



Memorandum

To: Julia Monteith

Date: July 24, 2014

Project: 33837.03

From: Paul Moyer, Dan Lovas, Diane Linderman

Re: UVA UEI Study Summary

VHB was retained by the University of Virginia to work with the multidisciplinary team including the Office of the Architect and Michael Vergason Landscape Architects (MVLA) to support the preparation of the University/Emmet/Ivy (UEI) District Planning. VHB's role was focused on developing a circulation analysis and plan for the area.

The following memorandum summarizes the circulation analysis and recommendations that were developed to support the overall study. The Section 1.0 of this document describes with text and graphics the existing conditions related to vehicular, transit, bicycle and pedestrian circulation. Section 2.0 provides a summary of recommendations for the overall study area as well as specifics related to each major portion of the study area.

1.0 Existing Conditions

The existing conditions analysis included the review of a number of previous studies and other background data from UVA, the City of Charlottesville, and the Virginia Department of Transportation (VDOT). Below is a list of the documents that were reviewed:

- UVA Emmet/Ivy/University Intersection Study (October 2013)
- UVA McCormick Road and Pavilion Alleys Improvement Project, Conceptual Design Phase (March 2007)
- UVA Bicycle Count Data (April, September, October 2013)
- VDOT Traffic Count Data (2012)
- UVA SMART Transportation Maps, Bicycle & Transit
- Charlottesville Area Transit (CAT) and University Transit System (UTS) Maps
- UVA Nameless Field Noise Study (October 2013)
- UVA Culbreth Road Study (September 2009)
- UVA Ivy Road Improvement Study: PACC Report (May 2008)
- Kimley-Horn North Grounds Traffic Volume Review (January 2007)
- UVA Carr's Hill/Arts Grounds Parking Garage Traffic Evaluation (April 2006)
- UVA Arts Grounds to North Grounds Planning Workshop Traffic Studies (2004)
- City of Charlottesville Bicycle and Pedestrian Facilities Recommendations Maps (2003)
- UVA Ivy Road Design Study Final Recommendations (September 1994)

Transit

The study area is well served by the University Transit System (UTS) and Charlottesville Area Transit (CAT). There are four UTS routes and one CAT route that serve portions of the study area. Figure 1 provides a summary of all the routes that serve the area. As shown on the map, the UTS routes travel along the major streets throughout the study area, including Emmet Street, Ivy Road, University Avenue, Massie Road, Copeley Road, and Alderman Road. Bus stops are well distributed along each of these routes providing excellent connectivity to other portions of the UVA grounds.

The CAT route in the study area travels only along Emmet Street, and some CAT stops are separated from UTS stops but located in close proximity. The most notable example of separate UTS and CAT stops is just north of the railroad trestle along Emmet Street, where there is a separate stop for each system.

Vehicular Traffic Circulation

Traffic volumes during peak hours were gathered from various available sources (Figure 2), these volumes show that several approaches to intersections along the major corridors are congested and operate at poor levels of service (LOS) during peak periods (LOS E and F). The weekday AM peak hour is the hour-long time period between approximately 6:00-9:00 AM when the overall traffic volume is greatest at each intersection, typically coinciding with the period of greatest commuter activity entering the Grounds. The weekday PM peak hour is the hour-long time period between approximately 4:00-7:00 PM when the overall traffic volume is greatest at each intersection, typically coinciding with the period of greatest commuter activity departing the university Grounds. The peak hour is specific to each intersection and may vary somewhat from one location to another.

These locations include:

- Emmet Street (northbound) at the intersection with Ivy/University during the PM peak hour
- Ivy Road (eastbound) at the intersection with Emmet Street during the AM peak hour
- Copeley Road (southbound) at the intersection with Ivy Road during PM peak hour

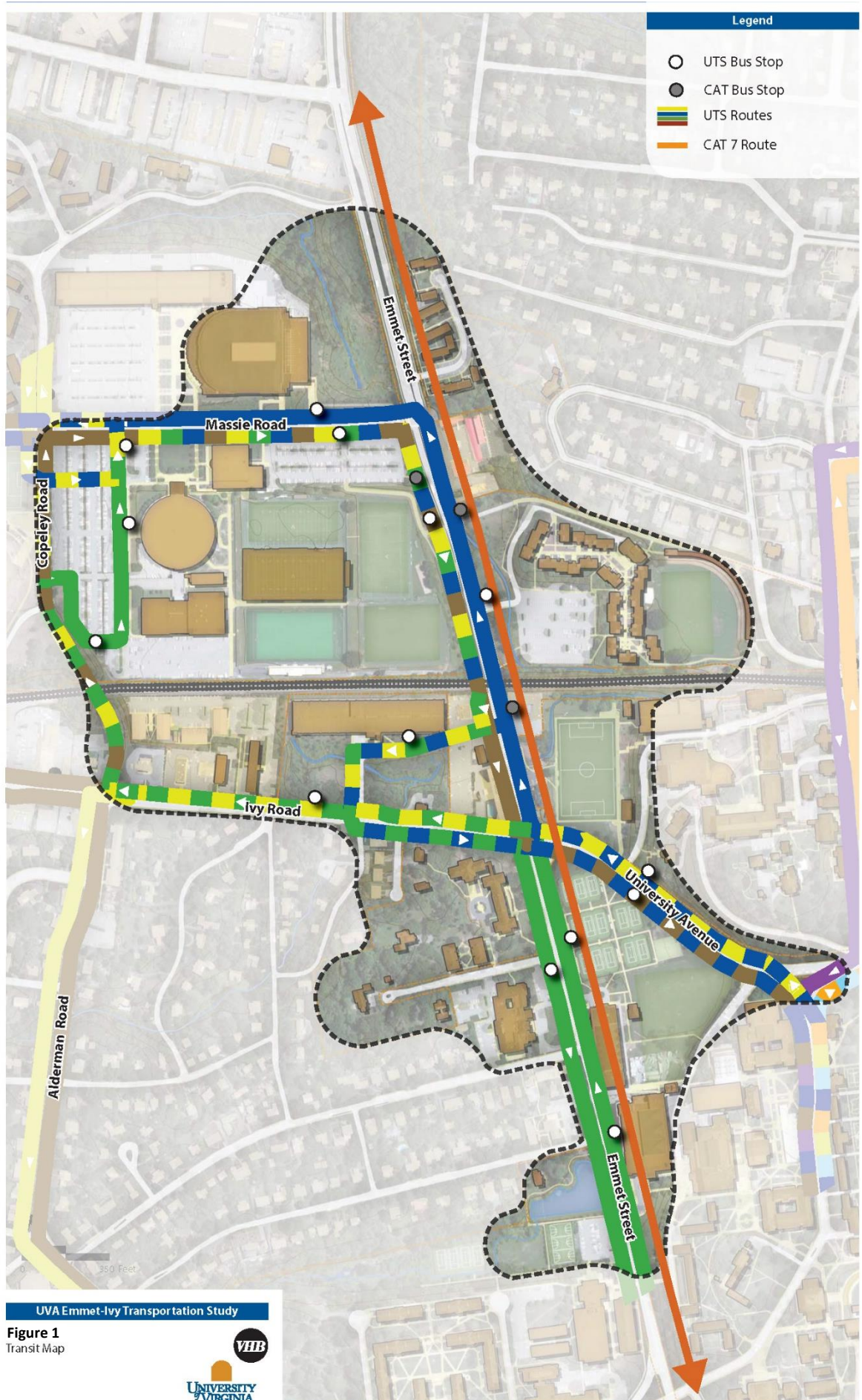
In addition to these intersections that are operating at a poor level of there are several that operate at a fair level of service during the peak hours (LOS D). These include:

