

**TOWN OF HERNDON, VIRGINIA
PLANNING COMMISSION PUBLIC HEARING AGENDA
JANUARY 28, 2019
HERNDON COUNCIL CHAMBERS BUILDING
765 LYNN STREET
7:00 P.M.**

CALL TO ORDER

1. Roll Call

APPROVAL OF AGENDA

APPROVAL OF MINUTES

2. December 3, 2018, Planning Commission Public Hearing Draft Minutes

COMMENTS

3. Comments from the Staff Members
4. Comments from the Commissioners
5. Comments from the Audience

NEW BUSINESS

6. Election of Officers

PUBLIC HEARINGS

7. **APPLICATION FOR A SPECIAL EXCEPTION – SE #19-01, 767 Monroe Street**, to consider a special exception to increase the number of nonresident persons permitted in a home-based business from a maximum of four in a 24-hour period to seven in a 24-hour period. Fairfax County Tax Map Reference Number: 0162 02 0265A. Applicant: Heather Kepshire.
8. **DEVELOPMENT PLAN - DP #17-01, 555 Herndon Parkway**. Descriptive Summary of Proposed Action: An application for a Herndon Transit-Oriented Core (HTOC) Development Plan with proffered conditions to allow a mixed-use development located at 555 Herndon Parkway. The plan also includes the establishment of a private road network, streetscape improvements along Herndon Parkway, and a plaza area at the center of the site. Owner: 555 Herndon LLC. Representative: Frank J. Poli, Senior Vice President, Penzance Management, LLC. Agent: Kenneth W. Wire, Esq. Wire Gill, LLP.
9. **ZONING ORDINANCE TEXT AMENDMENT - ZOTA #18-06**, to amend Chapter 78 (Zoning), Article V, (Planned Development Districts), Section 78-50.7, (Planned Development-Traditional Downtown District), Article VII, (Use Regulations), Section 78-71.6, (Eating Establishments Use Category), Article XI,

(Development Standards), and Section 78-110.2, (Planting Standards for Landscaping), to make housekeeping changes for internal consistency.

10. **COMPREHENSIVE PLAN AMENDMENT - CPA #18-02 – Establish a Design Concept for Street Improvements on Elden Street, between Sterling Road and Herndon Parkway.** The purpose of the comprehensive plan is to guide the present and future physical development of the town to promote the health, safety and welfare of its residents.

ADJOURNMENT

Future Planning Commission Meetings:

February 11, 2019	Planning Commission work session	7:00 p.m.
February 25, 2019	Planning Commission public hearing	7:00 p.m.



MEMORANDUM

To: Chairman Jonas and Members of the Planning Commission

From: David Stromberg, AICP, Zoning Administrator DS

Date: January 28, 2019

Subject: SE #19-01 – 767 Monroe Salon Update

During the Planning Commission work session on January 14, 2019 the Commission expressed some concern regarding the shared access between 767 Monroe and the adjacent property (765 Monroe). Vehicular access to the subject property is from an existing driveway and curb cut at 765 Monroe Street. An Ingress/Egress Easement exists over the driveway.

The layout of the subject property allows for two vehicle parking spaces and a turnaround space, or three vehicle spaces if the adjacent driveway is used for turning around.

Proposed Condition D limits the total nonresident vehicles at any one time to two vehicles. The concern expressed was that if the owner's vehicle is parked there then one of the two nonresident vehicles would need to utilize a portion of the adjacent driveway to turn around.

Staff believes that given the time-of-day limitations and other proposed conditions there would not be any negative impacts generated to the adjacent property provided none of the vehicles travel beyond the extents of the Ingress/Egress Easement.

The applicant has reached out to the adjacent property owner with whom they share the driveway with and they have provided a statement in which they express no opposition to the proposed increase in total clients.

Attachment:

1. Letter from 765 Monroe Street

Stromberg, David

To: Heather Kepshire
Subject: RE: 767 Monroe Special Exception: Letter

From: Heather Kepshire <1heatherward@gmail.com>
Sent: Thursday, January 17, 2019 9:31 PM
To: Stromberg, David <david.stromberg@herndon-va.gov>
Subject: 767 Monroe Special Exception: Letter

EXTERNAL EMAIL

David,

After listening to the discussion at the Planning Commission work session, I thought it would be best to get a letter of support from my neighbors at 765 Monroe Street, attached below is what they have written for me to pass along. Is it possible to add this to my application, or should I just bring it with me to the Public Hearing? Thank you, Heather

To Whom it May Concern:

We reside and own the property located at 765 Monroe Street, Herndon, VA 20170, and we are writing with regard to Heather Kepshire's request for a special exception which would extend the number of clients permitted to use the salon services at 767 Monroe on a daily basis. As neighbors and a patron of Heather's salon, we take no issue with a special exception being granted.

As you are aware, we own the servient estate over which the Kepshire's hold an easement to gain access to their house. We have never had an issue with clients of 767 Monroe disrupting our use of or access to our driveway, and do not anticipate any issues arising in the future. Should any issues arise, however, we are confident that we can resolve them reasonably and amicably.

Please let me know if you have any further questions. We may be reached at 518-577-2290 or vanessa.m.baer@gmail.com. Thank you for your concern.

Regards,

Benjamin and Vanessa Tecmire



STAFF REPORT

Planning Commission

January 14, 2019

Title:

APPLICATION FOR A SPECIAL EXCEPTION – SE #19-01, 767 Monroe Street. Consideration of a Special Exception to increase the number of nonresident persons permitted at a home-based business from a maximum of four in a 24-hour period to seven in a 24-hour period in an existing single-family residence in a R-10, Residential Single-Family, zoning district.

Staff Contact:

David Stromberg, AICP, Zoning Administrator
(703) 787-7380
david.stromberg@herndon-va.gov

Summary:

This application is for a special exception to permit a home-based business that exceeds the standards provided for home-based businesses in Section 78-80.5(a) of the zoning ordinance. Any home-based business, other than a daycare, is limited to a maximum of four nonresident visitors in any given 24-hour period. The applicant is requesting a maximum of seven nonresident visitors in a 24-hour period. The Town Council has the authority to modify the standards of a home-based business through the approval of a special exception if it is determined the modification in standards will not have a detrimental effect on adjacent properties.

Case Description:

Address:	767 Monroe Street
Parcel Tax Map #:	0162 02 0265A
Applicant:	Heather Kepshire
Business Name :	767 Monroe
Zoning District:	R-10, Residential Single-Family district

Property Use: Single Family Detached Dwelling

Proposed Use: Home-based hair salon

Adjacent Zoning: North: R-10, Single Family House
South: R-10, Single Family House
East: R-10, Single Family House
West: R-10, Single Family House

Comprehensive Plan
Land Use Designation: Neighborhood Conservation

Applicable Zoning Code: Section 78-80.5(a); Standards for home-businesses as accessory uses
Section 78-155.3; Special Exceptions

Building Size: 3,100 GFA; 720 SF for business use

Recommendation Alternatives:

1. Approve Special Exception #19-01 based upon the determination that the proposed use meets the standards as found in Section 78-155.3.
2. Approve Special Exception #19-01 with the conditions set forth in the staff recommendation to achieve compliance with the standards found in Section 78-155.3.
3. Deny Special Exception #19-01 based upon the determination that this special exception does not meet the requirements of Section 78-155.3.

Staff Recommendation:

Staff recommends approval in accordance with Alternative #2.

Staff Analysis:

The zoning ordinance lists uses permitted in a zoning district as by-right, by special exception, or not permitted. Special exceptions differ from by-right uses in that they have the potential to have a greater impact on neighboring properties and therefore are subject to more thorough review.

Among other zoning sections, staff relies on the standards listed in Section 78-155.3.(e), a copy of which is attached to this report, in its evaluation of Special Exception appropriateness, compatibility, and potential impacts. In light of this evaluation, staff offers the following comments:

The applicant was approved to operate a hair salon as a home-based business in 2016. The town has not received any complaints for this address.

The zoning ordinance limiting the number of nonresidents includes any employees of the home-based business. The applicant has hired an assistant which reduces the total number of clients the applicant can have in a 24-hour period from four to three.

The applicant advertises as a “single chair” salon and typically does not see more than one client at a time. The business does not generate additional waste or receive any special deliveries beyond that of a typical single-family residence.

The property contains a driveway with three vehicle parking spaces. There is no on-street parking permitted on Monroe Street and the street is marked with “No Parking” signs. The applicant has stated that a number of her clients are town residents who walk to the salon. Staff is recommending a condition that no more than two nonresident vehicles be located on the property at any one time.

Staff believes this proposal meets the conditions for approval of a special exception and recommends approval with the attached conditions.

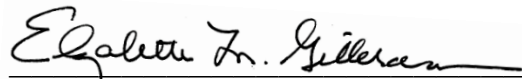
Attachments:

1. Draft Conditions
2. Vicinity Map
3. Narrative Statement
4. Property Plat
5. Floor Plan
6. Client Entrance
7. Zoning Ordinance Section 78-155.3(e)

Staff:



David Stromberg, Zoning Administrator



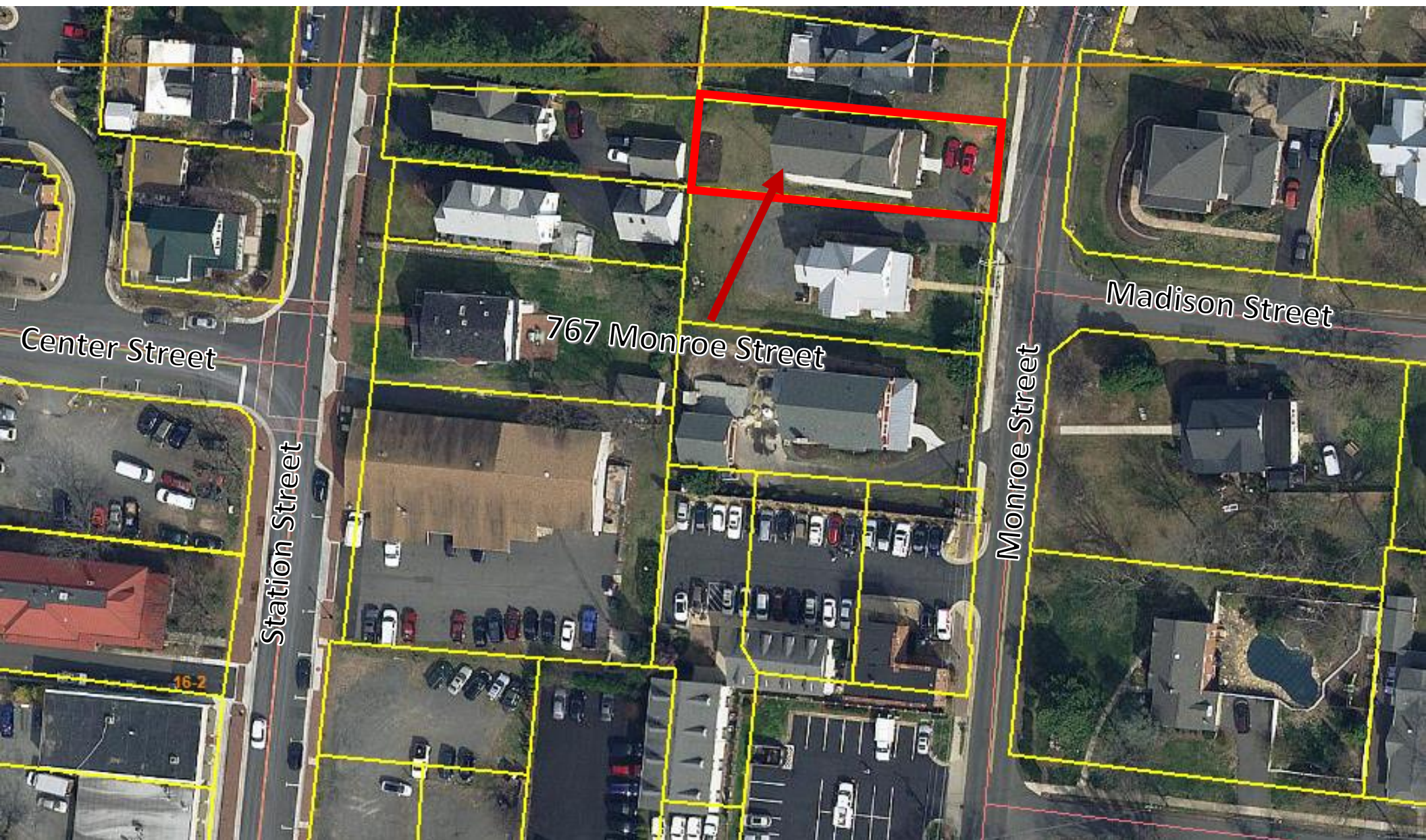
Elizabeth M. Gilleran, Director of Community Development

TOWN OF HERNDON, VIRGINIA
PLANNING COMMISSION DRAFT CONDITIONS

SE#19-01, 767 Monroe Street

JANUARY 14, 2019

- a. **Substantial conformity.** The site shall be operated in substantial conformance with the special exception application submitted November 27, 2018, except where modified by these conditions.
- b. **Permitted use.** The use shall be limited to an accessory home-based hair salon.
- c. **Hours of operation.** The hours of operation for the use shall not extend beyond 8:00 AM – 6:00 PM on weekdays and shall not occur on weekends.
- d. **Employee/client parking.** Any employee or client arriving by automobile shall park in the driveway located at 767 Monroe Street. No more than two nonresident vehicles shall be parked in the driveway during operational hours.
- e. **Number of permitted nonresidents.** The number of nonresidents permitted shall not exceed seven within any 24-hour period. Children aged 12 and under that accompany a client shall not count towards the maximum number of nonresidents.
- f. **Signs.** Signage related to the business shall not be permitted.
- g. **Inspection.** The property owner shall, during hours of operation, make provisions to allow town officials to inspect the property upon reasonable notice by the town.
- h. **Expiration.** This Special Exception shall not run with the land and shall expire under the following condition(s):
 - i. A discontinuation of the use for which the special exception was granted for a continuous twelve-month period;
 - ii. Failure to commence operation of the use within twelve months of approval of the special exception;
 - iii. A change in substantial ownership of possession of the subject land.
- i. **Revocation.** Any violation of the aforementioned conditions or other sections of the Herndon Town Code shall be grounds for revoking the special exception pursuant to the manner described in Section 78-155.3(h) of the zoning ordinance.



SITE LOCATION – AERIAL PHOTO

Case: SE #19-01 – 767 Monroe Street



TOWN OF
Herndon

Photo prepared by Town of Herndon
Department of Community Development
Image source: Fairfax County GIS

Applicant/Owner: Heather Kepshire

Location: 767 Monroe Street

Tax Map Reference: 0162-02-0265A

Zoning of Site: R-10 Single Family Residential

Zoning Approval for a Home-Based Business (home salon) Sept 2016.

Re: Application for a Special Exception

I appreciate that Herndon allows home-based businesses in the town. Since September 2016 I've been operating a hair salon called 767 Monroe from the basement of my home (approx 719 sqft), and it has been compliant of all standards set by the Town of Herndon, **Sec. 78-80.5**.

Over the last two years my business has grown, and my needs are changing, because of this I would like to **seek a special exception for my home-based business**. The current standard that I'd like to address is: "No more than four arrivals of nonresident persons who are employees, clients, customers, or associates of the home-based business shall occur during any 24-hour period." **Sec. 78-80.5(11)(c)**

I would like to increase that number from four to seven.

- The driveway on my property has 3 parking spaces, more than enough to accommodate this request; it is also important to know that a large percentage of my clientele live in town and walk to the salon.
- I believe my home-business has positively affected the neighborhood, because of this I have the support of all my immediate neighbors for this request.
- It is relevant to know the work schedule I keep is as follows: 9-5pm, four days a week (M, W, Th, F) which has helped keep my salon activity very subtle, i.e. no evening or weekend appointments.

Regards,

Heather Kepshire

Homeowner and Business Owner, 767 Monroe Street Herndon.

Documents Submitted:

- Cover Letter
- Pre-Application Conference Date and Attendants
- Application for a Special Exception
- Items Included for the Pre-Application Conference
 - 767 Monroe Street Lot Plan
 - 767 Monroe Salon Existing Exterior Schematic
 - 767 Monroe Salon Home-Based Business Interior Schematic
 - Exterior Photos of Property including parking, exterior salon path, and exterior salon entrance

Pre-Application Conference

November 15, 2018 2:30pm

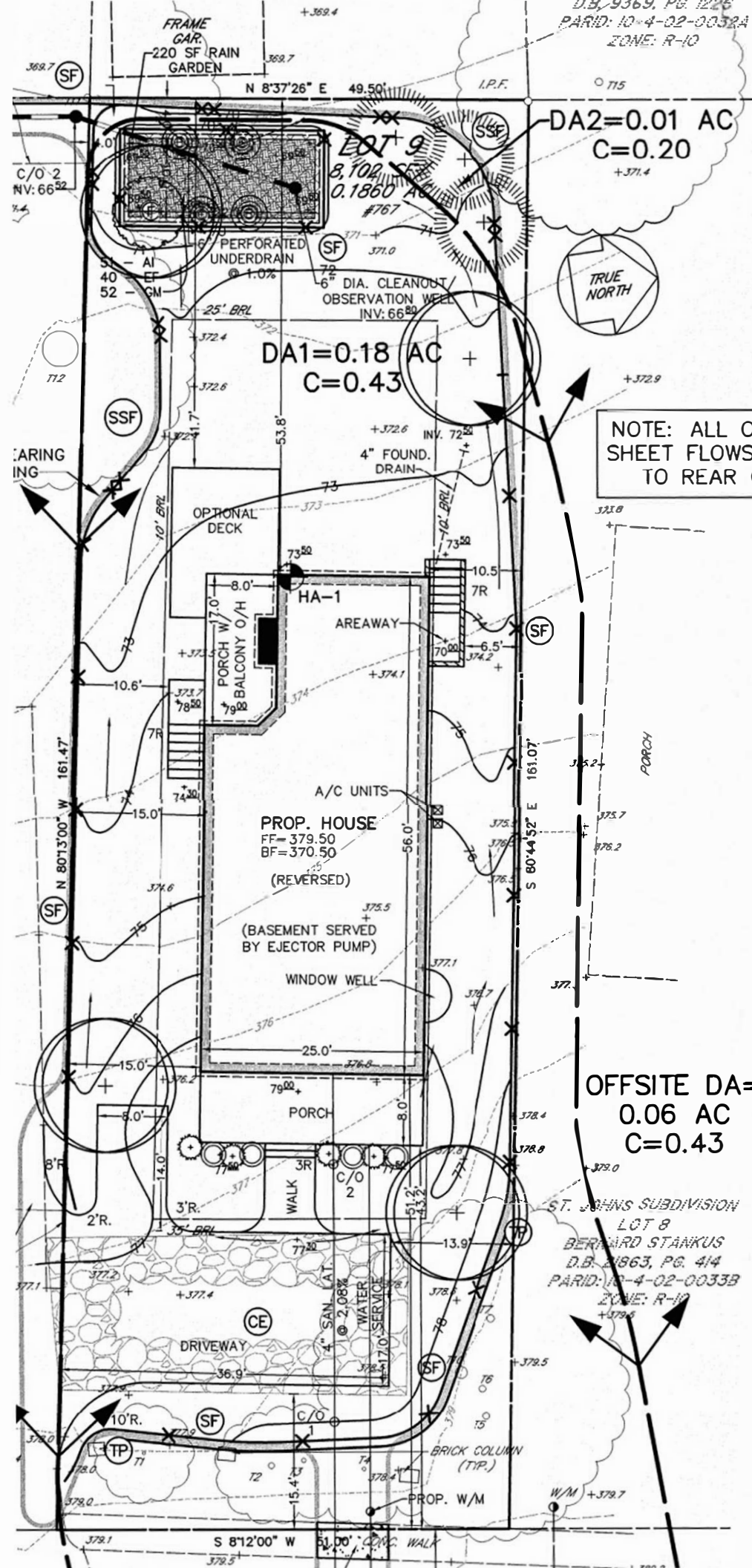
Attendants:

Raymond Ocel

David Stromberg

Pablo Novelo

Heather Kepshire



DA2=0.01 AC
C=0.20

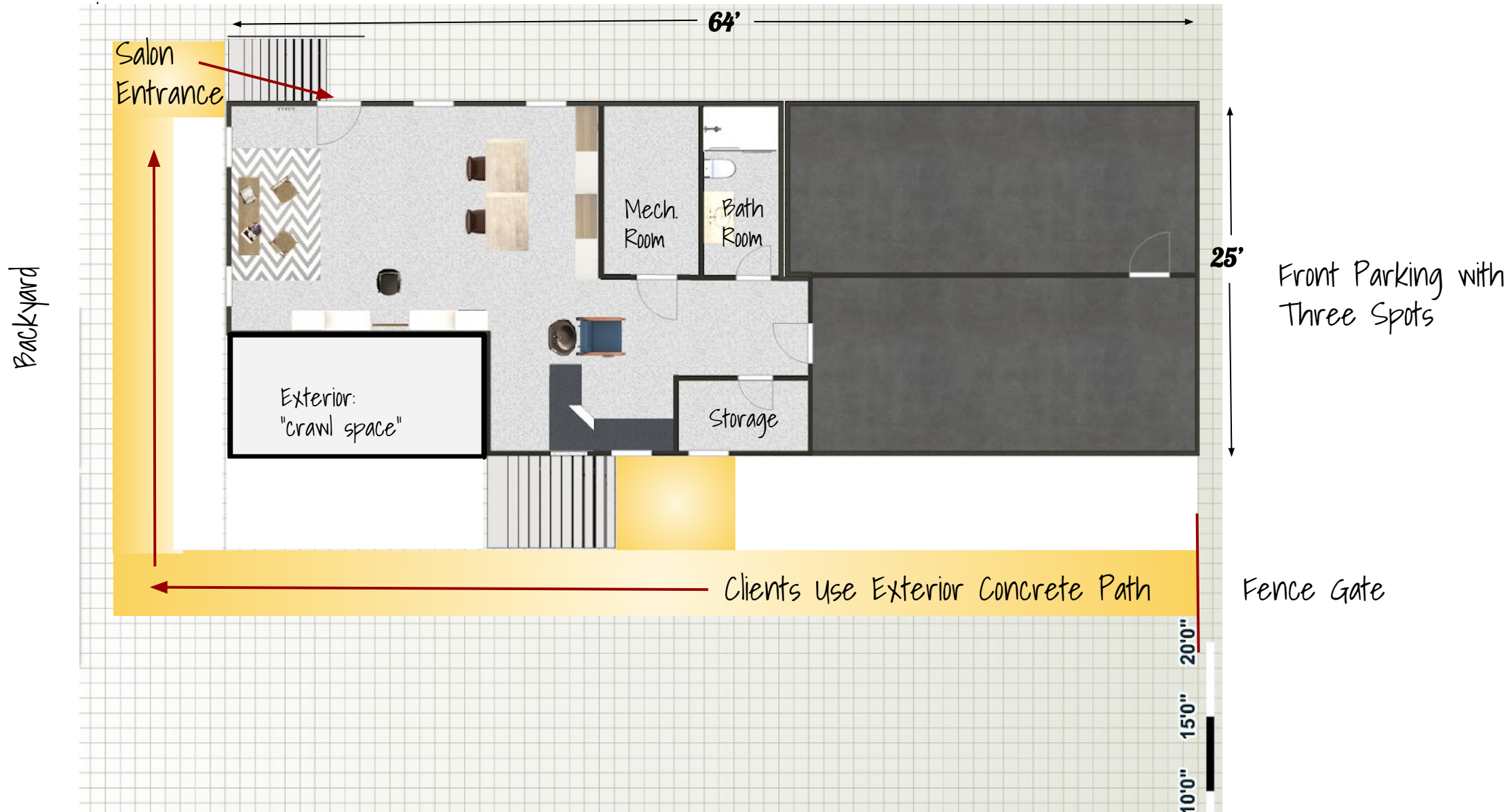
DA1=0.18 AC
C=0.43

NOTE: ALL ONSITE RUNOFF
SHEET FLOWS TO THE WEST
TO REAR OF THE LOT

OFFSITE DA=
0.06 AC
C=0.43

ST. JOHN'S SUBDIVISION
LOT 8
BERNARD STANKUS
D.B. 21863, PG. 414
PARID: 10-4-02-0033B
ZONE: R-10

767 Monroe Street Home-Based Business: Salon and Exterior Path





Salon Entrance

Sec. 78-155.3. - Special exception.

(e) *Review standards for special exceptions .*

- (1) *General standards for all special exceptions uses .* A special exception may be approved upon a determination by the planning commission and town council, respectively, as to whether, and the extent to which, the proposed use(s) meet the following standards:
 - a. Is consistent with the comprehensive plan.
 - b. Is free of conflict with any provision of this chapter and related town regulations or any other applicable local, state, or federal laws and regulations.
 - c. Does not adversely affect the health or safety of persons residing or working in the neighborhood of the proposed use.
 - d. Consistent with the purpose and intent of the zoning district in which it is located, or will improve compatibility among uses and will ensure efficient development within the town.
 - e. Minimizes adverse visual impact of the proposed use on adjacent lands.
 - f. Contributes to a logical and orderly development pattern consistent with accepted or emerging planning practices.
 - g. Minimizes adverse impact on surrounding lands regarding service delivery, parking and loading, odors, noise, glare, and vibration, and should not create a nuisance.
 - h. Avoids significant adverse impacts on the property values of surrounding lands or substantially and permanently injures the use of neighboring property for those uses that are permitted in the zoning district.
 - i. Does not significantly and adversely impact the natural environment, including but not limited to water, air, noise, stormwater management, wildlife, vegetation, wetlands, and the natural functioning of the environment.
 - j. Results in development that is adequately served by transportation facilities, including whether or not a substantial deterioration of the level of service on the town's transportation network would occur and whether or not the proposed use is designed to ensure safe ingress and egress onto the site and safe road conditions on and around the site.
 - k. Results in development that is adequately served by public facilities (roads, potable water and sewage, schools, parks, police, and fire and emergency medical facilities).
 - l. If infill and redevelopment is consistent with the redevelopment criteria and other applicable guidelines as stated in the Herndon 2030 Comprehensive Plan (adopted August 12, 2008), as amended.
 - m. If located in the floodplain overlay district, meets floodplain overlay standards.
 - f. Additional common recreation space (developed) above that required by section 78-113.3, privately provided recreation areas, is provided in proportion to the requested increase in dwelling unit density.



MEMORANDUM

To: Chairman Jonas and Members of the Planning Commission

From: Elizabeth M. Gilleran, Director of Community Development *EMG*

Date: January 11, 2019

Subject: Development Plan #17-01, 555 Herndon Parkway

Enclosed is the staff report with attachments for Development Plan #17-01 (DP#17-01) for the redevelopment of 555 Herndon Parkway. This application is the first submission of a development plan for property in the Herndon Transit-Oriented Core (HTOC) requesting density above a 1.2 Floor Area Ratio (FAR.) The applicant is requesting a FAR of 4.3.

The applicant has been working closely with staff, and while there is still the need for additional material and amendments to the proposal, the plan has progressed significantly.

During the work session on January 14th the staff will attempt to provide a thorough description of this complex project. The staff encourages members of the commission to visit the site and acquaint themselves with the abutting conditions and grade as these elements have a significant impact on this application.

Please contact me if you have any questions.



STAFF REPORT

Planning Commission

January 14, 2019

Title: DEVELOPMENT PLAN - DP #17-01, 555 Herndon Parkway.

Staff Contact: Bryce A. Perry, Deputy Director of Community Development
bryce.perry@herndon-va.gov (703)787-7380

Elizabeth M. Gilleran, AICP, Director of Community Development
lisa.gilleran@herndon-va.gov (703) 787-7380

Summary Information:

Applicant Request	An application for a Herndon Transit-Oriented Core (HTOC) Development Plan with proffered conditions to allow a mixed-use development located at 555 Herndon Parkway. The subject parcel contains an area of 4.3439 acres. The plan proposes a three phase development with two tower buildings and one mid-rise building collectively comprised of residential, office, and retail uses. These buildings are designed to a maximum 4.3 floor area ratio (FAR) and incorporate a below and above ground structured parking garage. The layout creates an urban block with private streets on each side and bisecting street and plaza area.
Address	555 Herndon Parkway
Owner	555 Herndon LLC
Representative	Frank J. Poli, SVP, Penzance Management, LLC
Agent	Kenneth W. Wire, Esq., Wire Gill LLP
Zoning	PD-TOC: Planned Development - Transit Oriented Core
Adjacent Zoning	North: O&LI (Office & Light Industrial) South: I-4 (Industrial Medium Intensity – FFX CO) East: PD-TOC West: PD-TOC
Land Use Designation	Regional Corridor Mixed Use - Herndon Transit-Oriented Core
Adjacent Land Use Designation	North: Regional Corridor Mixed Use South: Dulles Toll Road (outside town boundary) East: Regional Corridor Mixed Use - Herndon Transit-Oriented Core West: Regional Corridor Mixed Use - Herndon Transit-Oriented Core
Total Site Area	4.3439 acres / 189,218 square feet
Existing Use	89,711 square foot Low Rise Office Building

Background:

This is the first development plan to be submitted as regulated under Section 78-50.8 of the zoning ordinance and guided by Chapter III of the 2030 Comprehensive Plan and the Herndon Metro Station Area Study Transit-Oriented Core Plan that was adopted by the Town Council in February of 2012. These documents permit densities up to 4.3 FAR with approval of a development plan and associated proffers. Development is also subject to the adopted Herndon Transit-Oriented Core Architectural and Urban Design Guidelines.

The purpose and intent of the PD-TOC zoning district, as stated in the zoning ordinance is:

“The purpose and intent of the Metrorail Station Urban Development Area is to create a distinctive employment center and residential neighborhood characterized by concentrated development that is vibrant, mixed use, transit-oriented and pedestrian friendly. Emerging development is interwoven with and strengthens the town's cultural fabric and sense of identity. The scale of development provides maximum benefit for the fiscal health of the town by supporting long-term economic sustainability. The PD-TOC is established for the Herndon Transit-Oriented Core, as defined in the adopted comprehensive plan, to implement through phased redevelopment the mix of uses, densities and intensities as set forth in the adopted comprehensive plan. The PD-TOC district regulations are designed to provide the necessary flexibility to transform the suburban office park development that currently exist in the Herndon Transit-Oriented Core into a transit-oriented activity center as envisioned by the adopted comprehensive plan, the Herndon Metro Station area study and Urban Design and Architectural Guidelines for the Herndon Transit-Oriented Core. The PD-TOC district regulations have been developed to create a 38-acre transit-oriented core comprised of environmentally sustainable development, a vibrant mix of uses, premier architectural, landscape architectural, and urban design, robust pedestrian and bicycle accommodations, and necessary infrastructure improvements.”

The maximum by-right FAR in the PD-TOC district is 0.7. A maximum FAR of 1.2 is permitted with the granting of a special exception. Densities up to maximum of 4.3 FAR are permissible within the PT-TOC provided that the development achieves specific objectives which will be described in detail within this report.

The initial development plan submission for DP#17-01 was received in April 2017. Based on staff comments and program changes initiated by the applicant; the second plan submission was substantially different than the first. That second submission was

received in August 2018 and a third plan submission was received November 2018. The third submission includes the development plan and proffer statement under consideration by the Planning Commission. Staff has worked closely with the applicant since initial submission to address a range of issues explained in the staff analysis portion of this staff report. Some of staff's concerns have been addressed with the third submission however many require further attention.

Given that development plans are required to adhere to the Urban Design and Architectural Design Guidelines for the Herndon Transit-Oriented Core and the application must demonstrate compliance to that standard; the applicant sought preliminary review by the ARB informally at its December 2018 work session. That ARB's report on that review is included as Attachment #4 and a supporting memo by staff, Attachment #5.

The applicant has scheduled a neighborhood meeting for January 23, 2019 and mailed invitations to neighboring properties including the nearest single family neighborhoods. Staff will attend this session. The applicant will be expected to provide a report of any public input. This meeting is required by code and evidence of it must be provided to staff prior to any final decision on the application.

The review of development plan largely follows the process of zoning map amendments. The Planning Commission's role in this review is advisory. It shall review and make recommendations to the Town Council on whether to approve, approve with conditions, or disapprove the application. The Town Council will make the legislative decision following Planning Commission review. If the development plan is approved, no additional legislative action is required for development to occur. A site plan, which is an administrative action, as well as review and action by the ARB regarding the design of the buildings and exterior space, are required prior to issuance of a building permit. Staff would re-confirm conformance with the development plan at each of these steps.

The development plan and associated materials presented to the Planning Commission have progressed greatly from the initial submission. Staff has worked closely with the applicant to continue refinement of the project and ensure completeness of the necessary application information. As demonstrated in the staff analysis of this report further revision and additional information are necessary before further review can be conducted.

Site Description:

The site lies south of the Herndon Parkway and north of the Dulles Toll Road. The parcel lies to the east of 575 Herndon Parkway, which abuts the future Promenade and entrance to the Herndon Metrorail Station. While the applicant's parcel is actually located less

than a 10th of a mile from the Herndon Metrorail Station entrance, the distance from the Herndon Metrorail Station entrance to the site via public walkways is 0.17 of a mile.

The site is trapezoidal and has approximately 378 linear feet of frontage along the Herndon Parkway. The property's Dulles Toll Road frontage consists of approximately 484 linear feet. Existing vehicle access is by one shared access curb cut with full access from the Herndon Parkway and one private curb cut with right-in/right-out access from the Herndon Parkway. The private access curb cut immediately abuts the curb cut for the adjacent parcel to the east. At this time, development plans have not been submitted for the abutting properties.

Proposal Details:

Development Plan

As proposed, the plan would entirely demolish the existing building, surface parking lot, and all landscaping. The new development would consist of Building A, a mid-rise or podium building along the western half of the parcel; Building B, a high-rise office building at the southeast quadrant of the parcel; and Building C, a high-rise residential building at the northeast quadrant of the parcel. The structured parking garage for each building would be integrated into the podium and lined with active uses around portions of the garage, particularly in the northern half of the parcel. Each building has been designed to allow the development to be constructed in three phases. The project is designed to allow the three phases in any order and the garage for each phase is designed to connect with the abutting phase(s)' garage(s) to create a single garage at full build-out. According to the plan, the three buildings would have an approximate combined gross floor area (GFA) of 813,637 square feet and a total of 1271 parking spaces. The breakdown of the GFA and parking for each use and each building is on Sheet 4.0 of the development plan. See Attachment #1.

Transportation

The plan would establish an internal street network for the HTOC however access from a public right-of-way will be limited to Herndon Parkway. The plan shows Herndon Parkway curb cuts at the east and west boundary lines roughly in the same location as the existing entrance and a new mid-block curb cut for the new bisecting access drive. This center entrance and the entrance to the east would have right-in, right-out access. Only the entrance to the west would also have left-in and left-out access. All entrances are uncontrolled along Herndon Parkway. The nearest control would be the future pedestrian signal to be installed as part of the bus-bay project approximately 400 feet to the west of the subject parcel. The internal private streets are designed to function as typical urban right-of-ways with vehicle travel lanes, street trees and sidewalks.

The streets along the east and west boundaries are specifically intended to accommodate two-way traffic and then convert to a street half-section with on-street parking once the adjacent properties development and the other half of the street is built. This development maintains the existing grade at the property lines for that reason. The street along the southern boundary, as proposed, includes a landscape buffer along the Dulles Toll Road and sharrows bicycle markings to serve as an additional bicycle connection in the HTOC and provide the required Sugarland Valley Trail found in the zoning ordinance and comprehensive plan. The project's approximately 378 feet of frontage along Herndon Parkway would be enhanced with the required streetscape improvements including the two-way cycle track. Lastly, the center street is designed with two-way travel lanes, some on-street parking, and a turn-around. All streets offer access to the structured parking garage. The loading bays, screened with garage doors, front the perimeter streets.

The Traffic Impact Analysis Summary provides the expected traffic generated by this development. See Attachment #3.

Architecture & Urban Design

The design of the proposed development relies heavily on contemporary forms and details and larger scale architectural components. As currently proposed, the applicant has stressed that the design is both conceptual and illustrative and may change and be further developed following development plan review. As previously stated, the ARB reviewed the current architecture and urban design at its December work session and offers a report of its comments for Planning Commission consideration. See Attachments #4 and #5.

Proffer Statement

The draft proffer statement includes proffers regarding uses, transportation impacts, recreation and community amenities, and green building practices. It also proffers the development plan and offers contributions for off-site transportation improvements, off-site recreation amenities, Fairfax County schools, and Fairfax County Fire and Rescue. For the applicant's proposed proffer statement, refer to Attachment #2.

Modification

One modification will be necessary with this development plan as proposed. Section 78-50.8(g) of the zoning ordinance requires a minimum building tower separation of 65 feet. This requirement is not met between Buildings A and B and between Buildings B and C. As of the date of this report, the applicant has reference this modification but has not yet submitted a modification request with justification to the Zoning Administrator.

Staff Analysis:

Fiscal Impact

This project would provide the town with tax revenues that substantially exceed that of the existing use, but place a higher burden on services provided by the town and the county and require improvements to the public water and sanitary sewer systems and transportation infrastructure.

Staff has requested that the applicant provide an analysis that verifies the tax implications of the project with the proposed number of residential units and non-residential floor area in relation to the costs of services specific to this project. That analysis has not yet been submitted. To effectively evaluate the fiscal analysis, it should include the estimated value of the residential units when they are intended to be built, the estimated value of the commercial space when it is intended to be built, and the value of the cost of service provided by the town. Estimates for revenues from meals tax and BPOL taxes can be factored in for a more accurate calculation.

Adherence to Comprehensive Plan & Transit-Oriented Core Plan

1. The proposed development plan in general terms achieves many of the applicable principles, policies, goals and objectives for the Herndon Metro Station Area as expressed in the Land Use Chapter of the comprehensive plan. Some of this guiding language is at least partially addressed by the proposed development plan but requires further attention and further explanation on how specifically it is achieved. The development plan should demonstrate how it is enabling Herndon to be a leader in environmental stewardship for the region and how it reflects a unique Herndon identity that is distinct from other Metro stations. The comprehensive plan also urges the creation of active streetscapes and minimized visibility of any parking garages.

The comprehensive plan stresses the need for a balance of uses. Strictly for the purpose of background financial and transportation studies, the comprehensive plan used a total gross floor area split of 40% residential and 60% non-residential. As proposed, the development plan includes a use share of approximately 60% residential and 40% non-residential.

The applicant originally requested that the town permit a development plan option for only residential development with a limited amount of non-residential ground floor square footage. Based upon the language of the comprehensive plan, the intent of the zoning district and good planning practice the staff did not, and does not support such a scenario. Furthermore, such a scenario would create unanticipated and nonviable impacts on the town's water and sanitary sewer infrastructure. The current proposal retains a healthier use mix, with the two primary use types within 20% of each other, and replaces and increases the existing amount of quality non-residential square footage on the site as called for by the adopted comprehensive plan. While the increase in residential has an advantageous impact on traffic generation, its impact on

water and sewer is deleterious. The staff and applicant remain in discussion regarding how the project can mitigate this impact. Staff notes that should there be future interest in a further decrease in the amount of office use, staff could support such an option provided that it represented a loss in FAR and not an increase in the residential square footage.

The Herndon Metro Station Study Area Herndon Transit-Oriented Core (HTOC) Plan reinforces and elaborates on the comprehensive plan language. It delves into more detail on the design approach, the land use framework and the transportation improvements. The proposed development plan effectivity applies many of the applicable guidance outlined in the HTOC plan. As with the comprehensive plan, goals regarding sustainability, full screening of parking garages preferably with active floor area, open space with superb design and high quality materials, should be closely considered. The HTOC plan also expresses a need for interior community facilities to offset the increased demand for town interior community and recreation spaces and the use of focal points along the streetscape and public realm. The proposed development plan does not provide interior space for community or recreational use and does not directly explain what focal points are provided in the various open spaces.

Compliance with Standards for Increased Density

2. Development in the HTOC seeking a density greater than 1.2 FAR must meet specific objectives per Section 78-50.8(m)(2). Each of those objectives and staff's assessment on whether they have been met are as follows:

- a. *Contribute to a tiered intensity of development, with the highest intensities located closest to the Herndon Metro Station pavilion, and the Herndon Station promenade, with a mix of residential, office, retail and hotel uses and public spaces necessary to achieve a vibrant, mixed-use urban environment.*

DP#17-01 is requesting the highest possible density at 4.3 FAR. The subject parcel is within one eighth of a mile from the Metro station pavilion making it the closest property that is not directly abutting the pavilion. It proposes approximately 10,500SF of retail GFA, 479,137SF of residential GFA, and 324,000SF of office GFA. The plan proposes both public and private open space at both the ground level and the podium roof level.

- b. *Contribute to a logical networks of open space and urban parks designed as described in the Urban Design and Architectural Guidelines for the Herndon Transit-Oriented Core and Chapter 6 of the Herndon Metro Station area study to include but not be limited to the Herndon Station promenade, Herndon*

Parkway streetscape and cycle track, the extension of the Folly Lick Trail as an urban streetscape with multi-modal accommodations, the Metrorail Station urban development area portion of the Sugarland Run Stream Valley Trail pocket parks, common greens, civic plazas and recreational amenities for the district's residents and workforce, which reflect exemplary design in the fields of landscape architecture, urban design and public art.

The development plan does include the Herndon Parkway streetscape, accommodations for the Sugarland Run Valley Trail, and other multi-modal connections. It also provides a central plaza area that will be open to the public. Recreational amenities, as proposed, would be provided on-site for residents and office occupants. The staff is concerned that the pedestrian realm does not achieve the desired level of design. Generally, at this time, not enough information has been provided to determine whether the landscape and urban design is exemplary.

- c. Voluntarily address impacts to public facilities that result from the proposed development plan application, to include police protection, park and recreation services, public utilities and Fairfax County services to include fire and rescue, libraries, and schools.*

The proposed proffers provide contributions to offset impacts to Fairfax County schools and fire and rescue and Herndon parks and recreation. Contributions are not offered for impacts to police protection, libraries, or public utilities. Additional staff comment on those proffers are expressed in Comments #25.

- d. Voluntarily contribute a fair share of the necessary infrastructure improvements identified in the Herndon Metro Station area study including but not limited to the creation of the Worldgate Connector, the redesign of the Herndon Parkway, and water and sewer improvements.*

The proposed proffers provide contributions for off-site transportation improvements. Contributions are not offered for water and sewer infrastructure improvements. Additional staff comments on those proffers are expressed in Comments #25 and #27.

- e. Create and provide exemplary pedestrian, bicycle, passenger vehicle and service vehicle access.*

The development plan as proposed takes a multi-modal approach to access and mobility with two bicycle connections, sidewalks along every vehicle travel way, and service and emergency vehicle access around and through the site. Staff

believes the service level for pedestrians should be bolstered with wider sidewalks along the side streets, pedestrian entrances at every vehicle garage entrance, and demonstrated higher quality streetscape designs.

- f. Reduce the number of single occupant vehicle trips by implementing various transportation demand management strategies, such as voluntary transit subsidies, carpool and vanpool services, employee shuttles, car sharing programs and bicycle accommodations, limiting the amount of provided parking, encouraging shared parking arrangements among appropriate uses, and permitting the inclusion of managed tandem parking space.*

The development plan is proposing more parking than what is required by code. The proffers state that the applicant will develop a Transportation Demand Management (TDM) work plan and subsequent program to discourage single occupancy vehicle trips. There have not been any submitted application materials that specify reduction goals and the various strategies that may be employed to achieve those goals. The TDM work plan referenced in the proffers has not been submitted nor is there any clarification of when it may be submitted. Without a completed TDM Work Plan that lays out the development's TDM program, staff cannot verify if and how this project would reduce single vehicle occupancy trips. A completed TDM work plan that sets specific reduction goals is necessary as part of the development plan review in order to meet this standard. Additional staff comments on those proffers are expressed in Comment #25.

- g. Apply the adopted Urban Design and Architectural Guidelines for the Herndon Transit-Oriented Core.*

Both staff and the ARB have reviewed the architecture and urban design of this project as directed by the Urban Design and Architectural Guidelines for the Herndon Transit-Oriented Core. The staff memo to the ARB, Attachment # 5, and the ARB memo to the Planning Commission, Attachment #4, explain both general and specific tactics for revising the architecture and urban design to better comply with the applicable guidelines. In some instances, suggestions were made to alter the design. In other instances, more refined design and details was requested to be able to evaluate the degree to which project complies with the guidelines.

Additional specific building design and open space design comments are provided in this report in Comments #7 through #24.

The open space HTOC design guidelines have not yet been adopted however the draft has been completed and reviewed by staff and the HTOC property owners. As with the architecture and urban design, the open space design requires more attention and more information if an assessment of whether the design guidelines have been applied can be completed.

- h. Demonstrate how the development plan application contributes to a cohesive PD-TOC district and will permit development of adjacent parcels or landbays that are not included within the development plan application.*

This development establishes an internal on-site roadway network akin to an urban block and similar to the conceptual roadways shown in the Herndon Transit-Oriented Core Plan. As designed, the two side streets are meant to convert to a half section with on-street parking when the adjacent properties are developed. This helps to create an eventual shared access private street to be used by the adjacent properties.

The project has an inward orientation which may create a design challenge when the adjacent properties redevelop. Most of the ground floor active uses and more decorative open space designs are confined to Herndon Parkway and the proposed center street. The east and west facades along the ground floor are mostly open garage space with garage entrances and loading bays. The staff understands that the applicant faces a dilemma as the first property to design a transit-oriented redevelopment project for the HTOC. The abutting properties are not ready at this time to participate in the design effort, thus the applicant found very limited options for creating a viable development layout. Though there remains concern that the orientation of this development will encourage other property owners to repeat this pattern across the HTOC. The center street, which reinforces the inward orientation, is also a concern. In creating a vibrant urban neighborhood, curb cuts should be limited especially when they create an added conflict zone between pedestrian and cyclists as is the case along Herndon Parkway. These concerns may be mitigated by further articulating and varying the design of the garage facades, by adding pedestrian entrances into the garages, and by designing the center street as a mixed use plaza as further discussed in Comments #9 and #15 and in the ARB memos (Attachment #4 and #5). It will be important to ensure that other redevelopment in the HTOC are not similarly oriented inwards if district cohesiveness is to be achieved. Any future development plans within the HTOC will be expected to rely on the grid pattern of streets that this applicant is initiating.

- i. Reduce energy consumption and enhance the physical environment through specified stormwater management and sustainable building techniques.*

A green building proffer offers certification of LEED Silver or equivalent for each building. The proffer nor the development plan provide any specific information on how and to what degree energy consumption will be reduced and which green building practices would be employed.

The development plan includes a stormwater management narrative and concept plan. The plan indicates that some green infrastructure techniques would be used including green roofs and urban bio-retention. It is unclear however where the green roofs would be placed and the location and type of urban bio-retention would be used. The zoning ordinance requires the project to use green infrastructure to at least partially manage stormwater. A sheet in the development plan dedicated to green building practices and green infrastructure for stormwater would be helpful in understanding whether this standard has been achieved.

Transportation Analysis

3. A traffic impact analysis (TIA) is required of development plans. The applicant submitted a TIA with the first submission. The executive summary has been provide at Attachment #3. The project substantially changed with the second submission which triggered the requirement to submit a revised TIA. The town's traffic consultant reviewed the initial TIA and had comments that also warranted a revised TIA. A revised TIA has not been submitted and staff is unable to fully evaluate the traffic impacts until that occurs.
4. The initial TIA demonstrates that a traffic signal at Herndon Parkway and the western most entrance is necessary for that intersection to appropriately function. This signal would be approximately 400' from the future pedestrian signal at the Metro Station drop-off/pick-up area. More information regarding this signal should be included in the development as further explained in Comment #16.
5. The town's traffic consultant review cited a concern for three access points into the project and the added points of conflict between transportation modes. Staff notes that VDOT Access Management Design Standards states that these entrances should be a minimum of 250' apart based on Herndon Parkway's speed limit and functional classification. The western entrance and center entrance are approximately 100' apart. Given the reliance of this project on the center street, staff has been closely considering whether there are design solutions that would somewhat mitigate this issue. Raising the center street to sidewalk level, using pavers as the surface treatment, and dropping the curb to create a highly designed plaza area that

accommodates shared travel modes would help to highlight a pedestrian and cyclist service level priority. This is further discussed in Comment #15.

6. The Herndon Metro Area Study evaluated the transportation improvements that would be necessary town-wide to accommodate the increased densities permitted with a development plan in the HTOC. A list of those improvements were identified in Chapter 7 of that study. To gain a density exceeding 1.2 FAR through an approved development plan, applicant must contribute a fair share of the costs associated with this transportation improvements. Proffer #3a, discussed in Comment #25, includes this contribution.

Building Design Issues

7. A zoning modification to reduce the separation between building towers, as required per Section 78-50.8(g)(4), will be required if this plan, as proposed, moves forward. The formal request for that modification to the Zoning Administrator has not yet occurred. Staff cannot evaluate whether or not that modification is justified without submission of the request.
8. Sheets 5.1 to 5.3 of the development plan show the three phases and the proposed interim conditions of the areas not included in each phase. More information is necessary to evaluate the phasing plan. Additional sheets should be provided that show the interim plan conditions if Buildings A and C are built only, if Buildings A and B are built only, and if Buildings B and C are built only. Information and a visual exhibit for inclusion in the plan set should also be provided that explains and shows how the interim podium/garage walls in the areas that would connect with the abutting Phase will be finished. The design guidelines state that exposed garage walls during an interim phase should be screened or articulated with an architectural treatment.
9. The comprehensive plan, HTOC plan, and design guidelines focus on a need to activate streetscapes with exemplary design and active building uses. This is a challenge on three sides of the project that are mostly or entirely a parking garage along the ground floor. On the west elevation a specially designed pedestrian entrance into the garage not only effectively provides a source of sidewalk activity but also generates visual interest. That design approach should be repeated at the garage entrance on the south and east elevations, which as currently designed only accommodate for vehicular access. Adding pedestrian entrance immediately abutting the vehicle entrances with special design elements and enhanced lighting would help to break up the garage mass, reduce the design to a pedestrian scale, and provide a safe connection for pedestrian traveling from the garage to the sidewalk in an area that would otherwise be in conflict with turning vehicles.

10. Further building design comments are provided in the staff and ARB memos as Attachments #4 and #5.
11. The applicant submitted revised architectural perspective rendering, provided as Attachment#8. These drawings were developed in response to the staff comments provided to the ARB at its December 2018 work session. They have not been fully reviewed by staff nor provided to the ARB for consideration. They have been provided to the Planning Commission for informational purposes but were not included within the staff analysis.

Open Space Design Issues

12. The street section for the street along the south boundary does not meet the required standards for the Sugarland Run Trail and the Landscaping and Buffers per Section 78-50.8(h). As shown the landscape verge along the building is 18" wide and the sidewalk is 6' wide. The ordinance requires a minimum 8'wide sidewalk and a landscape verge along the building that is wide enough to accommodate a mix of deciduous and evergreen trees and shrubs to serve as a visual screen with enough space to allow healthy growth of those plants. The plan requires revision to meet these requirements. Furthermore, the staff suggests that pole lighting should be incorporated along the Sugarland Valley Trail along both sides of the access road to provide ample and even lighting across this multi-modal resource.
13. The phasing plans indicate that much of the existing surface parking lots would remain on-site as interim conditions. Clarification should be made as to the purpose and need of those lots since each building is parked with the integrated structured parking garage.
14. The comprehensive plan, HTOC plan, and design guidelines emphasize the need for open spaces with high design and material quality. Section 78-50.8(i) of the zoning ordinance states that open spaces shall be evaluated based on their quality, size, number and diversity of amenities. Required open space, this section further expresses, shall include both passive and active recreation facilities, extensive landscaping, creatively design surfaces, and must strengthen a pedestrian-centric approach to urban design.

To achieve the high quality open space design and materials expected of a plan seeking the maximum density, additional attention is necessary. Staff believes the open space would be improved by:

- Incorporating more pervious green space and plantings. A planting strip between the sidewalk and building on the east elevation as shown on the architectural perspectives but not on the landscape plan should be included. A planting strip between the garage and sidewalk on the south elevation should be included also as shown on the architectural perspectives but not on the landscape plan. That planting strip with trees and shrubs is also required by code. A planting strip between the retaining wall and sidewalk along Herndon Parkway should also be included. Within the center street, additional planting areas and street trees should be placed in the areas nearest to the turn-around including the sidewalk in front of Building B which is currently shown to have no landscaping. The Landscape plan should be revised to accommodate additional green space in this manner and properly align with the landscaping shown on the architectural exhibits.
- Incorporating more decorative surface treatments. The hardscape plan limits decorative surface treatments to accent stripes on pavers inlay on the center street plaza and sidewalk. All other sidewalks are shown as concrete and all private streets are shown as asphalt with traditional curb and gutter. This design on the center street is inconsistent with the decorative surface treatment shown on the architectural perspectives. Reliance on brushed concrete and sidewalks and asphalt for streets and access drives fails to meet the expectation of high quality open space design and material. Decorative pavers should be used in all sidewalks at least as accent elements. Decorative pavers should also be used within streets and access drives at certain locations such as intersections, crosswalks, curb cuts, and adjacent to building entrances. The hardscape plan should be revised to include the locations and type of additional decorative surface treatments.

The open space design can be more appropriately evaluated with additional information. The landscape and hardscape plan sheets should include the additional planting areas and paver treatments as expressed above and also site furnishings (benches, bicycle racks, trash/recycling receptacles, movable planters, etc.) locations, lighting, and crosswalks across streets, garage entrances and loading bays.

15. As proposed, the center street and plaza area would serve as the hub of pedestrian activity. Staff believes that should the new curb cut off Herndon Parkway into this area be permitted, it should be designed as a multi-modal plaza area with decorative surface treatments throughout as shown on the perspectives renderings and an either curb-less or mountable curb condition. This design solution could be further strengthened by raising the entire street at the curb cut to the sidewalk level. This elevation change and the coordinated surface treatments would provide visual cues to motorists that they were entering a predominantly pedestrian zone.

16. The development plan should show all crosswalks and associated curb ramps as earlier stated in Comment #14. This includes crosswalks across Herndon Parkway at the western most entrance if the expectation is that a traffic signal would be installed to permit functional operation of the intersection. The plan should indicate that a signal would be provided along with crosswalks and full accessible pedestrian signalization. Crosswalks within the internal streets should be incorporated into raised paver intersections. This condition is included as a standard within the draft HTOC open space design guidelines.
17. Further open space design comments are provided in the staff and ARB memos as Attachments #4 and #5.
18. The applicant submitted a development plan addendum, provided as Attachment#7. This addendum has not been fully reviewed by staff but appears to modify the streetscape sections. This has been provided to the Planning Commission for informational purposes but was not included within the staff analysis.

Other Staff Comments

19. The HTOC plan and design guidelines promote the use of mid-block pedestrian crossings. This development allows for partial mid-block crossings but is not designed to accommodate through passage, which is partly challenged by grade changes. A complete mid-block pedestrian passage on each side of the development can be achieved by adding the dedicated pedestrian entrances abutting the garage entrances on the east and south elevations and then including a marked and signed walkway through the garage to the stairs and elevator. This design change was previously mentioned in Comment #9 as also a good solution to break up the garage façade design and add activity along the sidewalks.
20. A fence should be considered for installation along the southern property boundary where the project abuts the Dulles Toll Road. A fence would provide additional screening and noise attenuation but more importantly serve as a safety barrier. Today the property line is marked by a broken metal wire fence. The staff suggests that a fence style should be selected that can be extended along the HTOC's southern border by other properties as well.
21. It is expected that the eastern most entrance would be combined with the nearby entrance on the adjacent property when that property redevelops. In the interim if this development is built out and the abutting property remains as existing, the back-to-back entrances are substandard given their proximity and create safety and mobility issues for motorists, cyclists, and pedestrians. An exhibit should be

submitted that shows the future entrance condition with a single shared access drive for evaluation.

22. The western most entrance, as proposed, creates a slightly awkward configuration. The entrance for the first 135 feet is 44 feet wide then abruptly reduces to a 22 foot width. It will need to be demonstrated how the flow of traffic is expected to be managed in this area. An exhibit should be submitted that shows the intended traffic pattern. Marking specific lanes in this area might be beneficial to guide motorists.
23. The development plan sheets include a number of minor omissions and mistakes such as incorrect zoning district designations and missing plant schedule information and similar items. Staff will work with the applicant to address these issues. At this level of review these are not matters to concern the Planning Commission however, if commissioners find any minor typos or seemingly inaccurate or confusing information, staff would appreciate notification.
24. It is unclear which areas of the proposed project would allow public access. The development plan should include a sheet showing the components of open space that would be dedicated and which would have a public access easement.

