ☐ Playgrounds
- ☐ Green Spaces
- ☐ Golf Courses
- ☐ Swimming Pools
- ☐ Zoo
- ☐ Botanical Gardens
- ☐ Stables
- ☐ Other (specify)
- ☐ N/A

INTERSECTION 2

66) Intersection Geometry

Number of legs intersecting:

Check one
- ☐ T-intersection
- ☐ 4-way intersection
- ☐ 5-way star
- ☐ 6-way (e.g., three streets)

67) Intersection Control:

Check items present
- ☐ None
- ☐ Yield signs/Flashing yellow
- ☐ Stop signs/Flashing red light
- ☐ Traffic signal
- ☐ Traffic circle, Roundabout

Retail and service oriented land uses

m. Pharmacy or drug store
- ☐ 0 ☐ 1 ☐ 2+

n. Bank or credit union
- ☐ 0 ☐ 1 ☐ 2+

o. Health-related professional (e.g., chiropractor, Dr. office)
- ☐ 0 ☐ 1 ☐ 2+

p. Entertainment (e.g., movie theatre, arcade)
- ☐ 0 ☐ 1 ☐ 2+

q. Other service (e.g., salon, lawyer, accountant, realtor, laundry/dry cleaner, commercial mailing service)
- ☐ 0 ☐ 1 ☐ 2+

r. Other retail (e.g., books, clothing, hardware, video rental)
- ☐ 0 ☐ 1 ☐ 2+

Government or community land use

s. Health or social services (e.g., hospital, health department, community action agency, police/fire stations, city hall, etc.)
- ☐ 0 ☐ 1 ☐ 2+

t. Library/Museums
- ☐ 0 ☐ 1 ☐ 2+

u. Post office
- ☐ 0 ☐ 1 ☐ 2+

v. Senior center
- ☐ 0 ☐ 1 ☐ 2+

w. Place of worship (e.g., church, synagogue, convent, mosque, etc.)
- ☐ 0 ☐ 1 ☐ 2+

x. School
- ☐ 0 ☐ 1 ☐ 2+

Other land use

y. Warehouse/factory/industrial
- ☐ 0 ☐ 1 ☐ 2+

z. Abandoned building
- ☐ 0 ☐ 1 ☐ 2+

aa. Unmaintained lot/field
- ☐ 0 ☐ 1 ☐ 2+

bb. Casino
- ☐ 0 ☐ 1 ☐ 2+

Recreational facilities or destinations

cc. Private indoor fitness facility
- ☐ 0 ☐ 1 ☐ 2+

dd. Community recreation center
- ☐ 0 ☐ 1 ☐ 2+

ee. Park
- ☐ 0 ☐ 1 ☐ 2+

ff. Playground at park or school
- ☐ 0 ☐ 1 ☐ 2+

gg. Outdoor pool
- ☐ 0 ☐ 1 ☐ 2+

hh. Golf course
- ☐ 0 ☐ 1 ☐ 2+

ii. Sports/playing field or court (e.g., baseball or tennis at park or school)
- ☐ 0 ☐ 1 ☐ 2+

jj. Sports track
- ☐ 0 ☐ 1 ☐ 2+

kk. Body of water (e.g., lake, ocean)
- ☐ 0 ☐ 1 ☐ 2+

ll. Other recreational facility (e.g., skating rink, miniature golf)
- ☐ 0 ☐ 1 ☐ 2+

PEDESTRIAN CROSSING AT INTERSECTION 2

Crossing from N S E W to N S E W

68) Signalization (if traffic signal present):

Check all that apply
- ☐ All traffic signals have green arrows for dedicated vehicle turns
- ☐ Pedestrian "Walk" signals present
- ☐ Pedestrian push buttons present
- ☐ Countdown signal
- ☐ Audible walk signal
- ☐ None of the Above

69) Crosswalk treatment

Check all that apply
- ☐ Marked crosswalk
- ☐ High-visibility striping
- ☐ Stop lines on road or additional crosswalk warnings
- ☐ Raised crosswalk
- ☐ Different material than road
- ☐ None of the Above

70) Crossing features

Check all that apply
- ☐ Specifically identified lanes **turning into crossing**
  - ☐ Right turn   ☐ Left turn
- ☐ Protected refuge islands
- ☐ One-way streets **through crossing**
- ☐ Curb extension
- ☐ None of the Above

71) Gutters present in crossing

Within possible path of crossing pedestrians
- ☐ Yes   ☐ No

72) Other characteristics of crossing

Check all that apply
- ☐ Steep slope or steep cross-slope at intersection
- ☐ Temporary obstructions
- ☐ Crossing aids (e.g., flags)
- ☐ None of the Above

73) Miscellaneous problems

Check all that apply
- ☐ Lack of lampposts or overhead street lamps
- ☐ Poor condition of crossing surface
- ☐ Poor visibility at corners
- ☐ Faded or worn crosswalk markings
- ☐ Unanticipated mid-segment crossing

  Reason: _____
- ☐ Other: _____
- ☐ None of the Above

74) Distance of crossing leg, including all potential parking and turn lanes

_____ lanes wide

75) Crosswalk timing: _____ **seconds**

(Length includes white "walk" time + flashing red "don't walk" time)
- ☐ No crosswalk   ☐ No signal

CROSSWALK CURB CUTS AT INTERSECTION 2

76) Curb ramps, curb cuts, or mountable curbs?

(a) Pre-crossing curb (on N E S W side of street)
- ☐ Yes (with tactile paving/truncated dome)
- ☐ Yes (with NO tactile paving)
- ☐ No

(b) Post-crossing curb (on N E S W side of street)
- ☐ Yes (with tactile paving/truncated dome)
- ☐ Yes (with NO tactile paving)
- ☐ No

77) Alignment of curb cut/ramp and crossing?

(Even if there is no marked crosswalk, there is still a crossing)

(a) Pre-crossing curb

Check one
- ☐ Ramp lines up with crossing
- ☐ Ramp does not line up with crossing
- ☐ No ramp

(b) Post-crossing curb

Check one
- ☐ Ramp lines up with crossing
- ☐ Ramp does not line up with crossing
- ☐ No ramp

78) Rate the condition and quality of curb cut/ramp.

(a) Pre-crossing curb (on N E S W side of street)
- ☐ Ramp is passable for mobility device (e.g., wheelchair)

  Check all that apply
  - ☐ ADA-compliant slope (8.3% or less)
  - ☐ No broken area
  - ☐ Broken area passable with little or no effort
- ☐ Ramp is impassable for mobility device (e.g., wheelchair)

  Check all that apply
  - ☐ ADA-non-compliant slope (over 8.3%)
  - ☐ Broken area impassable or only passable with high effort
- ☐ No ramp

(b) Post-crossing curb (on N E S W side of street)
- ☐ Ramp is passable for mobility device (e.g., wheelchair)

  Check all that apply
  - ☐ ADA-compliant slope (8.3% or less)
  - ☐ No broken area
  - ☐ Broken area passable with little or no effort
- ☐ Ramp is impassable for mobility device (e.g., wheelchair)

  Check all that apply
  - ☐ ADA-non-compliant slope (over 8.3%)
  - ☐ Broken area impassable or only passable with high effort
- ☐ No ramp

WEATHER CONDITIONS

79) What is the temperature (F) today?

☐ 50's or below
☐ 60's
☐ 70's
☐ 80's
☐ 90's or above

80) What is the weather today?

☐ Sunny
☐ Partly Sunny/Partly Cloudy
☐ Overcast
☐ Rainy
☐ Snowy

81) Does this segment need further evaluation during or after rainy periods?

☐ Yes ☐ No

Appendix E

BE Tool Instructions

Built Environment Assessment Tool (Be Tool) – Instructions And Picture Guide

Use one Built Environment Assessment Tool (BE Tool) per street segment. A street segment is the area of a street or roadway between two intersections. This includes the intersections at both ends of the street segment, and the block faces on both sides of the street, and all crossings. The tool is designed to assess the entire length of both sides of the street segment, and crossings at both ends. An example of how a rater would walk a street segment to complete one tool can be seen in this graphic:
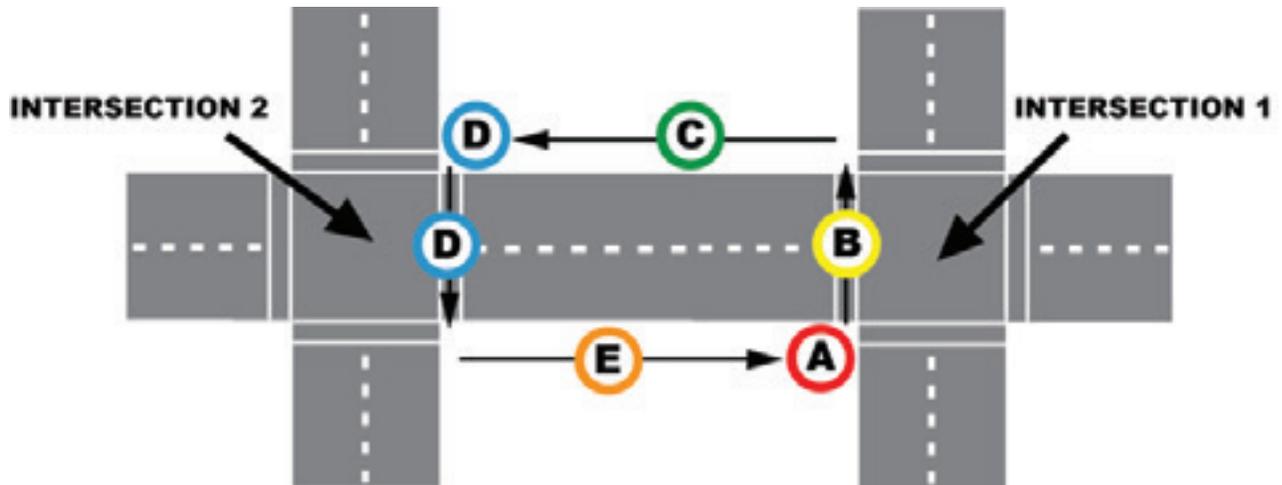
Many of the response options in the BE Tool are formatted to provide separate responses for each block face of the street segment. For those questions, use your map (and compass) to properly indicate the orientation of each block face when marking responses. After completing assessment for one block face and crossing the second intersection, mark responses for the opposing block face from the one you already assessed.

Complete the information about date, day, start and end times, and data collector name for each instance in which the tool is used for . Rather than pre-populating this section prior to going into the field, it is best if you complete this part immediately prior to rating the street segment to be sure it accurately reflects when the data collection was completed.

Date: _____

Day of week: _____

Start time: _____AM/PM

End time: _____ AM/PM

Data collector: _____

This section of street segment information should be pre-populated prior to going into the field to rate street segments. To ensure accuracy, this information should come from maps (or GIS), as well as the data collection management database. Raters should confirm this information in the field.

Street Segment Information

Street Name: _____

Segment ID: _____

Segment length: _____

Segment primary direction ☐ North-South ☐ East-West

Cross streets at intersections:

Intersection 1:

  Street Name: _____

  (at N E S W end of street. Circle one)

Intersection 2:

  Street Name: _____

  (at N E S W end of street. Circle one)

Zoning type: _____

1) How is audit information collected?

  ☐ By Foot (walked route)

  ☐ By Auto (drove route)

  ☐ Both (walked & drove route)

- Zoning type may be residential, commercial, industrial, or agricultural. More detailed local zoning types may also be used.

- Raters should collect information on foot when possible.

Intersection 1

2) Intersection Geometry

Number of legs intersecting: Check one

  ☐ T-intersection

  ☐ 4-way intersection

  ☐ 5-way star

  ☐ 6-way (e.g., three streets)

3) Intersection Control

Check items present

  ☐ None

  ☐ Yield signs/Flashing yellow

  ☐ Stop signs/Flashing red light

  ☐ Traffic signal

  ☐ Traffic circle, Roundabout

Traffic circle at T-intersection

Pedestrian Crossing At Intersection 1

Be sure to indicate the direction you are crossing at Intersection 1, so that it is clear which side of the crossing is "pre-crossing" and w hich side is "post-crossing." Pre-crossing is the side of the crossing where you start; post-crossing is the side of the crossing where you end after crossing the street.