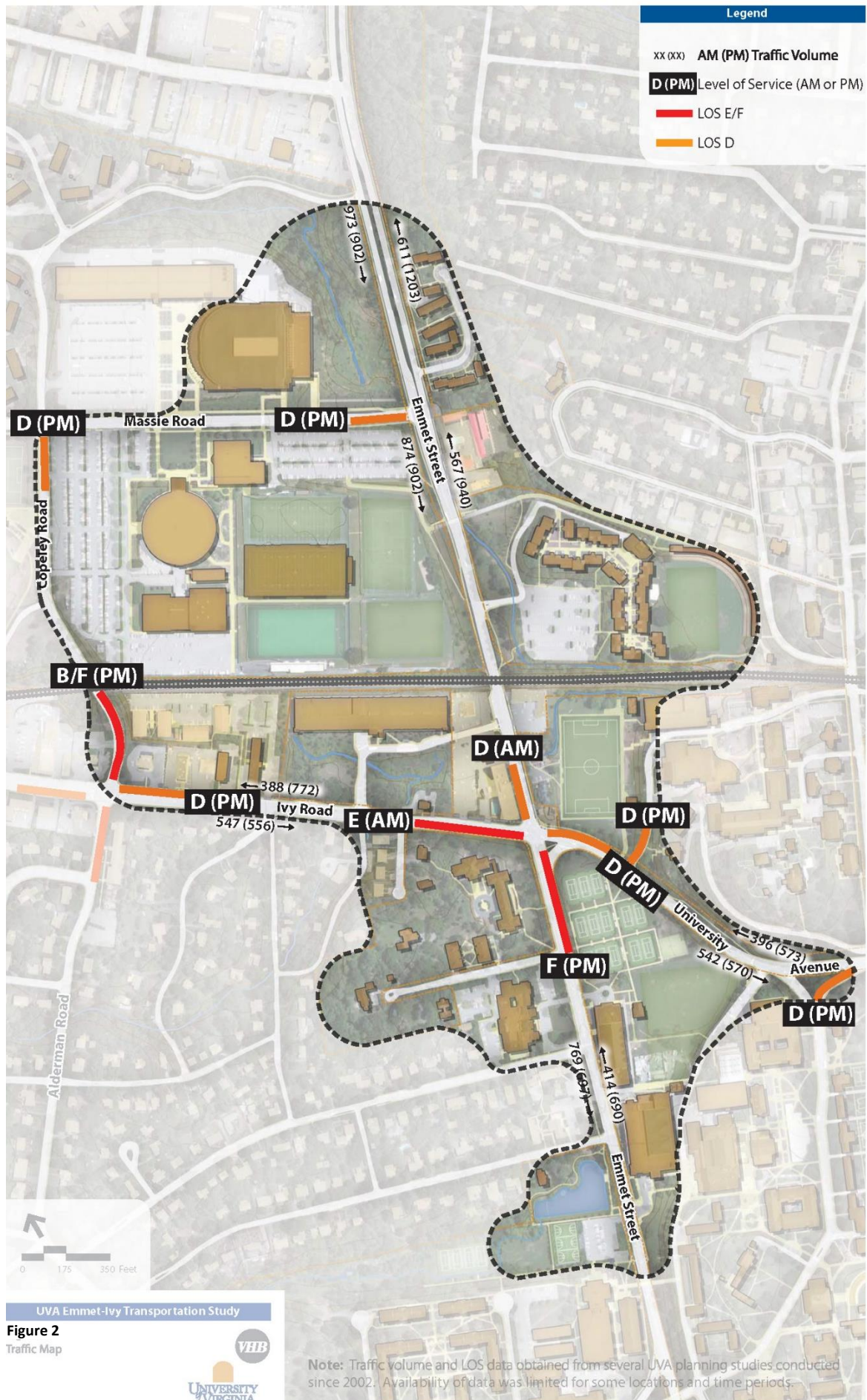
- Massie Road (eastbound) at Emmet Street during the PM peak hour
- Copeley Road (northbound) at Massie Road during the PM peak hour
- Ivy Road (westbound) at Copeley Road during the PM peak hour
- Emmet Street (southbound) at Ivy Road/University Avenue during the AM peak hour
- University Avenue (westbound) at Emmet Street during the PM peak hour
- McCormick Road (northbound) at University Avenue during the PM peak hour