Proffer Analysis

25. Proffers were not submitted until the 2nd submission of this application and are thus not considered to be as developed as the other components of this application. The proffers are still under review by staff however, general comments can be provided as listed below.
 - a. Proffer #2 permits residential uses but does not include any requirement for non-residential uses. It does not account for a loss in 89,711 square feet of office space if the existing building is demolished.
 - b. Proffer #2 should state a prohibition of hotel uses unless specifically included and studied as part of the development plan given how significantly different the traffic impacts and water and sewer demands would be compared to the proposed residential, office, and retail uses.
 - c. Proffer #3a references a Herndon Transportation Fund which does not exist. It also references Residential and Non-Residential Use Permits (RUPs and Non-RUPs) which Herndon does not use. Contributions for off-site transportation improvements should be paid prior to issuance of building permits. The \$0.75 per GFA square foot contribution offered does not adequately cover the proposed development share of capital costs for HTOC transportation improvements. The

town has estimated that the per GFA square foot impact is approximately \$1.50. This value, if extrapolated for full build-out of the proposed project would cover six percent of the total cost of all transportation improvements required for the HTOC not including right-of-way acquisition and utility relocation, except for the Spring Street/Herndon Parkway intersection for which actual construction costs exists. Six percent is the minimum applied since the traffic impact analysis assumed that this project would generate six percent of the total trips for the HTOC. At full build-out, this contribution, at the revised value, would total \$1,220,500.

- d. Proffer #3b incorrectly states that full credit towards the off-site transportation improvements contributions shall be received by the applicant for any on-site and off-site improvements. The applicant will be required to make on-site improvements through the site plan process. Credit should also not be provided to any off-site transportation improvements that were not identified in the HTOC plan and have been identified in the project's transportation impact analysis as necessary in order for the proposed development to properly function from a traffic standpoint.
- e. Proffer #3c states that right-of-way dedication would occur at occupancy. Right-of-way dedication is required to occur prior to site plan approval of the project's first phase.
- f. Proffer #3d states that public access easements would be granted for the private access roads. Public access easements for all internal streets and plaza areas will be required prior to site plan approval of each phase. Additionally, temporary public access easements should be granted over any existing drive aisles used for circulation during interim conditions.
- g. Proffer #3f states that a Transportation Demand Management (TDM) plan shall be implemented but does not provide plan details or goals. Submission of a TDM plan is required as part of the development plan process. This submission has not yet occurred. The plan must be submitted and must include the specific strategies that will be implemented to achieve a reduction in single occupancy vehicle trips. The proffer should specify trip generation reduction goals (i.e. 25% reduction) and the plan should explain how those goals would then be met.
- h. Proffer #5a appears to be referencing private recreation amenities. Clarification is necessary on whether this proffer concerns amenities for the residents and employees of the development or for amenities for public use. This proffer should require a list be provided to Community Development prior to issuance of the last occupancy permit of all on-site amenities and the cost of construction for each.

This information would be used to evaluate whether the amenities provided cover the per unit value cited (\$1900). In the event the proposed facilities do not have sufficient value, the remainder cash contribution should be paid prior to issuance of the final occupancy permit. The proffer should also state that any facility or component required by the Virginia USBC shall not count towards the value of amenities.

- i. RUPs and Non-RUPS are again referenced in Proffer #5b. Herndon does not issue these permits. The off-site recreation contribution should be paid prior to issuance of the building permit for each building. The contribution of \$0.25 per GFA square foot would total \$203,409 at full build-out. Staff believes the contribution should be adjusted with a higher contribution for residential GFA and lower contribution for non-residential GFA. This adjustment is recommended given the greater demand on recreational facilities from residential uses relative to office and retail uses. If adjusted to \$0.35 for residential and \$0.15 for non-residential, the total contribution would be \$217,898 at full build-out.
26. In evaluating the proffers, staff reviewed other proffers statements for nearby similar projects. Common proffers used elsewhere that could be applicable in Herndon have not been included in the proposed proffer statement relate to architecture, urban design, open space design, interior public community or recreational space, plan phasing, stormwater management and green infrastructure, noise attenuation from highway traffic, and future maintenance of common areas and streetscapes, specific green building practices, activated ground floor uses, declarations and owners' associations, parking garage façade treatments, artwork, and place-making. Each of these should be evaluated as possible ways to strengthen the application.
27. The proposed proffer statement also does not include any contributions towards HTOC water and sewer capital costs. Development in the HTOC at the densities permitted with approval of development plans will require significant infrastructure upgrades to accommodate for the demand in increased capacity. This development plan as proposed would cause added burden to these utilities beyond what was initially envisioned given its use split is 60% residential instead of the 40% residential assumed when the utility study was conducting during the Metro Station Area Study. Community Development will continue working closely with Public Works staff and the applicant to understand and develop precisely what water and sewer infrastructure will be necessary and what would constitute a fair share contribution of the costs.

Additional Information Needed

28. The comments above identify several items that require further clarification and subsequent submission. Those items are listed below in addition to required items that may not have been previously mentioned.

The following application materials are required for submission prior to further review of DP#17-01:

- Revised Traffic Impact Analysis.
- Revised Statement of Justification that relates to the current proposal.
- Cost benefit financial and fiscal analysis demonstrating the expenses and revenues the project would generate for the town.
- Written verification that the neighborhood meeting occurred including minutes of the input received.
- Modification request for a reduction in the tower separation.
- Revised Proffer Statement.
- Transportation Demand Management Work Plan.
- Revised Development Plan.

The following information should be incorporated into the development plan and submitted prior to further review of DP#17-01:

- Revised landscape plan and revised hardscape plan including the additional information discussed in the above building design open space design comments.
- Site distance analysis including plans and profiles for each of the property entrances.
- Exhibits showing the eventual configurations of the western and eastern entrances assuming redevelopment on the adjacent properties and creation of shared access private streets.
- Plan showing the location and extent of right-of-way dedication and public access easements.
- Additional phasing plans showing interim conditions when two phases are complete and verifying design of interim exposed garages.
- Sustainability sheet that demonstrates how the project would enable Herndon to be a leader in environmental stewardship. It should show locations, precedent images, and notations on the specific types of green building practices and green stormwater management methods that will be considered for use in this development.
- Sheet focused on demonstrating how the project reflects a unique Herndon identity that is distinct from other Metro stations. It can include information on specific focal points, specific open space design elements, and specific building design elements.

Planning Commission Recommendation Alternatives:

The following alternatives are available to the Planning Commission for its decision on this development plan, DP#17-01:

1. Recommendation for approval.
2. Recommendation for approval with conditions.
3. Recommendation for denial.
4. Continuance of the application to the February Planning Commission meetings.

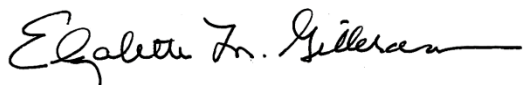
Staff Recommendation:

Staff recommends a continuance of the application in accordance with Alternative #4.

A continuance will allow the applicant additional time to respond to the issues raised in the staff report and provide staff the necessary time to evaluate any revisions and new information submitted.

Attachments:

1. Development Plan Dated November 19, 2018
2. Draft Proffer Statement Dated November 19, 2018
3. Traffic Impact Analysis Summary Report Dated April 21, 2017
4. ARB Report Memo Dated January 14, 2019
5. Staff Memo to ARB Dated December 12, 2018
6. Architectural Exhibits Presented to ARB at its December 12, 2018 Work Session
7. Development Plan Addendum Dated January 11, 2018
8. Revised Architectural Renderings Dated January 11, 2018



Elizabeth M. Gilleran, AICP
Director of Community Development

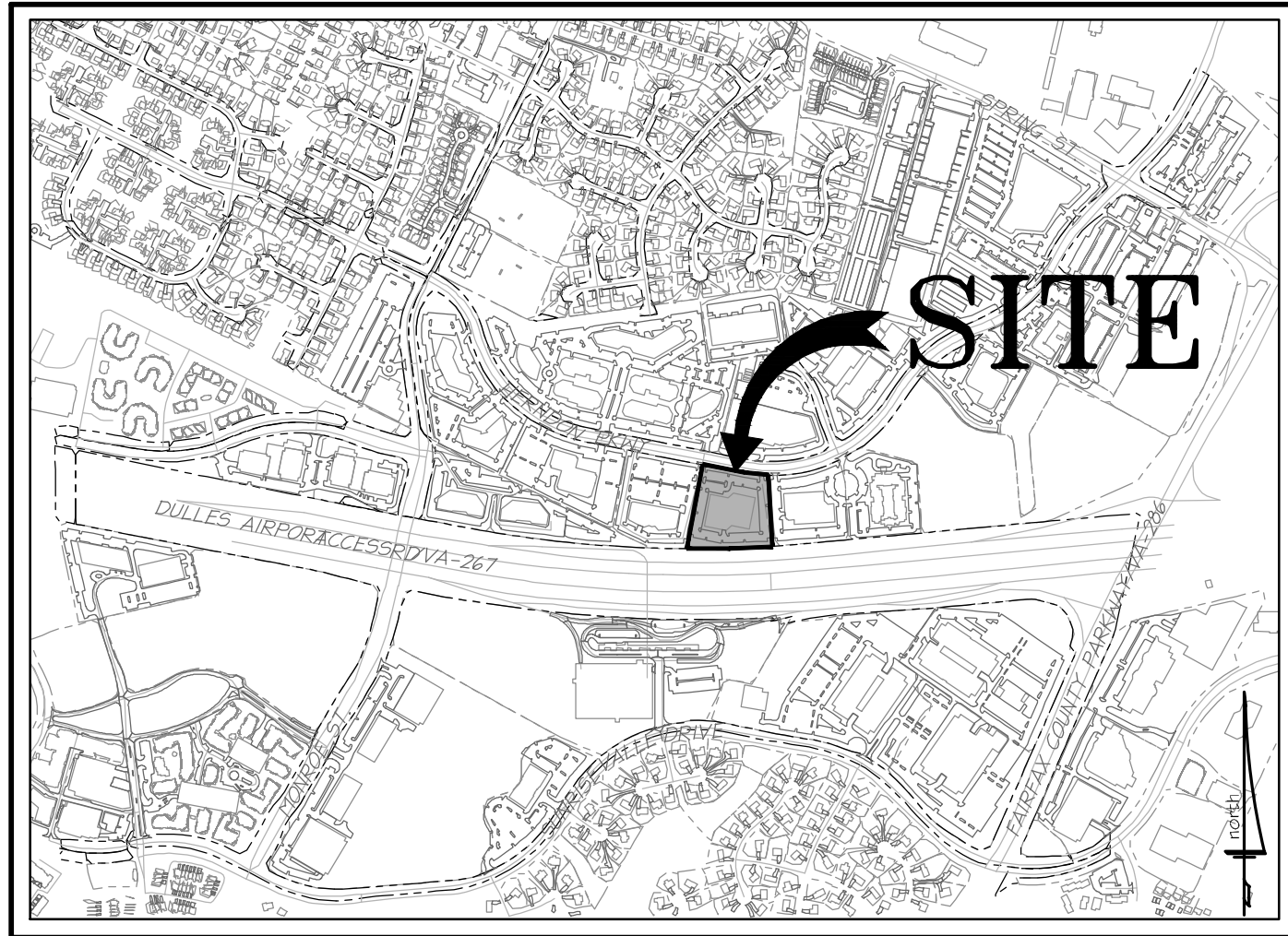


Bryce A. Perry
Deputy Director of Community Development

DEVELOPMENT PLAN

555 HERNDON PARKWAY

TOWN OF HERNDON, VIRGINIA



VICINITY MAP

SCALE: 1" = 1,000'



THE ABOVE RENDERING IS FOR ILLUSTRATIVE PURPOSES ONLY, DESIGNED BY DAVIS CARTER SCOTT.

APPLICANT / OWNER

555 HERNDON LLC

c/o PENZANCE MANAGEMENT, LLC

1680 WISCONSIN AVE.,NW, SUITE 300

WASHINGTON, DC 20007

PROJECT TEAM

- THE PROJECT TEAM IS COMPRISED OF THE FOLLOWING:
- APPLICANT/OWNER - 555 HERNDON, LLC
 - ENGINEER - CHRISTOPHER CONSULTANTS, LLC
 - ARCHITECT - DAVIS CARTER SCOTT
 - TRANSPORTATION ENGINEER - GOROVE/SLADE, INC
 - LANDSCAPE ARCHITECT - CHRISTOPHER CONSULTANTS, LLC
 - ATTORNEY - MCGUIRE WOODS, LLP

FOR ANY INQUIRIES ABOUT THIS DEVELOPMENT PLAN, PLEASE CONTACT:

FRANK J. POLI	KENNETH W. WIRE
PENZANCE MANAGEMENT, LLC	MCGUIRE WOODS, LLP
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WASHINGTON, DC 20007	TYSONS, VA 22102
PHONE: 202.729.6417	PHONE: 703.712.5362

DATE OF FIRST SUBMISSION: APRIL 14, 2017

DATE OF SECOND SUBMISSION: JULY 16, 2017

DATE OF THIRD SUBMISSION: AUGUST 8, 2018

DATE OF FOURTH SUBMISSION: NOVEMBER 19, 2018

Attachment #1

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18

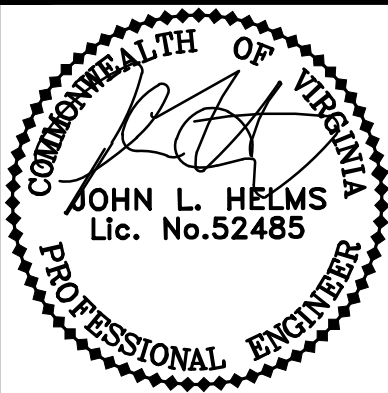
PENZANCE

christopher
consultants

dcs
DESIGN

GOROVE / SLADE
Transportation Planners and Engineers

McGUIREWOODS



COVER SHEET/
SHEET INDEX

DEVELOPMENT PLAN

555 HERNDON PARKWAY

TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00

SCALE:

AS NOTED

DATE:

08-08-2018

DESIGN: JR, JH

DRAWN: JH, LEB

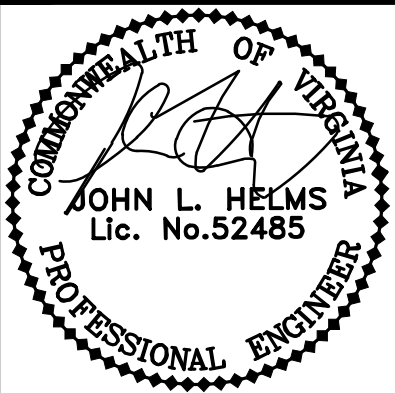
CHECKED:

SHEET No.

1.0 OF 22.0

103228

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18



PROJECT NO:	15002.001.00
SCALE:	AS NOTED
DATE:	08-08-2018
DESIGN:	JR, JM
DRAWN:	JM
CHECKED:	
SHEET No.	

PROJECT NARRATIVE:

THE APPLICANT PROPOSES TO DEVELOP THE PROPERTY IN ACCORDANCE WITH THE HERNDON METRO STUDY AREA WITH RESIDENTIAL, OFFICE, AND RETAIL USES. THE PROPOSED DEVELOPMENT CONSISTS OF THREE BUILDINGS WITH FIRST FLOOR RETAIL LINING AN INTERIOR MAIN STREET SUPPLEMENTED BY BELOW AND ABOVE-GROUND PARKING. THIS PROJECT WILL BE DEVELOPED IN UP TO THREE PHASES, SUBJECT TO MARKET CONDITIONS AND TO MEET MARKET DEMAND. THE APPLICANT REQUESTS FLEXIBILITY TO DELIVER PHASES IN ANY SEQUENCE.

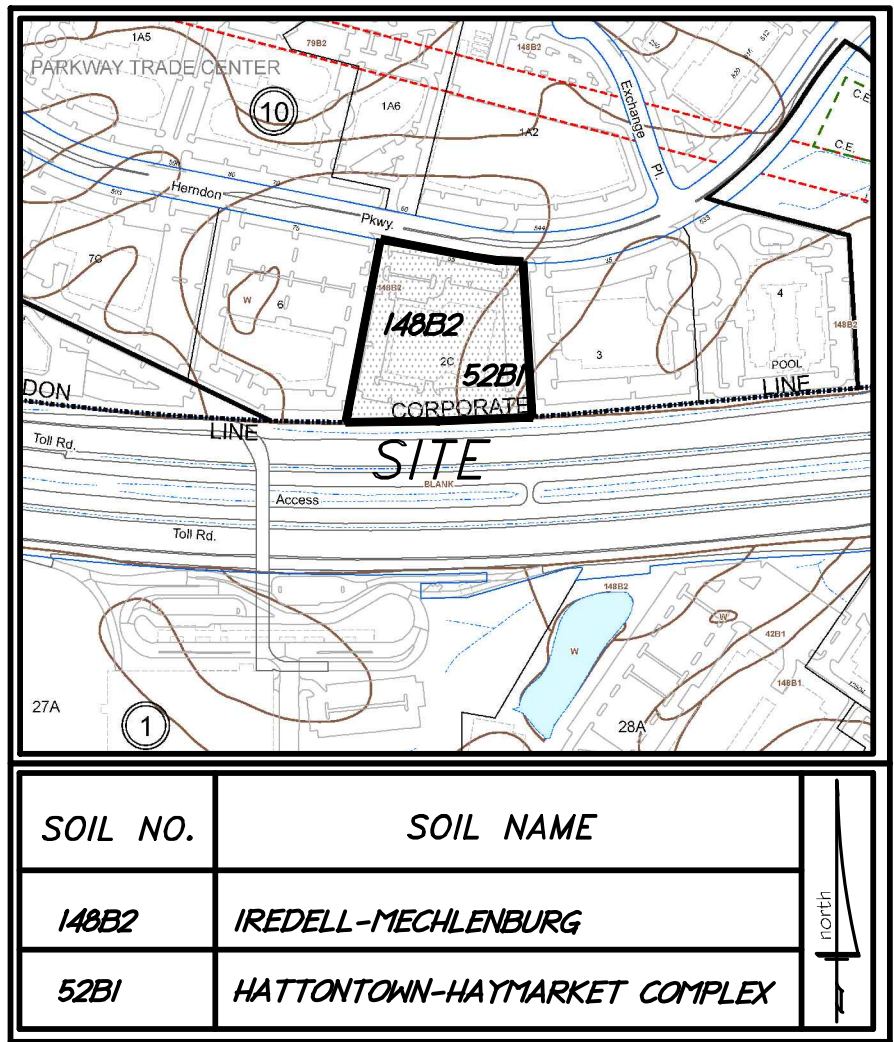
LEGAL DESCRIPTION:

TAX MAP 16-4 ((10)) 2C
555 HERNDON PARKWAY
HERNDON, VIRGINIA 20170

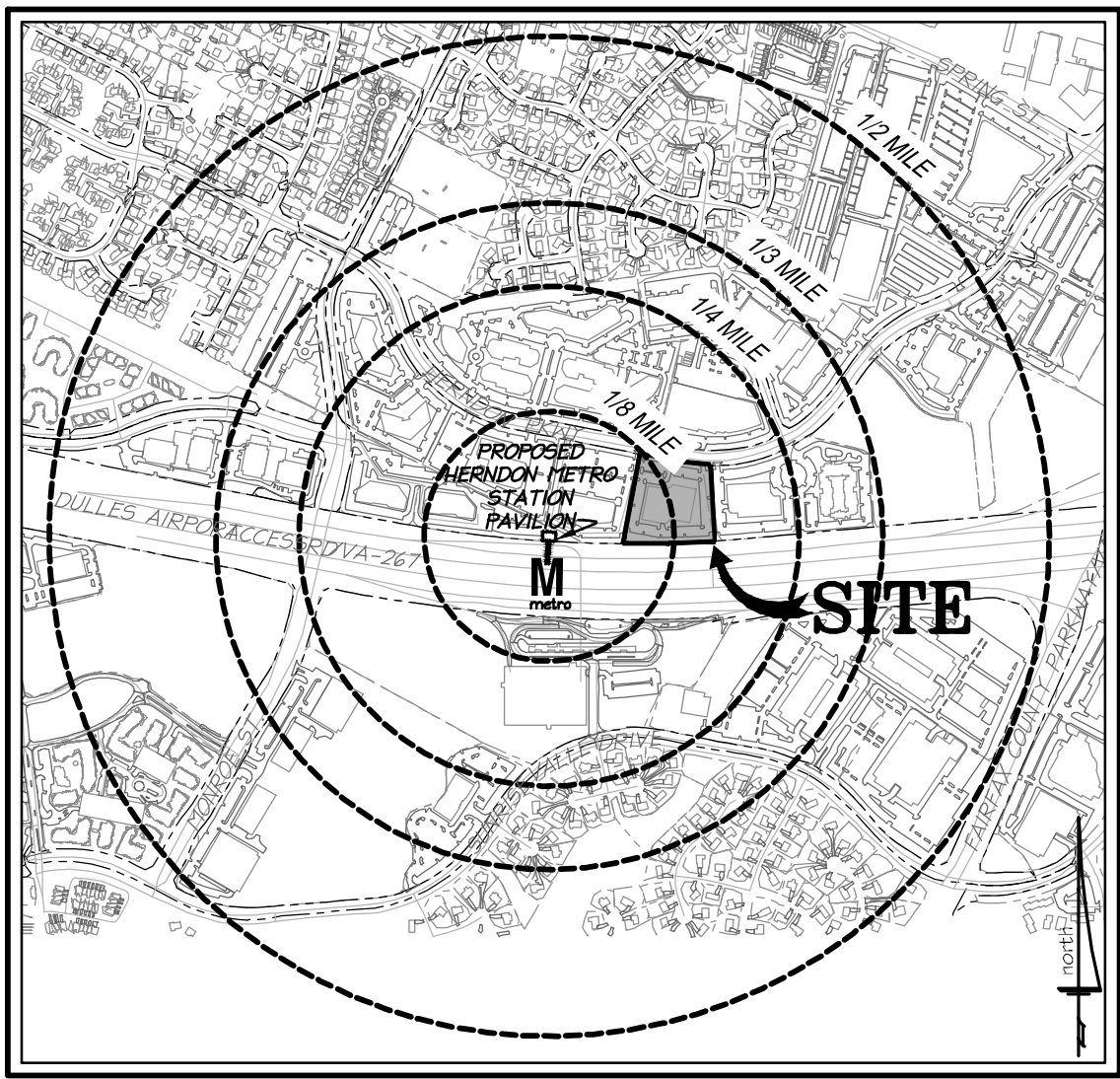
ALL OF THAT CERTAIN LOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE TOWN OF HERNDON, FAIRFAX COUNTY VIRGINIA, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

PARCEL 2C, PARKWAY TRADE CENTER, CONTAINING AN AREA OF 189,218 SQUARE FEET OR 4.3439 ACRES OF LAND MORE OR LESS, AS SHOWN ON A PLAT ATTACHED TO A DEED OF RE-SUBDIVISION AND EASEMENT RECORDED AUGUST 17, 1983 AT DEED BOOK 5838 PAGE 1680 AMONG THE LAND RECORDS OF FAIRFAX COUNTY, VIRGINIA.

TOGETHER WITH AND SUBJECT TO THOSE EASEMENTS CONVEYED AT DEED BOOK 5838 PAGE 1680 AS APPLICABLE.



SOILS MAP
(SOURCE: FAIRFAX COUNTY TAX MAPS)
SCALE: 1" = 500'



METRO PROXIMITY MAP
SCALE: 1" = 1,000'

GENERAL NOTES:

1. THE SUBJECT PROPERTY SHOWN HEREON IS RECORDED IN THE LAND RECORDS OF FAIRFAX COUNTY, VIRGINIA AS FOLLOWS:

TAX MAP	PIN#	LAND AREA	OWNER	INSTRUMENT #	ADDRESS
16-4((10))	0164 10 0002C	189,220 SF	555 HERNDON LLC	PARKWAY TRADE CENTER PCL 2C	555 HERNDON PARKWAY HERNDON, VA

2. PER THE TOWN OF HERNDON ZONING ORDINANCE, THE PARCEL IS CURRENTLY ZONED PD-TOC (PLANNED DEVELOPMENT-TRANSIT ORIENTED CORE).
3. THE SUBJECT PROPERTY IS BOUND ON THE NORTH AND ON THE EAST BY OFFICE USE, ON THE WEST BY OFFICE USE, AND ON THE SOUTH BY THE DULLES TOLL ROAD. THE LAND TO THE WEST AND TO THE EAST IS ZONED PD-TOC. THE LAND TO THE NORTH OF THE SITE IS ZONED OFFICE & INDUSTRIAL AND THE LAND TO THE SOUTH IS ZONED INDUSTRIAL.
4. THE SUBJECT PROPERTY IS FULLY DEVELOPED AND CONTAINS ONE (1) TWO-STORY OFFICE BUILDING WITH A PARKING LOT. THERE IS VEGETATION LOCATED ALONG THE PERIMETER OF THE PROPERTY. ACCESS TO THE SITE IS CURRENTLY FROM HERNDON PARKWAY.
5. THE SUBJECT PROPERTY WILL REMAIN ZONED PD-TOC, SUBJECT TO THE PD-TOC REQUIREMENTS OF SECTION 78-50.8 OF THE TOWN OF HERNDON MUNICODE.
6. BOUNDARY SURVEY (ALTA/ACSM TITLE SURVEY) WAS COMPLETED FOR THE SUBJECT PROPERTY BY BOWMAN CONSULTING DATED REVISED JANUARY 16, 2015.
7. TOPOGRAPHY AND PHYSICAL IMPROVEMENTS SHOWN HEREON ARE BASED ON A CURRENT FIELD SURVEY COMPLETED BY CHRISTOPHER CONSULTANTS, LTD. BETWEEN THE DATES OF AUGUST 12th AND AUGUST 18th, 2015. THE CONTOUR INTERVAL IS ONE (1) FOOT.
8. DURING THE PROCESS OF OUR PHYSICAL SURVEY NO EVIDENCE OF A CEMETERY WAS FOUND. NO FURTHER INSPECTION OF THIS PROPERTY HAS BEEN MADE FOR POSSIBLE CEMETERIES.
9. THE PROPERTY SHOWN HEREON IS LOCATED ON THE FLOOD INSURANCE RATE MAP (FIRM), COMMUNITY PANEL NO. 51059C0110 E, REVISED ON SEPTEMBER 17, 2010. BY GRAPHICAL DEPICTION ONLY, THE PROPERTY SHOWN HEREON IS SHOWN IN FLOOD ZONE "X", AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
10. THE SUBJECT PROPERTY LIES COMPLETELY OUTSIDE OF THE CHESAPEAKE BAY RESOURCE PROTECTION AREA (RPA) AS PER THE 2006 TOWN OF HERNDON CHESAPEAKE BAY PRESERVATION AREAS MAP.
13. A WETLAND DELINEATION WAS NOT DONE SINCE THE SITE IS FULLY DEVELOPED.
14. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO KNOWN HAZARDOUS OR TOXIC SUBSTANCES LOCATED ON THE SUBJECT PROPERTY.
15. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO KNOWN SCENIC ASSETS OR NATURAL FEATURES LOCATED ON THE SUBJECT PROPERTY THAT ARE DESERVING OF PROTECTION AND PRESERVATION.
16. THE SUBJECT PROPERTY LIES COMPLETELY WITHIN THE JURISDICTION OF THE TOWN OF HERNDON AND IS CURRENTLY LOCATED WITHIN THE DRANESVILLE TOWN OF HERNDON TRANS DULLES RAIL WEST DISTRICT.
17. THE SUBJECT PROPERTY IS TO BE SERVED BY PUBLIC WATER AND SANITARY SEWER. ALL PROPOSED SANITARY SEWER AND WATER SERVICES WILL BE DESIGNED IN ACCORDANCE WITH APPLICABLE TOWN OF HERNDON REQUIREMENTS.
18. THE STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICE FACILITY LOCATIONS AND DIMENSIONS ARE CONCEPTUAL IN NATURE AND MAY VARY IN LOCATION AND SIZE WITH FINAL ENGINEERING. STORMWATER MANAGEMENT SHALL BE PROVIDED IN ACCORDANCE WITH TOWN OF HERNDON REQUIREMENTS.

EX A	226.97 LF OF 15" RCP	EX 5188 5156	RIM EL. = 367.44 INV. - (TO 5156 = 362.66) RIM EL. = 365.48 INV. - (FROM 5188 = 361.42)
EX B	260.68 LF OF 18" RCP	EX 5156 1750	RIM EL. = 365.48 INV. - (TO 1750 = 361.37) RIM EL. = 364.99 INV. - (FROM 5156 = 360.00)
EX C	67.80 LF OF 18" RCP	EX 1750 5222	RIM EL. = 364.99 INV. - (TO 5222 = 359.84) RIM EL. = 365.22 INV. - (FROM 1750 = 359.52)
EX D	213.72 LF OF 18" RCP	EX 1542 5222	RIM EL. = 368.15 INV. - (12" RCP FROM BUILDING) INV. - (TO 5222 = 362.05) RIM EL. = 365.22 INV. - (FROM 1542 = 359.47)
EX E	42.02 LF OF 24" RCP	EX 5222 1851	RIM EL. = 365.22 INV. - (TO 1851 = 359.27) RIM EL. = 364.80 INV. - (FROM 5222 = 358.80) RIM EL. = 374.76 INV. - (36" RCP FROM WEST)
EX F	180.88 LF OF 36" RCP	EX 1463 1517	INV. - (TO 1517 = 365.38) RIM EL. = 369.50 INV. - (FROM 1463 = 361.99)
EX G	195.20 LF OF 36" RCP	EX 1517 1851	RIM EL. = 369.50 INV. - (TO 1851 = 361.51) RIM EL. = 364.80 INV. - (FROM 1517 = 357.95)
EX P	166.00 LF OF 36" RCP	EX 1851 5222	RIM EL. = 364.80 INV. - (TO 5225 = 357.82) RIM EL. = 359.71 INV. - (FROM 1851 = 353.01) INV. - (36" RCP TO EAST =
EX Q	100.02 LF OF 24" RCP	EX 1344 5222	RIM EL. = 375.68 INV. - (18" RCP FROM SOUTH) INV. - (TO 5226 = 368.18) RIM EL. = 373.73 INV. - (FROM 1344 = 367.56)
EX R	31.66 LF OF 15" RCP	EX 1364 5222	RIM EL. = 372.77 INV. - (TO 5226 = 368.35) RIM EL. = 373.73 INV. - (FROM 1364 = 367.93)
EX S	145.39 LF OF 30" RCP	EX 5222 1463	RIM EL. = 373.73 INV. - (TO 1463 = 367.26) RIM EL. = 374.76 INV. - (FROM 5226 = 366.21)

1. HORIZONTAL DATUM SHOWN HEREON IS REFERENCED TO THE VIRGINIA COORDINATE SYSTEM (VCS) 1983 - NORTH AS ESTABLISHED FROM A CURRENT GPS SURVEY.
2. THE VERTICAL DATUM SHOWN HEREON IS REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD 29) AS AS ESTABLISHED FROM A CURRENT GPS SURVEY.
3. REMOVAL OF OFFSITE TREES, WHERE NECESSARY, IS TO BE COORDINATED WITH OFFSITE OWNERS AT TIME OF SITE PLAN.

	: EX. CONTOUR		: EX. STREET / CENTER LINE
	: EX. WOODS LINE		: EX. CURB & GUTTER
	: EX. DECIDUOUS TREE		: EX. BOUNDARY
	: EX. EVERGREEN TREE		: EX. EDGE OF PAVEMENT (EP)
	: EX. TREE TAG NUMBER		: EX. STORM SEWER
			: EX. SANITARY SEWER
			: EX. SIGN
			: EX. STORM MANHOLE
			: EX. SANITARY MANHOLE
			: EX. SANITARY STRUCTURE NUMBER
			: EX. STORM STRUCTURE NUMBER
			: DENOTES HANDICAPPED PARKING SPACE

EXISTING TREE INVENTORY

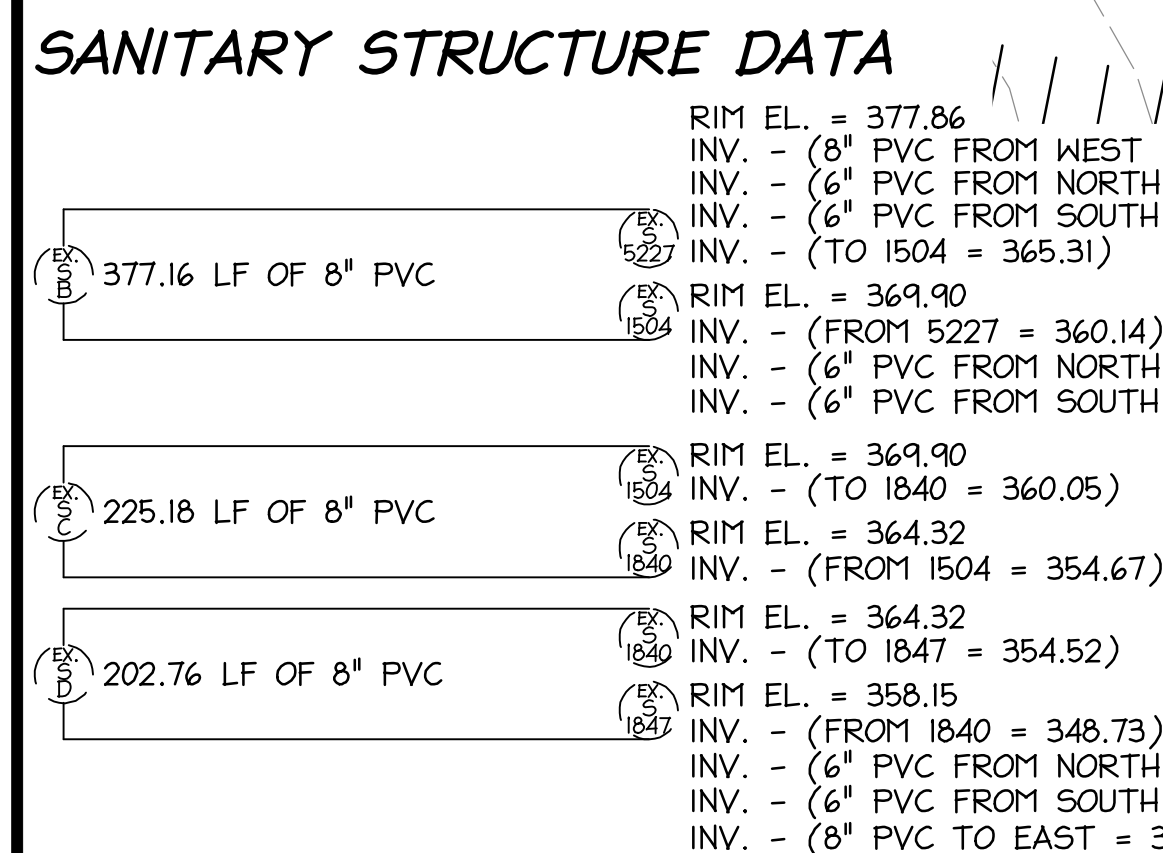
Tree Tag No.	Caliper (inches)	Crown Radius	Tree Type	Procedure
6586	25	20	DECIDUOUS	REMOVE
6587	15,12,10,8	30	DECIDUOUS	REMOVE
6588	21	30	DECIDUOUS	REMOVE
6589	18	15	DECIDUOUS	REMOVE
6590	2,3,3,4	8	DECIDUOUS-ORNAMENTA	REMOVE
6591	12	12	DECIDUOUS	REMOVE
6592	4	8	DECIDUOUS-ORNAMENTA	REMOVE
6593	15	20	DECIDUOUS-ORNAMENTA	REMOVE
6594	10	8	DECIDUOUS	REMOVE
6595	15	30	DECIDUOUS	REMOVE
6596	18	30	DECIDUOUS	REMOVE
6597	15	20	DECIDUOUS	REMOVE
6598	18	20	DECIDUOUS	REMOVE
6599	15	25	DECIDUOUS	REMOVE
6600	15	25	DECIDUOUS	REMOVE
6601	6,10,12	30	DECIDUOUS	REMOVE
6603	21	25	DECIDUOUS	REMOVE
6606	12	25	DECIDUOUS	REMOVE
6608	15	30	DECIDUOUS	REMOVE
6610	10	30	DECIDUOUS	REMOVE
6612	12	20	DECIDUOUS	REMOVE
6618	15	30	DECIDUOUS	REMOVE
6621	21	35	EVERGREEN	REMOVE
6624	10	8	EVERGREEN	REMOVE
6625	9	8	EVERGREEN	REMOVE
6626	16	15	DECIDUOUS	REMOVE
6627	14	15	EVERGREEN	REMOVE
6628	11	8	EVERGREEN	REMOVE
6629	9	8	EVERGREEN	REMOVE
6630	15	15	EVERGREEN	REMOVE
6631	15	12	EVERGREEN	REMOVE
6632	24	23	DECIDUOUS	REMOVE
6634	24	20	DECIDUOUS	REMOVE
6635	18	20	DECIDUOUS	REMOVE
6636	13	12	EVERGREEN	REMOVE
6637	10	10	EVERGREEN	REMOVE
6643	18	20	DECIDUOUS	REMOVE
6644	18	22	DECIDUOUS	REMOVE
6645	21	25	DECIDUOUS	REMOVE
6646	18	25	DECIDUOUS	REMOVE
6647	18	25	DECIDUOUS	REMOVE
6648	15	20	DECIDUOUS	REMOVE
6649	15	20	DECIDUOUS	REMOVE
6650	8	15	DECIDUOUS	REMOVE
6651	12	15	DECIDUOUS	REMOVE
6652	10	12	DECIDUOUS	REMOVE
6653	15	12	DECIDUOUS	REMOVE
6654	12	12	EVERGREEN	REMOVE
6655	27	30	EVERGREEN	REMOVE
6656	24	30	EVERGREEN	REMOVE
6657	24	35	EVERGREEN	REMOVE
6658	18	25	DECIDUOUS	REMOVE
6659	18	25	DECIDUOUS	REMOVE
6660	9	8	EVERGREEN	REMOVE
6661	8	27	EVERGREEN	REMOVE
6662	8	7	EVERGREEN	REMOVE
6663	10	9	EVERGREEN	REMOVE
6664	12	10	EVERGREEN	REMOVE
6665	10	5	EVERGREEN	REMOVE
6666	8	5	EVERGREEN	REMOVE
6667	10	6	EVERGREEN	REMOVE
6668	8	5	EVERGREEN	REMOVE
6669	8	8	DECIDUOUS	REMOVE
6670	15	12	DECIDUOUS	REMOVE
6671	20	15	EVERGREEN	REMOVE
6672	15	6	EVERGREEN	REMOVE
6673	8	6	DECIDUOUS	REMOVE
6674	12	10	DECIDUOUS	REMOVE
6677	14	8	EVERGREEN	REMOVE
6678	18	8	EVERGREEN	REMOVE
6679	16	8	EVERGREEN	REMOVE
6681	8	8	EVERGREEN	REMOVE
6682	8	7	EVERGREEN	REMOVE
6683	8	8	EVERGREEN	REMOVE

EXISTING TREE CANOPY COVER ONSITE: ±58,270 SF (31%)

DEVELOPMENT PLAN
5555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

3.0 OF 22.0

103228

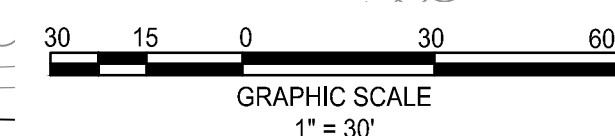


TAX MAP #0164-10-0006
LOT 5
PARKWAY TRADE CENTER
D.B. 5992 PG. 376
575 HERNDON PARKWAY
INVESTORS, LLC
D.B. 17654 PG. 1982
ZONE: PD-T
EX. LAND USE: GENERAL
MED/HI-RISE OFFICE

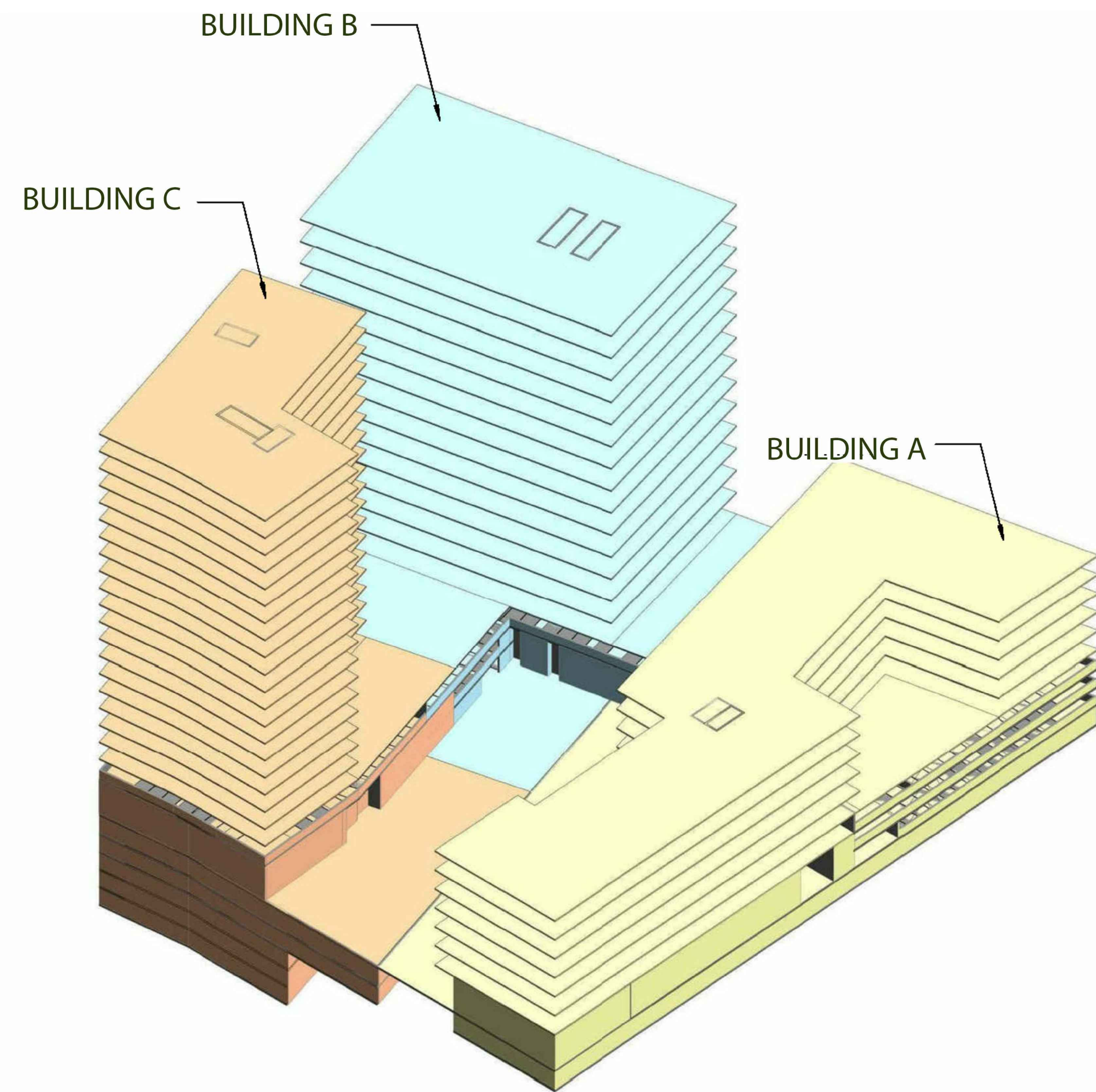
TAX MAP #0164-10-0002C
PARCEL 2C
PARKWAY TR 8" SAN
CENTER
D.B. 5838 PG. 1680
555 HERNDON LLC
D.B. 23471 PG. 1
189,218 SQ. FT. OR 4.3439
ACRES
ZONED: PD-TOC
EX. LAND USE: LOW-RISE
OFFICE

362.8
TAX MAP #0164-10-0003
LOT 3
PARKWAY TRADE CENTER
D.B. 5874 PG. 1826
SIXTEEN TWO FIVE MASS,
AVENUE N.W. CORP.
D.B. 6146 PG. 680
ZONE: PD-T
EX. LAND USE:
LOW-RISE OFFICE

DULLES TOLL ROAD - ROUTE #267
(VARIABLE WIDTH PUBLIC RIGHT-OF-WAY - PRINCIPAL ARTERIAL)



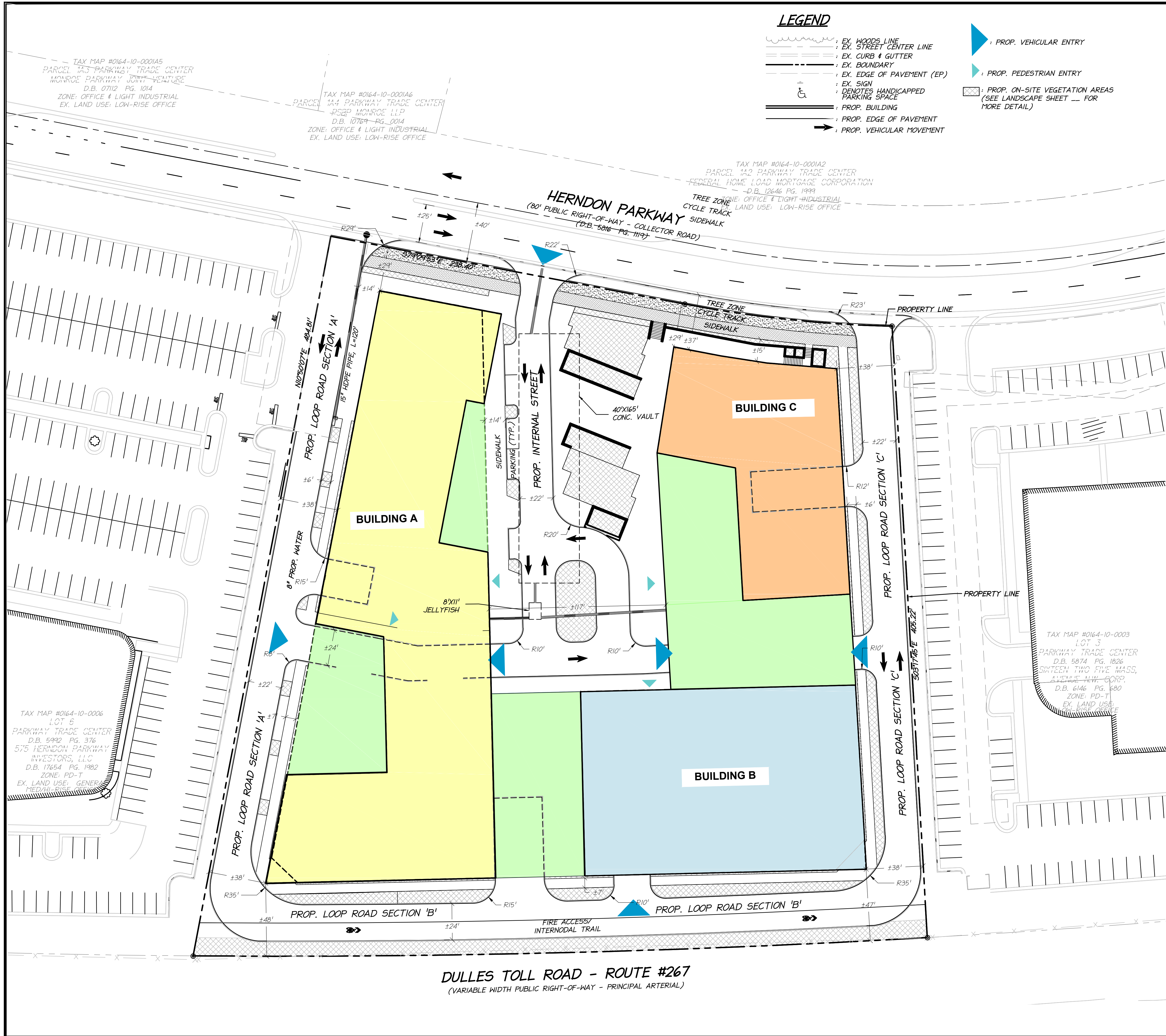
DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18



PROPOSED DEVELOPMENT TABULATIONS

PARKING					
	ESTIMATED GFA (SF)	HEIGHT (ft)	REQUIRED	Estimated Units/GFA	Provided Based on Unit Count/GFA
BUILDING A	RETAIL (GFA)	+/- 5,500	1.25 / 1,000 (GFA)	+/- 5,500	28
	RESIDENTIAL L.R. (GFA)	+/- 207,000	1.0 / UNIT	207	237
BUILDING B	OFFICE (GFA)	+/- 324,000	2.0 / 1,000 (GFA)	+/- 324,000	662
BUILDING C	RETAIL (GFA)	+/- 5,000	1.25 / 1,000 (GFA)	+/- 5,000	25
	RESIDENTIAL H.R. (GFA)	+/- 272,137	1.0 / UNIT	273	319
TOTAL GFA		+/- 813,637	TOTAL SPACES	1,142	1,271
TOTAL SITE ARE		189,220			
TOTAL SITE FAR		4.30			

Square footage and dwelling units are approximate.
Applicant reserves the right to adjust GFA, unit counts and heights for each building in accordance with the approved development plans and proffers.
Building heights are above average site elevation and do not include mechanical penthouse requirements or rooftop facilities (pool, deck, club room, etc).
Applicant reserves the right to develop up to 4.3 FAR based on final development plans. Total development square footage will not exceed 813,637 GFA, based on a 4.3 FAR.
Additional retail may be provided above the square footage shown provided that the overall final square footage will not exceed 813,637 GFA.
Applicant reserves the right to provide more or less parking with each building at the time of Site Plan, provided at least the minimum required rate for each use is provided.



DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18

ZONING TABULATION REQUIREMENTS PD-TOC	
ZONING REGULATIONS REQUIREMENTS (AS PER 20 SEC. 78-50.8):	
MINIMUM LOT SIZE: NO REQUIREMENT	
DENSITY: FLOOR AREA RATIO (FAR): 4.3 FAR	
OPEN SPACE: NO MINIMUM REQUIRED	
BUILDING SETBACKS: HERNDON PARKWAY: NO MINIMUM REQUIRED DULLES TOLL ROAD: 40' FROM DULLES TOLL ROAD ROW	
BUILDING TOWER SEPARATION: 65' MIN. BETWEEN RESIDENTIAL BLDG. TOWERS ABOVE 80' 50' MIN. BETWEEN NONRESIDENTIAL BLDG. TOWERS ABOVE 80'	
ACCESS DRIVE: MIN. 40' WIDE FROM BLDG. FACADE TO BLDG. FACADE	
BUILDING HEIGHT: 275' INCLUSIVE OF PARKING LEVELS	
PARKING: RESIDENTIAL: LONG-TERM USE 1.0 SPACE/DWELLING UNIT BICYCLE 0.75 SPACES/DWELLING UNIT	
RETAIL: LONG-TERM USE 1.25 SPACES/1,000 GROSS FLOOR AREA (GFA) BICYCLE 0.25 SPACES/1,000 GROSS FLOOR AREA (GFA)	
OFFICE: LONG-TERM USE 2.0 SPACES/1,000 GFA BICYCLE 0.20 SPACES/1,000 GROSS FLOOR AREA (GFA)	
PARKING SPACE DIMENSIONS: 90 DEGREE: 8.5'X18' PARALLEL: 8'X20'	
LOADING SPACES: MULTI-FAMILY: 1 SPACE PER 200 UNITS OR FRACTION THEREOF OFFICE: 1 SPACE PER 6,000 GFA (SF) RETAIL: 1 SPACE FOR 3,000-14,999 GFA (SF) 2 SPACES FOR 15,000-49,999 GFA (SF) 3 SPACES FOR 50,000-99,999 GFA (SF)	
LOADING SPACE DIMENSIONS: 17' WIDE X 25' LONG X 14' HIGH	
TREE COVER: NO MINIMUM TREE COVER REQUIREMENT ONE (1) SHADE TREE REQ'D PER EVERY TWELVE (12) UNCOVERED SURFACE PARKING SPACES. (NOT SUBJECT TO DEVELOPMENT PLAN AS PER SECT. 78-50.8.J.(1))	

PROPOSED ZONING TABULATION PD-TOC	
FULL BUILD-OUT	
DENSITY: FLOOR AREA RATIO (FAR): 4.3 FAR	
OPEN SPACE: PUBLIC OPEN SPACE: ±149,180 SF PRIVATE OPEN SPACE: ±25,000 SF TOTAL OPEN SPACE: ±174,180 SF	
BUILDING SETBACKS: HERNDON PARKWAY: ±29' FROM HERNDON PARKWAY DULLES TOLL ROAD: ±47' FROM DULLES TOLL ROAD ROW	
BUILDING TOWER SEPARATION: ±60' BETWEEN BLDG. A AND BLDG. B. ±58' BETWEEN BLDG. B AND BLDG. C.	
ACCESS DRIVE: ±117' WIDE FROM BLDG. A FACADE TO BLDG. B/C FACADE	
BUILDING HEIGHT: MAXIMUM 225' ALONG HERNDON PARKWAY SIDE MAXIMUM 275' ALONG DULLES TOLL ROAD SIDE	
PROVIDED PARKING: SURFACE SPACES (PROPOSED): UP TO ±5 SPACES GARAGE SPACES (PROPOSED): UP TO ±1,271 SPACES TOTAL SPACES PROVIDED: UP TO ±1,276 SPACES	
LOADING SPACES: 3	

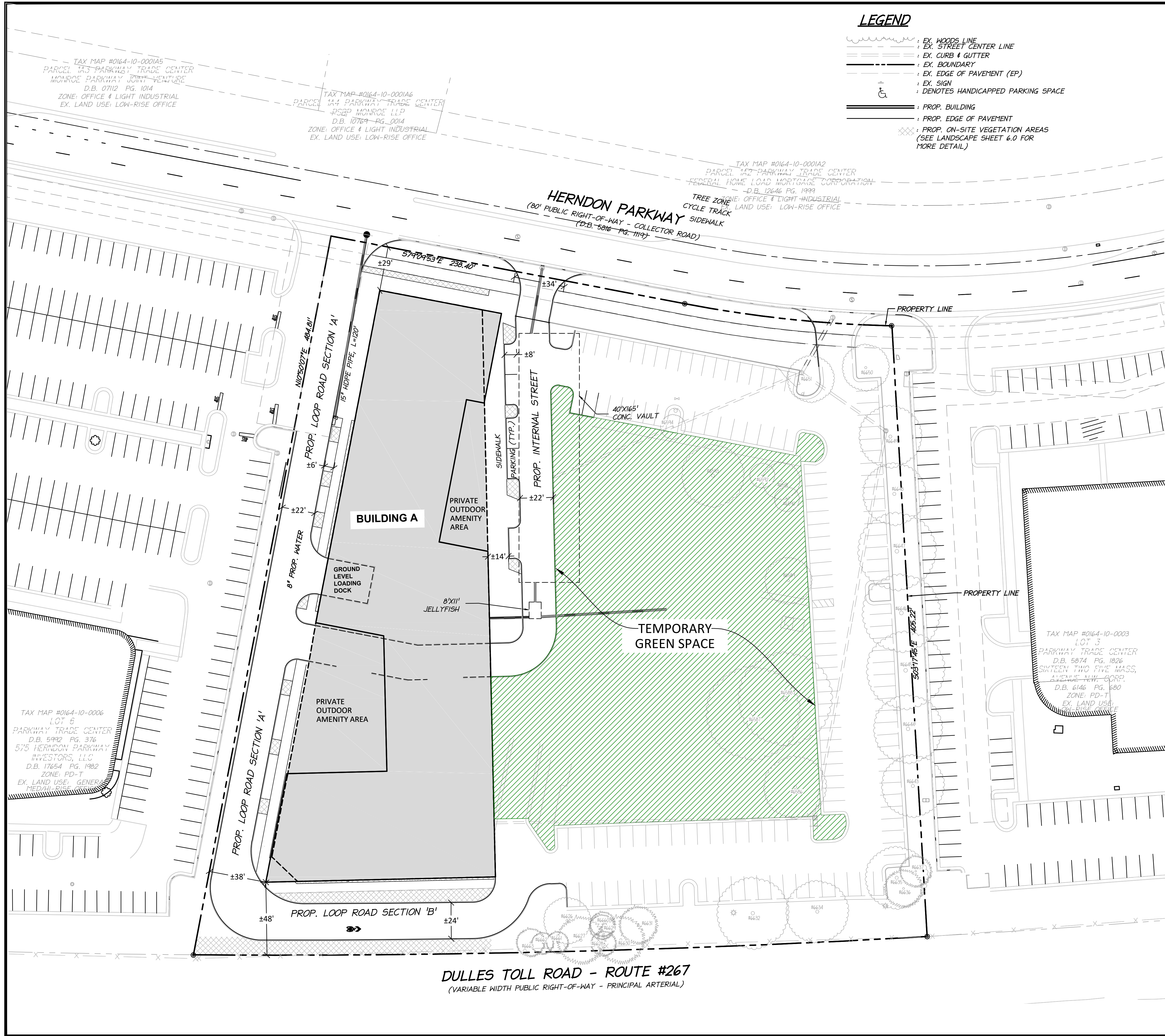
NOTE:
1. THIS PROJECT WILL BE DEVELOPED IN UP TO THREE PHASES, SUBJECT TO MARKET CONDITIONS AND TO MEET MARKET DEMAND. THE FIRST PHASE MAY CONSIST OF INFRASTRUCTURE AND A RESIDENTIAL BUILDING. ADDITIONAL INFRASTRUCTURE TO BE PROVIDED IN FUTURE PHASES AS NEEDED. SEE SHEETS 5.1-5.3 FOR INTERIM DEVELOPMENT CONDITIONS.

