Pedestrian and Bicyclist Safety Assessment
27th Street, Lincoln, Nebraska

Prepared by:
U.S. Department of Transportation,
Federal Highway Administration

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I. **Executive Summary**

This report documents the Pedestrian and Bicyclist Safety Assessment that was conducted on 27th Street in Lincoln, Nebraska on April 10, 2015. It was done as part of a U.S. Department of Transportation (U.S. DOT) initiative to conduct assessments in every state. The intent of the assessments is to produce multiple resources to help communities build streets that are safer for people walking, bicycling and taking public transportation. It is designed as "one assessment in the field on one day."

The Lincoln assessment covered a section of 27th Street running from A Street to Holdrege Street. This is a major north-south arterial and is urban in nature. It is also a major bus corridor. Toward the south end, it is a major connection point for bike trails throughout the City. The Lincoln Children's Zoo, the Lincoln Sunken Gardens, and other Parks and Recreation facilities are located in this vicinity. The central and north sections of the corridor by contrast are characterized by commercial development with residential and University of Nebraska student housing areas.

From the U.S. DOT, the assessment involved the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the National Highway Traffic Safety Administration (NHTSA), and the Federal Motor Carrier Safety Administration (FMCSA). Other participating agencies included the City of Lincoln Planning and Public Works Departments, the Nebraska Department of Roads Planning and Traffic Engineering Divisions, the Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA), and pedestrian and bicyclist advocates. The assessment provided a great opportunity for multi-disciplinary cooperation in addressing pedestrian and bicyclist issues.

This report highlights many aspects of the 27th Street corridor that are beneficial to pedestrians and bicyclists. Areas for improvement are also noted. Observations and recommendations from the assessment primarily pertain to the grade-separated pedestrian and bicyclist paths, sidewalks, crosswalks and curb ramps, bus stops, and pedestrian signals. Following are the assessment recommendations:

1. Sidewalks: Perform a detailed survey of sidewalk conditions along the corridor and upgrade sections as needed.

2. Crosswalks and Curb Ramps: Perform a detailed survey of crosswalks and curb ramps along the corridor and upgrade as needed. Consider public education and information (PI&E) and enforcement measures to address the crosswalk compliance and jay walking issues. Also consider installing Rectangular Rapid Flashing Beacons (RRFBs) to increase driver awareness of potential pedestrian conflicts at unsignalized intersections and mid-block crosswalks.

3. Bus Stops: Review bus stop locations as part of the transit system study.

4. Pedestrian Signals: Review pedestrian interval timings on signals and the adequacy of the pedestrian refuge islands.

In closing, the FHWA and its partner U.S. DOT agencies wish to express appreciation for the efforts of the City of Lincoln and everyone who participated in the assessment. Their efforts were instrumental to the success of the assessment.

II. Background

On September 10, 2014, U.S. Transportation Secretary Anthony Foxx announced an initiative to reduce the growing number of pedestrian and bicyclist injuries and fatalities through a comprehensive approach that addresses infrastructure safety, education, vehicle safety and data collection. According to Secretary Foxx, "Safety is our highest priority and that commitment is the same regardless of which form of transportation people choose, including walking and biking."

Along with his announcement, the Secretary released a document entitled, *"Safer People, Safer Streets: Summary of U.S. Department of Transportation (U.S. DOT) Action Plan to Increase Walking and Bicycling and Reduce Pedestrian and Bicyclist Fatalities."* This document outlines the comprehensive approach to improving pedestrian and bicyclist safety and is available on the U.S. DOT's website.

An important first step of this nationwide initiative is to conduct road safety assessments in every state. The intent is to produce multiple resources to help communities build streets that are safer for people walking, bicycling and taking public transportation. It is designed as "one assessment in the field on one day." Due to heightened interest in the assessment in Nebraska, it was decided to conduct assessments in both the Cities of Lincoln and Omaha.

III. Purpose

The purpose of this report is to chronicle the efforts of the pedestrian and bicyclist safety assessment of the 27th Street corridor in Lincoln, including identifying opportunities for safety and operational improvements.

IV. Overview of Lincoln Assessment

1. Initial Meetings: To begin the assessment process in Nebraska, a kick-off meeting was held at the FHWA, Nebraska Division Office in Lincoln on November 24, 2014. Participants included personnel from the Cities of Lincoln and Omaha; the Lincoln and Omaha Metropolitan Planning Organizations (MPO); the Nebraska Department of Roads (NDOR); FTA, Region 7; NHTSA, Region 7; FMCSA, Nebraska Division; and FHWA. The FHWA coordinated the meeting as the lead U.S. DOT modal agency for the assessment.

During the meeting, FHWA staff gave a presentation describing the Secretary's initiative and pedestrian and bicyclist safety data for Nebraska. The meeting information and attendance list are included at Appendix A. Additionally, a brainstorming session was held to identify local interest and potential participants for the pedestrian and bicyclist assessment to be performed in Nebraska. It was decided at that time to conduct assessments in both Lincoln and Omaha. Furthermore, Kellee VanBruggen of the Lincoln MPO and Michael Helgerson of the Omaha MPO were designated as the lead contacts for the assessments in their respective MPOs.

For the Lincoln assessment, a follow-up planning meeting was conducted at the City offices on January 14, 2015. In addition to the governmental attendees, this meeting included pedestrian and bicyclist advocates. For the purpose of selecting a corridor for the assessment, the City prepared Pedestrian and Bike Crash Hot Spot Analyses based on 2008-2013 crash data. This information is included at Appendix B.

During the meeting, several candidate corridors were suggested and the pros and cons of each were discussed. The suggested corridors included:

- Vine Street – West of Antelope Valley Parkway
- 16th, 17th, R and S Streets area
- 27th Street – North and south
- South Street – Near the Rock Island Trail
- 70th Street
- N Street – East-west corridor

As a follow-up to the meeting, the City would work to select a corridor and a date for the assessment.

2. Selection of Corridor and Conduct of the Assessment: As part of the analysis of the candidate corridors, the City checked the Transportation Improvement Program (TIP) and Capital Improvement Program (CIP) project listings to see if any projects would be completed in any of the locations in the near future. It was determined that no projects directly correlated with any of the suggested locations. Based on input received from the planning meeting participants, a two-mile section of the 27th Street corridor from A Street to Holdrege Street was selected for the assessment. It was also decided to conduct the assessment during the morning of April 10, 2015.

