



## D/DRC Case

1221-1301 Huger Street & 401-433 Gervais Street

**City Center Design/Development District**

TMS: 08912-13-02



**DESIGN/DEVELOPMENT REVIEW COMMISSION  
SITE/SUBDIVISION PLAN  
CASE SUMMARY**

**1221 HUGER STREET  
HOMES URBAN, LLC  
MIXED-USE PLANNED UNIT DEVELOPMENT**

**August 13, 2015 at 4:00pm  
City Council Chambers, 3rd Floor, City Hall, 1737 Main Street  
Columbia, South Carolina 29201**

<b>Subject Property:</b>	1221 Huger Street
<b>TMS#:</b>	08912-13-02
<b>Zoning District:</b>	PUD-C (Commercial Planned Unit Development)
<b>Council District:</b>	2
<b>Proposal:</b>	Request site plan approval of a ± 580,000 sq. ft. mixed-used development on 6.5 acres
<b>Applicant:</b>	Homes Urban, LLC
<b>Proposed Use:</b>	Mixed-use

<b>Detail:</b>	<p>This project entails the construction of a ± 560,000 sq. ft. mixed-use development on ± 6.5 acres. The property is bounded by Huger, Gervais, Williams, and Washington Streets. This mixed-use development will contain 32,000 sq. ft. of commercial office space, 35,000 sq. ft. of retail/restaurant space, an 110,000 sq. ft. hotel (not to exceed 140 rooms), condominiums or apartments (not to exceed 350 units). The project will also contain structured parking (700-850 spaces) and public open space amenities.</p> <p>The developer has also submitted a traffic impact study that has been reviewed and approved with conditions by the Traffic Engineer.</p> <p>Should the Commission be inclined to grant approval of the site plan, staff would request that the Commission grant approval subject staff comments.</p>
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**CITY AGENCY COMMENTS FOR SITE/SUBDIVISION PLAN REVIEW**

<b>John Fellows, Planning Administrator and Lucinda Statler, Urban Design Planner</b>	<p><b>Recommend approval with conditions:</b></p> <ol style="list-style-type: none"> <li>1. All streetscape designs along public right of ways shall generally be similar to existing elements within the area with regard to paving, finishes, and furnishings. All designs shall be differed to staff and shall require encroachments where applicable.</li> <li>2. All driveways to parking areas and garages (internal and external) shall have continuous sidewalks and shall use a driveway apron design. Entries to the development from Gervais and Huger/Lady Street shall be treated as roads.</li> <li>3. Street lighting along Gervais, Huger, and the relocated Washington Street shall match City Standards for downtown areas.</li> <li>4. Pedestrian accommodations shall be provided at the Intersection of Lady and Huger to allow for east west pedestrian connectivity. Traffic study shall include evaluation of potential traffic calming for pedestrian crossing and examination of feasibility of a refuge area.</li> </ol>
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	<ol style="list-style-type: none"> <li>5. Pedestrian and Cyclist access to River/Museum area shall be provided.</li> <li>6. Internal Crosswalks on private "roads" shall be provided – White Thermo.</li> <li>7. Pedestrian connection to state museum is key to the function of this site, and the primary public benefit that is being proposed per PUD; preliminary design of this feature should be part of Phase I review process.</li> <li>8. Consider public art in center of turnaround circle on Lady Street axis, rather than or in addition to, the art between buildings 3&amp;4.</li> <li>9. Please have a plan for what happens if buildings 3&amp;4 do not get built immediately after buildings 1&amp;2. We always have to plan for changes in the economy; if these never get built, or if it is several years, we end up with empty parcels on the corner. At the very least, no surface parking shall be allowed.</li> <li>10. Retail Space "A" on building 1 is too far above sidewalk elevation. Consider lowering FFE or terracing patio to address sidewalk.</li> <li>11. Ditto for courtyard space on Building 2; this condition feels awkward and needs work. Need to address street between courtyard that is 7' above street level.</li> <li>12. Gervais Street elevation is very plain and largely too far above street level; retail frontage/windows need better articulation (canopies, something)</li> <li>13. Need window sections/details for all conditions.</li> <li>14. Need fenestration percentage calculations for all facades; many upper story windows seem too small proportionally to façade (goal per guidelines is 70% first floor, 40% upper floors)</li> <li>15. Nichiha elevations appear very flat overall</li> <li>16. Where brick façade on lower levels is below stucco or Nichiha, avoid bifurcating façade; bring brick up a level to make the proportions heavier on the bottom, i.e. 2 levels stucco above 4 levels brick, (rather than 3/3) or 2/3 rather than 3/2.</li> <li>17. Generally, base/middle/top needs better definition</li> <li>18. Parking garage frontages will need higher level of finish, and vegetative screening.</li> <li>19. South elevation of building 1 (along Lady Street extension) will need articulation and/or vegetative screening along plain brick wall</li> <li>20. Southwest corner of Building 2 needs fenestration/articulation. This will be very visible to pedestrians on the Gervais Street sidewalk.</li> <li>21. Color renderings will ultimately be required, as we discussed, to better understand materiality.</li> </ol>
<p><b>K. Brian Cook, Zoning Administrator</b></p>	<p><b>Recommend approval with conditions:</b></p> <ol style="list-style-type: none"> <li>1. A major amendment to the existing PUD must be approved by City Council.</li> <li>2. The development must comply in all respects to the final approved and recorded PUD.</li> <li>3. Consideration of the museum telescope on the adjacent property shall be required relative to the potential for shielded lighting.</li> <li>4. Staff would like to see greater specificity regarding the future pedestrian connection to museum property.</li> </ol>
<p><b>Johnathan Chambers, Land Development Administrator</b></p>	<p><b>Recommend approval with conditions:</b></p> <ol style="list-style-type: none"> <li>1. All work within the ROW must be improved to meet the design standards and city specifications for parking and road design. Applicant must work with staff regarding all work within ROW. City and State Encroachment permits will be required for work being conducted within the ROW.</li> <li>2. Construction of the pedestrian connection to the South Carolina State Museum to be included in the permits for buildings 1 and 2.</li> </ol>
<p><b>Robert Harkins, Plans Examiner</b></p>	<p><b>Recommend approval.</b></p>
<p><b>Scott Rogers, Utilities</b></p>	<p><b>Recommend approval with conditions:</b></p> <ol style="list-style-type: none"> <li>1. Any needed upgrade, extension or relocation of City utilities must be provided by the developer.</li> <li>2. Any privately owned/maintained utilities or permanent structures cannot be located inside exclusive City of Columbia utility easements.</li> <li>3. Water mains, sewer mains, water meters that are 4" or larger or any privately maintained utilities will not be allowed inside public right-of-ways or under</li> </ol>

	<p>sidewalks without an approved encroachment permit and written approval from the City Engineer. Coordination between the Civil Engineer, Architect and Mechanical Engineer to allow room for these utilities on the developed property is strongly encouraged.</p> <p>4. If sewer flows for this project result in flows of 4,000 gallons per day or above calculations must be submitted to the City's Engineering department to determine how the proposed project will affect the City's sewer system. Depending upon the effects of the projected flows this project may or may not be approved. If required, these calculations should be submitted to the Engineering department as soon as possible.</p>
<b>David Brewer, Traffic Engineering</b>	<p><b>Recommend approval with condition:</b></p> <ol style="list-style-type: none"> <li>1. Improvements outlined in the traffic impact analysis performed by Kimley-Horn to be included on site plan.</li> <li>2. The costs of improvements are to be the responsibility of the developer.</li> </ol>
<b>David Koon, Fire Department</b>	<p><b>Recommend approval with condition:</b></p> <ol style="list-style-type: none"> <li>1. The fire department connections shall be within 100 feet of a fire hydrant. The locations of the fire hydrants and fire department connections shall be approved by the Fire Code Official.</li> </ol>
<b>Scott Holder, Land Development Planner</b>	<p><b>Recommend approval with conditions:</b></p> <ol style="list-style-type: none"> <li>1. Planting details to be provided for trees to be installed within the ROW.</li> <li>2. Additional trees should be located along the right of way adjacent to Retail C within Building Two as well as adjacent to Future Hotel (Building 4) in such a way to continue the rhythm of the existing trees. Several of the tree species have not performed well in our area and should be closely evaluated.</li> </ol>
<b>Sara Hollar, Forestry</b>	<p><b>Recommend approval with conditions:</b></p> <ol style="list-style-type: none"> <li>1. We do not want saw tooth oaks in the row on Washington.</li> <li>2. New species must be approved by Forestry and Beautification and fit with utility lines if not moved underground.</li> <li>3. Existing trees shown to remain on Gervais need to be protected during construction.</li> <li>4. Any new trees planted on Gervais need to match the existing (Chinese Elm 'Bosque') and with no additional new grates. We have a water meter that will need to be removed on Huger.</li> <li>5. Any new landscaping will be maintained by property owner in a manner to not interfere with pedestrian and vehicular traffic.</li> <li>6. SCDOT must approve any landscaping installed in SCDOT owned roadways.</li> </ol>
<b>Tracy Mitchell, Stormwater</b>	<p><b>Recommend approval with conditions:</b></p> <ol style="list-style-type: none"> <li>1. Need to provide pre- and post-developed drainage area maps, including runoff that may travel in from off-site.</li> <li>2. Pre- and post-development hydrology calculations including up to 25- and 100-year, 24-hour storm events since this area is prone to flooding.</li> <li>3. Need to provide water quality calculations appropriate for the area of disturbance, regardless of pervious or impervious cover.</li> <li>4. Maintenance agreements are/will be required for any/all permanent and water quality devices.</li> </ol>
<b>John Spade, Parking</b>	<p><b>Recommend approval with condition:</b></p> <ol style="list-style-type: none"> <li>1. Handicapped parking must be provided in surface lot and shown on drawing.</li> </ol>
<b>Robert Sweatt, Street Division</b>	<p><b>Recommend approval.</b> All sidewalks to comply with ADA requirements.</p>
<b>John Hooks, Solid Waste</b>	<p><b>Recommend approval.</b></p>



# City of Columbia APPLICATION for SITE PLAN/SUBDIVISION PLAT REVIEW

OFFICE USE ONLY: Date Received \_\_\_\_\_ By \_\_\_\_\_

## 1) APPLICANT (Please Print)

Name:	J. Russ Davis, Jr.	Company:	Homes Urban, LLC
Tel. #:	864-232-7474	Fax#:	864-232-7177
Mobile #:		E-mail:	russ.davis@homesurban.com

Do you own any of the property affected by this application?  YES  NO; If NO, provide Letter of Agency

## 2) THIS APPLICATION IS FOR (Check all that apply)

- Group/Individual Commercial Development
- Group Residential Development
- Residential Subdivision
- Planned Unit Development Site Review

## 3) PROPERTY

Address:	1221 Huger Street		
TMS#:	08912-13-02	Total Acreage:	6.5 acres +/-
Current Use:	Vacant	Proposed Use:	Mixed Use (PUD)
Current Zoning:	PUD-C		
Number of Lots and/or Units:		Total Sq. Ft.	

## 3) DETAILED PROJECT DESCRIPTION: (Attach additional paper if you need more space)

See attached

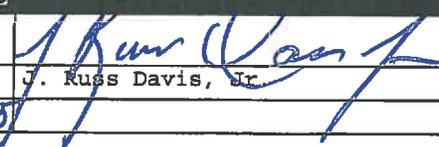
## 4) NEIGHBORHOOD CONSULTATION

Prior to the Planning Commission meeting, meet with the adjacent neighbors or neighborhood association to communicate details of the proposed project. Please note that this informational meeting is not required by ordinance, but is *strongly* encouraged. Contact information may be obtained from Zoning staff.

## 5) PLAN SUBMITTAL

Please refer to the Checklist for Site Plan Review for materials required for submittal with this application

## 6) SIGNATURE

Applicant Signature: 

Print Name: J. Russ Davis, Jr.

Date: 6/3/15

PC Date: \_\_\_\_\_ Action: \_\_\_\_\_



# CHECK LIST FOR SITE PLAN REVIEW

Please prepare 1 set of the information below and review it with Staff during a pre-application conference approximately ONE WEEK BEFORE THE APPLICATION DEADLINE.

After Staff has determined that the application contains the required information (that the application is complete), submit the information denoted below to the Zoning Division by the deadline listed on the *Planning Commission Calendar of Public Meetings*. All information is required unless checked and initialed by Development Services staff.

## PLEASE PRINT!

Project Address: 1221 Huger Street  
 TMS#: 08912-13-02  
 Applicant Name: Homes Urban, LLC  
 Applicant Telephone #: 864-232-7474  
 Contact Name: J. Russ Davis, Jr.  
 Contact Telephone #: 864-232-7474

Staff will place your item on the next-available Planning Commission agenda only if the application is complete!

Provided	Not Provided	# of Copies	Size Required	SUBMITTAL ITEM
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	8 ½" x 11"	PLANNING COMMISSION APPLICATION
<input checked="" type="checkbox"/>	<input type="checkbox"/>	13	18" x 24" min.	EXISTING SITE PLAN OR PLAT OF SURVEY <i>To Scale and Fully Dimensioned</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	8 ½" x 11"	PROPOSED SITE PLAN • <i>To Scale and Fully Dimensioned</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	13	18" x 24" minimum	<input type="checkbox"/> Total Acreage; <input type="checkbox"/> Location of Lots and Outlots (Numbered and Area in Square Feet); <input type="checkbox"/> Location of Buildings (including Setbacks from Property Lines and Distances between Buildings); <input type="checkbox"/> Location of Parking and Access/Driveways; <input type="checkbox"/> Location of Rights-of-Way and/or Easements for Streets, Railroads, and Utility Lines Upon and Abutting Subject Property; <input type="checkbox"/> Location of Streets, Alleys, Railroads, and Utility Lines Upon and Abutting Subject Property;
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	8 ½" x 11"	<input type="checkbox"/> Location of Lakes, Rivers, Streams, Swamps/Wetlands, Other Bodies of Water, and 100-year Floodplain and Floodway; <input type="checkbox"/> Location of Signage; <input type="checkbox"/> Statement/Chart of the Intensity of Development (Number and Size of Dwelling Units by Unit Type for Residential and/or Gross Floor Area by Building and Use for Nonresidential); <input type="checkbox"/> Topography by Contours (at Vertical Intervals of Not More Than 5 Feet); <input type="checkbox"/> Stamp of Registered Surveyor, Engineer, and/or Architect; <input type="checkbox"/> North Arrow; <input type="checkbox"/> Scale; <input type="checkbox"/> Vicinity Map (at 1 inch equals 1,000 feet).

