KYTC Sidewalk and Curb Ramp Inventory for ADA Compliance

Reginald R. Souleyrette\textsuperscript{*}  \hspace{1cm}  Brian K. Howell\textsuperscript{†}
\hspace{1cm}  William Nicholas Staats\textsuperscript{‡}

\textsuperscript{*}University of Kentucky, souleyrette@uky.edu
\textsuperscript{†}University of Kentucky, brian.howell@uky.edu
\textsuperscript{‡}University of Kentucky, william.staats@hotmail.com

This paper is posted at UKnowledge.
https://uknowledge.uky.edu/ktc_researchreports/1575
KTC’s Mission

We provide services to the transportation community through research, technology transfer, and education. We create and participate in partnerships to promote safe and effective transportation systems.
KYTC Sidewalk and Curb Ramp Inventory for ADA Compliance

Reginald Souleyrette, Ph.D., P.E.
Program Manager

Brian Howell, P.E., MSCE, PMP
Research Engineer

and

William Staats, MSCE
Research Engineer

Kentucky Transportation Center
College of Engineering
University of Kentucky
Lexington, Kentucky

In Cooperation With
Kentucky Transportation Cabinet
Commonwealth of Kentucky

The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the University of Kentucky, the Kentucky Transportation Center, the Kentucky Transportation Cabinet, the United States Department of Transportation, or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation. The inclusion of manufacturer names or trade names is for identification purposes and should not be considered an endorsement.

September 2017
1. **Report No.**  
   KTC-17-10/PL28-1F

2. **Government Accession No.**

3. **Recipient’s Catalog No.**

4. **Title and Subtitle**  
   KYTC Sidewalk and Curb Ramp Inventory for ADA Compliance

5. **Report Date**  
   September 2017

6. **Performing Organization Code**

7. **Author(s):**  
   Reginald Souleyrette, Brian Howell, William Staats

8. **Performing Organization Report No.**  
   KTC-17-10/PL28-1F

9. **Performing Organization Name and Address**  
   Kentucky Transportation Center  
   College of Engineering  
   University of Kentucky  
   Lexington, KY 40506-0281

10. **Work Unit No. (TRAIS)**

11. **Contract or Grant No.**  
   PL-28

12. **Sponsoring Agency Name and Address**  
   Kentucky Transportation Cabinet  
   State Office Building  
   Frankfort, KY 40622

13. **Type of Report and Period Covered**

14. **Sponsoring Agency Code**

15. **Supplementary Notes**  
   Prepared in cooperation with the Kentucky Transportation Cabinet

16. **Abstract**  
   The Americans with Disabilities Act of 1990 (ADA) requires that all public and private organizations providing services to the public ensure their facilities and infrastructure comply with regulations set forth therein. The ADA requires that a transition plan “identify physical obstacles in the public entity’s facilities that limit the accessibility of its programs or activities to individuals with disabilities.” In the first phase of Kentucky’s transition plan to become ADA compliant, KTC researchers inventoried sidewalks along all state-maintained roads in Kentucky to determine the presence or absence of pedestrian facilities. This sidewalk inventory was used to query Kentucky’s intersection database to achieve two goals: identify intersections along state-maintained roadways that have sidewalks, and determine the presence of curb ramps at intersections. Researchers performed quality control to ensure sidewalk and curb ramp inventories correctly characterized the pedestrian facilities that existed on the roadways. This process showed the error in the inventory to be approximately five percent, below the 10 percent error rate requested by KYTC. As a result of this project, KYTC now has access to a statewide inventory of state-maintained sidewalks and curb ramps that can serve as the basis for Kentucky’s ADA compliance transition plan.

17. **Key Words**  
   ADA compliance, sidewalk, curb, transition plan, Americans with Disabilities Act

18. **Distribution Statement**  
   Unlimited with approval of the Kentucky Transportation Cabinet

19. **Security Classification (report)**  
   Unclassified

20. **Security Classification (this page)**  
   Unclassified

21. **No. of Pages**  
   43

19. **Security Classification (report)**  
   Unclassified
Table of Contents

List of Figures ......................................................................................................................... iv
List of Tables ........................................................................................................................ iv
Chapter 1: Background ........................................................................................................... 1
  1.1 Introduction .................................................................................................................. 1
  1.2 Problem Statement ...................................................................................................... 1
  1.3 Objectives ................................................................................................................... 1
Chapter 2: KYTC Guidelines ................................................................................................. 2
  2.1 Roadway Classification ............................................................................................... 2
    2.1.1 2-Way Divided ................................................................................................... 2
    2.1.2 2-Way Undivided ............................................................................................. 2
    2.1.3 1-Way Cardinal ................................................................................................. 2
    2.1.4 1-Way, Non-Cardinal Couplet ......................................................................... 2
  2.2 HIS Metadata .............................................................................................................. 4
Chapter 3: KTC Methodology ............................................................................................... 8
  3.1 Source Data ................................................................................................................ 8
  3.2 Sidewalk Inventory .................................................................................................... 9
    3.2.1 Source Data (Step 1) ......................................................................................... 10
    3.2.2 Photolog Viewer (Step 2) ............................................................................... 10
    3.2.3 Begin Inventory (Step 3) ................................................................................ 11
    3.2.4 Determine Roadway Category (Step 4) ............................................................ 13
    3.2.5 Assess Sidewalk Material (Step 5) .................................................................. 13
    3.2.6 Assess Auxiliary Facilities (Step 6) .................................................................. 13
    3.2.7 Identify Mid-Block Crosswalks and Pedestrian Bridges (Step 7) .................... 14
    3.2.8 Assign Photolog Date (Step 8) ....................................................................... 14
    3.2.9 Additional Comments (Step 9) ....................................................................... 14
  3.3 Curb Ramp Inventory .................................................................................................. 14
    3.3.1 ArcMap Setup (Step 1) .................................................................................... 16
    3.3.2 Roadway Segment Sort (Step 2) ....................................................................... 17
    3.3.3 Assign Attributes (Step 3) .............................................................................. 17
    3.3.4 Final Coding (Step 4) ...................................................................................... 17
    3.3.5 Non-Intersection Database Curb Ramps ............................................................. 17
Chapter 4: Quality Control ................................................................................................... 18
  4.1 Sidewalk Procedures .................................................................................................... 18
List of Figures

Figure 1: 2-Way Divided & Undivided Roads .................................................................3
Figure 2: 1-Way Cardinal & Non-Cardinal Roads .........................................................3
Figure 3: KYTC State Roads .........................................................................................8
Figure 4: State Roads Pivot Table ................................................................................9
Figure 5: Photolog Viewer ............................................................................................11
Figure 6: Photolog Toggle Options ..............................................................................12
Figure 7: Y-Section, U.S. 60 (Franklin Co.) ...............................................................13
Figure 8: Curb Ramp Locations .................................................................................16
Figure 9: Add Data Button .........................................................................................18
Figure 10: Access Display Route Events .....................................................................19
Figure 11: Menu Options for Display Route Events ......................................................19
Figure 12: Typical Downtown Sidewalk ......................................................................31
Figure 13: Typical Urban Sidewalk .............................................................................31
Figure 14: Sidewalk End ..............................................................................................32
Figure 15: Midblock Crossing with Curb Extensions ....................................................32
Figure 16: Brick Sidewalk, Categorized as "Paved" ....................................................33
Figure 17: Divided Roadway with Dual Sidewalks ......................................................33
Figure 18: Divided Roadway with Single Sidewalk .....................................................34
Figure 19: Brick Sidewalk, Categorized as "Paved" ....................................................34
Figure 20: Asphalt Sidewalk, Categorized as "Paved" ................................................35
Figure 21: Ramps with No Sidewalk Present ...............................................................36
Figure 22: Sidewalk with No Ramps Present ..............................................................36
Figure 23: Steps at Curb, Not Considered Ramp .......................................................37
Figure 24: Single Ramp with Detectable Warning .....................................................37
Figure 25: Single Ramp without Detectable Warning .................................................38
Figure 26: Single Blended Ramp without Detectable Warning ..................................38
Figure 27: Single Blended Ramp with Detectable Warning ......................................39
Figure 28: Two Ramps without Detectable Warnings ...............................................39
Figure 29: Two Ramps with Detectable Warnings .....................................................40
Figure 30: Paved Auxiliary Facility with Detectable Warnings ..................................40
Figure 31: Paved Auxiliary Facility without Detectable Warnings ..............................41
Figure 32: Ramp Flush with Roadway ........................................................................41

List of Tables

Table 1: Attribute Table Errors ..................................................................................20
Chapter 1: Background

1.1 Introduction
The Americans with Disabilities Act of 1990 (ADA) introduced sweeping changes with the goal of increasing disabled Americans’ access to public facilities. The law requires that all public and private organizations providing services to the public ensure their facilities and infrastructure comply with regulations set forth in the ADA. For many governmental entities, complying with these requirements can be especially challenging due to the large scope and jurisdiction of their assigned responsibilities and the nature of their inherent role in serving the public.