PROJECT NO: 15002.001.00
SCALE: 1"=30'
DATE: 08-08-2018
DESIGN: JR,WR
DRAWN: WR
CHECKED:
SHEET No.
5.0 OF 22.0

DEVELOPMENT PLAN-
FULL BUILD-OUT

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00
SCALE: 1"=30'
DATE: 08-08-2018
DESIGN: JR,WR
DRAWN: WR
CHECKED:
SHEET No.
5.0 OF 22.0



LEGEND

- EX. WOODS LINE
- EX. STREET CENTER LINE
- EX. CURB & GUTTER
- EX. BOUNDARY
- EX. EDGE OF PAVEMENT (EP)
- EX. SIGN
- DENOTES HANDICAPPED PARKING SPACE
- PROP. BUILDING
- PROP. EDGE OF PAVEMENT
- PROP. ON-SITE VEGETATION AREAS (SEE LANDSCAPE SHEET 6.0 FOR MORE DETAIL)

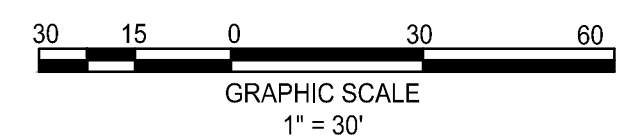
ZONING TABULATION REQUIREMENTS PD-TOC

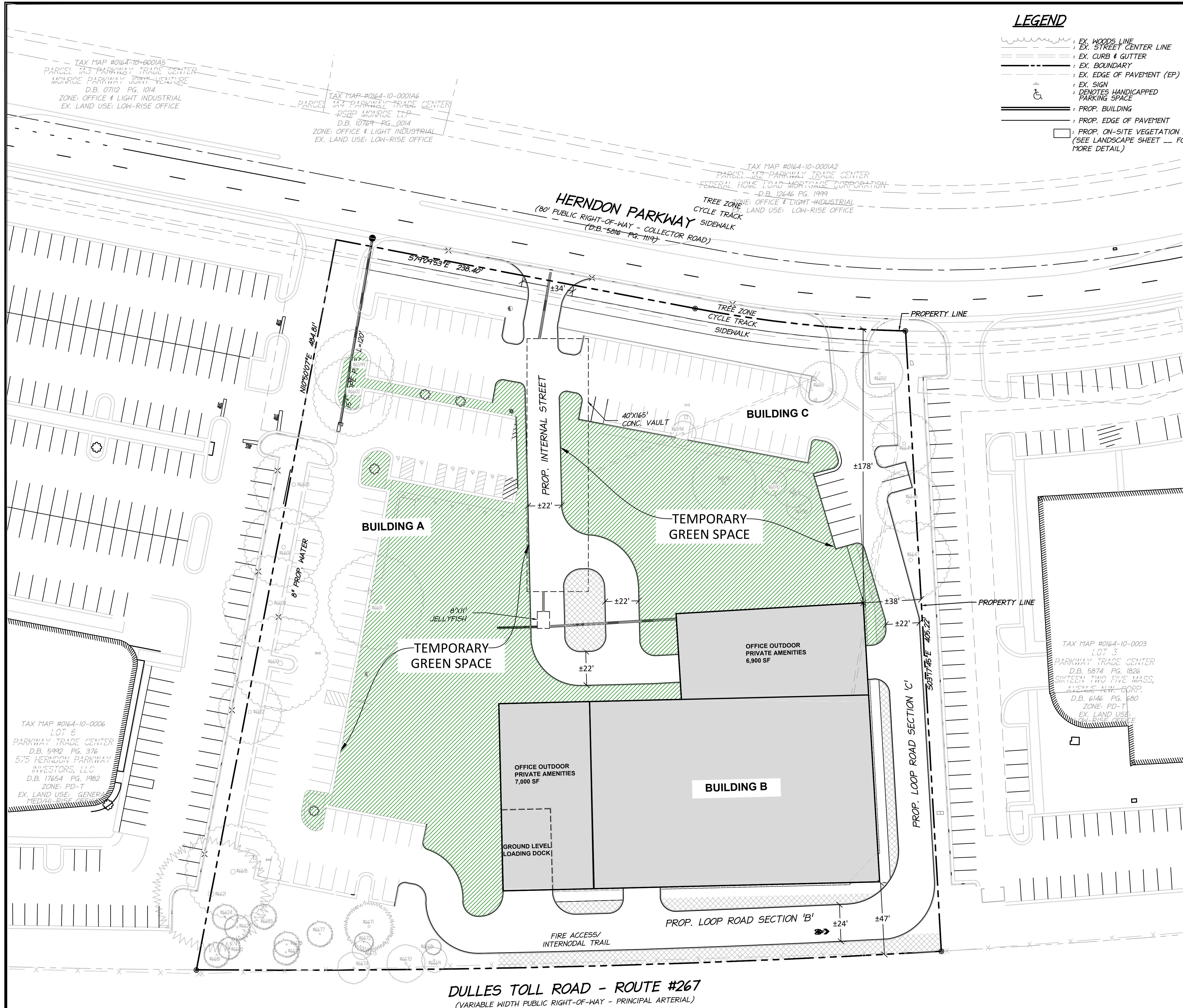
- ZONING REGULATIONS REQUIREMENTS (AS PER 20 SEC. 78-50.8):
- MINIMUM LOT SIZE:
NO REQUIREMENT
- DENSITY:
FLOOR AREA RATIO (FAR): 4.3 FAR
- OPEN SPACE: NO MINIMUM REQUIRED
- BUILDING SETBACKS:
HERNDON PARKWAY: NO MINIMUM REQUIRED
DULLES TOLL ROAD: 40' FROM DULLES TOLL ROAD ROW
- BUILDING TOWER SEPARATION:
65' MIN. BETWEEN RESIDENTIAL BLDG. TOWERS ABOVE 80'
50' MIN. BETWEEN NONRESIDENTIAL BLDG. TOWERS ABOVE 80'
- ACCESS DRIVE:
MIN. 40' WIDE FROM BLDG. FACADE TO BLDG. FACADE
- BUILDING HEIGHT:
275' INCLUSIVE OF PARKING LEVELS
- PARKING:
RESIDENTIAL: LONG-TERM USE
1.0 SPACE/DWELLING UNIT
BICYCLE
0.75 SPACES/DWELLING UNIT
- RETAIL: LONG-TERM USE
1.25 SPACES/1,000 GROSS FLOOR AREA (GFA)
BICYCLE
0.25 SPACES/1,000 GROSS FLOOR AREA (GFA)
- OFFICE: LONG-TERM USE
2.0 SPACES/1,000 GFA
BICYCLE
0.20 SPACES/1,000 GROSS FLOOR AREA (GFA)
- PARKING SPACE DIMENSIONS:
90 DEGREE: 8.5'x18'
PARALLEL: 8'x20'
- LOADING SPACES:
MULTI-FAMILY: 1 SPACE PER 200 UNITS OR FRACTION THEREOF
OFFICE: 1 SPACE PER 6,000 GFA (SF)
RETAIL: 1 SPACE FOR 3,000-14,999 GFA (SF)
2 SPACES FOR 15,000-49,999 GFA (SF)
3 SPACES FOR 50,000-99,999 GFA (SF)
- LOADING SPACE DIMENSIONS:
17' WIDE X 25' LONG X 14' HIGH
- TREE COVER:
NO MINIMUM TREE COVER REQUIREMENT
ONE (1) SHADE TREE REQ'D PER EVERY TWELVE (12)
UNCOVERED SURFACE PARKING SPACES. (NOT SUBJECT TO DEVELOPMENT PLANS AS PER SECT. 78-50.8.J.(1))

PROPOSED ZONING TABULATION PD-TOC

- PROPOSED BUILDING A
- DENSITY:
RETAIL (GSF) ±5,500
RESIDENTIAL L.R. (GSF) ±207,000
TOTAL ±212,500
- OPEN SPACE:
PUBLIC OPEN SPACE: ±83,000 SF
PRIVATE OPEN SPACE: ±7,000 SF
TOTAL OPEN SPACE: ±90,000 SF
- BUILDING SETBACKS:
HERNDON PARKWAY: ±29' FROM HERNDON PARKWAY ROW
DULLES TOLL ROAD: ±48' FROM DULLES TOLL ROAD ROW
- BUILDING HEIGHT:
MAXIMUM 225' ALONG HERNDON PARKWAY SIDE
MAXIMUM 275' ALONG DULLES TOLL ROAD SIDE
- PROVIDED PARKING:
SURFACE SPACES (EXISTING): 145 STANDARD SPACES
SURFACE SPACES (PROPOSED): UP TO ±2 STANDARD SPACES
UP TO ±5 PARALLEL SPACES
- GARAGE SPACES (PROPOSED): UP TO ±265 SPACES
TOTAL SPACES PROVIDED: UP TO ±417 SPACES
- LOADING SPACES (PROPOSED): 1

- NOTES:
- THE PROPOSED BUILDING IS SHOWN AT THE PODIUM LEVEL. THE REMAINDER OF THE SITE IS SHOWN AT GROUND LEVEL.
 - THIS PROJECT WILL BE DEVELOPED IN UP TO THREE PHASES, SUBJECT TO MARKET CONDITIONS AND TO MEET MARKET DEMAND. THE FIRST PHASE MAY CONSIST OF INFRASTRUCTURE AND A RESIDENTIAL BUILDING. ADDITIONAL INFRASTRUCTURE TO BE PROVIDED IN FUTURE PHASES AS NEEDED. SEE SHEETS 5.2 AND 5.3 FOR INTERIM DEVELOPMENT CONDITIONS OF BUILDING B AND C RESPECTIVELY.





LEGEND

- EX. WOODS LINE
- EX. STREET CENTER LINE
- EX. CURB & GUTTER
- EX. BOUNDARY
- EX. EDGE OF PAVEMENT (EP)
- EX. SIGN
- EX. DENOTES HANDICAPPED PARKING SPACE
- PROP. BUILDING
- PROP. EDGE OF PAVEMENT
- PROP. ON-SITE VEGETATION AREAS (SEE LANDSCAPE SHEET FOR MORE DETAIL)

ZONING TABULATION REQUIREMENTS PD-TOC

ZONING REGULATIONS REQUIREMENTS (AS PER ZO SEC. 78-50.8):

MINIMUM LOT SIZE:
NO REQUIREMENT

DENSITY:
FLOOR AREA RATIO (FAR): 4.3 FAR

OPEN SPACE: NO MINIMUM REQUIRED

BUILDING SETBACKS:
HERNDON PARKWAY: NO MINIMUM REQUIRED
DULLES TOLL ROAD: 40' FROM DULLES TOLL ROAD ROW

BUILDING TOWER SEPARATION:
65' MIN. BETWEEN RESIDENTIAL BLDG. TOWERS ABOVE 80'
50' MIN. BETWEEN NONRESIDENTIAL BLDG. TOWERS ABOVE 80'

ACCESS DRIVE:
MIN. 40' WIDE FROM BLDG. FACADE TO BLDG. FACADE

BUILDING HEIGHT:
275' INCLUSIVE OF PARKING LEVELS

PARKING:

RESIDENTIAL: LONG-TERM USE
1.0 SPACES/DWELLING UNIT
BICYCLE
0.75 SPACES/DWELLING UNIT

RETAIL: LONG-TERM USE
1.25 SPACES/1,000 GROSS FLOOR AREA (GFA)
BICYCLE
0.25 SPACES/1,000 GROSS FLOOR AREA (GFA)

OFFICE: LONG-TERM USE
2.0 SPACES/1,000 GFA
BICYCLE
0.20 SPACES/1,000 GROSS FLOOR AREA (GFA)

PARKING SPACE DIMENSIONS:
90 DEGREE: 8.5'X18'
PARALLEL: 8'X20'

LOADING SPACES:
MULTI-FAMILY: 1 SPACE PER 200 UNITS OR FRACTION THEREOF
OFFICE: 1 SPACE PER 6,000 GFA (SF)
RETAIL: 1 SPACE FOR 3,000-14,999 GFA (SF)
2 SPACES FOR 15,000-49,999 GFA (SF)
3 SPACES FOR 50,000-99,999 GFA (SF)

LOADING SPACE DIMENSIONS:
17' WIDE X 25' LONG X 14' HIGH

TREE COVER:
NO MINIMUM TREE COVER REQUIREMENT
ONE SHADE TREE REQ'D PER EVERY 12 PARKING SPACES

PROPOSED ZONING TABULATION PD-TOC

BUILDING B

DENSITY:
OFFICE (G3F) ±324,000
TOTAL ±324,000

OPEN SPACE:
PUBLIC OPEN SPACE: ±73,600 SF
PRIVATE OPEN SPACE: ±6,900 SF
TOTAL OPEN SPACE: ±80,500 SF

BUILDING SETBACKS:
HERNDON PARKWAY: ±178' FROM HERNDON PARKWAY ROW
DULLES TOLL ROAD: ±147' FROM DULLES TOLL ROAD ROW

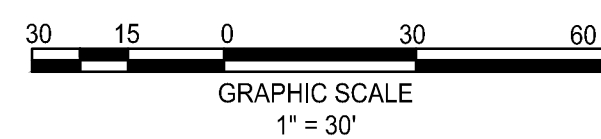
BUILDING HEIGHT:
MAXIMUM 225' ALONG HERNDON PARKWAY SIDE
MAXIMUM 275' ALONG DULLES TOLL ROAD SIDE

PROVIDED PARKING:
SURFACE SPACES (EXISTING): 147
SURFACE SPACES (PROPOSED): UP TO ±10
GARAGE SPACES (PROPOSED): UP TO ±662
TOTAL SPACES PROVIDED: UP TO ±819

LOADING SPACES (PROPOSED): 1

NOTES:

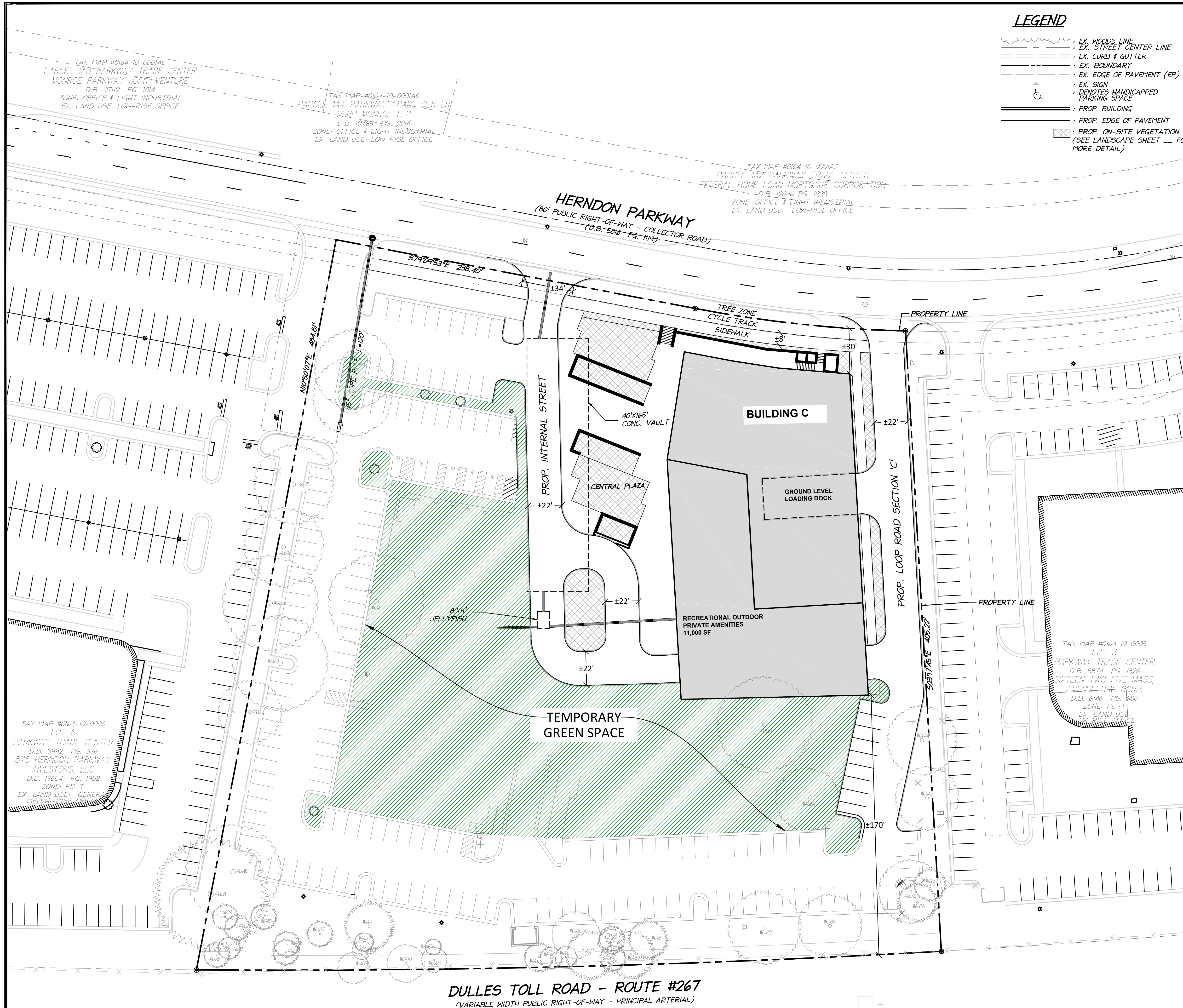
- THE PROPOSED BUILDING IS SHOWN AT THE PODIUM LEVEL. THE REMAINDER OF THE SITE IS SHOWN AT GROUND LEVEL.
- THIS PROJECT WILL BE DEVELOPED IN UP TO THREE PHASES, SUBJECT TO MARKET CONDITIONS AND TO MEET MARKET DEMAND. THE FIRST PHASE MAY CONSIST OF INFRASTRUCTURE AND A RESIDENTIAL BUILDING. ADDITIONAL INFRASTRUCTURE TO BE PROVIDED IN FUTURE PHASES AS NEEDED. SEE SHEETS 5.1 AND 5.3 FOR INTERIM DEVELOPMENT CONDITIONS OF BUILDING A AND C RESPECTIVELY.



DEVELOPMENT PLAN - BUILDING B

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00
SCALE: 1"=30'
DATE: 08-08-2018
DESIGN: JR, WR
DRAWN: WR
CHECKED:
SHEET No.
5.2 OF **22.0**



LEGEND

- EX. WOODS LINE
- EX. STREET CENTER LINE
- EX. CURB & GUTTER
- EX. BOUNDARY
- EX. EDGE OF PAVEMENT (EP)
- EX. SIGN
- EX. DENOTES HANDICAPPED PARKING SPACE
- PROP. BUILDING
- PROP. EDGE OF PAVEMENT
- PROP. ON-SITE VEGETATION AREAS (SEE LANDSCAPE SHEET FOR MORE DETAIL)

ZONING TABULATION REQUIREMENTS PD-TOC

ZONING REGULATIONS REQUIREMENTS (AS PER ZO SEC. 78-50.8):

MINIMUM LOT SIZE:
NO REQUIREMENT

DENSITY:
FLOOR AREA RATIO (FAR): 4.3 FAR

OPEN SPACE: NO MINIMUM REQUIRED

BUILDING SETBACKS:
HERNDON PARKWAY: NO MINIMUM REQUIRED
DULLES TOLL ROAD: 40' FROM DULLES TOLL ROAD ROW

BUILDING TOWER SEPARATION:
65' MIN. BETWEEN RESIDENTIAL BLDG. TOWERS ABOVE 80'
50' MIN. BETWEEN NONRESIDENTIAL BLDG. TOWERS ABOVE 80'

ACCESS DRIVE:
MIN. 40' WIDE FROM BLDG. FACADE TO BLDG. FACADE

BUILDING HEIGHT:
275' INCLUSIVE OF PARKING LEVELS

PARKING:
RESIDENTIAL: LONG-TERM USE
1.0 SPACES/DWELLING UNIT
BICYCLE
0.75 SPACES/DWELLING UNIT

RETAIL:
LONG-TERM USE
1.25 SPACES/1,000 GROSS FLOOR AREA (GFA)
BICYCLE
0.25 SPACES/1,000 GROSS FLOOR AREA (GFA)

OFFICE:
LONG-TERM USE
2.0 SPACES/1,000 GFA
BICYCLE
0.20 SPACES/1,000 GROSS FLOOR AREA (GFA)

PARKING SPACE DIMENSIONS:
90 DEGREE: 8.5'X18'
PARALLEL: 8'X20'

LOADING SPACES:
MULTI-FAMILY: 1 SPACE PER 200 UNITS OR FRACTION THEREOF
OFFICE: 1 SPACE PER 6,000 GFA (SF)
RETAIL: 1 SPACE FOR 3,000-14,999 GFA (SF)
2 SPACES FOR 15,000-49,999 GFA (SF)
3 SPACES FOR 50,000-99,999 GFA (SF)

LOADING SPACE DIMENSIONS:
17' WIDE X 25' LONG X 14' HIGH

TREE COVER:
NO MINIMUM TREE COVER REQUIREMENT
ONE SHADE TREE REQ'D PER EVERY 12 PARKING SPACES

PROPOSED ZONING TABULATION PD-TOC

BUILDING C

DENSITY:
RETAIL (GSF) ±5,000
RESIDENTIAL H.R. (GSF) ±272,137
TOTAL ±277,137

OPEN SPACE:
PUBLIC OPEN SPACE: ±90,000 SF
PRIVATE OPEN SPACE: ±11,000 SF
TOTAL OPEN SPACE: ±101,000 SF

BUILDING SETBACKS:
HERNDON PARKWAY: ±29' FROM HERNDON PARKWAY ROW
DULLES TOLL ROAD: ±47' FROM DULLES TOLL ROAD ROW

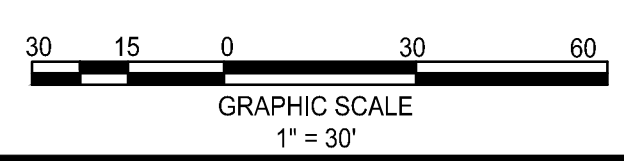
BUILDING HEIGHT:
MAXIMUM 225' ALONG HERNDON PARKWAY SIDE
MAXIMUM 275' ALONG DULLES TOLL ROAD SIDE

PROVIDED PARKING:
SURFACE SPACES (EXISTING): 170
SURFACE SPACES (PROPOSED): UP TO ±9
GARAGE SPACES (PROPOSED): UP TO ±319
TOTAL SPACES PROVIDED: UP TO ±498

LOADING SPACES: 1

NOTES:

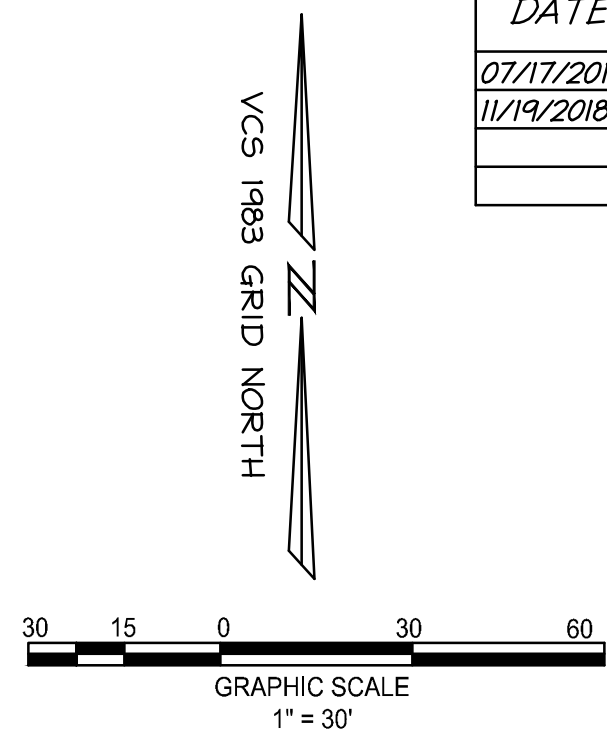
- THE PROPOSED BUILDING IS SHOWN AT THE PODIUM LEVEL. THE REMAINDER OF THE SITE IS SHOWN AT GROUND LEVEL.
- THIS PROJECT WILL BE DEVELOPED IN UP TO THREE PHASES, SUBJECT TO MARKET CONDITIONS AND TO MEET MARKET DEMAND. THE FIRST PHASE MAY CONSIST OF INFRASTRUCTURE AND A RESIDENTIAL BUILDING. ADDITIONAL INFRASTRUCTURE TO BE PROVIDED IN FUTURE PHASES AS NEEDED. SEE SHEETS 5.1 AND 5.2 FOR INTERIM DEVELOPMENT CONDITIONS OF BUILDING A AND B RESPECTIVELY.



DEVELOPMENT PLAN -
BUILDING C

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00
SCALE: 1"=30'
DATE: 08-08-2018
DESIGN: JR, WR
DRAWN: WR
CHECKED:
SHEET No.
5.3 OF 22.0



DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18

penzance

christopher consultants

dcs DESIGN

GOROVE / SLADE
Transportation Planners and Engineers

McGUIREWOODS

NOTE:
1. ALL SURFACE TREATMENTS ON THIS SHEET
ARE SHOWN FROM GROUND LEVEL.

LEGEND	
	ACER RUBRUM RED MAPLE
	GINKGO BILOBA GINKGO
	QUERCUS PHELLOS WILLOW OAK
	TILIA AMERICANA AMERICAN LINDEN
	BETULA NIGRA RIVER BIRCH
	GLEDITSIA TRIACANTHOS INERMIS THORNLESS HONEYLOCUST
	CORNUS FLORIDA FLOWERING DOGWOOD
	PINUS TAEDA LOBLOLLY PINE
	SHRUB / GROUND COVER PLANTING
	LAWN

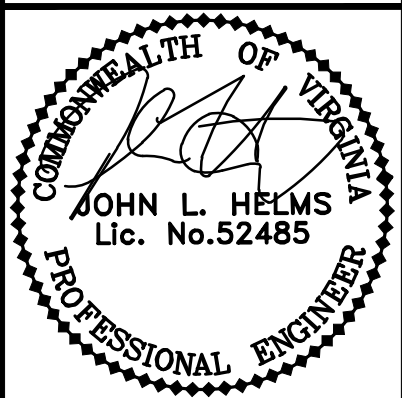
PLANTING SCHEDULE				
BOTANICAL NAME	COMMON NAME	STOCK SIZE (CALIPER /HEIGHT)	STOCK TYPE	QUANTITY
DECIDUOUS TREES - CATEGORY IV				
ACER RUBRUM	RED MAPLE	2 1/2 - 3" CAL.	B&B	16
GINKGO BILOBA	GINKGO	2 1/2 - 3" CAL.	B&B	9
QUERCUS PHELLOS	WILLOW OAK	2 1/2 - 3" CAL.	B&B	13
TILIA AMERICANA	AMERICAN LINDEN	2 1/2 - 3" CAL.	B&B	11
DECIDUOUS TREES - CATEGORY III				
BETULA NIGRA	RIVER BIRCH	2 1/2 - 3" CAL.	B&B	7
GLEDITSIA TRIACANTHOS INERMIS	THORNLESS HONEYLOCUST	2 1/2 - 3" CAL.	B&B	14
DECIDUOUS TREES - CATEGORY II				
CORNUS FLORIDA	FLOWERING DOGWOOD	2 1/2 - 3" CAL.	B&B	8
EVERGREEN TREES - CATEGORY IV				
PINUS TAEDA	LOBLOLLY PINE	8' HT.	B&B	7

LANDSCAPE PLAN

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00
SCALE: 1" = 30'
DATE: 08-08-2018
DESIGN: LBD
DRAWN: LBD
CHECKED:
SHEET No.

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18



HARDSCAPE PLAN

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00

SCALE:
1" = 30'

DATE:
08-08-2018

DESIGN: JTR
DRAWN: JTR
CHECKED:

SHEET No.

7.0 OF 22.0

103228

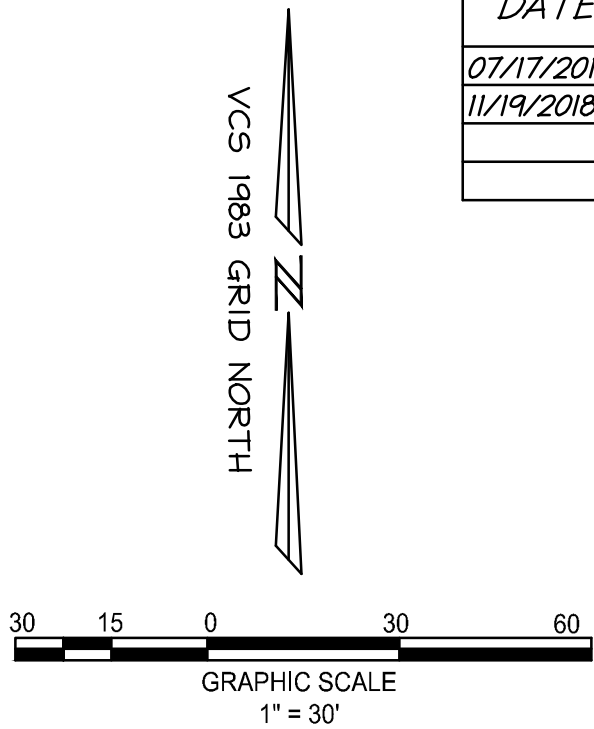


Amenity Key

- ① Decorative Paving Inlay
- ② Scored Concrete Sidewalk
- ③ Lawn Panel
- ④ Seat Walls
- ⑤ Dog Run/Park
- ⑥ Plaza Area
- ⑦ Shared Roadway Bike Trail
- ⑧ Parallel Parking
- ⑨ Public Bike Track
- ⑩ Public Sidewalk
- ⑪ Sidewalk

NOTE:
1. ALL SURFACE TREATMENTS ON THIS SHEET
ARE SHOWN FROM GROUND LEVEL.

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18

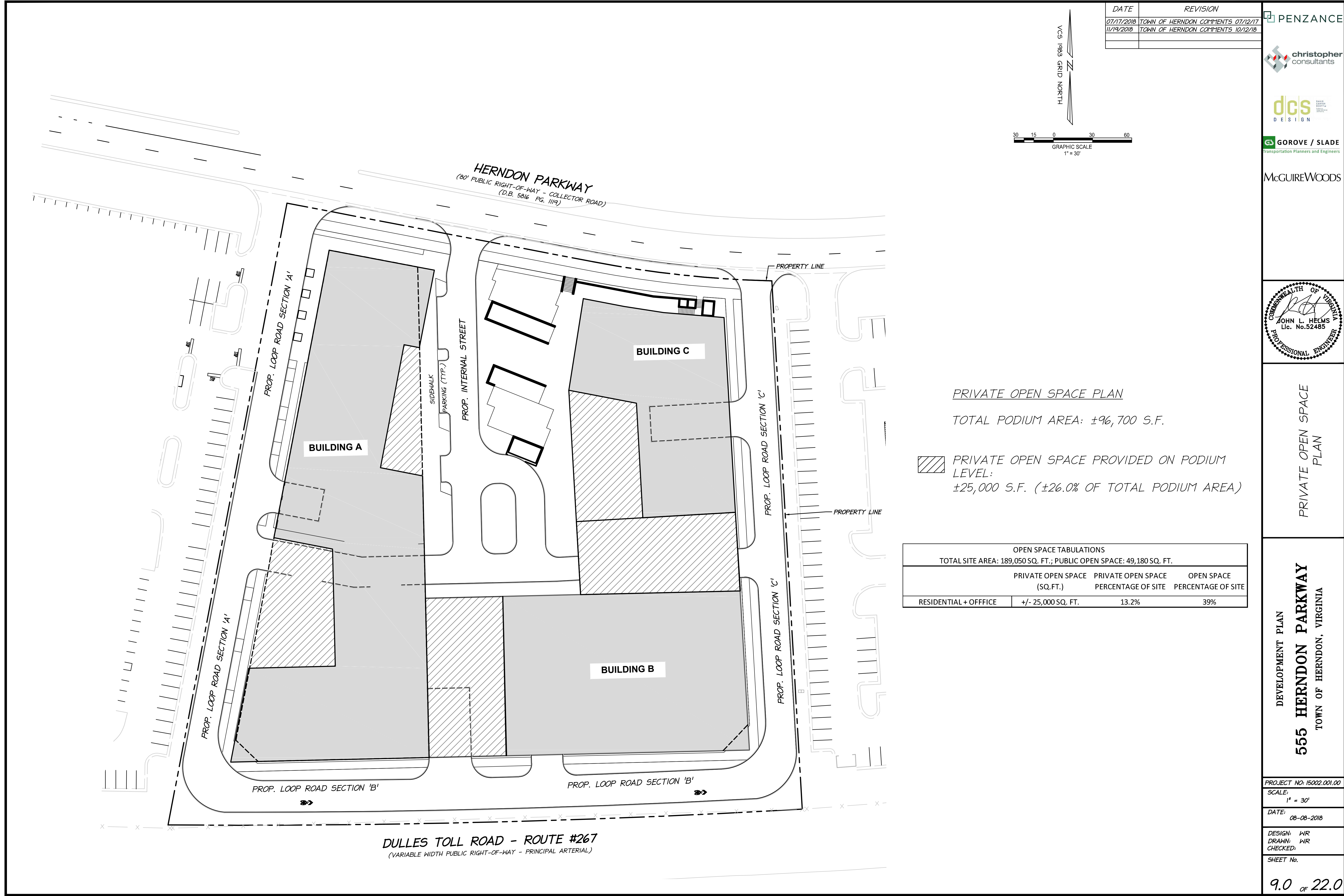


OPEN SPACE PLAN

TOTAL SITE AREA: 4.34 AC

OPEN SPACE AREA REQUIREMENT:
0.00 AC (0% OF SITE)

OPEN SPACE PROVIDED AT GRADE:
±1.12 AC (±26.0% OF SITE)



DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18

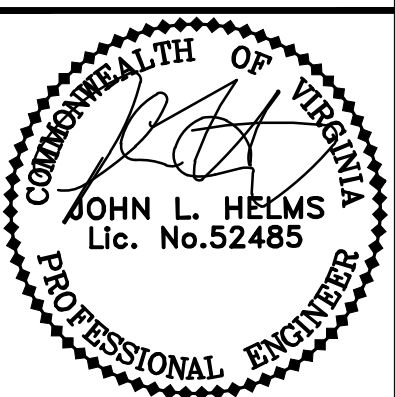
PENZANCE

christopher
consultants

dcs
DESIGN

GOROVE / SLADE
Transportation Planners and Engineers

McGUIREWOODS



PRIVATE OPEN SPACE
PLAN

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00

SCALE:
1" = 30'

DATE:
08-08-2018

DESIGN: WR
DRAWN: WR
CHECKED:

SHEET No.

9.0 OF 22.0

103228

LADDER TRUCK TURNING: REAR OF AT SITE FROM PRIMARY ENTRANCE



LADDER TRUCK TURNING: TURNING INTO PLAZA:



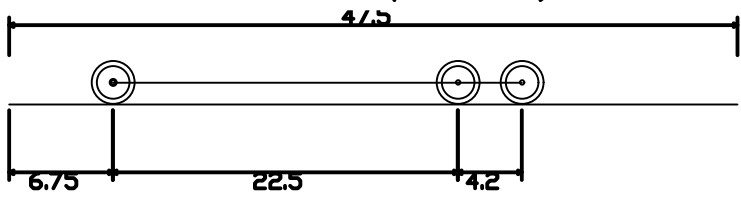
LADDER TRUCK TURNING: TURNING REAR OF SITE FROM SECONDARY ENTRANCE



PODIUM ACCESS IN ACCORDANCE WITH PFM:



LADDER TRUCK SPECIFICATIONS (N.T.S.):

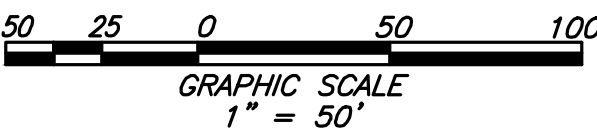


Ladder Fire Truck	47.500ft
Overall Length	8.000ft
Overall Width	14.00ft
Overall Body Height	1.400ft
Min Body Ground Clearance	8.000ft
Track Width	4.00s
Lock-to-lock time	45.250ft
Wall to Wall Turning Radius	

LEGEND

--- :PODIUM ACCESSIBLE BY LADDER

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18



VCS 1983 GRID NORTH

WB-40 ENTERING EASTERN LOADING BAY



WB-40 ENTERING WESTERN LOADING BAY



VCS 1983 GRID NORTH

GRAPHIC SCALE

1" = 50'

50

25

0

50

100

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18

penzance

christopher consultants

dcs DESIGN

GOROVE / SLADE

Transportation Planners and Engineers

McGUIREWOODS

COMMONWEALTH OF VIRGINIA

JOHN L. HELMS

Lic. No.52485

PROFESSIONAL ENGINEER

TRUCK TURNING
MOVEMENTS

DEVELOPMENT PLAN

555 HERNDON PARKWAY

TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00

SCALE: 1"=50'

DATE: 08-08-2018

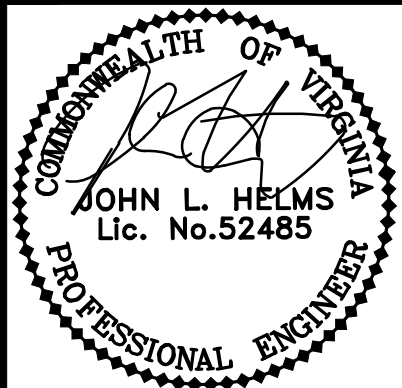
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CHECKED:

SHEET No.

11.1 OF 22.0

103228

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18



PROPOSED GRADING PLAN
& LIMITS

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00
SCALE: 1"=30'

DATE: 08-08-2018

DESIGN: JH
DRAWN: LB
CHECKED:

SHEET No.

12.0 OF 22.0

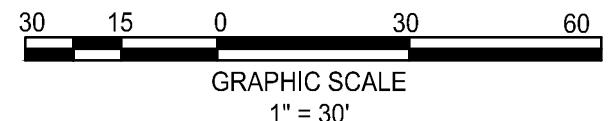
103228



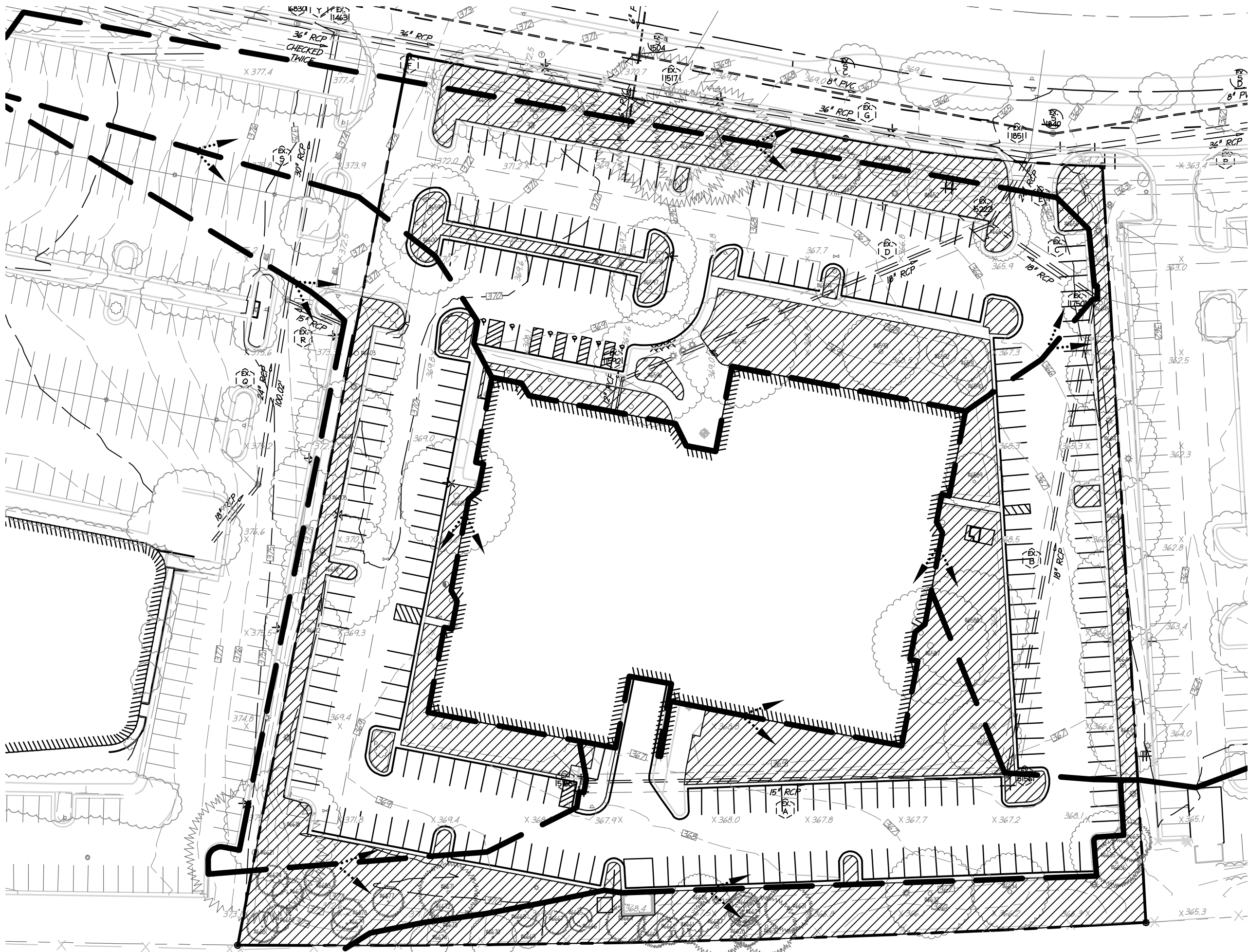
LEGEND

- EX. WOODS LINE
- EX. STREET CENTER LINE
- EX. CURB & GUTTER
- EX. BOUNDARY
- EX. EDGE OF PAVEMENT (EP)
- EX. SIGN
- EX. SIGN DENOTES HANDICAPPED PARKING SPACE
- PROP. BUILDING
- PROP. EDGE OF PAVEMENT
- PROP. LIMITS OF DISTURBANCE
- EX. CONTOUR
- PROP. CONTOUR

VCS 1983 GRID NORTH



EXISTING PERVIOUS AREA AND DRAINAGE DIVIDES:



TOTAL AREA = 189,220 S.F. PERVIOUS AREA = 58,916 S.F. IMPERVIOUS AREA = 130,304 S.F.

PROPOSED BMP AREAS: GREEN ROOF AREA, URBAN BIORETENTION, ISOLATOR ROW, AND BAYFILTER



GREEN ROOF = 22,650 S.F.

EXISTING CONDITION SITE NARRATIVE

THIS DEVELOPMENT CONSISTS OF APPROXIMATELY 4.34 ACRES OF LAND SITUATED BETWEEN HERNDON PARKWAY AND THE DULLES TOLL ROAD IN THE TOWN OF HERNDON. THE PROPERTY IS BOUNDED BY HERNDON PARKWAY TO THE NORTH, AN EXISTING OFFICE BUILDING TO THE EAST, THE DULLES TOLL ROAD TO THE SOUTH AND AN EXISTING OFFICE BUILDING TO THE WEST. THE PROPERTY CURRENTLY CONSISTS OF AN EXISTING OFFICE BUILDING WITH SURFACE PARKING. THE PROPERTY DOES NOT HAVE PERVIOUS AREAS.

REVIEW OF EXISTING TOPOGRAPHY INDICATES THAT THE PROPERTY SLOPES PREDOMINANTLY FROM THE SOUTHWEST TO THE NORTHEAST TOWARDS HERNDON PARKWAY. THE EXISTING STORMWATER IS COLLECTED ON SITE AND JOINS A CLOSED CONDUIT SYSTEM IN HERNDON PARKWAY. THE STORMWATER FLOWS TO A 36" RCP PIPE IN HERNDON PARKWAY AND IS TAKEN TO THE OUTFALL APPROXIMATELY 750' TO THE EAST WHERE IS EXITS A 60" RCP INTO AN EXISTING FLOODPLAIN. SEE SHEET IIA FOR OUTFALL MAP. ALL ADJACENT PROPERTIES FOLLOW A SIMILAR DRAINAGE PATTERN, WITH THEIR RESPECTIVE STORMWATER BEING CONVEYED TO THE CLOSED CONDUIT SYSTEM IN HERNDON PARKWAY.

THERE ARE NO RESOURCE PROTECTION AREAS ON THIS PROPERTY.

PROPOSED CONDITION SITE NARRATIVE

THE APPLICANT PROPOSES TO DEVELOP THE PROPERTY IN ACCORDANCE WITH THE HERNDON METRO STUDY AREA WITH RESIDENTIAL AND RETAIL USES, INCLUDING THE FLEXIBILITY TO PROVIDE OFFICE USES TO MEET MARKET DEMANDS. THE PROPOSED DEVELOPMENT CONSISTS OF THREE BUILDINGS WITH FIRST FLOOR RETAIL LINING AN INTERIOR MAIN STREET, AND ABOVE-GROUND PARKING. THIS PROJECT WILL BE DEVELOPED IN THREE PHASES. THE FIRST PHASE WILL CONSIST OF THE INFRASTRUCTURE AND THE FIRST RESIDENTIAL BUILDING. THE SUBSEQUENT PHASES WILL CONSIST OF EACH NEW BUILDING AND THE ASSOCIATED PARKING. PHASES WILL BE BUILT TO MEET MARKET DEMAND. THERE WILL BE AN INCREASE IN THE SITE'S IMPERVIOUSNESS WHICH WILL RESULT IN A INCREASE IN RUNOFF. THE VIRGINIA RUNOFF REDUCTION METHOD (VRRM) WILL BE USED TO PREVENT THE ADDITIONAL RUNOFF FROM ENTERING THE FLOODPLAIN AT ONCE. OVERALL DRAINAGE DIVIDES WILL NOT CHANGE AS THE SITE WILL STILL DRAIN PRIMARILY FROM THE SOUTHWEST OF THE SITE TO THE NORTHEAST. OVERLAND RELIEF IS PROVIDED ON THE SITE, AS THE SITE PROVIDES POSITIVE DRAINAGE TO THE NORTHEAST.

WATER QUALITY TREATMENT (BMP) NARRATIVE

TO COMPLY WITH THE CHESAPEAKE BAY ACT (CBA), THE PROJECT WILL PROVIDE WATER QUALITY TREATMENT THROUGH THE USE OF GREEN ROOFS, AND A MANUFACTURED TREATMENT DEVICE FILTERING (JELLYFISH FILTER). THESE TREATMENT SYSTEMS ARE CAPABLE OF REMOVING THE REQUIRED PHOSPHORUS TO ACHIEVE THE WATER QUALITY VOLUME FOR THE RE-DEVELOPED PROPERTY. SEE SHEET IIB FOR THE VRRM SPREADSHEET.

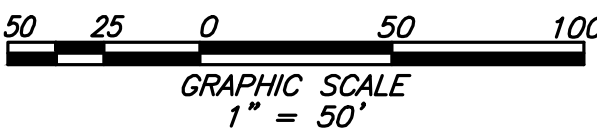
THE OWNER WILL BE RESPONSIBLE FOR MAINTAINING THE WATER QUALITY DEVICES THAT ARE LOCATED WITHIN THE SITE BOUNDARY.

PROPOSED PERVIOUS AREA AND DRAINAGE DIVIDES:

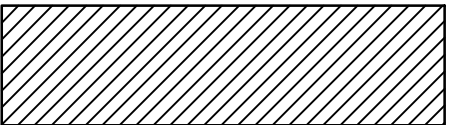


TOTAL AREA = 189,220 S.F. PERVIOUS AREA = 30,927 S.F. IMPERVIOUS AREA = 158,293 S.F.

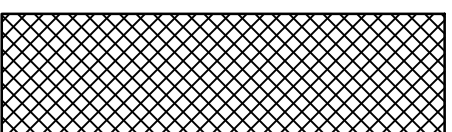
DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18



LEGEND:



PERVIOUS AREA



PROPOSED GREEN ROOF (22,650 S.F.)

WATER QUANTITY TREATMENT (SWM) NARRATIVE

DUE TO THE INCREASE IN IMPERVIOUS COVER FOR THE SITE THROUGH REDEVELOPMENT, POST-DEVELOPMENT PEAK RUNOFF FOR THE TWO AND TEN YEAR STORMS WILL EXCEED THE PRE-DEVELOPMENT RATES. THE DETENTION METHOD WILL BE APPLIED AND CONCRETE VAULT PROVIDED WITH AN OUTLET STRUCTURE TO DETAIN THE RUNOFF FROM EXCEEDING IT'S REQUIREMENTS.

STORMWATER MANAGEMENT WILL BE PROVIDED BY THE USE OF BMP'S TO STORE, TREAT, AND INFILTRATE RUNOFF FROM POST-DEVELOPMENT. 0.52 ACRES VEGETATED COVER WILL BE PROVIDED ON THE ROOF TOP, AND A FILTERING DEVICE (JELLYFISH FILTER) WILL BE INSTALLED TO INFILTRATE RUNOFF FROM POST-DEVELOPMENT.

SINCE THE DETENTION METHOD FOR STORMWATER MANAGEMENT IS BEING USED, NO ADVERSE EFFECTS TO THE FLOODPLAIN OR THE PUBLIC DRAINAGE SYSTEM IS EXPECTED.



DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18

ILLUSTRATIVE PLAN

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00

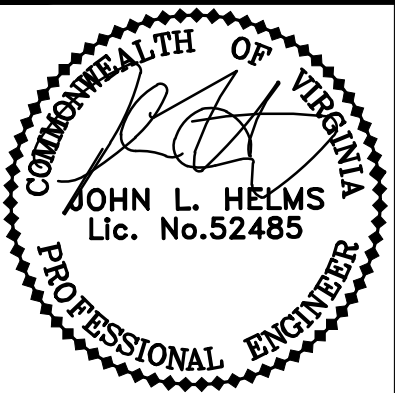
SCALE: N.T.S.

DATE: 08-08-2018

DESIGN: LBD
DRAWN: LBD
CHECKED:

SHEET No.
13.0 OF **22.0**

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18



ILLUSTRATIVE
PARKING PLAN

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00

SCALE: AS NOTED

DATE: 08-08-2018

DESIGN: DCS
DRAWN: DCS
CHECKED:

SHEET No.