- SEE NEXT PAGE -

<input checked="" type="checkbox"/>	<input type="checkbox"/>	4	18" x 24" min.	<b>BUILDING ELEVATIONS AND FLOOR PLANS</b> Please note this information is not required, but it is encouraged.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	8 1/2" x 11"	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3	18" x 24" min.	<b>LANDSCAPE PLAN</b> Please note that, while this item is not a listed requirement within the Zoning Ordinance, the Ordinance permits the Planning Commission to ask for additional documentation that they feel necessary to make an informed decision, and a landscape plan is <b>always</b> requested. You may contact Nancy Lee Trihey at (803) 545-3218 to review your landscape plan prior to the pre-application conference.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	8 1/2" x 11"	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	18" x 24" min.	<b>EXISTING TREE INVENTORY</b> Please note that, while this item is not a listed requirement within the Zoning Ordinance, the Ordinance permits the Planning Commission to ask for additional documentation that they feel necessary to make an informed decision, and an existing tree inventory is <b>always</b> requested. You may contact Nancy Lee Trihey at (803) 545-3218 to review your tree inventory prior to the pre-application conference.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	8 1/2" x 11"	

**CONFIRMATION OF THE PROVISION OF REQUIRED INFORMATION AND APPEARANCE AT THE PLANNING COMMISSION**

I, J. Russ Davis, Jr. (the named applicant above), hereby attest that I have provided to staff all information listed above and as required within §17-305 of the Zoning Ordinance of the City of Columbia. I understand that the Planning Commission reserves the right to require additional information that it deems reasonably appropriate. Further, I understand that my Application for Map Amendment will be on the Planning Commission's agenda for July 6, 2015 (date of Planning Commission meeting TO BE ENTERED BY STAFF) and that I should attend. I understand that this meeting starts at 5:15 p.m. at the City Council Chambers, 1737 Main Street.

SIGNATURE of Named Applicant Above: *J. Russ Davis, Jr.*

Date: 6/3/15

COPY

FORM REVISED 8/11/03



# LETTER OF AGENCY

DATE: May 29, 2015  
TO: ZONING ADMINISTRATOR, CITY OF COLUMBIA

I, the undersigned PROPERTY OWNER below, do hereby attest that I am the person that holds, or I am authorized to act on behalf of the party that holds, fee simple interest in the following property:

COMMON STREET ADDRESS(ES): 1221 Huger St., Columbia, SC

also known by TAX MAP NUMBER(S): R08912-13-02

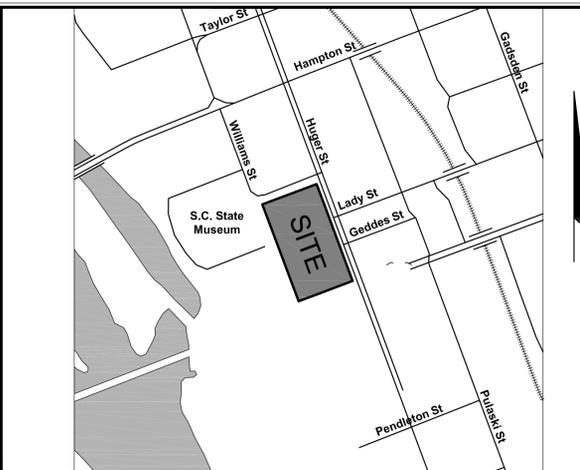
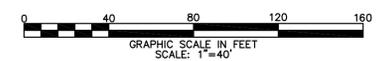
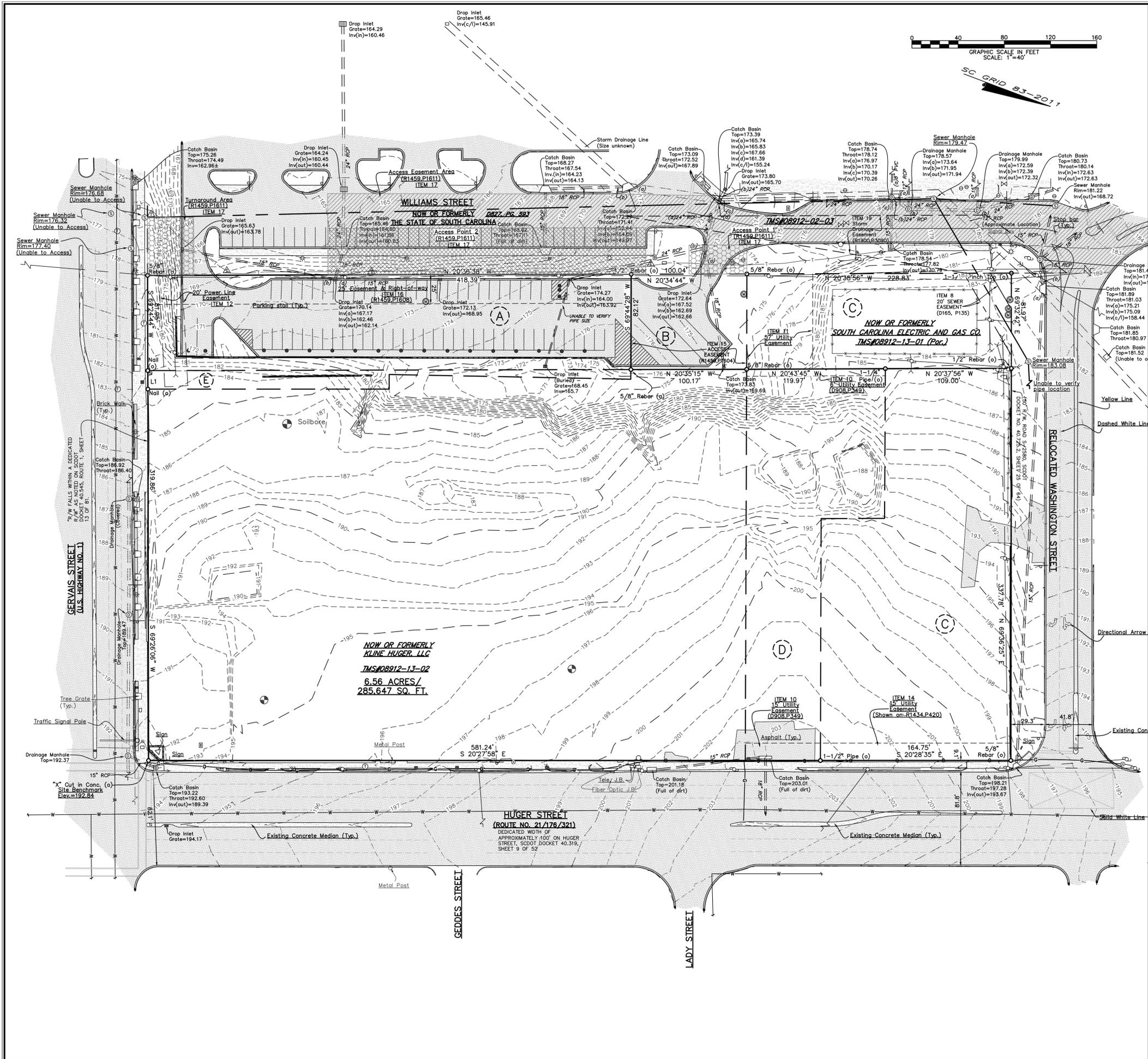
Further, I hereby authorize the person listed as AUTHORIZED AGENT below to act on my behalf for the purpose of submitting documents, amending documents, meeting with staff, attending public meetings and hearings, and as otherwise may be necessary and proper to fulfill the required steps to request (CHECK ALL THAT APPLY):

- a variance from the Board of Zoning Appeals;
- a special exception from the Board of Zoning Appeals;
- an appeal of the decision of the Zoning Administrator from the Board of Zoning Appeals;
- a change to the Zoning Maps of the City of Columbia from City Council, rezoning the property listed above from \_\_\_\_\_ to \_\_\_\_\_; and/or
- site plan review by the Planning Commission.

SIGNATURE OF PROPERTY OWNER: [Signature] DATE: 5/29/15  
 PRINT Name of Property Owner: Kline Huger, LLC  
 Street Address of Property Owner: 360 Alexander Circle  
 City, State, ZIP of Property Owner: Columbia, SC 29206  
 Telephone Number of Property Owner: 803-608-2069

SIGNATURE OF WITNESS: [Signature] DATE: 5/29/15  
 PRINT Name of Witness to Signature of Property Owner: Sue Kline

SIGNATURE OF AUTHORIZED AGENT: [Signature] DATE: 5/29/15  
 Name of Authorized Agent: J. Russ Davis, Jr.  
 Company/Firm of Authorized Agent: Homes Urban, LLC  
 Street Address of Authorized Agent: 219-A E. Washington St.  
 City, State, ZIP of Authorized Agent: Greenville SC 29601  
 Telephone Number of Authorized Agent: 864-232-7474



LOCATION MAP (Not to Scale)

**GENERAL NOTES**

- 1) THE PROJECT SITE CONSISTS OF TAX PARCEL 08912-13-01.
- 2) THE TOTAL AREA OF THE PROJECT SITE IS 6.56 ACRES.
- 3) THE SUBJECT PROPERTY IS CURRENTLY PUD-C.
- 4) REFERENCE MARK USED IS SCGS MONUMENT DESIGNATED "Z 53 RESET", ELEVATION 240.3 (FEET) (NAVD88 DATUM), AS TAKEN FROM NGS DATA SHEET <http://www.ngs.noaa.gov/>. THE CONTOUR INTERVAL IS ONE (1) FOOT.
- 5) THE PROPERTY IS LOCATED IN ZONE X, BY SCALED LOCATION AND GRAPHIC PLOTTING, AS DEPICTED ON FLOOD INSURANCE RATE MAP NO. 45079C0094 H, DATED FEBRUARY 20, 2002.
- 6) ALL DIMENSIONS REFERENCED TO THE CURB INCLUDING RADII ARE TO THE FACE OF CURB (PARKING LOT SIDE) UNLESS NOTED AS BACK OF CURB (BOC).

**REFERENCES**

- 1) PLAT PREPARED FOR HKS DEVELOPMENTS, LLC, BY HUSSEY, GAY, BELL & DEYOUNG, INC., DATED DECEMBER 28, 2005, REVISED ON MARCH 12, 2007, AND RECORDED IN THE OFFICE OF THE REGISTER OF DEEDS FOR RICHLAND COUNTY IN BOOK 1434, PAGE 420.
- 2) A SITE PLAN OF PLANETARIUM/OBSERVATORY/THEATRE CONSTRUCTION-A&E, H95-9501\_GMP#1, UTILITY, SITEWORK & OBSERVATORY DOME PACKAGE, SOUTH CAROLINA STATE MUSEUM, BY CLARK PATTERSON LEE DESIGN PROFESSIONALS, DATED AUGUST 10, 2012.
- 3) PLAT PREPARED FOR SOUTH CAROLINA ELECTRIC AND GAS, BY SURVEY ONE, LLC, DATED DECEMBER 12, 2006, REVISED MARCH 13, 2007, AND RECORDED IN BOOK 1459, PAGE 1597.

**COX AND DINKINS**  
ENGINEERS - SURVEYORS  
COX AND DINKINS, INC.  
724 BELTLINE BLVD.  
COLUMBIA, SC 29205  
803-254-0518  
Fax: 803-765-0993  
Email: [cdinc@coxanddinkins.com](mailto:cdinc@coxanddinkins.com)

SOUTH CAROLINA PROFESSIONAL ENGINEER  
No. 27748  
7/20/2015  
LAURA M. BAKER  
LICENSED PROFESSIONAL ENGINEER  
NO. 27748

SOUTH CAROLINA PROFESSIONAL ENGINEER  
COX AND DINKINS, INC.  
No. C00294  
CERTIFICATE OF AUTHORIZATION SEAL

NO.	DATE	DESCRIPTION
1	6/29/2015	ISSUED ONLY; NO REVISIONS THIS SHEET
2	7/20/2015	REVISED ONLY; NO REVISIONS THIS SHEET

PREPARED FOR:  
**HOMES URBAN, LLC**  
c/o DAVIS PROPERTY GROUP, LLC  
219-A E. Washington Street  
Greenville, SC 29601  
Tel: (864) 232-7474  
Fax: (864) 232-7177

PROJECT:  
**KLINE CITY CENTER  
HUGER @ GERVAIS**  
RICHLAND COUNTY, COLUMBIA, S.C.