   The 27th Street corridor is a major north-south arterial and is urban in nature. It is also a major bus corridor. Toward the south end, it is a major connection point for bike trails throughout the City. The Lincoln Children's Zoo, the Lincoln Sunken Gardens, and other Parks and Recreation facilities are located in this vicinity. The central and north sections of the corridor by contrast are characterized by commercial development with residential and University of Nebraska student housing areas. Areas north of the corridor include major commercial developments, which draws a lot of traffic to the area.

In preparation for the assessment, the participants were provided with a "Bicycle and Pedestrian Safety Assessment Resource." This compiled resource was intended to provide questions and photos of situations that may or may not be encountered during the assessment. Also to provide ideas on how to better accommodate pedestrians and bicyclists. Surveys forms with maps were also prepared. To facilitate the conduct of the assessment, the two-mile corridor was divided into the following one-half mile sections:

- A Street to Randolph Street
- Randolph Street to O Street
- O Street to Vine Street
- Vine Street to Holdrege Street

During the morning of the assessment approximately 25 participants from multiple disciplines were each assigned to one of the four corridors. They were asked to note their observations and to take many pictures. The assessment resource and corridor map are included at Appendix C.

Figure 1 – Assessment Team.

V. **Observations and Recommendations**

1. Grade-Separated Pedestrian and Bicycle Paths: One excellent feature of the 27th Street corridor is grade-separated facilities for pedestrian and bicyclists. These include the paths under the bridge at the Capital Boulevard intersection and the bridge over the roadway between Vine and Holdrege Streets. These facilities are located on abandoned railroad right-of-way and are shown in the following pictures:

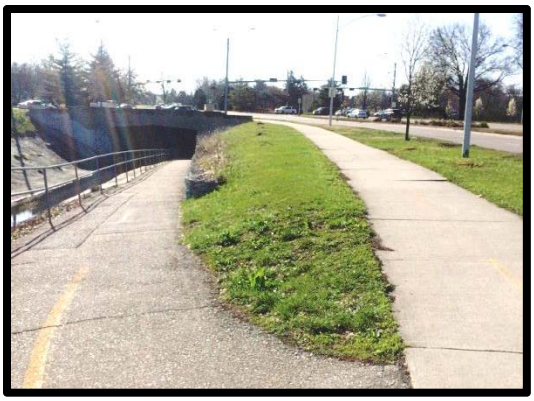


Fig. 2 – Bike underpass.

Fig. 3 – Bike overpass.

Recommendations: None.

2. Sidewalks: Another positive aspect of the corridor is that it is lined by sidewalk on both sides of the street for the entire length of the corridor. There are sections of sidewalk, however, that are in very poor condition and present tripping hazards. Other issues include light poles, a fire hydrant or tree branches obstructing the sidewalk. In some cases, sidewalks are not flat due to driveways. Furthermore, buildings at the intersections with Randolph, Vine and Orchard Streets are too close to the roadway and limit the visibility of pedestrians by motorists making right turns

Fig.4 – Building conflicts

Fig. 5 – Missing sidewalk panels

Recommendation: Prior to the projects that are upcoming on 27th Street, the city of Lincoln should perform a detailed survey of sidewalk conditions along the corridor and upgrade sections as needed.

3. Crosswalks and Curb Ramps: There are numerous crosswalks throughout the corridor. At several locations, crosswalk markings are either missing or need to be restriped. In a few instances, crosswalks are also partially obstructed by raised medians. Concerning curb ramps and detectable warning strips, the City has made a major effort to comply with the Americans with Disabilities Act. This is evident

throughout the entire corridor. Nevertheless, there are a few instances where curb ramps are either not installed, too steep, or not in line with the crosswalk.
The most prevalent problem at unsignalized intersection and mid-block crosswalks is that drivers generally do not yield to pedestrians and many bicyclists do not dismount from their bicycles in the crosswalk. There is also evidence of jay walking at mid-block locations and within crosswalks.

Fig. 6 – Signed crosswalk – no curb cut.

Fig 7 – Unmarked/Signed Crosswalk

<u>Recommendations</u>: Perform a detailed survey of crosswalks and curb ramps along the corridor and upgrade as needed. Consider public education and information (PI&E) and enforcement measures to address the crosswalk compliance and jay walking issues. Also consider installing Rectangular Rapid Flashing Beacons (RRFB) to increase driver awareness of potential pedestrian conflicts at unsignalized intersections and mid-block crosswalks.

4. <u>Bus Stops</u>: Much of this section of 27th Street also serves as a major bus corridor. The buses also have had bike racks since 2010. While bus stops are situated on both sides of the street, there are some significant distances to the nearest crosswalk. Jay walking occurs at these locations. Presently, the City is conducting a study of the transit system.

Fig. 8 – Transit Center

Fig. 9 - Individuals Jaywalking

Recommendation: Review bus stop locations as part of the transit system study.

5. Pedestrian Signals: Within this two-mile corridor, there are nine fully signalized intersections and one mid-block pedestrian signal. All of the signals utilize count-down pedestrian signal heads, many of which were provided by a Federal-aid Highway Safety Improvement Program (HSIP) project. This corridor is also part of an HSIP project to install an Adaptive Signal Control Technology (ASCT) project in the near future. ASCT systems adjust, in real time, signal timings based on the current traffic conditions, demand, and system capacity.

   At some of the signals, it appeared that the signal timing did not allow sufficient time for pedestrians to safely cross the road. Refuge islands in some case also appeared to be too narrow for pedestrians waiting to complete their crossing.

Fig. 10 – Example of signalized crosswalk

Recommendations: Review pedestrian interval timings on signals and the adequacy of the pedestrian refuge islands.