Crossing from N S E W to N S E W

4) Signalization (if traffic signal present)

Check items present

☐ All traffic signals have green arrows for dedicated vehicle turns

☐ Pedestrian "Walk" signals present

☐ Pedestrian push buttons present

☐ Countdown signal

☐ Audible walk signal

☐ None of the Above

Pedestrian walk signal

Pedestrian walk signal

Pedestrian push button

5) Crosswalk treatment

Check all that apply

☐ Marked crosswalk

☐ High-visibility striping

☐ Stop lines on road or additional crosswalk warnings

☐ Raised crosswalk

☐ Different material than road

☐ None of the Above

Marked crosswalk
http://www.pedbikeimages.org/pubdetail.cfm?picid=1440
Dan Burden
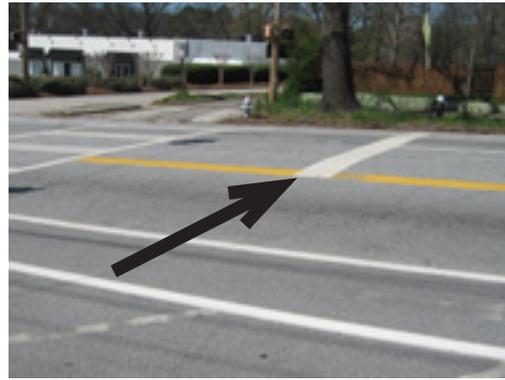
Stop lines on road

High-visibility striping
(Curb cut w/tactile paving, additional
crosswalk signage)

Additional crosswalk signage

6) Crossing features

Check all that apply

☐ Specifically identified lanes turning into crossing

☐ Right turn ☐ Left turn

☐ Protected refuge islands

☐ One-way streets through crossing

☐ Curb extension

☐ None of the Above

Protected refuge island

Curb extension (with traffic calming sign)

7) Gutters present in crossing

Within possible path of crossing pedestrians

☐ Yes ☐ No

8) Other characteristics of crossing

Check all that apply

☐ Steep slope or steep cross-slope at intersection

☐ Temporary obstructions

☐ Crossing aids (e.g., flags)

☐ None of the Above

Faded or worn crosswalk marking

9) Miscellaneous problems

Check all that apply

☐ Lack of lampposts or overhead street lamps

☐ Poor condition of crossing surface

☐ Poor visibility at corners

☐ Faded or worn crosswalk markings

☐ Unanticipated mid-segment crossing

Reason: _____

☐ Other: _____

☐ None of the Above

10) Distance of crossing leg, including all potential parking and turn lanes

———————————— lanes wide

11) Crosswalk timing: ——————seconds

(Length includes white "walk" time + flashing red "don't walk" time)

☐ No crosswalk   ☐ No signal

Crosswalk Curb Cuts At Intersection 1

12) Curb ramps, curb cuts, or mountable curbs?

(a) Pre-crossing curb *(on N E S W side of street)*

☐ Yes (with tactile paving/truncated dome)

☐ Yes (with NO tactile paving)

☐ No

(b) Post-crossing curb *(on N E S W side of street)*

☐ Yes (with tactile paving/truncated dome)

☐ Yes (with NO tactile paving)

☐ No

Curb cut (w tactile Paving/truncated dome)

Curb cut (w tactile Paving/truncated dome)

Curb cut (with NO tactile paving) Paving/truncated dome)

Crossing with no curb cutdome)

13) Alignment of curb cut/ramp and crossing?

(Even if there is no marked crosswalk,
there is still a crossing)

(a) Pre-crossing curb *(on N E S W side of street)*

☐ Ramp lines up with crossing

☐ Ramp does not line up with crossing

☐ No ramp

(b) Post-crossing curb *(on N E S W side of street)*

☐ Ramp lines up with crossing

☐ Ramp does not line up with crossing

☐ No ramp

Ramp does not line up with crossing

Ramp lines up with crossing

14) Rate the condition and quality of curb cut/ramp.

(a) Pre-crossing curb (on N E S W side of street)

☐ Ramp is passable for mobility device (e.g., wheelchair)

Check all that apply

    ☐ ADA-compliant slope (8.3% or less)

    ☐ No broken area

    ☐ Broken area passable with little or no effort

☐ Ramp is impassable for mobility device (e.g., wheelchair)

Check all that apply

    ☐ ADA-non-compliant slope (over 8.3%)

    ☐ Broken area impassable or only passable with high effort

☐ No ramp

(b) Post-crossing curb (on N E S W side of street)

☐ Ramp is passable for mobility device (e.g., wheelchair)

Check all that apply

    ☐ ADA-compliant slope (8.3% or less)

    ☐ No broken area

    ☐ Broken area passable with little or no effort

☐ Ramp is impassable for mobility device (e.g., wheelchair)

Check all that apply

    ☐ ADA-non-compliant slope (over 8.3%)

    ☐ Broken area impassable or only passable with high effort

☐ No ramp

For both the pre-crossing curb and post-crossing curb, the curb cut/ramp is either passable or impassable, based on its slope and broken areas. For each, if the ramp has either an "ADA-non-compliant slope (over 8.3%)" or "broken area impassable or only passable with high effort," then check the box for "ramp is impassable for mobility device…" However, it is possible for a ramp to have an "ADA-non-compliant slope…" but "no broken area" or "broken area passable with little or no effort" and vice versa. In this example, you would check the box for "ramp is impassable…" and check "ADA-non-compliant slope" and also "no broken area." It is important for every curb cut/ramp that the BE Tool indicates the condition of the ramp slope and broken areas.

To determine the severity of any broken area, use this guidance from the QPAT tool:

- If the broken concrete is stable and has no level changes, it is passable with little or no effort.
- If the broken concrete is stable and has at least one level change, it is passable with moderate effort.
- If an area of the broken concrete is loose, whether it does or does not have level changes, it is impassable or only passable with high effort.

Slope (or grade) is the measurement of rise over run. An 8.33% slope is 1ft (or 1") vertical rise per 12ft (or 12") horizontal distance. It is the maximum allowable slope under the Americans with Disabilities Act (ADA). The horizontal run of the curb ramp should be measured from where it intersects with the sidewalk to where it meets the road. Tools to measure this include a tape measure (or yard stick), a level, and potentially a length of string. Making sure that the tool being used to measure run is level (using the level), you can then measure the vertical distance from the street to that string, tape measure, or yard stick for the rise. A simple formula can then be used to determine slope. This resource can provide guidance: http://www.fhwa.dot.gov/environment/recreational_trails/publications/fs_publications/01232833/appenb.cfm

Street Segment

All questions in the street segment section of the tool are meant to either measure the entire street (both sides of the street and the road itself) or are formatted to measure each side (block face) separately. Those questions that provide response options in a table are formatted to measure each side separately. All other questions are meant to measure both sides of the street segment as a whole.

Road Configuration

15) Is the street predominantly one-way or two-way?

☐ 1-way   ☐ 2-way

16) What type of road is present?

Check one

☐ Divided highway > 4 lanes

☐ Undivided > 4 lanes

☐ 3 lanes (or two plus center turn lane)

☐ 2 marked lanes

☐ No marked lanes

☐ Unpaved roadway

Number of Traffic Lanes

17) How many traffic lanes are present (include all lanes that traffic can use; choose most predominant)?

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7+

Speed Limit

18) Is there a posted speed limit along the route?

If multiple, select the highest

<u>Regular</u>

☐ Yes   _____ mph   ☐ No

<u>Special school zone</u>

☐ Yes   _____ mph   ☐ No

Special school zone speed limit

Vehicular Traffic Control

19) What other street characteristics are present?

(specify # of each type)

Check all that apply

> Count each traffic calming method separately. If a traffic calming method has a physical feature (e.g., speed hump) and a sign that indicates it, this should be counted as 2.

☐ Traffic calming (signs, circles, speed tables, speed humps, curb extension) _____

☐ Roll-over curbs _____

☐ Drainage ditches _____ (count both sides of street)

☐ Instructional signs for pedestrians

☐ Crosswalk signage or other pedestrian signage (for drivers) _____

☐ None of the Above

Traffic calming sign and curb extension

Speed hump

Crosswalk signage

Transit Availability

20) Is there a public transit stop on this segment?

Check all that apply

☐ None

☐ Bus stop

☐ Light Rail/Other Transit

☐ Senior transit/paratransit

If none, skip to Q22

21) Is there a bench or covered shelter at the transit stop?

(Only count benches that users could be easily identified by bus drivers as waiting to ride the bus.)

Check all that apply

☐ None

☐ Bench

☐ Covered shelter with no room for mobility device

☐ Covered shelter with room for mobility device (~5ft clearance)

Consider both sides of the street segment when rating the presence of transit stops

Covered shelter with room for mobility device

Street Amenities

22) Presence of street amenities

Check all that apply

- ☐ Building overhangs that provide shelter from inclement weather in public space (i.e. sidewalks)
- ☐ Trash bins (public)
- ☐ Benches or other places to sit
- ☐ Bicycle rack(s) (non-school)
- ☐ Bicycle rack(s) in front of school
- ☐ Working drinking fountain
- ☐ Working public telephones
- ☐ Kiosks or information booths
- ☐ None of the Above

> Trash bins must be public, and not belong to a residence. Benches must be for public use to be counted (not a transit stop bench) and not meant for seating at private business (e.g., restaurant sidewalk seating). Bicycle racks belonging to a school should be counted separately from other bicycle racks.

Public trash bin and bench

Bicycle rack

Public bench

Public drinking fountain

23) Do you observe pleasant hardscape features, such as fountains, sculptures, or art (public or private)?

☐ Yes   ☐ No

24) Do you observe softscape features such as gardens or landscaping (e.g., Public – bodies of water, designated viewpoints; Private – retaining walls, bark, ponds)?

☐ Yes   ☐ No

25) Are the buildings well maintained?

North/East	South/West
☐ 0%	☐ 0%
☐ 1–49%	☐ 1–49%
☐ 50–99%	☐ 50–99%
☐ 100%	☐ 100%

26) Is landscaping well maintained?

North/East	South/West
☐ 0%	☐ 0%
☐ 1–49%	☐ 1–49%
☐ 50–99%	☐ 50–99%
☐ 100%	☐ 100%

27) How many trees exist within 5 feet of either side of the sidewalk/pathway (can be in buffer or setback; also count trees that are more than 5 feet away if they provide shade for the sidewalk/pathway)?

North/East	South/West
☐ 0 or 1	☐ 0 or 1
☐ 2–5	☐ 2–5
☐ 6–10	☐ 6–10
☐ 11–21	☐ 11–21
☐ 21+	☐ 21+
☐ N/A	☐ N/A

28) What percentage of the length of the sidewalk/walkway is covered by trees, awnings or other overhead coverage?

North/East	South/West
☐ 1–25%	☐ 1–25%
☐ 25–50%	☐ 25–50%
☐ 51–100%	☐ 51–100%
☐ No coverage	☐ No coverage
☐ N/A	☐ N/A

Physical Maintenance/Disorder

29) Which of the following physical disorders are present?

Check all that apply

- ☐ Graffiti/tagging (not murals)
- ☐ Abandoned cars
- ☐ Buildings with broken/boarded windows
- ☐ Drug paraphernalia
- ☐ Broken glass
- ☐ Beer/liquor bottles/cans
- ☐ Litter in yards
- ☐ Noticeable/excessive litter in street/sidewalk
- ☐ Neighborhood watch signs
- ☐ Signage for commercial destinations or parks
- ☐ None of these

> Look for these indications of physical disorder on both sides of the street segment. Neighborhood watch signs and signage for commercial destinations or parks are signs of maintenance rather than disorder, but should be measured as part of this question.

30) Rate the extent of physical disorder (e.g., litter, graffiti, broken glass, abandoned cars).

- ☐ None
- ☐ A little (physical disorder is present)
- ☐ Some (disorder is very noticeable)
- ☐ A lot (disorder is overwhelming)

> If anything is marked as present in question 29, the response to question 30 cannot be "none."

31) Rate the extent of social disorder (e.g., stray dogs, gangs, prostitution, hostile behaviors, drug dealing, panhandlers, etc.).

- ☐ None
- ☐ A little (social disorder is present)
- ☐ Some (disorder is very noticeable)
- ☐ A lot (disorder is overwhelming)

32) Estimate the proportion of street segment that has ground floor or street-level windows within 40 feet of sidewalk/walkway (or street if no sidewalk/walkway).