**DDRC EXISTING CONDITIONS PLAN**

TMS 08912-13-02  
BOOK 02B-1 SF NO. 226 23  
PROJECT NO. 1814 SHEET NO.  
DATE 6/03/2015 **EC1**

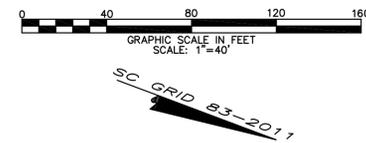
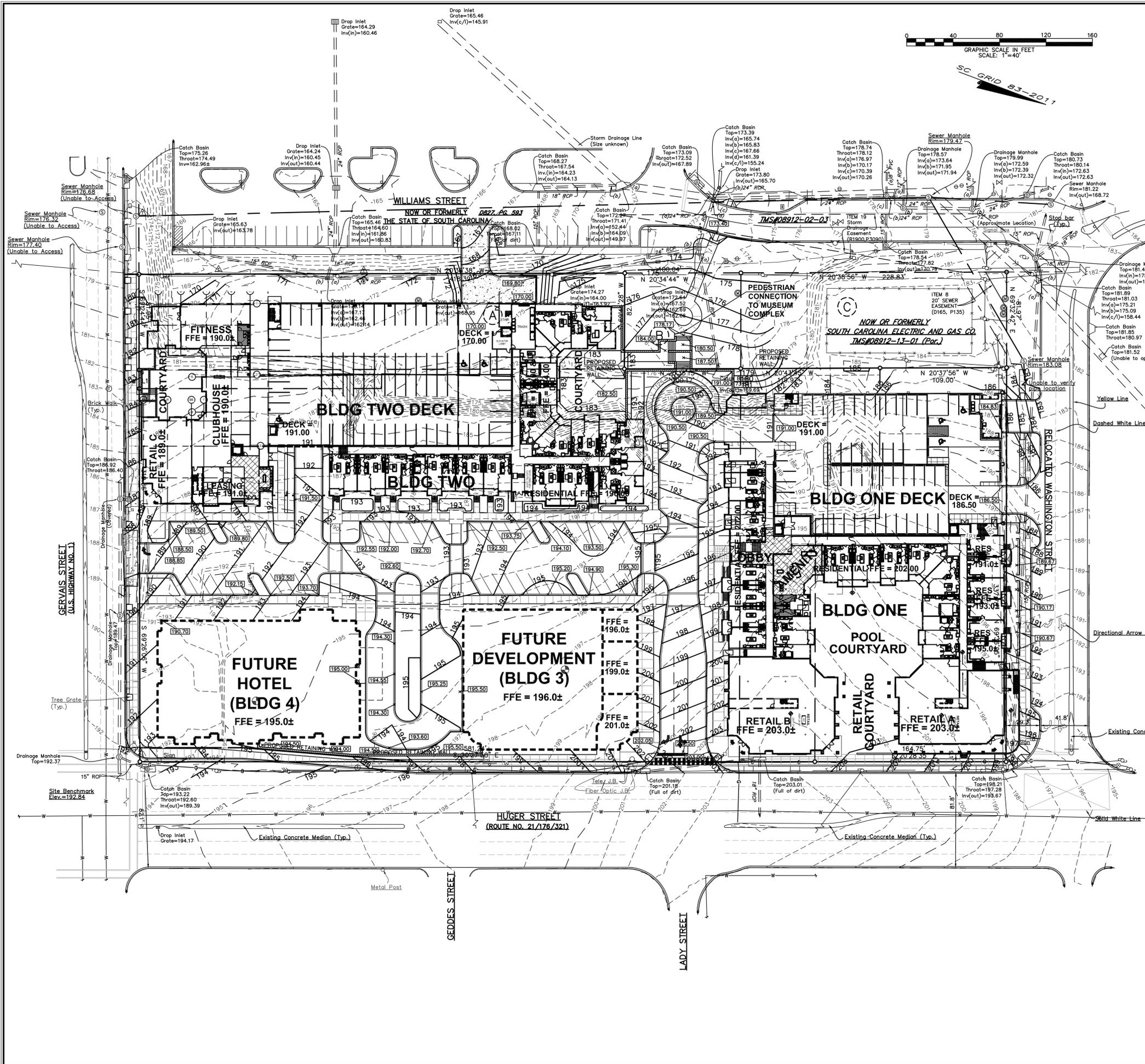
PROPERTY BOUNDARIES SHOWN ON THIS PLAN WERE TAKEN FROM ARCHIVES AND SURVEY WORK IN VARYING STAGES OF COMPLETION AND IS THEREFORE A COMPILATION. THIS PLAN IS FOR USE IN INITIAL PLAN REVIEW ONLY AND IS NOT INTENDED FOR USE AS A CONSTRUCTION DOCUMENT OR FOR CONVEYANCE OF TITLE.

The Palmetto Utility Protection Service, Inc.  
810 Dutch Square Blvd., Suite 120 Columbia, South Carolina 29210 (803) 930-1117

**South Carolina 811**  
Call 811 Before you Dig

3 DAYS BEFORE DIGGING IN SOUTH CAROLINA  
**CALL 811**  
CONTRACTOR SHALL CONTACT THE UNDERGROUND LOCATORS EVERY 10 DAYS FOR AN UPDATE TO UTILITY LOCATIONS.

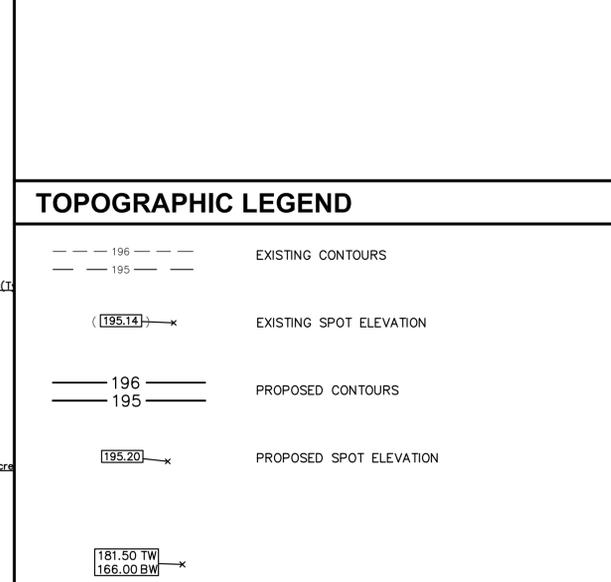
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LOCATION MAP (Not to Scale)

- ### GENERAL NOTES
- 1) THE PROJECT SITE CONSISTS OF TAX PARCEL 08912-13-01.
  - 2) THE TOTAL AREA OF THE PROJECT SITE IS 6.56 ACRES.
  - 3) THE SUBJECT PROPERTY IS CURRENTLY PUD-C.
  - 4) REFERENCE MARK USED IS SCOS MONUMENT DESIGNATED "Z 53 RESET", ELEVATION 240.3 (FEET) (NAVD88 DATUM), AS TAKEN FROM NGS DATA SHEET <http://www.ngs.noaa.gov/>. THE CONTOUR INTERVAL IS ONE (1) FOOT.
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The Palmetto Utility Protection Service, Inc.  
 800 South Main Street, Suite 100 Columbia, South Carolina 29201 (914) 411-1111

**South Carolina 811**  
 CALL 811 Before you Dig

3 DAYS BEFORE DIGGING IN SOUTH CAROLINA  
**CALL 811**  
 CONTRACTOR SHALL CONTACT THE UNDERGROUND LOCATORS EVERY 10 DAYS FOR AN UPDATE TO UTILITY LOCATIONS.

COX AND DINKINS, INC. HAS ATTEMPTED TO LOCATE UNDERGROUND PIPES & UTILITIES OF WHICH WE HAVE KNOWLEDGE. HOWEVER, THERE ARE SOME UNDERGROUND PIPES LOCATED ON THE PROPERTY WHICH WE CANNOT FIND THE ORIGIN OR TERMINUS OF AT THIS TIME. THERE ALSO MAY EXIST BURIED UNDERGROUND UTILITIES OF WHICH WE HAVE NO KNOWLEDGE OF AND WERE NOT OBSERVED DURING THE SURVEY. IF SUCH INFORMATION IS DEEMED NECESSARY WE SUGGEST THE OWNER CONTRACT WITH AN INDEPENDENT THIRD PARTY UTILITY LOCATOR.

**COX AND DINKINS**  
 ENGINEERS - SURVEYORS

COX AND DINKINS, INC.  
 724 BELTLINE BLVD.  
 COLUMBIA, SC 29205  
 803-254-0518  
 Fax: 803-765-0993  
 Email: cdinc@coxanddinkins.com

**NOT FOR CONSTRUCTION**

LICENSED PROFESSIONAL ENGINEER  
 NO. 27748

**GENERAL NOTES**

1) THE PROJECT SITE CONSISTS OF TAX PARCEL 08912-13-01.

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3) THE SUBJECT PROPERTY IS CURRENTLY PUD-C.

4) REFERENCE MARK USED IS SCOS MONUMENT DESIGNATED "Z 53 RESET", ELEVATION 240.3 (FEET) (NAVD88 DATUM), AS TAKEN FROM NGS DATA SHEET <http://www.ngs.noaa.gov/>. THE CONTOUR INTERVAL IS ONE (1) FOOT.

5) THE PROPERTY IS LOCATED IN ZONE X, BY SCALED LOCATION AND GRAPHIC PLOTTING, AS DEPICTED ON FLOOD INSURANCE RATE MAP PANEL NO. 45079C0094 H, DATED FEBRUARY 20, 2002.

6) ALL DIMENSIONS REFERENCED TO THE CURB INCLUDING RADII ARE TO THE FACE OF CURB (PARKING LOT SIDE) UNLESS NOTED AS BACK OF CURB (BOC).

### REVISONS

NO.	DATE	DESCRIPTION
1	6/29/2015	REVISE GRADING CONNECTION TO MUSEUM
2	7/20/2015	REVISE GRADING IN AREA OF PEDESTRIAN CONNECTION TO MUSEUM

PREPARED FOR:

HOMES URBAN, LLC  
 c/o DAVIS PROPERTY GROUP, LLC  
 219-A E. Washington Street  
 Greenville, SC 29601  
 Tel: (864) 232-7474  
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PROJECT:

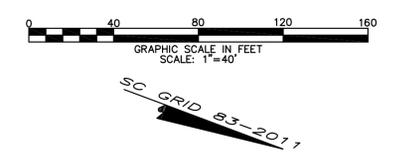
**KLINE CITY CENTER  
 HUGER @ GERVAIS**  
 RICHLAND COUNTY, COLUMBIA, S.C.

**DDRC GRADING SCHEMATIC**

PROJECT NO. 1814  
 SHEET NO. G1

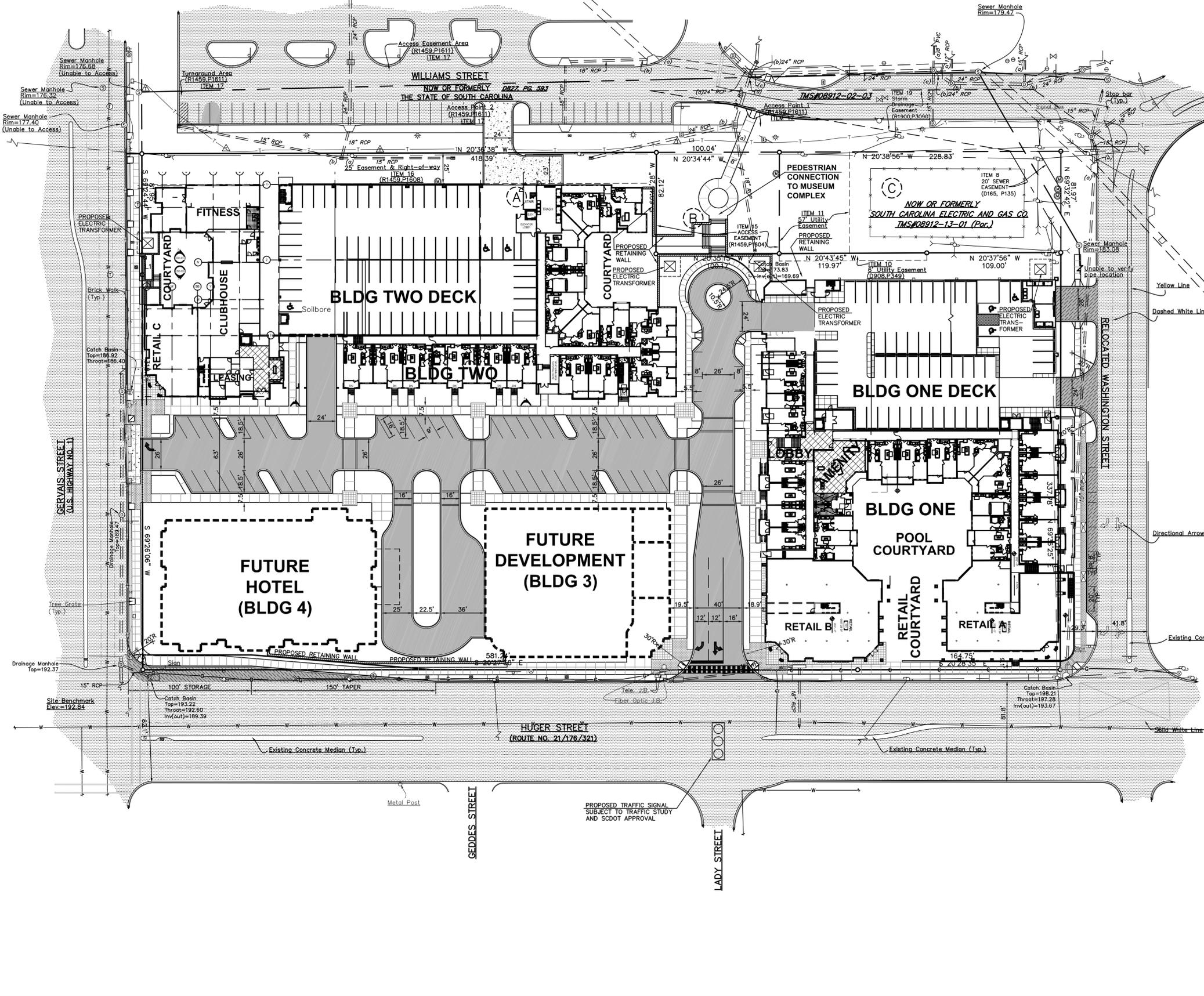
DATE 6/03/2015

COX and DINKINS, INC. HAS ATTEMPTED TO LOCATE UNDERGROUND PIPES & UTILITIES OF WHICH WE HAVE KNOWLEDGE. HOWEVER, THERE ARE SOME UNDERGROUND PIPES LOCATED ON THE PROPERTY WHICH WE CANNOT FIND THE ORIGIN OR TERMINUS OF AT THIS TIME. THERE ALSO MAY EXIST BURIED UNDERGROUND UTILITIES OF WHICH WE HAVE NO KNOWLEDGE OF AND WERE NOT OBSERVED DURING THE SURVEY. IF SUCH INFORMATION IS DEEMED NECESSARY WE SUGGEST THE OWNER CONTRACT WITH AN INDEPENDENT THIRD PARTY UTILITY LOCATOR.



**COX AND DINKINS**  
 ENGINEERS - SURVEYORS  
 COX AND DINKINS, INC.  
 724 BELTLINE BLVD.  
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**Laura M. Baker**  
 No. 27748  
 LICENSED PROFESSIONAL ENGINEER  
 No. 27748



**GENERAL NOTES**

- 1) THE PROJECT SITE CONSISTS OF TAX PARCEL 08912-13-01.
- 2) THE TOTAL AREA OF THE PROJECT SITE IS 6.56 ACRES.
- 3) THE SUBJECT PROPERTY IS CURRENTLY PUD-C.
- 4) REFERENCE MARK USED IS SCGS MONUMENT DESIGNATED "Z 53 RESET", ELEVATION 240.3 (FEET) (NAVD88 DATUM), AS TAKEN FROM NGS DATA SHEET <http://www.ngs.noaa.gov/>. THE CONTOUR INTERVAL IS ONE (1) FOOT.
- 5) THE PROPERTY IS LOCATED IN ZONE X, BY SCALED LOCATION AND GRAPHIC PLOTTING, AS DEPICTED ON FLOOD INSURANCE RATE MAP PANEL NO. 45079C0094 H, DATED FEBRUARY 20, 2002.
- 6) ALL DIMENSIONS REFERENCED TO THE CURB INCLUDING RADII ARE TO THE FACE OF CURB (PARKING LOT SIDE) UNLESS NOTED AS BACK OF CURB (BOC).