State departments of transportation (DOTs) are stewards of the transportation system, responsible for ensuring equitable mobility and unhindered access to transportation networks, most notably their pedestrian facilities. As such, state DOTs have worked in recent years to comply with the ADA by developing transition plans, which describe how they will move toward compliance. The ADA requires that a transition plan “identify physical obstacles in the public entity’s facilities that limit the accessibility of its programs or activities to individuals with disabilities.” The first step in developing a transition plan often involves inventorying presence or absence of pedestrian facilities on state roads. Most often, the term pedestrian facility refers to a state-maintained sidewalk or curb ramp. Additional steps in the inventory process typically include examining pedestrian facilities for other ADA requirements such as width and slope. Once complete, the pedestrian facility inventory can help state DOT authorities focus their efforts to address deficiencies and move toward full ADA compliance.

1.2 Problem Statement
All state DOTs must comply with the ADA’s regulatory provisions. Maintaining accessible and readily available pedestrian facilities is critical for achieving ADA compliance. State DOTs are responsible for pedestrian facilities located along their respective state roadway networks. To this end, state DOTs must conduct a full inventory of their pedestrian facilities and identify any barriers to accessibility for disabled people.

The Kentucky Transportation Cabinet (KYTC) will continue its transition to full ADA compliance by comprehensively assessing its network of pedestrian facilities. KYTC’s pedestrian facilities include sidewalks and curb ramps located on state-maintained roads. The Cabinet presently lacks a full inventory of pedestrian facilities within the state. A comprehensive inventory of sidewalks and curb ramps located along state-maintained roads is required to comply with the ADA.

1.3 Objectives
The project objectives include the following:
1. Develop sidewalk inventory along KYTC state-maintained roads.
2. Develop curb ramp inventory along KYTC state-state and state-local intersections.
3. Develop curb ramp inventory at midblock crossings where crosswalks exist on state-maintained roads.
4. Provide summary report of main inventory findings and conclusions.
Chapter 2: KYTC Guidelines

2.1 Roadway Classification
For the sidewalk inventory, KYTC classified roadways into four categories: 2-way divided, 2-way undivided, 1-way cardinal, and 1-way, non-cardinal couplet. Each sidewalk inventory segment falls into one of these categories corresponding to its adjoining roadway. KYTC’s Division of Planning is charged with formalizing this guidance and has produced detailed descriptions for each category. The four roadway categories are described in more detail below, along with accompanying illustrations (Figures 1 and 2).

2.1.1 2-Way Divided
A roadway where opposing traffic lanes are separated by grass or raised median, mountable median, or a barrier. Lanes separated by only a continuous left turning lane are not considered divided. (Non-cardinal lanes of a divided road carry section ID -010.) The right side of the cardinal direction roadway (direction of increasing milepoints) is coded CR and the left side (also increasing milepoints) is coded as CL. The right side of the non-cardinal direction roadway (direction of decreasing milepoints) is coded as NR and the left side of the non-cardinal direction roadway (also decreasing milepoints) is coded as NL.

2.1.2 2-Way Undivided
A roadway with one or more lanes in the cardinal direction (the direction of increasing milepoints) and one or more lanes in the non-cardinal direction (opposite to the cardinal direction.) The only physical separation between opposing traffic may be continuous turn lanes. On undivided roadways, the right side of the cardinal direction (increasing milepoints) is coded as CR and the right side of the non-cardinal direction (decreasing milepoints) is coded as NR.

2.1.3 1-Way Cardinal
A roadway with one or more lanes in the cardinal direction (increasing milepoints) and no lanes in the opposite direction. The right side of the cardinal direction (increasing milepoints) is coded as CR and the left side (also increasing milepoints) is coded as CL.

2.1.4 1-Way, Non-Cardinal Couplet
A section of state-maintained roadway that carries non-cardinal direction traffic in the direction of decreasing milepoints and is separate from the cardinal direction roadway. Typically, it consists of pairs of one-way streets, south or westbound, in cities or towns where city blocks (often courthouses) separate non-cardinal from cardinal direction roadways. The right side of the non-cardinal couplet roadway (direction of decreasing milepoints) is coded as NR and the left side of the non-cardinal couplet roadway (also decreasing milepoints) is coded as NL.
Figure 1: 2-Way Divided & Undivided Roads

2-way Undivided

2-way Divided

CR

Cardinal Direction

Median

NR

NL

Figure 2: 1-Way Cardinal & Non-Cardinal Roads

1-way Non-Cardinal Couplet
(State roads only)

1-way

CL

CR

NR

NL
2.2 HIS Metadata
KYTC uses the Highway Information System (HIS) to record information about state-maintained roadways, their characteristics, and related infrastructure. Understanding the terms and descriptions used in the HIS is critical for transportation planners conducting roadway studies. Kentucky Transportation Center (KTC) researchers relied on KYTC’s HIS metadata for this ADA inventory assessment. Having knowledge of the underlying terms is necessary when executing the methodology used to inventory sidewalks (see Chapter 3). To this end, the HIS road centerline attribute descriptions and codes are listed below:

Local_Key: A randomly generated number that may be used for applying address range data

RT_Utique: Primary route identifier using the following format (hold all spacing) CCC-PP-NNNSS-sss, where

- CCC = Three-digit County Number
- PP = Route Prefix (RT_Prefix)
- NNNN = Route Number (RT_Number)
- SS = Route Suffix (RT_Suffix)
- sss = Route Section (RT_Section)

Begin_MP: Linear Referencing System (LRS) beginning milepoint used to locate features along a route

End_MP: Linear Referencing System (LRS) end milepoint used to locate features along a route

RD_Name: Road name and suffix abbreviation as provided by the road’s owning agency

Surftype: Road surface type

- 20 = Unimproved
- 40 = Gravel, Soil, or Stone
- 52 / 53 = Bituminous
- 61 / 62 = Asphalt
- 70 / 72 = Concrete
- 80 = Brick, Block, or Other

DMI_Len_Mi: Official segment length (in miles)

Gov_Level: Road ownership indicator

- 01 = State-Maintained Roads
- 02 = County-Maintained Roads
- 04 = City-Maintained Roads
- 11 = State Park & State Forest Roads
- 12 = Local Park & Local Forest Roads
- 21 = Other State Agency Roads
- 25 = Other Local Agency Roads
- 26 = Private Roads
- 60 = Other Federal Agency Roads
- 64 = U.S. Forest Service Roads
- 66 = National Park Service Roads
- 70 = U.S. Army Corps of Engineers Roads
- 74 = U.S. Army Roads
- 98 = Adjacent State Roadway
**Status:** Adoption status by owning agency
- Accepted = KYTC notified that the road has been adopted by the owning agency
- Not Accepted = KYTC needs verification of road’s adoption status by owning agency
- Pending = KYTC needs verification of proper road name

**Graphic_Le:** Unofficial, database-generated length (in miles)

**CO_Number:** A piece of the RT_Unique used to identify a route’s three-digit county number

**RT_Prefix:** A piece of the RT_Unique used to identify route type
- I = Interstate Route
- WK = Wendell H Ford-Western Kentucky Pkwy
- BG = Martha Layne Collins-Bluegrass Pkwy
- JC = Julian M Carroll Pkwy
- EB = Edward T Breathitt Pkwy
- AU = Audubon Pkwy
- HR = Hal Rogers Pkwy
- WN = William H Natcher Pkwy
- LN = Louie B Nunn Pkwy
- US = United States Route
- KY = Kentucky Route
- KY 9000 = Bert T Combs-Mountain Pkwy
- KY 9009 = Bert T Combs-Mountain Pkwy Extension
- XX = Other State-Maintained Route
- CR = County Road
- CS = City Street
- FD = Federal Agency Road
- IC = Inter-Agency Charge Road
- ST = Other State Agency Road
- LA = Local Agency Road
- PR = Private Road open to public travel
- PS = Private Road in a subdivision or development
- PV = Private Driveway (collected for 911 purposes)

**RT_Number:** A piece of the RT_Unique used to identify a route’s number

**RT_Suffix:** A piece of the RT_Unique used to identify a route’s suffix for State-Maintained Roads
- A = Alternate
- B = Bypass
- C = Connector
- E = East
- EB = East Bypass
- EX = East Business
- S = Spur
- T = Truck
- W = West
- WB = West Bypass
• WX = West Business
• X = Business

For roads that are not state-maintained, RT_Suffix may contain alphanumeric combinations without intentional meaning.