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103228



PLAZA / P1 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



P2 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



P3 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



G5, G4 & G3 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



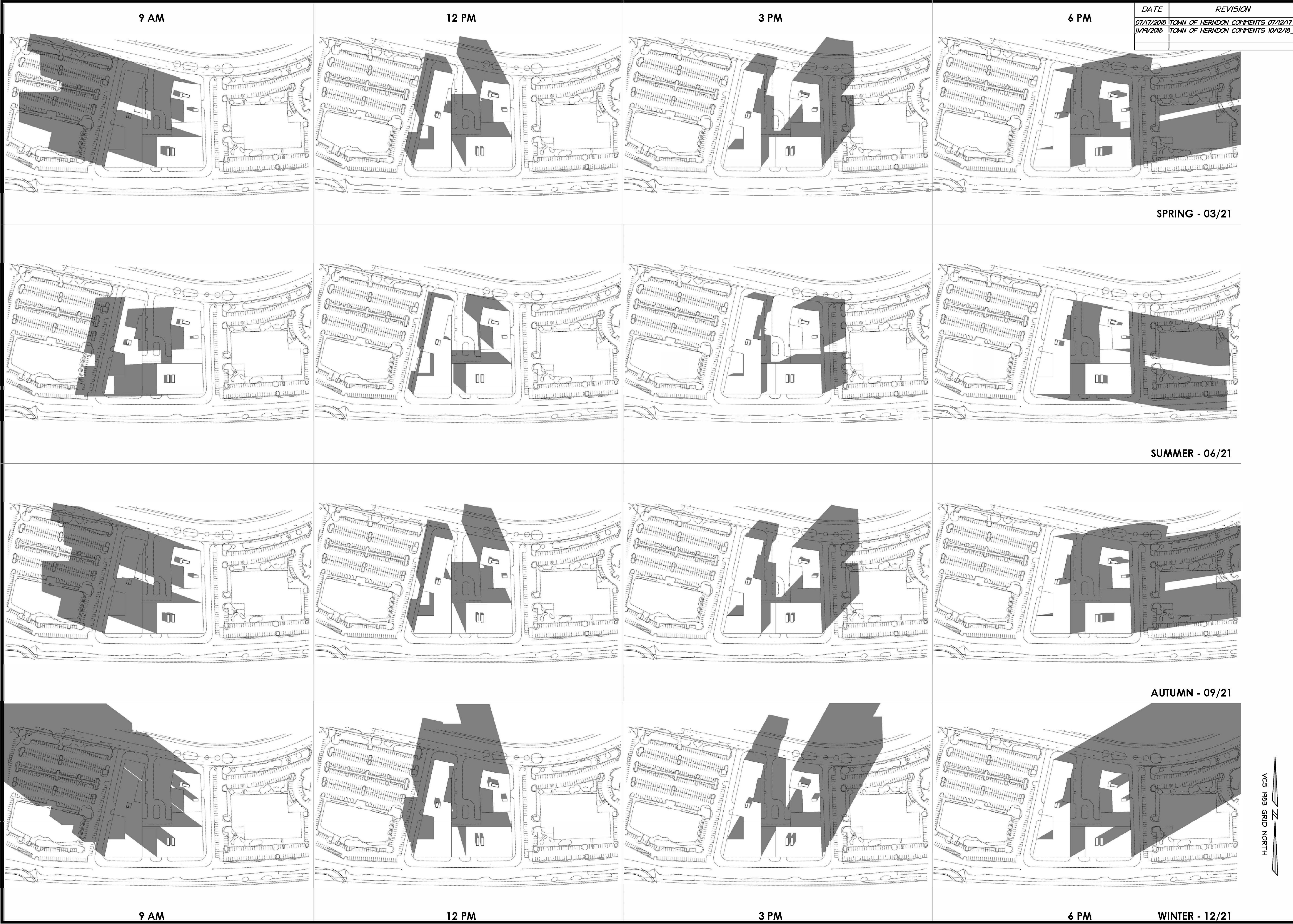
G2 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



G1 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



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DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
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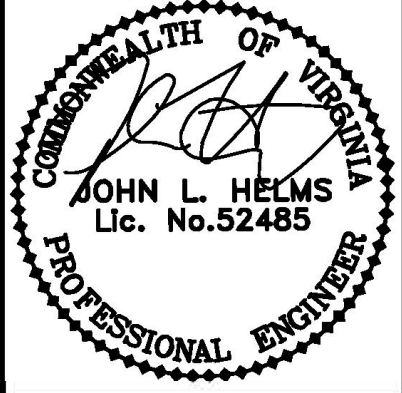
PENZANCE

christopher consultants

DCS DESIGN

GOROVE / SLADE
Transportation Planners and Engineers

McGUIREWOODS



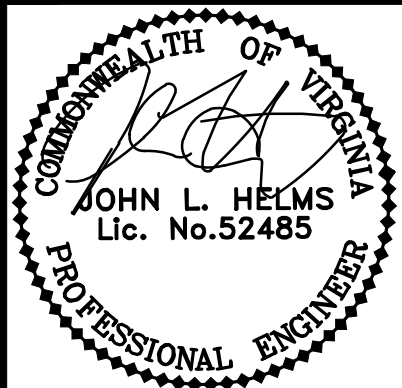
SHADOW ANALYSIS
RESIDENTIAL + OFFICE

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO:	15002.001.00
SCALE:	N.T.S.
DATE:	08-08-2018
DESIGN:	DCS
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PERSPECTIVE VIEWS

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00
SCALE: N.T.S.
DATE: 08-08-2018
DESIGN: DCS
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103228



IMAGE # 1



IMAGE # 4



IMAGE # 6



IMAGE # 2

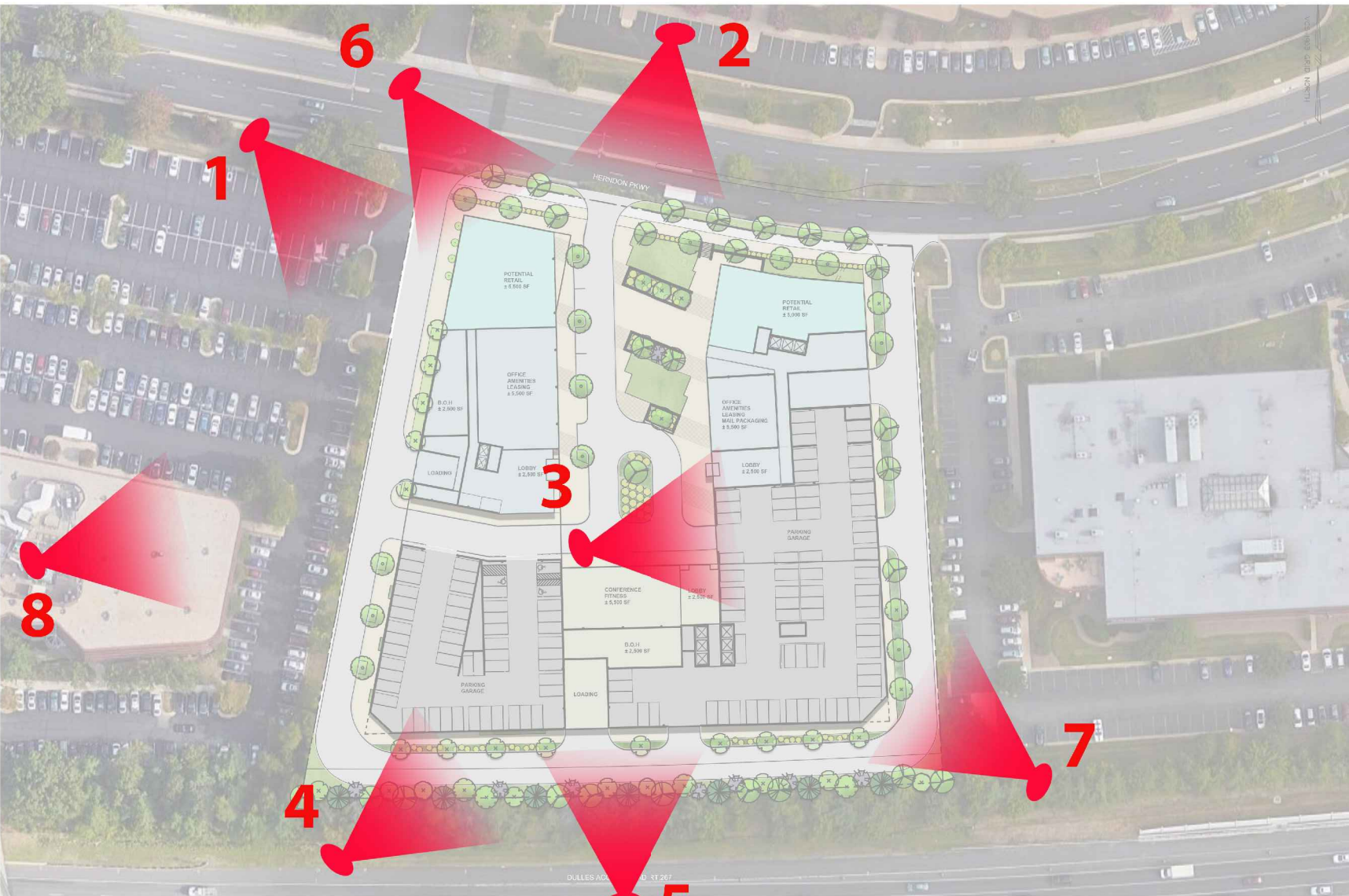


IMAGE # 7



BUILDINGS SEPARATION

IMAGE # 3



BUILDINGS SEPARATION

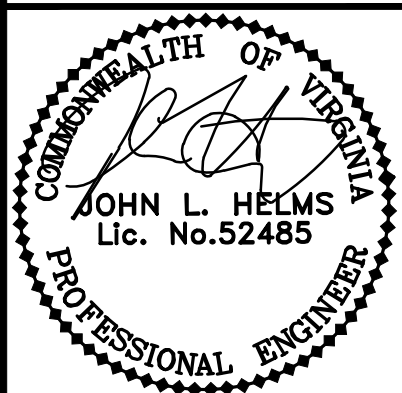
IMAGE # 5



BUILDINGS SEPARATION

IMAGE # 8

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11/14/2018	TOWN OF HERNDON COMMENTS 10/12/18



PERSPECTIVE VIEWS

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO:	15002.001.00
SCALE:	N.T.S.
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CHECKED:	
SHEET No.	



IMAGE # 1



IMAGE # 2



IMAGE # 3



IMAGE # 4

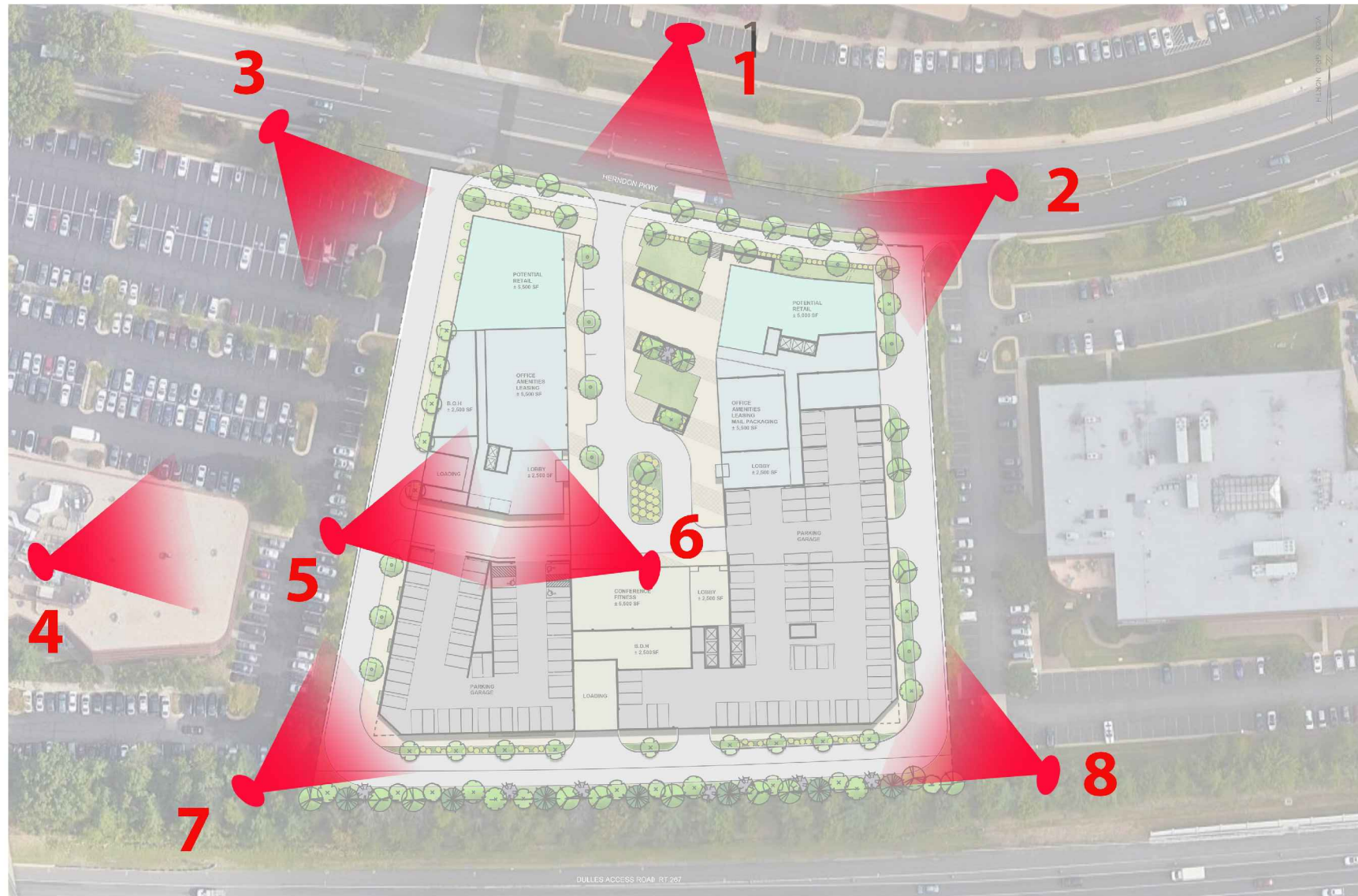


IMAGE # 5



IMAGE # 6



IMAGE # 7

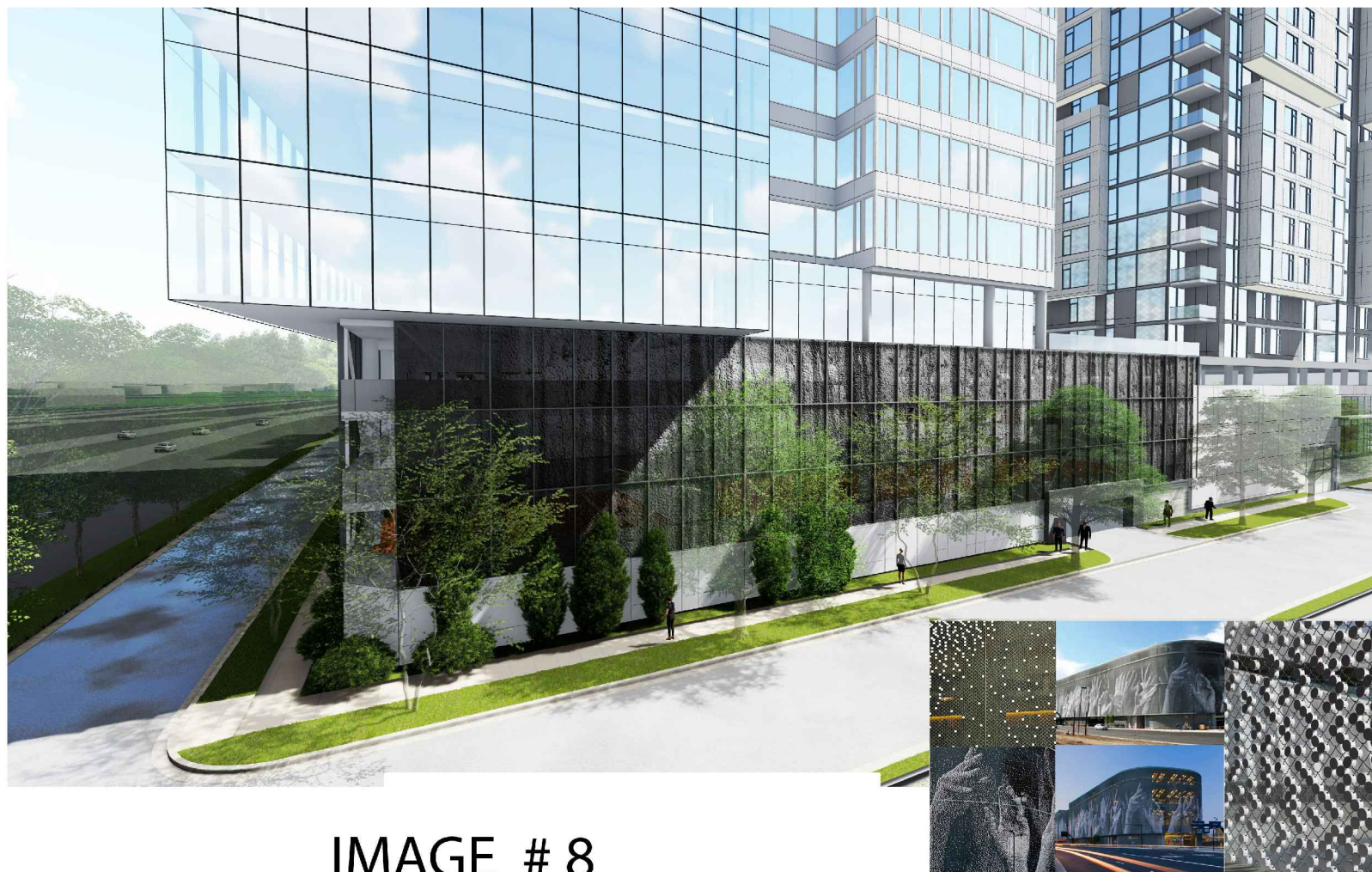
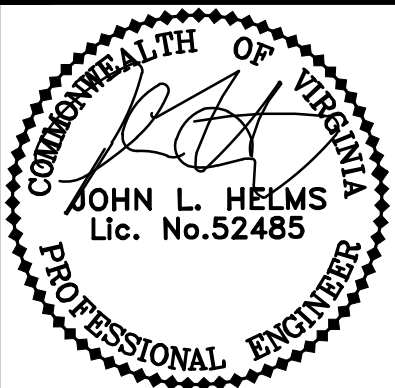


IMAGE # 8

DATE	REVISION
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BUILDING SECTIONS
TOWARD NORTH

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00

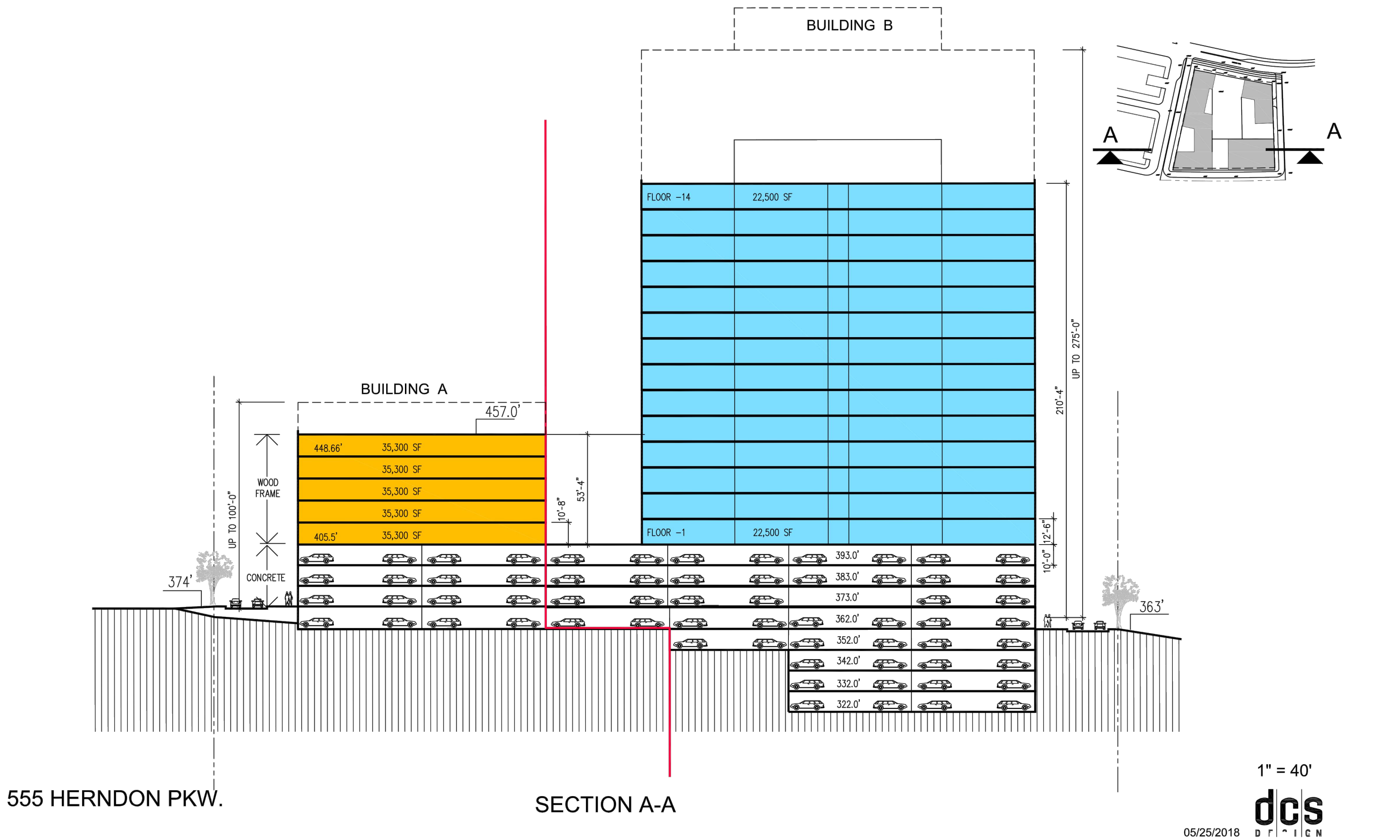
SCALE:
N.T.S.

DATE:
08-08-2018

DESIGN: DCS
DRAWN: DCS
CHECKED:

SHEET No.

17.0 OF 22.0



555 HERNDON PKW.

SECTION A-A

1" = 40'



05/25/2018



555 HERNDON PKW.

SECTION B-B

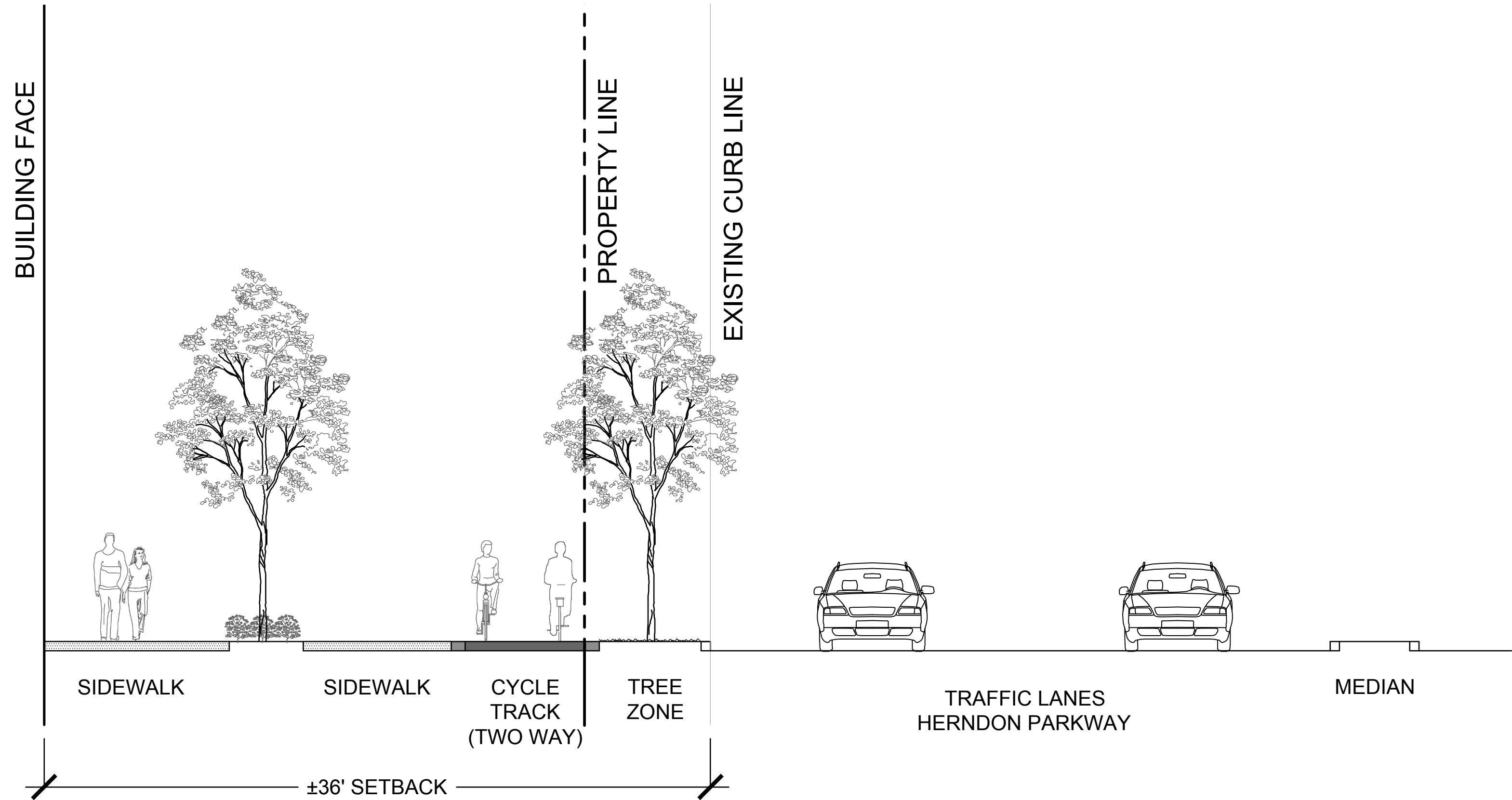
1" = 40'



05/25/2018

FOR ILLUSTRATIVE PURPOSES ONLY. THIS IS NOT FOR CONSTRUCTION.

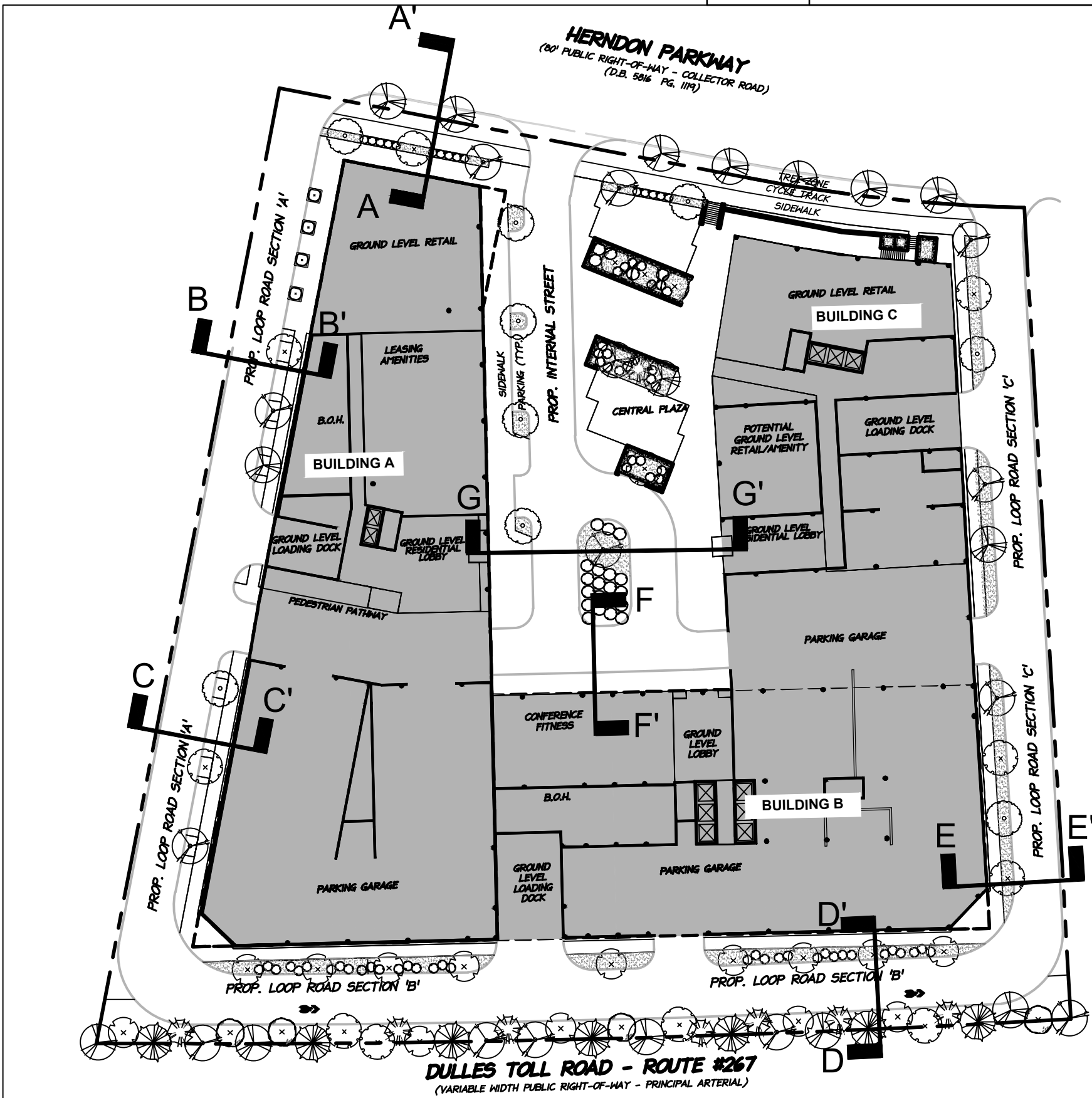
DATE	REVISION
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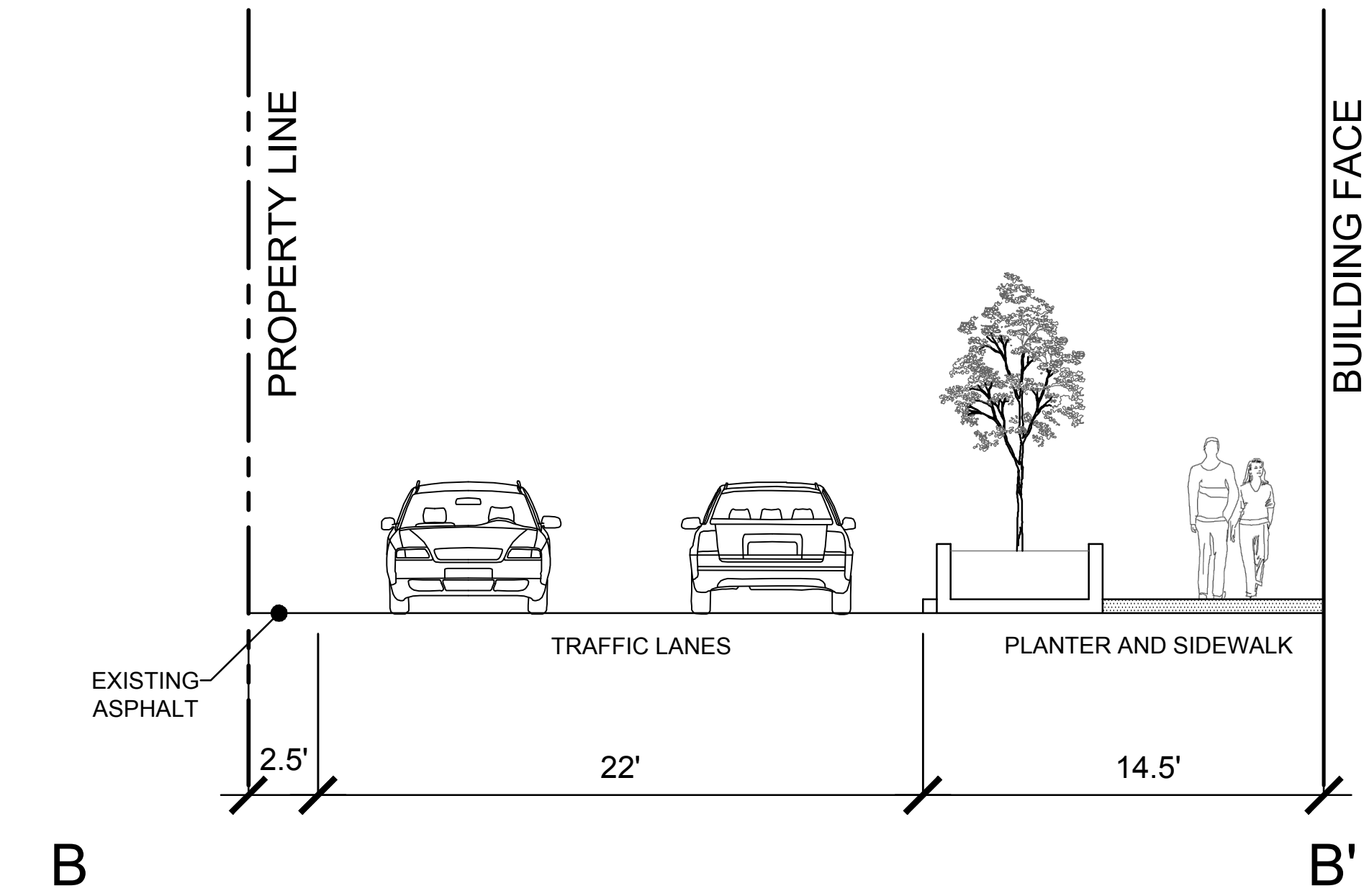
A

1

HERNDON PARKWAY STREETSCAPE - SECTION A-A'



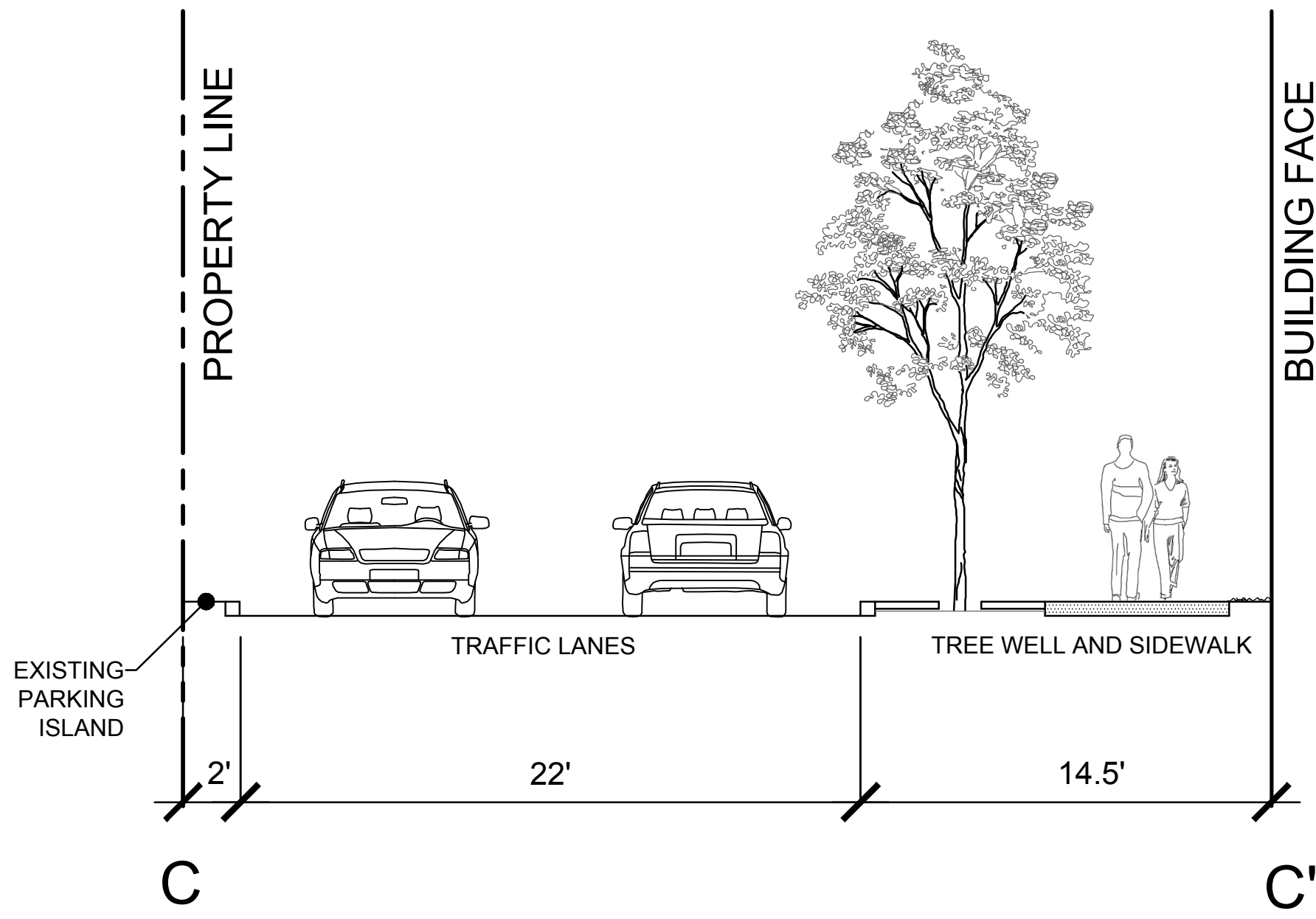
KEY PLAN



B

2

PROPOSED LOOP ROAD SECTION 'A' - SECTION B-B'



C

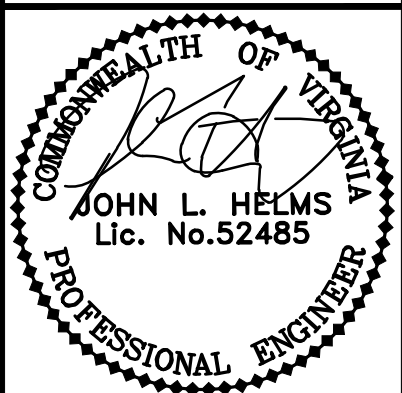
3

PROPOSED LOOP ROAD SECTION 'A' - SECTION C-C'

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ILLUSTRATIVE DESIGN
AMENITIES

DEVELOPMENT PLAN
555 HERNDON PARKWAY
 TOWN OF HERNDON, VIRGINIA

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 DATE: 08-08-2018
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Decorative Paving Examples



Bench Examples



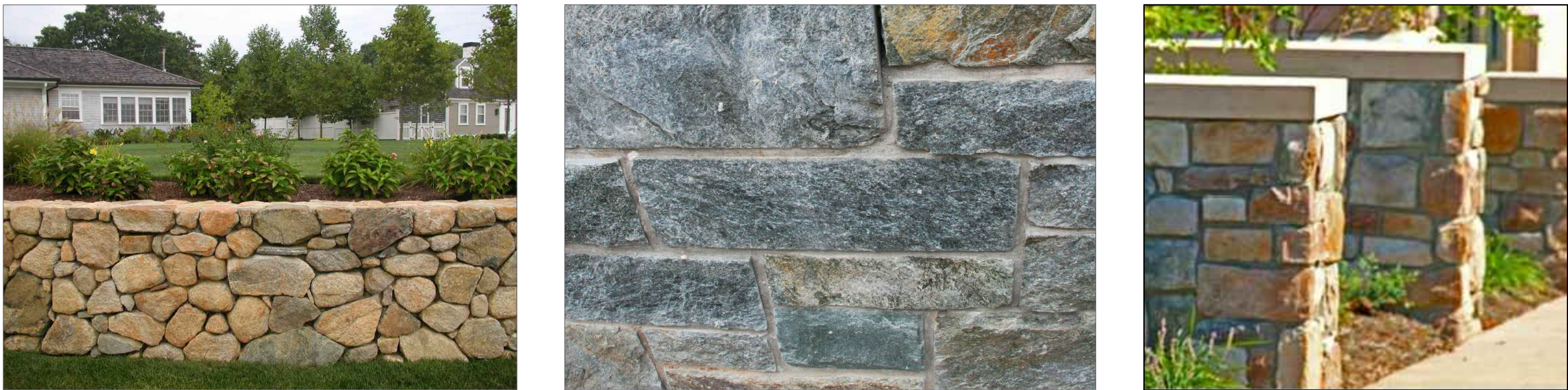
Waste Receptacle Examples



Bicycle Rack Examples



Seat/Retaining Wall Examples



Tree Grate Examples

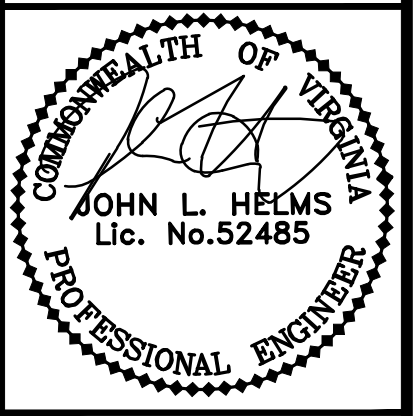


Site Lighting Examples



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McGUIREWOODS



ILLUSTRATIVE
LANDSCAPE

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

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Retail Sidewalk - Sidewalk goes all the way to the building to offer maximum tenant flexibility. Colorful planters containing fastigate trees and a mix of perennials and shrubs between the building and sidewalk circulation space help reduce the scale of the building. The fastigate trees provide a year-round architectural feature. To the rear, the sidewalk is moved to be placed along the curb to allow a larger planter against the building that will allow for better concealment of a blank facade and further reduce the scale of the building for the pedestrian. The sidewalk will also better serve future parallel parking on this block. Trees are not able to be placed along the curb line due to a shallow stormwater pipe in this location.



Tree Wells - Street trees provided in tree wells against the curb-line. The sidewalk is placed against the building. This allows for larger-canopy street trees.



Herndon Parkway - To be planted per the revised Streetscape Manual with a mix of trees in planting strips.

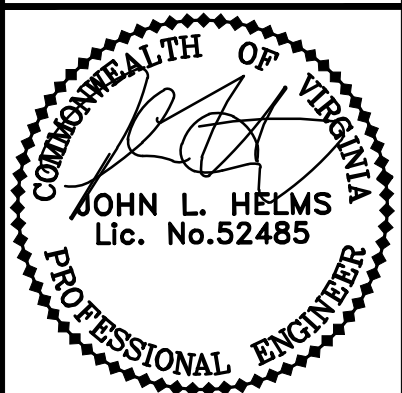


East Sidewalk - Larger shade trees help reduce the scale of the architecture along this blank facade frontage. Grade is sloping and lower than the Finished Floor Elevation of the retail floor.

South Side Plantings - More naturalized and varied plantings to provide buffer from highway.



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ILLUSTRATIVE
LANDSCAPE

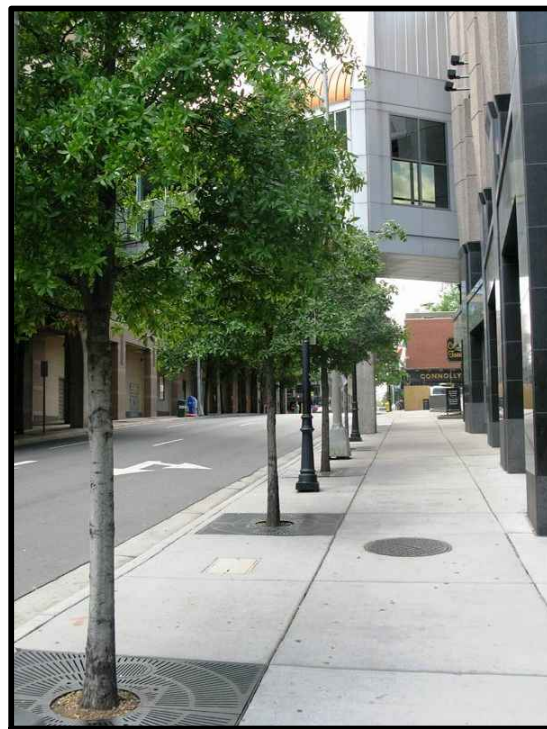
DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

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SHEET No.	



Lawn Panel - Large non-hardscaped open areas that can be programmed or non-programmed space, usually lacking desired amenity area. Turf can be natural or artificial depending on the final engineering of the structure beneath.

Retail Streetscape -Adequate width for circulation and dedicated areas for active space where street furniture will be located. Design of which will be based on final architectural design and door placement.



Feature Area - Pedestrian inaccessible area that can be used as an area for public art, large architectural planter, or vertical focal or themed element can be located here.

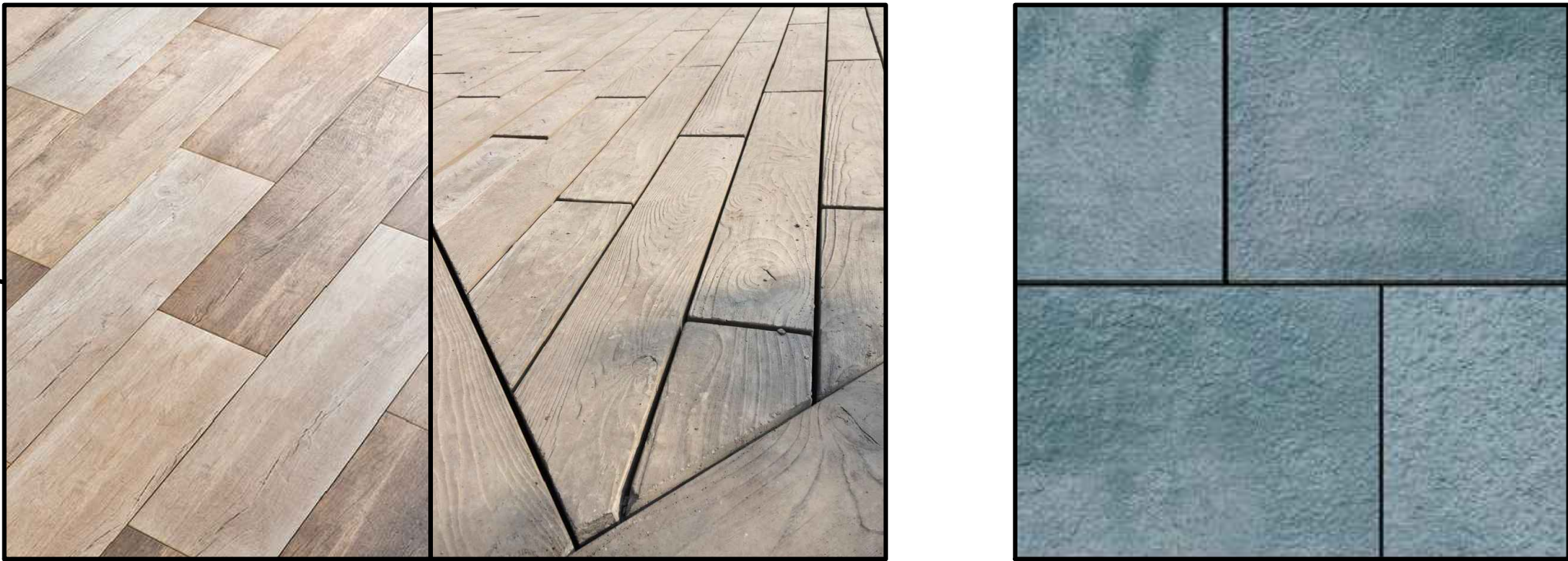
Plaza Overall Concept - Formal Design/Informal Materials:
A modern design language is juxtaposed with traditional materials to create an organized, functional, and accessible plaza with a more comfortable and softer human feel.



Softscape -Softer, and a more 'residential' plant palette in a less formal planting arrangement contrasts nicely with the more geometric and regimented hardscape and architecture. Helps to bring a human scale to the plaza.



Seat/Planter Wall - Wood grain concrete product to hold bermed soil of planting beds and provide casual seating in addition to benches. Texture matched wood used on architectural concepts and provides a "softer" and "casual" feel. Could also be a board-form concrete or simulated stone.

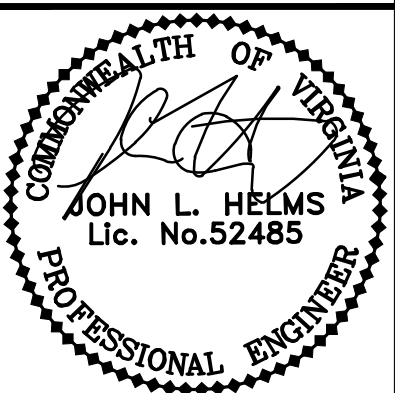


Paver Inlays - Accent paving in texture and colors to match or contrast with the architecture. Options include wood-grained plank pavers, outdoor porcelain tile, or pavers slabs such as the above pictured flamed bluestone.



Planters - Wood grain concrete will match the seat/planter walls in the main section of the plaza. Texture matched wood used on architectural concepts and provides a "softer" and "casual" feel. Composite planters can accent entrances and bring color to facades around the remainder of the development in lieu of in-grade planters.

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ON-PODIUM
PRIVATE AMENITIES

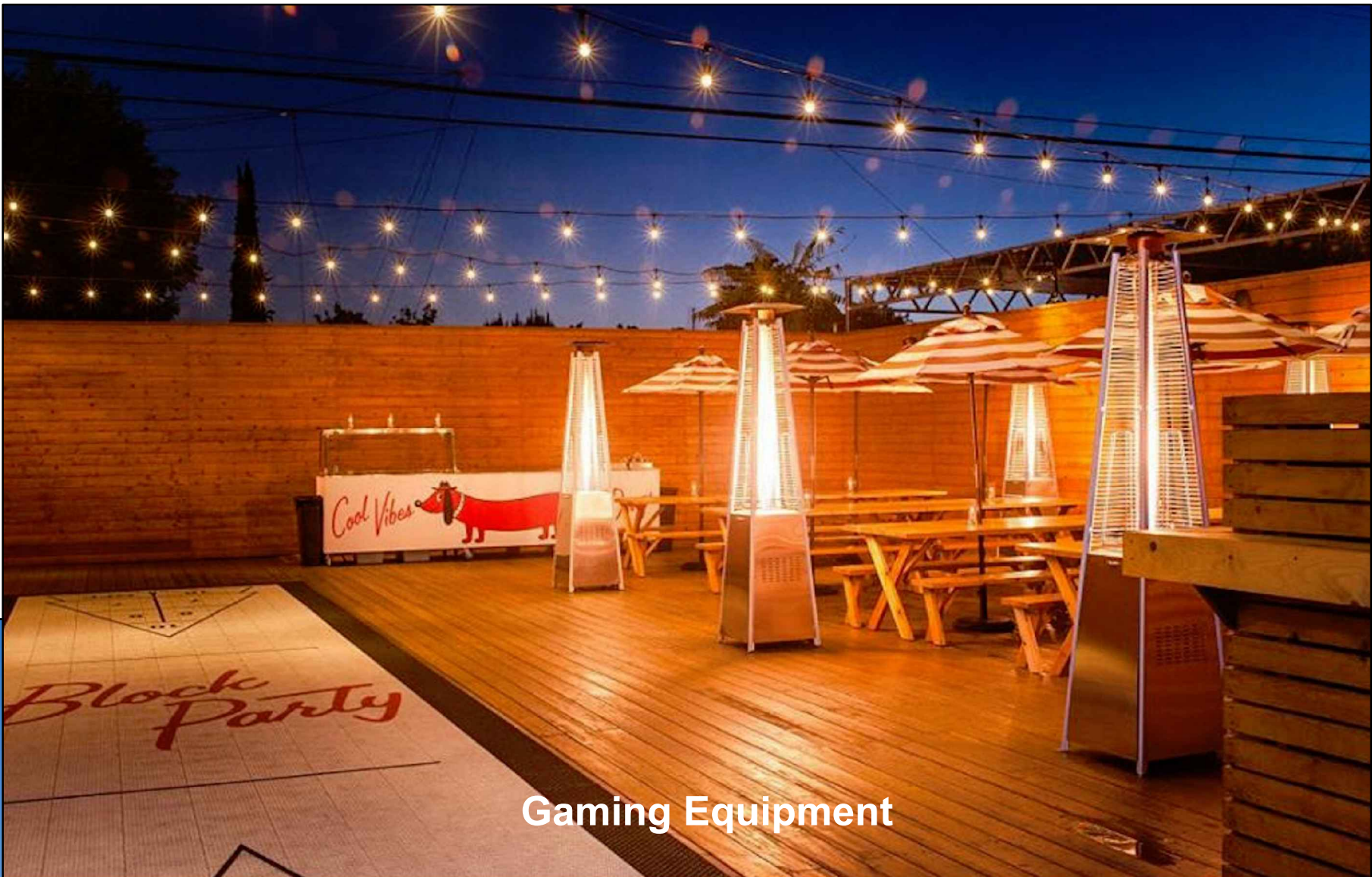
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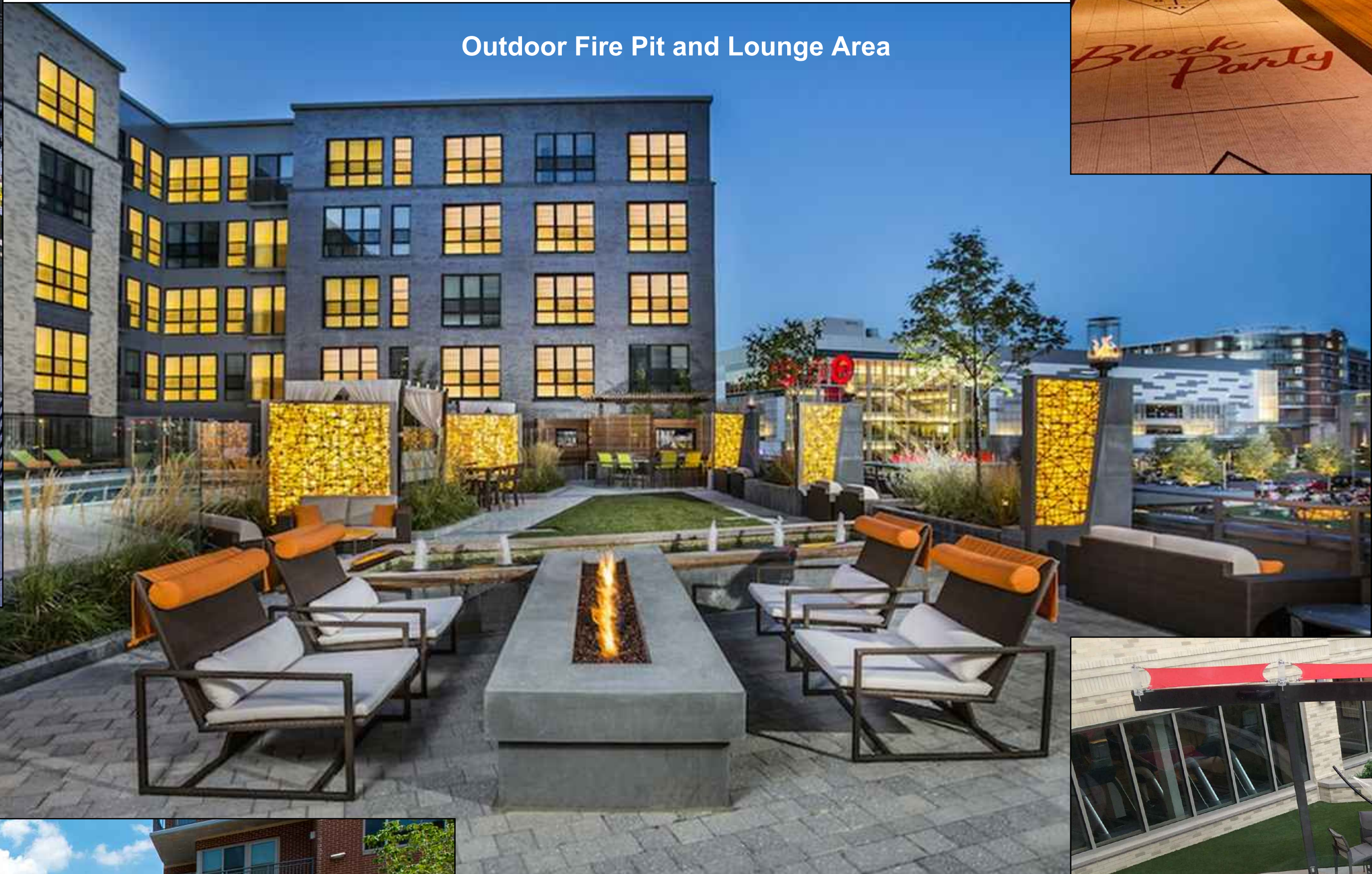


Swimming Pool

Private Amenities on Podium - Some suggested and planned amenities that may be made available to residents of the development include many features illustrated with the images on this sheet. Design is subject to the final architecture of the building.



Gaming Equipment



Outdoor Fire Pit and Lounge Area



PetPark



Lounge Seating and Fire Pits

DRAFT PROFFERS**555 Herndon Parkway****November 19, 2018**

Pursuant to Section 15.2-2303 of the Code of Virginia (1950, as amended) and Section 78-50.8 of the Town of Herndon Zoning Ordinance, as amended (the “Zoning Ordinance”), the undersigned, for themselves and their successors and/or assigns (referred to hereafter, both collectively and, where appropriate, individually, as the “Applicant”), hereby proffers that the development (the “Development”) of the parcels that are the subject of this application, which are shown on the Fairfax County 2015 Tax Map as parcels 16-4(10))2C (the “Property”) shall be in substantial conformance with the conditions set forth below (the “Proffers”) if and only if Development Plan # _____ (“Development Plan”) is approved.

1. DEVELOPMENT PLAN

- a. The Property shall be developed in substantial conformance with the development plan entitled 555 Herndon Parkway prepared by christopher consultants and Davis Carter Scott dated November 19, 2018 (the “Development Plan”). It is understood by the Applicant that all other applicable regulations and policies governing land development within the Town of Herndon (the “Town”) shall apply to the Property and its development unless specifically modified by the language of this approval and these Proffers.
 - b. Minor modifications of the Development Plan may be permitted without the need for an amendment to this approval when necessitated by final engineering or final site design provided that the Development is in substantial conformance with the DP, these Proffers and/or as approved by the Architectural Review Board. Substantial conformity shall be determined as provided in the Zoning Ordinance.
2. **USES.** Any use or combination of uses permitted in the PD-TOC may be established on the Property so long as residential development does not exceed 489,000 square feet.

3. TRANSPORTATION.

- a. **Herndon Transportation Fund.** The Applicant shall make a per GFA foot contribution of \$0.75 to the Town to address off-site transportation improvements. This contribution shall be paid upon or prior to the issuance of an initial RUP or Non-RUP for each building based on the actual GFA of the building.
- b. The Applicant shall receive a full credit towards the Transportation Fund contributions for all on-site and off-site transportation improvement expenditures.

- c. Right of Way Dedication. The Applicant will dedicate the right-of-way along the Herndon Parkway frontage prior to the issuance of a certificate of occupancy for the first phase of the project.
- d. Public Access Easements. The Applicant will dedicate a public access street easement for the new access roads along the perimeter of the Property for each phase of the redevelopment.
- e. Sidewalk Improvements. As shown on the Development Plan, the Applicant will construct the sidewalk and bicycle track improvements along the entire Herndon Parkway frontage prior to the issuance of the certificate of occupancy for the first phase of the project.
- f. Transportation Demand Management. This Proffer sets forth the programmatic elements of a transportation demand management program (the “TDM Program”) that shall be implemented by the Applicant to encourage the use of transit (Metrorail and bus), other high-occupant vehicle commuting modes, walking, biking and teleworking, all in order to reduce automobile trips generated by the multifamily dwelling and the office uses constructed on the Property. The proffered elements of the TDM Program will be implemented through a Transportation Demand Management Work Plan (the “TDM Work Plan”) developed by the Applicant with input from and approval by the Town of Herndon Department of Community Development. It is the intent of this Proffer that the TDM Work Plan will be adapted over time to respond to the changing transportation related circumstances of the Property, the surrounding community and the region, as well as to technological and/or other improvements, all with the objective of meeting the trip reduction goals as set forth in these Proffers.

4. GREEN BUILDING.

- a. The Applicant shall obtain a rating for each building(s) from U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) of Silver or equivalent.
- b. The Applicant shall include, at the time of application for a building permit for each building, a list of specific credits within the most current version of the LEED Scorecard. A LEED accredited professional, who is also a professional engineer or licensed architect, will provide a LEED Worksheet or Scorecard, or equivalent rating system, with certification statements, calculations and or building

system/component specifications confirming the sustainable development strategies to be implemented meet the point or credit system standard or criteria will meet at least the minimum number of credits necessary to attain LEED or NGBS certification for the multifamily building and the office building.