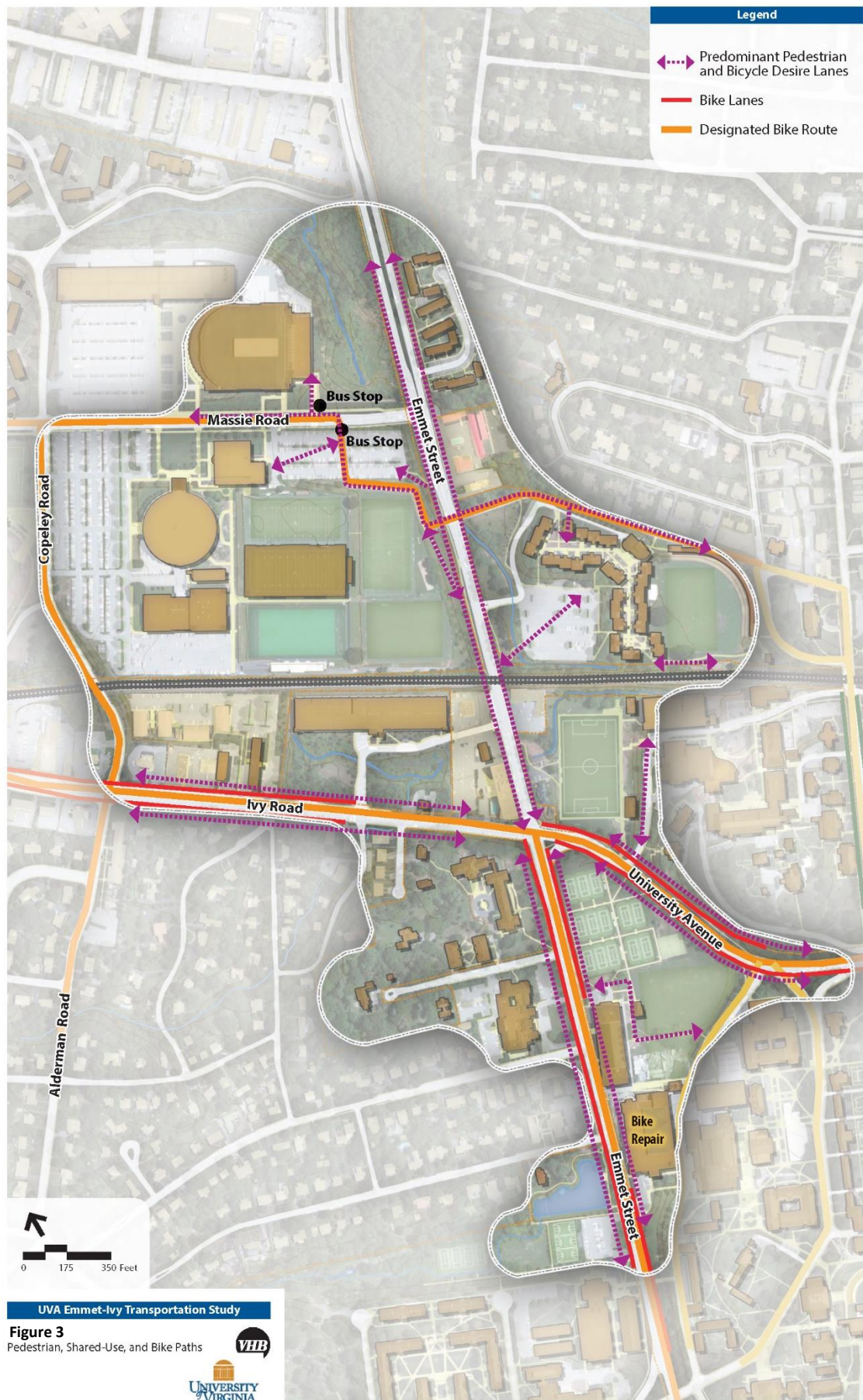
Pedestrian and Shared Use Paths

The area has an extensive system of paths along the roadways within the study area. While these paths and sidewalks offer connections to many of the buildings and other activity areas, in many cases they are narrow and provide an unfriendly environment for pedestrians or bicycles. Figure 3 provides a summary of the major desire lines throughout the study area along with the designated bike routes.

The Emmet Street corridor, north of the University Avenue/Ivy Road intersection, is the highest traffic volume corridor in the study area, but lacks a dedicated bicycle facility for cyclists entering the Grounds from the north. Topography and building locations currently constrain the roadway cross-sections along Ivy Road and Emmet Street (south of Ivy/University) and limit the University's ability to consistently provide adequate shared-use paths or on-street bicycle lanes on these corridors. These conditions result in a patchwork of bicycle facilities of varying quality and comfort throughout the study area. Sidewalks on Ivy Road and Emmet Street, south of the University Avenue/Ivy Road intersection, are characterized by limited width, utility poles located in the sidewalks, adjacency to the street without buffers, and awkward configurations of the sidewalks and crossing areas. Some of the most challenged pedestrian facilities include the traffic island in the southeast corner of the University/Emmet/Ivy Intersection, and the narrow, raised sidewalk next to the Memorial Gym.







UVA Emmet-Ivy Transportation Study
Figure 3
Pedestrian, Shared-Use, and Bike Paths
VHB
UNIVERSITY OF VIRGINIA

Parking

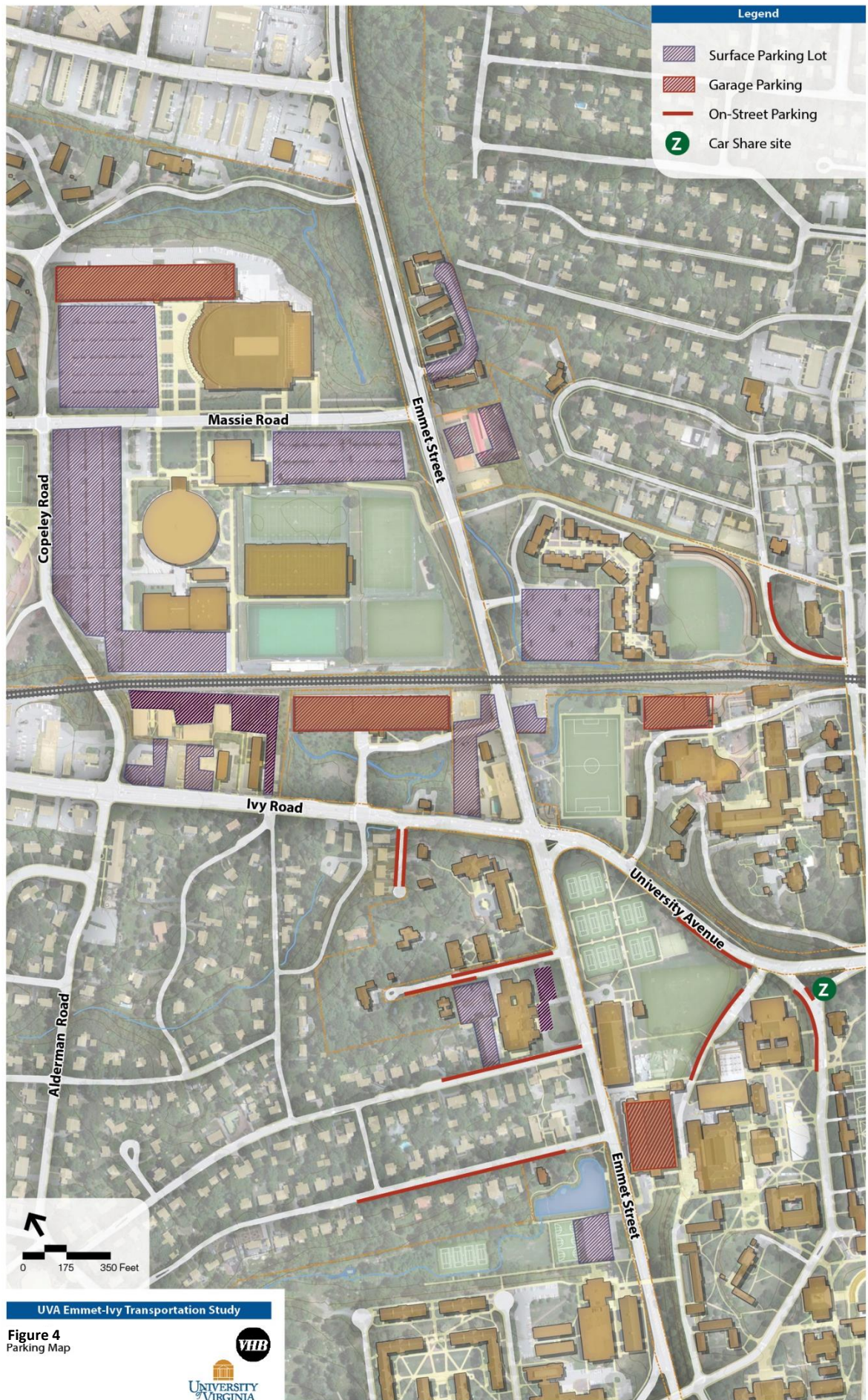
The study area contains several sizable parking facilities, including surface parking and three (3) garages as well as some limited on-street parking along University Avenue (Figure 4). As a gateway region to the Grounds, use of this remote parking to capture commute trips to the campus allows faculty, staff, and students to enter the Grounds by alternative means after parking. The presence of two primary roadway corridors serving the campus and several remote parking facilities contributes to significant vehicular, transit and pedestrian traffic in the area. The parking supply also offers opportunity to support future uses in the study area, either as a parking resource for those uses or as locations for new development.