**RT_Section:** A piece of the RT_Unique used to identify a route’s segment type

0 = Mainline
Provides the main through traffic movement for a route and distinguishes it from other subordinate roadway segments. It is the primary source for identifying a route and its length.

1 to 9 = Non-Cardinal Couplet
Provides traffic movement in the non-cardinal direction when the roadway is separate from the cardinal direction roadway. Typically, a non-cardinal couplet is a one-way street, south or westbound, running parallel to the cardinal roadway but separated by city blocks, buildings, or significant terrain.

10 = Non-Cardinal side of a Divided Roadway
Provides traffic movement in the non-cardinal direction when the cardinal and non-cardinal traffic lanes are separated by a depressed, raised, or flush/painted median. Both the cardinal and non-cardinal sides of the median are represented by a separate road centerline. This is commonly referred to as a dual carriageway. Lanes separated by a continuous left-turn lane are not considered a divided roadway.

11 to 19 = Collector-Distributor
Reduces the number of interchange ramps that intersect through traffic movements on an adjacent and parallel controlled-access highway.

20 to 29 = Y Section
Separates from the mainline to help facilitate turning movements at intersections. It may be formed by grass, raised traffic islands, pavement markings, or some other barrier.

30 to 69 = Crossover
Connects a road with the non-cardinal side of a divided highway if the road intersects the cardinal side first. If the intersecting road intersects the non-cardinal side first, the intersecting road will continue through the median to connect to the cardinal side; a crossover is not used.

70 to 79 = Connector
Provides access from one road to a separate road when the mainlines of those roads do not intersect.

80 to 97 = Other Subordinate Roadway
A segment type that does not meet the criteria of the other types but is important to distinguish. Other Subordinate Roadways include bays, cul-de-sacs, spurs, frontage roads, and any other roadways that do not meet the criteria of the other types.

98 = Roadway Belonging to an Adjacent State
Its physical location falls within Kentucky’s boundary but is the responsibility of an adjacent state.

*01 to *10 (where * is between 1 and 9) = Rest Area or Weigh Station
A rest area provides travel services for drivers and passengers and is usually adjacent to a significant highway. A weigh station is a checkpoint for inspecting vehicular weights and is usually adjacent to a significant highway. The first digit of the RT_Section identifies the facility location with respect to the
nearest interchange in the cardinal direction. The second digit is always 0. The third digit is an odd number when the facility is located on the cardinal side of the highway and an even number when located on the non-cardinal side of the highway.

*11 to *99 (where * is between 1 and 9) = Interchange Ramp
Connects a controlled-access highway with another road at a grade-separated interchange.
The first digit of the RT_Section identifies the interchange location within a county, beginning at the county line and increasing sequentially in the cardinal direction. The second digit identifies the interchange quadrant the ramp is located within, beginning with the first quadrant in the cardinal direction and increasing sequentially in a counterclockwise direction. The third digit identifies the ramp position within the quadrant, beginning with the ramp farthest outside and increasing sequentially to the inside.

**Type_OP:** Type of operation
- 1 = One-way
- 2 = Two-way
- D = Divided by median (code applied to both cardinal and non-cardinal sides of the highway)
Chapter 3: KTC Methodology

3.1 Source Data

KTC researchers manually inventoried all sidewalks installed adjacent to state-maintained roads in Kentucky. KYTC’s Division of Planning is responsible for maintaining the entire database of state-maintained roads, which is available through KYTC’s website. KTC researchers selected the State Roads zip file to access the ArcGIS files containing the entire network (see Figure 3). Next, the “StateRds.dbf” file was opened in ArcGIS and saved as a Microsoft Excel file for use in a spreadsheet format.

![State Roads File]

Figure 3: KYTC State Roads

Data were consolidated and sorted using the Microsoft Excel pivot table function. The pivot table aggregated multiple roadway segments contained within each unique route into a single row. At this point, rows designated a single beginning and ending mile point for each unique route. This greatly simplified KTC’s efforts to search for and extract data as it provided drop-down menus listed by county, where each menu contained their respective individual state roads. Figure 4 illustrates this consolidation process.
KTC researchers used online geospatial tools to conduct the comprehensive KYTC sidewalk inventory. Researchers primarily used KYTC’s online mapping database, Photolog, as the key repository for state-maintained roadways. This website can be found at http://maps.kytc.ky.gov/photolog. The Google Maps platform also assisted with inventorying when a Photolog image was missing or was otherwise incomplete.

Researchers identified sidewalk locations using KYTC-defined county, route, and mile points along state-maintained routes. They also assigned a corresponding direction of cardinal right or non-cardinal right. Sidewalks were categorized by material type. The five sidewalk material types include:

- No Sidewalk — sidewalk material is not present
- Paved — any sidewalk constructed with asphalt, brick, concrete, or a combination thereof
- Undefined — any sidewalk that lacks clear delineation in the form of distinct boundaries (e.g., physical edges or pavement markings) but has a paved surface, often in the form of a sidewalk continuation, through a paved parking lot

<table>
<thead>
<tr>
<th>RT_UNIQUE</th>
<th>BEGIN_MP</th>
<th>END_MP</th>
<th>CO_NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>001-KY-0092 -000</td>
<td>0.00000000000</td>
<td>0.22100000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>0.22100000000</td>
<td>0.79000000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>0.79000000000</td>
<td>0.84800000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>0.84800000000</td>
<td>1.14200000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>1.14200000000</td>
<td>1.60900000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>1.60900000000</td>
<td>1.85900000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>1.85900000000</td>
<td>1.90000000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>1.90000000000</td>
<td>2.12200000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>2.12200000000</td>
<td>2.37300000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>2.37300000000</td>
<td>2.41600000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>2.41600000000</td>
<td>2.45500000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>2.45500000000</td>
<td>2.85300000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>2.85300000000</td>
<td>3.27800000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>3.27800000000</td>
<td>3.60000000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>3.60000000000</td>
<td>3.72100000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>3.72100000000</td>
<td>3.98000000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>3.98000000000</td>
<td>4.31900000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>4.31900000000</td>
<td>5.34400000000</td>
<td>ADAIR</td>
</tr>
<tr>
<td>001-KY-0092 -000</td>
<td>5.34400000000</td>
<td>5.43800000000</td>
<td>ADAIR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Row Labels</th>
<th>Min of BEGIN_MP</th>
<th>Max of END_MP</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADAIR</td>
<td>0</td>
<td>5.438</td>
<td>5.438</td>
</tr>
</tbody>
</table>

Figure 4: State Roads Pivot Table

3.2 Sidewalk Inventory

KTC researchers used online geospatial tools to conduct the comprehensive KYTC sidewalk inventory. Researchers primarily used KYTC’s online mapping database, Photolog, as the key repository for state-maintained roadways. This website can be found at http://maps.kytc.ky.gov/photolog. The Google Maps platform also assisted with inventorying when a Photolog image was missing or was otherwise incomplete. Researchers identified sidewalk locations using KYTC-defined county, route, and mile points along state-maintained routes. They also assigned a corresponding direction of cardinal right or non-cardinal right. Sidewalks were categorized by material type. The five sidewalk material types include:

- No Sidewalk — sidewalk material is not present
- Paved — any sidewalk constructed with asphalt, brick, concrete, or a combination thereof
- Undefined — any sidewalk that lacks clear delineation in the form of distinct boundaries (e.g., physical edges or pavement markings) but has a paved surface, often in the form of a sidewalk continuation, through a paved parking lot
• Unpaved – any sidewalk constructed of materials that are not commonly used, such as gravel, mulch, and other non-paved materials

• Photo Unavailable – photo imagery was unavailable in Photolog to assign a sidewalk rating or determine its location (rendering Google Maps ineffective)

• Photo Distorted Imagery – any sidewalk not readily visible in the Photolog imagery due to poor photo quality or object obstructions contained in the photo, and can therefore not be assigned rating

KTC, with the assistance of the KYTC Study Advisory Committee, developed a sidewalk inventory template based on the selection of key defining sidewalk characteristics and attributes. The final template contained 21 unique columns, each with defining attributes. In general, sidewalk segments were divided into database rows that corresponded to any changes identified in their condition. Identical conditions for a continuous sidewalk segment were identified within a single, unique Excel row. However, a new database row was created each time a template-defined inventory attribute changed, such as the sidewalk ending or a change in material type. In other cases, the appearance of inventory features (e.g., mid-block crosswalk or pedestrian bridge) resulted in the creation of a new data row. Each inventoried sidewalk segment and/or accompanying infrastructure facility was referenced to the mainline segment milepoint. The mainline segment consisted of any route section ending in 000 or 001-009, as applicable, for 2-way or 1-way streets (see Section 2.2). The entire inventory process proceeded in the cardinal direction and was characterized as such. Appendix A contains a screenshot of the complete inventory template. All of the steps needed to complete the sidewalk inventory are discussed below.