5. CONTRIBUTIONS.

- a. Recreation/Community Amenities/Civic Facilities. At the time of site plan review, the Applicant shall demonstrate that the value of any proposed recreational amenities/community amenities/civic facilities are equivalent to a minimum of \$1,900 per residential unit. In the event it is demonstrated that the proposed facilities do not have sufficient value, the Applicant shall provide the remainder in a cash contribution to the Town of Herndon for use on recreational facilities in the vicinity of the Property.
- b. Offsite Recreation Contribution. The Applicant shall make a per GFA square foot contribution of \$0.25 to the Town for offsite recreation improvements. This contribution shall be paid upon or prior to the issuance of an initial RUP or Non-RUP for each building based on the actual GFA of the building. Such funds shall be used for the improvements of Town play grounds, open space or athletic fields in locations that logically serve the approved development and the HTOC area.
- c. School Contribution.
 - i. Per the Residential Development Criteria Implementation Motion adopted by the Fairfax County Board of Supervisors on January 7, 2003, as amended prior to the issuance of certificate of occupancy or a non-residential use permit, the Applicant will contribute funds at an assumed rate of 0.062 students per units for elementary school, 0.019 for middle school, 0.031 students per high school multiplied by \$12,262.00 per student generated to the Board of Supervisors for transfer to the Fairfax County School Board to be used for capital improvements and capacity enhancements to schools that serve the Town of Herndon. The contributions will be based on the actual number of residential units constructed, as the total amount may vary. Following approval of this Rezoning and prior to the Applicant's payment of the amount(s) set forth in this Proffer, if Fairfax County should modify the ratio of students per units of the amount of the contribution per student, the Applicant will pay the modified contribution amount for that phase of development to reflect the then current ratio and/or contribution.

- ii. Prior to beginning construction, the Applicant will notify the Fairfax County Public Schools of the intended construction and anticipated completion date.
 - d. Fire Department Contribution. The Applicant shall contribute a total of \$10,000 to the Town toward the cost of a preemptive devices on nearby traffic signals. The contribution shall be paid upon site plan approval for the first building to be constructed on the Property.
6. ESCALATION. All monetary contributions required by these proffers, with the exception of the proffer relating to the public school contribution, shall escalate on a yearly basis from the base year of 2018 and change effective each January 1 thereafter, based on the Consumer Price Index as published by the Bureau of Labor Statistics, the U.S. Department of Labor for the Washington-Baltimore, MD-VA-DC-WV Consolidated Metropolitan Statistical Area (the “CPI”), as permitted by Virginia State Code Section 15.2-2303.3.3.
7. SUCCESSORS AND ASSIGNS. These proffers shall bind and inure to the benefit of the Applicant and his/her successors and assigns
8. COUNTERPARTS. These proffers may be executed in one or more counterparts, each of which when so executed and delivered shall be deemed an original document and all of which taken together shall constitute but one and the same instrument.

TITLE OWNER/APPLICANT SIGNATURE TO FOLLOW ON THE NEXT PAGE:

555 Herndon, LLC

Title Owner of 16-4((10))2C

By: _____

Name: _____

Title: _____

COMMONWEALTH OF _____

CITY/COUNTY OF _____, to-wit:

The foregoing instrument was acknowledged before me this ____ day of _____, 2018
by _____ as _____ of and on behalf of _____.

Notary Public

Notary Registration No: _____

My Commission Expires: _____

EXECUTIVE SUMMARY

This report presents the findings of a transportation impact study conducted for the proposed redevelopment of 555 Herndon Parkway in the Town of Herndon, Virginia. The study was developed in accordance with the Town of Herndon's Traffic Impact Study Guidelines.

Site Location and Study Area

The site is located in the Town of Herndon, Virginia on the south side of Herndon Parkway, between Van Buren Street and Spring Street, and north of the future Herndon Silver Line Station. The vehicular study area includes eight (8) intersections along Herndon Parkway.

Description of Proposed Development

The site is currently occupied by 90,000 square feet of office that is to be razed. The 555 Herndon Parkway redevelopment application includes three (3) development alternatives. This traffic impact study analyzes the alternative with the highest trip generation as shown in the Scoping Document in the Technical Appendix. This highest generating scenario is proposed to include up to 406,000 square feet of office, 380 residential apartment units, and 27,767 square feet of retail. Total site buildout is planned for the year 2022.

Principal Findings and Conclusions

The analysis presented in this report supports the following major conclusions:

Existing (2017) Conditions:

- The 2015 counts were projected to 2017 using a growth rate of 1% on the major movements. This growth is conservative when compared to the ADT growth recorded along Herndon Parkway by the Town.
- The following intersections currently operate below the Town of Herndon's acceptable level of service (LOS D for overall intersections or LOS E for individual movements):
 - Intersection #1: Van Buren Street and Herndon Parkway
 - Intersection #4: Herndon Parkway and Site Driveway West
 - Intersection #7: Herndon Parkway and Fairbrook Drive
 - Intersection #8: Herndon Parkway and Spring Street
- As noted in the Herndon Metro Station Area Study dated February 28, 2012 and prepared by Vanasse Hangen Brustlin, Inc. (VHB), Herndon has long planned for intersection improvements on Spring Street between Herndon Parkway and Fairfax County Parkway and at the intersection of Herndon Parkway and Van Buren Street. These intersections operate at or near capacity under existing conditions. In order to achieve acceptable levels of service at these intersections, mitigation measures are required.

Future Conditions (2022) without Development:

- The following assumptions were made for the future without development conditions:
 - Approximately 10% (90 kSF) of the office use planned for Quadrangle Fairbrook Business Park was assumed to be in place by 2022 in addition to the existing building on site. Future phases of development for the Fairbrook parcel include four (4) office buildings totaling 900,000 SF and a 250 room Hotel.

- o The future Herndon Hotel development (250 room hotel) is assumed to be constructed and open by 2022.
- o An inherent growth of 1.0% per year was used on all major movements at each study intersection in order to account for regional traffic growth.
- As identified in the Herndon Metro Station Area Study, the following improvements are anticipated to be built by others and required under background conditions in order to achieve acceptable levels of service:
 - o Herndon Parkway and Spring Street
 - Add northbound through lane and right turn lane
 - Add a southbound left turn lane
 - Add an eastbound through lane
 - Optimize signal timing
 - o Herndon Parkway and Van Buren Street
 - Add a westbound left turn lane
 - Add an eastbound right turn lane and convert existing through/right lane to an exclusive through lane
 - Convert existing northbound shared through/right lane to an exclusive, channelized right turn lane
 - Optimize signal timings
- The following intersections currently operate below the Town of Herndon's acceptable level of service (LOS D for overall intersections or LOS E for individual movements) after the mitigation measures listed above are implemented:
 - o Intersection #1: Van Buren Street and Herndon Parkway
 - o Intersection #4: Herndon Parkway and Site Driveway West
 - o Intersection #7: Herndon Parkway and Fairbrook Drive

Future Conditions (2022) With Development:

- The proposed redevelopment plan includes up to 380 residential units, 406,000 square feet of office, and 27,767 square feet of retail. Construction of the proposed development is anticipated to be complete by 2022.
- It is assumed that the Dulles Corridor Metrorail Silver Line Extension project will be complete by the site's opening year 2022. The site is located less than a quarter mile from the future Herndon Metrorail Station.
- Consistent with the Herndon Metro Station Area Study, the following transit mode share reductions were applied to the site's future trip generation
 - o Office: 25 percent
 - o High-Rise Residential: 35 percent
- All mitigations included in Future Conditions without Development are also assumed to be in place for the Future Conditions with Development.

- The traffic generated by the proposed development has a minimal impact on the regional study intersections.
- The following intersections operate below the Town of Herndon's acceptable level of service (LOS D for overall intersections or LOS E for individual movements) after the mitigation measures are implemented. The intersections in **BOLD** also operate at unacceptable levels in the Future without Development scenario:
 - **Intersection #1: Van Buren Street and Herndon Parkway**
 - Intersection #3: 593 Herndon Parkway East/Monroe and Herndon Parkway
 - **Intersection #7: Herndon Parkway and Fairbrook Drive**
- The following mitigation measures are proposed:
 - Intersection #4: Herndon Parkway and Site Driveway West/Monroe Business Park
 - Installation of a traffic signal. The southern leg of this intersection is anticipated to serve both the subject site and the parcel immediately to the east, and installation of a traffic signal will benefit both parcels.
 - Construct exclusive northbound left turn lane
 - Intersection #5: Introduce new site driveway which allows left turns into but not out of the site. Right turns are allowed in and out at this new location.

Town of Herndon Proposed Bus Bay Plans:

- The town of Herndon is studying three (3) alternate bus bay location plans that include bus layby lanes, passenger car layby lanes, and a signalized pedestrian connection crossing Herndon Parkway east of the subject site.
- All of the improvements associated with the bus bay alternatives are located west of the subject site and will be constructed by the Town of Herndon. These improvements are assumed to be in place under both the Future without Development and Future with Development scenarios.
- With the exception of 555 Herndon Parkway, future access to parcels along Herndon Parkway will be affected by the introduction of the bus bay improvements. Design of these alternatives is still under review, and no decisions have been made as to the location of these future access points; therefore, all intersection locations within the study area remain in their existing location in their existing configuration except for those improvements noted previously.
- The pedestrian signal was modeled in Synchro and operates at acceptable levels of service during both the Future without Development and Future with Development scenarios during all peak hours.



MEMORANDUM

To: Chair Jonas and Members of the Planning Commission

From: Chairman Walker and Members of the Architectural Review Board

Date: January 14, 2019

Subject: Architectural and Urban Design Review of Redevelopment Proposed for 555 Herndon Parkway through the Development Plan submitted by Penzance Management, LLC.

The ARB reviewed the architecture and urban design for the above referenced project at its work session on December 12, 2018. This memo is provided as the Board's report to the ARB summarizing that review for your consideration.

Staff provided the ARB a memo with its analysis of the architecture and urban design prior to the Board's review. The Board used that memo to help frame the review and agrees with its analysis and all comments contained within. The staff memo is attached for Planning Commission review.

Given the conceptual nature of the project's design; it is a challenge for the ARB to evaluate its architecture based on the applicable design guidelines which in this case are the Architectural Control District Design Criteria found in Section 58-96 of the Town Code and the Herndon Transit-Oriented Core Architectural and Urban Design Guidelines referenced in Section 78-50.8 of the Zoning Ordinance. This particular project is additionally difficult for the ARB to review since it is the first development of this size and scale in Herndon and the first time the ARB is evaluating architecture as part of a development plan review process. For these reasons, Board review was kept at a broad and general level with an understanding that a complete assessment of the project's adherence to the applicable architecture, urban design, and open space design guidelines could not be achieved at this time.

The ARB offers the following design comments to supplement the staff analysis.

- At this conceptual design level, building mass is one architectural characteristic that may be more substantially understood and evaluated. As presented to the ARB, the massing of each building seems to be on the right path towards effectively breaking up the buildings into smaller components with varying wall planes and, on the towers, varying cladding treatments and patterns. However, as further explained in the following comments, there are concerns with the scale of some of those components, which may be addressed by adjusting some of the massing.

- The proposed architecture has not been successfully articulated which results in an overall stark and sterile design. Flat surfaces, unadorned surfaces, overly-simple and mostly undefined material pallet all contribute to the perceived image of blandness and uniformity.
- The lack of façade detailing and articulation adversely affects the design’s ability to create smaller architectural compositions that define a pedestrian scale, especially along the ground floor on all sides of the project. As designed, the buildings’ vertical and horizontal forms have an imposing scale. Significantly greater design attention is required to improve the relationship of the building and the abutting sidewalk. In those locations where less activated building facades interact directly with the sidewalk, further articulation and material diversity is needed to ensure pedestrian scale and interest. Where retail, amenity, and lobby uses abut a sidewalk, further articulation and material diversity is also necessary to create a defined composition that is engaging, welcoming, architecturally diverse and visually appealing.
- Building A lacks sufficient material variety on the residential floors and roof line articulation. Overall, its design exhibits many characteristics of similar buildings recently constructed in the area. The ARB recognizes the need to ensure a certain uniqueness to building architecture in Herndon, especially in the HTOC, and expresses the importance of avoiding over-reliance on architectural trends.
- The garage façade design fails to define a pedestrian scale and create visual interest along on the south and east elevations at street level. The ARB understands the reasons for the inward focus on design, but the dearth of outward design focus on these two elevations at the street level require substantial attention if HTOC neighborhood and urban design goals are to be met. The ARB believes there are many design solutions that can be pursued to horizontally and vertically decrease the monumental garage façade in a way that better reflects the architecture of the floor above, that improves the scale, and creates more visual interest.
- Overall, the materials, colors, and textures combine to create a somewhat monochromatic presentation which contributes to the starkness mentioned earlier. More use of materials such as brick, which is more heavily textured and can have color or pattern variants as a primary cladding material, would help to soften the scale and design while creating improved depth and variability on the facades.
- The applicant relied upon the conceptual nature of the design to explain why materials were not identified, storefronts were not articulated, adornment was omitted and overall, why information on design, both architecture and open space, was either not provided or unclear. This forced an open-ended architectural conversation focused on more abstract architectural qualities and features. While the applicant acknowledged the importance of design in the HTOC; the submitted architectural drawings and information lack the level of design definition necessary for the ARB to assess the project. Without further developed designs, albeit conceptual, the ARB’s

ability to provide a complete assessment of the project's appearance and ability to achieve the HTOC goals are hindered.

The ARB appreciates the applicant's submission and the discussion that occurred at the Board's December work session. The ARB firmly believes however, that the architecture and urban design of the project must be further defined and revised before an evaluation of whether it meets the applicable architectural and urban design guidelines can be conducted.

The ARB is confident that the development plan would be strengthened with further developed architecture and is ready to review and provide design feedback for any revised designs should it be asked to.

Thank you.

Attachment:

1. Staff Memo – Analysis of Architecture and Urban Design



MEMORANDUM

To: Chairman Walker and Members of the Architectural Review Board

From: Christopher J. Garcia, AICP, Community Design Planner/Deputy Zoning Administrator; and 
 Bryce A. Perry, Deputy Director of Community Development 

Date: December 12, 2018

Subject: Discussion Item – Development Plan for 555 Herndon Parkway

Please consider the following memo as a report on the above referenced discussion item.

Review Process

The applicant, Penzance Management LLC, has submitted a Development Plan for a mixed-use development within the Planned Development - Transit-Oriented Core (PD-TOC) Zoning District. Prior to Planning Commission review of a PD-TOC Development Plan, its architectural and open space design must be reviewed by the Architectural Review Board (ARB). A report from the ARB conveying its evaluation of the plan's architecture and open space design must then be provided to the Planning Commission for its consideration during its subsequent review. This review, requested to occur at the ARB's December 2018 work session, is intended to serve as that necessary architectural evaluation prior to Planning Commission review and consideration. Following this ARB review, staff and the ARB will draft the report based on the comments expressed by Board members at the work session.

The ARB, in its review of this Development Plan, is tasked with evaluating its architecture and open space design for compliance with the HTOC Architectural and Urban Design Guidelines and adherence to Sec.58-96 of the Herndon Town Code. In this memo, staff will offer its design review comments in that regard and identify areas where it believes the Board's ability to effectively assess design guideline compliance relies on the applicants' provision of additional design information. The applicant has submitted the following documents to solicit design comments:

1. Architectural Narrative – Attachment #1
2. Architectural Drawings (Elevations, Perspectives, Sections) – Attachment #2
3. Relevant Development Plan Sheets – Attachment #3

Following ARB review of the Development Plan architecture and open space components, the Planning Commission will consider the plan, followed by Town Council consideration. If approved the plan would then require site plan review proceeded by formal ARB review

before any building permits are pursued. At the formal ARB case review, the Board will again evaluate the design based on the applicable design guidelines and Town code sections. It is expected that while the architecture remains more conceptual in form at the Development Plan level, detailed information will be required for the formal ARB review, as is customary for all ARB case reviews.

Overview of Development Plan & Architecture

As proposed, the plan includes three distinct buildings designed to allow three phases of development; an office tower, a residential tower, and a podium residential building. All buildings sit on a below and aboveground structured parking garage. The ground floor of the development on the north half of the block is predominantly retail and resident amenity space. Private amenities are also located on podium and roof top open space.

The development creates an urban block with multi-modal internal streets along its east, west, and south boundaries. The design focus however is internal to the block where a midblock access drive bisects a public-accessible urban park. The retail components of the development are either along Herndon Parkway or oriented towards this internal connection.

The proposed architecture relies heavily on contemporary forms arranged in a manner to accommodate the scale and mass of the development with simple yet strong lines. On the towers, dramatic displays of geometric forms create dynamic facades that are further defined by variations in solid to void ratios and in the case of the office tower, glass curtain walls. The residential buildings' compositions are characterized by repetitive patterns of fenestration, unadorned spandrel panels, and residential unit balconies. The architecture for the entire development seems to lean on gray color tones and flat surfaces. The parking garage screening relies on metal mesh treatments and an unidentified flat paneling system. The storefront design is largely defined by floor to ceiling glass systems.

Staff Comments

- 1) **Storefront Design:** More material and compositional variation and articulation of the first-floor facades along the sections with active floor area is necessary to establish a pedestrian scale and enhance the storefront urban design objectives as expressed in the HTOC design guidelines. The guidelines state that storefronts should be distinguished with interesting design features and varied materials in an area no greater than 30' in width. As proposed, this design guideline is not achieved. Breaking the storefronts into smaller sections improves the scale to a pedestrian level and provides an opportunity for more varied details and articulation along the sidewalks and walkways.

As proposed, first floor sections with either retail, lobby, or residential amenity space, are faced with simple and expansive architectural compositions either the same size

or larger than the compositions of the towers and podium building. Those compositions are defined by a minimal material palette, simple repetitive forms, and relative flatness in wall plane. The visual affect seems stark and has an overreliance on banners, awnings, and signage to attempt to add visual interest and compensate for the flat building base design. The façade treatment would benefit from enhanced adornment and articulation applied in a manner to add depth and visual interest to the storefronts and better distinguish the ground floor from the rest of the buildings.

- 2) **Podium Building Design:** The guidelines state that podium buildings should read as separate buildings with architecturally distinct compositions spanning 60 to 120 feet in width. As proposed this design guideline is not achieved. The storefront and podium buildings are designed with much wider compositions and larger scales. Neither tower buildings have defined podium compositions. Those towers carry structure to the ground in the case of the Building C or carry to the parking garage in the case of Building B. Building A, the entirety of which would be considered a podium building, is designed to appear as a single block-long building. Though wall planes broken, that effect alone does not create the visual differentiation cited in the guidelines.

The address this issue on Building A, the two end/corner buildings should serve as architectural ‘bookends’ to the otherwise unified series of building bays. Each “bookend” building could be clad with a different material that creates a different texture such as brick and details and forms that visually separates them from the rest of the building to give the appearance of three different buildings across the block. Establishing a stronger roofline with architectural features and defined cornice treatments would further define these “bookend buildings” and bolster the identity of the development at key viewsheds visible from public streets.

The guidelines emphasize the reliance of defined building base, middle, and top architectural compositions on a podium façade. For Building A, these distinctions are weak or absent. The goal in separating a façade in this manner relates to managing scale and ensuring architectural interest. The “top” of Building A should be capped with a stronger and more varied roofline, cornice, and parapet treatment. Focused effort on the “bookend” portions of the building would help achieve the intent of this design objective. Further articulating the “base” of Building A is discussed in comment #1 above.

- 3) **Garage Treatment:** The architectural elevations on three sides of the development are dominated by open structured parking garages on the bottom floors. The proposed design on the south and east elevations do not meet the design guidelines for parking which stress essential design characteristics to include façade designed with high

architectural quality to resemble adjacent buildings, screened and lined with active uses, with clearly visible pedestrian access. While acknowledging the difficulty in wrapping active uses around the entire garage on all elevations, contrastingly carrying the garage to the edge of the sidewalk for all of the south elevation and most of the east elevation without any active uses and minimal attempt to use articulated facades similar to those of the portions of the building with active uses fails to adequately address the design objectives of the HTOC.

The proposed chain link mesh and solid white paneling for the garage below Building B is of particular concern. Though, as presented, the mesh could be used as the canvas for large art displays, the reliance on artwork solely to articulate the building instead of architecture should be avoided and the use of artwork at that scale to add visual interest on the pedestrian level is ineffective. The use of the flat white panels (of an unknown material) along the sidewalk creates an expansive, unbroken, hard edge. All the landscaping shown in the drawings located against the building would not fit within the space provided between the sidewalk and the building, which based on the plan, is only one foot wide.

The mesh and panels create a 3-4 floor flat relatively unarticulated surface abutting the sidewalk. This design can be broken up both horizontally and vertically by carrying forms and materials down from the office tower and across from the podium building. Visual interest might be achieved by articulating the façade in a manner that better reflects a pedestrian scale with variation in materials, textures, and wall planes. Artwork and/or architectural accents can be important components when scaled and located appropriately for users to experience at street level.

One specific solution to break up the garage treatment, activate albeit minimally the street on the south and east elevation, and provide the expected level of pedestrian access would be to add separate pedestrian entrances into the garage abutting the vehicle entrances in a manner similar to the pedestrian garage entrance on the west elevation. In that design, the garage entrance is widened to accommodate the pedestrian entrance on one side that is marked by a different façade treatment and lighting that carries around the entrance corner in to the garage.

- 4) **Colors, Materials, & Textures:** Overall the project with its grey tones, large-scaled forms, and flat surfaces seem to present a cold, stark and hard-edged image. This is reinforced by the lack of identification of the specific materials to be used. Over usage of flat paneling on each component of the development especially with little understanding of the texture, scoring, or other means of articulation is a concern. The concern grows where the material is experienced at the street level particularly along the east elevation. The use of warmer materials, textures with more relief, and more

color variation, to a greater degree, would help create distinguishable architectural compositions across the development vertically and horizontally, and help to soften edges with the intent of breaking up the seemingly homogeneity in design and material.

- 5) **Open Space Design:** Variation in ground plane materials is an important ingredient to well-designed open space in an urban transportation-oriented development. Decorative sidewalk treatments that carry across curb cut aprons are important as are special pavement treatments in streets. As proposed, the Development Plan does not show any special treatments for either the sidewalks or private streets. Some decorative paving is referenced for the internal drive but is not explained or specified. The internal drive itself should be designed to function and appear as a mixed mode plaza area and fully treated with pavers or a similar treatment. The streets along the property perimeter, especially the street on the west side which will serve as the primary access point for a possible future redevelopment on the adjacent property, should also employ decorative treatments instead of basic asphalt or concrete especially at intersections and other points of mode convergence and to highlight building entrance and development focal points.
- 6) **Plan Comments that may Impact Architecture:** These comments are not intended for direct consideration by the ARB and are provided here for information only given the possibility that, if addressed, may impact the architecture and urban design.
- There are inconsistencies between the plan sheets and the architectural drawings that require correction such as the planting of evergreen tree up against the building in an area that could not fit evergreen trees or shrubs within it.
 - The drawings show rooftop mechanical units. The zoning ordinance requires full screening of those units.
 - The development is oriented internally towards a new mid-block private drive both in its use arrangement and design focus. This approach adds an additional sub-standard curb cut that bisects a short urban block and adds an additional point of conflict between vehicles, pedestrians, and cyclists. This approach also creates a development that somewhat turns its back towards the abutting properties and in doing so may establish a rhythm of shared private streets without active uses, which is a development pattern that should be avoided in a transportation-oriented neighborhood.
 - To activate the frontages without active uses, adding pedestrian entrances to the garage or as mid-block cut-throughs to lobbies would be an important option. This should be done at each garage entrance on the south and east

- elevations and should also be considered on the east elevation for access to the retail area.
- The plan shows some signage, most notably a well over-scaled property address sign along the storefront. That particular sign should not be employed in the manner or location shown and more collectively the signage shown seems much too uncoordinated and conceptual at this time. Staff expects signage to be better developed later in the review process and prefers not to have any of the signs shown at this time included in the review of the development plan.
 - The zoning ordinance speaks to designing the HTOC with developments that uniquely reflect Herndon. Designing the podium buildings and the base sections of all buildings with materials and forms and a human scale that, in some ways, reflect more traditional architectural concepts may be an option for addressing that provision.

Staff recognizes that challenge to the ARB of evaluating the architecture and urban design of this development given its scale, the somewhat undefined and unrefined architecture being presented by the applicant, and since it's the first Development Plan to be submitted. The ARB is asked to assess the design based on the information that has been provided. If that evaluation cannot occur in any specific way based on a need for additional information, that issue can be raised in the report to the Planning Commission.

Thank you.

Attachments:

1. Architectural Narrative
2. Architectural Drawings (Elevations, Perspectives, Sections)
3. Relevant Development Plan Sheets



555 Herndon Parkway

Architectural Review Board: December 12, 2018



- **Existing Site**
- **Timeline & Planning Context**
- **Design**
- **Streetscape & Landscape**

Existing Conditions



Existing Conditions



EXISTING BUILDING

Timeline

Town Updates:

- **2012** Town adopted HTOC Plan and PD-HTOC Ordinance

555 Submission:

- **Nov 25, 2015** First Submission
- **Apr 14, 2017** Second Submission
- **July 16, 2017** Third Submission
- **Aug 8, 2018** Fourth Submission
- **Nov 19, 2018** Fifth Submission

Upcoming:

- **Dec 12, 2018** ARB Meeting
- **Dec-Jan 2019** Community Meeting
- **Jan 2019** Planning Commission Hearings
- **Feb 2019** Town Council Hearings
- **TBD** Return to ARB for Design Approval for each building prior to Building Permit



Development objectives . It is the intent of the town council in approving a planned development district that the resulting development meets the following objectives:

(1) Compact design. The proposed development is clustered and compact, interrelated and linked by pedestrian ways, bikeways (where appropriate), and other transportation systems;

(2) Efficient transportation. The proposed development promotes and expands opportunities for public transportation and an efficient compact network of streets;

(3) Scenic and natural resources. The proposed development preserves and protects scenic assets and natural features such as trees, streams and topographic features;

(4) Design. The proposed development exhibits harmonious design, incorporating a variety of building types and variations in buildings styles;

(5) Compatible character. The proposed development is compatible with the character of surrounding land uses; and

(6) Enhance value. The proposed development is designed to maintain and enhance the value of surrounding properties



Staff Comments:

Storefront Design

Podium Building Design

Garage Treatment

Colors, Materials & Textures

Open Space Design



URBAN DESIGN AND ARCHITECTURAL GUIDELINES

for THE HERNDON TRANSIT-ORIENTED CORE

URBAN DESIGN ASSOCIATES



SECTION CARCHITECTURAL GUIDELINES

Storefronts

For mixed-use buildings in the HTOC, the design of storefronts and the relationship between interior building spaces and exterior pedestrian spaces is especially important. The design of storefronts is critical to the success of the pedestrian realm and will impact the sense of security and safety in the neighborhood. The following are a series of elements that should be considered:

STOREFRONT COMPOSITION

- » Ground-floor retail spaces having a minimum height of 18 feet from floor to finished ceiling.
- » Storefront design utilizing the full height of the ground-floor facade frontage.

OPENINGS AND TRANSPARENCY

- » Clazing should constitute a minimum of 60% of the ground-floor retail facades.
- » Shop windows should provide views into the shop as well as its displays.
- » Exterior window signage is highly preferred over interior window signage.
- » Opaque tinting, window shade, and blinds that block visual interaction between the street and the interior are discouraged.

AWNINGS

- » Awnings are encouraged and may provide additional signage space by incorporating names and logos.
- » Plastic, over-scaled, and fluorescent back-lit or internally lit signs and awnings are discouraged.

STOREFRONTS

- » Storefronts should be designed using traditionally framed elements of retail design as well as innovative new components that emulate the composition of traditional retail design. Characteristic elements include large transparent display windows with kick plates below and clerestory windows above, recessed front entries, and exterior awnings and signs.

UNDESIRABLE STOREFRONTS

- Cluttered shop windows with reduced or impeded visibility between the interior and exterior
- Fluorescent lighting
- Backlit signs and awnings
- Solid security gates
- Boarded up storefront window areas
- Reflective glazing
- Inaccessible entrances
- Paint colors inconsistent with the area



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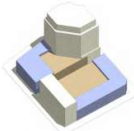
SECTION CARCHITECTURAL GUIDELINES

MID-RISE AND PODIUM BUILDINGS

Mid-rise and podium buildings can house residential, office, or commercial uses either in a single or mixed-use format. These buildings should have consistent massing while incorporating human-scale elements (such as ground floor commercial storefronts) that respond to the objectives of the HTOC.

Mid-rise buildings and podiums may be intricate buildings that combine many uses and circulation patterns. A logical pattern of development will be to locate parking garages in the middle of the block wrapped with active uses that front public streets and plazas. Developers should consider interior alleys, courtyards, and passages to bring light into the middle of development sites. These internal passages will provide natural divisions for phasing development, and will also provide the necessary circulation for service and parking access. They can have the added benefit of breaking the size of monolithic developments into smaller increments. The internal passages should be designed with the pedestrian and public in mind so that the district as a whole will be enriched with this secondary circulation network.

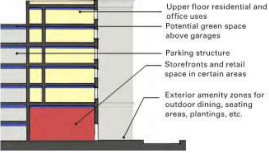
The most successful development in the HTOC will not be perceived as a single massive building but rather as a collection of street-oriented buildings forming an urban block. This can be accomplished with variable building heights, facade compositions, and materials.



ESSENTIAL CHARACTERISTICS

- Preferred minimum height = 3 stories
- Vertical expression from 60 to 120 feet in width to simulate smaller buildings forming a street wall
- Preferred commercial ground floor height = minimum, 18 feet
- Recognizable horizontal divisions into a base, middle, and top using a variety of architectural elements is desirable
- Regular patterns, whether symmetrical or asymmetrical, of openings and accents
- Bay windows or grouped windows as accents
- Storefronts and active lobbies along frontages
- Residential ground floor uses should be 2 feet above exterior grade level and separated from sidewalks with planting areas

ELEMENTS OF MID-RISE AND PODIUM BUILDINGS



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SECTION CARCHITECTURAL GUIDELINES

Parking

Surface Parking Lots, Integral Parking, Podium Parking, and Free-Standing Parking Garages are possible configurations in the HTOC. The following pages describe each parking type and how it should be implemented. The design of parking lots and garages tends to be governed in the following ways:

LOCATION ON THE SITE

Parking is most appropriate on a development site when it is sited with sensitivity to adjacent activities and features, including the adjacent right-of-way.

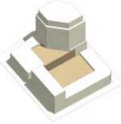
SCREENING AND VISIBILITY

Some level of screening between the parking area and adjacent areas is usually provided. The Herndon Town Code governs the type of screening required of facilities depending on the location within the site.

Shade Trees and Parking area landscaping can be used around the structure as appropriate to intensify screening or create a landscape feature.

INTERIM USE

Parking lots are not an anticipated feature within the HTOC but may be present prior to the final build out of a land bay at an interim stage.



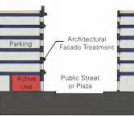
ESSENTIAL CHARACTERISTICS

- Preferably located in center of development blocks
- Should be screened from primary pedestrian paths by buildings and lined by active uses
- When exposed to view, parking structures should have articulated facades
- Pedestrian access should be clearly visible and provide direct access to adjoining buildings and adjacent public spaces
- Vehicular entries should be located on access drives and internal service lanes
- Underground parking is encouraged throughout the HTOC

ARCHITECTURAL FACADE

Parking garage buildings should be designed with facades of high architectural quality using materials to resemble adjacent buildings. Active ground floor commercial or residential uses are recommended instead of highly visible parking decks.

Note: This styling is not encouraged along Herndon Parkway, the Promenade, and Worldgate Extensions.



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SECTION DLANDSCAPING GUIDELINES

SUGGESTED MATERIALS

(OTHER MATERIALS MAY ALSO BE APPROPRIATE)

CLADDING

Brick, stone, cast stone, precast concrete, glass fiber reinforced cement, metal and composite panel systems, and aluminum and glass curtain walls. Masonry wall systems are suggested, particularly at the podium levels. (See page 52 for storefront materials). Exterior insulation and finishing system (EIFS) generally is discouraged.

ROOFING

Flat roofing systems with stone or cast stone or precast parapets may be used for towers although interesting tops, such as articulated parapets, sloped roofs, and crowns should be employed to distinguish the buildings from conventional flat-roofed architecture along the Dulles Toll Road. Standing seam metal or other decorative roofing is recommended for exposed roofs on lower floors. Vegetated roofs are preferred wherever possible.

WINDOW WALLS

Aluminum framing systems with clear or "E" coated glazing, spandrel glass and metal panels may be used. Glazing systems that seek uniformity across facades are not recommended.

WINDOWS

Aluminum window systems, coated steel window systems, clear or "E" coated glazing, spandrel glass and metal panels.

TRIM

- » Overall building: Stone, cast stone, and stone string courses, lintels, and sills
- » Storefronts or other entrance areas: Durable weather resistant and impact resistant materials

COLUMNS

- » Overall building: Brick, stone, cast stone, precast concrete, glass fiber reinforced cement, aluminum, or steel. Wood columns may be appropriate for residential buildings.
- » Storefronts or other entrance areas: Durable weather resistant and impact resistant materials

BALCONIES

Concrete or steel with aluminum, steel, or glass railing systems

SOFFITS

Concrete, stucco, fiber cement, wood, or prefinished aluminum. Exterior insulation and finishing system (EIFS) generally is discouraged.

CANOPIES

Metal, glass, wood, or canvas awnings



ARCHITECTURAL GUIDELINES | 53

SECTION DLANDSCAPING GUIDELINES

PUBLIC OPEN SPACE & PEDESTRIAN PASSAGES – FURNISHINGS

This section provides requirements for site furnishings.

A. Site furnishings can be similar to one specified for private streets, or custom fabricated to add an artistic touch. Materials may include wood, steel, aluminum, stone, cast in place or precast concrete, or a combination thereof.

B. Furnishings should complement the architectural elements of the adjacent buildings as well as the ground plane paving material.

C. Furnishings can be fixed to define edges or the perimeter of the public space. Ideally they are used along the edges of use areas and can either be free standing or planting behind. Movable furnishings should be considered to animate large paving areas allowing them to be moved when events take place.

D. Movable planters should be considered where fixed planters are not desired.



Wood and steel furnishings



Steel and stone custom furnishings



Movable furnishings



Stone furnishings of different patterns



Concrete and wood furnishings

51 | URBAN DESIGN AND ARCHITECTURAL GUIDELINES FOR THE HERNDON TRANSIT-ORIENTED CORE

First Submission



Second Submission



Current Submission



For Illustrative Conceptual Purposes Only, Not Final Design



Current Site Plan



ILLUSTRATIVE SITE PLAN

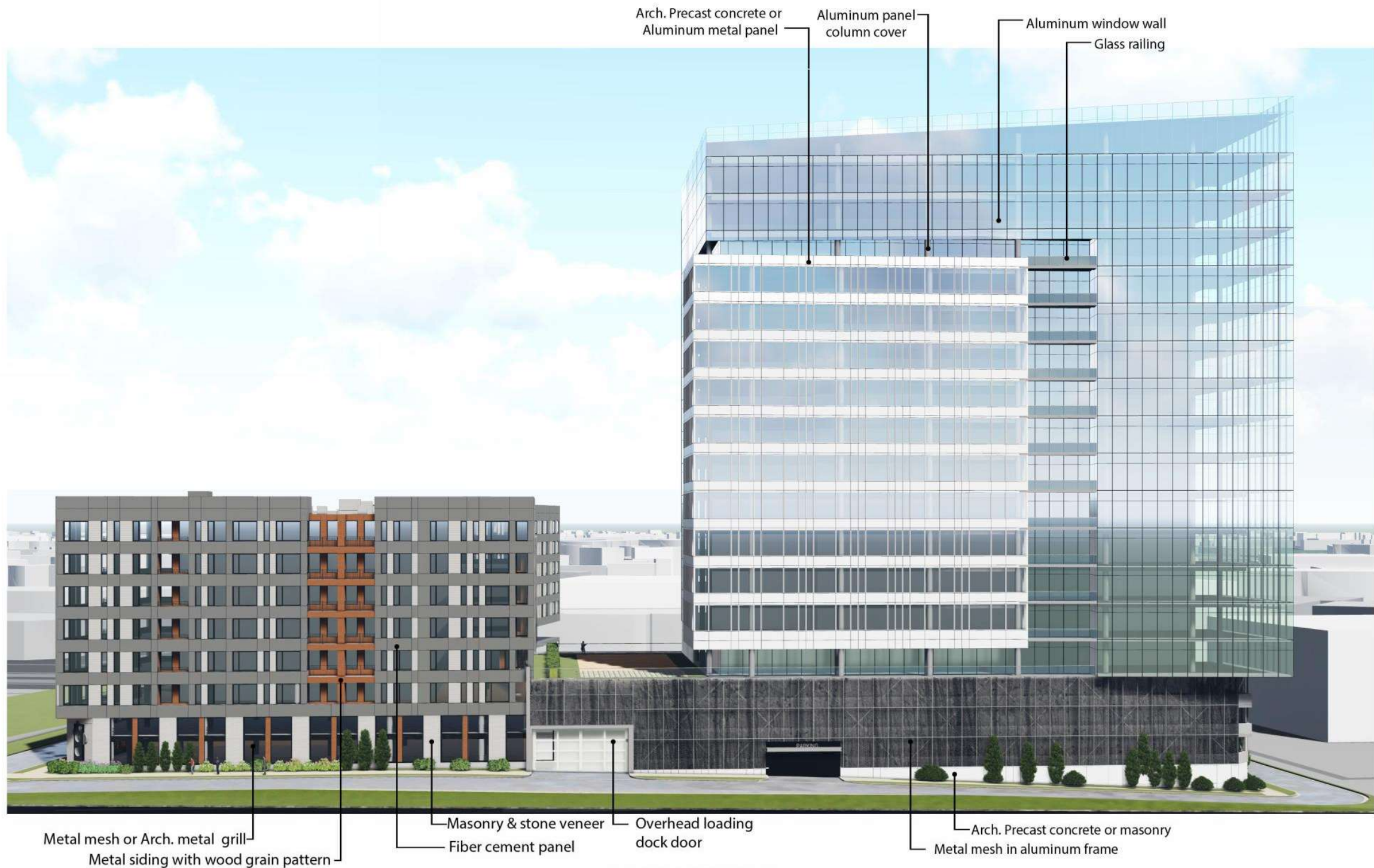
North Elevation



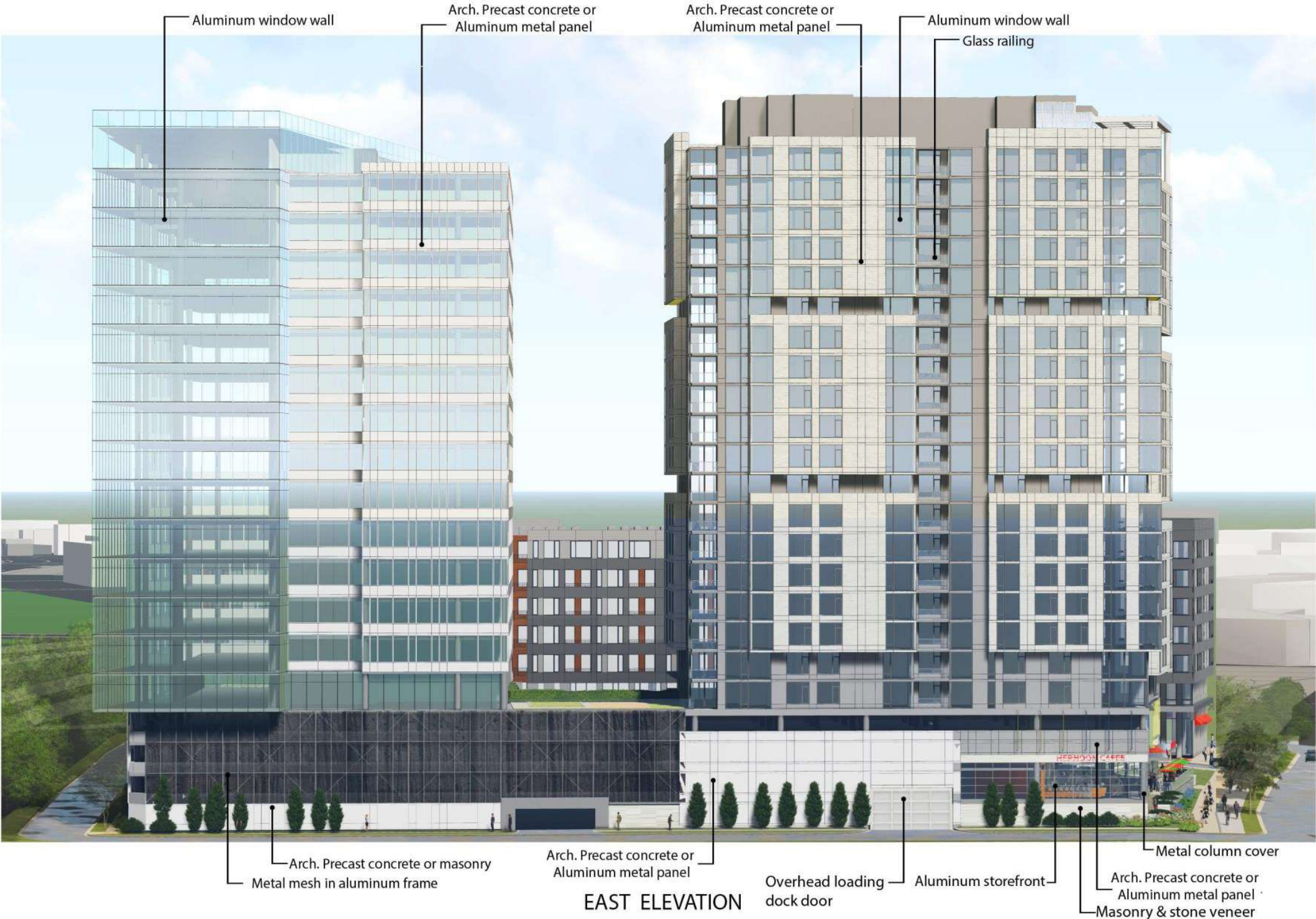
West Elevation



South Elevation



East Elevation



View From North (Herndon Parkway)



For Illustrative Conceptual Purposes Only, Not Final Design

PERSPECTIVE # 1

View From North (Herndon Parkway)



For Illustrative Conceptual Purposes Only, Not Final Design



PERSPECTIVE # 13

View From Northwest (Herndon Parkway)



For Illustrative Conceptual Purposes Only, Not Final Design

PERSPECTIVE # 2



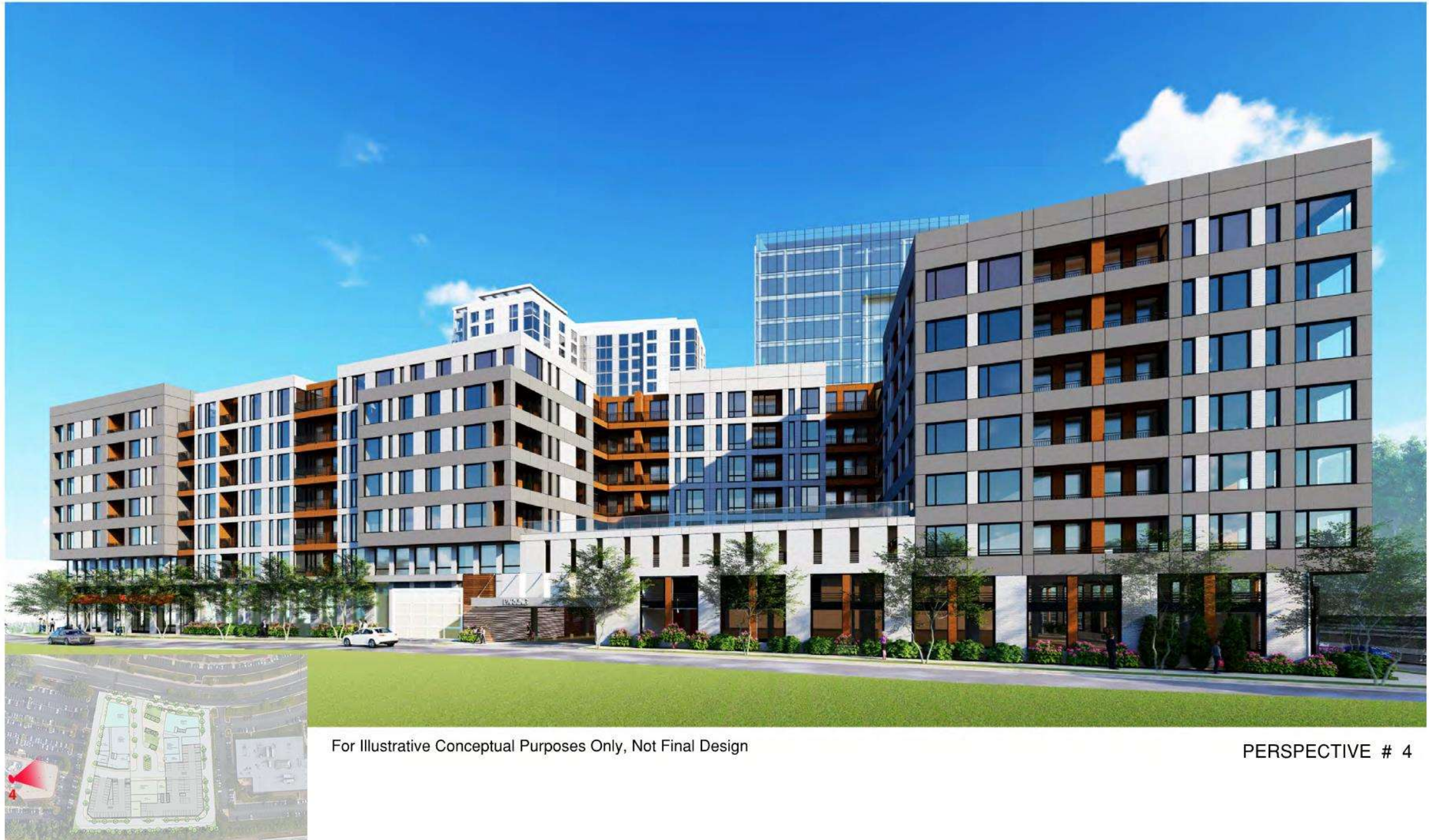
View From West



For Illustrative Conceptual Purposes Only, Not Final Design

PERSPECTIVE # 3

View From West



For Illustrative Conceptual Purposes Only, Not Final Design

PERSPECTIVE # 4

View From West



PASSAGEWAY FROM THE EAST

PERSPECTIVE # 5

For Illustrative Conceptual Purposes Only, Not Final Design

View From Southwest



For Illustrative Conceptual Purposes Only, Not Final Design

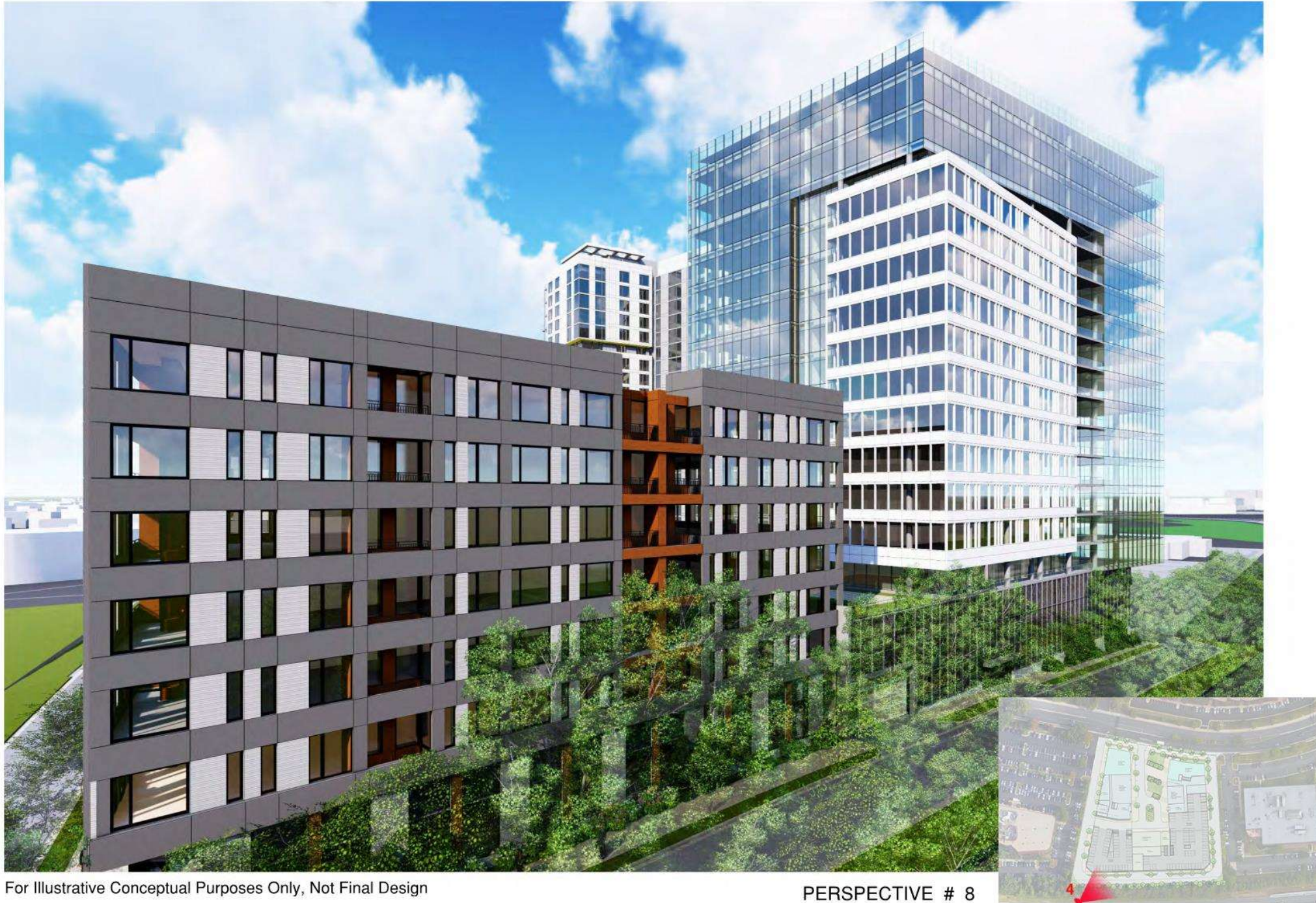
PERSPECTIVE # 6

View From South (Toll Road Side)



For Illustrative Conceptual Purposes Only, Not Final Design

View From South (Toll Road Side)



For Illustrative Conceptual Purposes Only, Not Final Design

PERSPECTIVE # 8

View From Southeast



POTENTIAL GARAGE FACADE TREATMENT UNDER OFFICE

PERSPECTIVE # 10

For Illustrative Conceptual Purposes Only, Not Final Design

View From Northeast (Herndon Parkway)



For Illustrative Conceptual Purposes Only, Not Final Design

PERSPECTIVE # 12



View of Interior Courtyard



PERSPECTIVE # 15

View of Interior Courtyard

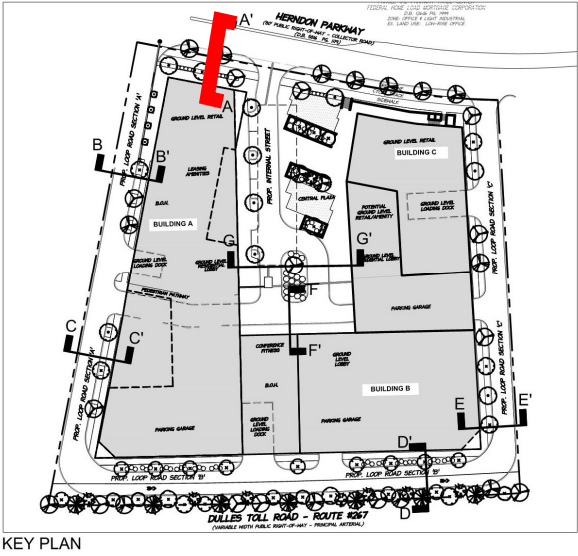
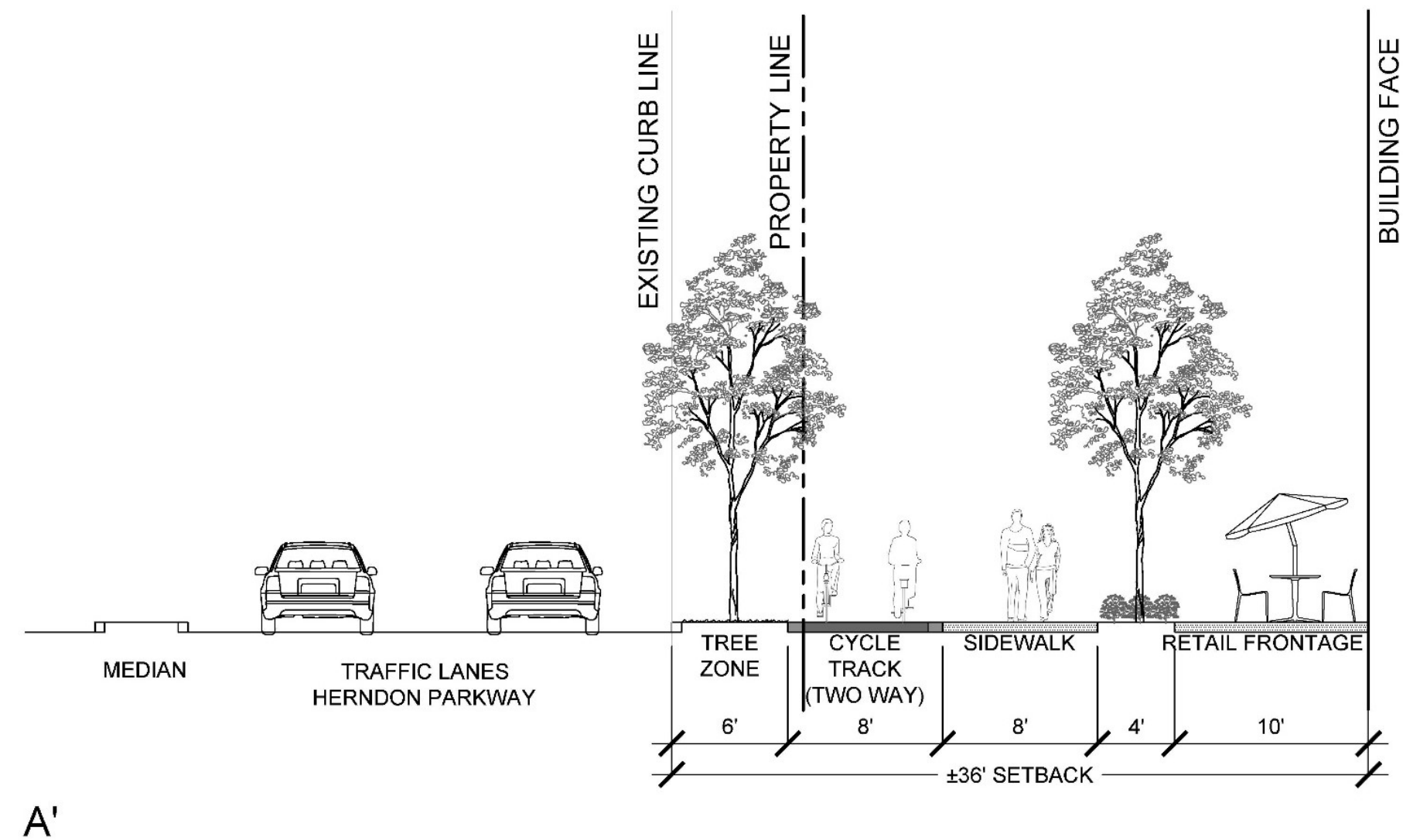