North/East	South/West
☐ 1–25%	☐ 1–25%
☐ 25–50%	☐ 25–50%
☐ 51–75%	☐ 51–75%
☐ 76–100%	☐ 76–100%
☐ No windows	☐ No windows

> Be sure to only count windows on buildings within 40 feet of the sidewalk/walkway. A good estimate of 40 feet is two full-sized car lengths. If the buildings on the segment only cover a portion of the segment (e.g., one building that covers one-fourth of the segment), and it has full window coverage, you would indicate that 25% of the segment is covered by windows, rather than 100%.

Building Setbacks

33) What is the smallest building setback from the sidewalk?

North/East	South/West
☐ No building	☐ No building
☐ <10 feet	☐ <10 feet
☐ 10–20 feet	☐ 10–20 feet
☐ 21–50 feet	☐ 21–50 feet
☐ 51–100 feet	☐ 51–100 feet
☐ >100 feet	☐ >100 feet

34) What is the largest building setback from the sidewalk/walkway?

North/East	South/West
☐ No building	☐ No building
☐ <10 feet	☐ <10 feet
☐ 10–20 feet	☐ 10–20 feet
☐ 21–50 feet	☐ 21–50 feet
☐ 51–100 feet	☐ 51–100 feet
☐ >100 feet	☐ >100 feet

35) What is the average height of buildings?

Count both sides of the street

☐ No building

☐ 1–2 stories

☐ 3–5 stories

☐ 6–10 stories

☐ >10 stories

Parking

36) What parking facilities are present?

Check all that apply (both sides of street)s

☐ None

☐ On-street, parallel or angled parking

☐ Small lot or garage (< 30 spaces)

☐ Medium to large lot or garage

Parallel parking

Angled parking

Sidewalks

37) Is a sidewalk present?

☐ None   ☐ N/E   ☐ S/W

38) What is the width of the majority of the sidewalk?

North/East	South/West
☐ < 3 ft.	☐ < 3 ft.
☐ 3 to <5 ft.	☐ 3 to <5 ft.
☐ ≥ 5 ft.	☐ ≥ 5 ft.
☐ No sidewalk	☐ No sidewalk

3 to <5 ft. sidewalk w/<3 ft. buffer

**≥ 5 ft. sidewalk
(w/benches, trash bin, and street trees)**

39) Is there a buffer present? *(Separation between the walkway and road; does not apply to roadway walking)*

N/E   ☐ Yes   ☐ No   ☐ N/A
S/W   ☐ Yes   ☐ No   ☐ N/A

> A buffer is an area between the sidewalk and the roadway, not intended for walkers or traffic. A bicycle lane should not be considered a buffer, nor should trees, telephone poles, or parking meters if there is more than 20 feet between them along the street. A brick or other surface between the sidewalk and roadway should not be considered a buffer because it does not limit the ability of vehicles to come onto the sidewalk.

No buffer

40) How wide is the majority of the buffer?

North/East	South/West
☐ < 3 ft.	☐ < 3 ft.
☐ 3 to <5 ft.	☐ 3 to <5 ft.
☐ ≥ 5 ft.	☐ ≥ 5 ft.
☐ No sidewalk	☐ No sidewalk

> Buffer width measures the distance between the sidewalk and curb or edge of street.

< 3ft. buffer

≥ 5ft. buffer

41) Is the sidewalk <u>continuous</u> within the segment?

N/E   ☐ Yes   ☐ No   ☐ No sidewalk

S/W   ☐ Yes   ☐ No   ☐ No sidewalk
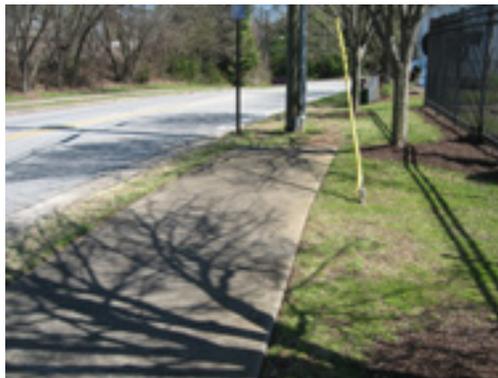
Non-continuous sidewalk

42) Are there poorly maintained sections of the sidewalk that constitute <u>trip hazards</u> (e.g., heaves, misalignment, cracks, overgrowth)?

North/East	South/West
☐ None	☐ None
☐ One	☐ One
☐ A few	☐ A few
☐ A lot	☐ A lot
☐ No sidewalk	☐ No sidewalk

One
(heave and cracks in sidewalk)

Few
(heave w/overgrowth)
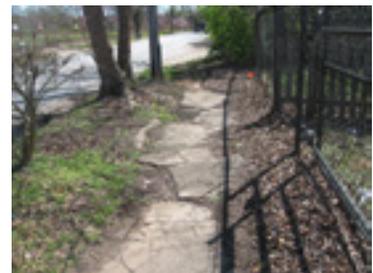
A lot
(cracks and heaves)

43) How steep is the sidewalk at the steepest point in the segment (excluding heaves)?

N/E ☐ Level ☐ Moderate ☐ Steep ☐ No sidewalk

S/W ☐ Level ☐ Moderate ☐ Steep ☐ No sidewalk

44) How much of the segment is at or near this level of steepness?

North/East	South/West
☐ Little (1-25%)	☐ Little (1-25%)
☐ Some (26-75%)	☐ Some (26-75%)
☐ Most or All (76-100%)	☐ Most or All (76-100%)
☐ No sidewalk	☐ No sidewalk

45) If answer to Q44 is "Little," provide a steepness measure that represents the majority of the segment.

N/E ☐ Level ☐ Moderate ☐ Steep

S/W ☐ Level ☐ Moderate ☐ Steep

46) Does the walkway have a cross-slope that affects walkers?

(A cross-slope is a sideways slope, like a driveway that slopes through the sidewalk.
Only evaluate cross-slope that is in the path of the walkway.)

N/E ☐ Level   ☐ Moderate   ☐ Steep

S/W ☐ Level   ☐ Moderate   ☐ Steep

47) Are there <u>permanent obstructions</u> in the sidewalk (e.g., telephone poles, trees, café tables, shrubs, basketball hoops)?

North/East	South/West
☐ None	☐ None
☐ Some	☐ Some
☐ Many	☐ Many
☐ No sidewalk	☐ No sidewalk

Some Obstructions

48) Are there temporary obstructions in the sidewalk (e.g., parked cars, sandwich boards, garbage cans)?

North/East	South/West
☐ None	☐ None
☐ Some	☐ Some
☐ Many	☐ Many
☐ No sidewalk	☐ No sidewalk

Some Temporary Obstructions
(temporary sidewalk obstruction)

Many Temporary Obstructions
(trash bins and vehicle obstructing sidewalk)

49) <u>If no sidewalk</u>, is there any other place to walk that is safe from traffic?

North/East	South/West
☐ Yes	☐ Yes
☐ Unpaved pathway (goat path)	☐ Unpaved pathway (goat path)
☐ Street shoulder	☐ Street shoulder
☐ Buffer	☐ Buffer
☐ No	☐ No
☐ N/A Sidewalk present	☐ N/A Sidewalk present

> For each side of the street segment, if the response to question 37 (presence of sidewalk) is "Yes," then the response for this question 49 should be "N/A Sidewalk present." A street shoulder can be marked as a safe place to walk only if it is marked with street lines. A bicycle lane should not be considered as a safe place to walk.

50) <u>If no sidewalk</u>, what is the width of the place on which one could safely walk? *(Not in possible path of traffic)*

North/East	South/West
☐ None	☐ None
☐ < 4 ft.	☐ < 4 ft.
☐ > 4 ft.	☐ > 4 ft.
☐ N/A	☐ N/A

Pedestrian Curb Cuts On Segment (Non-Intersection)

51) Presence of any mid-segment street crossing, where an individual could safely cross (marked by sign or crosswalk)?

☐ Yes   ☐ No

> You do not have to cross to count mid-segment crossings; they only have to be on the street segment. Because mid-segment crossings are present on both sides of a street segment, count each one only once.

Mid-segment street crossing
http://www.pedbikeimages.org/pubdetail.cfm?picid=328
Laura Sandt

Driveway Curb Cuts

52) How many driveways or alleys are there?

(Count only alleys that are wide enough to be used by cars or other vehicles that could impede pedestrian traffic.)

North/East

☐ None

☐ 1–2

☐ 3–5

☐ 6 or more

South/West

☐ None

☐ 1–2

☐ 3–5

☐ 6 or more

Pedestrian Lighting

53) Are street lights installed?

North/East

☐ None

☐ Some (e.g., overhead street lights on utility poles with wide spacing)

☐ Ample (e.g., regularly spaced pedestrian lampposts)

South/West

☐ None

☐ Some (e.g., overhead street lights on utility poles with wide spacing)

☐ Ample (e.g., regularly spaced pedestrian lampposts)

Bicycle Lane

How would you rate the bikability of this segment?

54) Location of bike lane (marked lane)?

North/East

☐ Does not apply

☐ No shoulder (no marked lane)

☐ Narrow paved (<3ft) shoulder (no marked lane)

☐ Wide paved (>3ft) shoulder (no marked lane)

☐ Narrow (<3ft) marked lane

☐ Wide (>3ft) marked lane

South/West

☐ Does not apply

☐ No shoulder (no marked lane)

☐ Narrow paved (<3ft) shoulder (no marked lane)

☐ Wide paved (>3ft) shoulder (no marked lane)

☐ Narrow (<3ft) marked lane

☐ Wide (>3ft) marked lane

No shoulder
http://www.pedbikeimages.org/pubdetail.
cfm?picid=1138
Barbara Gosse

Wide paved shoulder (no marked lane)
http://www.pedbikeimages.org/pubdetail.
cfm?picid=1494
Bob Boyce

Wide marked bicycle lane

**Narrow paved shoulder
(no marked lane)**

55) Are there any signs indicating bicycle use (share the road, etc.)?

☐ None   ☐ N/E   ☐ S/W

Bike lane sign

56) Levelness and condition of bike lane (e.g., heaves, alignment, cracks, broken sections, weeds)?

North/East	South/West
☐ Does not apply	☐ Does not apply
☐ None	☐ None
☐ A little	☐ A little
☐ Some	☐ Some
☐ A lot	☐ A lot

57) Obstructions in bike lane (e.g., artificial – cars, rumble strips, drainage grates – or natural – trees, bushes, rocks)?

North/East	South/West
☐ Does not apply	☐ Does not apply
☐ None	☐ None
☐ A little	☐ A little
☐ Some	☐ Some
☐ A lot	☐ A lot

Bike/Ped Path

How would you rate the availability of trails or paths for this segment? (Check all that apply.)

58) Presence of path or trail (e.g., multi-use, biking, walking route)?

N/E ☐ Yes ☐ No

S/W ☐ Yes ☐ No

Multi-use path

59) Width of path or trail?

North/East	**South/West**
☐ Does not apply	☐ Does not apply
☐ 0 to 3 ft	☐ 0 to 3 ft
☐ >3 to < 6 ft	☐ >3 to < 6 ft
☐ ≥ 6 ft	☐ ≥ 6 ft

≥ 6 ft.

60) Levelness and condition of trail (e.g., heaves, alignment, cracks, broken sections, weeds)?

North/East	South/West
☐ Does not apply	☐ Does not apply
☐ None	☐ None
☐ A little	☐ A little
☐ Some	☐ Some
☐ A lot	☐ A lot

61) Obstructions (e.g., artificial – cars, trash cans – or natural – trees, bushes, rocks)?

North/East	South/West
☐ Does not apply	☐ Does not apply
☐ None	☐ None
☐ A little	☐ A little
☐ Some	☐ Some
☐ A lot	☐ A lot

Land Uses And Destinations

For land uses and destinations, count the total number on both sides of the street segment. Do not double count. Only count land uses and destination that have an entrance on the street segment. Be sure to only count a land use or destination on one segment, even if it faces two streets.

62) What types of residential uses?

Check all that apply

☐ Single family houses

☐ Multi-unit homes (duplex, 4-plex, row house)

☐ Apartments or condominiums

☐ Apartments above street retail

☐ Retirement/senior living facility

☐ Other (mobile home, dormitory)

☐ None

63) Shopping Centers

Check all that apply

☐ Shopping Mall

☐ Strip Mall

☐ Shopping Arcade

☐ None of the above

64) How many of the following types of non-residential destinations are present? (Count both sides of street. Do not double count.)