3.2.1 Source Data (Step 1)
First, researchers selected target county and copied data from the “StateRds” Excel file into the template. These data included:

- County Name (column A)
- County Number (column B)
- Begin Milepoint (column C)
- End Milepoint (column D)
- Highway Route Number (column F)

The database also contained formulas that automatically calculate the total miles and the route section based upon entered data. For instance, the total miles (column E) was calculated by subtracting the begin milepoint from the end milepoint. The route section (column G) extracted the final three digits from the highway route number (following the definition in Section 2.2). This initial populated data established the foundation to begin the inventory process.

3.2.2 Photolog Viewer (Step 2)
Second, researchers opened the KYTC Photolog browser and selected the county, route prefix, and route number. The milepoints for the entire route segment automatically populated and were changed manually, as needed. The “Locate” toggle button was selected on the screen. Next, the “Photolog” toggle button was chosen, as shown in the upper right-hand corner of the screen (see Figure 5). This function provides a street-view photograph of the route, starting at the beginning milepoint. In the lower right-hand corner, the “Photo Info.” tab was selected to access roadway data needed for the inventory process.
3.2.3 Begin Inventory (Step 3)
To begin the inventory process, researchers first selected the play function, which is located between the street-view photography and the base map (planar view). This function is the third toggle button from the right. This button activates the drive-by functionality, which lets the user simulate driving down the road. Driving speed may be adjusted by moving the “Speed” option to the left or right for higher or lower speeds, respectively. This feature is displayed as “Speed” to the left of the toggle buttons. The distance covered by each photo frame may be adjusted from 26 feet to 130 feet. The research team found that the lowest setting (26 feet) provided the best results for accurately inventorying all roadway segments. Figure 6 indicates the different Photolog toggle options.
Figure 6: Photolog Toggle Options
3.2.4 Determine Roadway Category (Step 4)
Researchers determined the roadway category from the initial Photolog frame. Previously defined roadway categories included: 2-way divided, 2-way undivided, 1-way, and 1-way non-cardinal couplet (see Section 2.1). The appropriate roadway category was assigned to column M using a drop-down menu that contained the available options. In certain instances, a unique route was assigned different classifications at different intervals along its segment. A common occurrence of this involved a roadway alternating between a 2-way divided and a 2-way undivided configuration along different portions of its route. In these instances, a new row was created each time a switch in roadway type occurred; this account for the change in classification. Take the example of a 2-way divided roadway converging into a 2-way undivided roadway at milepoint 7.8. In this case, the existing sidewalk inventory row would be split at milepoint 7.8 and an ending milepoint assigned. The newly created row would begin at milepoint 7.8 and its classification would switch to a 2-way undivided roadway. The same process would be applied again if the roadway later split or reverted to 2-way divided status.

3.2.5 Assess Sidewalk Material (Step 5)
At the outset of the roadway driving simulation, a sidewalk was assessed for its overall condition as well as any required attributes. The first condition assessed was the mainline sidewalk material type (definitions in Section 3.1.2). The appropriate sidewalk material code (e.g., 1-6) was placed into the cell or cells with the corresponding directional code (see Figures 1 and 2). This completed the process for filling in columns O, P, Q, and R.

3.2.6 Assess Auxiliary Facilities (Step 6)
An auxiliary facility is a unique route section that was coded as a y-section (20-29), connector (70-79), or other subordinate roadway (80-97). These facilities are associated with tangents off the mainline and sometimes have their own sidewalks. Consequently, these additional sidewalks were inventoried with respect to the mainline. Therefore, the auxiliary facility inventory process required creating a new row each time one appeared, and a value of “1” was placed into the auxiliary facility column, indicating its presence (see example below).

![Figure 7: Y-Section, U.S. 60 (Franklin Co.)](image)

The inventoried mainline segment stretches from milepoint 2.0 (Begin MP) to 5.5 (End MP). A y-section appears on this route at milepoint 4.0; this would require the researcher to break the original 2.0 to 5.5 milepoint segment (and list a newly created row for this condition change). The new End MP for the original row would be 4.0, corresponding to the beginning milepoint of the newly created sidewalk segment row.
located directly underneath it. Subsequently, the newly created row would list a beginning mile point of 4.0 and an ending mile point of 5.5. A value of “1” would then be placed into the auxiliary facility cell (column H) for the first segment, indicating the segment ended with this facility. In addition to the auxiliary facility flag, the unique route for the auxiliary facility was associated with each segment when the flag was used.

Like the mainline sidewalk material categories, each auxiliary facility sidewalk was assigned a sidewalk material code and appropriate directional cell block (e.g., CR, NR, CL, NL). This corresponded to columns S, T, U, and V. Only auxiliary facilities with sidewalks were placed into the inventory template. Auxiliary facilities lacking sidewalks were not inventoried in this manner, nor were they used to break existing mainline sidewalk segments. Finally, some auxiliary facilities spanned several Photolog frames (i.e., over several defined milepoints). In these instances, the facility was marked in the location where it first appeared. Consequently, inventoried auxiliary facilities reflected only the beginning milepoints at which they first appear; the ending milepoint was inconsequential.

3.2.7 Identify Mid-Block Crosswalks and Pedestrian Bridges (Step 7)
Researchers defined a mid-block crosswalk as any cross-walk located along a roadway segment that was not positioned at an intersection. Mid-block crosswalks were most common near school crossing zones. Similarly, pedestrian bridges were defined as bridges that cross a roadway to accommodate pedestrian traffic. Classifying these facilities followed the same procedure described above for auxiliary facilities, including breaking the mainline segment each time one appeared. Using the original process, a value of “1” was placed into the mid-block crosswalk or pedestrian bridge cell each time one was inventoried, or columns J and K, respectively. However, the research team only annotated the presence of a mid-block crosswalk or pedestrian bridge, and did not assign a sidewalk material category.

3.2.8 Assign Photolog Date (Step 8)
A Photolog collection date, indicating the corresponding date of the photograph, was included in each row. This information was collected via the “Photo Info.” tab, located in the lower, right-hand corner in Photolog. The photo date was entered in column N of the database.

3.2.9 Additional Comments (Step 9)
In certain instances, the research team encountered issues with the Photolog system or unique situations that required additional clarification. Therefore, the sidewalk inventory template provided additional columns to address these problems, as needed. The “Photolog Picture Issue” found in column W was used if the initial Photolog picture was not visible (i.e., street view), produced no image, or was otherwise unavailable. Furthermore, this option indicated the planar/aerial view in Photolog was unavailable. The chart definitions in Appendix B provide numerical codes for each unique issue. Whenever Photolog picture issues materialized, Google Maps was utilized to fill in additional sidewalk inventory gaps. If researchers used Google Maps, they clearly noted its use in the comments category box found in column X. The comment category was also used to clarify inventory issues or to describe unique situations.

3.3 Curb Ramp Inventory
The KTC research team also used Photolog to conduct the comprehensive KYTC curb ramp inventory. This inventory process was similar to the sidewalk inventory process. However, a supplemental tool — the SIGGIS application in ArcMap — was incorporated to reduce processing time and to enhance quality control. When users click on this tool they access any location on a defined map and open the Google Maps Street View window in ArcMap. KTC researchers used the add-on to quickly identify intersection locations in Google Maps and retrieved detailed intersection imagery. This provided enhanced photo images not available in Photolog. Furthermore, the detailed photos allowed for expedited and more accurate assessments of curb ramp features, such as detectable warning surfaces. The SIGGIS application was obtained and downloaded from ESRI®.
Researchers inventoried curb ramps at intersections that bordered at least one state-maintained roadway. Intersections not adjacent to a state-maintained roadway were excluded from the inventory. Initially, researchers focused the curb ramp search on urban intersections and select rural intersections.

Researchers decided to examine all urban intersections due to their higher likelihood of containing curb ramps. On the other hand, the study only focused on rural intersections with sidewalks, as identified during the initial sidewalk inventory. The research team determined that the high number of rural intersections across Kentucky would consume significant project resources with little value generated. Most rural roadways lacking sidewalks would presumably lack corresponding curb ramps as well. Furthermore, a curb ramp installation at an intersection without a connecting sidewalk would not comply with ADA standards.