For Illustrative Conceptual Purposes Only, Not Final Design

PASSAGEWAY FROM THE PLAZA



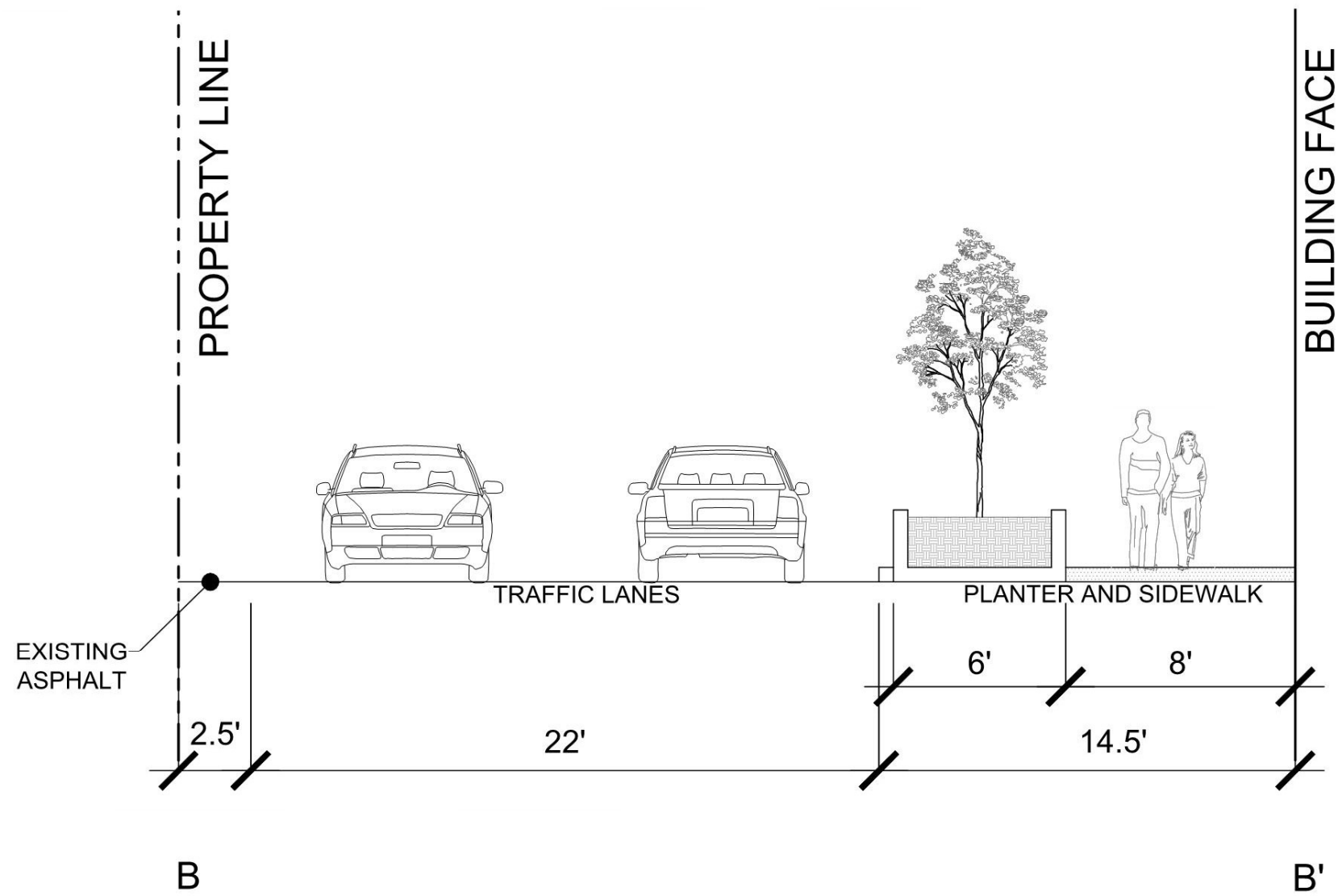
Street and Sidewalk Sections – Herndon Parkway



A'

1 HERNDON PARKWAY STREETScape - SECTION A'-A

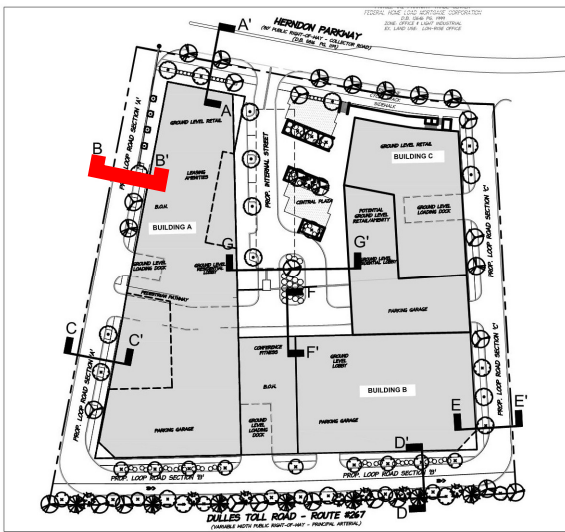
Street and Sidewalk Sections – West Private Road



B

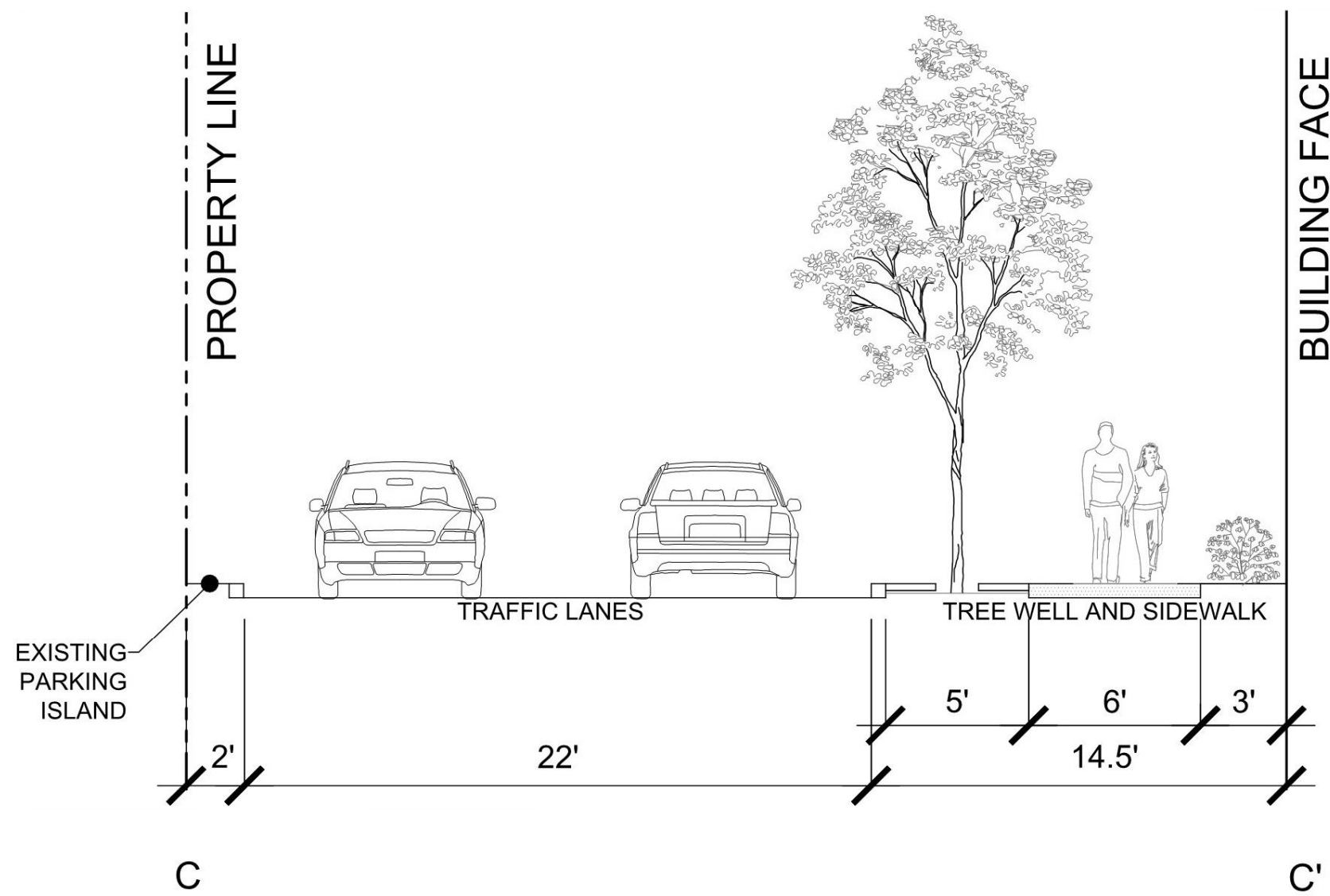
B'

2 PROPOSED LOOP ROAD SECTION 'A' - SECTION B-B'

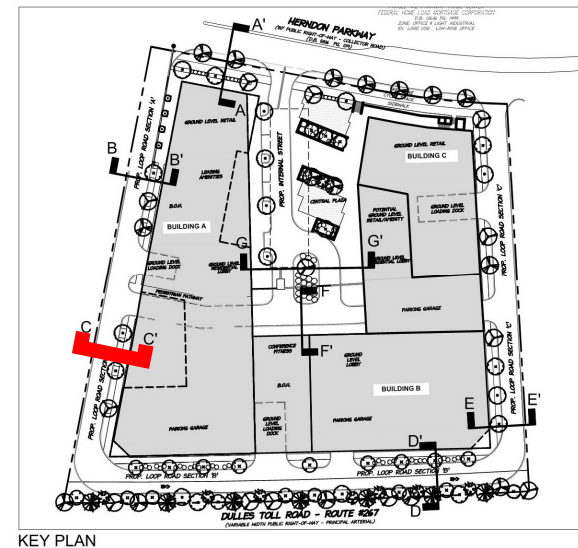


KEY PLAN

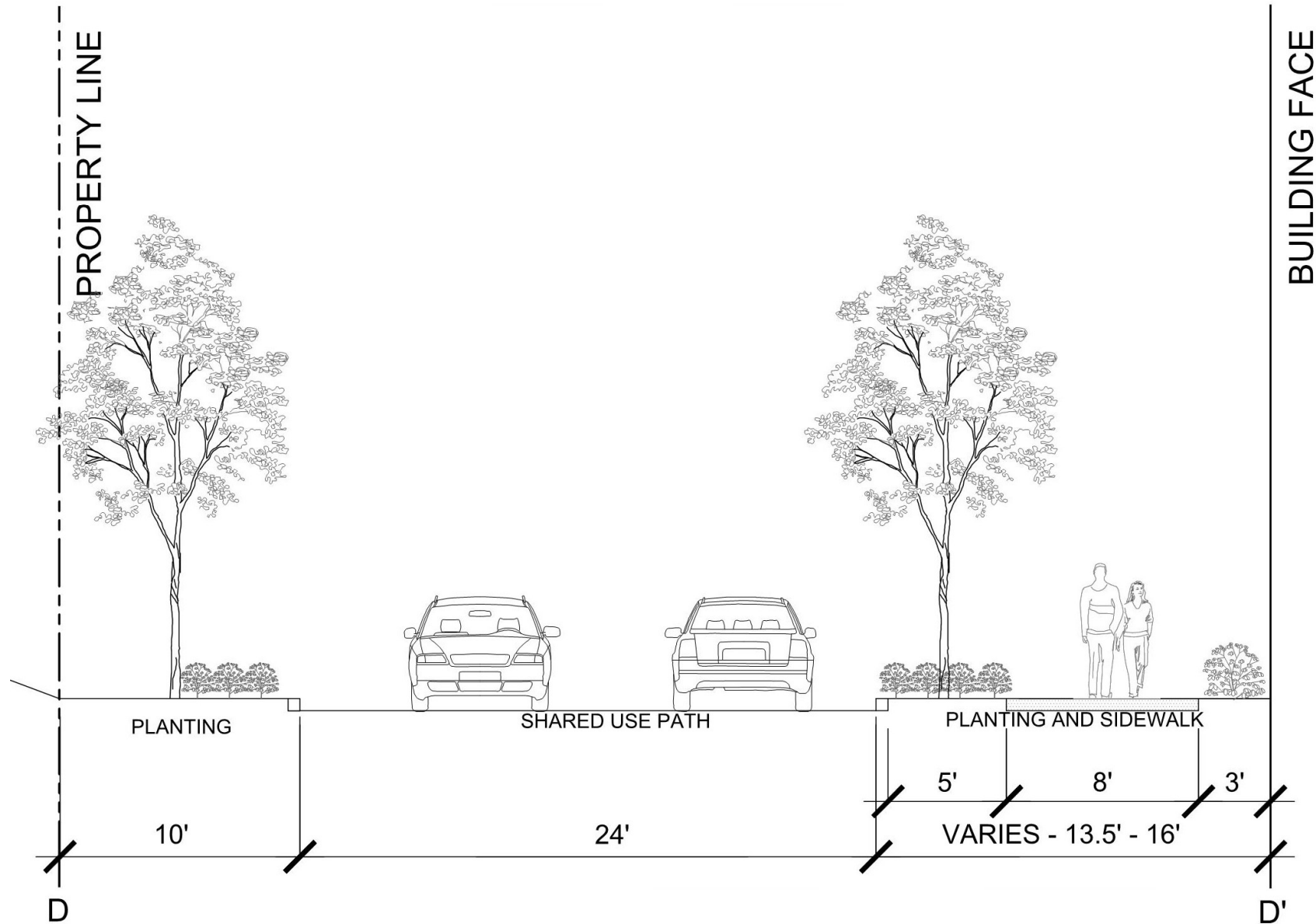
Street and Sidewalk Sections – West Private Road



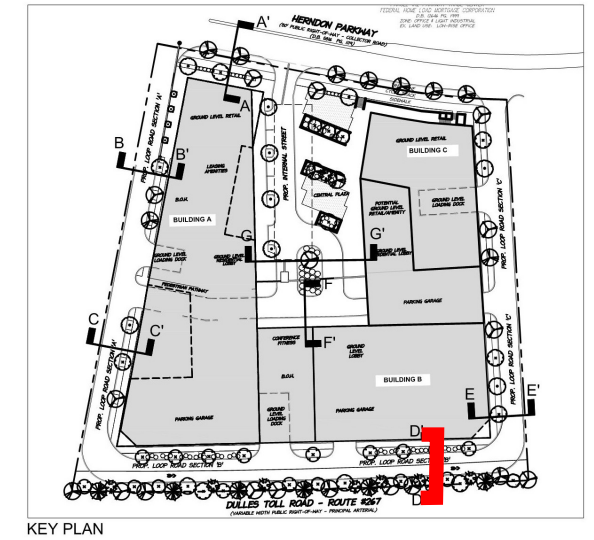
3 PROPOSED LOOP ROAD SECTION 'A' - SECTION C-C'



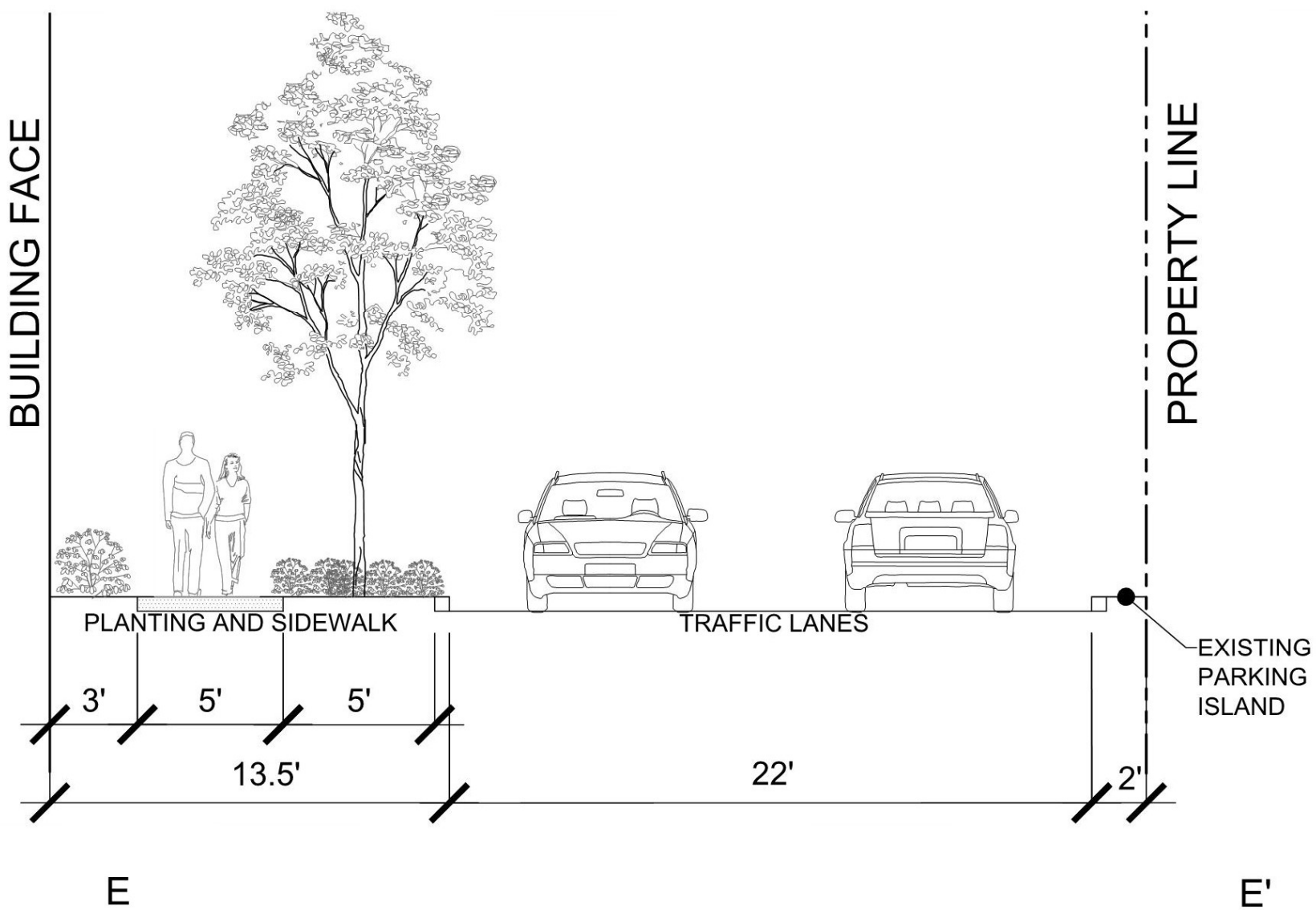
Street and Sidewalk Sections – South Private Road



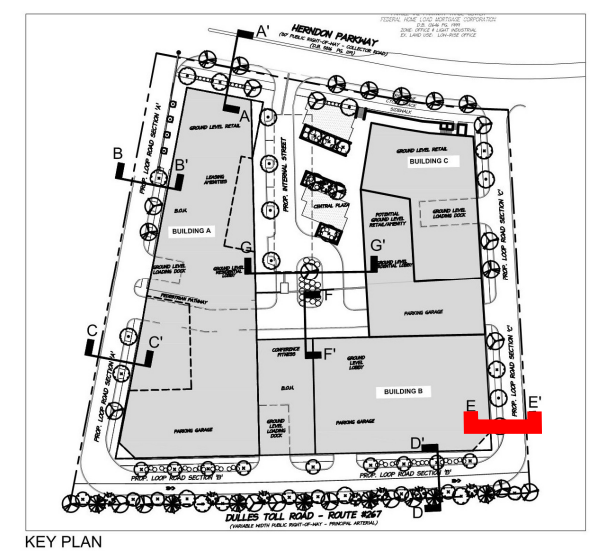
3 PROPOSED LOOP ROAD SECTION 'B' - SECTION D-D'



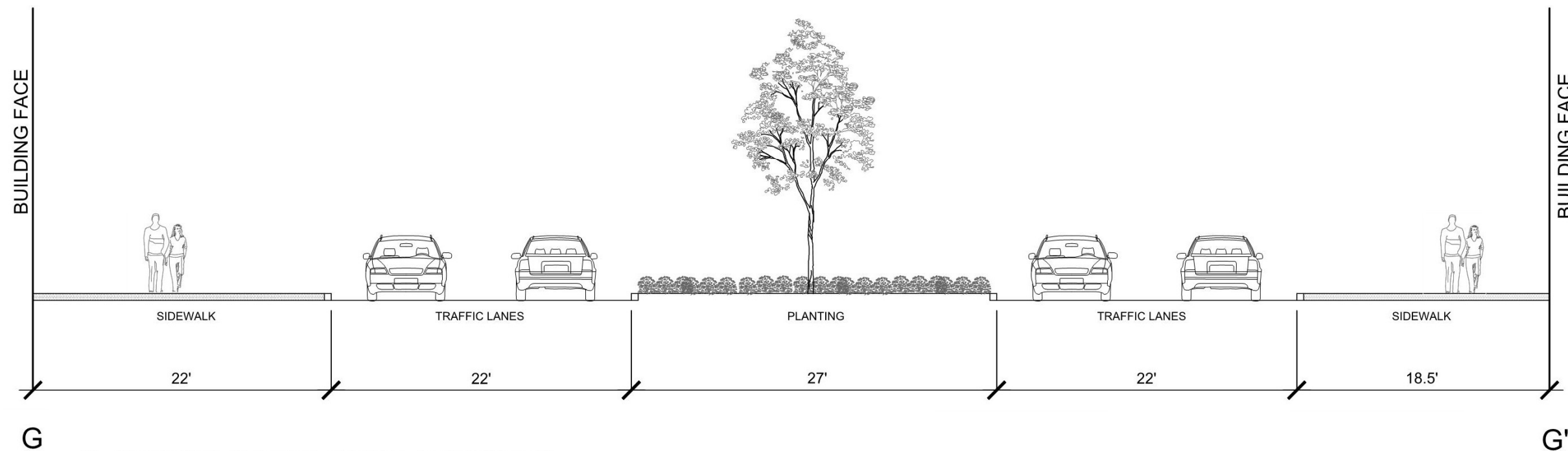
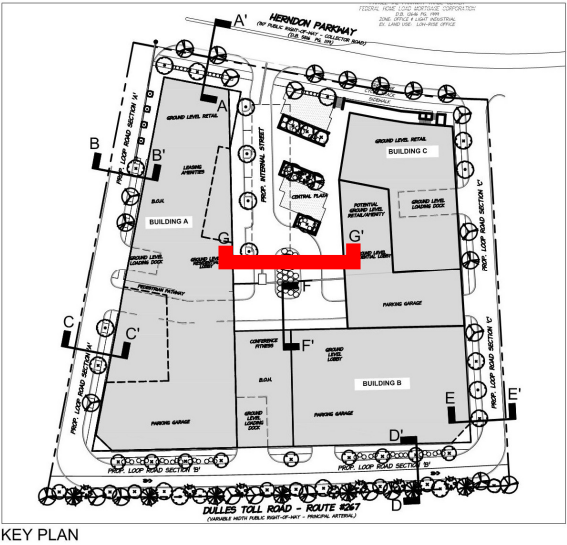
Street and Sidewalk Sections – East Private Road



6 PROPOSED LOOP ROAD SECTION 'C' - SECTION E-E'



Street and Sidewalk Sections – Interior Private Road



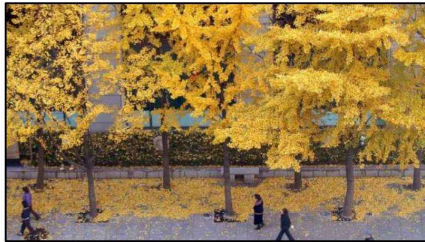
8 PROPOSED INTERNAL STREET - SECTION G-G'

Landscape & Hardscape Plan





Retail Sidewalk - Sidewalk goes all the way to the building to offer maximum tenant flexibility. Colorful planters containing fastigate trees and a mix of perennials and shrubs between the building and sidewalk circulation space help reduce the scale of the building. The fastigate trees provide a year-round architectural feature. To the rear, the sidewalk is moved to be placed along the curb to allow a larger planter against the building that will allow for better concealment of a blank facade and further reduce the scale of the building for the pedestrian. The sidewalk will also better serve future parallel parking on this block. Trees are not able to be placed along the curb line due to a shallow stormwater pipe in this location.



Tree Wells - Street trees provided in tree wells against the curb-line. The sidewalk is placed against the building. This allows for larger-canopy street trees.



South Side Plantings - More naturalized and varied plantings to provide buffer from highway.



Herndon Parkway - To be planted per the revised Streetscape Manual with a mix of trees in planting strips.



East Sidewalk - Larger shade trees help reduce the scale of the architecture along this blank facade frontage. Grade is sloping and lower than the Finished Floor Elevation of the retail floor.

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
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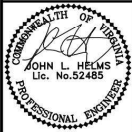
PENZANCE

christopher consultants

dcs DESIGN

GOROVE / SLADE
Transportation Planners and Engineers

McGUIREWoods



ILLUSTRATIVE
LANDSCAPE

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00

SCALE: AS NOTED

DATE: 08-08-2018

DESIGN: JTR
DRAWN: JTR
CHECKED:

SHEET No.

20.0 OF 22.0

103228

Landscape/Hardscape



Lawn Panel - Large non-hardscaped open areas that can be programmed or non-programmed space, usually lacking desired amenity area. Turf can be natural or artificial depending on the final engineering of the structure beneath.

Retail Streetscape - Adequate width for circulation and dedicated areas for active space where street furniture will be located. Design of which will be based on final architectural design and door placement.



Feature Area - Pedestrian inaccessible area that can be used as an area for public art, large architectural planter, or vertical focal or themed element can be located here.

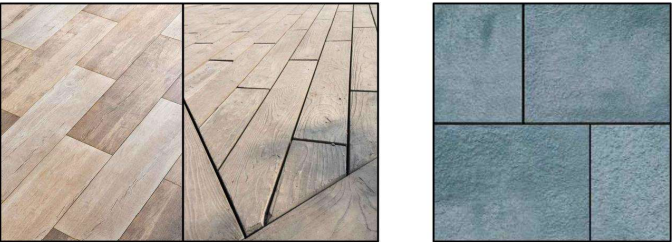
Plaza Overall Concept - Formal Design/Informal Materials:
A modern design language is juxtaposed with traditional materials to create an organized, functional, and accessible plaza with a more comfortable and softer human feel.



Softscape - Softer, and a more 'residential' plant palette in a less formal planting arrangement contrasts nicely with the more geometric and regimented hardscape and architecture. Helps to bring a human scale to the plaza.



Seat/Planter Wall - Wood grain concrete product to hold bermed soil of planting beds and provide casual seating in addition to benches. Texture matched wood used on architectural concepts and provides a "softer" and "casual" feel. Could also be a board-form concrete or simulated stone.



Paver Inlays - Accent paving in texture and colors to match or contrast with the architecture. Options include wood-grained plank pavers, outdoor porcelain tile, or pavers slabs such as the above pictured flamed bluestone.



Planters - Wood grain concrete will match the seat/planter walls in the main section of the plaza. Texture matched wood used on architectural concepts and provides a "softer" and "casual" feel. Composite planters can accent entrances and bring color to facades around the remainder of the development in lieu of in-grade planters.

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ILLUSTRATIVE LANDSCAPE

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 18002.001.00
SCALE: AS NOTED
DATE: 08-08-2018
DESIGN: JTR
DRAWN: JTR
CHECKED:
SHEET NO: 21.0 OF 22.0

Site Furnishings

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18

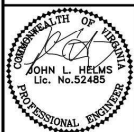
PENZANCE

christopher
consultants

dcs
DESIGN

GOROVE / SLADE
Transportation Planners and Engineers

McGUIREWOODS



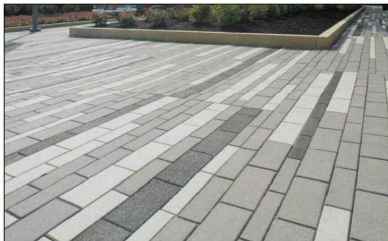
ILLUSTRATIVE DESIGN
AMENITIES

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00
SCALE: AS NOTED
DATE: 08-08-2018
DESIGN: JTR
DRAWN: JTR
CHECKED:
SHEET No.

19.0 OF 22.0
103228

Decorative Paving Examples



Bench Examples



Waste Receptacle Examples



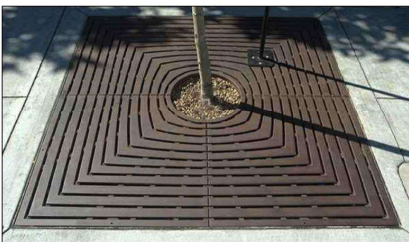
Bicycle Rack Examples



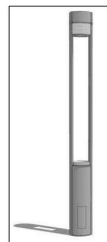
Seat/Retaining Wall Examples



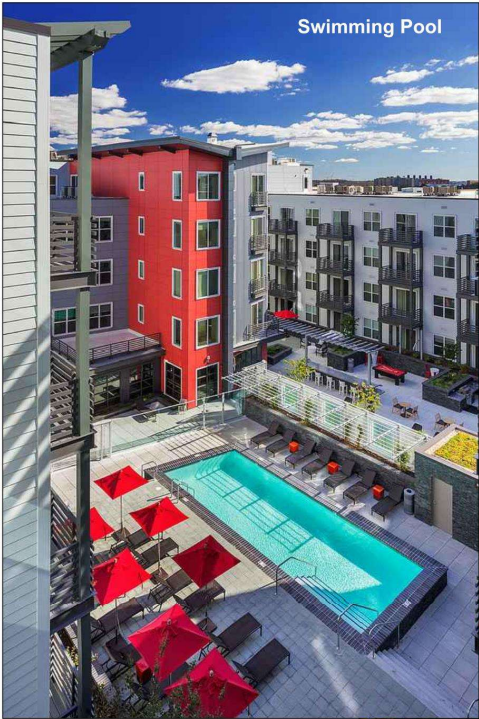
Tree Grate Examples



Site Lighting Examples



Amenity Spaces

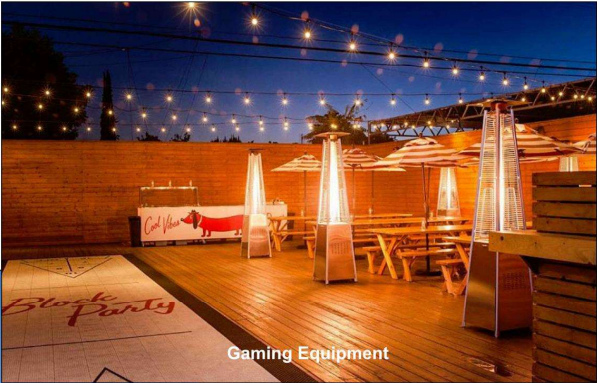


Swimming Pool

Private Amenities on Podium - Some suggested and planned amenities that may be made available to residents of the development include many features illustrated with the images on this sheet. Design is subject to the final architecture of the building.



Outdoor Fire Pit and Lounge Area



Gaming Equipment



PetPark



Lounge Seating and Fire Pits

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11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18

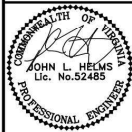
PENZANCE

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ON-PODIUM
PRIVATE AMENITIES

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00
SCALE: AS NOTED
DATE: 08-08-2018
DESIGN: JTR
DRAWN: JTR
CHECKED:
SHEET NO:

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PENZANCE

DEVELOPMENT PLAN INSERTS

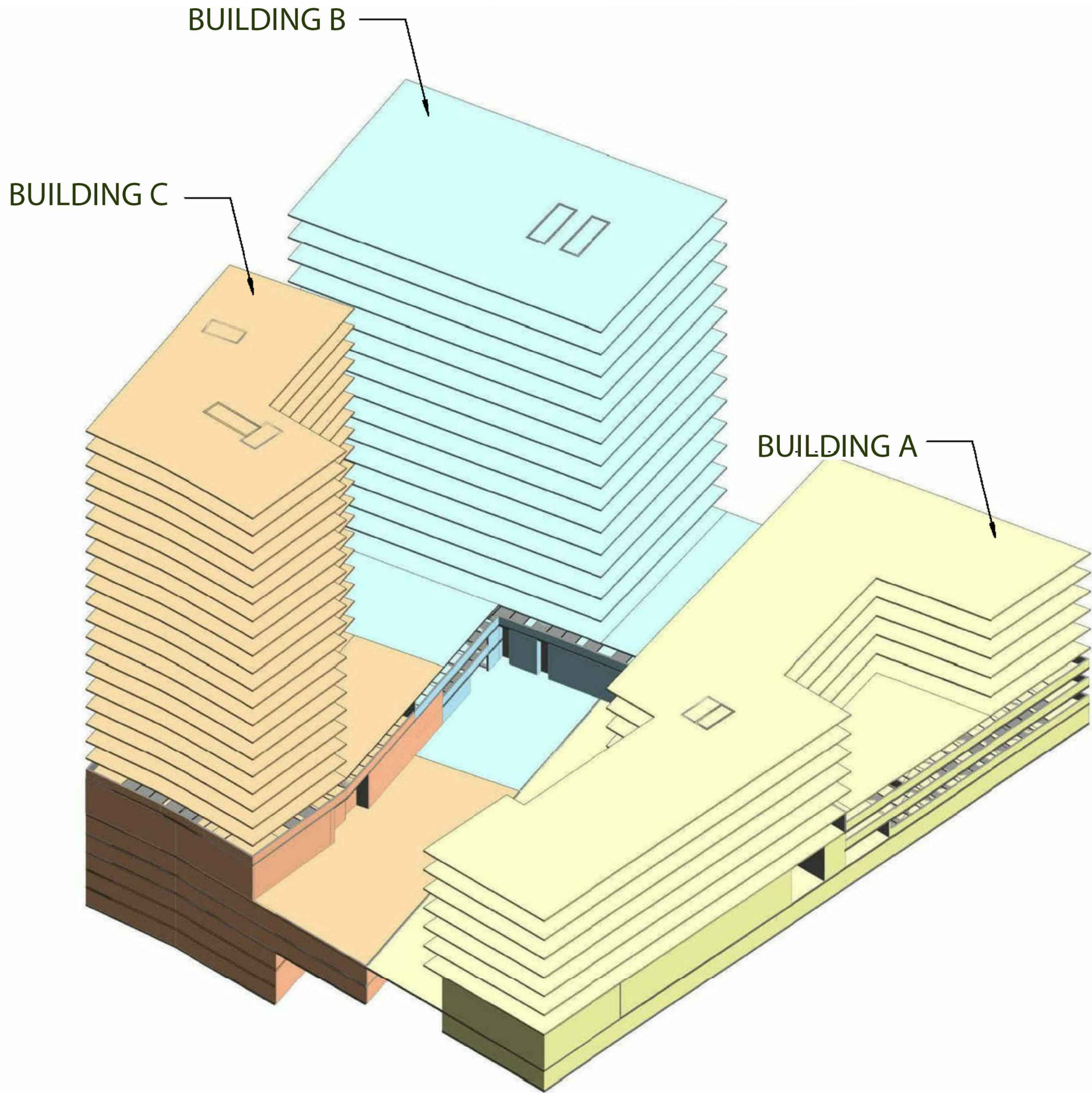
555 HERNDON PARKWAY

TOWN OF HERNDON, VIRGINIA

SHEET INDEX

1 - COVER SHEET
2 - DEVELOPMENT PLAN AND TABULATIONS BY BUILDING
3 - DEVELOPMENT PLAN- FULL BUILDOUT
4 - DEVELOPMENT PLAN- BUILDING A
5 - DEVELOPMENT PLAN- BUILDING B
6 - DEVELOPMENT PLAN- BUILDING C
7 - ILLUSTRATIVE PARKING PLAN
8 - STREET LEVEL CROSS SECTIONS
9 - STREE LEVEL CROSS SECTIONS (CONT'D)

DATE	REVISION
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PROPOSED DEVELOPMENT TABULATIONS

PARKING				
	ESTIMATED GFA (SF)	HEIGHT (ft)	REQUIRED	Estimated Units/GFA Provided Based on Unit Count/GFA
BUILDING A	RETAIL (GFA)	+/- 5,500	1.25 / 1,000 (GFA)	+/- 5,500
	RESIDENTIAL L.R. (GFA)	+/- 207,000	1.0 / UNIT	207
BUILDING B	OFFICE (GFA)	+/- 324,000	2.0 / 1,000 (GFA)	+/- 324,000
BUILDING C	RETAIL (GFA)	+/- 5,000	1.25 / 1,000 (GFA)	+/- 5,000
	RESIDENTIAL H.R. (GFA)	+/- 272,137	1.0 / UNIT	273
TOTAL GFA		+/- 813,637	TOTAL SPACES	
TOTAL SITE ARE		189,220	1,142	
TOTAL SITE FAR		4.30	1,271	

NOTES:
 Square footage and dwelling units are approximate.
 Applicant reserves the right to adjust GFA, unit counts and heights for each building in accordance with the approved development plans and proffers."
 Building heights are above average site elevation and do not include mechanical penthouse requirements or rooftop facilities (pool, deck, club room, etc).
 Applicant reserves the right to develop up to 4.3 FAR based on final development plans. Total development square footage will not exceed 813,637 GFA, based on a 4.3 FAR.
 Additional retail may be provided above the square footage shown provided that the overall final square footage will not exceed 813,637 GFA.
 Applicant reserves the right to provide more or less parking with each building at the time of Site Plan, provided at least the minimum required rate for each use is provided.

-  : EX. **WOODS LINE**
-  : EX. **STREET CENTER LINE**
-  : EX. **CURB & GUTTER**
-  : EX. **BOUNDARY**
-  : EX. **EDGE OF PAVEMENT (EP)**
-  : EX. **SIGN**
-  : **DENOTES HANDICAPPED PARKING SPACE**
-  : **PROP. BUILDING**
-  : **PROP. EDGE OF PAVEMENT**
-  : **PROP. VEHICULAR MOVEMENT**

 : PROP. VEHICULAR ENTRY
 : PROP. PEDESTRIAN ENTRY
 : PROP. ON-SITE VEGETATION AREAS
 (SEE LANDSCAPE SHEET __ FOR MORE DETAIL)

DATE	REVISION
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PENZANCE



christopher
consultants



DAVIS
CENTER
SCOTT
DESIGN

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McGUIREWOODS

A circular professional engineer seal for the Commonwealth of Virginia. The outer ring contains the text "COMMONWEALTH OF VIRGINIA" at the top and "PROFESSIONAL ENGINEER" at the bottom. Inside the ring, the name "JOHN L. HELMS" is printed, with "Lic. No. 52485" printed below it. A handwritten signature is scrawled over the name and license number.

DEVELOPMENT PLAN- FULL BUILD-OUT

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00

SCALE: 1"=30'

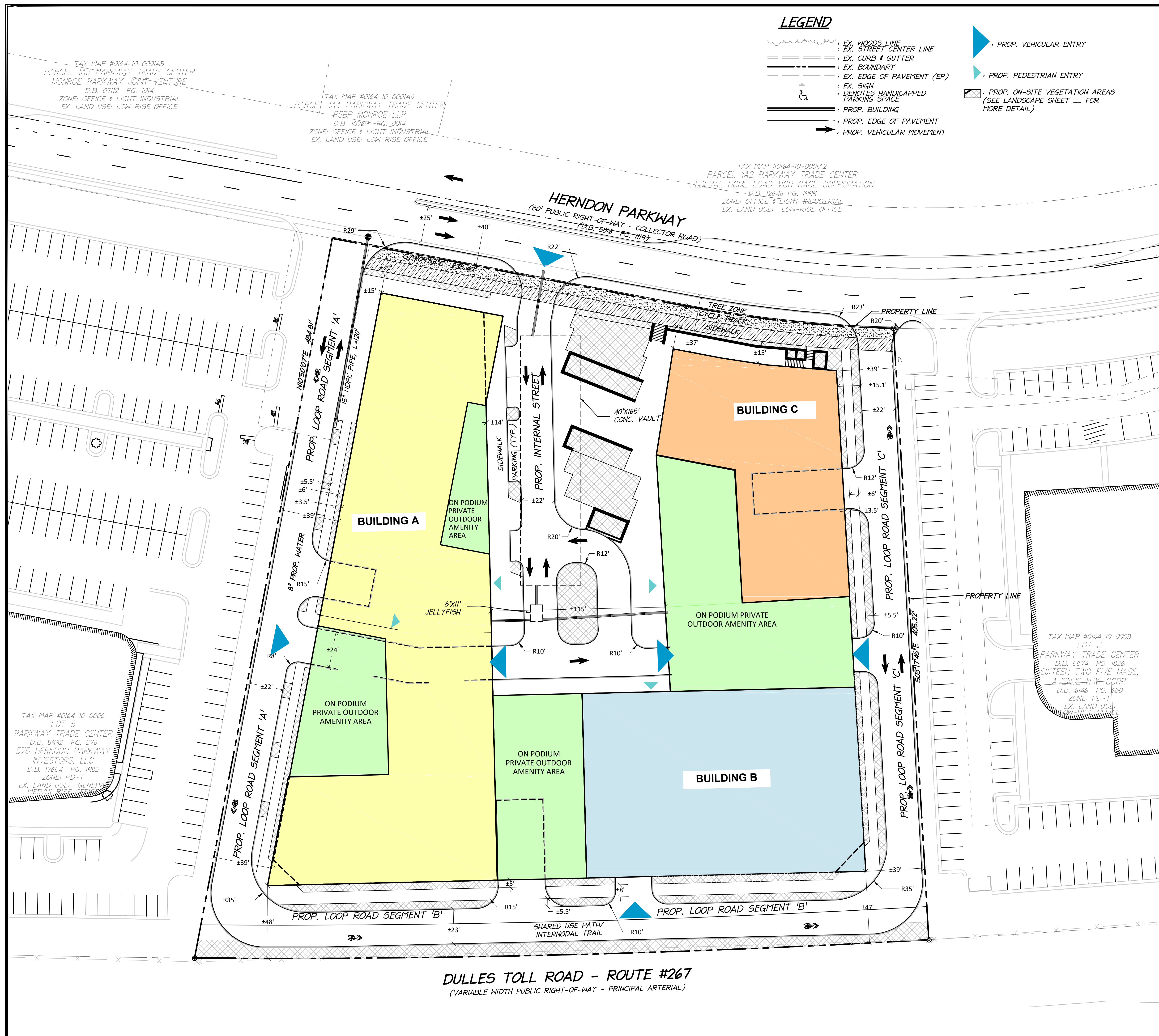
DATE: 08-08-2018

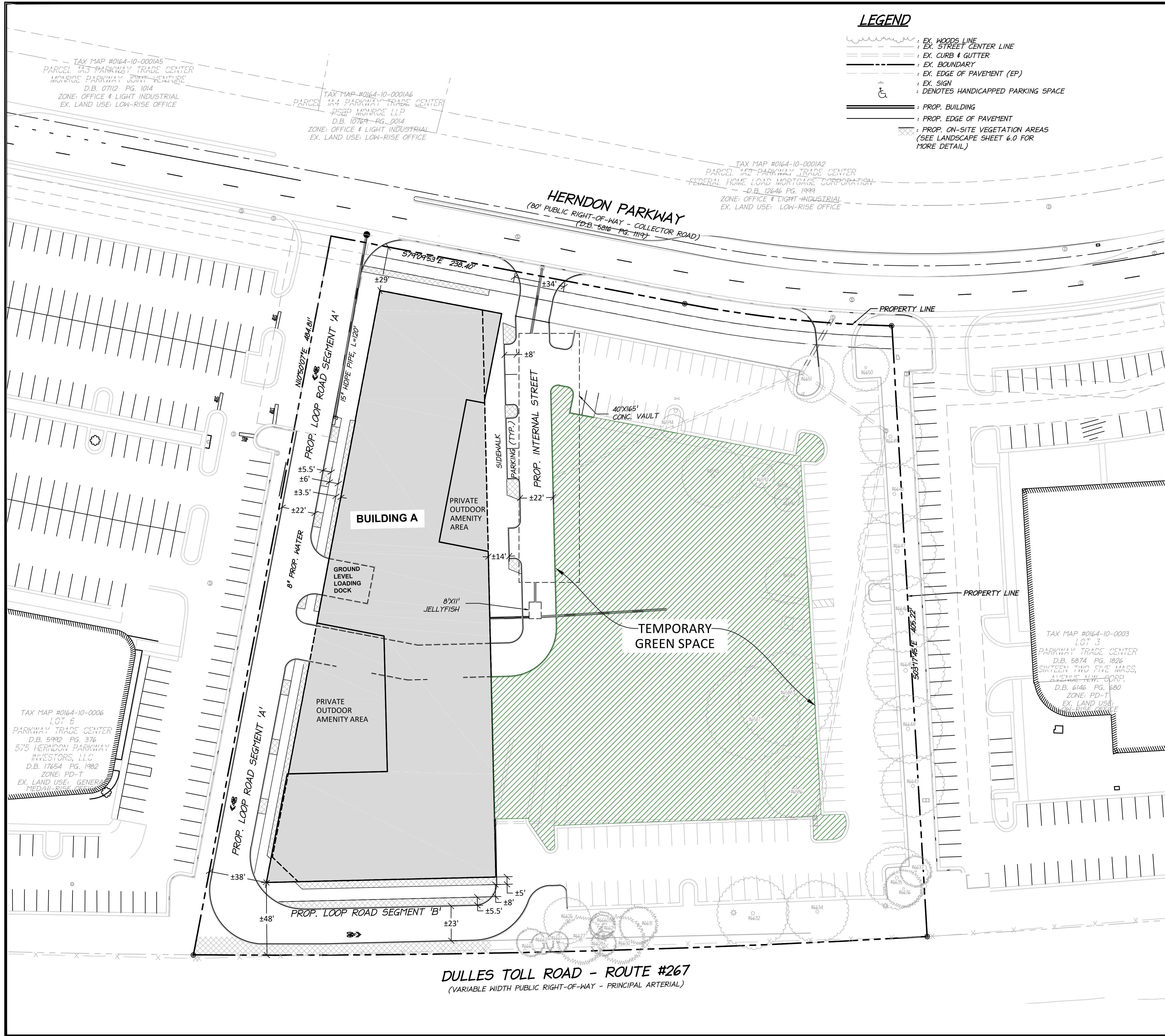
DESIGN: JR, WR

CHECKED:
SHEET No.

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LEGEND

- EX. WOODS LINE
- EX. STREET CENTER LINE
- EX. CURB & GUTTER
- EX. BOUNDARY
- EX. EDGE OF PAVEMENT (EP)
- EX. SIGN
- DENOTES HANDICAPPED PARKING SPACE
- PROP. BUILDING
- PROP. EDGE OF PAVEMENT
- PROP. ON-SITE VEGETATION AREAS (SEE LANDSCAPE SHEET 6.0 FOR MORE DETAIL)

**ZONING TABULATION REQUIREMENTS
PD-TOC**

ZONING REGULATIONS REQUIREMENTS (AS PER ZO SEC. 78-50.8):

MINIMUM LOT SIZE:
NO REQUIREMENT

DENSITY:
FLOOR AREA RATIO (FAR): 4.3 FAR

OPEN SPACE: NO MINIMUM REQUIRED

BUILDING SETBACKS:
HERNDON PARKWAY: NO MINIMUM REQUIRED
DULLES TOLL ROAD: 40' FROM DULLES TOLL ROAD ROW

BUILDING TOWER SEPARATION:
65' MIN. BETWEEN RESIDENTIAL BLDG. TOWERS ABOVE 80'
50' MIN. BETWEEN NONRESIDENTIAL BLDG. TOWERS ABOVE 80'

ACCESS DRIVE:
MIN. 40' WIDE FROM BLDG. FACADE TO BLDG. FACADE

BUILDING HEIGHT:
275' INCLUSIVE OF PARKING LEVELS

PARKING:

RESIDENTIAL: **LONG-TERM USE**
1.0 SPACE/DWELLING UNIT
BICYCLE
0.75 SPACES/DWELLING UNIT

RETAIL: **LONG-TERM USE**
1.25 SPACES/1,000 GROSS FLOOR AREA (GFA)
BICYCLE
0.25 SPACES/1,000 GROSS FLOOR AREA (GFA)

OFFICE: **LONG-TERM USE**
2.0 SPACES/1,000 GFA
BICYCLE
0.20 SPACES/1,000 GROSS FLOOR AREA (GFA)

PARKING SPACE DIMENSIONS:
90 DEGREE: 8.5'x18'
PARALLEL: 8'x20'

LOADING SPACES:
MULTI-FAMILY: 1 SPACE PER 200 UNITS OR FRACTION THEREOF
OFFICE: 1 SPACE PER 6,000 GFA (SF)
RETAIL: 1 SPACE FOR 3,000-14,999 GFA (SF)
2 SPACES FOR 15,000-49,999 GFA (SF)
3 SPACES FOR 50,000-99,999 GFA (SF)

LOADING SPACE DIMENSIONS:
17' WIDE X 25' LONG X 14' HIGH

TREE COVER:
NO MINIMUM TREE COVER REQUIREMENT
ONE (1) SHADE TREE REQ'D PER EVERY TWELVE (12)
UNCOVERED SURFACE PARKING SPACES. (NOT SUBJECT TO
DEVELOPMENT PLANS AS PER SECT. 78-50.8.J.(1))

**PROPOSED ZONING TABULATION
PD-TOC**

PROPOSED BUILDING A

DENSITY:
RETAIL (GSF) ±5,500
RESIDENTIAL L.R. (GSF) ±207,000
TOTAL ±212,500

OPEN SPACE:
PUBLIC OPEN SPACE: ±83,000 SF
PRIVATE OPEN SPACE: ±7,000 SF
TOTAL OPEN SPACE: ±90,000 SF

BUILDING SETBACKS:
HERNDON PARKWAY: ±29' FROM HERNDON PARKWAY ROW
DULLES TOLL ROAD: ±48' FROM DULLES TOLL ROAD ROW

BUILDING HEIGHT:
MAXIMUM 225' ALONG HERNDON PARKWAY SIDE
MAXIMUM 275' ALONG DULLES TOLL ROAD SIDE

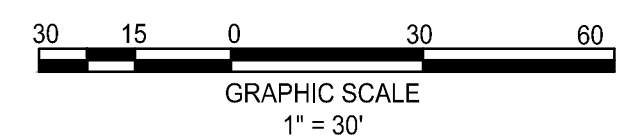
PROVIDED PARKING:
SURFACE SPACES (EXISTING): 145 STANDARD SPACES
SURFACE SPACES (PROPOSED): UP TO ±2 STANDARD SPACES
UP TO ±5 PARALLEL SPACES

GARAGE SPACES (PROPOSED): UP TO ±265 SPACES
TOTAL SPACES PROVIDED: UP TO ±417 SPACES

LOADING SPACES (PROPOSED): 1

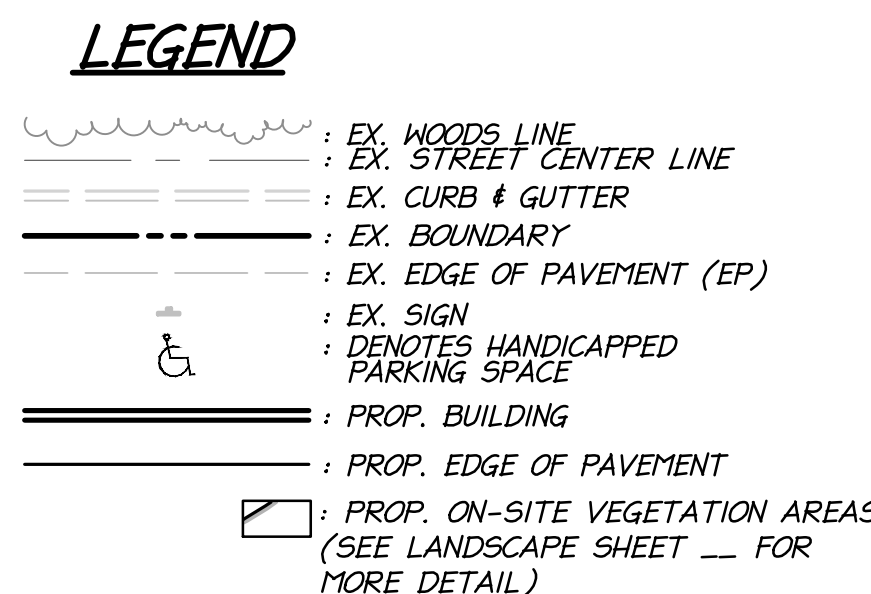
NOTES:

- THE PROPOSED BUILDING IS SHOWN AT THE PODIUM LEVEL. THE REMAINDER OF THE SITE IS SHOWN AT GROUND LEVEL.
- THIS PROJECT WILL BE DEVELOPED IN UP TO THREE PHASES, SUBJECT TO MARKET CONDITIONS AND TO MEET MARKET DEMAND. THE FIRST PHASE MAY CONSIST OF INFRASTRUCTURE AND A RESIDENTIAL BUILDING. ADDITIONAL INFRASTRUCTURE TO BE PROVIDED IN FUTURE PHASES AS NEEDED. SEE SHEETS 5.2 AND 5.3 FOR INTERIM DEVELOPMENT CONDITIONS OF BUILDING B AND C RESPECTIVELY.



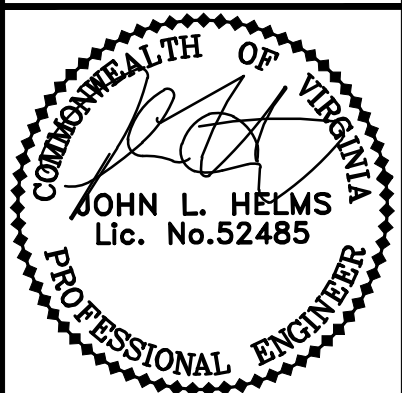
30 15 0 30 60
GRAPHIC SCALE
1" = 30'

103228



NOTE:
1. GARAGE DESIGN IS CONCEPTUAL AND CAN BE MODIFIED AT TIME OF SITE PLAN FOR EACH BUILDING PHASE ON THE CONDITION THAT THE MINIMUM REQUIRED RATE FOR EACH USE IS PROVIDED.

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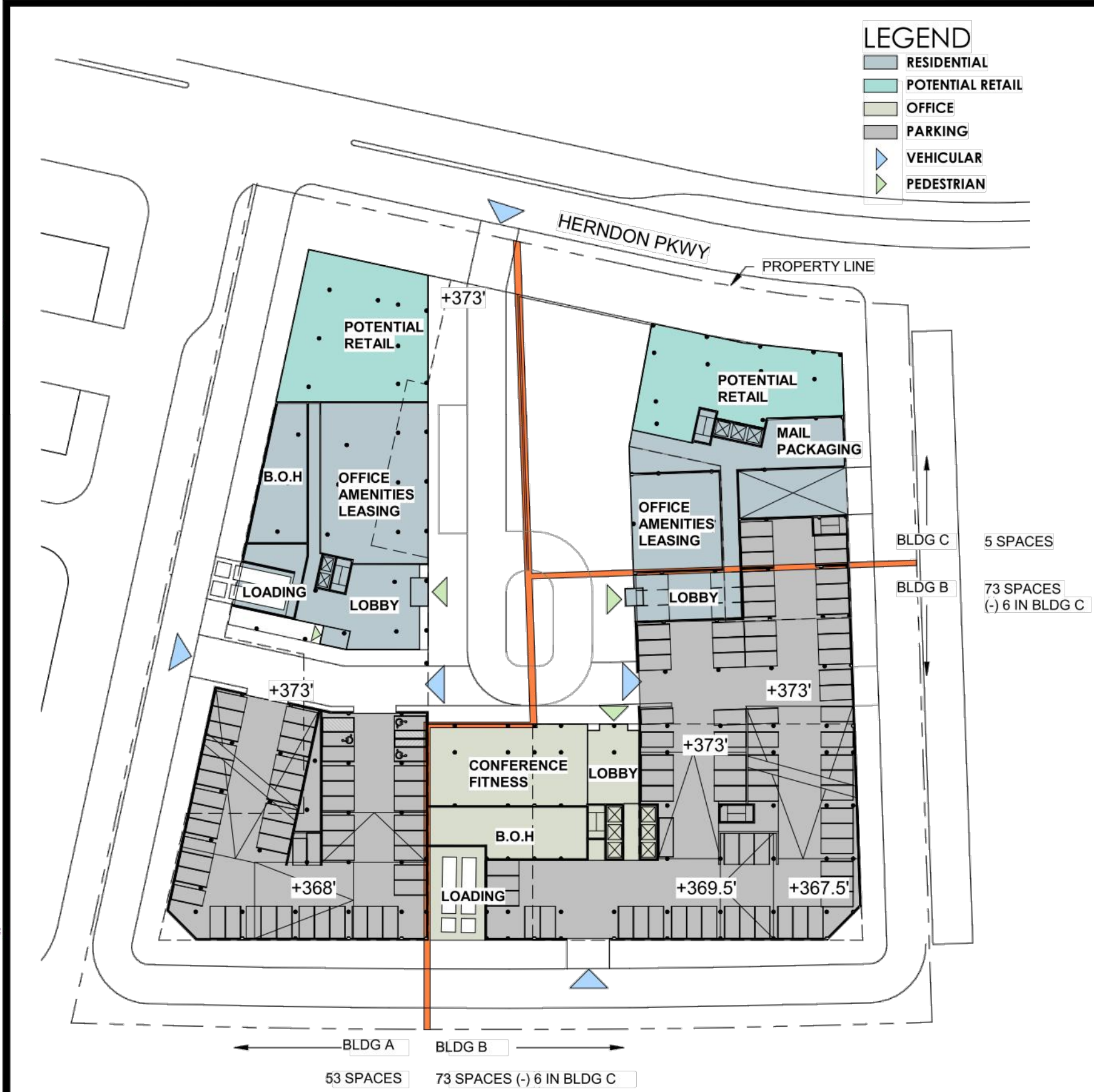
ILLUSTRATIVE
PARKING PLAN

DEVELOPMENT PLAN
555 HERNDON PARKWAY
TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00
SCALE: AS NOTED
DATE: 08-08-2018
DESIGN: DCS
DRAWN: DCS
CHECKED:
SHEET No.