Appendix A

NE ASSESSMENT KICKOFF

NOVEMBER 24, 2014

Pedestrian and Bicycle Safety

Introducing the Assessment

Agenda

Nebraska Pedestrian and Bicycle Safety Assessment Kickoff Meeting		1PM –3PM
Presentations		
Assessment Goals, Criteria, and Planning	Justin Luther	1PM
Nebraska Pedestrian and Bicycle Safety	John Perry	1:10PM
Pedestrian and Bicycle Safety Data	Robert Eichkorn	1:20PM
Facilitated Brainstorming Sessions		
Lincoln Area Project Scope and Location Discussion		1:30PM
Omaha Area Project Scope and Location Discussion		2:10PM
Meeting Wrap-Up and Discussion of Next Steps for Assessment		2:50PM

Overview of Assessment Initiative

- Nationwide Initiative from Secretary of Transportation
- One assessment "in the field" on one day
- We are looking for one event to be held in Omaha and one in Lincoln
- To be completed by June 1, 2015
- NE FHWA is the lead agency for the assessment
- Other DOT agencies, MPOs, city governments, law enforcement, and local and community organizations to be involved as stakeholders

Assessment Goals

- Foster relationships
- Engage range of practitioners and stakeholders and demonstrate leadership around the topic of pedestrian and bicycle safety
- Initiate what will be an ongoing conversation
- Identify improvement opportunities

Criteria

Assessment Needs

- Photos required from each event
  - Consider using video clips as well
- Background Research and Data
  - May include Crash History, Traffic, Ped and Bike Counts, Population and Demographics
- Use a specific walk or bike assessment tool
  - FHWA Bicycle Road Safety Audit Guidelines and Prompt Lists (2012)
  - Pedestrian and Bicycle Information Center Road Safety Audit Resource Page

Attendees

- **State transportation professionals** – Include staff from State agencies involved in planning and safety for approving improvements along the corridors in question.
- **Regional or local transportation agencies** – Include staff from agencies responsible for this roadway or the surrounding network, including public works and maintenance staff.
- **Transit professionals** – If the corridor has a transit route or routes, it is essential that planners and operational professionals from the transit agency/agencies attend.
- **Planning agencies and decision-makers** – Include planners and engineers working on future plans for the assessment area or the region as a whole.
- **Law enforcement** – Include State and local police charged with enforcing traffic laws.

Attendees

- Consider inviting a limited number of representatives from the following groups:
  - Elected Officials
  - Public Health Professionals
  - Advocacy/special interest groups
  - Geographically based organizations
  - Representatives of persons with disabilities

Locations

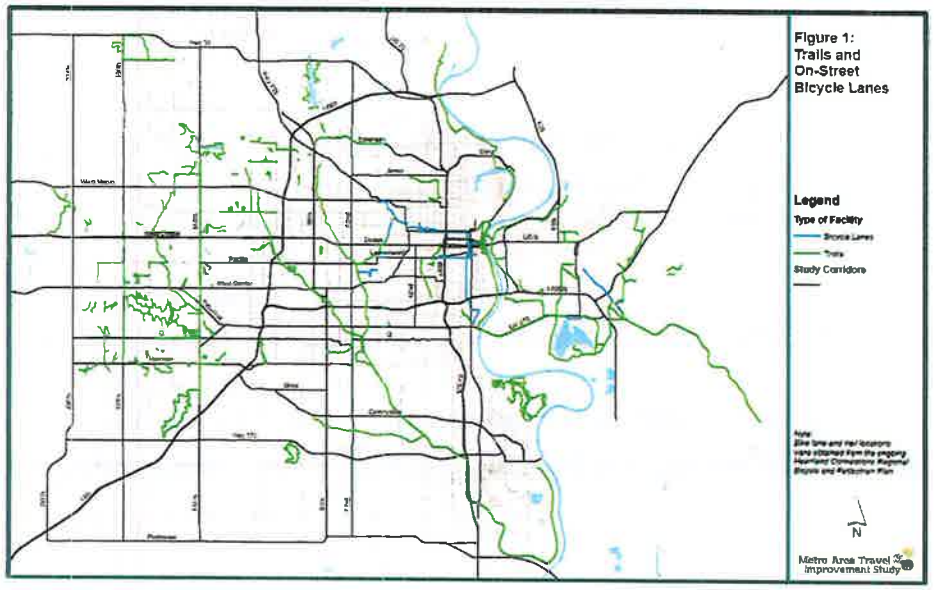
Choosing a Location

- The location can focus on identified problem types or themes such as:
  - Last mile connections (between transit and final destinations)
  - Multimodal conflict points
  - Urban arterials
  - Places with high populations of – or destinations for – older adults, people with disabilities, or low-income residents
  - Areas with potential freight-related conflicts
  - At-grade rail crossings
  - High crash intersections
  - School zones
  - Work zones

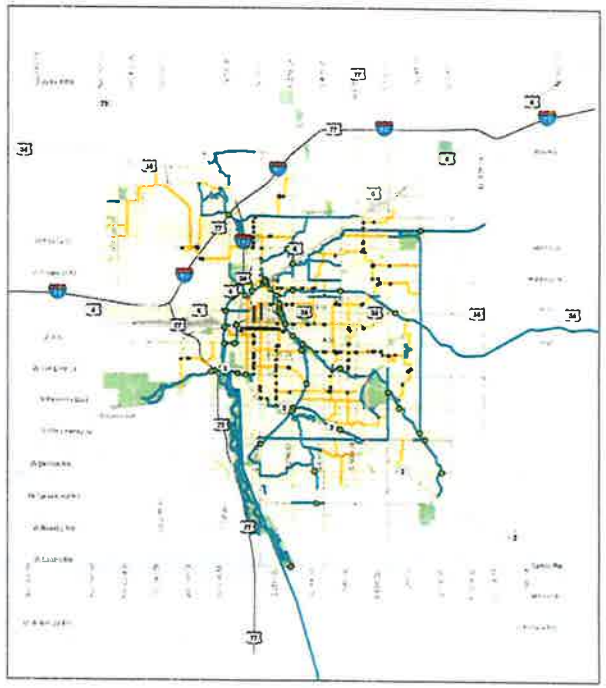
Choosing a Location

- Develop a route that lets the group observe all relevant transportation modes in the area and observe different types of infrastructure or lack thereof (crosswalks, ramps, sidewalks, signals, multi-use trails, bike lanes, etc.).
- Listed on the STIP or otherwise scheduled for maintenance or resurfacing
- Ideally participants should experience the majority of the route by foot or bicycle.
- Identify locations where the group should stop and have a discussion.