Intersections form the basis by which curb ramps are identified. However, the research team — in conjunction with the KYTC Study Advisory Committee — determined that using intersections as the sole indicator of curb ramps presented assignment and time challenges. Specifically, while several formats were initially developed to coincide with an intersection-based inventory, they were inadequate due to added complexity, excessive time requirements, and overall ease of use. Therefore, the team decided to use road segments as the basis for conducting the curb ramp inventory. KYTC uses individual road segments—annotated by the route, beginning milepoint, and ending milepoint—as the basis for many of their GIS and planning conventions. The research team used existing roadway segment data to identify segments that entered and exited each intersection. In each instance, researchers identified the individual roadway segment approach that entered a state-maintained intersection and consequently, inventoried any curb ramp facilities located directly to the right of it. This method simplified the curb ramp inventory process, both for the researchers and end users. For example, an intersection with two, 2-way undivided roads converging would have four corners to examine. Researchers would assign a single corner to a single approach segment, located to the immediate left of the corner. In a more complex example, an intersection with a 2-way undivided road converging with a 2-way divided road would have four corners to examine, along with two medians for the single 2-way undivided road. This is because medians on the undivided road should have pedestrian crosswalk facilities and include curb ramps (as applicable).
3.3.1 ArcMap Setup (Step 1)
Before inventorying curb ramps, ArcMap was configured to filter the entire statewide intersection database to include only the intersections of interest. Several operations were performed and the appropriate shapefiles identified for the applicable intersection roadway segments. The research team followed these steps:

1. Plot Sidewalks: The team created a shapefile and plotted the inventoried sidewalks in ArcMap. This involved adding the sidewalk inventory as a table and the AllRds_M file from KYTC Planning to an ArcMap document. Next, the “Display Route Events” tool was used to plot a line file of the sidewalks in the state.

2. Join Sidewalks: The statewide intersection was added to the shapefile in the ArcMap document. Plotted sidewalks were joined to the intersections using spatial join. The result of this join displayed which intersections had a sidewalk previously identified through the sidewalk inventory.

3. Filter Sidewalks: A query was applied to the resulting join file to filter out intersections that did not have at least one approach with a known sidewalk.
4. Identify Approaches: The intersection approaches line file was added to the ArcMap document. A select by location query was used to select the intersection approaches corresponding to the intersections that were identified with a known sidewalk from step three.

5. Separate Counties: Each county’s intersection approaches were separated for individual review using another query function ("RT_UNIQUE" LIKE '092-%', where the 092 is replaced with each county’s numeric county code).

3.3.2 Roadway Segment Sort (Step 2)
After setup was complete, roadway segment approaches had to be assigned to a given intersection. Each roadway segment was sorted by the intersection ID field to band those roadway segments to an individual intersection. This placed all collocated roadway segments next to each other (by row) in the curb ramp inventory database. Ultimately, researchers zoomed to the intersection of interest and conducted the inventory using the banded roadway segments.

3.3.3 Assign Attributes (Step 3)
The SIGGIS tool was used to query Google Street View at each intersection to facilitate collection of curb ramp data. The attribute table was edited for each roadway segment using the curb ramp inventory definitions (see Appendix D). As noted, each roadway segment approach to a given intersection was associated with a curb ramp to its right. The “RampCorner” and “RampType” data fields were used for the most common situations —roadway approaches adjacent to intersection corners. Alternatively, the “PresenceMI” and “RampMI” data fields were used for roadway segments adjacent to a median island (found on the right). In rare cases, an auxiliary facility was discovered. The “PresenceAF” and “RampAF” data fields were used to assign attributes to auxiliary facilities located on the right. “Slip lanes” for dedicated left turns were treated as their own approach (and dedicated data row) and not assigned as auxiliary facilities.

3.3.4 Final Coding (Step 4)
Researchers coded each “Flag” data field with the value of “1.” This indicated a segment was successfully inventoried. If there were issues with a segment it would be coded with a value of “3” to inform reviewers that those data fields required further examination. Reviewers collected the final sidewalk inventory and then performed quality control procedures.

3.3.5 Non-Intersection Database Curb Ramps
Along with curb ramp data collected at intersections with known sidewalks, KYTC provided KTC a file containing 85 points that represented intersections with businesses. The legs of the intersection (approach) leading into the business’ lots do not exist in the Kentucky Intersection Database because they are private property and not part of Kentucky’s roadway system. Therefore, curb ramp data on these approaches were not collected as part of the initial curb ramp data collection efforts.

To collect curb ramp data for these approaches, four fields were added to the point file provided to address the potential ramps on either side of the approach. Two fields were created for each side of the approach, one titled “Ramp_X” to denote the number and type of ramps on one side of the approach, and one titled “DWX” to denote the presence or absence of a detectable warning on those ramps (with the X representing either “1” or “2” depending on the side of the approach). Coding for these categories followed the same logic as the coding for “RampType” and “RampDW” (Appendix D). The approach sides are defined as “1” for the side to the right of the approach when facing the center of the intersection, and “2” for the left side of the approach when facing the center of the intersection.
Chapter 4: Quality Control

4.1 Sidewalk Procedures
KTC reviewed a sample of completed sidewalk inventories for quality control (QC). This review ensured the proper methodological procedures were followed. Reviewers randomly selected five percent of the completed sidewalk segments from each county using a random number generator in Excel. Segments were then sorted, based on their randomly assigned number, from least to greatest. Next, reviewers used ArcMap’s Route Events function to perform QC, using the KYTC-prescribed procedures outlined below.

4.1.1 Add Excel to ArcMap (Step 1)
First, the Excel spreadsheet tab was given a unique name that would display as the layer name in ArcMap. (NOTE: Event layers draw slowly. When setting up the event layer, it saves time to pause map drawing; the pause button is at the bottom of the map display window. Once the layer is added and symbolized, continue the process.) The Excel table was then added to ArcMap by clicking on the “Add Data” button (see Figure 9), navigating to the storage location for the data table, double-clicking the file name, and clicking the file in the next window to add the file name.

![Figure 9: Add Data Button](image)

4.1.2 Display Route Events (Step 2)
After the Excel table was added to ArcMap, the Table of Contents switched to List by Source view with the added table highlighted. The table was right-clicked and the Display Route Events selected (see next figure).
The Allroads Measured file was (and should always be) used as the Route Reference. RT_UNIQUE was the route identifier for both the Route Reference and the Event Table. The sidewalk facility data was a line event. The From-Measure was Begin_MP and the To-Measure was End_MP. Next, the Advanced Options button was selected, checking the field for “Generate a field for locating errors”. Figure 11 displays these steps.
4.1.3 Identifying Errors (Step 3)
Next, the event layer’s attribute table was opened to identify errors associated with the plotted sidewalks. For instance, the far-right column might display an error such as “Partial Match for the To-Measure.” This represented a LOC_ERROR (see table below).

<table>
<thead>
<tr>
<th>LOC_ERROR</th>
<th>Shape *</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEASURE EXTENT OUT OF ROUTE MEASURE RANGE</td>
<td>Polyline M</td>
</tr>
<tr>
<td>MEASURE EXTENT OUT OF ROUTE MEASURE RANGE</td>
<td>Polyline M</td>
</tr>
<tr>
<td>MEASURE EXTENT OUT OF ROUTE MEASURE RANGE</td>
<td>NOT FOUND</td>
</tr>
<tr>
<td>MEASURE EXTENT OUT OF ROUTE MEASURE RANGE</td>
<td>NOT FOUND</td>
</tr>
<tr>
<td>MEASURE EXTENT OUT OF ROUTE MEASURE RANGE</td>
<td>LENGTH EXTENT</td>
</tr>
<tr>
<td>MEASURE EXTENT OUT OF ROUTE MEASURE RANGE</td>
<td>LENGTH EXTENT</td>
</tr>
</tbody>
</table>

Table 1: Attribute Table Errors

This table was exported to a new Excel file that contained the location errors, allowing researchers to make revisions outside of the original ArcMap table. Note, the original table was revised to avoid having to recreate the route event. Some common errors identified during this process included:

- **ROUTE NOT FOUND**: The route ID is not in the KYTC Allroads network. This usually indicates a typo somewhere in RT_UNIQUE.

- **MEASURE EXTENT OUT OF ROUTE MEASURE RANGE**: Check the route ID and milepoints. The route is in the network but generally the End_MP is beyond the KYTC network. Often, this indicates that the route number is incorrect because the route number changed at an intersection or an incorrect route number was used, but there could also be a typo in the milepoints. If the route number is incorrect, review all records with the same route number for possible revisions.

- **ZERO LENGTH EXTENT**: ArcMap indicates that the begin and end milepoints are less than .001 miles different even when the difference between the two calculates to 0.001 mile. This tends to occur with crosswalks that are only 0.001-mile long and there are anomalies in the measures within the GIS centerline segment. Change one of the milepoints so that the record is at least 0.002-mile long.

- **INVALID LOCATION MEASURE**: End_MP is zero and must have a value greater than that.

- **PARTIAL MATCH FOR THE TO MEASURE**: Does not appear to affect plotting or incorporation of data into file.

- **PARTIAL MATCH FOR THE FROM-MEASURE**: Does not appear to affect plotting or incorporation of data into file.