Food-related land uses

a. Fast food restaurant (national or local chain, primarily sells burgers, fried chicken, pizza, or "Americanized" Mexican, Chinese, etc.)

    ☐ 0   ☐ 1   ☐ 2+

b. Sit-down restaurant

    ☐ 0   ☐ 1   ☐ 2+

c. Grocery/supermarket

    ☐ 0   ☐ 1   ☐ 2+

d. Convenience store (may also be a gas station)

    ☐ 0   ☐ 1   ☐ 2+

e. Café or coffee shop

    ☐ 0   ☐ 1   ☐ 2+

f. Liquor/alcohol store (primarily sells alcohol, wine bar, strip club)

    ☐ 0   ☐ 1   ☐ 2+

g. Big box store (e.g., Home Depot, Best Buy, Sears, Super Walmart, Target)

    ☐ 0   ☐ 1   ☐ 2+

h. Specialty Food Store (e.g., ice cream, candy, bakery)

    ☐ 0   ☐ 1   ☐ 2+

i. Community garden

    ☐ 0   ☐ 1   ☐ 2+

j. Farmers market

    ☐ 0   ☐ 1   ☐ 2+

k. Green carts

    ☐ 0   ☐ 1   ☐ 2+

l. Food trucks

    ☐ 0   ☐ 1   ☐ 2+

Retail and service oriented land uses

m. Pharmacy or drug store

    ☐ 0   ☐ 1   ☐ 2+

n. Bank or credit union

☐ 0 ☐ 1 ☐ 2+

o. Health-related professional (e.g., chiropractor, doctor's. office)

☐ 0 ☐ 1 ☐ 2+

p. Entertainment (e.g., movie theatre, arcade)

☐ 0 ☐ 1 ☐ 2+

q. Other service (e.g., salon, lawyer, accountant, realtor, laundry/dry cleaner, commercial mailing service)

☐ 0 ☐ 1 ☐ 2+

r. Other retail (e.g., books, clothing, hardware, video rental)

☐ 0 ☐ 1 ☐ 2+

Government or community land use

s. Health or social services (e.g., hospital, health department, community action agency, police/fire stations, city hall, etc.)

☐ 0 ☐ 1 ☐ 2+

t. Library/Museums

☐ 0 ☐ 1 ☐ 2+

u. Post office

☐ 0 ☐ 1 ☐ 2+

v. Senior center

☐ 0 ☐ 1 ☐ 2+

w. Place of worship (e.g., church, synagogue, convent, mosque, etc.)

☐ 0 ☐ 1 ☐ 2+

x. School

☐ 0 ☐ 1 ☐ 2+

Count any place that has "school" in the name, including pre-schools, church schools, and learning centers.

Other land use

y. Warehouse/factory/industrial

☐ 0 ☐ 1 ☐ 2+

z. Abandoned building

☐ 0 ☐ 1 ☐ 2+

aa. Unmaintained lot/field

☐ 0 ☐ 1 ☐ 2+

bb. Casino

☐ 0 ☐ 1 ☐ 2+

Recreational facilities or destinations

cc. Private indoor fitness facility

☐ 0 ☐ 1 ☐ 2+

dd. Community recreation center

☐ 0   ☐ 1   ☐ 2+

ee. Park

☐ 0   ☐ 1   ☐ 2+

ff. Playground at park or school

☐ 0   ☐ 1   ☐ 2+

gg. Outdoor pool

☐ 0   ☐ 1   ☐ 2+

hh. Golf course

☐ 0   ☐ 1   ☐ 2+

ii. Sports/playing field or court (e.g., baseball or tennis at park or school)

☐ 0   ☐ 1   ☐ 2+

jj. Sports track

☐ 0   ☐ 1   ☐ 2+

kk. Body of water (e.g., lake, ocean)

☐ 0   ☐ 1   ☐ 2+

ll. Other recreational facility (e.g., skating rink, miniature golf)

☐ 0   ☐ 1   ☐ 2+

65) What activity areas are in the park? (Mark all that apply)

(Answer this question if Q64ee, park, was 1 or 2+)

☐ Tennis Courts

☐ Basketball Courts

☐ Other Courts (specify)_____

☐ Baseball Fields

☐ Football Fields

☐ Soccer Fields

☐ Other Fields (specify)_____

☐ Paths

☐ Playgrounds

☐ Green Spaces

☐ Golf Courses

☐ Swimming Pools

☐ Zoo

☐ Botanical Gardens

☐ Stables

☐ Other (specify)_____

Intersection 2

66) Intersection Geometry

Check one

☐ T-intersection

☐ 4-way intersection

☐ 5-way star

☐ 6-way (e.g., three streets)

67) Intersection Control

Check items present

☐ None

☐ Yield signs/Flashing yellow

☐ Stop signs/Flashing red light

☐ Traffic signal

☐ Traffic circle, Roundabout

Pedestrian Crossing At Intersection 2

Crossing from N S E W to N S E W

68) Signalization (if traffic signal present)

Check all that apply

☐ Any traffic signals have green arrows for dedicated vehicle turns

☐ Pedestrian "Walk" signals present

☐ Pedestrian push buttons present

☐ Countdown signal

☐ Audible walk signal

☐ None of the Above

69) Crosswalk treatment

Check all that apply

☐ Marked crosswalk

☐ High-visibility striping

☐ Stop lines on road or additional crosswalk warnings

☐ Raised crosswalk

☐ Different material than road

☐ None of the Above

70) Crossing features

Check all that apply

☐ Specifically identified lanes **turning into crossing**

    ☐ Right turn   ☐ Left turn

☐ Protected refuge islands

☐ One-way streets **through crossing**

☐ Curb extension

☐ None of the Above

71) Gutters present in crossing

Within possible path of crossing pedestrians

    ☐ Yes   ☐ No

72) Other characteristics of crossing

Check all that apply

☐ Steep slope or steep cross-slope at intersection

☐ Temporary obstructions

☐ Crossing aids (e.g., flags)

☐ None of the Above

73) Miscellaneous problems

Check all that apply

☐ Lack of lampposts or overhead street lamps

☐ Poor condition of crossing surface

☐ Poor visibility at corners

☐ Faded or worn crosswalk markings

☐ Unanticipated mid-segment crossing Reason: _____

☐ Other: _____

☐ None of the Above

74) Distance of crossing leg, including all potential parking and turn lanes

    _____ lanes wide

75) Crosswalk timing: _____ **seconds**

(Length includes white "walk" time + flashing red "don't walk" time)

☐ No crosswalk ☐ No signal

Crosswalk Curb Cuts At Intersection 2

76) Curb ramps, curb cuts, or mountable curbs?

(a) Pre-crossing curb (on N E S W side of street)

☐ Yes (with tactile paving/truncated dome)

☐ Yes (with NO tactile paving)

☐ No

(b) Post-crossing curb (on N E S W side of street)

☐ Yes (with tactile paving/truncated dome)

☐ Yes (with NO tactile paving)

☐ No

77) Alignment of curb cut/ramp and crossing?

(Even if there is no marked crosswalk, there is still a crossing)

(a) Pre-crossing curb

Check one

☐ Ramp lines up with crossing

☐ Ramp does not line up with crossing

☐ No ramp

(b) Post-crossing curb

Check one

☐ Ramp lines up with crossing

☐ Ramp does not line up with crossing

☐ No ramp

78) Rate the condition and quality of curb cut/ramp.

(a) Pre-crossing curb (on N E S W side of street)

☐ Ramp is passable for mobility device (e.g., wheelchair)

    Check all that apply

    ☐ ADA-compliant slope (8.3% or less)

    ☐ No broken area

    ☐ Broken area passable with little or no effort

☐ Ramp is impassable for mobility device (e.g., wheelchair)

    Check all that apply

    ☐ ADA-non-compliant slope (over 8.3%)

    ☐ Broken area impassable or only passable with high effort

☐ No ramp

(b) Post-crossing curb (on N E S W side of street)

☐ Ramp is passable for mobility device (e.g., wheelchair)

    Check all that apply

    ☐ ADA-compliant slope (8.3% or less)

    ☐ No broken area

    ☐ Broken area passable with little or no effort

☐ Ramp is impassable for mobility device (e.g., wheelchair)

    Check all that apply

    ☐ ADA-non-compliant slope (over 8.3%)

    ☐ Broken area impassable or only passable with high effort

☐ No ramp

Weather Conditions

79) What is the temperature (F) today?

☐ 50's or below

☐ 60's

☐ 70's

☐ 80's

☐ 90's or above

80) What is the weather today?

☐ Sunny

☐ Partly Sunny/Partly Cloudy

☐ Overcasts

☐ Rainy

☐ Snowy

81) Does this segment need further evaluation during or after rainy periods?

☐ Yes   ☐ No

Appendix F

BE Tool Data Coding and Scoring Table

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
LU1	Foot (walked route) = 1; Auto (drove route) = 2; Both = 3	1)	How is audit information collected?	Route		not used in positive or negative subscales		
Intersection 1								
C1_2	T-intersection = 1; 4-way = 2; >4-way = 3	2)	Intersection Geometry	Crossings Section		not used in positive or negative subscales		
		3)	Intersection Control:	Crossings Section		Intersection Control and Signage Positive Subscale		
			☐ None					
C1_1a	Yield signs No = 0; Yes = 1		☐ Yield signs/Flashing yellow			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C1_1b	Stop signs No = 0; Yes = 1		☐ Stop signs/Flashing red light			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C1_1c	Traffic signal No = 0; Yes = 1		☐ Traffic signal			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C1_1d	Traffic circle No = 0; Yes = 1		☐ Traffic circle, Roundabout			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
Pedestrian Crossing at Intersection 1								
			Crossing from N S E W to N S E W					
		4)	Signalization (if traffic signal present):	Crossings Section		Intersection Control and Signage Positive Subscale		
C1_3a	No = 0; Yes = 1		☐ All traffic signals have green arrows for dedicated vehicle turns					
C1_3b	No = 0; Yes = 1		☐ Pedestrian "Walk" signals present					
C1_3c	No = 0; Yes = 1		☐ Pedestrian push buttons present					
C1_3d	No = 0; Yes = 1		☐ Countdown signal					

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 1 (continued)					
			Pedestrian Crossing at Intersection 1 (continued)					
C1_3e	No = 0; Yes = 1		☐ Audible walk signal					
			☐ None of the Above					
		5)	Crosswalk treatment	Crossings Section		Crosswalk Amenities Positive Subscale		
C1_8a	No = 0; Yes = 1		☐ Marked crosswalk			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
C1_8b	No = 0; Yes = 1		☐ High-visibility striping			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
C1_8c	No = 0; Yes = 1		☐ Stop lines on road or additional crosswalk warnings			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
C1_8d	No = 0; Yes = 1		☐ Raised crosswalk			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
C1_8e	No = 0; Yes = 1		☐ Different material than road			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
			☐ None of the Above			Crosswalk Amenities Positive Subscale		
		6)	Crossing features	Crossings Section		Intersection Control and Signage Positive Subscale; Crosswalk Amenities Positive Subscale		
			☐ Specifically identified lanes **turning into crossing**			Intersection Control and Signage Positive Subscale		
C1_11a	No = 0; Yes = 1		☐ Right turn			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C1_11b	No = 0; Yes = 1		☐ Left turn			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C1_11c	No = 0; Yes = 1		☐ Protected refuge islands			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
C1_11d	No = 0; Yes = 1		☐ One-way streets **through crossing**			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	