**REFERENCES**

- 1) PLAT PREPARED FOR HKS DEVELOPMENTS, LLC, BY HUSSEY, GAY, BELL & DEYOUNG, INC., DATED DECEMBER 28, 2005, REVISED ON MARCH 12, 2007, AND RECORDED IN THE OFFICE OF THE REGISTER OF DEEDS FOR RICHLAND COUNTY IN BOOK 1434, PAGE 420.
- 2) A SITE PLAN OF PLANETARIUM/OBSERVATORY/THEATRE CONSTRUCTION-A&E, H95-9501\_GMP#1, UTILITY, SITEWORK & OBSERVATORY DOME PACKAGE, SOUTH CAROLINA STATE MUSEUM, BY CLARK PATTERSON LEE DESIGN PROFESSIONALS, DATED AUGUST 10, 2012.
- 3) PLAT PREPARED FOR SOUTH CAROLINA ELECTRIC AND GAS, BY SURVEY ONE, LLC, DATED DECEMBER 12, 2006, REVISED MARCH 13, 2007, AND RECORDED IN BOOK 1459, PAGE 1597.

**BUILDING & PARKING SUMMARY**

REFER TO THE PUD DESCRIPTIVE STATEMENT AND THE KLINE CITY CENTER NARRATIVE AND DESIGN GUIDELINES FOR BUILDING AND PARKING SUMMARIES



NO.	DATE	DESCRIPTION
1	6/29/2015	ADD PEDESTRIAN STAIR CONNECTION TO MUSEUM & ADJACENT BUS PARKING
2	7/20/2015	REVISE PEDESTRIAN CONNECTION TO MUSEUM & TRANSFORMER LOCATIONS @ BUILDING TWO.

PREPARED FOR:  
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**PAVEMENT LEGEND**

	NEW PROJECT SITE ASPHALT PAVEMENT		EXISTING ASPHALT PAVEMENTS TO REMAIN
	NEW CONCRETE PAVEMENTS		NEW WASHINGTON STREET ASPHALT PAVEMENT (PER CITY STANDARDS)
	NEW HUGER STREET ASPHALT PAVEMENT (PER SC DOT STANDARDS)		NEW HARDSCAPE SEE LANDSCAPE PLAN FOR MORE DETAILS

PROJECT:  
**KLINE CITY CENTER**  
**HUGER @ GERVAIS**  
 RICHLAND COUNTY, COLUMBIA, S.C.

**DDRC SITE PLAN**

PROJECT:	TMS 08912-13-02
BOOK:	02B-1
SF NO.:	226 23
PROJECT NO.:	1814
SHEET NO.:	<b>C1</b>
DATE:	6/03/2015



**Traffic Impact Analysis for  
Kline Square  
Columbia, South Carolina**

**Prepared for:**

**Davis Property Group, LLC  
Greenville, South Carolina**

**Prepared by:**

**Kimley-Horn and Associates, Inc.  
924 Gervais Street  
Columbia, SC 29201  
(803) 403-8556**

**July 2015**



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## 1.0 Executive Summary

The purpose of this Traffic Impact Analysis (TIA) is to review vehicular traffic impacts as a result of the proposed Kline Square mixed used development. The objectives of the study are:

- To estimate trip generation and distribution for the proposed development.
- To perform capacity analyses for the identified study area.
- To determine the potential traffic impacts of the proposed development.
- To develop recommendations for needed roadway and operational improvements to accommodate the proposed development's traffic impacts.

The proposed Kline Square development is located in Columbia, South Carolina in the northwest quadrant of the Huger Street and Gervais Street intersection. The site, currently a vacant lot, is bound by Williams Street to the North, Huger Street to the east, and Gervais Street to the South. As currently envisioned, the proposed site will ultimately consist of the following land uses:

- 370 multi-family apartments
- 140 room hotel
- 40,000 square feet of general retail space
- 20,000 square feet of office space
- 950 parking space facility (with 150 of the spaces dedicated to public parking to access attractions outside of the site)

The development is expected to be completed (built-out) in 2017. Access to the site is proposed via the following locations:

- full movement driveway located along Washington Street
- full movement driveway located at the existing intersection of Lady Street and Huger Street
- One right-in/right-out driveway located along Gervais Street

This report summarizes the analyses of 2015 existing conditions, 2017 background conditions, and 2017 build-out conditions during the AM and PM peak hours at the following intersections:

1. Huger Street at Hampton Street (signalized)
2. Huger Street at Washington Street (unsignalized, full-movement)
3. Huger Street at Lady Street/ Access #1 (proposed to be signalized)
4. Gervais Street at Access #2 (proposed right-in/right-out)
5. Washington Street at Access #3 (proposed unsignalized, full-movement, parking garage)

Kimley-Horn was retained to determine the potential traffic impacts of this development (in accordance with the traffic study guidelines set forth by SCDOT and the City of Columbia) and to identify transportation improvements that may be required to accommodate future traffic conditions. This report presents trip generation, distribution, capacity analyses, and recommendations for transportation improvements required to meet anticipated traffic demands.

Based on the capacity analyses contained herein, the following roadway improvements are recommended to mitigate impact of the proposed development on the adjacent street network.

#### **Huger Street at Lady Street/ Access #1**

- Based off of capacity analysis signal warrant results at the intersection of Huger Street at Lady Street/Access #1, a signal is recommended at this intersection. Upon signalization of this intersection, this intersection is expected to operate at a LOS B during the AM peak hour and LOS A during the PM peak hour.
- In addition to the signalization of this intersection, in order to accommodate site trips into the site, a northbound left-turn lane with a minimum of 75 feet of storage along Huger Street is recommended with permitted protected phasing.

#### **Huger Street at Gervais Street**

- Construct an additional southbound left-turn on Huger Street, this improvement will necessitate protected southbound left-turn phasing. One southbound left-turn will be a drop lane, the other will require a minimum storage of 325 feet to accommodate the expected queuing at the intersection.
- Construct a southbound right-turn lane with a minimum storage of 100 feet to accommodate expected queuing at the intersection.
- Construct an additional northbound left-turn on Huger Street, this improvement will necessitate protected northbound left-turn phasing. The northbound left-turns will need a minimum of 250 feet of storage to accommodate expected queuing at the intersection.

## 2.0 Introduction

The proposed Kline Square development is located in Columbia, South Carolina in the northwest quadrant of the Huger Street and Gervais Street intersection. The site, currently a vacant lot, is bound by Williams Street to the North, Huger Street to the east, and Gervais Street to the South. **Figure 1** provides an aerial of the study area/site location. **Figure 2** shows the proposed site plan. The development is expected to be built-out in 2017. This analysis considers the 2015 existing traffic conditions, the projected 2017 background conditions, and the projected 2017 build-out conditions.

The study area has been identified as:

1. Huger Street at Hampton Street (signalized)
2. Huger Street at Washington Street (unsignalized, full-movement)
3. Huger Street at Lady Street/ Access #1 (proposed signalized)
4. Gervais Street at Access #2 (proposed right-in/right-out)
5. Washington Street at Access #3 (proposed unsignalized, full-movement, parking garage)

Existing roadway laneage can be seen in **Figure 3**.

## 3.0 Existing Traffic Conditions

Huger Street is a six (6) lane (varies up to eight (8) lanes depending on turn lanes), concrete divided principal arterial with a posted speed limit of 35 mph throughout the study area. This roadway has a 2013 South Carolina Department of Transportation (SCDOT) Average Annual Daily Traffic (AADT) volume of 34,100 vehicles per day (vpd) and 23,100 vpd to the north and south of the proposed site, respectively.

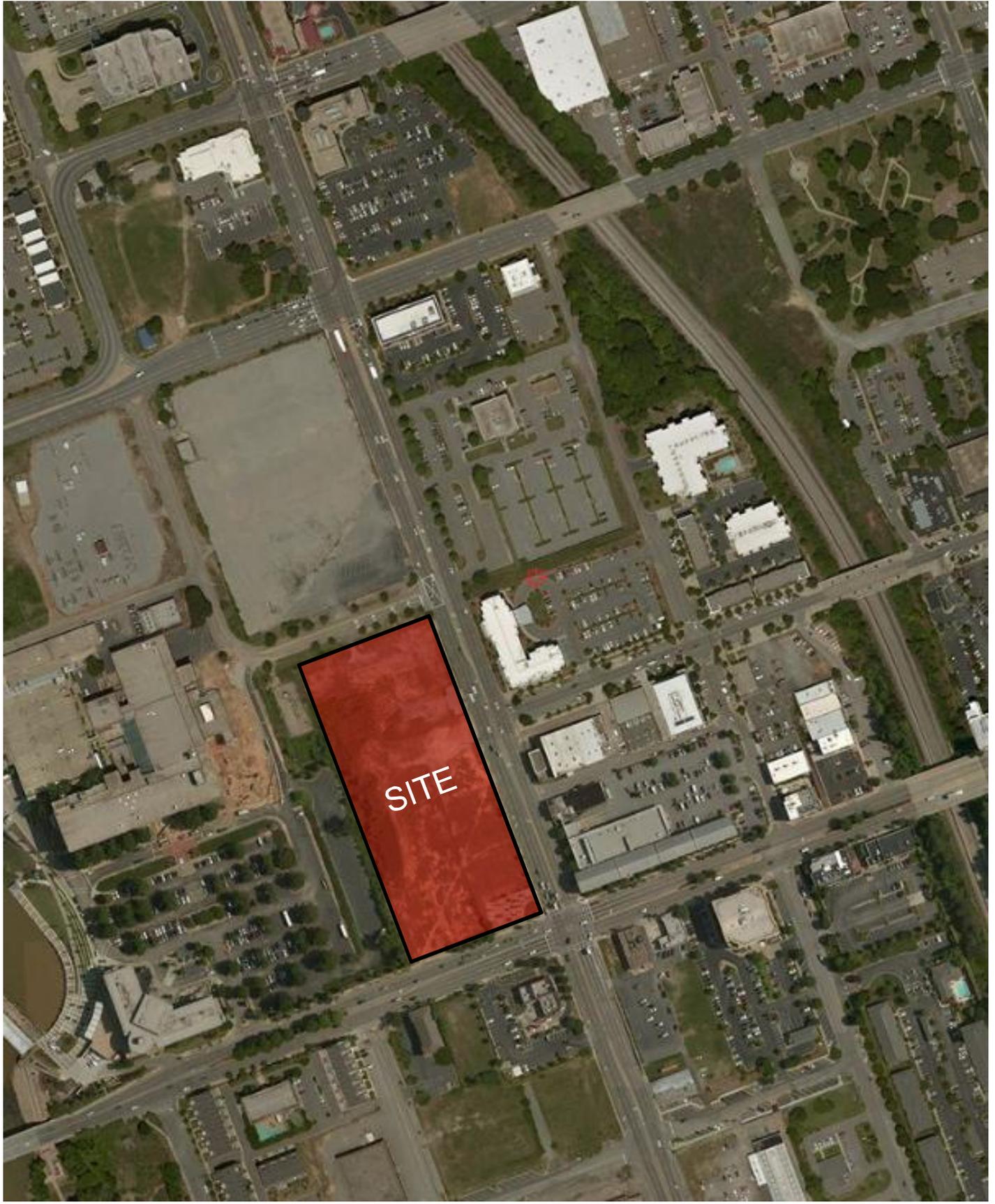
Hampton Street is a four (4) lane (varies up to seven (7) lanes depending on turn lanes), undivided principal arterial which operates as the eastbound direction of a one-way pair with Taylor Street in the study area. There is a posted speed limit of 35 mph throughout the study area. This roadway has a 2013 SCDOT AADT volume of 21,400 vpd and 7,900 vpd to the east and west of the proposed site, respectively.

Gervais Street is a six (6) lane (varies up to seven (7) lanes depending on turn lanes), undivided principal arterial. There is a posted speed limit of 35 mph throughout the study area. This roadway has a 2013 SCDOT AADT volume of 26,100 vpd and 27,900 vpd to the east and west of the proposed site, respectively.

Washington Street is a three (3) lane undivided roadway. There is not a posted speed limit in the study area. This roadway has a 2013 SCDOT AADT volume of 850 vpd in the vicinity of the site.

Lady Street is a two (2) lane undivided roadway. There is a posted speed limit of 25 mph throughout the study area. This roadway has a 2013 SCDOT AADT volume of 6,200 vpd near the site.

Peak-hour turning movement traffic counts were performed at the four existing intersections on Tuesday, March 31, 2015. Existing traffic volumes were balanced due to the close spacing of the study intersections with limited driveways in-between. Traffic counts and calculations are provided in **Appendix A. Figure 4** illustrates existing 2015 peak hour traffic volumes. It is important to note that 200 vehicles were added to the southbound right turn and subsequently subtracted from the southbound through volume at the intersection of Huger Street at Gervais Street. The counts received did not match field observations or historical data, therefore engineering judgement was used to make this assumption.