4.1.4 Quality Control Results (Step 4)
After removing common errors, reviewers performed a final QC review on the completed county sidewalk inventories. During this procedure five percent of the plotted sidewalks in each county were selected to
confirm their accuracy. Aerial street-level photography in Photolog and ArcMap were utilized for this review. Any errors identified were corrected on the spot.

KYTC tasked the project team with completing sidewalk inventories with less than 10 percent error. During this phase, researchers successfully inventoried 11,437 individual sidewalk segments and performed a QC review on 624 segments (5.4 percent). The reviewed segments were randomly selected from the total population to ensure the review was statistically representative of the entire dataset. This review identified 48 individual inventory methodology errors — 7.7 percent — which were corrected. Since the observed error rate was less than the 10 percent threshold, the sidewalk inventory quality control efforts were deemed successful.

4.2 Curb Ramp Procedures
KTC reviewed a sample of completed intersection approach-based curb ramp inventories as a form of QC. This review ensured proper methodological procedures were followed. As with the sidewalk inventory, ArcMap was used for the QC process. However, since the curb ramp inventory was collected in ArcMap rather than Excel, there was no need to plot the inventory in ArcMap as it was already in a map format. To begin, reviewers randomly selected five percent of the approaches from each county. Selected approaches were reviewed in ArcMap using the SIGGIS tool to query Google Street View at each approach, allowing for inspection of the curb ramps. The QC process for curb ramps was as follows.

4.2.1 Check Flagged Approached (Step 1)
All locations marked with a “3” in the “Flag” category were inspected during the QC process to ensure curb ramps at these approaches were inventoried correctly. Approaches marked as such were locations where the coders were either uncertain about how to characterize the ramps, or locations where there were issues such as construction or an approach in the intersection database that no longer existed. Flagged approaches were inspected to determine which issue was present. If there was a question about how to characterize the ramps, researchers conducting QC made the final coding decision. If construction visually obscured the curb ramps in Google Street View, the most recent aerial photography or Photolog images were used to determine if curb ramps were present. If an approach from the intersection database was included in the inventory, but recent imagery showed the approach no longer existed, researchers removed the approach from the curb ramp inventory.

In addition to checking for approaches flagged with a “3”, each county was checked for approaches flagged as “0.” A “0” means that either approach was not inventoried or the coder neglected to flag the approach as “1” to signify its completion. All instances of an approach flagged as “0” were reviewed for completeness. If the approach was not inventoried, reviewers completed a curb ramp assessment.

4.2.2 Randomize Approaches (Step 2)
After reviewing the flagged approaches, a new column of data was added to each county file with a random number appended to each approach. The random number was generated using the following python code within the “Field Calculator” function in ArcMap:

```python
def fillRandomInt(intMin, intMax):
    import random
    return random.randint(int(intMin), int(intMax))
fillRandomInt(0, 10000)
```

The random numbers were generated between 0 and 10,000 because no individual county inventory had more than 10,000 approaches. The approaches were sorted from least to greatest based on the random numbers. The top five percent of approaches in the resulting table were used to conduct QC on the curb ramps.
4.2.3 Quality Control Results (Step 3)
Selected approaches were assessed for accuracy using the SIGGIS tool to query Google Street View at each approach. If reviewers found that an approach’s curb ramps were characterized incorrectly, they recoded the ramps and checked neighboring approaches at that intersection for accuracy, even if those approaches were not a part of the random sample. All instances where reviewers made changes were marked.

KYTC tasked the project team with completing curb ramp inventories with less than 10 percent error. During this phase, the research team successfully inventoried 45,935 individual intersection approaches with their corresponding curb ramps and performed a quality control review on 2,348 segments, or 5.1 percent. The reviewed approaches were randomly selected among the total population to ensure the review was statistically representative of the overall dataset. The review identified 124 individual inventory methodology errors (5.3 percent). Since the error rate was under the 10 percent threshold, the sidewalk inventory quality control efforts were deemed successful.
Chapter 5: Discussion of Results

5.1 Sidewalk Inventory
The research team surveyed over 26,300 miles of state-maintained roads using KYTC’s Photolog. Using the sidewalk inventory procedures described in Section 3.2, researchers identified 1,096 roadway miles with at least one directional sidewalk facility. The team divided the identified sidewalk miles into 11,082 individual segments for identification purposes. Segments were assigned based on the following: roadway names, sidewalk conditions, and the presence of special facilities. Special facilities of interest included auxiliary facilities, midblock crossings, and pedestrian bridges. The final inventory collected and annotated special facilities in a data subset contained within the overall sidewalk inventory. This effort yielded the following results:

- Auxiliary Facilities — 78
- Midblock Crossings — 188
- Pedestrian Bridges — 24

The research team noted several issues while conducting the sidewalk inventory. First, KYTC’s Photolog database sometimes lacked photo images for a given roadway location. To compensate, researchers used Google Maps as a proxy system to obtain aerial and street-view imagery. In some cases, this let the research team overcome the issue of absent photos. However, Google images could not always be used; the research team did not use Google images that (a) displayed poor quality (and proved susceptible to erroneously categorized conditions), or (b) were older than 2010 (due to the photos being lower quality). Consequently, a total of 78 segments from the original segment count were discarded. This encompassed approximately 191 roadway miles. Nevertheless, the percentage of discarded segments was only 0.7 percent of the total inventoried database and well within acceptable tolerances. Appendix E contains sidewalk inventory examples.

5.2 Curb Ramp Inventory
Researchers used ArcMap in conjunction with the SIGGIS tool to query Google Street View to inventory curb ramps at over 12,000 intersections on state-maintained roads across Kentucky. KTC researchers also collected curb ramp data on 85 intersection approaches that led into business lots and were not a part of the Kentucky Intersection Database. The inventory was based on intersection approaches; data were collected following the procedures described in Section 3.3.

Several issues emerged when data were collected for the curb ramp inventory. These issues were similar to the those encountered with the sidewalk inventory. Google Street View is continuously updated; therefore, some images used in the original inventory process were updated to show new curb ramps, resulting in changes during the QC process that were marked as errors, even though they were not necessarily incorrectly characterized during initial data collection efforts. Various locations were under construction in Street View imagery; therefore, aerial photography within Google was used to adjudicate the status of the curb ramps. If construction was present in Google’s aerial photography, Photolog was used in its place. In some instances, an intersection approach in Kentucky’s intersection database no longer existed when coders attempted to inventory its neighboring curb ramps; therefore, these approaches were removed from the curb ramp inventory.
Chapter 6: Conclusion

6.1 Summary
To facilitate development of Kentucky’s transition plan to become ADA compliant, KTC researchers inventoried sidewalks along all state-maintained roads in Kentucky. This sidewalk inventory was used to query Kentucky’s intersection database to identify intersections along state-maintained roadways known to have sidewalks. Intersections were inventoried at the approach level for curb ramp presence. Researchers performed quality control to ensure sidewalk and curb ramp inventories correctly characterized the elements that actually exist on the roadways. This process showed the error in the inventory to be approximately five percent, which is below the 10 percent error requested by KYTC. As a result of this project, KYTC now has access to a statewide inventory of state-maintained sidewalks and curb ramps that can serve as the basis for Kentucky’s ADA compliance transition plan.
### Appendix A: Sidewalk Inventory Template