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Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 1 (continued)					
			Pedestrian Crossing at Intersection 1 (continued)					
C1_11e	No = 0; Yes = 1		☐ Curb extension			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
			☐ None of the Above					
C1_6	No = 0; Yes = 1	7)	Gutters present in crossing	Crossings Section		Crossing Impediments Negative Subscale	No = 0; Yes = 1	
			Within possible path of crossing pedestrians					
		8)	Other characteristics of crossing	Crossings Section		Crossing Impediments Negative Subscale; Crosswalk Amenities Positive Subscale		
C1_7a	No = 0; Yes = 1		☐ Steep slope or steep cross-slope at intersection			Crossing Impediments Negative Subscale	No = 0; Yes = 1	
C1_7b	No = 0; Yes = 1		☐ Temporary obstructions			Crossing Impediments Negative Subscale	No = 0; Yes = 1	
C1_7c	No = 0; Yes = 1		☐ Crossing aids (e.g., flags)			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
			☐ None of the Above					
		9)	Miscellaneous problems	Crossings Section		Crossing Impediments Negative Subscale		
C1_12a	No = 0; Yes = 1		☐ Lack of lampposts or overhead street lamps			not used in positive or negative subscales		
C1_12b	No = 0; Yes = 1		☐ Poor condition of crossing surface			not used in positive or negative subscales		
C1_12c	No = 0; Yes = 1		☐ Poor visibility at corners			Crossing Impediments Negative Subscale	No = 0; Yes = 1	
C1_12d	No = 0; Yes = 1		☐ Faded or worn crosswalk markings			Crossing Impediments Negative Subscale	No = 0; Yes = 1	

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 1 (continued)					
			Pedestrian Crossing at Intersection 1 (continued)					
C1_12e	No = 0; Yes = 1		☐ Unanticipated mid-segment crossing			not used in positive or negative subscales		
			Reason: _____			not used in positive or negative subscales		
C1_12f			☐ Other: _____			not used in positive or negative subscales		
			☐ None of the Above			not used in positive or negative subscales		
C1_10_ trichot	#	10)	Distance of crossing leg, including all potential parking and turn lanes. _____ lanes wide	Crossings Section		Road Width Negative Subscale	1 – 2 = 0; 3 – 4 = 1; 5 – Highest = 2	
C1_4	# of seconds; No crosswalk = -777; No signal = -778	11)	Crosswalk timing: _____ seconds	Crossings Section		not used in positive or negative subscales		
			Crosswalk Curb Cuts at Intersection 1					
C1_B12a		12)	Curb ramps, curb cuts, or mountable curbs?	Crossings Section		Curb Quality/Presence Positive Subscale	2 = 1; 1 or 0 = 0	
C1_B12a	Pre-crossing has ramp (w tactile) = 1; Pre-crossing has ramp (w/o tactile) = 2; No ramp = 3		(a) Pre-crossing curb (on N E S W side of street)			Curb Quality/Presence Positive Subscale	Ramp (w tactile) = 1; Ramp (w/o tactile) = 1; No ramp = 0	
C1_B12b	Pre-crossing has ramp (w tactile) = 1; Pre-crossing crossing has ramp (w/o tactile) = 2; No ramp = 3		(b) Post-crossing curb (on N E S W side of street)			Curb Quality/Presence Positive Subscale	Ramp (w tactile) = 1; Ramp (w/o tactile) = 1; No ramp = 0	

Crosswalk Curb Cuts at Intersection 1 (continued)

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
		13)	Alignment of curb cut/ramp and crossing?	Crossings Section		Curb Quality/Presence Positive Subscale; Crossing Impediments Negative Subscale		2 = 1; 1 or 0 = 0
C1_5a	Ramp lines up w/xing = 1; Ramp does not line up = 2; No ramp = 3		(a) Pre-crossing curb (on N E S W side of street)			Curb Quality/Presence Positive Subscale; Crossing Impediments Negative Subscale	Ramp lines up w/xing = 1; Ramp does not line up =1; No ramp = 0	
C1_5a_ positive			☐ Ramp lines up with crossing			Curb Quality/Presence Positive Subscale		
C1_5a_ opt2			☐ Ramp does not line up with crossing			not used in positive or negative subscales		
C1_5a_ negative			☐ No ramp			Crossing Impediments Negative Subscale		
C1_5b	Ramp lines up w/xing = 1; Ramp does not line up = 2; No ramp = 3		(b) Post-crossing curb (on N E S W side of street)			Curb Quality/Presence Positive Subscale; Crossing Impediments Negative Subscale	Ramp lines up w/xing = 1; Ramp does not line up =1; No ramp = 0	
C1_5b_ positive			☐ Ramp lines up with crossing			Curb Quality/Presence Positive Subscale		
C1_5b_ opt2			☐ Ramp does not line up with crossing			not used in positive or negative subscales		
C1_5b_ negative			☐ No ramp			Crossing Impediments Negative Subscale		
C1_B14_ positive		14)	Rate the condition and quality of curb cut/ramp.			Curb Quality/Presence Positive Subscale;		2 = 1; 1 or 0 = 0

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 1 (continued)					
			Crosswalk Curb Cuts at Intersection 1 (continued)					
C1_B14_ negative						Crossing Impediments Negative Subscale		1 or 2 = 1; 0 = 0
			a. Pre-crossing curb *(on N E S W side of street)*					
C1_B14a1_ negative			☐ Ramp is passable for mobility device (e.g., wheelchair)			Crossing Impediments Negative Subscale	Ramp is passable = 0	
C1_B14a1_ positive						Curb Quality/Presence Positive Subscale	Ramp is passable = 1	
			☐ ADA-compliant slope (8.3% or less)			not used in positive or negative subscales		
			☐ No broken area			not used in positive or negative subscales		
			☐ Broken area passable with little or no effort			not used in positive or negative subscales		
C1_B14a2_ negative			☐ Ramp is impassable for mobility device (e.g., wheelchair)			Crossing Impediments Negative Subscale	Ramp is impassable = 1	
C1_B14a_ positive						Curb Quality/Presence Positive Subscale	Ramp is impassable = 0	
			☐ ADA-non-compliant slope (over 8.3%)			not used in positive or negative subscales		
			☐ Broken area impassable or only passable with high effort			not used in positive or negative subscales		
C1_B14a3			☐ No ramp			not used in positive or negative subscales		
			b. Post-crossing curb *(on N E S W side of street)*					

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 1 (continued)					
			Crosswalk Curb Cuts at Intersection 1 (continued)					
C1_B14b1_ negative						Curb Quality/Presence Positive Subscale	Ramp is passable = 0	
C1_b14b1_ positive						Curb Quality/Presence Positive Subscale	Ramp is passable = 1	
			☐ ADA-compliant slope (8.3% or less)			not used in positive or negative subscales		
			☐ No broken area			not used in positive or negative subscales		
			☐ Broken area passable with little or no effort			not used in positive or negative subscales		
C1_B14b2_ negative			☐ Ramp is impassable for mobility device (e.g., wheelchair)			Crossing Impediments Negative Subscale	Ramp is impassable = 1	
C1_B14b2_ positive						Curb Quality/Presence Positive Subscale	Ramp is impassable = 0	
			☐ ADA-non-compliant slope (over 8.3%)			not used in positive or negative subscales		
			☐ Broken area impassable or only passable with high effort			not used in positive or negative subscales		
C1_B14b3			☐ No ramp			not used in positive or negative subscales		

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Street Segment					
			Road configuration					
S1_11_dichot	One-way = 1; Two-way = 2	15)	Is the street predominantly one-way or two-way?	Segments Section	Walkways/ Sidewalks	Negative Street Design Subscale	One-way = 1; Two-way = 2	
S1_B16	Divided highway > 4 lanes = 1; Undivided > 4 lanes = 2; 3 lanes (or two plus center turn lane) = 3; 2 marked lanes = 4; No marked lanes = 5; Unpaved roadway = 6	16)	What type of road is present?	Route	Streetscape Section	not used in positive or negative subscales		
			Number of traffic lanes					
S1_10_dichot	#	17)	How many traffic lanes are present (include all lanes that traffic can use; choose most predominant)?	Segments Section	Walkways/ Sidewalks	Negative Street Design Subscale	1-4 lanes = 1; >5 lanes = 2	
			Speed limit					
SS3a	No = 0; Yes = speed limit (text)	18)	Is there a posted speed limit along the route?	Route	Streetscape Section	Positive Streetscape Subscales		
	Regular							
SS3a_sign	☐ Yes _____ mph ☐ No					Positive Streetscape Subscales	No = 0; Yes = 1	
SS3a_pos						Positive Streetscape Subscales		
SS_B18b	No = 0; Yes = speed limit (text)		Special school zone			not used in positive or negative subscales	No = 0; Yes, speed limit 25mph or less= 1	

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Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Street Segment (continued)					
			Vehicular traffic control					
		19)	What other street characteristics are present?	Route	Streetscape Section	Positive Streetscape Subscales		
			(specify # of each type)					
SS4a	#		☐ Traffic calming (signs, circles, speed tables, speed humps, curb extension)			Positive Streetscape Subscales	None = 0; Any = 1	
SS4b	#		☐ Roll-over curbs ____					
SS4c	#		☐ Drainage ditches ____ (count both sides of street)					
SS4d	#		☐ Instructional signs for pedestrian's					
SS4e	#		☐ Crosswalk signage or other pedestrian signage (for drivers)					
			☐ None of the Above					
			Transit Availability					
		20)	Is there a public transit stop on this segment? *Check all that apply*	Route	Streetscape Section	Negative Streetscape Subscale		
			☐ None					
SS1a_dichot			☐ Bus stop			Negative Streetscape Subscale	None = 1; Any = 0	
SS_B20c			☐ Light Rail/Other Transit			not used in positive or negative subscales		
SS1b			☐ Senior transit/paratransit			not used in positive or negative subscales		
			If none skip to Q22.					
		21)	Is there a bench or covered shelter at the transit stop?	Route	Streetscape Section			

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
Street Segment (continued)								
Transit Availability (continued)								
			☐ None			Positive Streetscape Subscales		
SS2_1b	No = 0; Yes = 1		☐ Bench			Positive Streetscape Subscales	No = 0; Yes = 1	
SS2_1c	No = 0; Yes = 1		☐ Covered shelter (with no room for mobility device)			Positive Streetscape Subscales	No = 0; Yes = 1	
SS2_1d	No = 0; Yes = 1		☐ Covered shelter with room for mobility device (5ft clearance)			Positive Streetscape Subscales	No = 0; Yes = 1	
Street Amenities								
		22)	Presence of street amenities	Route	Streetscape Section	Positive Streetscape Subscales		
SS7a	No = 0; Yes = 1		☐ Building overhangs that provide shelter from inclement weather in public space (e.g. sidewalks)			Positive Streetscape Subscales	No = 0; Yes = 1	
SS7b	No = 0; Yes = 1		☐ Trash bins (public)			Positive Streetscape Subscales	No = 0; Yes = 1	
SS7c	No = 0; Yes = 1		☐ Bicycle racks (non-school)			Positive Streetscape Subscales; Bike Infrastructure Positive Subscale	No = 0; Yes = 1	
SS_B22d	No = 0; Yes = 1		☐ Bicycle rack(s) in front of school			not used in positive or negative subscales		
SS7e	No = 0; Yes = 1		☐ Working drinking fountain			Positive Streetscape Subscales	No = 0; Yes = 1	
SS7f	No = 0; Yes = 1		☐ Working public telephones			Positive Streetscape Subscales	No = 0; Yes = 1	

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Street Segment (continued)					
			Street Amenities (continued)					
SS7g	No = 0; Yes = 1		☐ Kiosks or information booths			Positive Streetscape Subscales	No = 0; Yes = 1	
			☐ None of the Above					
A1	No = 0; Yes = 1	23)	Do you observe pleasant hardscape features, such as fountains, sculptures, or art (public or private)?	Route	Aesthetics and Social Section	Positive Aesthetics and Social Subscale	No = 0; Yes = 1	
A2	No = 0; Yes = 1	24)	Do you observe softscape features such as gardens or landscaping (e.g., Public: bodies of water, designated viewpoints; Private: retaining walls, bark, ponds)?	Route	Aesthetics and Social Section	Positive Aesthetics and Social Subscale	No = 0; Yes = 1	
A4_dichot_neg	0% = 1; 1-49% = 2; 50-99% = 3; 100% = 4	25)	Are the buildings well maintained?	Route	Aesthetics and Social Section	Negative Aesthetics and Social Elements	0-99% = 1; 100% = 0	1 or 2 = 1; 0 = 0
A5_dichot	0% = 1; 1-49% = 2; 50-99% = 3; 100% = 4	26)	Is landscaping well maintained?	Route	Aesthetics and Social Section	Positive Aesthetics and Social Subscale	0-99% = 0; 100% = 1	1 or 2 = 1; 0 = 0
S1_23_trichot	0-1 = 1; 2-5 = 2; 6-10 = 3; 11-20 = 4; 21+ = 5; No sidewalk= -777	27)	How many trees exist within 5 feet of either side of the sidewalk/pathway (can be in buffer or setback; also count trees that are more than 5 feet away if they provide shade for the sidewalk/pathway)?	Segments Section	Walkways/ Sidewalks	Trees Positive Subscale	No sidewalk/NA = 0; 0-1 trees = 0; 2-10 trees = 1; >11 trees = 2	3 or 4 = 2; 1 or 2 = 1; 0 = 0
S1_25_trichot	1-25% = 1; 26-50% = 2; 51-75% = 3; 76-100% = 4; No sidewalk = -777; No coverage = 5	28)	What percentage of the length of the sidewalk/walkway is covered by trees, awnings or other overhead coverage?	Segments Section	Walkways/ Sidewalks	Trees Positive Subscale	No coverage or no sidewalk/NA and ≤25% = 0; 26%-75% = 1; >75% = 2	3 or 4 = 2; 1 or 2 = 1; 0 = 0