Kimley»Horn

Kline Square  
Traffic Impact Analysis

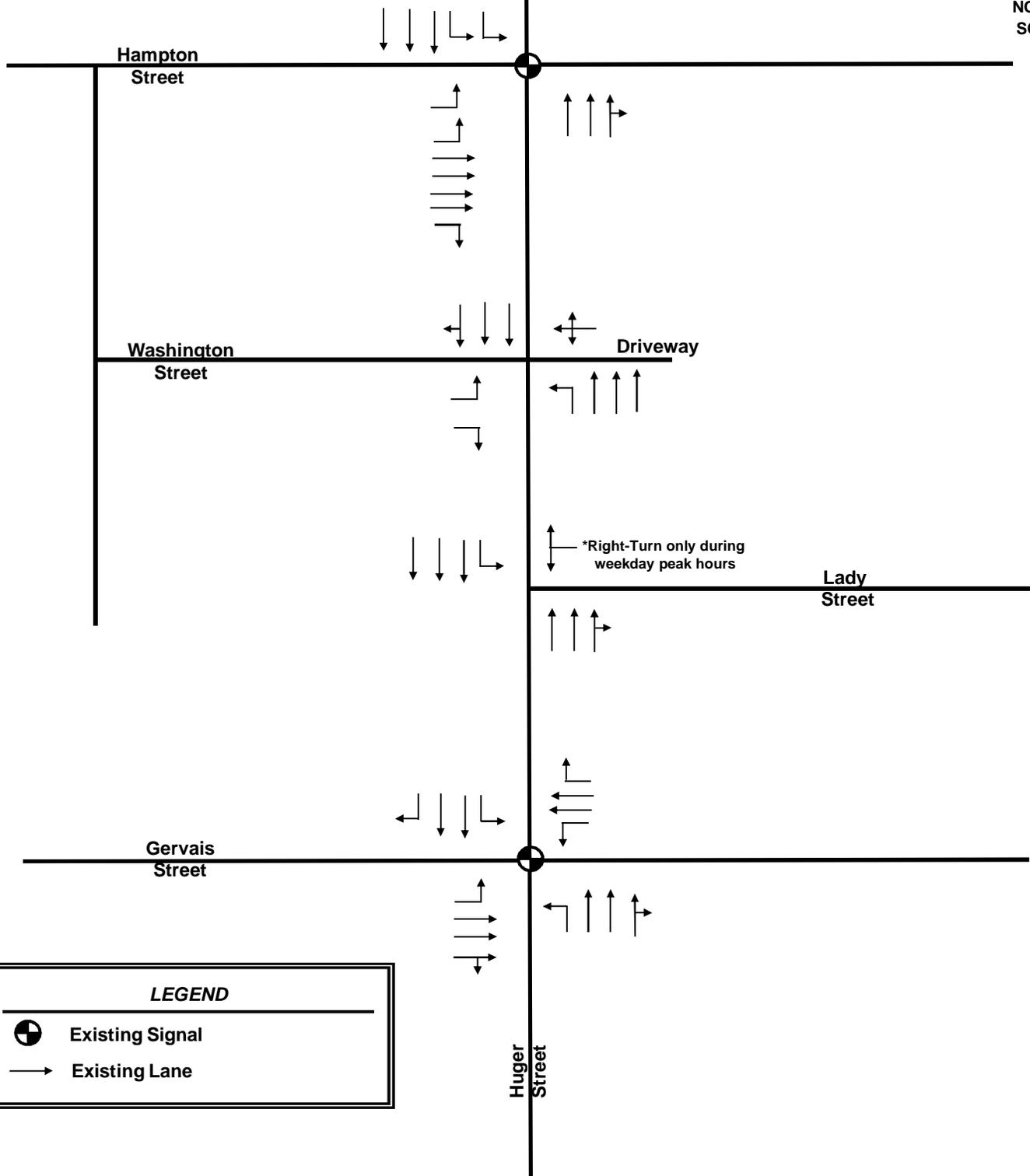
Site Location

Figure  
1





NOT TO SCALE



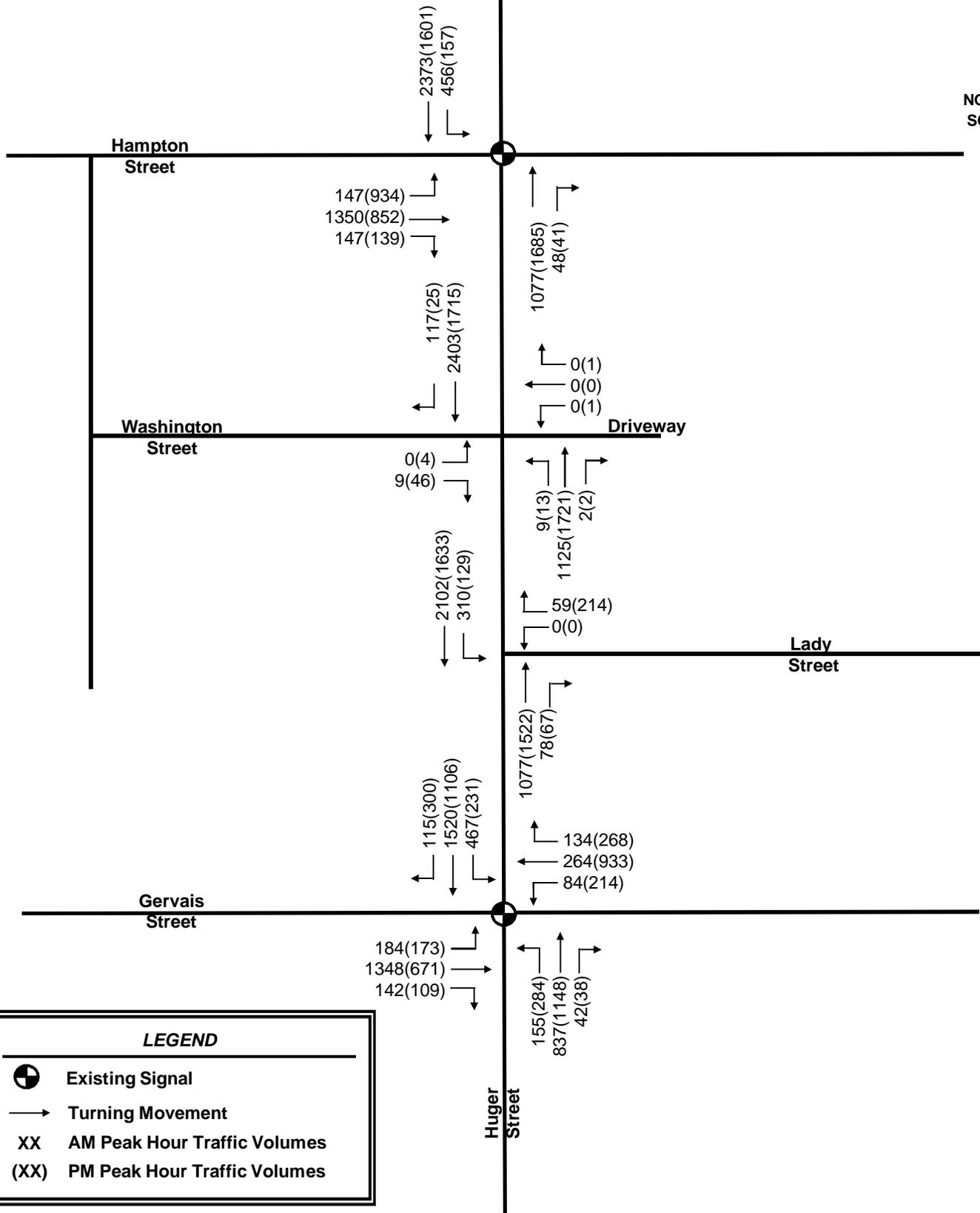
**LEGEND**

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 Existing Signal  
 Existing Lane



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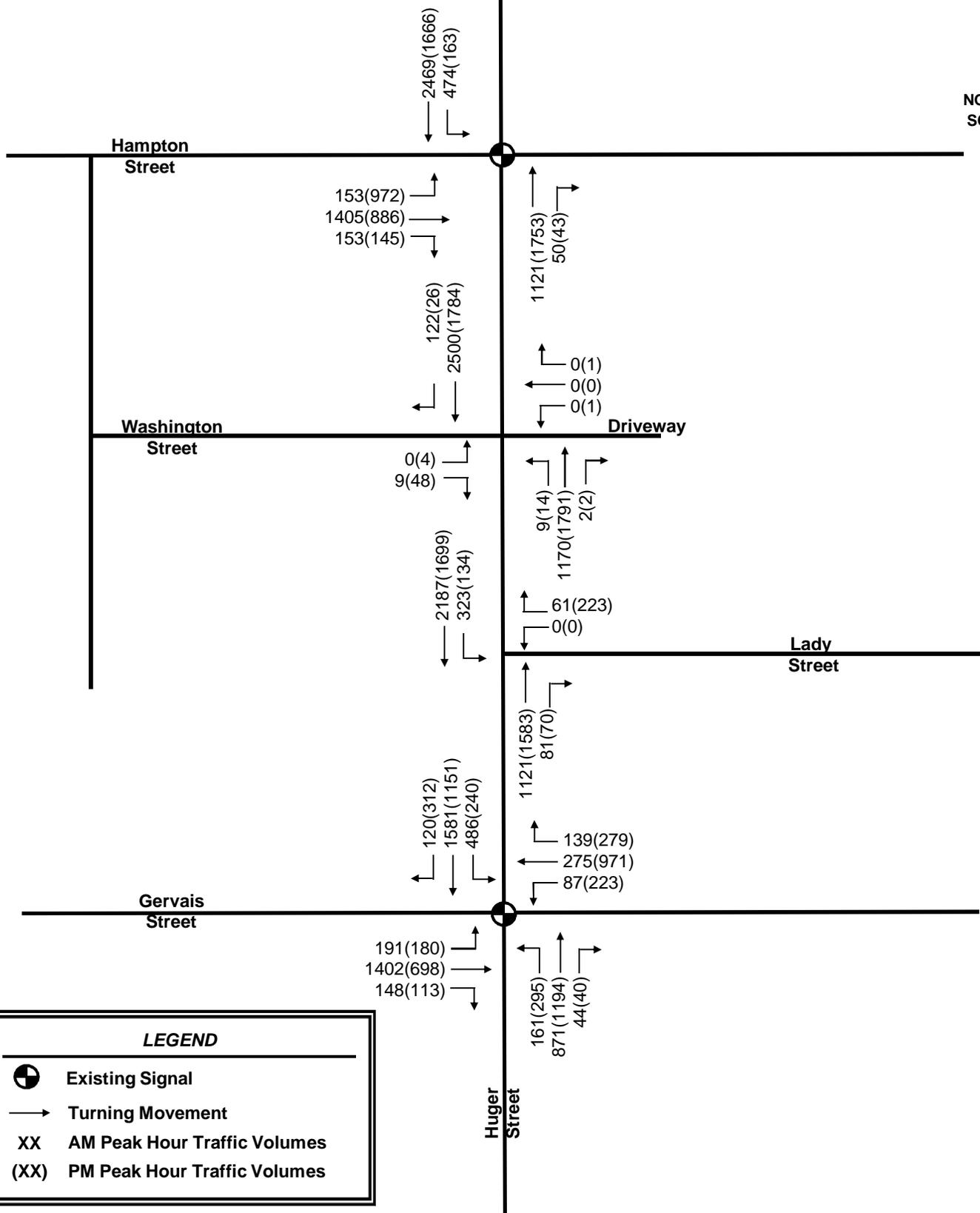


#### 4.0 Projected Background (Non-Project) Traffic

Projected background (non-project) traffic is defined as expected traffic on the roadway network in the future year(s) absent the construction and opening of the proposed project, plus any approved adjacent developments. Based on discussions with City of Columbia Planning Office, no permitted developments were identified that would impact traffic in the study area. The existing 2015 peak hour traffic volumes were grown at 2% per year to account for the expected background growth in traffic. **Figure 5** illustrates the projected 2017 background traffic volumes (which do not include the Kline Square development volumes).



NOT TO SCALE



**LEGEND**

- Existing Signal
- Turning Movement
- XX AM Peak Hour Traffic Volumes
- (XX) PM Peak Hour Traffic Volumes

## 5.0 Project Traffic

Project traffic used in this analysis is defined as the vehicle trips expected to be generated by the development, distribution, and assignment of that traffic over the study roadway network.

### 5.1 PROJECT SITE ACCESS

Access to the proposed Kline Square development will be provided at three (3) proposed locations, which can be seen in the site plan located previously in **Figure 2**. The proposed driveways are proposed to be located and operate as the following:

1. Huger Street at Lady Street/ Access #1 (proposed signalized)
2. Gervais Street at Access #2 (proposed right-in/right-out)
3. Washington Street at Access #3 (proposed unsignalized, full-movement, parking garage)

### 5.2 TRAFFIC GENERATION

The traffic generation potential of the proposed development was determined using the trip generation rates published in *Trip Generation* (Institute of Transportation Engineers, Ninth Edition, 2012). As currently envisioned, the proposed site will ultimately consist of the following land uses:

- 370 Multi-family Apartments
- 140 room hotel – ITE 310
- 40,000 square feet of general retail space-ITE 820
- 20,000 square feet of office space –ITE 710
- 950 parking space facility with 150 of the spaces dedicated to public parking to access attractions outside of the site (800 spaces are dedicated to the retail, hotel, and office space)
  - Parking facility trip generation rates are not available from ITE, therefore it was assumed that 80% of 150 parking spaces will be filled in the AM and PM peak hours, totaling 120 trips. In the AM peak hour, it is expected approximately 65% of AM trips will enter the site while 35% will exit the site. In the PM peak hour. It is expected approximately 50% of PM trips will enter the site while 50% will exit the site.

Pass-by and internal capture trips were included in this analysis due to the nature of the proposed retail and residential land uses. **Table 1** summarizes the projected trip generation.