<table>
<thead>
<tr>
<th>County</th>
<th>County Name</th>
<th>Milepoints</th>
<th>Total</th>
<th>Highway Route</th>
<th>Auxiliary</th>
<th>Mid-Block</th>
<th>Pedestrian</th>
<th>Highway Route</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Begin MP</td>
<td>End MP</td>
<td>Miles</td>
<td>RT_Unique</td>
<td>RT_Section</td>
<td>Facility</td>
<td>Route</td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>0.000</td>
<td>21.305</td>
<td>21.305</td>
<td>001-KY-0055 -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>0.000</td>
<td>0.585</td>
<td>0.585</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>0.585</td>
<td>0.685</td>
<td>0.100</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>0.685</td>
<td>0.755</td>
<td>0.070</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>0.755</td>
<td>0.855</td>
<td>0.100</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>0.855</td>
<td>1.370</td>
<td>0.515</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>1.390</td>
<td>1.400</td>
<td>0.010</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>1.400</td>
<td>1.440</td>
<td>0.040</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>1.440</td>
<td>1.499</td>
<td>0.059</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>1</td>
<td>001-KY-0055X -071</td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>1.499</td>
<td>1.502</td>
<td>0.003</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>1</td>
<td>001-KY-0055X -070</td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>1.502</td>
<td>1.625</td>
<td>0.123</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>1.625</td>
<td>1.880</td>
<td>0.255</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>1.880</td>
<td>1.920</td>
<td>0.040</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>1.920</td>
<td>1.929</td>
<td>0.009</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>1.929</td>
<td>2.005</td>
<td>0.076</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>2.005</td>
<td>3.025</td>
<td>1.020</td>
<td>001-KY-0055X -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>1.510</td>
<td>1.565</td>
<td>0.055</td>
<td>001-KY-0055X -001</td>
<td>001</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>0.000</td>
<td>19.745</td>
<td>19.745</td>
<td>001-KY-0061 -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>0.000</td>
<td>14.452</td>
<td>14.452</td>
<td>001-KY-0076 -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>0.000</td>
<td>12.130</td>
<td>12.130</td>
<td>001-KY-0080 -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>12.130</td>
<td>12.170</td>
<td>0.040</td>
<td>001-KY-0080 -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>12.170</td>
<td>12.750</td>
<td>0.580</td>
<td>001-KY-0080 -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>12.750</td>
<td>12.865</td>
<td>0.115</td>
<td>001-KY-0080 -000</td>
<td>000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Adair</td>
<td>1</td>
<td>12.865</td>
<td>12.964</td>
<td>0.099</td>
<td>001-KY-0080 -000</td>
<td>000</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Roadway</td>
<td>Photolog</td>
<td>Mainline Sidewalk Material</td>
<td>Auxiliary Facility</td>
<td>Photolog</td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>----------------------------</td>
<td>--------------------</td>
<td>----------</td>
<td>----------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Category</td>
<td>Date</td>
<td>CR</td>
<td>NR</td>
<td>CL</td>
<td>NL</td>
<td>CR</td>
</tr>
<tr>
<td>2U</td>
<td>10/23/2013</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>5/29/2014</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>10/21/2013</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>10/21/2013</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>10/21/2013</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>10/21/2013</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>10/21/2013</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>10/21/2013</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>10/21/2013</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>10/21/2013</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>11/12/2013</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>11/12/2013</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>11/12/2013</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>11/12/2013</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>11/12/2013</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2U</td>
<td>11/12/2013</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
Appendix B: Sidewalk Inventory Definitions

**Chart Definitions**

<table>
<thead>
<tr>
<th><strong>a</strong> where</th>
<th>RT_Unique is &quot;CCC-PP-NNNNSS-sss&quot; and</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CCC = Three-digit County Number</td>
</tr>
<tr>
<td></td>
<td>PP = Route Prefix (RT_Prefix)</td>
</tr>
<tr>
<td></td>
<td>NNNN = Route Number (RT_Number)</td>
</tr>
<tr>
<td></td>
<td>SS = Route Suffix (RT_Suffix)</td>
</tr>
<tr>
<td></td>
<td>sss = Route Section (RT_Section)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>b</strong> where</th>
<th>Auxiliary facility is any RT_Section coded within the following ranges:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(y-section, 20-29; connector, 70-79; other subordinate roadway, 80-97)</td>
</tr>
<tr>
<td></td>
<td>Blank = Leave cell blank if no auxiliary facility with sidewalk</td>
</tr>
<tr>
<td></td>
<td>RT_Section # = Auxiliary facility present (and will need to code sidewalk</td>
</tr>
<tr>
<td></td>
<td>(3 digits) inventory categories under separate aux. facility columns)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>c</strong> where</th>
<th>(applies to either Mid-Block Crosswalks or Pedestrian Bridges)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Blank = Leave cell blank if not present</td>
</tr>
<tr>
<td></td>
<td>1 = Mid-block crosswalk or Pedestrian Bridge located on roadway</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>d</strong> where</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2U = 2-way Undivided</td>
<td></td>
</tr>
<tr>
<td>2D = 2-way Divided</td>
<td></td>
</tr>
<tr>
<td>1WC = 1-way</td>
<td></td>
</tr>
<tr>
<td>1WNC = 1-way Non-Cardinal Couplet</td>
<td></td>
</tr>
<tr>
<td>N/A = Not applicable for RT_Sections 11 or higher</td>
<td></td>
</tr>
</tbody>
</table>

and "Sidewalk Material" is either:

| 0 = Material not present, no sidewalk |
| 1 = Paved (Asphalt, Brick, Concrete) |
| 2 = Paved but badly damaged (No Longer Applicable) |
| 3 = Undefined Sidewalk (Crosses a parking lot) |
| 4 = Unpaved Sidewalk (mulch, gravel, etc.) |
| 5 = Photo Unavailable (either profile or aerial views) |
| 6 = Sidewalk not readily visible so cannot assign rating |

<table>
<thead>
<tr>
<th><strong>e</strong> where</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank = Leave cell blank if no Photolog issues</td>
<td></td>
</tr>
<tr>
<td>1 = Initial Photolog frame not visible</td>
<td></td>
</tr>
<tr>
<td>2 = Second (clicked) Photolog frame produces no image</td>
<td></td>
</tr>
<tr>
<td>3 = Aerial view in Photolog not available</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix C: Curb Ramp Inventory Template

<table>
<thead>
<tr>
<th>OBJECTID_1</th>
<th>FID_1</th>
<th>OBJECTID</th>
<th>RJFN_1</th>
<th>RT_UNIQUE</th>
<th>BMP</th>
<th>EMP</th>
<th>IntsctId</th>
<th>ApprCnt</th>
<th>MasterNd</th>
<th>RurUrb</th>
<th>Jurisdcti</th>
</tr>
</thead>
<tbody>
<tr>
<td>591251</td>
<td>606194</td>
<td>606574</td>
<td>617737</td>
<td>80226</td>
<td>117-CS-2006</td>
<td>0.45500000000</td>
<td>0.47400000000</td>
<td>80226</td>
<td>3</td>
<td>150506</td>
<td>rural</td>
</tr>
<tr>
<td>591254</td>
<td>606197</td>
<td>606400</td>
<td>617561</td>
<td>80252</td>
<td>117-CS-2008</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>80252</td>
<td>4</td>
<td>150483</td>
<td>rural</td>
</tr>
<tr>
<td>591265</td>
<td>606208</td>
<td>606551</td>
<td>617714</td>
<td>80428</td>
<td>117-CS-2021</td>
<td>0.08600000000</td>
<td>0.10500000000</td>
<td>80428</td>
<td>3</td>
<td>150176</td>
<td>rural</td>
</tr>
<tr>
<td>591266</td>
<td>606209</td>
<td>606293</td>
<td>617454</td>
<td>80444</td>
<td>117-CS-2028</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>80444</td>
<td>3</td>
<td>150148</td>
<td>rural</td>
</tr>
<tr>
<td>591282</td>
<td>606225</td>
<td>606437</td>
<td>617598</td>
<td>80567</td>
<td>117-CS-2020</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>80567</td>
<td>3</td>
<td>149964</td>
<td>rural</td>
</tr>
<tr>
<td>591286</td>
<td>606229</td>
<td>606503</td>
<td>617666</td>
<td>80605</td>
<td>117-CS-2017</td>
<td>0.00000000000</td>
<td>0.01200000000</td>
<td>80605</td>
<td>3</td>
<td>149904</td>
<td>rural</td>
</tr>
<tr>
<td>591289</td>
<td>606232</td>
<td>606185</td>
<td>617344</td>
<td>80631</td>
<td>117-CS-2025</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>80631</td>
<td>3</td>
<td>149865</td>
<td>rural</td>
</tr>
<tr>
<td>591310</td>
<td>606253</td>
<td>606239</td>
<td>617398</td>
<td>80816</td>
<td>117-CS-2009</td>
<td>0.19000000000</td>
<td>0.20900000000</td>
<td>80816</td>
<td>4</td>
<td>149580</td>
<td>rural</td>
</tr>
<tr>
<td>591311</td>
<td>606254</td>
<td>606510</td>
<td>617673</td>
<td>80816</td>
<td>117-CS-2009</td>
<td>0.20900000000</td>
<td>0.22800000000</td>
<td>80816</td>
<td>4</td>
<td>149580</td>
<td>rural</td>
</tr>
<tr>
<td>591430</td>
<td>606373</td>
<td>606222</td>
<td>617381</td>
<td>82714</td>
<td>117-CS-1001</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>82714</td>
<td>3</td>
<td>146518</td>
<td>rural</td>
</tr>
<tr>
<td>591431</td>
<td>606374</td>
<td>606493</td>
<td>617656</td>
<td>82737</td>
<td>117-CS-1002</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>82737</td>
<td>3</td>
<td>146504</td>
<td>rural</td>
</tr>
<tr>
<td>591441</td>
<td>606384</td>
<td>606487</td>
<td>617650</td>
<td>82855</td>
<td>117-CS-1007</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>82855</td>
<td>3</td>
<td>146312</td>
<td>rural</td>
</tr>
<tr>
<td>591450</td>
<td>606393</td>
<td>606316</td>
<td>617477</td>
<td>82956</td>
<td>117-CS-1009</td>
<td>0.14600000000</td>
<td>0.16500000000</td>
<td>82956</td>
<td>4</td>
<td>146151</td>
<td>rural</td>
</tr>
<tr>
<td>591451</td>
<td>606394</td>
<td>606592</td>
<td>617756</td>
<td>82956</td>
<td>117-CS-1009</td>
<td>0.16500000000</td>
<td>0.18400000000</td>
<td>82956</td>
<td>4</td>
<td>146151</td>
<td>rural</td>
</tr>
<tr>
<td>591452</td>
<td>606395</td>
<td>606210</td>
<td>617369</td>
<td>82980</td>
<td>117-CS-1006</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>82980</td>
<td>3</td>
<td>146122</td>
<td>rural</td>
</tr>
<tr>
<td>591607</td>
<td>606555</td>
<td>607030</td>
<td>618206</td>
<td>75444</td>
<td>117-CS-3126</td>
<td>0.29300000000</td>
<td>0.31200000000</td>
<td>75444</td>
<td>4</td>
<td>158066</td>
<td>rural</td>
</tr>
<tr>
<td>591614</td>
<td>606563</td>
<td>607118</td>
<td>618294</td>
<td>75529</td>
<td>117-CS-3028</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>75529</td>
<td>3</td>
<td>157943</td>
<td>rural</td>
</tr>
<tr>
<td>591621</td>
<td>606570</td>
<td>607071</td>
<td>618247</td>
<td>75654</td>
<td>117-CS-3124</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>75654</td>
<td>3</td>
<td>157764</td>
<td>rural</td>
</tr>
<tr>
<td>591622</td>
<td>606571</td>
<td>607224</td>
<td>618400</td>
<td>75675</td>
<td>117-KY-0109</td>
<td>0.90800000000</td>
<td>0.92700000000</td>
<td>75675</td>
<td>3</td>
<td>157725</td>
<td>rural</td>
</tr>
<tr>
<td>591629</td>
<td>606580</td>
<td>606954</td>
<td>618130</td>
<td>75727</td>
<td>117-CS-3103</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>75727</td>
<td>3</td>
<td>157643</td>
<td>rural</td>
</tr>
<tr>
<td>591638</td>
<td>606590</td>
<td>607041</td>
<td>618217</td>
<td>75797</td>
<td>117-CS-3101</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>75797</td>
<td>3</td>
<td>157561</td>
<td>rural</td>
</tr>
<tr>
<td>591654</td>
<td>606610</td>
<td>607013</td>
<td>618189</td>
<td>75976</td>
<td>117-CS-3142</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>75976</td>
<td>4</td>
<td>157307</td>
<td>rural</td>
</tr>
<tr>
<td>591655</td>
<td>606611</td>
<td>606945</td>
<td>618121</td>
<td>75987</td>
<td>117-CS-3043</td>
<td>0.00000000000</td>
<td>0.01500000000</td>
<td>75987</td>
<td>3</td>
<td>157280</td>
<td>rural</td>
</tr>
<tr>
<td>591663</td>
<td>606625</td>
<td>607112</td>
<td>618288</td>
<td>76104</td>
<td>117-CS-3039</td>
<td>0.22100000000</td>
<td>0.24000000000</td>
<td>76104</td>
<td>4</td>
<td>157112</td>
<td>rural</td>
</tr>
<tr>
<td>591667</td>
<td>606631</td>
<td>606881</td>
<td>618057</td>
<td>76142</td>
<td>117-CS-3049</td>
<td>0.00000000000</td>
<td>0.01900000000</td>
<td>76142</td>
<td>3</td>
<td>157041</td>
<td>rural</td>
</tr>
</tbody>
</table>