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Street Segment (continued)					
			Physical Maintenance/Disorder					
		29)	Which of the following physical disorders are present?	Route	Aesthetics and Social Section	Negative Aesthetics and Social Subscale; Positive Aesthetics and Social Subscale		
A6a	No = 0; Yes = 1		☐ Graffiti/tagging (not murals)			Negative Aesthetics and Social Subscale	No = 0; Yes = 1	
A6b	No = 0; Yes = 1		☐ Abandoned cars			Negative Aesthetics and Social Subscale	No = 0; Yes = 1	
A6c	No = 0; Yes = 1		☐ Buildings with broken/ boarded windows			Negative Aesthetics and Social Subscale	No = 0; Yes = 1	
A6d	No = 0; Yes = 1		☐ Drug paraphernalia			Negative Aesthetics and Social Subscale	No = 0; Yes = 1	
A6e	No = 0; Yes = 1		☐ Broken glass			Negative Aesthetics and Social Subscale	No = 0; Yes = 1	
A6f	No = 0; Yes = 1		☐ Beer/liquor bottles/cans			not used in positive or negative subscales	No = 0; Yes = 1	
A6g	No = 0; Yes = 1		☐ Litter in yards			Negative Aesthetics and Social Subscale	No = 0; Yes = 1	
A6h	No = 0; Yes = 1		☐ Noticeable/excessive litter in street/sidewalk			not used in positive or negative subscales	No = 0; Yes = 1	
A6i	No = 0; Yes = 1		☐ Neighborhood watch signs			Positive Aesthetics and Social Subscale	No = 0; Yes = 1	
A6j	No = 0; Yes = 1		☐ Signage for commercial destinations or parks			Positive Aesthetics and Social Subscale	No = 0; Yes = 1	
			☐ None of these					
A7_ dichot	None = 1; A little = 2; Some = 3; A lot = 4	30)	Rate the extent of physical disorder	Route	Aesthetics and Social Section	Negative Aesthetics and Social Subscale	None = 0; A little, some or a lot = 1	

Street Segment (continued

Physical Maintenance/Disorder (continued)

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
A8_ dichot	None = 1; A little = 2; Some = 3; A lot = 4	31)	Rate the extent of social disorder	Route	Aesthetics and Social Section	Negative Aesthetics and Social Subscale	None = 0; A little, some or a lot = 1	
Line of Sight								
S1_19_ trichot	1-25% = 1; 26-50% = 2; 51-75% = 3; 76-100% = 4; No sidewalk =-777	32)	Estimate the proportion of street segment that has ground floor or street-level windows within 40 feet of sidewalk/walkway (or street if no sidewalk/walkway)	Segments Section	Walkways/ Sidewalks	Building Aesthetics & Design Positive Subscale	No windows – 25% = 0; 26%-75% = 1; >76% = 2	3 or 4 = 2; 1 or 2 = 1; 0 = 0
Building setbacks								
S1_26	No building = 1; <10 feet = 2; 10-20 feet = 3; 21-50 feet = 4; 51-100 feet = 5; >100 feet = 6	33)	What is the smallest building setback from the sidewalk?	Segments Section	Walkways/ Sidewalks	Positive Building Height and Setbacks Subscale	No building = 1; <10 feet = 2; 10-20 feet = 3; 21-50 feet = 4; 51-100 feet = 5; >100 feet = 6	
S1_27	No building = 1; <10 feet = 2; 10-20 feet = 3; 21-50 feet = 4; 51-100 feet = 5; >100 feet = 6	34)	What is the largest building setback from the sidewalk/ walkway?				No building = 1; <10 feet = 2; 10-20 feet = 3; 21-50 feet = 4; 51-100 feet = 5; >100 feet = 6	
S1_26_27 _0pts*			Either setback (S1_26, S1_27) >50 ft and no building				No = 0; Yes = 0	
S1_26_27_ 1point*			All other combinations of S1_26 and S1_27				No = 0; Yes = 1	

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Street Segment (continued)					
			Building setbacks (continued)					
S1_26_27_2points*			Both setbacks (S1_26 and S1_27) 10-20 ft. or one setback <10 ft and one setback 10-20 ft.				No = 0; Yes = 2	
S1_26_27_3points*			Both setbacks (S1_26 and S1_27) <10 ft.				No = 0; Yes = 3	
S1_26_27_points *			Smallest and largest setback scores combined			Positive Building Height and Setbacks Subscale	S1_26_27_0pts + S1_26_27_1point + S1_26_27_2points + S1_26_27_3points = 3	
S1_28_trichot	No building = 1; 1-2 stories = 2; 3-5 stories = 3; 6-10 stories = 4; >10 stories = 5	35)	What is the average height of buildings?			Positive Building Height and Setbacks Subscale	No building and 0-2 stories = 0; 3-5 stories = 1; 6-10 stories = 2; 10+stories = 3	
PosBldgHt Setbks_S1						Positive Building Height and Setbacks Subscale	S1_26_27_points + S1_28_trichot	
			Parking					
LU2a	No = 0; Yes = 1	36)	What parking facilities are present? □ None	Route	Destinations and Land Use Section	Positive Parking Subscale; Negative Destinations and Land Use Subscale	No = 0; Yes = 1	
LU2b_recode	No = 0; Yes = 1		□ On-street, parallel or angled parking			Positive Parking Subscale	No = 0; Yes = 1	

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Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
Street Segment (continued)								
Parking (continued)								
LU2c	No = 0; Yes = 1		☐ Small lot or garage (< 30 spaces)			Negative Destinations and Land Use Subscale	No = 0; Yes = 1	
LU2d_rec	No = 0; Yes = 1		☐ Medium to large lot or garage			Negative Destinations and Land Use Subscale	No = 0; Yes = 1	
Sidewalks								
S1_1	No = 0; Yes = 1	37)	Is a sidewalk present?	Segments Section	Walkways/ Sidewalks	Positive Sidewalk Subscale	No = 0; Yes = 2	4 = 2; 2 = 1; 0 = 0
S1_2_recode	<3 feet = 1; 3 to <5 feet = 2; ≥5 feet = 3; No sidewalk =-777	38)	What is the width of the majority of the sidewalk?	Segments Section	Walkways/ Sidewalks	Positive Sidewalk Subscale	<3 feet = 2; 3 to <5 feet = 2; ≥5 feet = 3; No sidewalk= 0	6 = 3; 4 or 5 = 2; 2 or 3 = 1; 0 = 0
S1_3a_ recode	No sidewalk = -777; No = 0; Yes = 1	39)	Is there a buffer present? (separation between the walkway and road; does not apply to roadway walking)	Segments Section	Walkways/ Sidewalks	Buffer Positive Subscale	No sidewalk = 0; No = 0; Yes = 1	2 = 2; 1 = 1; 0 = 0
S1_3b_ dichot	<3 feet = 1; 3 to <5 feet = 2; ≥5 feet = 3; No sidewalk =-777	40)	How wide is the majority of the buffer?	Segments Section	Walkways/ Sidewalks	Buffer Positive Subscale	No sidewalk = 0; 0-3 feet = 0; >3 feet = 1	2= 2; 1 = 1; 0 = 0
S1_4_recode	No = 0; Yes = 1; No sidewalk =-777	41)	Is the sidewalk continuous within the segment?	Segments Section	Walkways/ Sidewalks	Sidewalk Negative Subscale	No = 1; Yes = 0	2 = 1; 0 or 1 = 0
S1_B42	None = 1; One = 2; A few = 3; A lot = 4; No sidewalk =-777	42)	Are there poorly maintained sections of the sidewalk that constitute trip hazards? (e.g., heaves, misalignment, cracks, overgrowth)	Segments Section	Walkways/ Sidewalks	Sidewalk Negative Subscale	None or One = 0; A few or a lot = 1	2 = 2; 1 = 1; 0 = 0
S1_B43	Level = 1; Moderate = 2; Steep = 3; No sidewalk =-777	43)	How steep is the sidewalk at the steepest point in the segment? (Excluding heaves)	Segments Section	Walkways/ Sidewalks	Sidewalk Slope Negative subscale	Level or moderate = 0; Steep = 1	1 or 2 = 1; 0 = 0

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
Street Segment (continued)								
Sidewalks (continued)								
S1_6b	Little (1-25%) = 1; Some (26-75%) = 2; Most or all (76-100%) = 3; No sidewalk = -777	44)	How much of the segment is at or near this level of steepness?	Segments Section	Walkways/ Sidewalks	not used in positive or negative subscales		
S1_B45	Level = 1; Moderate = 2; Steep = 3	45)	If answer to Q44 is "Little," provide a steepness measure that represents the majority of the segment	Segments Section	Walkways/ Sidewalks	Sidewalk Slope Negative Subscale	Level or moderate = 0; Steep = 1	1 or 2 = 1; 0 = 0
S1_B46	Level = 1; Sloped = 2; Steep = 3	46)	Does the walkway have a cross-slope that affects walkers?	Segments Section	Walkways/ Sidewalks	Sidewalk Slope Negative Subscale	Level or sloped = 0; Steep = 1	1 or 2 = 1; 0 = 0
S1_8_dichot	None = 1; Some = 2; Many = 3; No sidewalk = -777	47)	Are there permanent <u>obstructions</u> in the sidewalk? (e.g., telephone poles, trees, café tables, shrubs, basketball hoops)	Segments Section	Walkways/ Sidewalks	Sidewalk Slope Negative Subscale	None = 0; Some or many = 1	2 = 2; 1 = 1; 0 = 0
S1_9_dichot	None = 1; Some = 2; Many = 3; No sidewalk = -777	48)	Are there temporary <u>obstructions</u> in the sidewalk?	Segments Section	Walkways/ Sidewalks	Sidewalk Slope Negative Subscale	None = 0; Some or Many = 1	2 = 2; 1 = 1; 0 = 0
		49)	If no sidewalk, is there any other place to walk that is safe from traffic?	Segments Section	Walkways/ Sidewalks	Positive Sidewalk Subscale		
	No = 0; Yes = 1; Sidewalk=-777		☐ Yes	Segments Section	Walkways/ Sidewalks			
S1_12a_recode	No = 0; Yes = 1; Sidewalk=-777		☐ Unpaved pathway (goat path)	Segments Section	Walkways/ Sidewalks	Positive Sidewalk Subscale	No = 0; Yes = 1; NA/Sidewalk=0	1 or 2 = 1; 0 = 0
S1_12b_recode	No = 0; Yes = 1; Sidewalk=-777		☐ Street shoulder			Positive Sidewalk Subscale	No = 0; Yes = 1; NA/Sidewalk=0	1 or 2 = 1; 0 = 0
S1_12c_recode	No = 0; Yes = 1; Sidewalk=-777		☐ Buffer			Positive Sidewalk Subscale	No = 0; Yes = 1; NA/Sidewalk=0	1 or 2 = 1; 0 = 0