Omaha Trails and Bike Lanes



Lincoln Trails and Bike Lanes



Legend
- ExistingTrails
- Existing Bike Lanes
- On-Street Bicycle Routes
- BikeRouteSigns
- ExistingTrailsGradeSeparations
- Parks

National Pedestrian and Bicyclist Safety Data

- Nationally, pedestrian and bicyclist fatalities and injuries have increased
  - In 2012, 4,743 pedestrians and 726 cyclists were killed in collisions with motor vehicles – a 15% increase from 2009
  - From 2009 to 2012, the number of pedestrian injuries rose from 59,000 to 76,000 – a 29% increase
  - Pedestrians represent 14% of people killed in motor vehicle crashes

Source: A Guide for Walking and Bicycling Road Safety Assessments

Nebraska Pedestrian Fatalities 2009-2013

Year	Total Fatalities	Total Pedestrian Fatalities	Percent Pedestrian Fatalities
2009	223	9	
2010	190	7	
2011	181	7	
2012	212	14	
2013	211	14	
Average	203	10	5%

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Non-Fatal Injury Definitions

- Type A – Disabling injuries
- Type B – Visible, but not disabling injuries
- Type C – Possible injuries

Nebraska Pedestrian Injuries, 2009-2013

Year	Total Pedestrian Injuries	Type A	Type B	Type C
2009	350	88	135	127
2010	325	70	115	140
2011	381	104	133	144
2012	381	84	161	136
2013	382	88	139	155
Average	364	87	137	140

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Nebraska Pedalcyclist Fatalities, 2009-2013

Year	Total Fatalities	Total Pedalcyclist Fatalities	Percent Pedalcyclist Fatalities
2009	223	3	
2010	190	2	
2011	181	2	
2012	212	0	
2013	211	0	
Average	203	1.4	0.7%

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Nebraska Pedalcyclist Injuries, 2009-2013

Year	Total Pedalcyclist Injuries	Type A	Type B	Type C
2009	247	27	137	83
2010	259	27	146	86
2011	279	39	154	86
2012	328	40	186	102
2013	283	37	154	92
Average	279	34	155	90

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Nebraska, Omaha and Lincoln Pedestrian Fatalities, 2009-2013

Jurisdiction	Total Fatalities 2009-2013 Yearly Average	Ped Fatalities 2009-2013 Yearly Average	Percent Pedestrian Fatalities
Nebraska	203.4	10.2	5.0%
Omaha	22.6	4.2	18.6%
Lincoln	6.4	1.4	21.9%

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Nebraska, Omaha and Lincoln Pedestrian Injuries, 2009-2013

Jurisdiction	Ped Injuries 2009-2013 Yearly Average	Type A	Type B	Type C
Nebraska	364	87	137	140
Omaha	148	37	50	61
Lincoln	89	18	34	36

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Nebraska, Omaha and Lincoln Pedalcyclist Fatalities, 2009-2013

Jurisdiction	Total Fatalities 2009-2013 Yearly Average	Cyclist Fatalities 2009-2013 Yearly Average	Percent Pedalcyclist Fatalities
Nebraska	203.4	1.4	0.7%
Omaha	22.6	0.4	1.8%
Lincoln	6.4	0.2	3.1%

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Nebraska, Omaha and Lincoln Pedalcyclist Injuries, 2009-2013

Jurisdiction	Cyclist Injuries 2009-2013 Yearly Average	Type A	Type B	Type C
Nebraska	279	34	155	90
Omaha	57	7	30	20
Lincoln	126	14	74	38

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Nebraska Pedestrian Fatalities by Age Group, 2009-2013

Age Group	Ped Fatalities 2009-2013 Cumulative Total	Age Group	Ped Fatalities 2009-2013 Cumulative Total
0-4 years	4	35-44 years	6
5-9 years	1	45-54 years	11
10-14 years	2	55-64 years	8
15-19 years	1	65-74 years	5
20-24 years	1	75 & older	5
25-34 years	5	Age not stated	1
		Total	50

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Nebraska Pedestrian Injuries by Age Group, 2009-2013

Age Group	Ped Injuries 2009-2013 Cumulative Total	Age Group	Ped Injuries 2009-2013 Cumulative Total
0-4 years	64	35-44 years	177
5-9 years	146	45-54 years	201
10-14 years	187	55-64 years	143
15-19 years	188	65-74 years	63
20-24 years	165	75 & older	53
25-34 years	245	Age not stated	30
		Total	1,662

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Nebraska Pedalcyclist Injuries by Age Group, 2009-2013

Age Group	Cyclist Injuries 2009-2013 Cumulative Total	Age Group	Cyclist Injuries 2009-2013 Cumulative Total
0-4 years	18	35-44 years	128
5-9 years	126	45-54 years	121
10-14 years	265	55-64 years	77
15-19 years	184	65-74 years	25
20-24 years	165	75 & older	5
25-34 years	187	Age not stated	27
		Total	1,327

Source: Standard Summary of Nebraska Motor Vehicle Traffic Accidents

Nebraska Alcohol-Involvement Crashes, 2009-2013

- Pedestrian Casualties
  - 37% of pedestrians killed in crashes had been drinking
  - 6% of pedestrians injured in crashes had been drinking
- Pedalcyclist Casualties – Alcohol is generally not a factor in pedalcyclist crashes

Safety Program Resources

- Highway Safety Improvement Program (HSIP)
  - Provides funding to significantly reduce fatalities and serious injuries on all public roads
  - NDOR Safety Committee – Meets monthly and has Omaha and Lincoln representation
  - Crash data-driven projects
- HSIP Projects
  - Spot improvements
  - Systemic improvements (e.g., count-down pedestrian signals)

Pedestrian and Bicycle Assessment Meeting Minutes 24 NOV 2014

Meeting Agenda:

Nebraska Pedestrian and Bicycle Safety Assessment Kickoff Meeting		1PM –3PM
Presentations		
Assessment Goals, Criteria, and Planning	Justin Luther	1PM
Nebraska Pedestrian and Bicycle Safety	John Perry	1:10PM
Facilitated Brainstorming Sessions		
Lincoln Area Project Scope and Location Discussion		1:30PM
Omaha Area Project Scope and Location Discussion		2:10PM
Meeting Wrap-Up and Discussion of Next Steps for Assessment		2:50PM