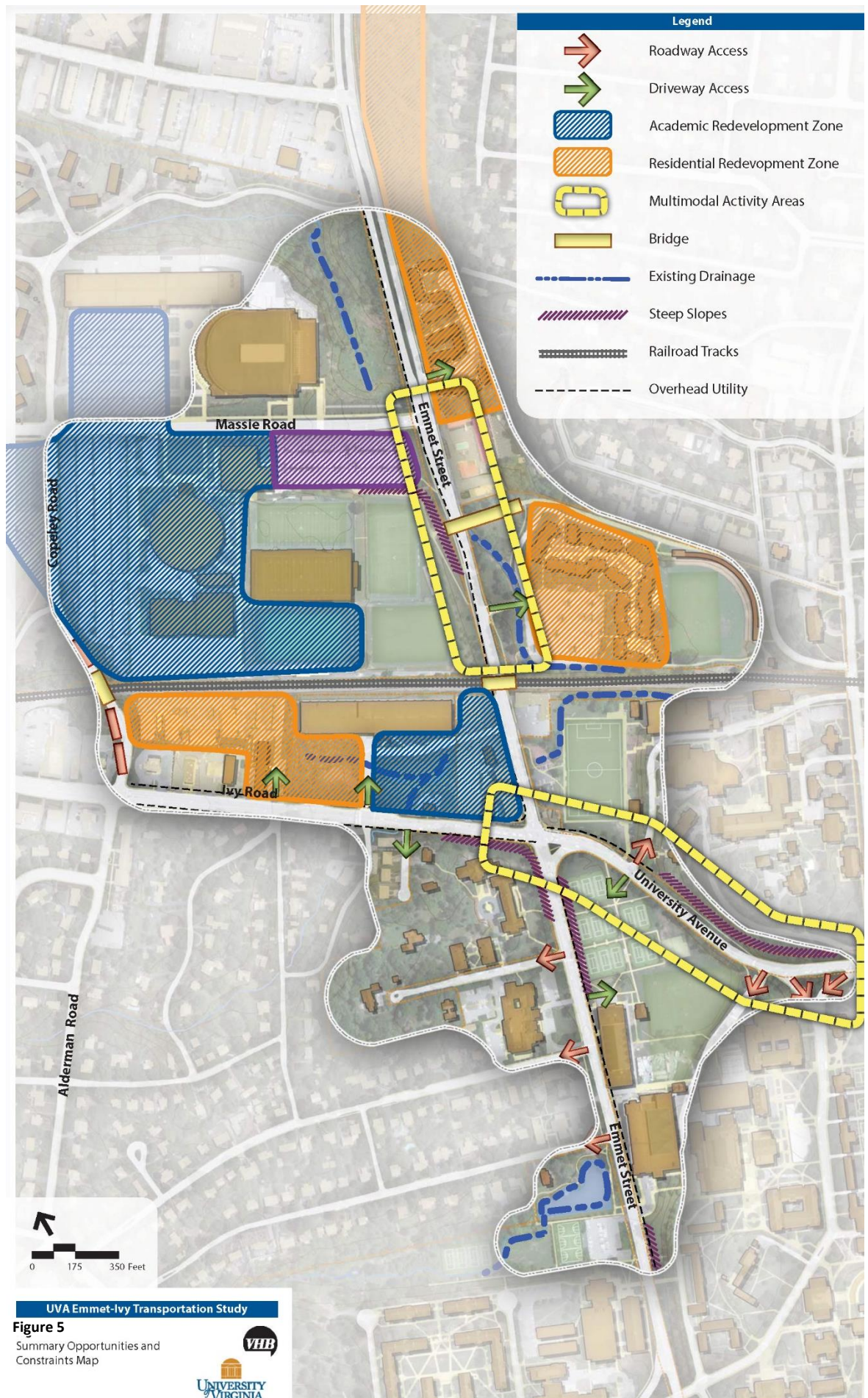
Summary of Opportunities and Constraints

Figure 5 provides a summary of the key opportunities and constraints within the study area. The figure includes a number of elements including:

- Existing driveway / roadway access points
- UVA redevelopment zones per the Grounds Plan
- Bridge locations that create gateways and/or constrain road connections
- Existing drainage locations
- Steep slopes
- Railway tracks
- Overhead utility locations
- Multimodal activity areas

The opportunities and constraints present challenges and offer improvements to the overall function, aesthetic quality, circulation, and comfort for pedestrians and cyclists within the study area. In the following section, there are a number of specific recommendations that address many of these elements.





2.0 Recommendations

The following recommendations were developed during a circulation workshop held on May 9, 2014, at the University of Virginia with several project stakeholders. The workshop included a review of the compiled existing condition data, discussion of overall goals of the study as well as additional input from the stakeholders. The result of the workshop was an overall circulation framework described in five zones corresponding the segments of the major roads. The zones include the following:

- Zone 1 – Emmet Street north of the railroad trestle
- Zone 2 – Emmet – Ivy/University Intersection
- Zone 3 – Emmet Street south of Ivy Road/University Avenue
- Zone 4 – Ivy Road west of Emmet Street
- Zone 5 – University Avenue east of Emmet Street

The recommendations for each Zone address the following elements:

- Landscape and utilities
- Street cross-sections
- Pedestrian facilities
- Bicycle paths and lanes
- Transit facilities

The following figures summarize and highlight the transportation-related system recommendations for each Zone. The intent for these recommendations is to be combined and harmonized with the overall landscape framework developed by MVLA for the UEI study area. The combined transportation and landscape recommendations framework should support the University's long-term development plans, provide a clear sense of arrival to the University, and promote comfort and safety for alternative transportation options.