Table 1 - Trip Generation									
Land Use	Intensity	Daily	AM Peak Hour			PM Peak Hour			
			Total	In	Out	Total	In	Out	
General Office	20,000 SF	386	53	47	6	101	17	84	
Shopping Center	40,000 SF	3,743	89	55	34	324	156	168	
Apartment	370 DU	2,366	185	37	148	221	144	77	
Public Parking	150 SP		120	78	42	120	60	60	
Hotel	140 RM	880	74	44	30	84	43	41	
<b>Subtotal</b>		<b>7,375</b>	<b>521</b>	<b>261</b>	<b>260</b>	<b>850</b>	<b>420</b>	<b>430</b>	
<b>Internal Capture</b>		<b>1,538</b>	<b>20</b>	<b>10</b>	<b>10</b>	<b>184</b>	<b>92</b>	<b>92</b>	
ITE 820 Pass-By - 0% AM / 51% PM		116	0	0	0	116	58	58	
Adjacent Street Traffic			3,257			3,226			
10% Adjacent Street Traffic		646	0	0	0	646	323	323	
<b>Pass-By</b>		<b>116</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>116</b>	<b>58</b>	<b>58</b>	
<b>Net New External Trips</b>		<b>5,721</b>	<b>501</b>	<b>251</b>	<b>250</b>	<b>550</b>	<b>270</b>	<b>280</b>	
Note: Trip generation was calculated using the following data:									
Daily Traffic Generation									
General Office	[ITE 710]	=	Ln (T) = 0.76 Ln (X) + 3.68; (50% in, 50% out)						
Shopping Center	[ITE 820]	=	Ln (T) = 0.65 Ln (X) + 5.83; (50% in, 50% out)						
Apartment	[ITE 220]	=	T = 6.06 (X) + 123.56; (50% in, 50% out)						
Public Parking									
Hotel	[ITE 310]	=	T = 8.95 X - 373.16; (50% in, 50% out)						
AM Peak-Hour Traffic Generation									
General Office	[ITE 710]	=	Ln (T) = 0.80 Ln (X) + 1.57; (88% in, 12% out)						
Shopping Center	[ITE 820]	=	Ln (T) = 0.61 Ln (X) + 2.24; (62% in, 38% out)						
Apartment	[ITE 220]	=	T = 0.49 (X) + 3.73; (20% in, 80% out)						
Public Parking		=	T = 80% Occupancy * 150 Public Parking Spaces (65% in, 35% out)						
Hotel	[ITE 310]	=	T = 0.53 X; (59% in, 41% out)						
PM Peak-Hour Traffic Generation									
General Office	[ITE 710]	=	T = 1.12 (X) + 78.45; (17% in, 83% out)						
Shopping Center	[ITE 820]	=	Ln (T) = 0.67 Ln (X) + 3.31; (48% in, 52% out)						
Apartment	[ITE 220]	=	T = 0.55 (X) + 17.65; (65% in, 35% out)						
Public Parking		=	T = 80% Occupancy * 150 Public Parking Spaces (50% in, 50% out)						
Hotel	[ITE 310]	=	T = 0.60 X; (51% in, 49% out)						

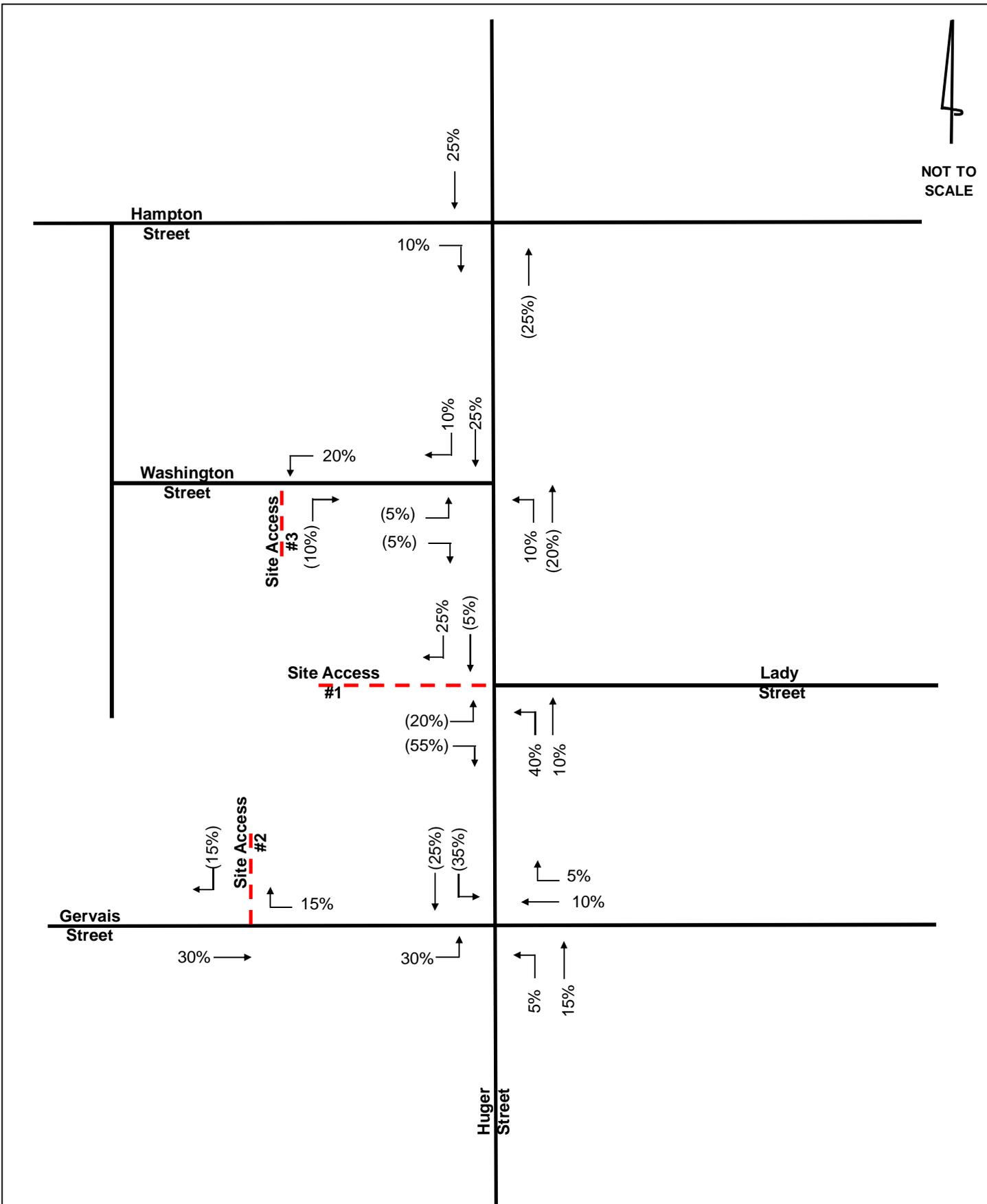
### 5.3 TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution and assignment of new project trips are based upon a review of land uses and population densities in the area, and the existing peak hour turning movement counts. **Figure 6** summarizes the project trip distribution and assignment for the AM peak hour. **Figure 7** summarizes the project trip distribution and assignment for the PM peak hour.

Based on the trip generation from **Table 1** and the anticipated trip distribution, new project trips are assigned to the study roadway network. **Figure 8** illustrates the projected 2017 AM build-out traffic volumes and **Figure 9** illustrates the project 2017 PM build-out traffic volumes. **Appendix B** provides intersection volume worksheets for the study network. **Appendix C** provides pass-by calculations.

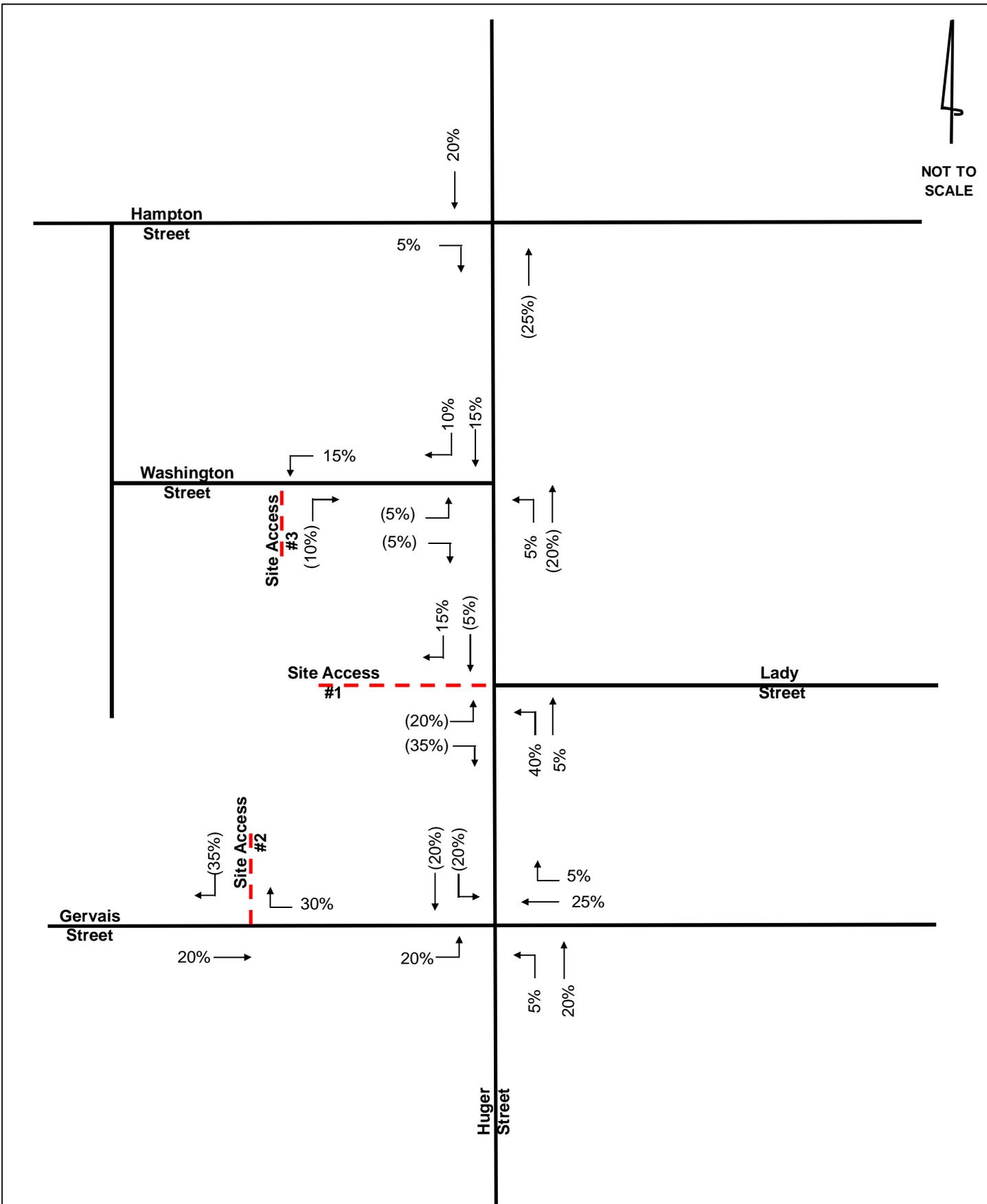


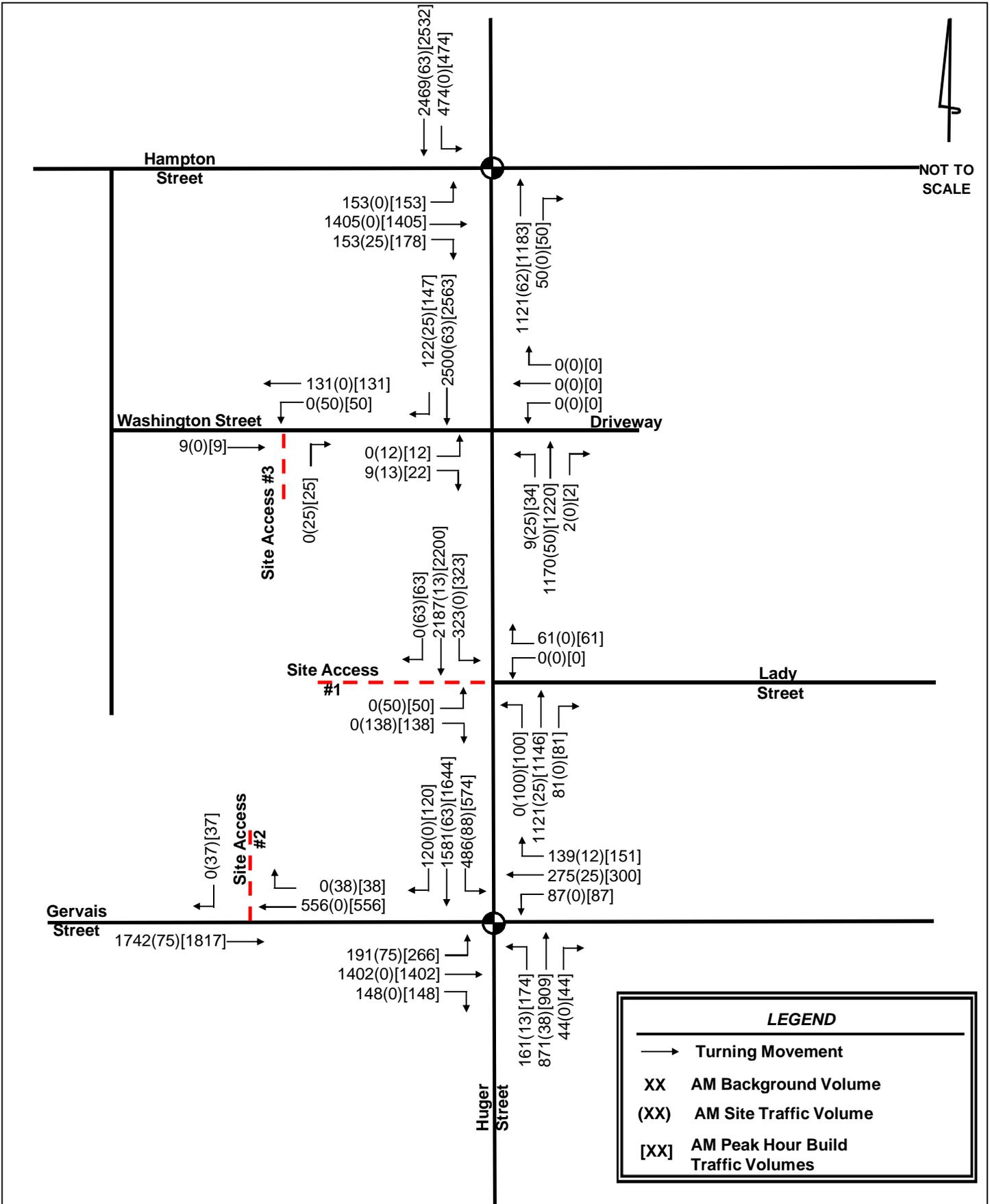
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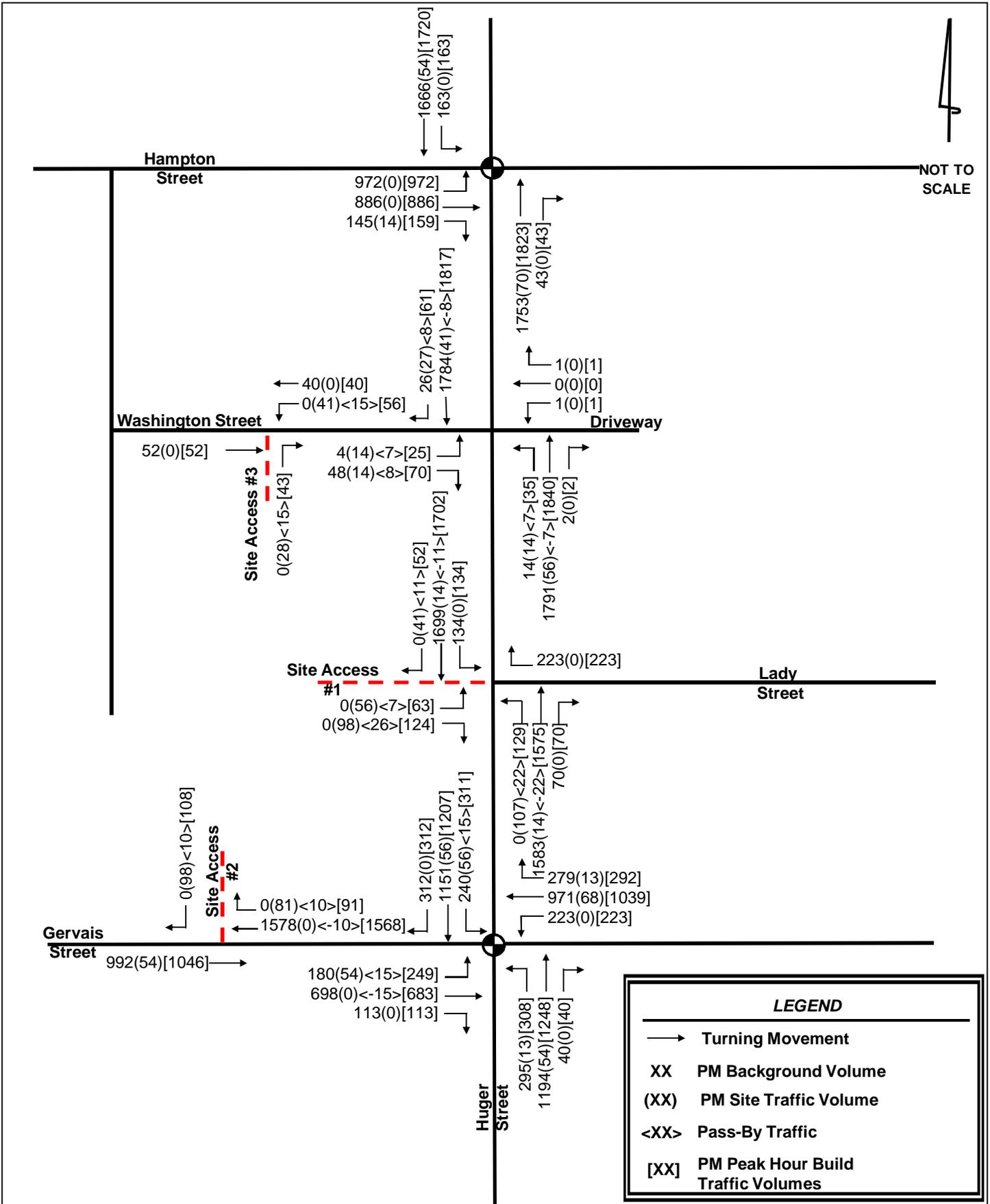