Attendees:

Name and Organization
Brad Zumwalt, NDOR
David Schoenmaker, NDOR
Mark Bechtel, FTA
Robert Eichkorn, NHTSA
Diane Podany, FMCSA
Mike Brienzo, Lincoln MPO
Kellee VanBruggen, Lincoln MPO
Derek Miller, City of Omaha
Lonnie Burklund, City of Lincoln
Shane Dostal, City of Lincoln
Michael Helgerson, MAPA
Michael Felschow
Fred Zwonechek, NDOR
Dan Waddle, NDOR
Justin Luther, FHWA
Erich Hines, FHWA
Melissa Maiefski, FHWA
John Perry, FHWA

The purpose of the kick-off meeting was to begin the planning process for Nebraska's participation in the National Pedestrian and Bicyclist Road Safety Assessment. This included initial discussions of who should be involved as well as candidate locations or corridors. The initiative is designed as "one assessment in the field on one day" to be completed by June 1, 2015.

Justin and John gave the attached presentation describing the Secretary's Initiative and Nebraska Bicycle/Pedestrian safety statistics for Nebraska. Local contacts were identified, a brain storming session was held to identify local interest and potential participants for the Bicycle/Pedestrian Safety Assessments to be performed in Nebraska. We chose to perform two assessments taking place in Lincoln and Omaha.

Results of the Meeting

Lead local contacts for the assessments in Lincoln and Omaha:

Michael Helgerson – MAPA
Kellee VanBruggen – Lincoln MPO

Date for next meeting:

The next meetings will be scheduled for mid-to-late January 2015, one for Omaha and one for Lincoln. Following are the results of the brainstorming session for each City:

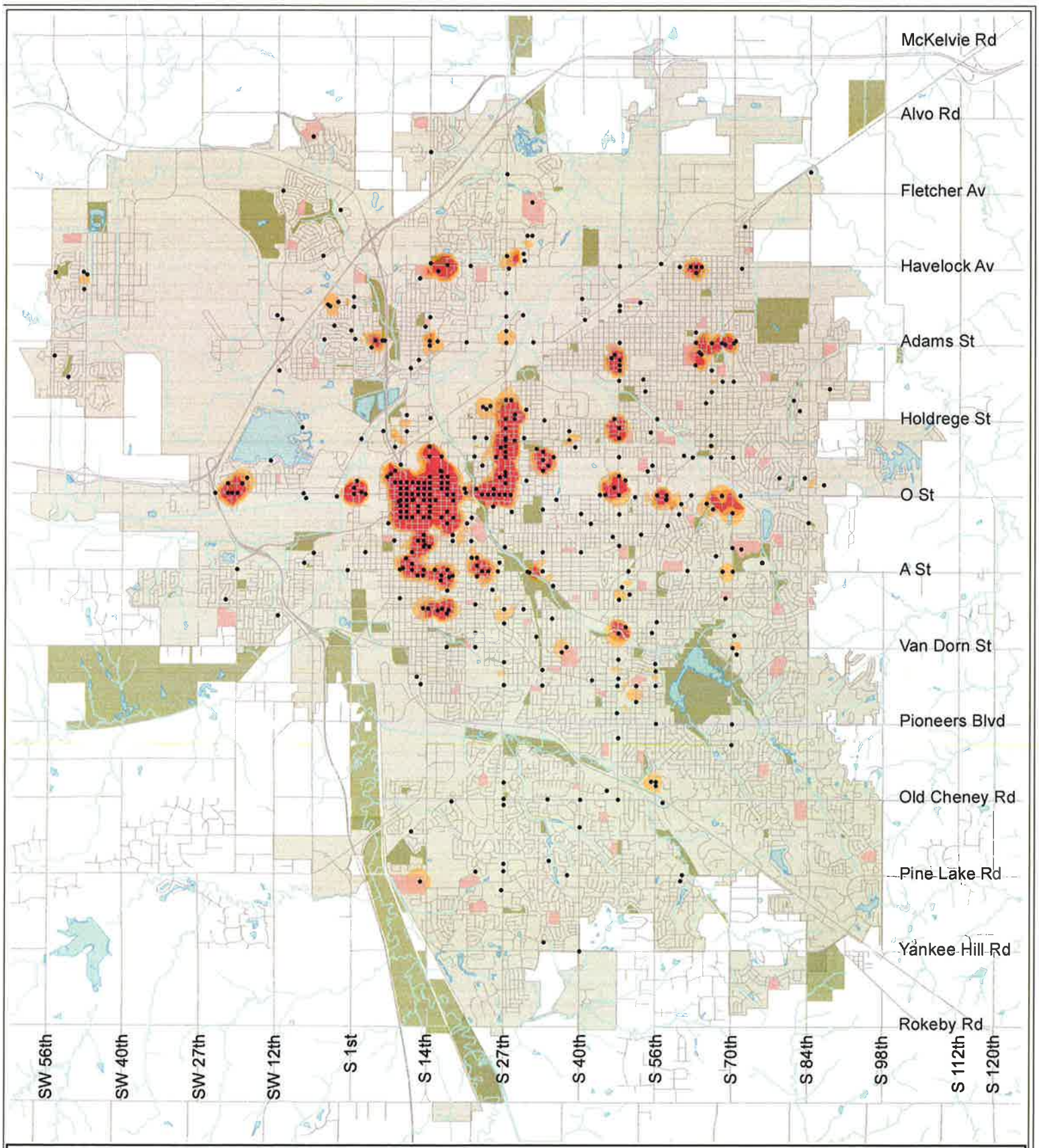
Omaha

Potential Local Partners:
Complete Streets Committee
Mode Shift
Mayor's Committee
Local Developers
Potential Modal Focus:
Bike Share
Bus Rapid Transit
Potential Locations:
Dodge St. (2-3 miles, bikeway, 90th and Dodge, two separate locations on same corridor)

Lincoln

Potential Local Partners:
Mayor's Advisory Committee
Complete Streets
Law Enforcement
Interest Groups
UNL
Potential Modal Focus:
Gap Analysis
Trail Connections
Signage – Bike Parking