14.0 OF 22.0

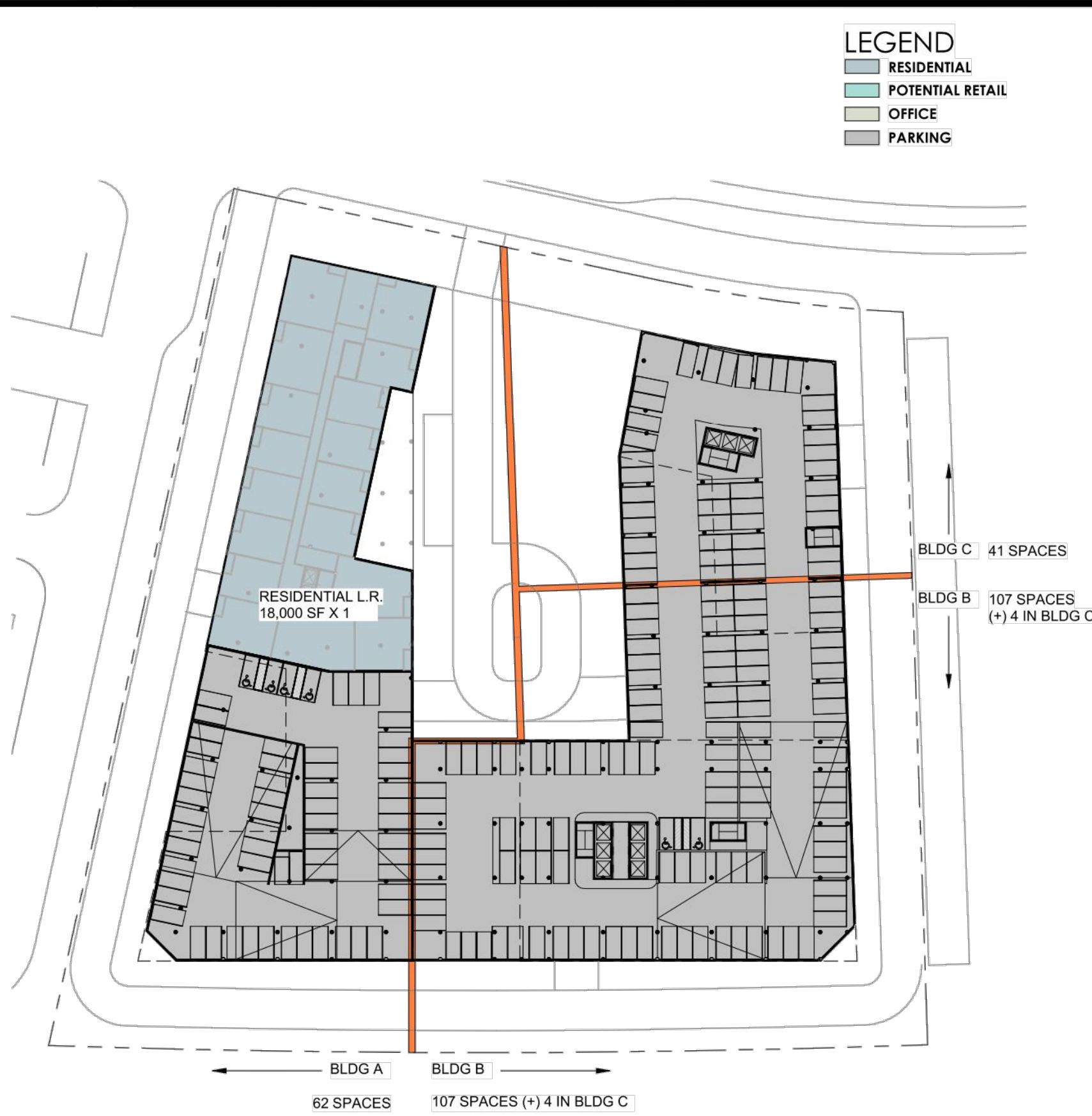
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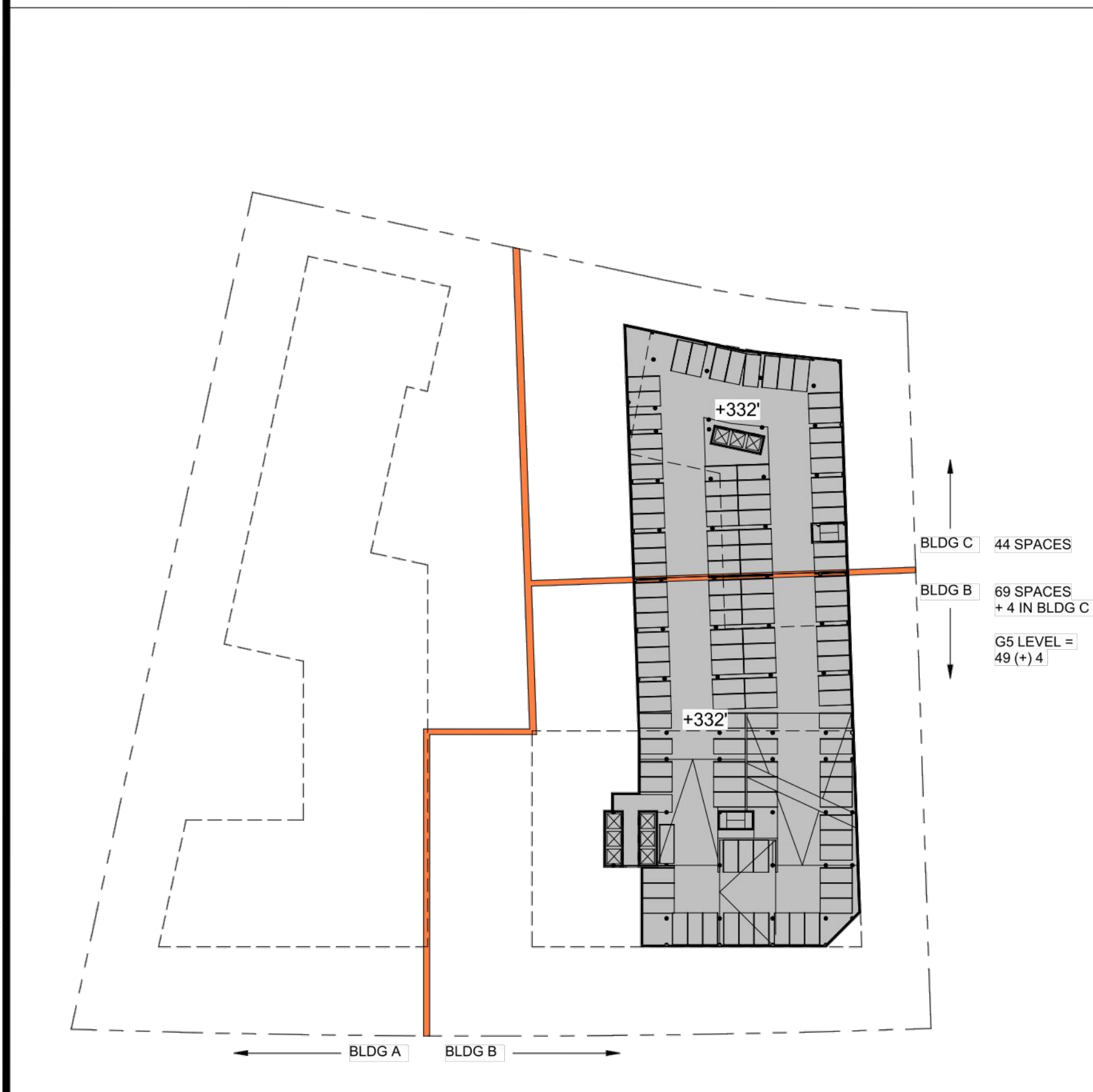
PLAZA / P1 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



P2 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



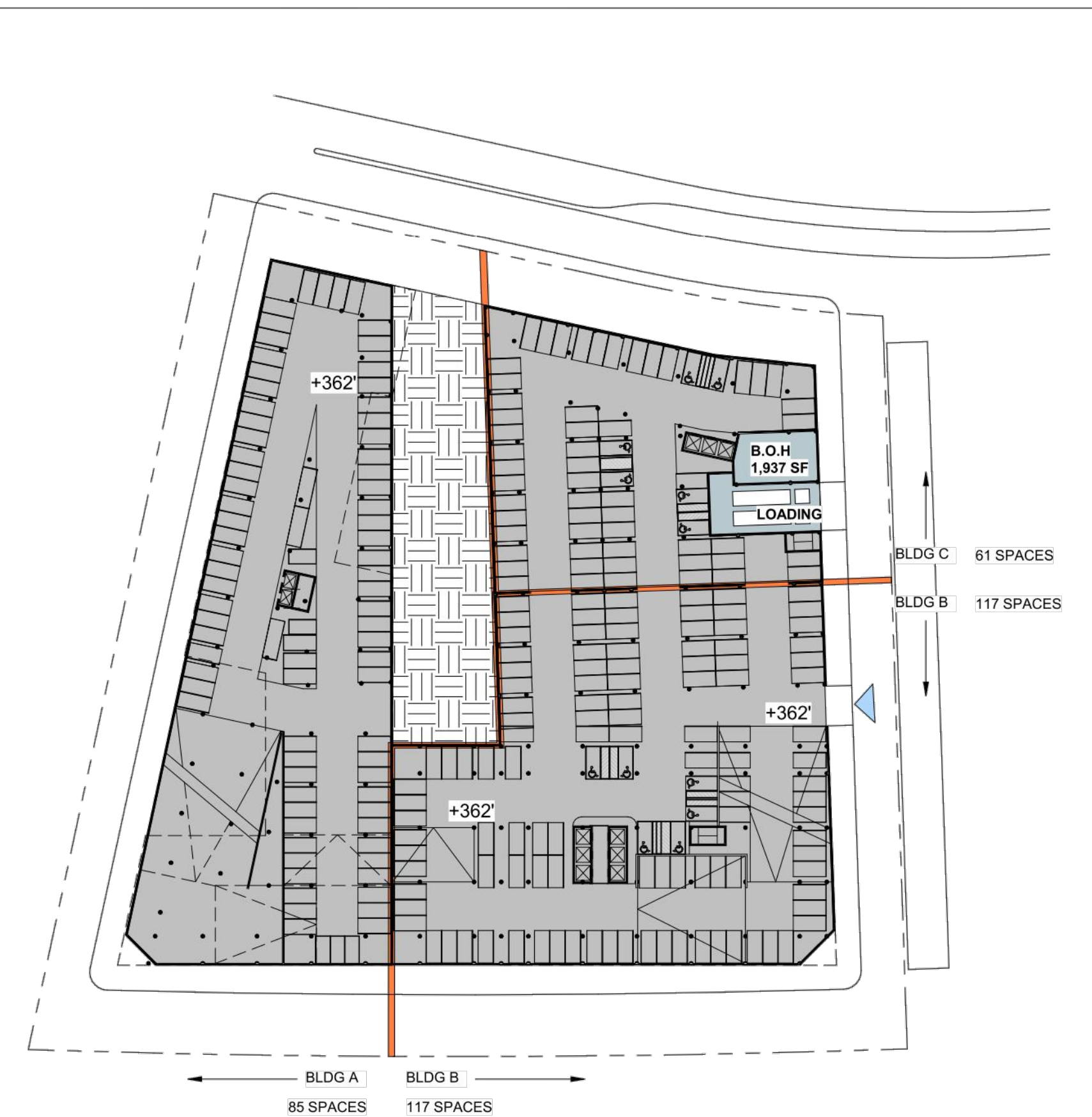
P3 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



G5, G4 & G3 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



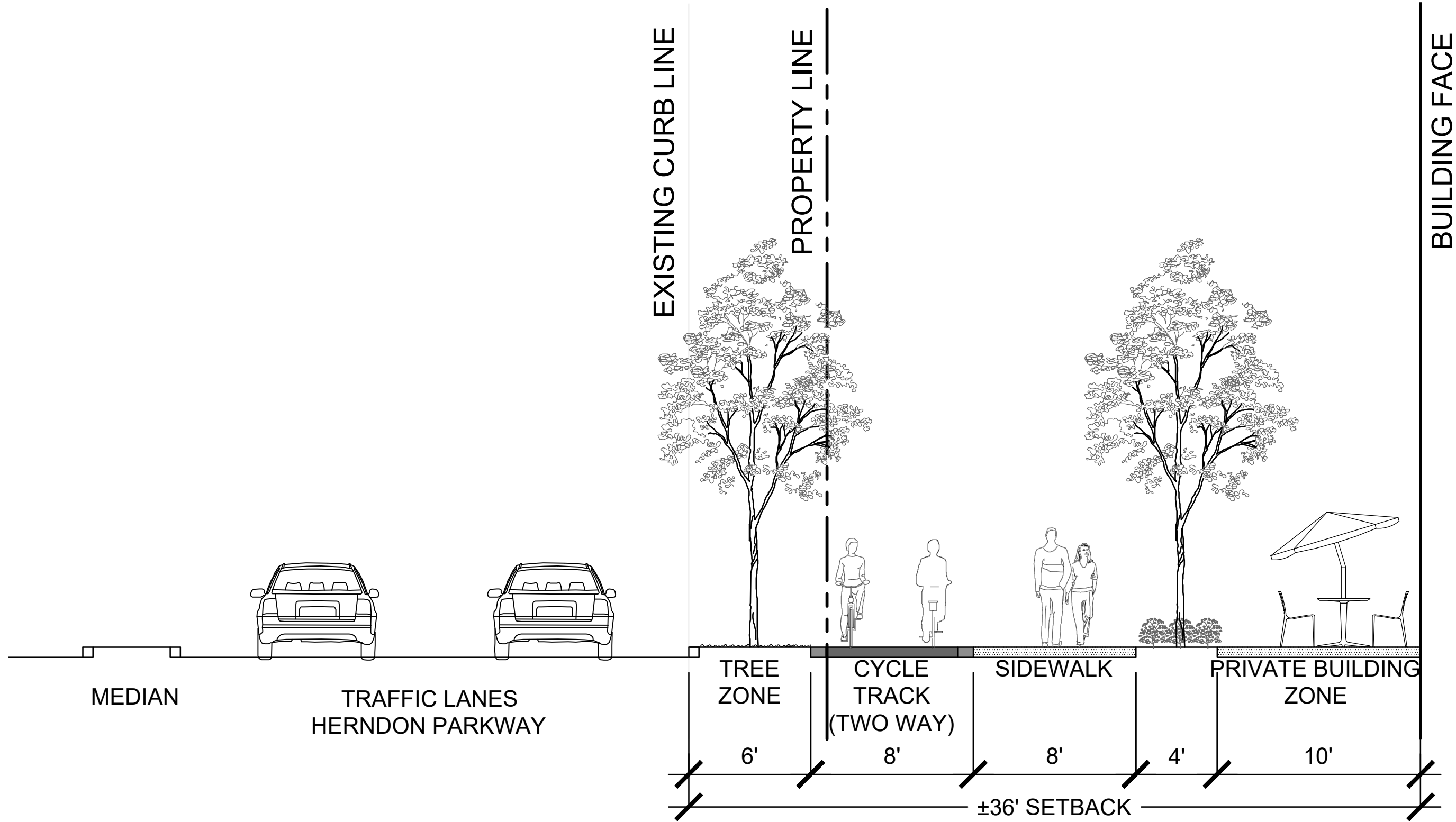
G2 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"



G1 LEVEL FLOOR PLAN SCALE: 1" = 60'-0"

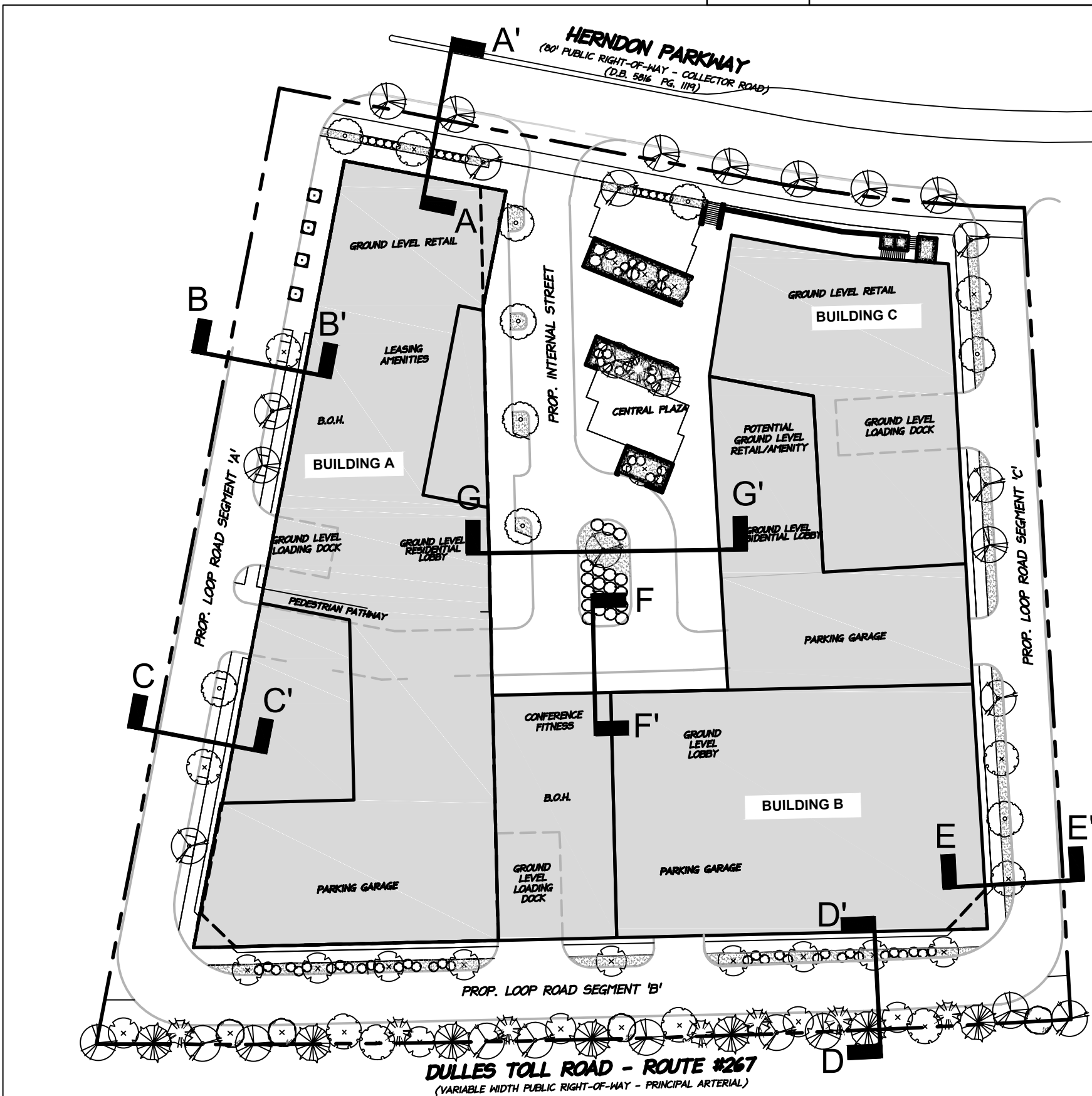
VCS 1983 GRID NORTH

DATE	REVISION
07/17/2018	TOWN OF HERNDON COMMENTS 07/12/17
11/19/2018	TOWN OF HERNDON COMMENTS 10/12/18

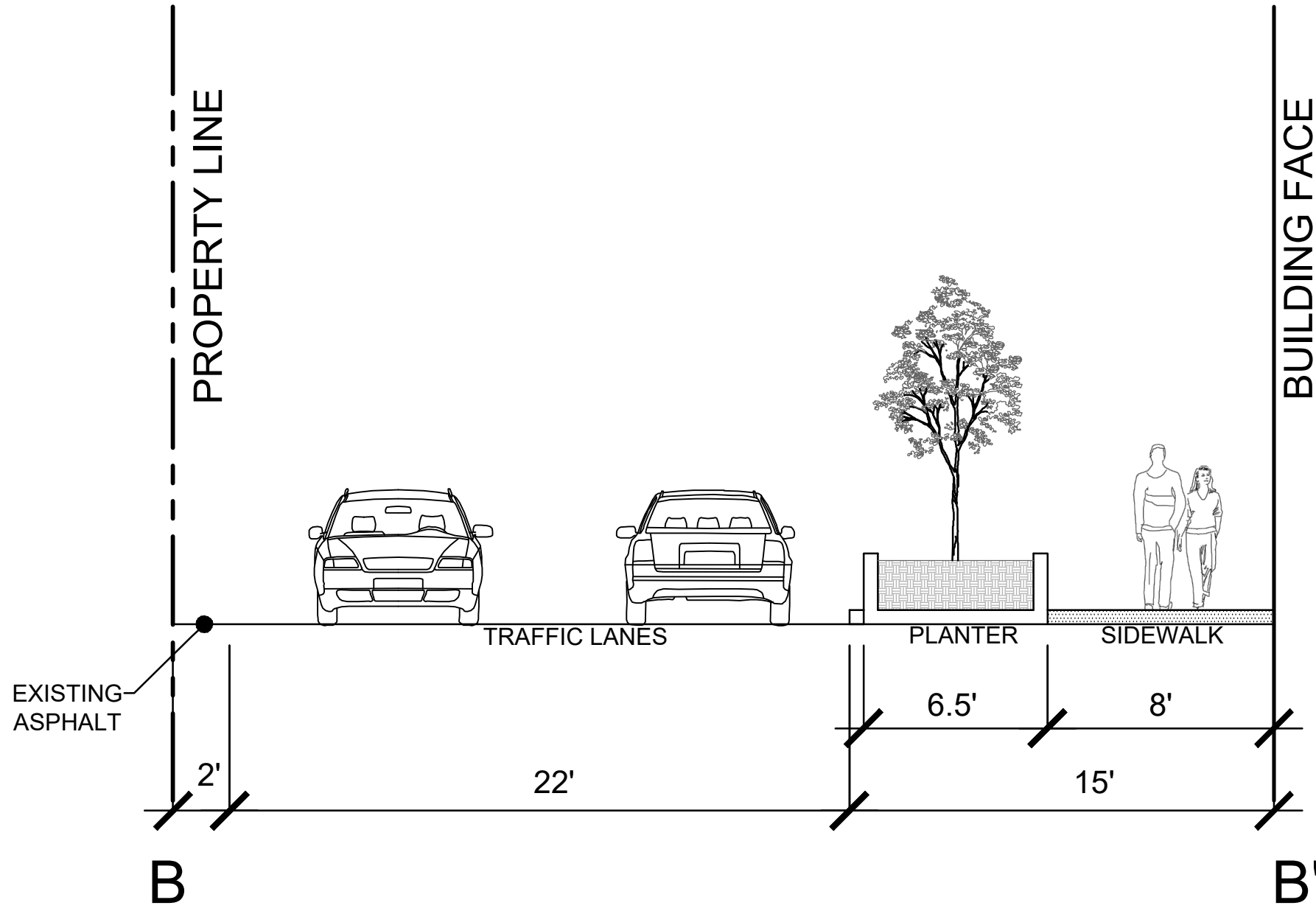


A'

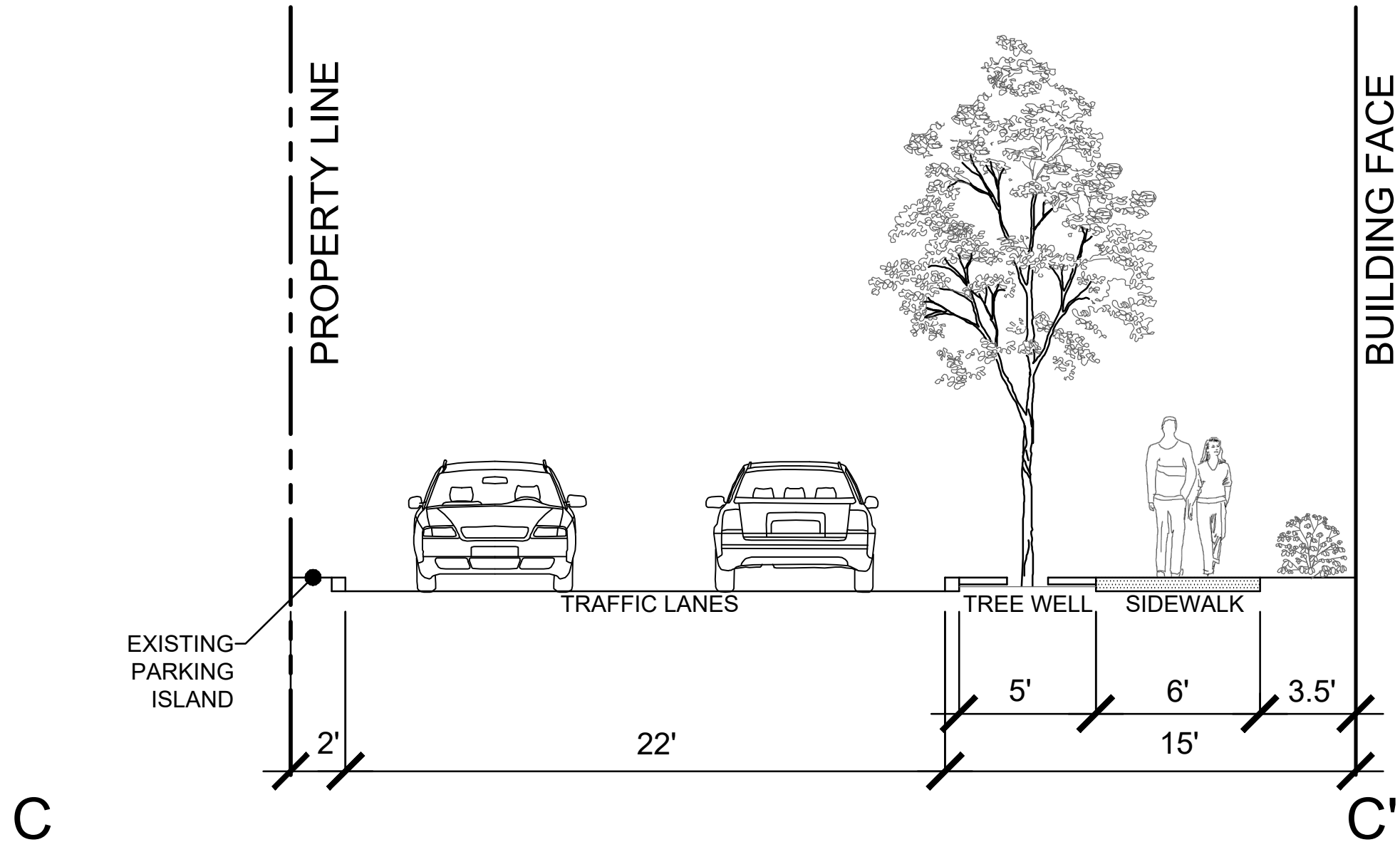
HERNDON PARKWAY STREETSCAPE - SECTION A'-A



KEY PLAN



PROPOSED LOOP ROAD SEGMENT "A" - SECTION B-B'



PROPOSED LOOP ROAD SEGMENT "A" - SECTION C-C'

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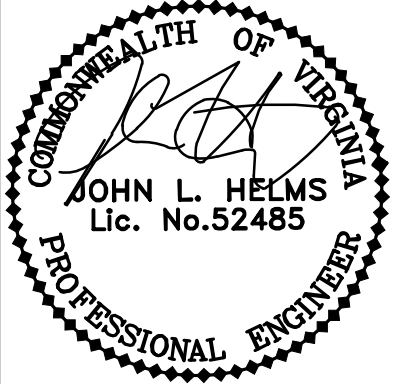

PENZANCE


christopher consultants


dcs DESIGN


GOROVE / SLADE
 Transportation Planners and Engineers

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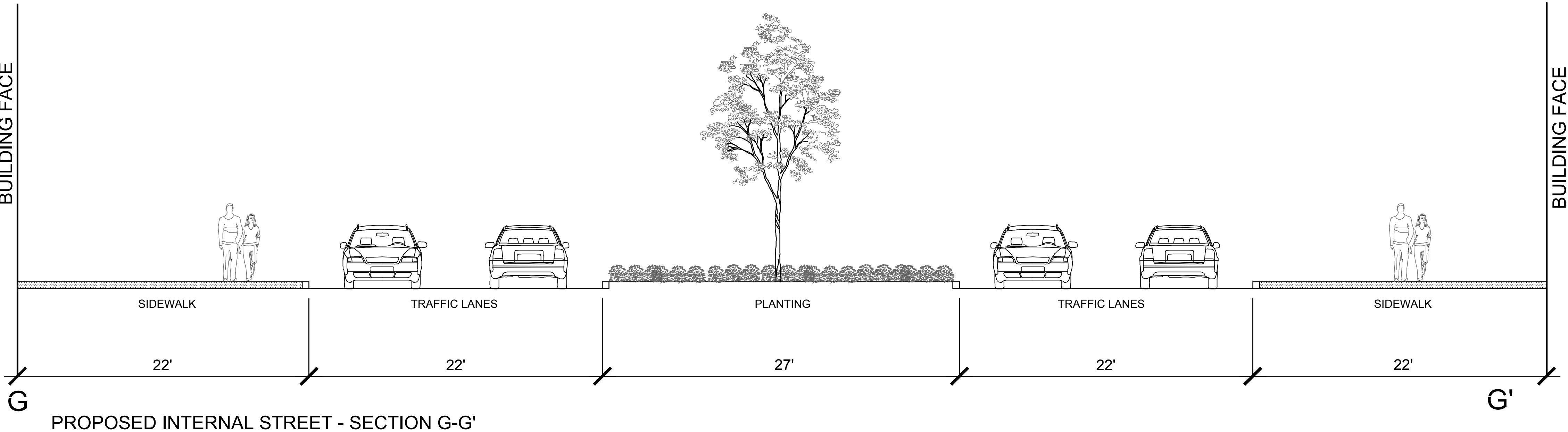
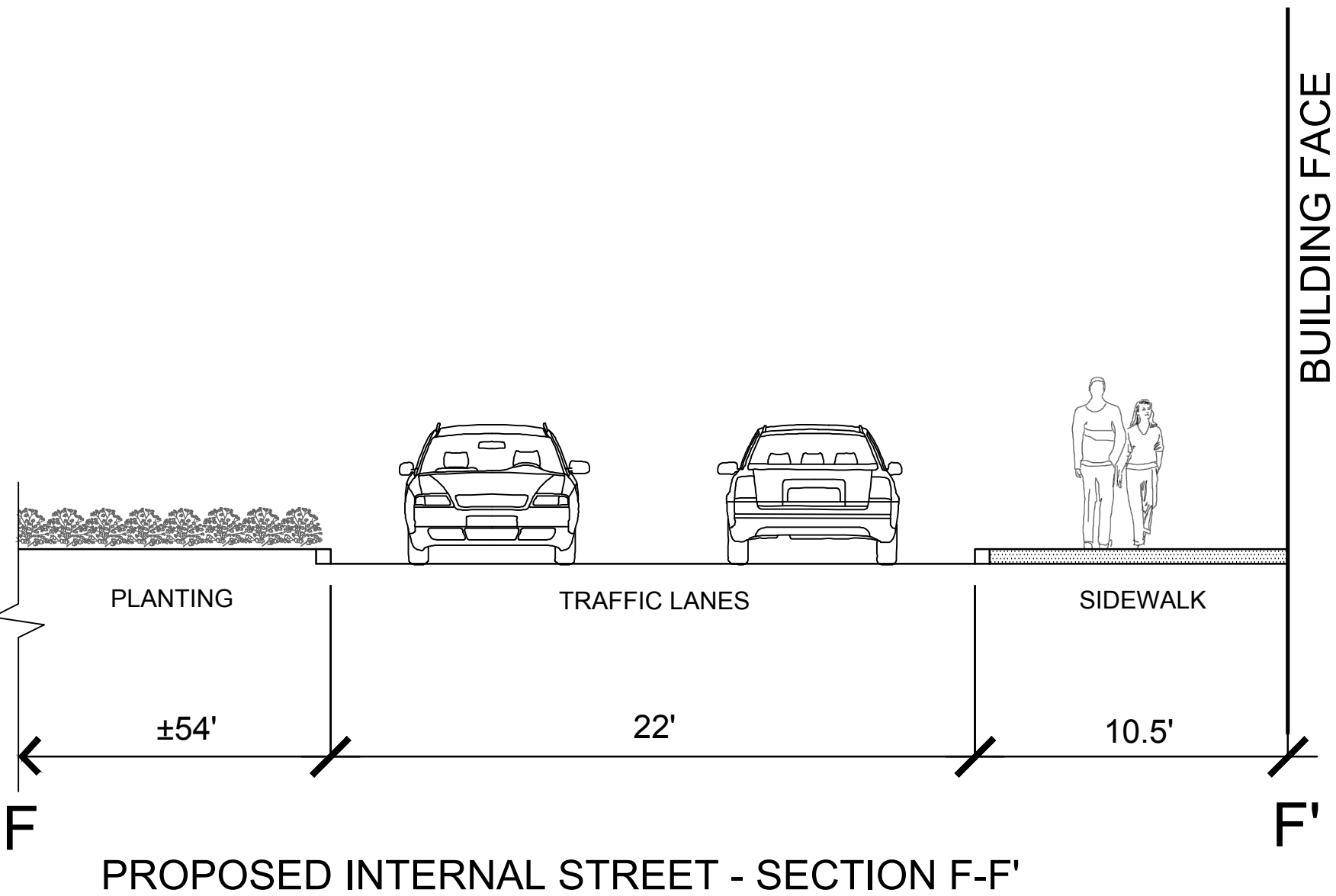
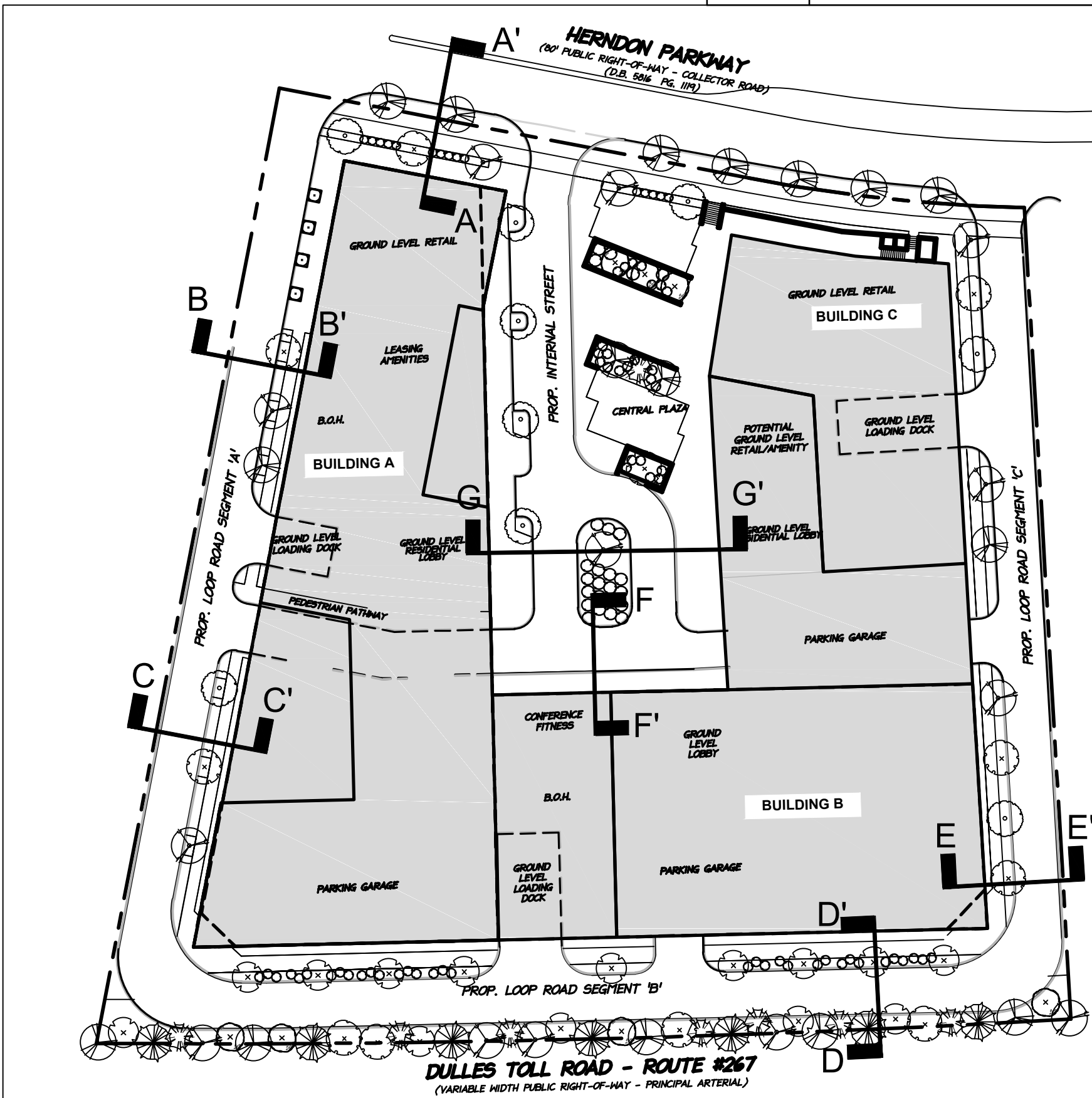
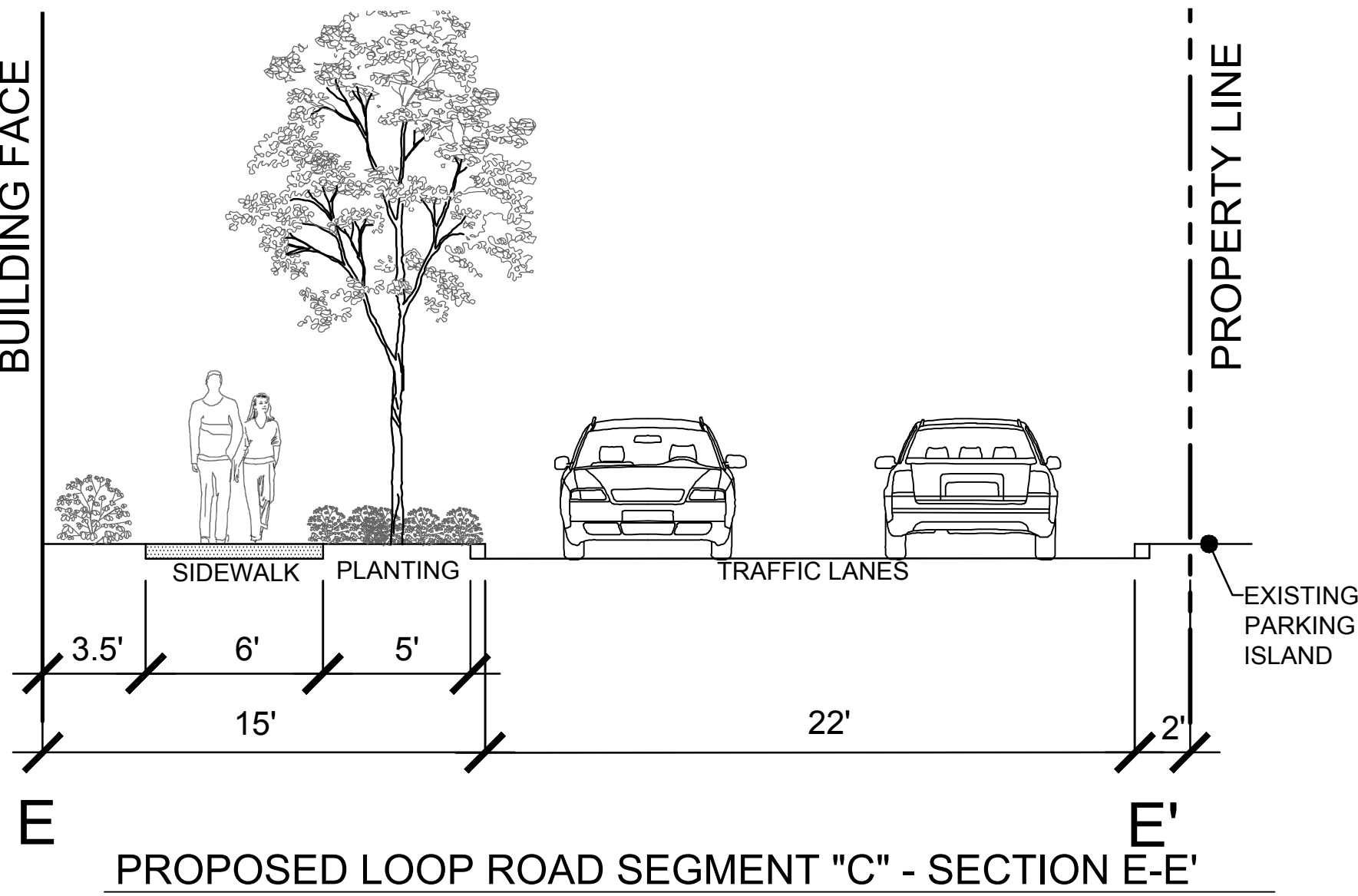
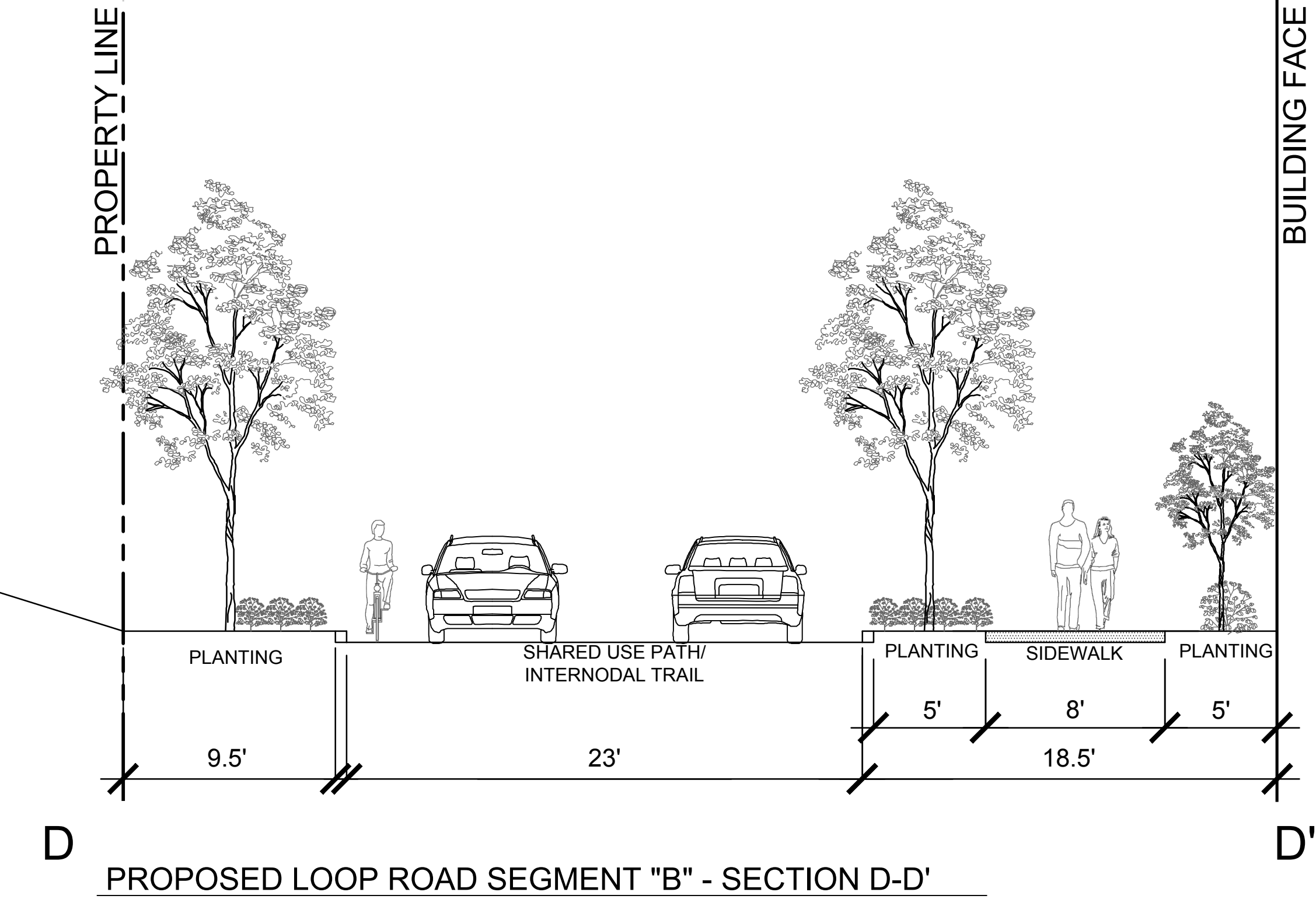


INTERNODAL TRAIL/
 PROP. INTERNAL STREET/
 PROP. LOOP ROAD B & C
 CROSS SECTIONS

DEVELOPMENT PLAN
555 HERNDON PARKWAY
 TOWN OF HERNDON, VIRGINIA

PROJECT NO: 15002.001.00
SCALE: N.T.S.
DATE: 08-08-2018
DESIGN: WJR
DRAWN: WJR
CHECKED:
SHEET No.

18.1 OF 22.0
 103228



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STAFF REPORT
Planning Commission
January 14, 2019

Title:

ZONING ORDINANCE TEXT AMENDMENT - ZOTA #18-06, to amend and reenact Chapter 78 (ZONING), Article V (Planned Development Districts), Section 78-50.7 (Planned Development Traditional Downtown District), Article VII (Use Regulations), Section 78-71.6 (Eating Establishments Use Category), Article XI (Development Standards), Section 78-110.2 (Planting Standards for Landscaping), to make housekeeping changes for internal consistency.

Staff Contact:

David Stromberg, AICP, Zoning Administrator
(703) 787-7380
David.stromberg@herndon-va.gov

Summary:

This is part of the ongoing process to eliminate inconsistencies, errors, or obsolete provisions of the Zoning Ordinance in order to increase clarity and administrative efficiency.

Description:

Section 78-50.7 - PD-TD

This section contains the provisions for establishing a planned development in Herndon's downtown. Development or redevelopment under the provisions of Section 78-50.7 may only occur subject to a zoning map amendment and generalized development plan process. PD-TD was adopted on January 8, 2013. Prior to this date, all planned developments in the downtown were designated as PD-D, or prior to that, PD-MU.

The PD-D and PD-MU planned development districts specified a FAR (floor area ratio) of 0.7 to 2.5 in certain sectors of the downtown. In order to develop at the

maximum FAR, the HPRB (Heritage Preservation Review Board) was required to verify compliance with the Heritage Preservation Handbook prior to the Planning Commission public hearing.

PD-TD does not prescribe a maximum FAR. Density is designed to be flexible based on the proposed development, whether parking is provided for in surface lots or structured parking, and other physical factors of the parcel(s) in question. Any proposed development is required to comply with the Downtown Pattern Book and other adopted regulatory plans.

The former language from PD-D and PD-MU regarding the allowance of increased FAR was erroneously carried over into the PD-TD district. As there is no maximum density prescribed for PD-TD, the provision allowing for an increase in density is nonsensical and is proposed to be deleted.

Section 78-71.6 – Eating Establishments

This section of the ordinance details the characteristics of what is classified as an “Eating Establishment” use in the Zoning Ordinance. Outdoor seating areas are permitted as an accessory use to an eating establishment provided certain provisions are met. The language in this section further describes outdoor seating areas as an area of 25 seats or fewer.

Prior to 2013 eating establishments with outdoor seating of 25 seats or fewer were allowed by-right and any outdoor seating over 25 required a special exception. These standards were changed in 2013 to allow outdoor seating of any number to be permitted but required that additional parking be added for any outdoor seating area of greater than 32 seats. These provisions are in Section 78-80.4(n).

The language in Section 78-71.6 limiting outdoor seating to 25 seats is an error and the proposal is to delete this language. All other provisions regulating outdoor seating areas are not proposed to be altered and will remain in effect.

Section 78-110.2 – Planting Standards for Landscaping

This section contains the landscaping requirements for development and redevelopment in the town. The section proposed to be deleted is the one that requires all invasive plant species to be removed prior to the issuance of a ZIP (Zoning Inspection Permit). Several years ago, a ZIP was required for any new

development. Under current procedures, landscape compliance is conducted as part of the overall site inspection process for site plans and a separate ZIP is not issued. This is part of the effort between CD and DPW to provide consolidated comments rather than requiring a variety of approvals before a Certificate of Occupancy can be issued. Property owners will still be required to remove alien or invasive species.

Alternatives:

1. Recommend approval of ZOTA #18-06.
2. Continuation of review to the February Planning Commission public hearing to address any issues raised by the commission.
3. Recommend denial of ZOTA #18-06.

Recommendation:

Staff recommends approval in accordance with Alternative #1.

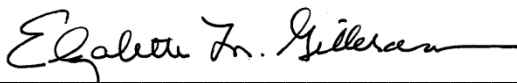
Attachments:

1. Draft Ordinance
2. Initiating Resolution

Staff:



David Stromberg
Zoning Administrator



Elizabeth M. Gilleran,
Director of Community Development

TOWN OF HERNDON, VIRGINIA

ORDINANCE

_____, 2019

Ordinance- to amend and reenact Chapter 78 (ZONING), Article V (Planned Development Districts), Section 78-50.7 (Planned Development Traditional Downtown District), Article VII (Use Regulations), Section 78-71.6 (Eating Establishments Use Category), Article XI (Development Standards), Section 78-110.2 (Planting Standards for Landscaping), to make housekeeping changes for internal consistency.

BE IT ORDAINED by the Council for the Town of Herndon that:

1. Chapter 78 (ZONING) of the Herndon Town Code is amended and reenacted as follows.

Sec. 78-50.7 – PD-TD – Planned Development Traditional Downtown District.

- (h) *Site planning and building design in PD-TD.* Sites and buildings within the PD-TD district shall meet the following standards:

- (5) *HPRB review required for increased FAR.* Site and building design shall comply with guidelines in the Herndon Heritage Preservation Handbook as determined by the HPRB prior to the planning commission public hearing *in accordance with Section 78-155.1(h)(2)* when the increased floor area ratio is considered.

Sec. 78-71.6 – Eating Establishments Use Category.

- (a) *Characteristics .* The eating establishments use category is characterized by establishments that sell prepared food for on- or off-premises consumption. Outdoor eating areas are permitted in accordance with section 78-80.4(n); outdoor seating area of 25 seats or fewer, accessory to an enclosed restaurant with indoor seating. Drive through lanes associated with the eating

establishment are permitted in accordance with section 78-80.4(j), drive-through service accessory to a retail pharmacy, financial institution, laundry, eating establishment or other principal commercial use. See also Article XVIII, Definitions. Drive-in (not drive-through) window service is a term used to describe an establishment designed or operated to serve a patron while seated in an automobile parked in an off-street parking space. Drive-in window service is permitted with a special exception in this use category.

Sec. 78-110.2 – Planting Standards for Landscaping.

- (a) *Planting standards.* Plantings required by this section shall comply with the following standards, unless otherwise specified herein.

- (2) *Existing vegetation.* Existing vegetation shall be subject to the following standards:

a. Existing healthy, well-formed canopy and under story trees, as well as healthy shrubs, shall be credited toward the requirements of this section, provided the vegetation is protected before and during development of the site and maintained thereafter in a healthy growing condition *in accordance with (see s Section 78-111.4, tree preservation credit.) All alien or invasive species, as determined by the community forester, shall be removed by the applicant.*

~~b. Prior to issuance of a zoning inspection permit, the applicant shall remove all alien, invasive plants from the property.~~

2. This ordinance shall be effective on and after the date of its adoption.

TOWN OF HERNDON, VIRGINIA

RESOLUTION

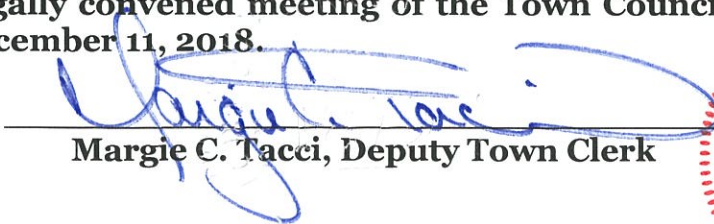
DECEMBER 11, 2018

Resolution- to initiate consideration of a zoning ordinance text amendment ZOTA #18-06, Chapter 78 (ZONING), Article V (Planned Development Districts), Section 78-50.7 (Planned Development Traditional Downtown District), Article VII (Use Regulations), Section 78-71.6 (Eating Establishments Use Category), Article XI (Development Standards), Section 78-110.2 (Planting Standards for Landscaping), to make housekeeping changes for internal consistency.

NOW, THEREFORE, BE IT RESOLVED that the Town Council of the Town of Herndon, Virginia, hereby:

1. Initiates consideration of an amendment to the Town of Herndon Zoning Ordinance (2007), Chapter 78, to amend sections of the Zoning Ordinance for internal consistency.
2. Requires out of public necessity, convenience, general welfare, or good planning practice requires the Town Council's consideration of this proposed amendment.

This is certified to be a true and accurate copy of Resolution 18-G-68 adopted at a legally convened meeting of the Town Council of the Town of Herndon on December 11, 2018.


Margie C. Tacci, Deputy Town Clerk

Attached for reference is the proposed draft ordinance.





STAFF REPORT

**Planning Commission
January 14, 2019**

Title:

COMPREHENSIVE PLAN AMENDMENT CPA #18-02 – Establish a Design Concept for Street Improvements on Elden Street, between Sterling Road and Herndon Parkway. Amend the Town of Herndon 2030 Comprehensive Plan adopted August 12, 2008 as amended through January 13, 2015 to establish a design concept for street improvements on South Elden Street, between Sterling Road and Herndon Parkway, and incorporate by reference the Design Concept by AECOM transportation consultants (dated November 30, 2017, revised June 15, 2018).

Staff Contact:

Michael Wallick, Transportation Planner
(703) 787-7380
Michael.Wallick@herndon-va.gov

Dana Heiberg, Senior Planner
(703) 787-7380
Dana.Heiberg@herndon-va.gov

Summary:

This comprehensive plan amendment was initiated by the Town Council on November 13, 2018 by Resolution 18-G-63. This is a limited plan amendment establishing a design concept for street improvements on South Elden Street, between Sterling Road and Herndon Parkway. This plan amendment does not affect the base land use that is planned for any property within the town.

Section 15.2-2223 of the Code of Virginia requires the local planning commission to prepare and recommend a comprehensive plan for adoption by the local governing body. The recommendation is to be in the form of a resolution. The purpose of the comprehensive plan is to guide the present and future physical development of the town to promote the health, safety and welfare of its residents. Section 15.2-2229 states that the governing body shall act within 90 days of the planning commission's recommending resolution on a plan amendment.

Staff Recommendation:

The staff recommends that the Planning Commission approve the attached resolution for CPA #18-02, recommending this minor plan amendment to the Town Council.

Background:

On August 8, 2017, the Town Council authorized an application to the Virginia Office of Intermodal Planning and Investment (OIPI) for a technical assistance grant, totaling \$65,000, to study possible multimodal street improvements on Elden Street, between Sterling Road and Herndon Parkway. The grant was approved and the proposed comprehensive plan amendment reflects the results of the study. The study was overseen by an oversight committee, consisting of Town Council member Signe Friedrichs and Planning Commissioner Michael Romeo, to develop a concept plan. Under the terms of the grant, the Town must adopt policy relating to the work completed under the grant by October 1, 2019, or repay the grant funds to the State.

The resulting study adds a 10 foot wide shared-use path and modifies the existing 5-lane section to a 4-lane section with a raised median and dedicated turning lanes. The purpose of the project is to improve safety and multimodal circulation for drivers, pedestrians, bicyclists, and transit riders for local and regional destinations. Similar to the objectives on East Elden Street Improvement Plan, the concept indicates the intent of the town to reduce conflicting traffic movements and ease the passage of all traffic through the corridor, while increasing safety. The concept is shown in attachment #4. The project is limited to improvements in the vehicular lanes and to the pedestrian environment on the west side of the street. Overhead utility lines lie along the east side of the street and create a greater challenge. The focused attention of the concept makes the most of the limited grant funds available, and makes prospective construction more feasible. However, the oversight committee was concerned about not addressing improvements on the east side of the street.