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
Street Segment (continued)								
Sidewalks (continued)								
	No = 0; Yes = 1; Sidewalk=-777		☐ No			Positive Sidewalk Subscale	No = 0; Yes = 1; NA/Sidewalk=0	1 or 2 = 1; 0 = 0
			☐ N/A Sidewalk present					
S1_13	None = 1; <4 feet = 2; ≥4 feet = 3; N/A =-777	50)	If no sidewalk, what is the width of the place on which one could safely walk? (Not in possible path of traffic)	Segments Section	Walkways/ Sidewalks	not used in positive or negative subscales		
Pedestrian Curb Cuts on Segment (non-intersection)								
SS8	No = 0; Yes = 1	51)	Presence of any mid-segment street crossing, where an individual could safely cross (marked by sign or crosswalk)?	Route	Streetscape Section	Positive Streetscape Subscales	No = 0; Yes = 1	
Driveway curb cuts								
SS6_dichot	None = 1; 1-2 = 2; 3-5 = 3; 6+ = 4	52)	How many driveways or alleys are there?	Route	Streetscape Section	Negative Streetscape Subscale	0-5 driveways = 0; 6+ driveways = 1	2 = 2; 1 = 1; 0 = 0
Pedestrian Lighting								
SS5_dichot _neg	None = 1; Some = 2; Ample = 3	53)	Are street lights installed?	Route	Streetscape Section	Negative Streetscape Subscale	None = 1; Any (some and ample)= 0	2 = 1; 0 or 1 = 0
Bicycle Lane								
			How would you rate the bikability of this segment?					
S1_B54	Does not apply = 0; No shoulder (unmarked) = 1; Narrow paved (unmarked) = 2; Wide paved (unmarked) = 3; narrow marked = 4; Wide marked = 5	54)	Location of bike lane (marked lane)?	Segments Section	Bike lanes	Bike Infrastructure Positive Subscale	0 or 1 = 0; 2 = 1; 3 or 4 = 2; 5 = 3	5 or 6 = 3; 3 or 4 = 2; 1 or 2 = 1; 0 = 0

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Street Segment (continued)					
			Bicycle Lane (continued)					
S1_15	No = 0; Yes = 1	55)	Are there any signs indicating bicycle use (share the road, etc.)?	Segments Section	Bike lanes	Bike Infrastructure Positive Subscale	No = 0; Yes = 1	1 or 2 = 1; 0 = 0
S1_B56	Does not apply, or 0; None = 1; A little = 2; Some = 3; A lot = 4	56)	Levelness and condition of bike lane (e.g., heaves, alignment, cracks, broken sections, weeds)?	Segments Section	Bike lanes	Bike Infrastructure Negative Subscale	0 or 1 = 0; 2, 3, or 4 = 1	1 or 2 = 1; 0 = 0
S1_B57	Does not apply, or none = 0; A little, some, or a lot = 1	57)	Obstructions in the bike lane (e.g., artificial – cars, rumble strips, drainage grates – or natural – trees, bushes, rocks)?	Segments Section	Bike lanes	Bike Infrastructure Negative Subscale	Does not apply, or none = 0; A little, some, or a lot = 1	1 or 2 = 1; 0 = 0
			Bike/Ped Path					
			How would you rate the availability of trails or paths for this segment? (Check all that apply.)	Segments Section	Bike/Ped Path			
S1_B58	No = 0; Yes = 1	58)	Presence of path or trail (e.g., multi-use, biking, walking route)?	Segments Section	Bike/Ped Path	Bike Infrastructure Positive Subscale	No = 0; Yes = 1	1 or 2 = 1; 0 = 0
S1_B59	Does not apply, or 0 to 3 ft = 0; > 3 ft to < 6 ft = 1; ≥6 ft = 2	59)	Width of path or trail?	Segments Section	Bike/Ped Path	Bike Infrastructure Positive Subscale	Does not apply, or 0 to 3 ft = 0; > 3 to < 6 ft = 1; ≥6 ft = 2	2, 3, or 4 = 2; 1 = 1; 0 = 0
S1_B60		60)	Levelness and condition of trail (e.g., heaves, alignment, cracks, broken sections, weeds)?	Segments Section	Bike/Ped Path	Bike Infrastructure Negative Subscale	Does not apply, or none = 0; A little, some, or a lot = 1	1 or 2 = 1; 0 = 0
S1_B61		61)	Obstructions in the path or trail (e.g., artificial – cars, trash cans – or natural – trees, bushes, rocks)?	Segments Section	Bike/Ped Path	Bike Infrastructure Negative Subscale	Does not apply, or none = 0; A little, some, or a lot = 1	1 or 2 = 1; 0 = 0

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Land Uses and Destinations					
		62)	What types of residential uses?	Route	Destinations and Land Use Section	Residential Density Subscale		
LU3a	No = 0; Yes = 1		☐ Single family houses			Residential Density Subscale	Single family only = 1	
LU3b	No = 0; Yes = 1		☐ Multi-unit homes (duplex, 4-plex, row house)			Residential Density Subscale	Multi-family only and any other mix= 2	
LU3c	No = 0; Yes = 1		☐ Apartments or condominiums			Residential Density Subscale	Multi-family only and any other mix= 2	
LU3d	No = 0; Yes = 1		☐ Apartments above street retail			Residential Density Subscale	Apartment over retail only =3	
LU3e	No = 0; Yes = 1		☐ Retirement/senior living facility			Residential Density Subscale	Multi-family only and any other mix= 2	
LU3f	No = 0; Yes = 1		☐ Other (mobile home, dormitory)			Residential Density Subscale	Multi-family only and any other mix= 2	
			☐ None			Residential Density Subscale	Commercial=0	
		63)	Shopping Centers	Route	Destinations and Land Use Section	Shops Subscale		
LU7a	No = 0; Yes = 1		☐ Shopping Mall			Shops Subscale	No = 0; Yes = 1	
LU7b	No = 0; Yes = 1		☐ Strip Mall			Shops Subscale	No = 0; Yes = 1	
LU7c	No = 0; Yes = 1		☐ Shopping Arcade			Shops Subscale	No = 0; Yes = 1	
			☐ None of the above			Shops Subscale		
		64)	How many of the following types of non-residential destinations are present? (Count both sides of street. Do not double count.)	Route	Destinations and Land Use Section			

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Land Uses and Destinations (continued)					
			Food-related land uses					
LU6a	0 = 0; 1 = 1; 2+ = 2		a. Fast food restaurant (national or local chain, primarily sells burgers, fried chicken, pizza, or "Americanized" Mexican, Chinese, etc.)			Restaurant and Entertainment Negative Subscale; Healthy Food Access Negative Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6b	0 = 0; 1 = 1; 2+ = 2		b. Sit-down restaurant			Restaurant and Entertainment Positive Subscale; Healthy Food Access Positive Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6c	0 = 0; 1 = 1; 2+ = 2		c. Grocery/supermarket			Shops Subscale; Healthy Food Access Positive Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6d	0 = 0; 1 = 1; 2+ = 2		d. Convenience store (may also be a gas station)			Shops Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6d_ Recode						Healthy Food Access Negative Subscale	0 = 0; 1 or 2+ = 1	
LU6e	0 = 0; 1 = 1; 2+ = 2		e. Café or coffee shop			Restaurant and Entertainment Positive Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6f	0 = 0; 1 = 1; 2+ = 2		f. Liquor/alcohol store (primarily sells alcohol, wine bar, strip club)			Shops Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6g	0 = 0; 1 = 1; 2+ = 2		g. Big box store (e.g., Home Depot, Best Buy, Sears, Super Walmart, Target)			Shops Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6h	0 = 0; 1 = 1; 2+ = 2		h. Specialty Food Store (e.g., ice cream, candy, bakery)			Shops Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6y	0 = 0; 1 = 1; 2+ = 2		i. Community garden			Public Recreation Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6y	0 = 0; 1 = 1; 2+ = 2		l. Food trucks			Healthy Food Access Positive Subscale	0 = 0; 1 or 2+ = 1	
LU6y_ Recode								

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Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
Land Uses and Destinations (continued)								
Food-related land uses (continued)								
LU_B64j	0 = 0; 1 = 1; 2+ = 2		j. Farmer's market			Shops Positive Subscale, under food sub-section	0 = 0; 1 = 1; 2+ = 2	
LU_B64k	0 = 0; 1 = 1; 2+ = 2		k. Green carts			Shops Subscale; Healthy Food Access Positive Subscale	0 = 0; 1 = 1; 2+ = 2	
LU_B64l	0 = 0; 1 = 1; 2+ = 2		l. Food trucks			Restaurant and Entertainment Positive Subscale; Shops Subscale	0 = 0; 1 = 1; 2+ = 2	
Retail and service oriented land uses								
				Route	Destinations and Land Use Section			
LU6i	0 = 0; 1 = 1;2+ = 2		m. Pharmacy or drug store			Shops Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6j	0 = 0; 1 = 1;2+ = 2		n. Bank or credit union			Institutional/Services Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6k	0 = 0; 1 = 1;2+ = 2		o. Health-related professional (e.g. doctors, office)			Institutional/Services Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6l	0 = 0; 1 = 1;2+ = 2		p. Entertainment (e.g., movie theatre, arcade			Restaurant and Entertainment Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6m	0 = 0; 1 = 1;2+ = 2		q. Other service (e.g., salon, lawyer, accountant, realtor, laundry/dry cleaner, commercial mailing service)			Institutional/Services Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6n	0 = 0; 1 = 1;2+ = 2		r. Other retail (e.g., books, clothing, hardware, video rental)			Shops Subscale	0 = 0; 1 = 1; 2+ = 2	
Government or community land use								
				Route	Destinations and Land Use Section			

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
Land Uses and Destinations (continued)								
Government or community land use (continued)								
LU6o	0 = 0; 1 = 1; 2+ = 2		s. Health or social services (e.g., hospital, health department, community action agency, police/fire stations, city hall, etc.)			Government Services Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6p	0 = 0; 1 = 1; 2+ = 2		t. Library/Museums			Government Services Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6q	0 = 0; 1 = 1; 2+ = 2		u. Post office			Government Services Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6r	0 = 0; 1 = 1; 2+ = 2		v. Senior center			Government Services Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6s	0 = 0; 1 = 1; 2+ = 2		w. Place of worship (e.g., church, synagogue, convent, mosque, etc.)			Worship Land Uses	0 = 0; 1 = 1; 2+ = 2	
Other land use				Route	Destinations and Land Use Section			
LU6t	0 = 0; 1 = 1; 2+ = 2		x. School			Positive Destinations and Land Use	0 = 0; 1 = 1; 2+ = 2	
LU6u	0 = 0; 1 = 1; 2+ = 2		y. Warehouse/factory/industrial			Negative Destinations and Land Use Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6v	0 = 0; 1 = 1; 2+ = 2		z. Abandoned building			Negative Destinations and Land Use Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6w	0 = 0; 1 = 1; 2+ = 2		aa. Unmaintained lot/field			Negative Destinations and Land Use Subscale	0 = 0; 1 = 1; 2+ = 2	
LU6x	0 = 0; 1 = 1; 2+ = 2		bb. Casino			Negative Destinations and Land Use Subscale	0 = 0; 1 = 1; 2+ = 2	

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Land Uses and Destinations (continued)					
			Recreational facilities or destinations					
				Route	Destinations and Land Use Section			
LU6z	0 = 0; 1 = 1;2+ = 2		cc. Private indoor fitness facility			Private Recreation Subscale	0 = 0;1 = 1; 2+ = 2	
LU_B	0 = 0; 1 = 1;2+ = 2		dd. Community recreation center			Public Recreation Subscale	0 = 0;1 = 1; 2+ = 2	
LU6ad	0 = 0; 1 = 1;2+ = 2		ee. Park			Public Recreation Subscale; Park Amenities Subscale	0 = 0;1 = 1; 2+ = 2	
LU_B64ff	0 = 0; 1 = 1;2+ = 2		ff. Playground at park or school			Public Recreation Subscale	0 = 0;1 = 1; 2+ = 2	
LU_B64gg	0 = 0; 1 = 1;2+ = 2		gg. Outdoor pool			Public Recreation Subscale	0 = 0;1 = 1; 2+ = 2	
LU_B64hh	0 = 0; 1 = 1;2+ = 2		hh. Golf course			Private Recreation Subscale	0 = 0;1 = 1; 2+ = 2	
LU_B64ii	0 = 0; 1 = 1;2+ = 2		ii. Sports/playing field or court (e.g., baseball or tennis at park or school)			Public Recreation Subscale	0 = 0;1 = 1; 2+ = 2	
LU_B64jj	0 = 0; 1 = 1;2+ = 2		jj. Sports track			Public Recreation Subscale	0 = 0;1 = 1; 2+ = 2	
LU_B64kk	0 = 0; 1 = 1;2+ = 2		kk. Body of water, e.g., lake, ocean			Public Recreation Subscale	0 = 0;1 = 1; 2+ = 2	
LU_B64ll	0 = 0; 1 = 1;2+ = 2		ll. Other recreational facility (e.g., skating rink, miniature golf)			Private Recreation Subscale	0 = 0;1 = 1; 2+ = 2	