Appendix B



2008-2013 Pedestrian Accident Frequency

Pedestrian Crash Hot Spot Analysis

- Hot Spot - 90% Confidence
- Hot Spot - 95% Confidence
- Hot Spot - 99% Conficence

- Pedestrian Crash Locations (657 Total Locations)
- Schools
- Parks

LINCOLN - LANCASTER COUNTY
PLANNING DEPARTMENT
Information Technology Services
555 South 10th Street
Lincoln, Nebraska 68508
Ph: 402.441.7491 Fax: 402.441.6377

N W E S

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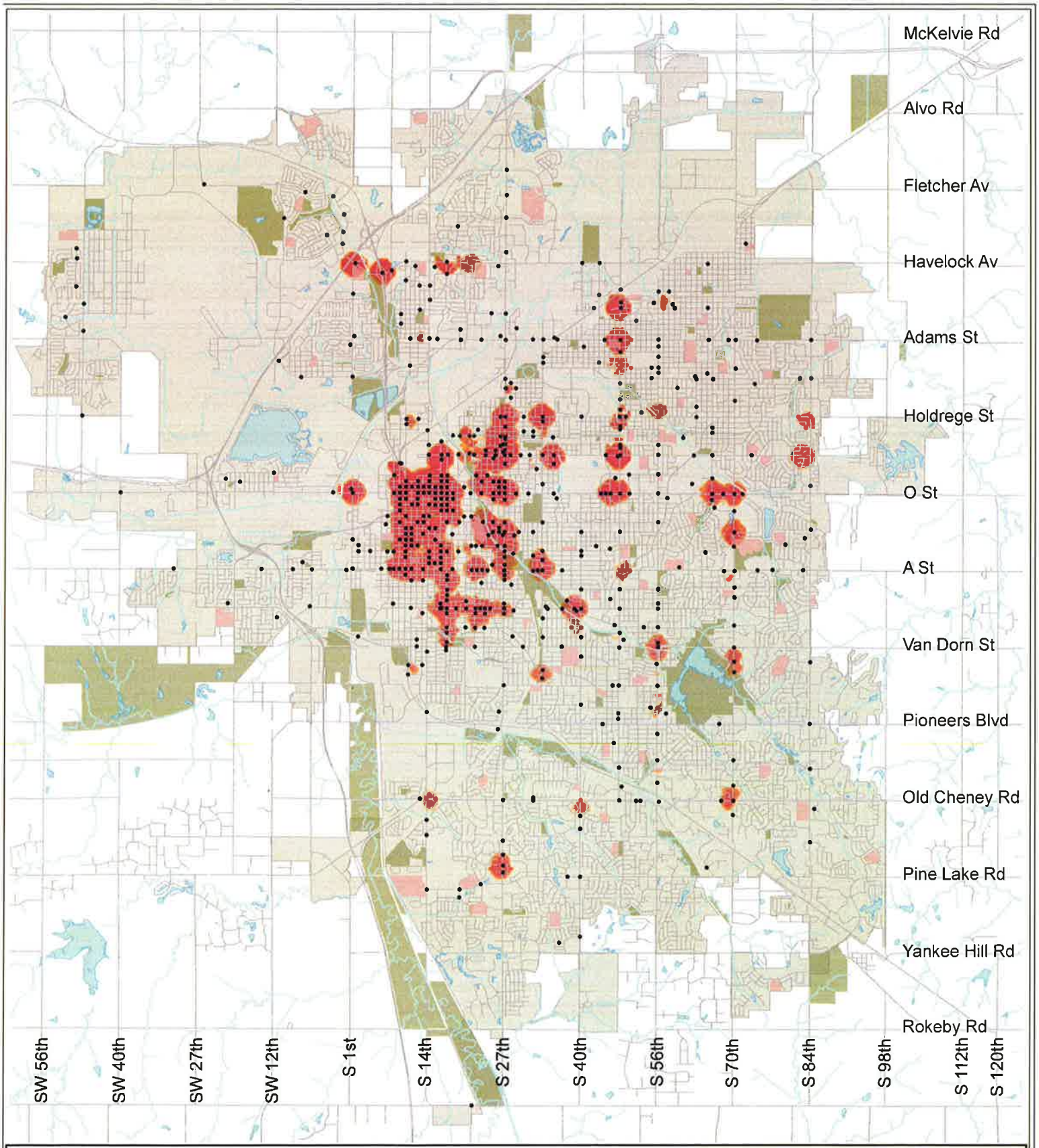
Date: 12/12/2014



2008-2013 Bike Accident Spatial Hot Spot Analysis

Bike Crash Hot Spot Analysis

- Hot Spot - 90% Confidence
- Hot Spot - 95% Confidence
- Hot Spot - 99% Conficence

- Bike Crash Locations (1655 Total Locations)
- Schools
- Parks

LINCOLN - LANCASTER COUNTY
PLANNING DEPARTMENT
Information Technology Services
555 South 10th Street
Lincoln, Nebraska 68508
Ph: 402.441.7491 Fax: 402.441.6377

N W E S

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Date: 12/12/2014

Appendix C

Use the map below to highlight particular areas where you are concerned about pedestrian and bicycle safety and where you believe improvements are needed:

Notes:

Use the map below to highlight particular areas where you are concerned about pedestrian and bicycle safety and where you believe improvements are needed:

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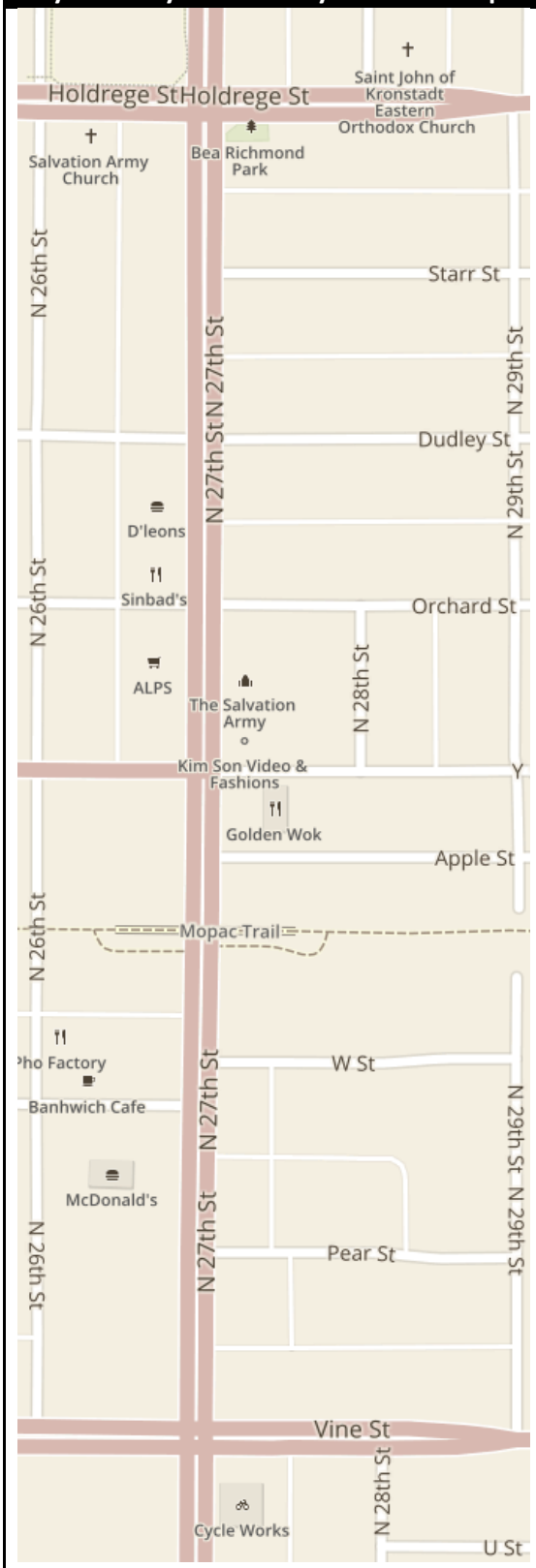


Notes:

Bicycle and Pedestrian Safety Assessment Resource		
This compiled resource is intended to provide questions and photos of situations that may or may not be encountered during the assessment. Also to provide ideas on how to better accommodate pedestrians and bicyclists.		
Pedestrian Facilities		
Connectivity		
Pedestrian zones are clearly separated from other modes of traffic		An example where pedestrian spaces are clearly separate from vehicular uses by way of green barriers, color changes, etc.
Pedestrian facilities continue through all crossings and provide a clear path		An absence of continuity is apparent in this photograph, where a marked pedestrian crosswalk over a circulating road in a commercial development ends in a landscaped area. No connecting walkway is provided, so pedestrians must walk in the street.
Sidewalks/ shared use paths connect the street and adjacent land uses		Pedestrians in the parking lot of this mall are walking in the roadway because there is no obvious pedestrian connection between the sidewalks on the street and the entrance to the shopping center.

Visibility		
Obstacles could limit pedestrian visibility and pose a hazard		As an example, buildings sometimes extend to the edge of or beyond the property line, obstructing sight lines around corner.
Sidewalks		
Sidewalks are wide, continuous and have a smooth surface		A pedestrian with a walker requires most of the sidewalk width provided. A pedestrian approaching from the opposite direction would have trouble passing on the sidewalk. Pedestrians were observed walking on the street and crossing mid-block upstream of this pedestrian to provide her with sufficient walking room
		Although a narrower sidewalk might be adequate for many pedestrian uses, school children may require additional space since they often walk in groups. Insufficient sidewalk width can be a particular concern for younger children, who are easily distracted.
Curb ramps/ detectable warning strips are present	Having a clearly defined walkway helps define pedestrian, bicycle and vehicle travel zones, and can reduce conflicts between vehicles and pedestrians with visual impairments. You should assess whether cues are present that indicate the boundary between the sidewalk and travel lane, such as detectable warnings that include color changes, tactile changes at crossings and buffers.	

Interrupting driveways pose a hazard		Motorists exiting driveways are often focused on finding gaps in traffic rather than pedestrians walking along the street.
Intersections		
There are marked and signed crosswalks		An example of a marked and signed crosswalk.
Signals are pedestrian activated and have a countdown timer		A pedestrian activated signal with a countdown timer.
Signals provide enough time to cross	Consider all types of users as you use the crosswalks on the assessment including young children, elderly persons, and those with disabilities who may take longer to cross the intersection.	
There are gaps in traffic wide enough to cross in non-signalized intersections	Consider what traffic would be like during periods as well, do all pedestrians have enough time to cross the street safely without vehicles being stopped by signals.	

Vehicles making turns pose a hazard to pedestrians		Left-turning and right-turning traffic often conflicts with pedestrians crossing at signalized intersections. These conflicts can be the most significant hazard to a pedestrian crossing the intersection.
		Motorists leaving the access near this signalized midblock crossing may not expect pedestrians to be in front of them after executing the right turn.
		The fact that the pedestrian is trying to cross a free-flow right turn lane increases the risk of collision.