Circulation Study Goal/Principle:
Improve pedestrian, bicycle, and transit accommodations without degrading vehicular traffic

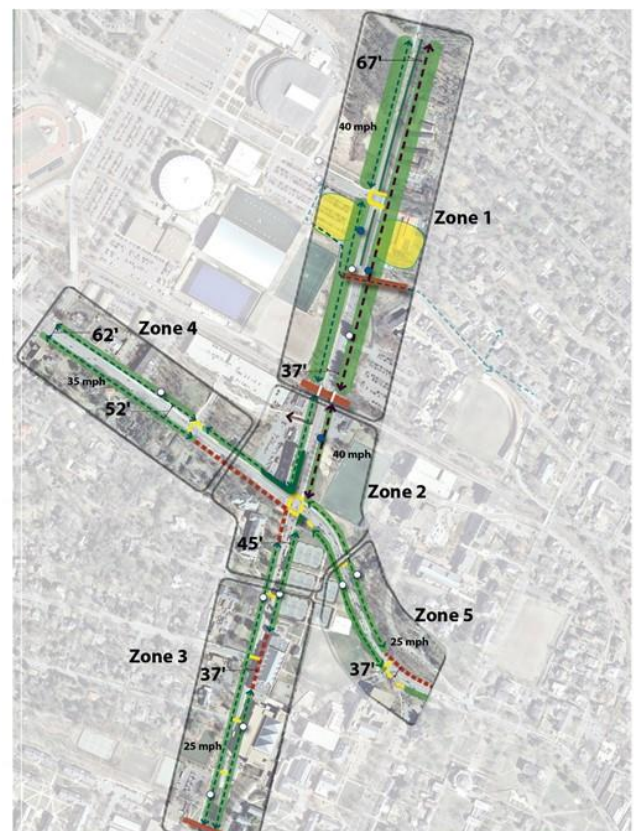
Process

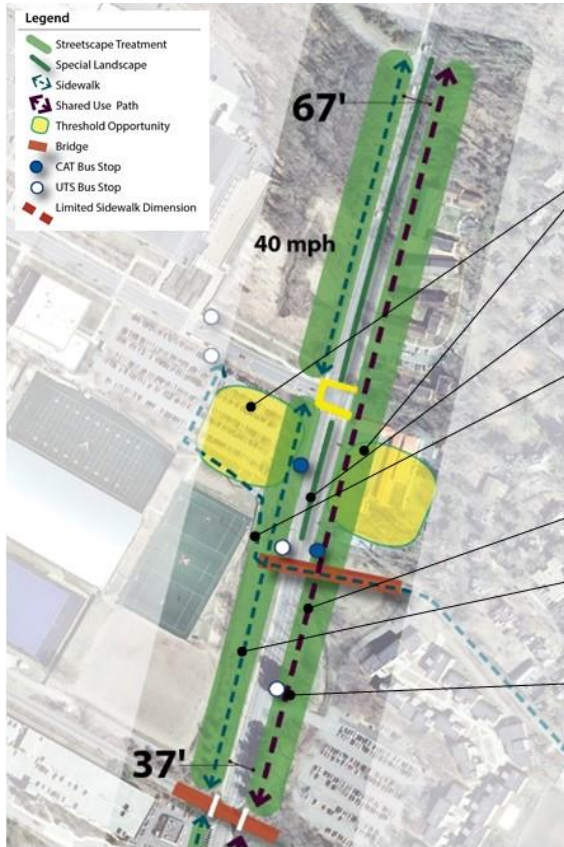
- Performed on-site observations and data review
- Established zones based on transportation characteristics

Concept Development

Zone Themes

- Landscape and Utilities
- Street Cross Sections
- Pedestrian Facilities
- Bicycle Paths and Lanes
- Transit Facilities



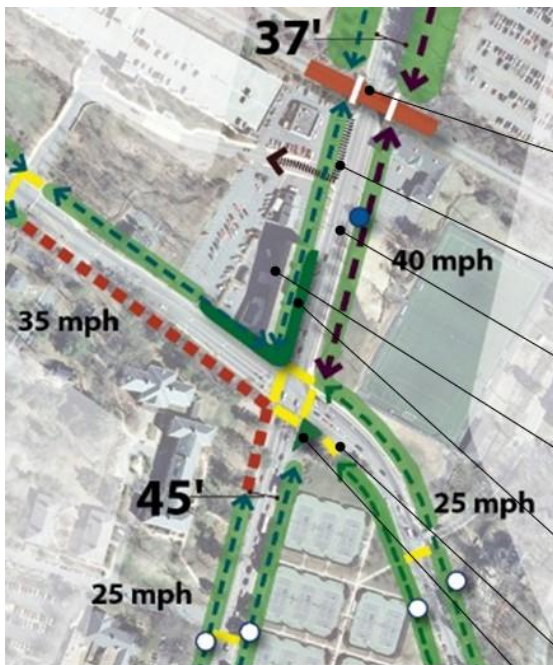


Corridor transitions from wider informal landscape character to more urban in character south of the railroad trestle

- Key entrance opportunity south of Massie Road intersection: **67'Width**
- Extend median south of Massie Road
- Establish continuous and safe pathway connectivity from pedestrian bridge to Massie Road
- Create shared-use path on east side of Emmet Street and buffer sidewalk from street edge on west side
- Consolidate UTS and CAT bus stops and optimize stop locations for users

Zone 1: Emmet Street North

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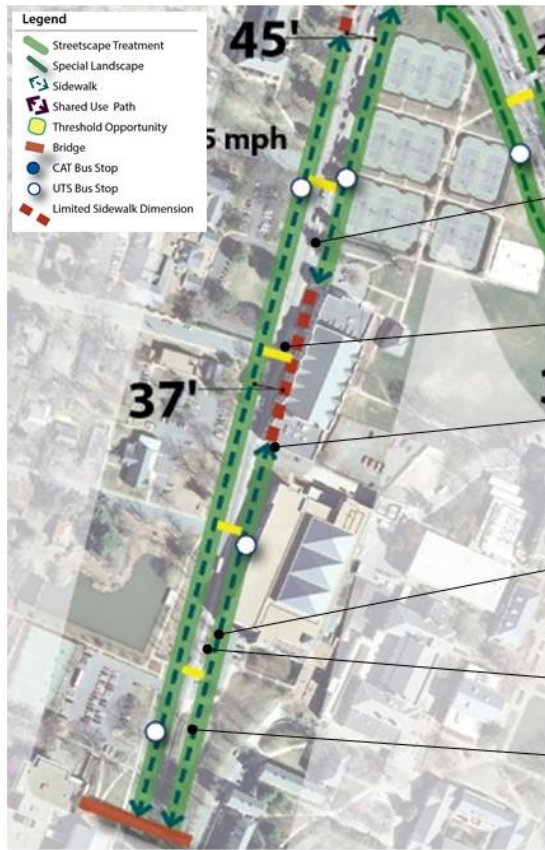