Continued on next page
<table>
<thead>
<tr>
<th>Longitude</th>
<th>Latitude</th>
<th>Inventory Criteria</th>
<th>Approach Query Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>-87.82359630</td>
<td>37.47034550</td>
<td>RampCorner RampType RampDW PresenceMI RampMI PresenceAF RampAF Flag</td>
<td>MatchIntID SidewalkIs</td>
</tr>
<tr>
<td>-87.82359660</td>
<td>37.47065470</td>
<td>0 0 0 0 0 0</td>
<td>1 1</td>
</tr>
<tr>
<td>-87.82210700</td>
<td>37.47350110</td>
<td>1 5 0 0 0</td>
<td>0 0 1 1</td>
</tr>
<tr>
<td>-87.82170290</td>
<td>37.47387490</td>
<td>1 5 0 0 0</td>
<td>0 0 1 1</td>
</tr>
<tr>
<td>-87.82203870</td>
<td>37.47592090</td>
<td>1 1 1 0 0</td>
<td>0 0 1 1</td>
</tr>
<tr>
<td>-87.82024430</td>
<td>37.47634850</td>
<td>1 5 0 0 0</td>
<td>0 0 1 1</td>
</tr>
<tr>
<td>-87.82013680</td>
<td>37.47657700</td>
<td>1 5 0 0 0</td>
<td>0 0 1 1</td>
</tr>
<tr>
<td>-87.82127810</td>
<td>37.47900070</td>
<td>1 5 0 0 0</td>
<td>0 0 1 1</td>
</tr>
<tr>
<td>-87.82127810</td>
<td>37.47900070</td>
<td>1 5 0 0 0</td>
<td>0 0 1 1</td>
</tr>
<tr>
<td>-87.82013680</td>
<td>37.47657700</td>
<td>1 5 0 0 0</td>
<td>0 0 1 1</td>
</tr>
<tr>
<td>-87.82013680</td>
<td>37.47657700</td>
<td>1 5 0 0 0</td>
<td>0 0 1 1</td>
</tr>
<tr>
<td>-87.82127810</td>
<td>37.47900070</td>
<td>1 5 0 0 0</td>
<td>0 0 1 1</td>
</tr>
<tr>
<td>-87.82013680</td>
<td>37.47657700</td>
<td>1 5 0 0 0</td>
<td>0 0 1 1</td>
</tr>
</tbody>
</table>
## Appendix D: Curb Ramp Inventory Definitions

<table>
<thead>
<tr>
<th>GIS Column Header</th>
<th>Meaning</th>
<th>Code</th>
<th>Code Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>RampCorner</td>
<td>Ramps on Corner</td>
<td>0</td>
<td>No ramps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>Ramp present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Unknown ramp status</td>
</tr>
<tr>
<td>RampType</td>
<td>Corner Ramp Type</td>
<td>0</td>
<td>No ramps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>Single blended transition ramp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Two ramps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>One ramp to approach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>One ramp to neighboring approach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>Flush with roadway</td>
</tr>
<tr>
<td>RampDW</td>
<td>Corner Ramp Detectable Warning</td>
<td>0</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Unknown</td>
</tr>
<tr>
<td>PresenceMI</td>
<td>Median Island Presence</td>
<td>0</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>Present and paved</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Present and unpaved</td>
</tr>
<tr>
<td>RampMI</td>
<td>Median Island Ramps</td>
<td>0</td>
<td>No ramps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>Ramp with smooth surface</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Ramp with detectable warning</td>
</tr>
<tr>
<td>PresenceAF</td>
<td>Auxiliary Facility Presence</td>
<td>0</td>
<td>Absent</td>
</tr>
<tr>
<td>RampAF</td>
<td>Auxiliary Facility Ramps</td>
<td>0</td>
<td>No ramps</td>
</tr>
<tr>
<td>Flag</td>
<td>Flag</td>
<td>1</td>
<td>Completed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>Check for Error</td>
</tr>
</tbody>
</table>
Appendix E: Sidewalk Inventory Screenshots

Figure 12: Typical Downtown Sidewalk

Figure 13: Typical Urban Sidewalk
Figure 14: Sidewalk End

Figure 15: Midblock Crossing with Curb Extensions
Figure 16: Brick Sidewalk, Categorized as "Paved"

Figure 17: Divided Roadway with Dual Sidewalks
Figure 18: Divided Roadway with Single Sidewalk

Figure 19: Brick Sidewalk, Categorized as "Paved"
Figure 20: Asphalt Sidewalk, Categorized as "Paved"
Figure 21: Ramps with No Sidewalk Present

Figure 22: Sidewalk with No Ramps Present
Appendix F: Curb Ramp Inventory Screenshots

Figure 23: Steps at Curb, Not Considered Ramp

Figure 24: Single Ramp with Detectable Warning
Figure 25: Single Ramp without Detectable Warning

Figure 26: Single Blended Ramp without Detectable Warning
Figure 27: Single Blended Ramp with Detectable Warning

Figure 28: Two Ramps without Detectable Warnings
Figure 29: Two Ramps with Detectable Warnings

Figure 30: Paved Auxiliary Facility with Detectable Warnings
Figure 31: Paved Auxiliary Facility without Detectable Warnings

Figure 32: Ramp Flush with Roadway
Endnotes