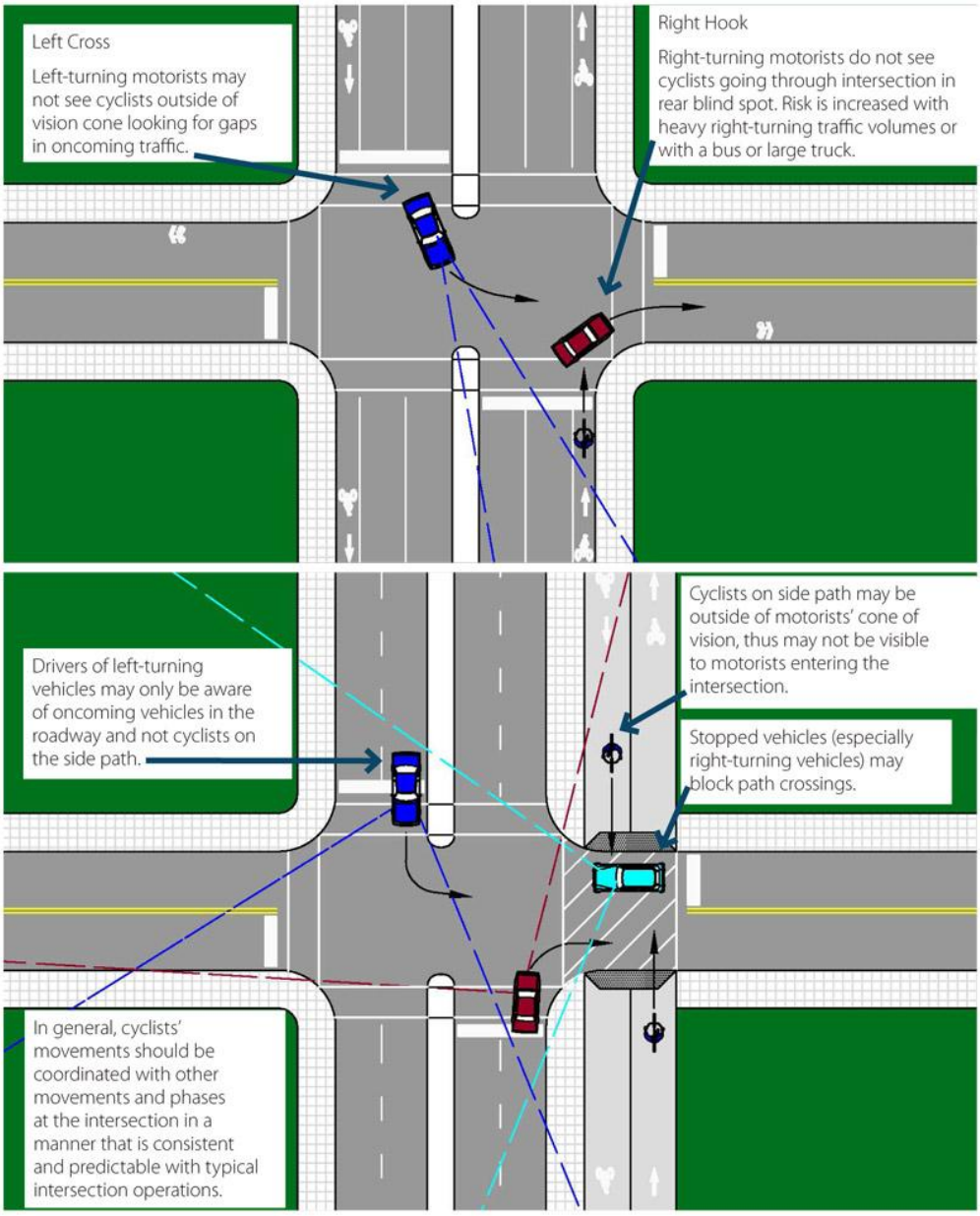
Transit Facilities		
Transit stops are located near pedestrian areas with a high amount of foot traffic	Are bus stops sited properly? Bus stops should be located next to pedestrian traffic generators or along pedestrian desire lines. When they are not, pedestrians may take unsafe paths to reach transit stops or neglect to pay adequate attention to traffic	
Directions to transit stops are clearly marked with signs / wayfinding		An example of a pedestrian wayfinding sign.
It is obvious how pedestrians should travel in order to reach the stop		This pedestrian is walking in a busy street after exiting the bus. The fact that there is no formal walk or paved path along the street and that the right lane is wide enough for a vehicle to pass, probably were key factors in her decision to walk in the street. The assessment team may suggest placing a sidewalk along the street.
There are protected crossings to reach bus stop	 .	The picture shows a bus blocking the crosswalk. This not only prevents pedestrians from using the crosswalk, but also presents a hazard to people getting on the bus. Transit riders would not be able to tell where to cross the street

There are amenities for pedestrians at stops such as benches, green areas, etc.		An example of a bus stop that could be considered inviting to pedestrians and transit users.

Bicycle Facilities		
Bike lanes / Trails / Shared Use Paths		
Bicycle facilities are separated from street traffic		An example of a bicycle lane with a striped buffer area separating it from moving traffic.
Rate Trail System connectivity using the 1-5 scale		This trail ends on an exit ramp with no connection to a trail or sidewalk.
There is enough space to accommodate bicyclist's speed and comfort		A shared use path that narrows at the transition to a bridge, causing a choke point.
Bicyclists are frequently seen on sidewalks		The bicyclist in this photo is causing a safety hazard for pedestrians in the area and is vulnerable to getting impacted by an opening door.

Interrupting driveways pose hazards	See pedestrian example above. Are there driveways that turn out through a bicycle facility where the exiting motorists may not be looking out for bicycles?	
The pavement surface poses hazards to bicyclists (ruts, cracks, grooves, etc.)		As an example deep longitudinal joints may 'grab' a tire and potentially cause loss of control
Bicycle facilities continue through all crossings and provide a clear path for users		An example of a trail that ends abruptly.
Visibility		
Obstacles could limit bicyclists' visibility and pose a hazard	See pedestrian example above.	

Intersections		
Bicyclists can easily navigate the intersection		Example of markings directing bicycle traffic at an intersection.
There are potential conflicts with pedestrians at intersections		In this example cyclists on the path cannot see the pedestrians crossing at the same time.

Vehicles making turns pose a hazard to bicyclists	The diagram below illustrates potential hazards that could be of concern at intersections: 

Transit Facilities		
It is obvious how bicyclists should travel in order to reach the stop	Do bicycle facilities (lanes, shared use paths, etc) lead up to a bus stop or is there separation. Can a rider easily get off of their bicycle and walk it over to a transit stop?	
There are directions to transit stops clearly marked with signs / wayfinding		An example of a wayfinding sign designed for bicycles.
There is adequate bicycle parking at the stops, it is clear where bikes should be locked up		An example of bicycle parking at a bus stop.

Further Information and References for this Document

FHWA Pedestrian Road Safety Audit Guidelines and Prompt Lists (2007):
http://www.pedbikeinfo.org/pdf/PlanDesign_Tools_Audits_PedRSA.pdf

FHWA Bicycle Road Safety Audit Guidelines and Prompt Lists (2012):
http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa12018/

Pedestrian and Bicycle Information Center Road Safety Audit Resource Page:
http://www.pedbikeinfo.org/planning/tools_audits.cfm