Emmet/Ivy Intersection is a main entrance to the Grounds

- Consider options for pathways through railroad foundation and continue shared use path along east side of Emmet, consistent with Zone 1
- Modify or eliminate exclusive southbound right turn lane at Emmet/Ivy Garage access road
- Pursue speed limit reduction on Emmet Street to 25 mph
- Redevelopment of NW quadrant provides opportunity for pedestrian facility and streetscape improvements
- Overhead utilities on NW quadrant should be placed underground with redevelopment
- Expand curb island to reduce right turn lane width and speeds
- Landscape enhancements to green curb island and improve sidewalk

Zone 2: Emmet – Ivy Intersection

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for the University

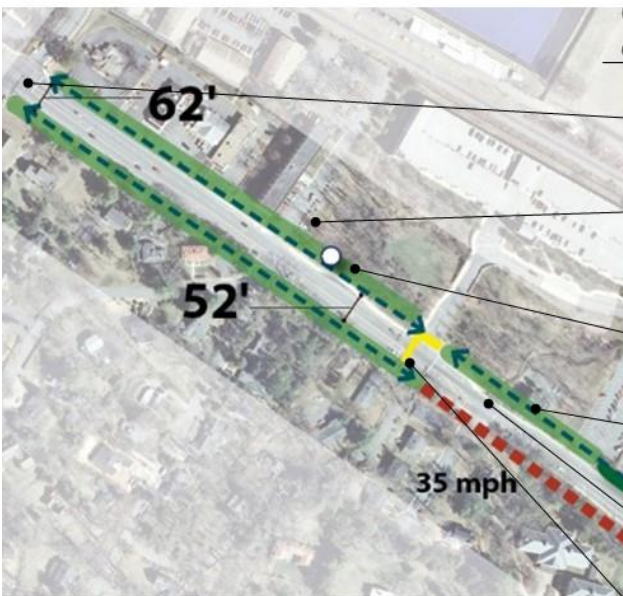


Corridor marks a change in scale from residential to University buildings and landscape

- Three lane roadway cross-section provides adequate access to adjacent land uses
- Significant pedestrian crossing activity supports enhanced crossing treatments
- Sidewalk character differs in response to land use on each side of Emmet
- Focal pedestrian crossing/entrance at visitor garage requires more detailed study
- Improve bike lanes and clearly mark on-street bicycle accommodations
- Enhance sidewalk and bus stop south of visitor garage driveway

Zone 3: Emmet South of Ivy

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for the University



Corridor is a transition area between Commercial / Residential Areas and campus

- Threshold opportunity at Ivy/Copeley intersection
- Redevelopment of north side of Ivy Road provides opportunity to revisit roadway alignment and south sidewalk width
- Assess transit stop locations based on redevelopment
- Focus on pathway/sidewalk improvement opportunities on north side of Ivy
- Provide continuous bike lanes or shared-lane markings on Ivy
- Modify roadway striping and/or curb limits to enhance sidewalk and reduce utility pole obstructions on south side of Ivy
- Pursue speed limit reduction on Emmet Street to 25 mph

Zone 4: Ivy at Alderman

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for the University



Corridor is a transition zone within Central Grounds

- Significant pedestrian crossing activity supports enhanced crossing treatments
- Transition to eliminate on-street parking to enhance bicycle and transit accommodations
- Develop continuous sidewalk on north side away from street edge consistent with landscape character
- Maintain bike lanes
- Implement intersection modifications and access control at McCormick Road to enhance circulation and pedestrian safety

Zone 5: University Avenue



3.0 Conclusion





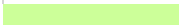


This memorandum represents a summary of the analysis and recommendations related to transportation and circulation for the University/Emmet/Ivy area District Planning. A key overriding goal is to improve pedestrian, bicycle and transit accommodations without degrading vehicular traffic. Therefore a key consideration for any improvements is to consider them within the larger circulation systems as well as future planned improvements that could affect the study area. Finally these recommendations are intended to be considered as part of the larger planning and design recommendations being developed in parallel to this task.





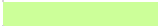


Next Steps





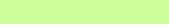


- Coordinate these recommendations with the City of Charlottesville and VDOT
- Further study and analysis of potential circulation improvements including:
 - Reducing the speed limit
 - Expanded access through the Railroad Trestle for pedestrian / bike access along Emmet Street
 - Coordination of CAT and UTS stops
 - Pedestrian signals
 - Bike lane / Shared Lane Improvements
- Coordinate / pursue improvements to key locations including the traffic island at the intersection of University and Emmet.





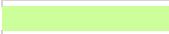


Appendix





Summary Evaluation Matrices

Zone 1: EMMET STREET NORTH					
Corridor	Existing Facilities (Adequate, Fair, Poor)	Volume (Low, Average, High)	Capacity (Adequate, Fair, Poor)	Conflicts/Safety Issues (Minimal, Moderate, Significant)	Improvement Constraints (Minimal, Moderate, Significant)
Automobile Traffic 	<ul style="list-style-type: none"> Four lanes near Massie Road Three lanes south of Massie Road Traffic Signal at Massie Road Several driveways along corridor 	<ul style="list-style-type: none"> AM Peak: 1,450-1,600 vph PM Peak: 1,850-2,100 vph 	<ul style="list-style-type: none"> Adequate capacity on Emmet St. Traffic delays at Massie Road 	<ul style="list-style-type: none"> Turning movements at driveways Event traffic at Massie Road 	<ul style="list-style-type: none"> Limited railroad underpass width Roadside grade on west side Stream/culvert south of Massie Road Private property on both sides
Transit 	<ul style="list-style-type: none"> UTS routes on Emmet and Massie CAT 7 route on Emmet Street Unclear bus stops relate to destinations Insufficient landings at bus stops on Emmet Street 	<ul style="list-style-type: none"> UTS service 6:00 AM-12:30 AM CAT 7 service 6:30 AM-11:30 PM 	<ul style="list-style-type: none"> Three UTS routes UTS Peak Service: 8-15 minutes CAT 7 Service: 20 minutes 	<ul style="list-style-type: none"> Limited crossing treatments on Emmet Street near bus stops Bus stop landings limit ADA access 	<ul style="list-style-type: none"> 3-4 lanes to crossing on Emmet St. Grass landscape buffers on Emmet St. Private property along Emmet Street
Pedestrians 	<ul style="list-style-type: none"> Sidewalks on both sides of Emmet St. Landscape buffers mostly provided Pedestrian bridge over Emmet Street Path connections to parking Countdown pedestrian signals at Massie Rd. Numerous driveways along Emmet St. 	<ul style="list-style-type: none"> Normal pedestrian activity Events may increase activity 	<ul style="list-style-type: none"> 5-foot sidewalk width 15-foot wide pedestrian bridge High-visibility x-walks at Massie Road 	<ul style="list-style-type: none"> Mid-block crossing activity Only two dedicated crossings on Emmet St. within 1/2 mile corridor Turning movement conflicts at driveways 	<ul style="list-style-type: none"> Intersection/crossing/bus stop spacing Private property access requirements Existing signal equipment
Bicycles 	<ul style="list-style-type: none"> No dedicated bicycle facilities on Emmet St. Wide lanes north of railroad bridge Ped/Bike bridge over Emmet Street 	<ul style="list-style-type: none"> Approx. 50 bikes per hour (peak) along Emmet St. 	<ul style="list-style-type: none"> Bicyclists use street or sidewalk for north-south trips Ped/Bike bridge supports east-west trips 	<ul style="list-style-type: none"> Vehicle-bike conflicts on street Turning movement conflicts at driveways Ped-bike conflicts on sidewalks 	<ul style="list-style-type: none"> Limited railroad underpass width Roadside grade on west side Stream/culvert south of Massie Road Private property on both sides
Legend:					
Quality of Facilities/Service Characteristics					
	Adequate, Low, Minimal				
	Fair, Average, Moderate				
	Poor, High, Significant				