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## 6.0 Capacity Analysis

Level-of-service determinations were made for the weekday AM and PM peak hours for the existing study network intersections and proposed access intersections using Synchro Version 8. The program uses methodologies contained in the *2000 and 2010 Highway Capacity Manual* to determine the operating characteristics of an intersection. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment, or through a particular intersection, within a specified period of time under prevailing roadway, traffic, and control conditions.

Level-of-service (LOS) is used to describe the operating characteristics of a road segment or intersection in relation to its capacity. LOS is defined as a qualitative measure that describes operational conditions and motorists' perceptions of a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with A being the best and F the worst.

Levels-of-service for unsignalized intersections, with stop control on the minor street(s) only, are reported for the side street approaches. Low levels-of-service for the side street approaches are not uncommon, as vehicles may experience long delays turning onto a major roadway.

Levels-of-service for signalized intersections are reported for the intersection as a whole. One or more movements at an intersection may experience a low level-of-service, while the intersection as a whole may operate acceptably.

Capacity analyses were performed for the 2015 existing traffic conditions, 2017 background traffic conditions, and 2017 build-out traffic conditions. Recommended storage lengths are based upon Synchro 95<sup>th</sup> queue lengths. Synchro and SimTraffic analysis results are available in **Appendix D**.

City of Columbia provided existing signal timings via AM and PM Synchro files. These timings were used in the development of the study.

Table 2.0-A lists the LOS control delay thresholds published in the Highway Capacity Manual (HCM) for signalized intersections. Synchro Version 8 software uses the same LOS thresholds as those published in the HCM.

<b>Table 6.0 A</b>	
<b>Level-of-Service Control Delay Thresholds for Signalized Intersections</b>	
<b>Level-of-Service</b>	<b>Control Delay per Vehicle [sec/veh]</b>
A	≤ 10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

Table 2.0-B lists the LOS control delay thresholds published in the HCM for unsignalized intersections, as well as the unsignalized operational descriptions assumed herein.

<b>Table 6.0 B</b>		
<b>Level-of-Service Control Delay Thresholds for Unsignalized Intersections</b>		
<b>Level-of-Service</b>	<b>Average Control Delay per Vehicle [sec/veh]</b>	
A	≤ 10	Short Delays
B	> 10 – 15	
C	> 15 – 25	
D	> 25 – 35	Moderate Delays
E	> 35 – 50	
F	> 50	Long Delays

## 6.1 HUGER STREET AT HAMPTON STREET

**Table 6.1** summarizes the LOS and control delay (seconds per vehicle) at the signalized intersection of Huger Street at Hampton Street.

Huger Street at Hampton Street								
Condition	Measure	EB			NB	SB		Intersection
		EBL	EBT	EBR	NBT	SBL	SBT	
<b>AM Peak Hour</b>								
2015 Existing	LOS (Delay)	D (38.6)			E (57.3)	C (24.7)		D (35.1)
	Synchro 95th Q	77'	363'	110'	354'	246'	667'	
2017 Background	LOS (Delay)	D (38.9)			E (58.9)	C (26.4)		D (36.4)
	Synchro 95th Q	79'	382'	116'	371'	257'	724'	
2017 Build	LOS (Delay)	D (38.9)			E (58.9)	C (27.4)		D (37.0)
	Synchro 95th Q	79'	382'	142'	398'	257'	766'	
<b>PM Peak Hour</b>								
2015 Existing	LOS (Delay)	F (89.0)			B (10.9)	B (13.5)		D (40.4)
	Synchro 95th Q	#676'	241'	114'	142'	107'	234'	
2017 Background	LOS (Delay)	F (98.4)			B (10.9)	B (13.7)		D (43.9)
	Synchro 95th Q	#714'	252'	122'	147'	110'	247'	
2017 Build	LOS (Delay)	F (98.0)			B (10.4)	B (13.8)		D (43.1)
	Synchro 95th Q	#714'	252'	138'	m148'	110'	260'	

During all analyzed AM and PM peak hour conditions, the intersection of Huger Street at Hampton Street is expected to operate at LOS D for the overall intersection. The addition of the site traffic is expected to have minimal impacts on this intersection, therefore no improvements are recommended.

## 6.2 HUGER STREET AT WASHINGTON STREET

**Table 6.2** summarizes the LOS and control delay (seconds per vehicle) at the unsignalized, full-movement intersection of Huger Street at Washington Street.

Huger Street at Washington Street								
Condition	Measure	EB		WB	NB		SB	Intersection
		EBL	EBR	WBT	NBL	NBT	SBT	
<b>AM Peak Hour</b>								
2015 Existing	LOS (Delay)	B (10.9)		A (0.0)	A (0.2)		A (0.0)	-
	Synchro 95th Q	0'	1'	0'	3'	0'	0'	
2017 Background	LOS (Delay)	B (11.4)		A (0.0)	A (0.2)		A (0.0)	-
	Synchro 95th Q	0'	1'	0'	3'	0'	0'	
2017 Build	LOS (Delay)	C (21.7)		A (0.0)	A (0.7)		A (0.0)	-
	Synchro 95th Q	9'	4'	0'	15'	0'	0'	
<b>PM Peak Hour</b>								
2015 Existing	LOS (Delay)	B (10.8)		C (20.9)	A (0.1)		A (0.0)	-
	Synchro 95th Q	2'	4'	1'	3'	0'	0'	
2017 Background	LOS (Delay)	B (10.9)		C (21.2)	A (0.1)		A (0.0)	-
	Synchro 95th Q	2'	5'	1'	3'	0'	0'	
2017 Build	LOS (Delay)	C (19.7)		D (26.5)	A (0.3)		A (0.0)	-
	Synchro 95th Q	23'	7'	1'	10'	0'	0'	

During all analyzed AM and PM peak hour conditions, the intersection of Huger Street at Washington Street is expected to operate with short to moderate delays. The addition of the site traffic is expected to have minimal impacts on this intersection, therefore no improvements are recommended.

### 6.3 HUGER STREET AT LADY STREET/ACCESS #1

**Table 6.3** summarizes the LOS and control delay (seconds per vehicle) at the currently unsignalized intersection of Huger Street at Lady Street/Access #1. This intersection is proposed to be signalized upon build-out of the site.

Huger Street at Lady Street/Site Access #1									
Condition	Measure	EB		WB	NB		SB		Intersection
		EBL	EBR	WBR	NBL	NBT	SBL	SBT	
<b>AM Peak Hour</b>									
2015 Existing	LOS (Delay)	-		A (9.2)	A (0.0)		A (1.7)		-
	Synchro 95th Q	-		6'	-	0'	55'	0'	-
2017 Background	LOS (Delay)	-		A (9.3)	A (0.0)		A (1.8)		-
	Synchro 95th Q	-		6'	-	0'	62'	0'	-
2017 Build	LOS (Delay)	F (286.6)		A (9.3)	A (2.1)		A (1.8)		-
	Synchro 95th Q	177'	25'	6'	23'	0'	63'	0'	-
2017 Build IMP (Signalization + NB Left-Turn Lane)	LOS (Delay)	C (22.5)		A (0.6)	D (36.6)		A (9.9)		B (18.9)
	Synchro 95th Q	88'	27'	0'	m73'	465'	m233'	170'	-
<b>PM Peak Hour</b>									
2015 Existing	LOS (Delay)	-		B (11.0)	A (0.0)		A (1.0)		-
	Synchro 95th Q	-		29'	-	0'	23'	0'	-
2017 Background	LOS (Delay)	-		B (11.2)	A (0.0)		A (1.0)		-
	Synchro 95th Q	-		32'	-	0'	25'	0'	-
2017 Build	LOS (Delay)	F (3375.0)		B (11.2)	A (3.3)		A (1.0)		-
	Synchro 95th Q	Err	13'	31'	39'	0'	25'	0'	-
2017 Build IMP (Signalization + NB Left-Turn Lane)	LOS (Delay)	C (22.2)		C (20.4)	A (7.9)		A (8.0)		A (9.4)
	Synchro 95th Q	101'	0'	96'	m70'	m129'	104'	183'	-

As shown in **Table 6.3**, the intersection of Huger Street at Lady Street currently operates with short delays on the side streets during the AM and PM peak hours. Note: Westbound Lady Street operates with a left turn restriction during the PM (4-6) peak hour on weekdays. Therefore, the intersection functions as a left-over intersection to balance the queuing from the downstream left turn traffic at the intersection with Gervais Street. The intersection is expected to continue to operate with short delays during the AM and PM peak hours with the 2017 background traffic.

Upon build-out of the site in 2017, the eastbound approach is expected to operate with exceedingly long delays. The eastbound approach is the proposed site's main entrance as well as provides the pedestrian connectivity from the Lady Street Vista to the site and State Museum property. In order to mitigate the addition of the site traffic, this intersection is proposed to be signalized. Upon signalization, this intersection is expected to operate at overall LOS B during the AM peak hour and LOS A during the PM peak hour.

A northbound left-turn lane with a minimum of 75 feet of storage along Huger Street is recommended with permitted protected phasing to accommodate trips into the site.

This signal will need to be coordinated with the existing signals along Huger Street, especially at the intersection of Huger Street at Gervais Street due to the expected southbound through queues. The southbound queues at the intersection of Huger Street at Gervais Street are expected to exceed 1000 feet in the AM peak hour and 700 feet in the PM peak hour, while there is only 450 feet to 500 feet between the intersection of Lady Street and Gervais Street along Huger Street. Section 6.4 covers the recommended mitigation strategy for the proposed signal at Huger Street and Lady Street/Site Access #1 operate more efficiently.

### 6.4 HUGER STREET AT GERVAIS STREET

**Table 6.4** summarizes the LOS and control delay (seconds per vehicle) at the signalized intersection of Huger Street at Gervais Street.

Huger Street at Gervais Street												
Condition	Measure	EB		WB			NB		SB			Intersection
		EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
<b>AM Peak Hour</b>												
2015 Existing	LOS (Delay)	F (85.5)		C (26.4)			D (48.6)		F (108.0)			F (81.9)
	Synchro 95th Q	170'	#683'	83'	142'	35'	163'	310'	m#610'	#989'	m62'	
2017 Background	LOS (Delay)	F (100.7)		C (26.9)			D (49.8)		F (123.9)			F (93.3)
	Synchro 95th Q	176'	#726'	87'	147'	38'	172'	324'	#609'	#1051'	m61'	
2017 Build	LOS (Delay)	F (98.7)		C (28.0)			D (51.6)		F (152.8)			F (104.7)
	Synchro 95th Q	249'	#726'	87'	160'	70'	188'	339'	m#787'	#1116'	m57'	
2017 Build IMP (Dual SBL, Dual NBL, Optimized Offsets)	LOS (Delay)	F (107.2)		C (30.6)			D (45.9)		F (95.8)			F (84.0)
	Synchro 95th Q	252'	#738'	88'	171'	59'	121'	317'	318'	#1094'	m53'	
<b>PM Peak Hour</b>												
2015 Existing	LOS (Delay)	D (36.7)		D (35.7)			D (50.8)		F (133.8)			E (69.8)
	Synchro 95th Q	#215'	228'	161'	442'	125'	#425'	#516'	274'	#866'	266'	
2017 Background	LOS (Delay)	D (38.0)		D (36.2)			E (55.6)		F (161.8)			E (79.9)
	Synchro 95th Q	#241'	238'	#181'	465'	131'	#447'	#549'	284'	#914'	284'	
2017 Build	LOS (Delay)	E (59.3)		D (35.7)			F (92.6)		F (189.5)			F (102.3)
	Synchro 95th Q	#404'	233'	#168'	511'	140'	#460'	#585'	#424'	#971'	282'	
2017 Build IMP (Dual SBL, Dual NBL, Optimized Offsets)	LOS (Delay)	E (64.7)		E (58.6)			D (52.0)		D (40.1)			D (52.2)
	Synchro 95th Q	#406'	296'	228'	#653'	110'	#241'	430'	196'	#736'	59'	

As shown in **Table 6.4**, the intersection of Huger Street at Gervais Street currently operates at a LOS F during the AM peak hour and LOS E during the PM peak hour. During 2017 background conditions, the intersection is expected to continue to operate at LOS F during the AM peak hour and LOS E during the PM peak hour. Upon build-out of the site in 2017, the intersection is expected to continue to operate at LOS F during the AM peak hour but the PM peak hour LOS is expected to drop to LOS F.