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Land Uses and Destinations (continued)					
			Recreational facilities or destinations (continued)					
		65)	What activity areas are in the park? (Mark all that apply)	Route	Destinations and Land Use Section			
LU_B65a	No = 0; Yes = 1		☐ Tennis Courts			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65b	No = 0; Yes = 1		☐ Basketball Courts			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65c	No = 0; Yes = 1		☐ Other Courts (specify):			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65d	No = 0; Yes = 1		☐ Baseball Fields			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65e	No = 0; Yes = 1		☐ Football Fields			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65f	No = 0; Yes = 1		☐ Soccer Fields			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65g	No = 0; Yes = 1		☐ Other Fields (specify):			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65h	No = 0; Yes = 1		☐ Paths			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65i	No = 0; Yes = 1		☐ Playgrounds			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65j	No = 0; Yes = 1		☐ Green Spaces			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65k	No = 0; Yes = 1		☐ Golf Courses			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65l	No = 0; Yes = 1		☐ Swimming Pools			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65m	No = 0; Yes = 1		☐ Zoo			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65n	No = 0; Yes = 1		☐ Botanical Gardens			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65o	No = 0; Yes = 1		☐ Stables			Park Amenities Subscale	No = 0; Yes = 1	
LU_B65p	No = 0; Yes = 1		☐ Other (specify):			Park Amenities Subscale	No = 0; Yes = 1	

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 2					
C2_2	T-intersection = 1; 4-way = 2; >4-way = 3	66)	Intersection Geometry	Crossings Section		not used in positive or negative subscales		
		67)	Intersection Control:	Crossings Section		Intersection Control and Signage Positive Subscale		
			☐ None					
C2_1a	Yield signs No = 0; Yes = 1		☐ Yield signs/Flashing yellow			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C2_1b	Stop signs No = 0; Yes = 1		☐ Stop signs/Flashing red light			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C2_1c	Traffic signal No = 0; Yes = 1		☐ Traffic signal			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C2_1d	Traffic circle No = 0; Yes = 1		☐ Traffic circle, Roundabout			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
			Pedestrian Crossing at Intersection 2					
		68)	Signalization (if traffic signal present):	Crossings Section		Intersection Control and Signage Positive Subscale		
C2_3a	No = 0; Yes = 1		☐ Any traffic signals have green arrows for dedicated vehicle turns			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C2_3b	No = 0; Yes = 1		☐ Pedestrian "Walk" signals present			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C2_3c	No = 0; Yes = 1		☐ Pedestrian push buttons present			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C2_3d	No = 0; Yes = 1		☐ Countdown signal			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C2_3e	No = 0; Yes = 1		☐ Audible walk signal			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
			☐ None of the Above					

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Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 2 (continued)					
			Pedestrian Crossing at Intersection 2 (continued)					
		69)	Crosswalk treatment	Crossings Section		Crosswalk Amenities Positive Subscale		
C2_8a	No = 0; Yes = 1		☐ Marked crosswalk			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
C2_8b	No = 0; Yes = 1		☐ High-visibility striping			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
C2_8c	No = 0; Yes = 1		☐ Stop lines on road or additional crosswalk warnings			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
C2_8d	No = 0; Yes = 1		☐ Raised crosswalk			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
C2_8e	No = 0; Yes = 1		☐ Different material than road			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
			☐ None of the Above			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
		70)	Crossing features	Crossings Section		Intersection Control and Signage Positive Subscale; Crosswalk Amenities Positive Subscale		
			☐ Specifically identified lanes **turning into crossing**			Crosswalk Amenities Positive Subscale		
C2_11a	No = 0; Yes = 1		☐ Right turn			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C2_11b	No = 0; Yes = 1		☐ Left turn			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	
C2_11c	No = 0; Yes = 1		☐ Protected refuge islands			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
C2_11d	No = 0; Yes = 1		☐ One-way streets **through crossing**			Intersection Control and Signage Positive Subscale	No = 0; Yes = 1	

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 2 (continued)					
			Pedestrian Crossing at Intersection 2 (continued)					
C2_11e	No = 0; Yes = 1		☐ Curb extension			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
			☐ None of the Above					
C2_6	No = 0; Yes = 1	71)	Gutters present in crossing	Crossings Section		Crossing Impediments Negative Subscale	No = 0; Yes = 1	
		72)	Other characteristics of crossing	Crossings Section		Crossing Impediments Negative Subscale; Crosswalk Amenities Positive Subscale		
C2_7a	No = 0; Yes = 1		☐ Steep slope or steep cross-slope at intersection			Crossing Impediments Negative Subscale	No = 0; Yes = 1	
C2_7b	No = 0; Yes = 1		☐ Temporary obstructions			Crossing Impediments Negative Subscale	No = 0; Yes = 1	
C2_7c	No = 0; Yes = 1		☐ Crossing aids (e.g., flags)			Crosswalk Amenities Positive Subscale	No = 0; Yes = 1	
			☐ None of the Above					
		73)	Miscellaneous problems	Crossings Section		Crossing Impediments Negative Subscale		
C2_12a	No = 0; Yes = 1		☐ Lack of lampposts or overhead street lamps			not used in positive or negative subscales		
C2_12b	No = 0; Yes = 1		☐ Poor condition of crossing surface			not used in positive or negative subscales		
C2_12c	No = 0; Yes = 1		☐ Poor visibility at corners			Crossing Impediments Negative Subscale	No = 0; Yes = 1	
C2_12d	No = 0; Yes = 1		☐ Faded or worn crosswalk markings			Crossing Impediments Negative Subscale	No = 0; Yes = 1	
C2_12e	No = 0; Yes = 1		☐ Unanticipated mid-segment crossing			not used in positive or negative subscales		

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 2 (continued)					
			Crosswalk Curb Cuts at Intersection 2					
C2_12f			Reason: ___ ☐ Other: ___ ☐ None of the Above			not used in positive or negative subscales		
C2_10_trichot	#	74)	Distance of crossing leg, including all potential parking and turn lanes ___ lanes wide	Crossings Section		Road Width Negative Subscale	1 – 2 = 0; 3 – 4 = 1; 5 – Highest = 2	
C2_4	# of seconds No crosswalk = -777; No signal = -778	75)	Crosswalk timing: ___ seconds	Crossings Section		not used in positive or negative subscales		
C2_B12a	Pre-crossing has ramp (w tactile) = 1; Pre-crossing has ramp (w/o tactile) = 2; No ramp = 3	76)	Curb ramps, curb cuts, or mountable curbs? (a) Pre-crossing curb (on N E S W side of street)	Crossings Section		Curb Quality/Presence Positive Subscale Curb Quality/Presence Positive Subscale	2 = 1; 1 or 0 = 0 Ramp (w tactile) = 1; Ramp (w/o tactile) = 1; No ramp = 0	
C2_B12b	Pre-crossing has ramp (w tactile) = 1; Pre-crossing has ramp (w/o tactile) = 2; No ramp = 3		(b) Post-crossing curb (on N E S W side of street)			Curb Quality/Presence Positive Subscale	Ramp (w tactile) = 1; Ramp (w/o tactile) = 1; No ramp = 0	
C2_5_positive		77)	Alignment of curb cut/ramp and crossing?	Crossings Section		Curb Quality/Presence Positive Subscale	2 = 1; 1 or 0 = 0	
C2_5_negative						Crossing Impediments Negative Subscale	1 or 2 = 1; 0 = 0	

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 2 (continued)					
			Crosswalk Curb Cuts at Intersection 2 (continued)					
C2_5a	Ramp lines up w/xing = 1; Ramp does not line up = 2; No ramp = 3		(a) Pre-crossing curb *(on N E S W side of street)*			Curb Quality/Presence Positive Subscale; Crossing Impediments Negative Subscale	Ramp lines up w/xing = 1; Ramp does not line up =1; No ramp = 0	
C2_5a_positive			☐ Ramp lines up with crossing			Curb Quality/Presence Positive Subscale	Ramp lines up w/xing = 1	
C2_5a_opt2			☐ Ramp does not line up with crossing			Crossing Impediments Negative Subscale	Ramp does not line up =1	
C2_5a_negative			☐ No ramp			not used in positive or negative subscales		
C2_5b	Ramp lines up w/xing = 1; Ramp does not line up = 2; No ramp = 3		(b) Post-crossing curb *(on N E S W side of street)*			Curb Quality/Presence Positive Subscale; Crossing Impediments Negative Subscale	Ramp lines up w/xing = 1; Ramp does not line up =1; No ramp = 0	
C2_5b_positive			☐ Ramp lines up with crossing			Curb Quality/Presence Positive Subscale	Ramp lines up w/xing = 1	
C2_5b_opt2			☐ Ramp does not line up with crossing			not used in positive or negative subscales	Ramp does not line up =1	
C2_5b_negative			☐ No ramp			Crossing Impediments Negative Subscale		
C1_B78_positive		78)	Rate the condition and quality of curb cut/ramp.			Curb Quality/Presence Positive Subscale;		2 = 1; 1 or 0 = 0
C1_B78_negative						Crossing Impediments Negative Subscale		1 or 2 = 1; 0 = 0

Variable Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
		Intersection 2 (continued)					
		Crosswalk Curb Cuts at Intersection 2 (continued)					
		a. Pre-crossing curb (on N E S W side of street)					
C1_B78a1_negative		☐ Ramp is passable for mobility device (e.g., wheelchair)			Crossing Impediments Negative Subscale	Ramp is passable = 0	
C1_B78a1_positive					Curb Quality/Presence Positive Subscale	Ramp is passable = 1	
		☐ ADA-compliant slope (8.3% or less)			not used in positive or negative subscales		
		☐ No broken area			not used in positive or negative subscales		
		☐ Broken area passable with little or no effort			not used in positive or negative subscales		
C1_B78a_positive					Curb Quality/Presence Positive Subscale	Ramp is impassable = 0	
C1_B78a2_negative		☐ Ramp is impassable for mobility device (e.g., wheelchair)			Crossing Impediments Negative Subscale	Ramp is impassable = 1	
		☐ ADA-non-compliant slope (over 8.3%)			not used in positive or negative subscales		
		☐ Broken area impassable or only passable with high effort			not used in positive or negative subscales		
C1_B78a3		☐ No ramp			not used in positive or negative subscales		
		b. Post-crossing curb (on N E S W side of street)					

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 2 (continued)					
			Crosswalk Curb Cuts at Intersection 2 (continued)					
C1_B78b1_negative			☐ Ramp is passable for mobility device (e.g., wheelchair)			Crossing Impediments Negative Subscale	Ramp is passable = 0	
C1_b78b1_positive							Ramp is passable = 1	
			☐ ADA-compliant slope (8.3% or less)			not used in positive or negative subscales		
			☐ No broken area			not used in positive or negative subscales		
			☐ Broken area passable with little or no effort			not used in positive or negative subscales		
C1_B78b2_negative			☐ Ramp is impassable for mobility device (e.g., wheelchair)			Crossing Impediments Negative Subscale	Ramp is impassable = 1	
C1_B78b2_positive						Curb Quality/Presence Positive Subscale	Ramp is impassable = 0	
			☐ ADA-non-compliant slope (over 8.3%)			not used in positive or negative subscales		
			☐ Broken area impassable or only passable with high effort			not used in positive or negative subscales		
C1_B78b3			☐ No ramp			not used in positive or negative subscales		
W1_B79	59 or below = 1; 60-69 = 2; 70-79 = 3; 80-89 = 4; 90 or above = 5	79)	What is the temperature (F) today?					

Variable	Coding	Item Number	BE Tool Item Content	MAPS Section	BE Tool Sub-section	MAPS Subscale	Scoring	Combined Scoring (Both sides added) = (Score)
			Intersection 2 (continued)					
			Crosswalk Curb Cuts at Intersection 2 (continued)					
W2_B80	Sunny = 1; Partly Sunny/Partly Cloudy = 2; Overcast = 3; Rainy =4; Snowy = 5	80)	What is the weather today?					
W3_B81	No = 0; Yes = 1	81)	Does this segment need further evaluation during or after rainy periods?					