Zone 2: EMMET - IVY INTERSECTION					
Corridor	Existing Facilities (Adequate, Fair, Poor)	Volume (Low, Average, High)	Capacity (Adequate, Fair, Poor)	Conflicts/Safety Issues (Minimal, Moderate, Significant)	Improvement Constraints (Minimal, Moderate, Significant)
Automobile Traffic 	<ul style="list-style-type: none"> • Signalized intersection • Constrained turn lanes and storage on southbound and westbound approaches • Channelized northbound right turn lane • Protected north-south left turn phase 	<ul style="list-style-type: none"> • AM Peak: 2,300+ vph • PM Peak: 2,700+ vph 	<ul style="list-style-type: none"> • Significant delays/queuing on all approaches during peak conditions 	<ul style="list-style-type: none"> • Constrained sight lines for permissive left turns on Emmet Street • Truck turns constrained by intersection geometry • High-speed turns on channelized northbound right lane 	<ul style="list-style-type: none"> • Roadside grade on south side of intersection • Private property on Emmet Street north of intersection • Roadside utilities
Transit 	<ul style="list-style-type: none"> • Multiple UTS routes on all approaches • No bus stops at intersection 	<ul style="list-style-type: none"> • UTS service 6:00 AM-12:30 AM • CAT 7 service 6:20 AM-11:30 PM 	<ul style="list-style-type: none"> • Three UTS routes • UTS Peak Service: 8-15 minutes • CAT 7 Service: 20 minutes 	<ul style="list-style-type: none"> • Significant bus activity contributes to congestion 	<ul style="list-style-type: none"> • Roadside grade on south side of intersection • Private property on Emmet Street north of intersection • Roadside utilities
Pedestrians 	<ul style="list-style-type: none"> • Sidewalks on all sides of intersection • Countdown pedestrian signals provided • Crosswalk markings and wheelchair ramps were recently improved • Limited pedestrian landings on three corners • Limited width, retaining wall, and utility poles affect sidewalks along Emmet Street and Ivy Road • Long crosswalk across northbound right turn lane 	<ul style="list-style-type: none"> • Significant pedestrian activity 	<ul style="list-style-type: none"> • Concurrent pedestrian signal phases • Standard crosswalk markings/width 	<ul style="list-style-type: none"> • Pedestrian conflicts on channelized northbound right turn lane • Pathway connection on channizing island doesn't serve pedestrian desire lines 	<ul style="list-style-type: none"> • Roadside grade on south side of intersection • Private property on Emmet Street north of intersection • Signal equipment/utilities on channelizing island
Bicycles 	<ul style="list-style-type: none"> • Bike lanes on Emmet Street (northbound) and University Avenue • Signal has limited bicycle detection 	<ul style="list-style-type: none"> • Approx. 25-75 bikes per hour (peak) along University Avenue 	<ul style="list-style-type: none"> • Bike lanes serve cyclists on two approaches • Cyclists share street on Emmet Street (southbound) and Ivy Road 	<ul style="list-style-type: none"> • Vehicle-bike conflicts on street • Turning movement conflicts at northbound right turn lane • Ped-bike conflicts on sidewalks 	<ul style="list-style-type: none"> • Roadside grade on south side of intersection • Private property on Emmet Street north of intersection
Legend:					
Quality of Facilities/Service Characteristics					
	Adequate, Low, Minimal				
	Fair, Average, Moderate				
	Poor, High, Significant				

Zone 3: EMMET STREET SOUTH					
Corridor	Existing Facilities (Adequate, Fair, Poor)	Volume (Low, Average, High)	Capacity (Adequate, Fair, Poor)	Conflicts/Safety Issues (Minimal, Moderate, Significant)	Improvement Constraints (Minimal, Moderate, Significant)
Automobile Traffic 	<ul style="list-style-type: none"> • Two lane roadway with turn lanes • Several side streets 	<ul style="list-style-type: none"> • AM Peak: 1,100-1,200 vph • PM Peak: 1,300-1,400 vph 	<ul style="list-style-type: none"> • Adequate capacity on Emmet St. • Critical access to Central Grounds Garage (CCG) 	<ul style="list-style-type: none"> • Turning movements at garage driveway 	<ul style="list-style-type: none"> • Building setbacks and landscape buffers • Roadside grades near tennis courts • Roadside utilities
Transit 	<ul style="list-style-type: none"> • UTS Green Route on Emmet Street • CAT 7 route on Emmet Street • Limited passenger waiting areas and other facilities at bus stops 	<ul style="list-style-type: none"> • UTS service 6:00 AM-8:00 PM • CAT 7 service 6:30 AM-11:30 PM 	<ul style="list-style-type: none"> • One UTS route • UTS Peak Service: 8-15 minutes • CAT 7 Service: 20 minutes 	<ul style="list-style-type: none"> • Buses stop in or along bike lanes 	<ul style="list-style-type: none"> • Landscape buffers on west side of Emmet St. • Roadside grades near tennis courts
Pedestrians 	<ul style="list-style-type: none"> • Sidewalks on both sides of Emmet St. • Landscape buffers along portions of west side • In-road lighting at CCG crosswalk • Raised sidewalk along face of Memorial Gym • Some poorly located wheelchair ramps • Some wheelchair ramps are not ADA-compliant 	<ul style="list-style-type: none"> • Normal pedestrian activity 	<ul style="list-style-type: none"> • 5-foot sidewalk width • High-visibility x-walks at several streets • Railings limit capacity at Memorial Gym 	<ul style="list-style-type: none"> • Mid-block crossing activity • Vehicle-pedestrian conflicts on CCG driveway • Turning movement conflicts at several streets • Drainage grates near some wheelchair ramps 	<ul style="list-style-type: none"> • Building locations and setbacks • Roadside grades • Private property (church)
Bicycles 	<ul style="list-style-type: none"> • Bike lanes along most of Emmet Street 	<ul style="list-style-type: none"> • Approx. 20 bikes per hour (peak) along Emmet St. 	<ul style="list-style-type: none"> • Bike lanes for north-south trips • On-street bike route near CCG & Memorial Gym • Limited east-west connectivity 	<ul style="list-style-type: none"> • Turning movement conflicts at driveways 	<ul style="list-style-type: none"> • Building locations and setbacks • Roadside grades • Private property (church)
Legend:					
Quality of Facilities/Service Characteristics					
	Adequate, Low, Minimal				
	Fair, Average, Moderate				
	Poor, High, Significant				