In order to mitigate the delays associated with the addition of the site traffic to this intersection and to help improve the signal operations at the intersection of Huger Street at Lady Street/Access #1, the following improvements at the intersection of Huger Street at Gervais Street are recommended:

- Construct an additional southbound left-turn on Huger Street, this improvement will necessitate protected southbound left-turn phasing. One southbound left-turn will be a drop lane, the other will require a minimum storage of 325 feet to accommodate the expected queuing at the intersection.
- Construct a southbound right-turn lane with a minimum storage of 100 feet to accommodate expected queuing at the intersection.
- Construct an additional northbound left-turn on Huger Street, this improvement will necessitate protected northbound left-turn phasing. The northbound left-turns will need a minimum of 250 feet of storage to accommodate expected queuing at the intersection.
- Modify the traffic signal phasing for northbound and southbound Huger Street left turn movements to operate in a lead-lag operation. This operation is necessary as the space within the intersection does not permit concurrent operation of the dual-left movements. In addition, this operation permits optimization of the signal timings based on traffic progression and improvement in the overall intersection performance.

These improvements are not only expected to mitigate the overall intersection delays associated with the site traffic for the proposed development, but are also expected to help the overall intersection operate more efficiently than existing conditions. The construction of dual southbound lefts and dual northbound lefts are warranted in the existing conditions due turning volumes at the intersection.

### 6.5 GERVAIS STREET AT ACCESS #2

**Table 6.5** summarizes the LOS and control delay (seconds per vehicle) at the unsignalized, right-in/right-out intersection of Gervais Street at Access #2.

Gervais Street at Site Access #2					
Condition	Measure	EB	WB	SB	Intersection
		EBT	WBTR	SBR	
AM Peak Hour					
2017 Build	LOS (Delay)	A (0.0)	A (0.0)	A (9.1)	-
	Synchro 95th Q	0'	0'	3'	
PM Peak Hour					
2017 Build	LOS (Delay)	A (0.0)	A (0.0)	B (10.1)	-
	Synchro 95th Q	0'	0'	13'	

Upon build-out of the site in 2017, there are expected to be short delays on all approaches at Site Access #2 located along Gervais Street. This driveway was modeled as a right-in/right-out. There is expected to be minimal queuing on all approaches of this intersection when the site is built.

### 6.6 WASHINGTON STREET AT SITE ACCESS #3

**Table 6.6** summarizes the LOS and control delay (seconds per vehicle) at the unsignalized, full-movement intersection of Washington Street at Site Access #3.

Washington Street at Site Access #3					
Condition	Measure	EBT	WB	NB	Intersection
		EBT	WBLT	NBLR	
AM Peak Hour					
2017 Build	LOS (Delay)	A (0.0)	A (2.2)	A (8.4)	-
	Synchro 95th Q	0'	3'	2'	
PM Peak Hour					
2017 Build	LOS (Delay)	A (0.0)	A (4.5)	A (8.6)	-
	Synchro 95th Q	0'	3'	4'	

Upon build-out of the site in 2017, there are expected to be short delays on all approaches at Site Access #3 located along Washington Street. This driveway was modeled as unsignalized full-movement with a shared northbound left-right lane. There is expected to be minimal queuing on all approaches of this intersection when the site is built.

## 7.0 Auxiliary Turn Lane Warrants

Turn lane warrant analyses were performed based off of turn-lane warrants in the *SCDOT Highway Design Manual* for unsignalized turning movements into the site. Auxiliary turn lane warrant analysis can be seen in **Appendix E**.

### Huger Street at Lady Street/Access #1

Based on auxiliary turn lanes warrants, a southbound right-turn lane and a northbound left-turn lane are warranted along Huger Street, only if this intersection was to remain unsignalized. Since this intersection is planned to be signalized, these turn lane warrants do not apply to the intersection.

### Gervais Street at Access #2

Based on auxiliary turn lane warrants, a westbound right turn lane along Gervais Street should be considered. This improvement is not recommended because the westbound lane adjacent to the curb on Gervais Street currently operates as a right turn lane. Upstream of the access driveway, the lane is controlled by overhead signing at the traffic signal with Huger Street to function as a right turn only lane. The lane actually extends westward through the intersection with Huger Street and terminates downstream at The South Carolina State Museum drive approximately 600 feet beyond the proposed access driveway.

### Washington Street at Access #3

Based off of auxiliary turn lanes warrants no turn lanes should be considered at this intersection.

## 8.0 Signal Warrant Analysis

A traffic signal warrant analysis was performed for the 2017 build-out year for the intersection of Huger Street and Lady Street/Access #1 based on the guidelines published by the Federal Highway Administration (FHWA) in the *Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition*. The MUTCD provides the following standards:

- An engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic control signal is justified at a particular location.
- The investigation of the need for a traffic control signal shall include an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following signal warrants:
  - Warrant 1, Eight-Hour Vehicular Volume
  - Warrant 2, Four-Hour Vehicular Volume
  - Warrant 3, Peak Hour
  - Warrant 4, Pedestrian Volume
  - Warrant 5, School Crossing
  - Warrant 6, Coordinated Signal System
  - Warrant 7, Crash Experience
  - Warrant 8, Roadway Network
  - Warrant 9, Intersection Near a Grade Crossing
- The satisfaction of a traffic signal warrant or warrants shall not, in itself, require the installation of a traffic control signal.

Warrant 1 Condition A is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic signal. Warrant 1 Condition B is intended for application where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. If a combination of Condition A and Condition B are not satisfied, Warrant 1 may be satisfied by Condition C.

Warrant 2 is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic signal.

Warrant 3 is intended for use at a location where traffic conditions are such that for a minimum of one (1) hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

To perform the signal warrant analysis with Lady Street as the minor street approach, a Tuesday 12-hour tube count was performed on March 31, 2015 on Lady Street near the intersection of Lady Street and Huger Street. A copy of the tube count data is included in **Appendix A**. The 2015 tube count volumes were grown to 2017 volumes by 2% per year for 2 years. **Table 8.1** below summarizes the signal warrant analysis for the intersection of Huger Street at Lady Street. A 50 percent right-turn reduction was calculated for Lady Street.

Table 8.1 Traffic Signal Warrant Analysis For Huger Street at Lady Street		
Warrant	Criteria Satisfied	Hours Satisfied / Required
1A (Eight Hour)	No	0 / 8
1B (Eight Hour)	No	7 / 8
1C (Eight Hour)	No	0,8 / 8
2 (Four Hour)	No	1 / 4
3 (Peak Hour)	Yes	1 / 1

To perform the signal warrant analysis with Access #1 as the minor street approach, *ITE Table 1- Hourly Variations in Shopping Center Traffic* was used to calculate the expected minor street approach volumes (Access #1). **Table 8.2** below summarizes the signal warrant analysis for the intersection of Huger Street at Access #1. From unsignalized SimTraffic and Synchro analysis it was observed that the right-turns did not have gaps to exit the site, thus a right-turn reduction was not calculated for this signal warrant.

Table 8.1 Traffic Signal Warrant Analysis For Huger Street at Access #1		
Warrant	Criteria Satisfied	Hours Satisfied / Required
1A (Eight Hour)	No	0 / 8
1B (Eight Hour)	Yes	11 / 8
1C (Eight Hour)	Yes	8,12 / 8
2 (Four Hour)	No	1 / 4
3 (Peak Hour)	Yes	1 / 1

Consideration of Warrant 6 Coordinated Signal System should be provided when evaluating the ultimate access strategy of the Kline Square development. The proposed signalized intersection of Huger Street at Lady Street/Access #1 is located +/-450 ft. north of Huger Street at Gervais Street intersection and +/-975 ft. south of the Huger Street at Hampton Street intersection.

When considering the purpose that Huger Street facilitates in the greater transportation system for the City of Columbia, Warrant 8 Roadway Network is satisfied. Huger Street is classified as a major thoroughfare and upon build out of the site without a signal at this intersection; the minor street is projected to have long delays, which satisfies Signal Warrant 3.

With these improvements in place, the intersection is expected to operate at LOS B during the AM peak hour and LOS A during the PM peak hour with little delay added to the mainline of Huger Street.

The signal warrant analysis can be found in **Appendix F**.

## 9.0 Recommendations

Recommendations for improvements to intersection lane geometry and operations for intersections in the study area for this TIA are summarized in the following listing. The following improvements are recommended to accommodate **2017 build-out traffic conditions** due to the impact of the site:

### Huger Street at Lady Street/ Access #1

- Based off of capacity analysis signal warrant results at the intersection of Huger Street at Lady Street/Access #1, a signal is recommended at this intersection. Upon signalization of this intersection, this intersection is expected to operate at a LOS B during the AM peak hour and LOS A during the PM peak hour.
- In addition to the signalization of this intersection, in order to accommodate site trips into the site, a northbound left-turn lane with a minimum of 75 feet of storage along Huger Street is recommended with permitted protected phasing.

This signal will need to be coordinated with the existing signals along Huger Street, especially at the intersection of Huger Street at Gervais Street due to the expected southbound through queues. The southbound queues at the intersection of Huger Street at Gervais Street are expected to exceed 1000 feet in the AM peak hour and 700 feet in the PM peak hour, while there is only 450 feet to 500 feet between the intersection of Lady Street and Gervais Street along Huger Street. Section 6.4 covers the recommended mitigation strategy for the proposed signal at Huger Street and Lady Street/Site Access #1 operate more efficiently.

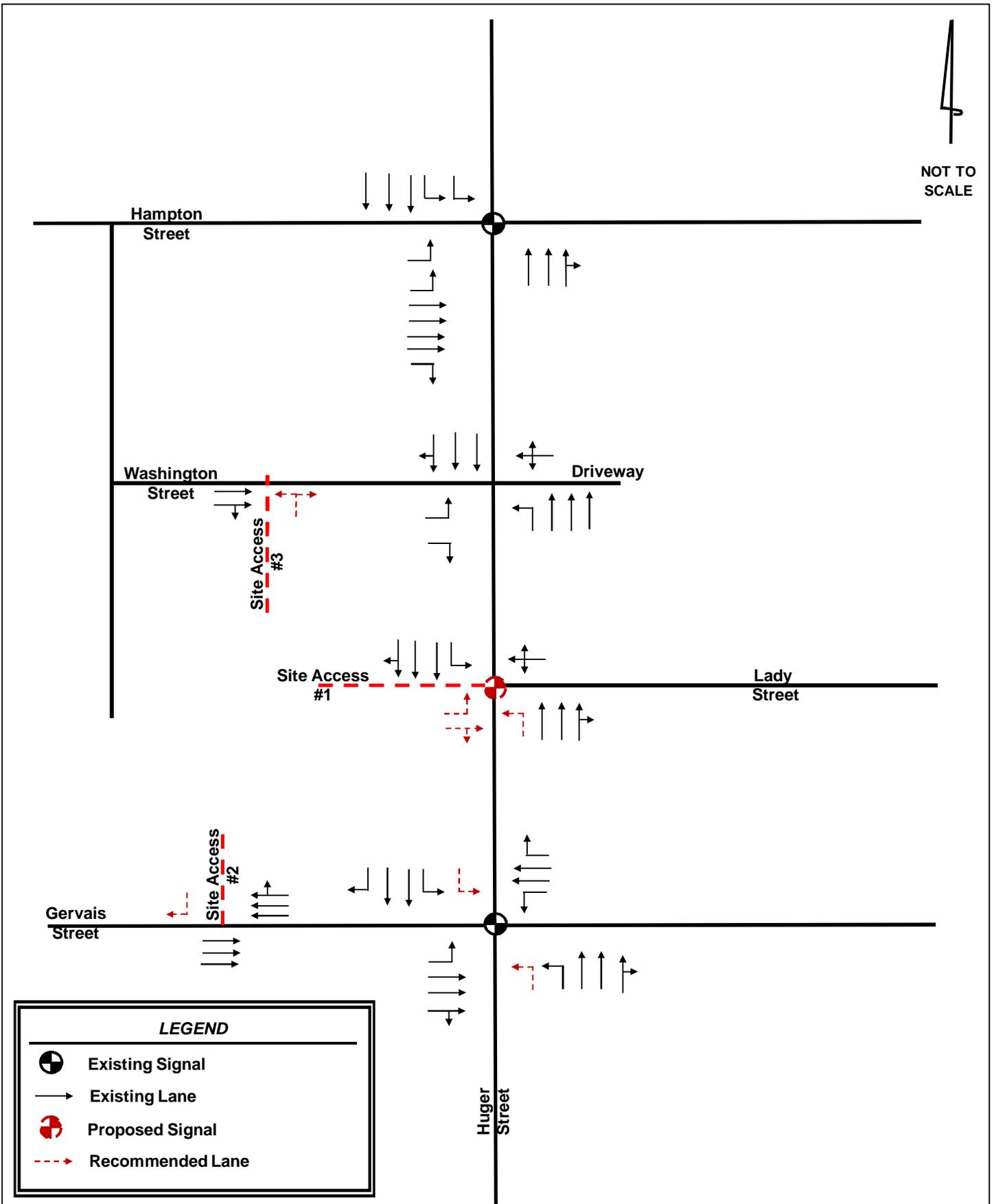
### Huger Street at Gervais Street

- Construct an additional southbound left-turn on Huger Street, this improvement will necessitate protected southbound left-turn phasing. One southbound left-turn will be a drop lane, the other will require a minimum storage of 325 feet to accommodate the expected queuing at the intersection.
- Construct a southbound right-turn lane with a minimum storage of 100 feet to accommodate expected queuing at the intersection.
- Construct an additional northbound left-turn on Huger Street, this improvement will necessitate protected northbound left-turn phasing. The northbound left-turns will need a minimum of 250 feet of storage to accommodate expected queuing at the intersection.
- Modify the traffic signal phasing for northbound and southbound Huger Street left turn movements to operate in a lead-lag operation. This operation is necessary as the space within the intersection does not permit concurrent operation of the dual-left movements. In addition, this operation permits optimization of the signal timings based on traffic progression and improvement in the overall intersection performance.

These improvements are not only expected to mitigate the overall intersection delays associated with the site traffic for the proposed development, but are also expected to help the overall intersection operate more efficiently than existing conditions. The construction of dual southbound lefts and dual northbound lefts are warranted in the existing conditions due turning volumes at the intersection. **Figure 10** illustrates the recommend laneage for this project.



NOT TO SCALE



**LEGEND**

- Existing Signal
- Existing Lane
- Proposed Signal
- Recommended Lane

**APPENDIX**