Zone 4: IVY ROAD					
Corridor	Existing Facilities (Adequate, Fair, Poor)	Volume (Low, Average, High)	Capacity (Adequate, Fair, Poor)	Conflicts/Safety Issues (Minimal, Moderate, Significant)	Improvement Constraints (Minimal, Moderate, Significant)
 Automobile Traffic	<ul style="list-style-type: none"> Two lane roadway with turn lanes, near Emmet St. Four lane roadway near Copeley Road Traffic signals at Rothery Road and Copeley Road Several side street and commercial driveways 	<ul style="list-style-type: none"> AM Peak: 900-1,000 vph PM Peak: 1,300-1,400 vph 	<ul style="list-style-type: none"> Elevated westbound traffic volume (PM) 	<ul style="list-style-type: none"> Turning movements at driveways Event traffic at Copeley Road 	<ul style="list-style-type: none"> Roadside grade on south side of Ivy Road Private property on both sides Roadside utilities
 Transit	<ul style="list-style-type: none"> Multiple UTS routes on Ivy, Copeley, and Rothery Only one bus stop on corridor Bus pullout on westbound Ivy Road 	<ul style="list-style-type: none"> UTS service 6:00 AM-12:30 AM 	<ul style="list-style-type: none"> Four UTS routes UTS Peak Service: 8-15 minutes 	<ul style="list-style-type: none"> Limited crossing treatments on Ivy Road near bus stop 	<ul style="list-style-type: none"> 3-4 lanes to crossing on Ivy Road Single eastbound through lane on Ivy Road Roadside grade on south side of Ivy Road Private property along Ivy Road
 Pedestrians	<ul style="list-style-type: none"> Sidewalks on both sides of Ivy Road Countdown pedestrian signals at Copeley and Rothery Limited width and utility poles in sidewalk on south side of Ivy Road Most wheelchair ramps are absent or not ADA-compliant Numerous driveways along Ivy Road 	<ul style="list-style-type: none"> Normal pedestrian activity 	<ul style="list-style-type: none"> 6-foot sidewalk width on north side 4 to 5-foot sidewalk width on south side High-visibility x-walks at signals 	<ul style="list-style-type: none"> Pedestrian conflicts on narrow south side sidewalk Turning movement conflicts at driveways Inadequate wheelchair ramps challenge disabled pedestrians Mid-block crossing activity 	<ul style="list-style-type: none"> Roadside grade on south side of Ivy Road Utilities in south sidewalk Private property access requirements
 Bicycles	<ul style="list-style-type: none"> Bike lanes along Ivy Road, west of Rothery Road 	<ul style="list-style-type: none"> Approx. 15 bikes per hour (peak) along Ivy Road 	<ul style="list-style-type: none"> Bike lanes for east-west trips On-street bike route east of Rothery Road Limited north-south connectivity 	<ul style="list-style-type: none"> Vehicle-bike conflicts on street Turning movement conflicts at driveways 	<ul style="list-style-type: none"> Roadside grade on south side of Ivy Road Private property on south side Roadside utilities
Legend:					
Quality of Facilities/Service Characteristics					
	Adequate, Low, Minimal				
	Fair, Average, Moderate				
	Poor, High, Significant				

Zone 5: UNIVERSITY AVENUE											
Corridor	Existing Facilities (Adequate, Fair, Poor)	Volume (Low, Average, High)	Capacity (Adequate, Fair, Poor)	Conflicts/Safety Issues (Minimal, Moderate, Significant)	Improvement Constraints (Minimal, Moderate, Significant)						
 Automobile Traffic	<ul style="list-style-type: none"> Two lane roadway with turn lanes On-street parking along south side of street Three unsignalized side streets 	<ul style="list-style-type: none"> AM Peak: 900-1,000 vph PM Peak: 1,100-1,200 vph 	<ul style="list-style-type: none"> Adequate capacity on University Avenue Traffic delays at Massie Road 	<ul style="list-style-type: none"> Unusual intersection geometry at McCormick Road Turning movements at side streets On-street parking maneuvers 	<ul style="list-style-type: none"> Roadside grade on both sides of University Ave. Landscaping and street trees Roadside utilities 						
 Transit	<ul style="list-style-type: none"> Multiple UTS routes on University Avenue Minimal facilities at bus stops Bus shelter/pull-out at Emmet Garage Charter bus stop and area of refuge 	<ul style="list-style-type: none"> UTS service 7:30 AM-12:30 AM 	<ul style="list-style-type: none"> Three UTS routes UTS Peak Service: 8-15 minutes 	<ul style="list-style-type: none"> Bus stops located within bike lanes 	<ul style="list-style-type: none"> Roadside grade on both sides of University Ave. 						
 Pedestrians	<ul style="list-style-type: none"> Sidewalks on both sides of University Avenue In-road lighting at Culbreth Road crosswalk Limited width, retaining wall, and utility poles affect portions of sidewalk on north side Some wheelchair ramps are absent or not ADA-compliant Very long crosswalks at McCormick Road 	<ul style="list-style-type: none"> Significant pedestrian activity 	<ul style="list-style-type: none"> 6-foot sidewalk width on south side 5-foot sidewalk width on north side High-visibility x-walks at intersections and side streets 	<ul style="list-style-type: none"> Pedestrian conflicts on narrow south side sidewalk Pedestrian exposure on long crosswalks Turning movement conflicts at Side streets Inadequate wheelchair ramps challenge disabled pedestrians 	<ul style="list-style-type: none"> Roadside grade on both sides of University Ave. Utilities in north sidewalk Intersection geometry at McCormick Road 						
 Bicycles	<ul style="list-style-type: none"> Bike lanes along University Avenue 	<ul style="list-style-type: none"> Approx. 25 bikes per hour (peak) along University Avenue 	<ul style="list-style-type: none"> Bike lanes for east-west trips Bike lanes and limited access streets for north-south trips 	<ul style="list-style-type: none"> Turning movement conflicts at side streets 	<ul style="list-style-type: none"> Roadside grade on both sides of University Ave. 						
Legend:											
Quality of Facilities/Service Characteristics											
<table border="0"> <tr> <td style="width: 20px; background-color: #90EE90;"></td> <td>Adequate, Low, Minimal</td> </tr> <tr> <td style="width: 20px; background-color: #FFD700;"></td> <td>Fair, Average, Moderate</td> </tr> <tr> <td style="width: 20px; background-color: #FF6347;"></td> <td>Poor, High, Significant</td> </tr> </table>							Adequate, Low, Minimal		Fair, Average, Moderate		Poor, High, Significant
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