Therefore, an important aspect of the Committee's discussion was emphasis on the Town, pursuing two separately funded initiatives related to this project within the study area. The first initiative is to improve the existing sidewalk on the east side of Elden Street, between Herndon Parkway and Sterling Road. As stated above, due to right-of-way constraints on the east side of Elden Street, the project calls for pedestrian and bicycle improvements on the west side of the street. The second initiative is to signalize the intersection of Elden Street and the Dulles Park Shopping Center. The Committee's recommendation is based upon need for safe pedestrian crossing in the vicinity of Herndon Middle School and the Dulles Park Shopping Center, and to provide safe vehicular left movements for automobiles at this intersection. Due to unmet signal warrants at this intersection, signalization is not included as part of the concept plan and will be pursued via a separate effort.

Conclusion:

The proposed comprehensive plan amendment consists of the text found in the proposed resolution, attachment 2. It amends the Transportation Chapter, current Page IX-8, and incorporates by reference into the comprehensive plan supporting documents described within the resolution.

As stated above, the staff recommends that the Planning Commission approve the attached resolution for CPA #18-02. The staff finds that the proposed plan amendment and supporting documentation accurately reflects the work of the committee and consultant and meets the requirements of the OIPI grant.

Attachments:

1. Location Map
2. Planning Commission Recommending Resolution for CPA #18-02, January 28, 2019
3. Town Council Initiating Resolution for CPA #18-02, November 13, 2018
4. The Design Concept by AECOM (dated November 30, 2017, revised June 15, 2018)
5. Traffic Operations Technical Memorandum South Elden Street Corridor Plan Existing and No Build Condition, prepared by AECOM and dated December 22, 2017
6. 2040 Build Scenario Traffic Operations Addendum South Elden Street Corridor Plan, prepared by AECOM and dated July 9, 2018
7. Access Spacing along Elden Street from Herndon Parkway (South) to Sterling Road, prepared by the Department of Community Development

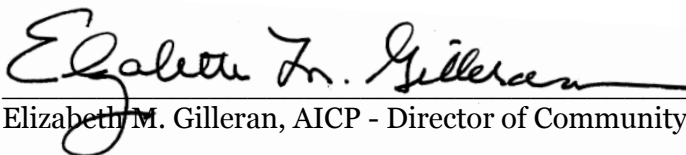
Staff:



Michael Wallick, Planner



Dana Heiberg, Senior Planner



Elizabeth M. Gilleran, AICP - Director of Community Development

Location Map



Case: CPA #18-02

TOWN OF HERNDON, VIRGINIA

RESOLUTION

January 28, 2019

Resolution - CPA #18-02. Recommending and Certifying Comprehensive Plan Amendment #18-02 Establish a Design Concept for Street Improvements on Elden Street, between Sterling Road and Herndon Parkway, to the Town Council of the Town of Herndon, Virginia.

BE IT RESOLVED by the Planning Commission for the Town of Herndon that:

1. On November 13, 2018, the Town Council referred the proposed amendment to the Planning Commission for public hearing and recommendation in accordance with Code of Virginia § 15.2-2229. Amendments.
2. The Planning Commission has reviewed the plan amendment and after public hearing recommends CPA #18-02 to the Town Council. The amendment consists of the following text amendment to the Transportation Chapter, current Page IX-8, as well as supporting documents described below to be incorporated by reference into the comprehensive plan.

6. South Elden Street: (Town Minor Arterial) Herndon Parkway to Sterling Road, improve to divided four lane section. Project study area to encompass Elden Street/Sterling Road and Elden Street/Ferndale Avenue intersections. (CIP) add a shared-use path of eight feet in width & improve the existing 5-lane section to be a 4-lane section with 11 foot wide travel lanes and a raised median and protected turning lanes. To increase visibility and safety to pedestrian crossings, enhanced crosswalks are to be added at the intersections of Elden Street and Alabama Drive, the intersection at Dulles Park Shopping Center, and the intersection of Elden Street at Sterling Road. The eight foot wide shared-use path is to be located on the western side of Elden Street and is to run from Sterling Road to Herndon Parkway.

3. CPA #18-02 amends the Town of Herndon 2030 Comprehensive Plan adopted August 12, 2008, as amended through January 13, 2015 to establish a design concept for street improvements on Elden Street, between Sterling Road and Herndon Parkway, and incorporate by reference:
 - a. The Design Concept by AECOM (dated November 30, 2017, revised June 15, 2018)
 - b. Traffic Operations Technical Memorandum South Elden Street Corridor Plan Existing and No Build Condition, prepared by AECOM and dated December 22, 2017
 - c. 2040 Build Scenario Traffic Operations Addendum South Elden Street Corridor Plan, prepared by AECOM and dated July 9, 2018
 - d. The conceptual access management plan prepared by the Department of Community Development and shown as attachment 7 to the staff report of January 14, 2019
4. Based upon outcomes of the OIPI (Grant Oversight Committee which met in 2018), the town shall pursue two separately funded initiatives related to this project within the study area:
 - a. Signalize the intersection of Elden Street and the Dulles Park Shopping Center.
 - b. Improve the existing sidewalk on the east side of Elden Street, between Herndon Parkway and Sterling Road.
5. This resolution shall be effective on and after its date of adoption.

TOWN OF HERNDON, VIRGINIA

RESOLUTION

NOVEMBER 13, 2018

Resolution– to initiate consideration of comprehensive plan amendment CPA #18-02, to establish a design concept for street improvements on Elden Street, between Sterling Road and Herndon Parkway.

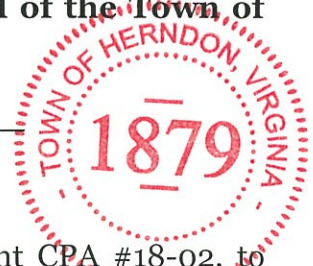
BE IT RESOLVED by the Town Council for the Town of Herndon, Virginia, that:

1. The Town Council initiates consideration of the requested comprehensive plan amendment in accordance with Sec. 78-200.2. Planning Commission, Town of Herndon Zoning Ordinance (2007).
2. The Town Council requests the review of the Planning Commission within 90 days and refers the proposed amendment to the Planning Commission for recommendation in accordance with Code of Virginia § 15.2-2229. Amendments.
3. Public necessity, convenience, general welfare, or good zoning practice requires the Town Council's consideration of this proposed measure.

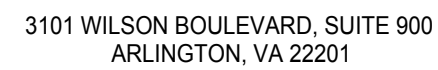
This is certified to be a true and accurate copy of Resolution 18-G-63 adopted at a legally convened meeting of the Town Council of the Town of Herndon on November 13, 2018.



Margie C. Tacci, Deputy Town Clerk



Attached for reference is the draft Comprehensive Plan Amendment CPA #18-02, to establish a design concept for street improvements on Elden Street, b/n Sterling Road and the Herndon Parkway, Proposed Plan Text, dated November 13, 2018.



WENDEL ENGINEERING, P.C.

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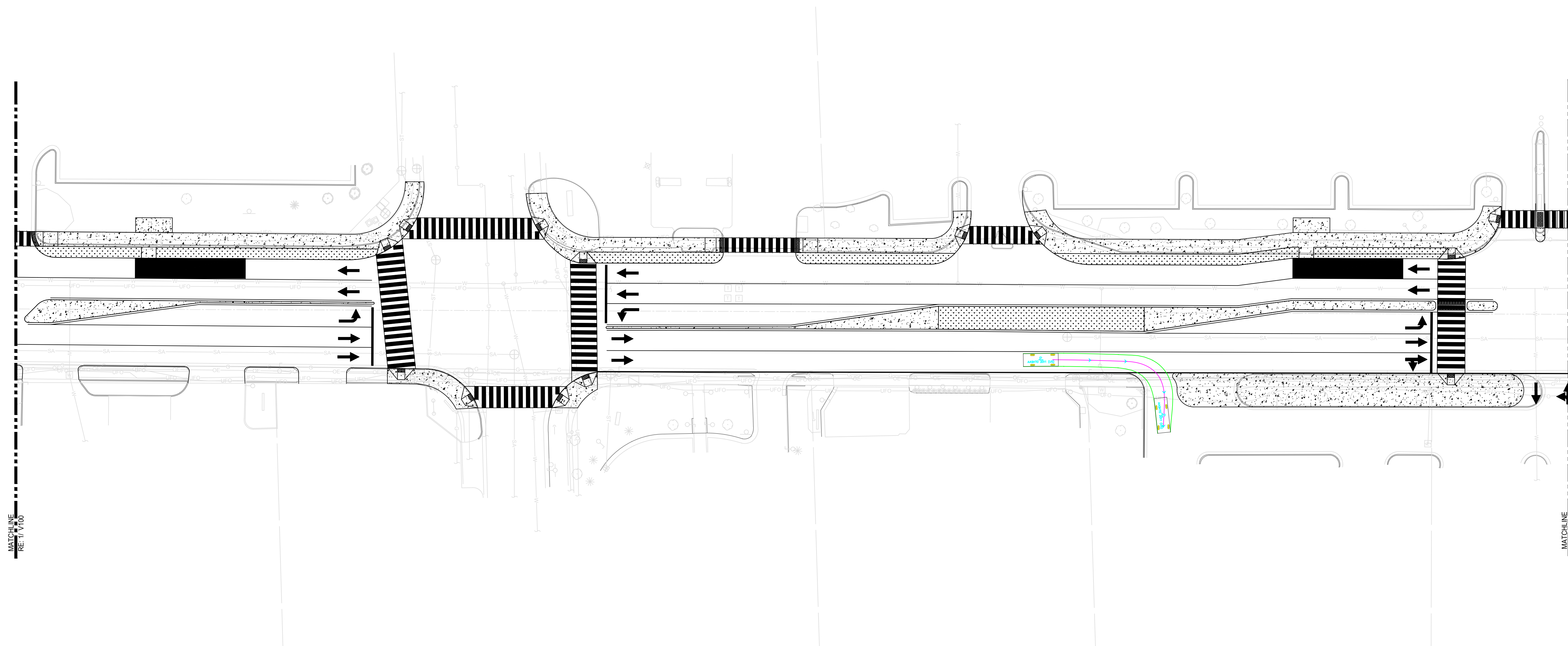
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CONSTRUCTION**

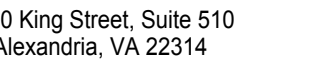
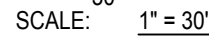
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PROJ. No.	461703		
DWG. No.	11020		

HD-2
(SHEET 2 OF 3)



 N  **ELDEN STREET - PLAN**
SCALE: 1" = 30'

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ARLINGTON, VA 22201



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REVISIONS	DATE
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CONSTRUCTION**

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HD-3
(SHEET 3 OF 3)



1

ELDEN STREET - PLAN

DRAFT

Traffic Operations Technical Memorandum

South Elden Street Corridor Plan
Existing and No Build Condition

Town of Herndon

December 22, 2017

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1. Introduction

To prepare for planned land use changes in the South Elden Street corridor, the Town of Herndon evaluated the corridor's current and projected transportation needs. This transportation study will identify and assess ways to include multi-modal design aspects that facilitates a more efficient use of existing right-of-way.

As part of these efforts, existing and future traffic conditions along South Elden Street corridor were evaluated. Current traffic condition was assessed using existing geometry, lane configuration and field collected vehicular traffic and pedestrian data at four intersections along the corridor between Herndon Parkway and Sterling Road. Future traffic volumes were then projected for year 2040 and were an input to the future analysis under the no build condition.

2. Roadway Network System

For traffic analysis purposes, the study corridor was defined as South Elden Street between Herndon Parkway to the south and Sterling Road to the north. The study intersections within the corridor are as follows:

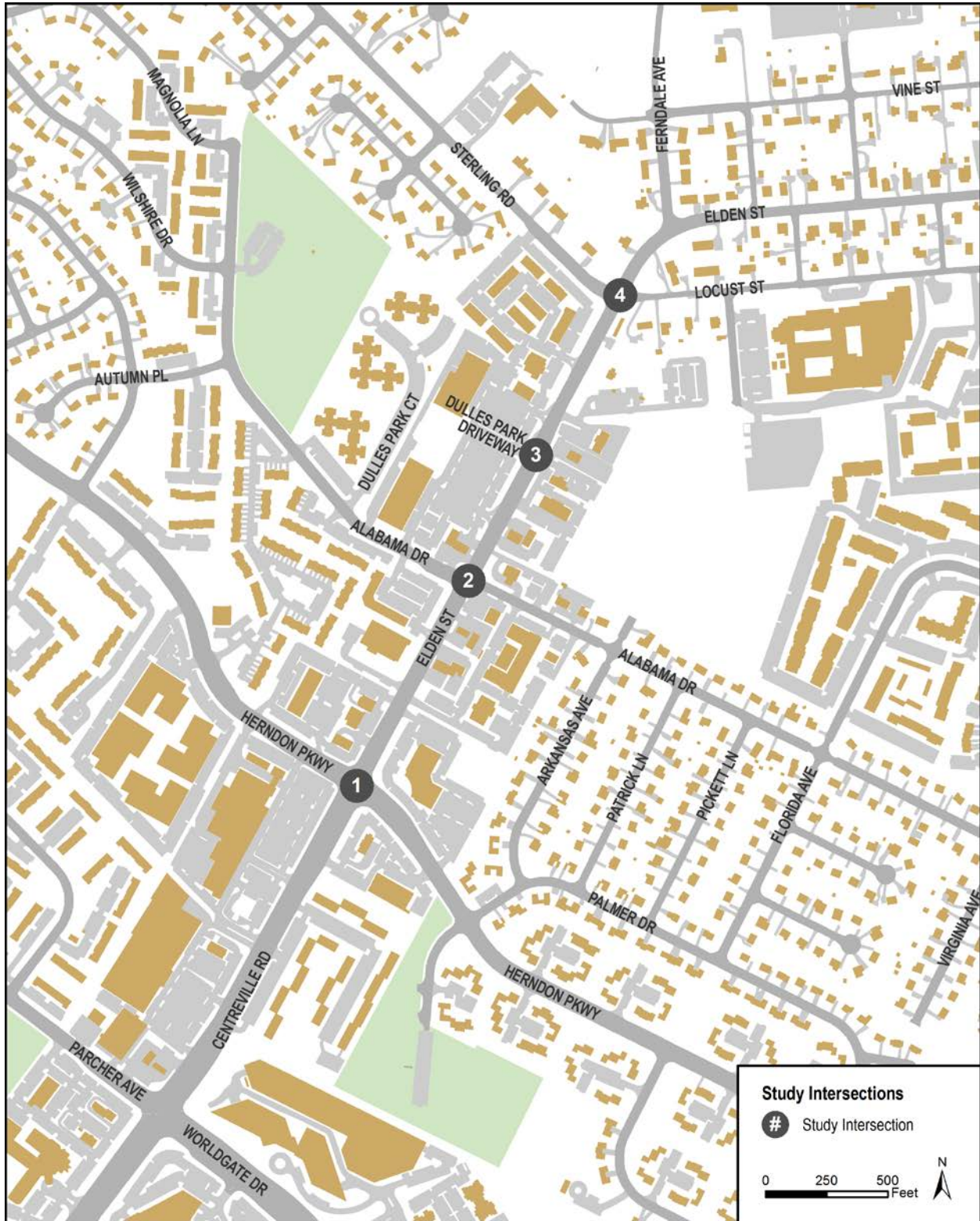
1. Herndon Parkway (Signalized)
2. Alabama Drive (Signalized)
3. Dulles Park Shopping Center (Stop-controlled)
4. Sterling Road/Locust Street (Signalized)

A schematic of the intersections is provided on **Figure 1**. A brief description of the studied roadways is provided below.

- **South Elden Street** is a minor arterial that traverses historic Herndon Downtown area between Dulles Access Road and Fairfax County Parkway. Within the study limits, South Elden Street runs in the north-south direction with two continuous through lanes on each direction. Sidewalk is provided along both directions of travel and on-street parking is restricted. At major intersections, Elden Street widens to accommodate for left and right turn pockets, and two-way left-turn lane exists in the middle to provide turn access at mid-block driveways. The land use varies along the corridor, but is generally a mix of residential and retail. Traffic signals are present at multiple major intersections along the corridor, and driveway approaches are mostly stop-controlled.
- **Herndon Parkway** is a minor arterial making a loop around Town of Herndon. Herndon Parkway intersects Elden Street at two locations. The signalized intersection of Herndon Parkway and Elden Street north of Dulles Access Road is the southern end of the study area for this report. The land use along Herndon Parkway at the vicinity of this intersection is comprised of retail with major surface parking lots at all four quadrants of the intersection. All movements at this intersection are signal-controlled, and crosswalks are provided at all four legs of the intersection.

- **Alabama Drive** is a single-lane local street running in east-west direction between Herndon Parkway and Van Buren Street. At the vicinity of the intersection with Elden Street, the west leg of Alabama Drive widens to provide two approaching lanes and a right turn pocket. On the east leg, the lane use changes to provide a dedicated left and a shared right and thru lane at the intersection. All movements are signal-controlled, and pedestrian access is provided through crosswalks at all four legs of the intersection.
- **Dulles Park Shopping Center** is located on the west side of the Elden Street and includes multiple driveways along Elden Street corridor that provide access to surface lots in front of the shopping center. The main entrance to the parking lot is a two-way driveway with single lane on each direction. There are left and right turn pockets on the Elden Street for the northbound and southbound vehicles to access the driveway, while the through movement on Elden Street is uninterrupted at this location. Both driveways on the west and east side of the Elden Street are included in the traffic analysis.
- **Sterling Road** is a minor arterial running in east-west direction from Rock Hill Road to the Elden Street. Sterling Road has two lanes on the eastbound direction and a single lane on the westbound direction for the most part of the roadway, but its cross section widens to provide two through lanes on each direction between Herndon Parkway and Rock Hill Road. The land use surrounding Sterling Road is generally comprised of single family houses. Sterling Road connects to Elden Street from west with a dedicated left, a through, and a right turn pocket.
- **Locust Street** is a local roadway running in east-west direction with one lane on each direction. The land use along Locust Street is a mixed of commercial and residential with single family houses on the north side and Herndon Middle School facility on the south side of the street. Locust Street meets Elden Street from east with a widen cross section that includes a dedicated left, and a shared through and right pocket lane. All movements at the intersection of Elden Street and Sterling Road/Locust Street are controlled by traffic signals and crosswalks are provided at all four legs.

Figure 1 Study Intersections



3. Traffic Data Collection

Turning movement traffic counts were collected at the study area intersections during the hours of 6:30-10:30 a.m. and 3:30-7:30 p.m. on Tuesday, October 10, 2017. These hours were selected as they generally encompass the peak morning and evening peak traffic hours. The collected data includes vehicle classification, and contains pedestrian and bicycle volumes as well. The traffic counts were collected at the following study intersections:

1. Herndon Parkway and Elden Street
2. Alabama Drive and Elden Street
3. Dulles Park Shopping Center and Elden Street
4. Sterling Road/Locust Street and Elden Street

Copies of traffic counts are included in **Appendix A**.

4. Existing Condition Traffic Analysis

To determine the traffic impacts of future land use changes, potential new developments and roadway design improvements, it is necessary first to establish a baseline of existing conditions. A review of Google maps, and Google aerial photos were used to determine the current lane configuration and traffic control scheme at the study area intersections. Except for the Dulles Park Shopping Center drive, all other study intersections are signalized. **Figure 2** presents a summary of the lane use and traffic control at study intersections.

Existing traffic signal timings were obtained from Town of Herndon Department of Traffic Control. System-wide peak hours of 8:30-9:30 a.m. and 5:00-6:00 p.m. were identified by comparing the individual intersection peak traffic hours. The system-wide peak hour traffic volumes were then used for intersection capacity analysis. **Figure 3** shows the turning movement volumes for the morning and afternoon peak hours.

Intersection capacity analysis was performed using Synchro, based on the procedures and methodologies contained in the Highway Capacity Manual (HCM). Based on HCM methodology, levels of service (LOS) for roadway segments and intersections range from A to F, with the following brief descriptions of each level.

Signalized Intersections

The level of service criteria for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. Control delay includes intersection deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

- LOS A indicates traffic operations with very low average delay (less than 10 seconds per vehicle). Typically the volume-to-capacity ratio is low, progression is favorable or the cycle length is short. With favorable progression, most vehicles arrive during the green phase of the signal and do not stop.

- LOS B indicates operations with delay between 10 and 20 seconds per vehicle, and is generally assigned with low volume-to-capacity ratios, and either favorable progression or short cycle lengths. More vehicles stop than under LOS A.
- LOS C describes operations with delay between 20 and 35 seconds per vehicle. Typically progression is favorable or the cycle length is moderate. Individual cycle failures (not all queued vehicles are able to traverse the intersection during the cycle) may begin to appear. The number of vehicles stopping is significant, but many still pass through without stopping.
- LOS D indicates operations with delay between 35 and 55 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level generally indicates high volume-to-capacity ratios and either long cycle lengths or ineffective progression. Many vehicles stop and individual cycle failures are noticeable.
- LOS E describes operations with delay from 55 to 80 seconds per vehicle and volume-to-capacity less than 1.0. Generally volume-to-capacity is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
- LOS F indicates operations with delay exceeding 80 seconds per vehicle or a volume-to-capacity greater than 1.0. This is generally assigned with very high volume-to-capacity ratios, poor progression, and long cycle length. During most cycles the vehicle queue does not clear.

Unsignalized Intersections

Level of service for intersections with two-way stop control is determined by control delay. The LOS is determined for each minor-street movement or shared movement, and for major-street left turns. LOS is not defined for the overall intersection or for major-street through vehicles, since those are assumed to experience no delay and would disproportionately skew the weighted average of all movements.

The thresholds of LOS criteria for unsignalized intersections differ from those for signalized intersections due to driver perceptions. The expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay than an unsignalized intersection. The unsignalized LOS descriptions are as follows:

- LOS A indicates traffic operations with delay of less than 10 seconds per vehicle. There is little conflicting traffic for the minor-street movements.
- LOS B indicates operations with delay between 10 and 15 seconds per vehicle.
- LOS C describes operations with delay between 15 and 25 seconds per vehicle.
- LOS D indicates operations with delay between 25 and 35 seconds per vehicle.
- LOS E describes operations with delay from 35 to 50 seconds per vehicle.
- LOS F describes operations with delay greater than 50 seconds per vehicles or volume-to-capacity ratio greater than 1.0.

Figure 2 Existing Lane Configuration at Study Intersections



Figure 3 Existing (2017) Traffic Volumes



As stated previously, intersection capacity analysis performed using Synchro and with system peak traffic volumes, existing lane configuration and existing traffic signal timings as input. The results of the existing condition analysis for the study area intersections are shown on **Table 1** in terms of both LOS and delay. For signalized intersections, the LOS and delay are reported for the overall intersection, while at unsignalized intersections the highest-delay approach is indicated.

Table 1 Existing Condition Synchro Results

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (seconds)	LOS	Delay (seconds)
Signalized Intersections				
Herndon Parkway / Elden Street	D	47.0	D	52.9
Alabama Drive / Elden Street	B	19.4	D	41.0
Sterling Road/Locust Street and Elden Street	D	52.5	D	39.9
Unsignalized Intersections (worst LOS/Delay approach shown)				
Dulles Park Shopping Center / Elden Street*	C	16.0	D	28.0

*Minor Street approach Delay and LOS are reported.

More detailed information, including LOS and delay for each individual approach, is provided on **Figure 4** for the AM peak hour and on **Figure 5** for the PM peak hour. Copies of the existing condition Synchro reports are included in **Appendix B**.

In general, within urban built-up areas, LOS D is considered acceptable. As **Table 1** shows, all of the study area intersections operate with overall LOS D or better during morning and evening peak hours under existing conditions. Synchro analysis results suggest that except for the stop-controlled approaches at Dulles Park Shopping Center, all intersections have individual approaches operating with LOS E during morning and/or evening peak hour.

In the AM peak hour, both northbound and southbound approaches on Elden Street at Herndon Parkway operate at LOS E, while both Herndon Parkway approaches operate at LOS C with approximate delays of 30.0 seconds, suggesting an imbalance of delay between north-south and east-west approaches. The higher delays on Elden Street could be associated to the coordinated system along Herndon Parkway that prevents more green time to be allocated to Elden Street approaches. At Sterling Road/Locust Street intersection, the heavy left turn demand on Sterling Road is the main contributing factor to the eastbound approach operating at LOS E and with 80.0 seconds of delay.

In the PM peak hour, the southbound approach on Elden Street operates at LOS E with 63.7 seconds of delay at Herndon Parkway. Comparing to the morning operation, delays are better balanced between all approaches at this intersection during evening peak hour. The second highest delays are experienced on Locust Street approach during evening peak hour where westbound approach operates at LOS E with 58.0 seconds of delay. Nonetheless, the overall delay experienced at this intersection during PM peak is lower than the AM peak hour.

Figure 4 Existing (2017) AM Peak Hour LOS and Delay

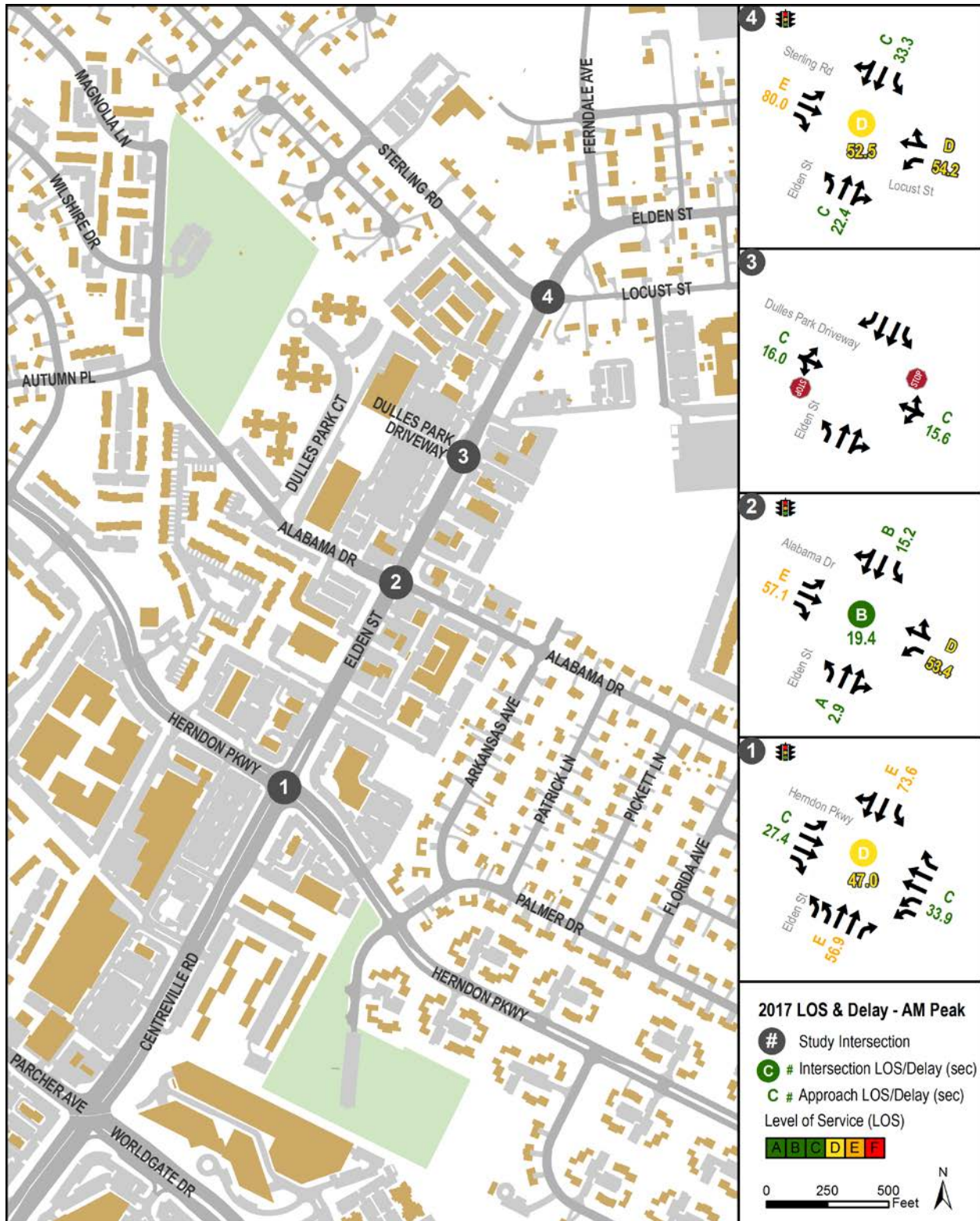
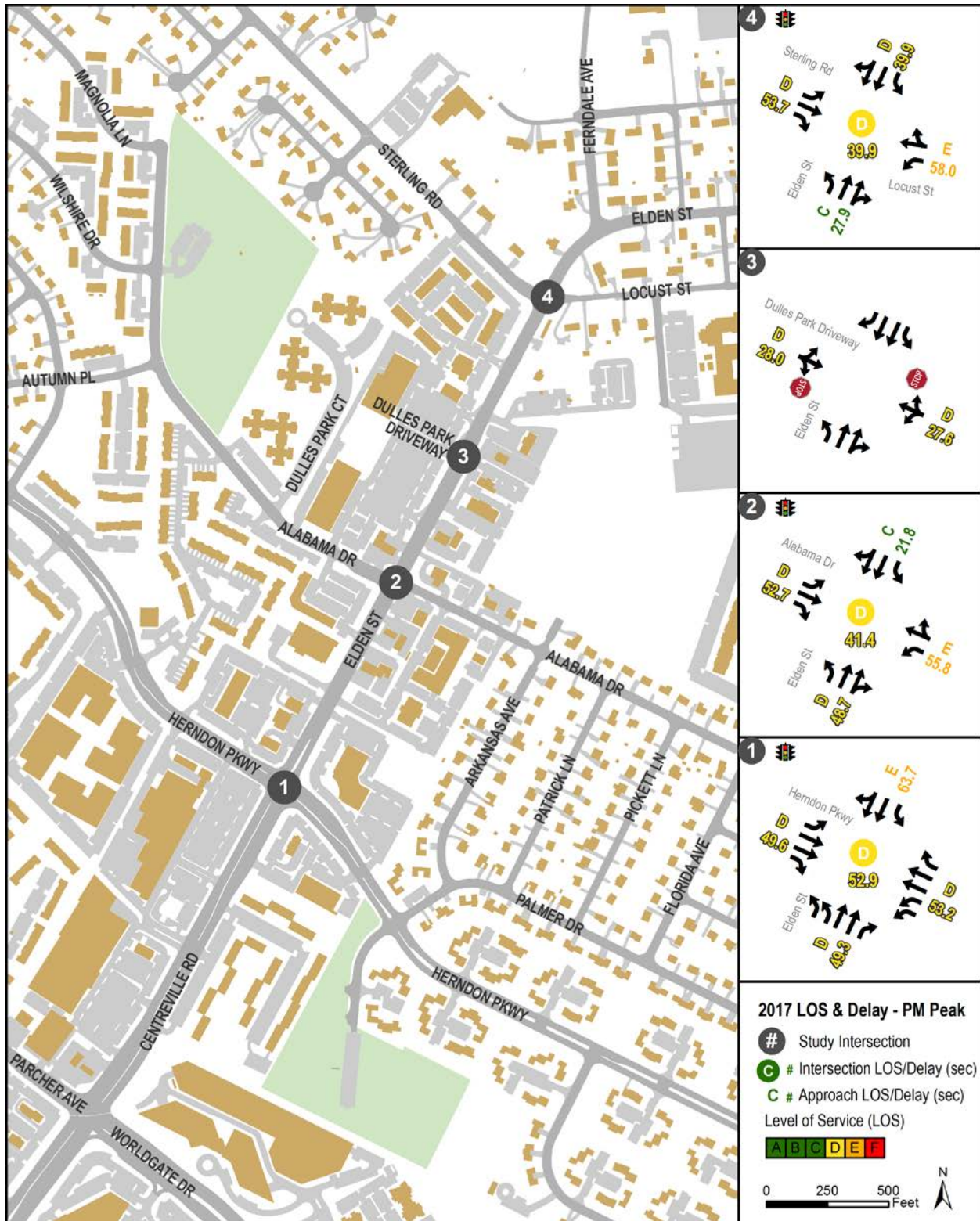


Figure 5 Existing (2017) PM Peak Hour LOS and Delay



5. Future No-Build Condition Traffic Analysis

Projected traffic volumes for year 2040, as well as existing lane configuration and traffic signal timings, were the inputs to the future no-build condition traffic analysis. Similar to existing condition, Synchro was used to perform the capacity analysis using HCM methodologies. Future traffic volumes were developed for year 2040 using Metropolitan Washington Council of Government's Round 9 Cooperative Forecast model. **Figure 6** show projected morning and evening traffic volumes at study intersections. Summary of the Synchro results are shown on **Table 2**. More detailed information, including LOS and delay for each individual approach, is provided on **Figure 7** for the AM peak hour and on **Figure 8** for the PM peak hour. Copies of the 2040 no-build Synchro reports are included in **Appendix C**.

Table 2 2040 No-Build Synchro Results

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (seconds)	LOS	Delay (seconds)
Signalized Intersections				
Herndon Parkway / Elden Street	D	48.9	F	81.8
Alabama Drive / Elden Street	C	21.1	E	63.9
Sterling Road/Locust Street and Elden Street	F	98.9	F	112.3
Unsignalized Intersections (worst LOS/Delay approach shown)				
Dulles Park Shopping Center / Elden Street*	F	85.0	E	52.3

*Minor Street approach Delay and LOS are reported.

As indicated in the analysis results, with existing lane use and traffic control assumed for the future year no-build analysis, all intersections are expected to operate with higher delays in 2040 comparing to the existing condition. The delay increase is more significant during PM peak hour.

The Dulles Shopping Center drive operation degrades to LOS F in the morning peak hour and LOS E in the evening peak hour, mainly due to significant increase of Elden Street traffic that makes driveway traffic incur more delays before they can find a gap on the main street traffic to make a turn.

Synchro result suggests that the signalized intersection of Sterling Road/Locust Street/Elden Street will operate unfavorably in 2040 at LOS F with overall intersection delay of about 100 seconds during both morning and evening peak hours. In AM peak hour, significant delay increase observed on the side street approaches with eastbound approach delay increased from 80.0 seconds to 185.5 seconds. In the evening peak hour, all approaches operate with LOS E or LOS F with overall intersection delay of 112.3 seconds.

At Alabama Drive intersection, the overall intersection level of service is changed to C from B in the morning peak hour, with the delay increase on side street approaches. The main street approach (Elden Street) continues to operate efficiently with LOS A and

LOS B on the northbound and southbound approaches, respectively, during the morning peak hour. Delay increases in the afternoon peak are more significant with westbound approach operation degraded to LOS F, and northbound approach operates at LOS E with 66 seconds of delay.

The Herndon Parkway/Elden Street continues to operate acceptably at LOS D with 50 seconds of delay in the morning peak hour with delays almost evenly balanced between all approaches. Similar to other intersections, the intersection operation during evening peak hour is expected to be unfavorable with overall intersection LOS degraded to F from D comparing 2040 with the existing condition.

The review of 2040 no-build traffic analysis results suggest that increased vehicular traffic demand due to the future growth is the main contributing factor for degrading level of service at all the study intersections. The significant delay increase observed for individual movements or approaches suggests a need for mitigations in form of traffic signal phasing and/or potential lane configuration or roadway improvements.

Figure 6 Future No-Build (2040) Traffic Volumes



Figure 7 Future No Build (2040) AM Peak Hour LOS and Delay

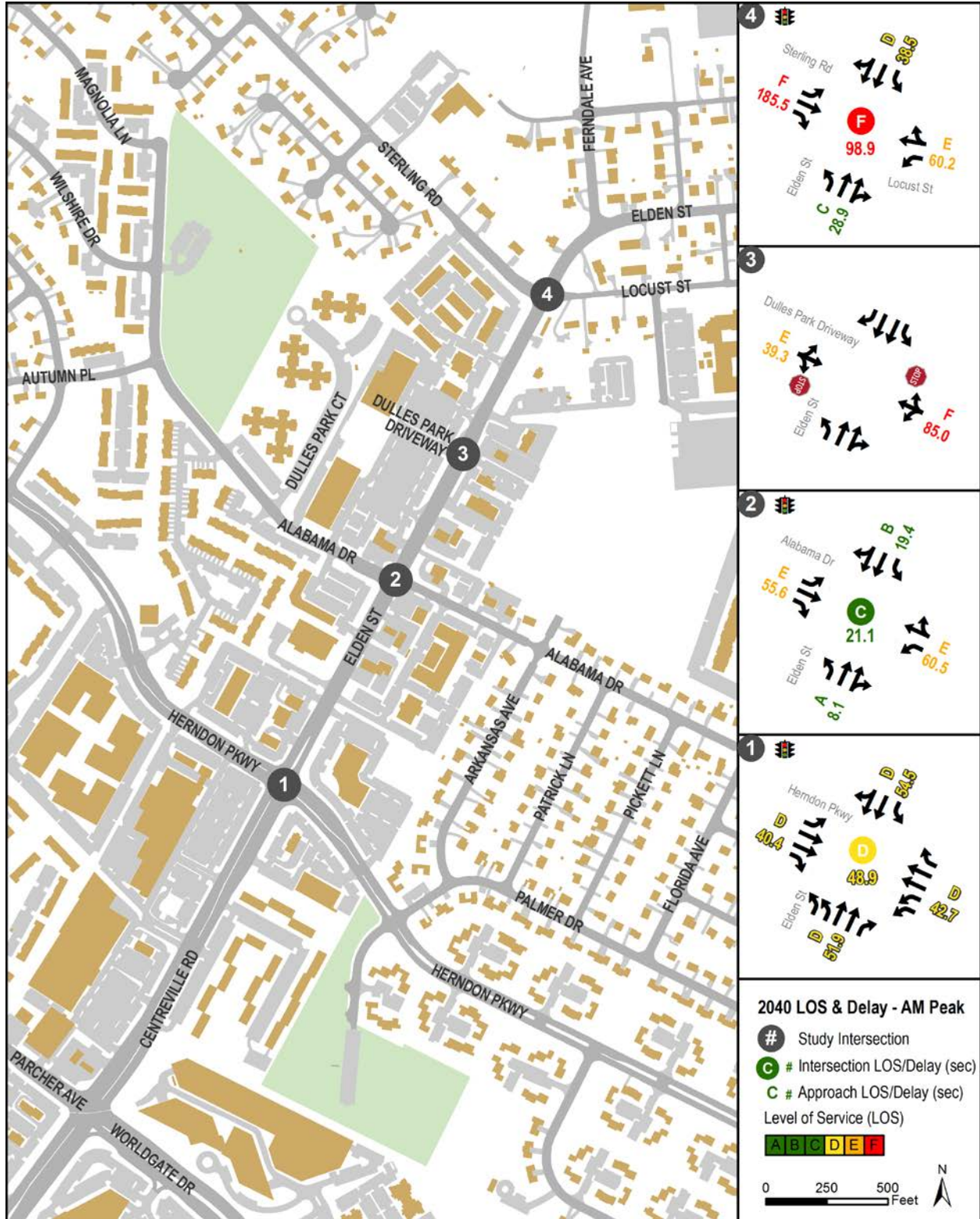
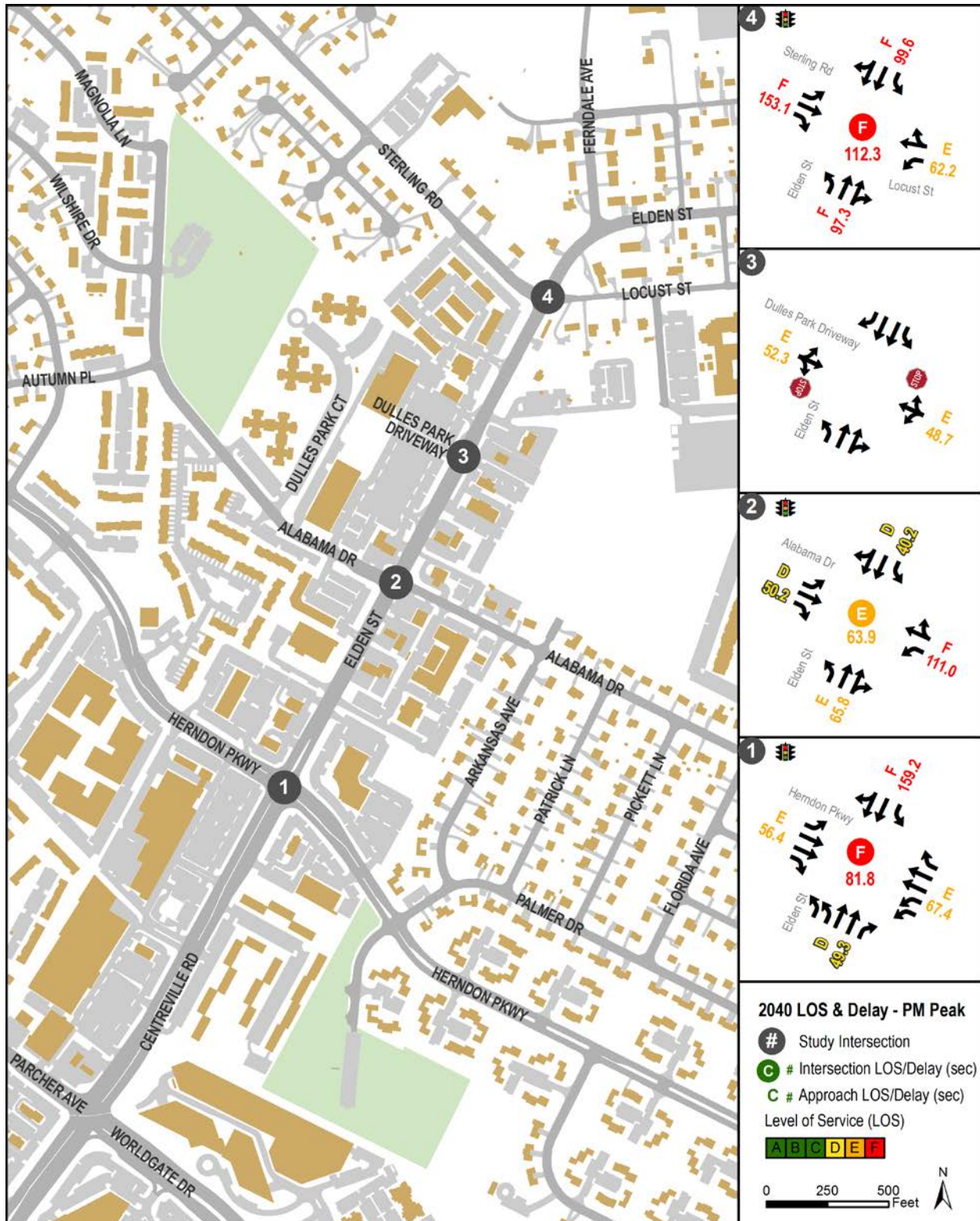
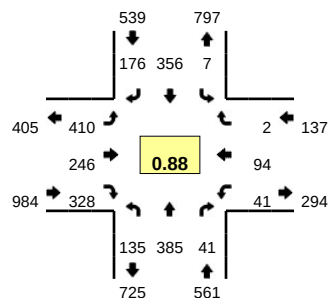


Figure 8 Future No Build (2040) PM Peak Hour LOS and Delay

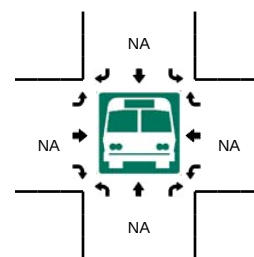
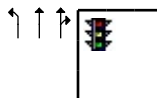
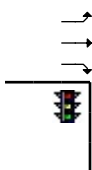
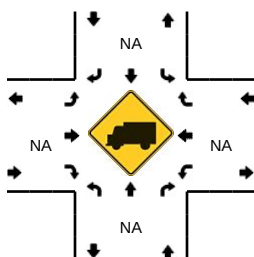
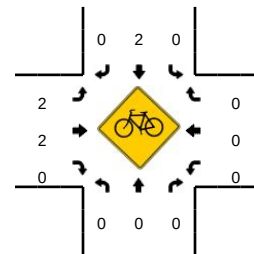
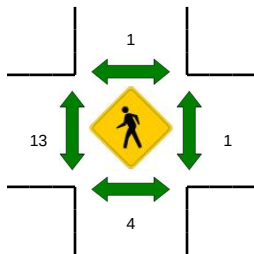
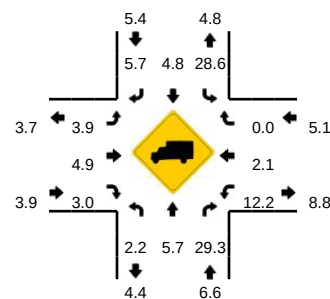


LOCATION: Elden St -- Sterling Rd/Locust St
CITY/STATE: Herndon, VA

QC JOB #: 14514501
DATE: Tue, Oct 10 2017



Peak-Hour: 8:30 AM -- 9:30 AM
Peak 15-Min: 9:00 AM -- 9:15 AM

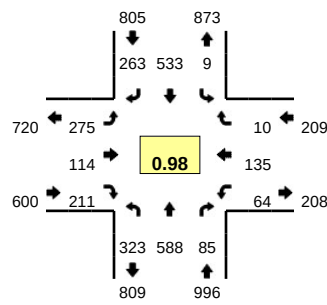


15-Min Count Period Beginning At	Elden St (Northbound)				Elden St (Southbound)				Sterling Rd/Locust St (Eastbound)				Sterling Rd/Locust St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	31	46	12	0	3	49	26	0	65	35	47	0	5	19	0	0	338	1678
6:45 AM	24	51	24	0	2	67	31	0	80	46	48	0	9	26	4	0	412	
7:00 AM	13	56	31	0	23	82	24	0	69	58	54	0	9	16	2	0	437	
7:15 AM	33	54	28	0	10	87	43	0	80	55	55	0	16	28	2	0	491	
7:30 AM	41	77	4	0	3	63	30	0	105	50	58	0	7	15	2	0	455	
7:45 AM	37	117	6	0	3	93	38	0	125	79	61	0	10	20	2	0	591	
8:00 AM	33	88	2	0	8	112	56	0	102	49	61	0	5	14	0	0	530	
8:15 AM	28	79	3	0	1	88	38	0	107	57	96	0	8	14	0	0	519	
8:30 AM	32	91	7	0	1	89	56	0	90	69	72	0	8	20	1	0	536	2176
8:45 AM	41	95	12	0	3	73	42	0	95	61	76	0	11	24	0	0	533	2118
9:00 AM	32	92	12	0	2	127	46	0	130	62	88	0	12	25	1	0	629	2217
9:15 AM	30	107	10	0	1	67	32	0	95	54	92	0	10	25	0	0	523	2221
9:30 AM	43	94	5	0	1	87	49	0	83	42	48	0	11	15	2	0	480	2165
9:45 AM	34	82	9	0	0	73	56	0	85	35	42	0	4	18	4	0	442	2074
10:00 AM	20	78	7	0	2	76	44	0	57	18	37	0	6	15	0	0	360	1805
10:15 AM	32	78	8	0	0	74	49	0	53	20	29	0	7	16	1	0	367	1649
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	128	368	48	0	8	508	184	0	520	248	352	0	48	100	4	0	2516	
Heavy Trucks	4	12	20		4	24	12		24	12	8		8	8	0		136	
Pedestrians		0				0				4				0			4	
Bicycles	0	0	0		0	1	0		0	2	0		0	0	0		3	
Railroad																		
Stopped Buses																		

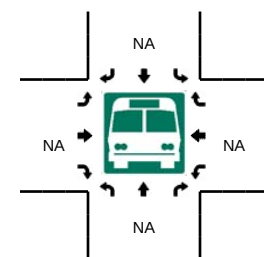
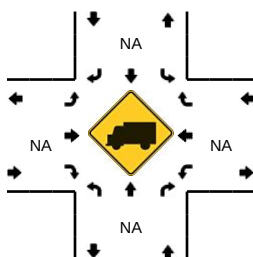
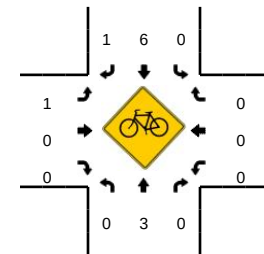
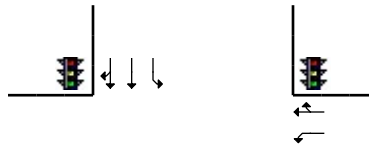
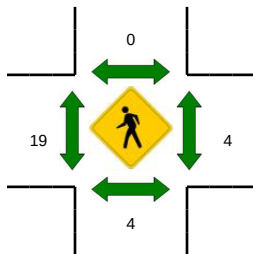
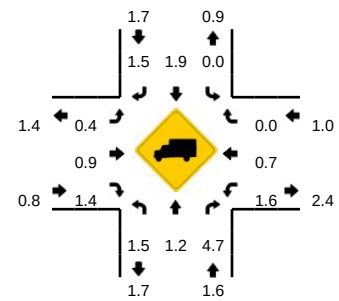
Comments:

LOCATION: Elden St -- Sterling Rd/Locust St
CITY/STATE: Herndon, VA

QC JOB #: 14514502
DATE: Tue, Oct 10 2017



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM



15-Min Count Period Beginning At	Elden St (Northbound)				Elden St (Southbound)				Sterling Rd/Locust St (Eastbound)				Sterling Rd/Locust St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	46	98	12	0	2	93	53	0	52	17	25	0	7	36	0	0	441	2007
3:45 PM	46	102	5	1	1	102	78	0	53	28	38	0	12	28	3	0	497	
4:00 PM	63	111	9	0	0	96	62	0	53	24	49	0	12	25	1	0	505	
4:15 PM	59	101	19	0	4	117	69	0	61	34	48	0	10	41	1	0	564	
4:30 PM	59	123	17	0	1	133	59	0	64	24	48	0	17	45	2	0	592	
4:45 PM	64	142	19	0	1	124	62	0	75	23	41	0	15	37	3	0	606	
5:00 PM	67	142	12	0	2	132	63	0	84	27	57	0	19	40	1	0	646	2408
5:15 PM	82	145	22	1	1	143	83	0	60	23	43	0	15	30	2	0	650	2494
5:30 PM	80	152	20	0	1	124	58	0	74	28	49	0	17	41	3	0	647	2549
5:45 PM	93	149	31	0	5	134	59	0	57	36	62	0	13	24	4	0	667	2610
6:00 PM	76	141	16	0	1	121	51	0	75	26	43	0	4	26	5	0	585	2549
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6:30 PM	48	139	14	0	7	155	46	0	71	29	54	0	12	27	2	0	604	2501
6:45 PM	60	151	13	0	2	145	70	0	61	35	60	0	8	24	1	0	630	2464
7:00 PM	54	102	21	0	1	128	59	0	63	34	49	0	13	29	3	0	556	2435
7:15 PM	52	116	15	0	1	111	60	0	53	38	45	0	9	23	3	0	526	2316
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	372	596	124	0	20	536	236	0	228	144	248	0	52	96	16	0	2668	
Heavy Trucks	8	12	0		0	8	0		0	0	4		0	0	0		32	
Pedestrians		4				0				20				12			36	
Bicycles	0	0	0		0	1	1		0	0	0		0	0	0		2	
Railroad																		
Stopped Buses																		

Comments:

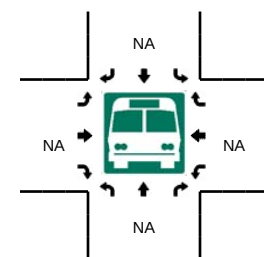
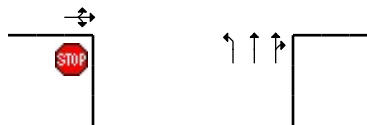
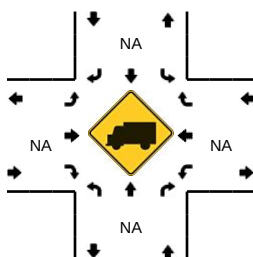
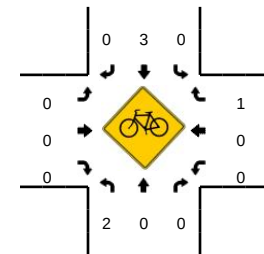
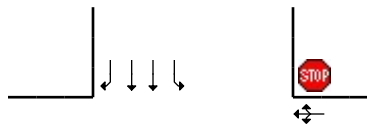
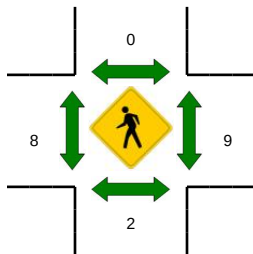
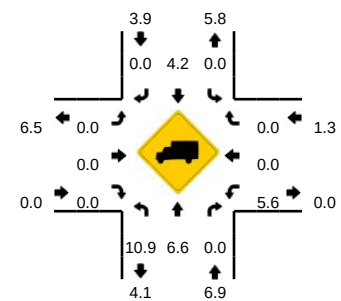
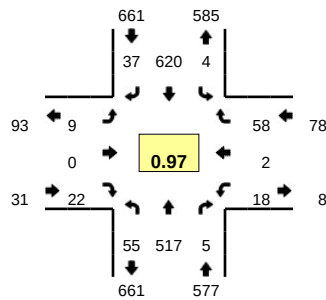
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Elden St -- Dulles Park Shopping Center Middle Dwy
CITY/STATE: Herndon, VA

QC JOB #: 14514503
DATE: Tue, Oct 10 2017

Peak-Hour: 8:45 AM -- 9:45 AM
Peak 15-Min: 8:45 AM -- 9:00 AM



15-Min Count Period Beginning At	Elden St (Northbound)				Elden St (Southbound)				Dulles Park Shopping Center Middle Dwy (Eastbound)				Dulles Park Shopping Center Middle Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	1	77	1	0	0	102	0	0	0	0	0	0	4	0	15	0	200	
6:45 AM	3	79	2	0	1	126	0	0	0	0	2	0	8	0	12	0	233	
7:00 AM	5	97	0	1	2	141	1	0	1	0	4	0	5	0	14	0	271	
7:15 AM	2	97	0	0	4	153	0	0	0	0	2	0	8	0	13	0	279	983
7:30 AM	9	117	1	1	1	124	3	0	0	0	0	0	9	0	12	0	277	1060
7:45 AM	7	137	0	0	0	158	3	0	0	0	0	0	5	0	18	0	328	1155
8:00 AM	7	104	0	0	0	174	8	0	1	0	2	0	0	2	9	0	307	1191
8:15 AM	8	115	0	0	3	195	2	0	5	0	3	0	4	2	14	0	351	1263
8:30 AM	9	101	1	0	0	165	4	0	0	0	4	0	5	0	17	0	306	1292
8:45 AM	11	140	1	0	2	160	1	0	2	0	7	0	5	1	18	0	348	1312
9:00 AM	14	118	2	0	0	169	9	0	2	0	7	0	3	1	12	0	337	1342
9:15 AM	12	139	0	0	0	160	10	0	3	0	2	0	7	0	15	0	348	1339
9:30 AM	17	120	2	1	1	131	17	1	2	0	6	0	3	0	13	0	314	1347
9:45 AM	23	103	1	0	1	107	5	0	7	0	6	0	2	1	15	0	271	1270
10:00 AM	13	100	0	0	0	111	10	0	7	0	6	0	5	1	9	0	262	1195
10:15 AM	14	84	0	0	1	91	10	0	6	0	4	0	4	1	11	0	226	1073
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	44	560	4	0	8	640	4	0	8	0	28	0	20	4	72	0	1392	
Heavy Trucks	0	56	0		0	24	0		0	0	0		4	0	0		84	
Pedestrians		0				0				16				12			28	
Bicycles	1	0	0		0	0	0		0	0	0		0	0	0		1	
Railroad																		
Stopped Buses																		

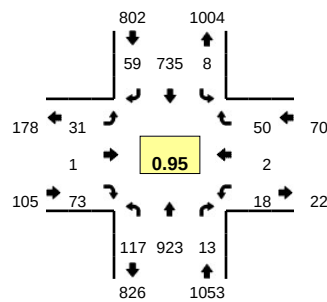
Comments:

Type of peak hour being reported: Intersection Peak

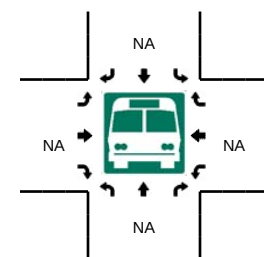
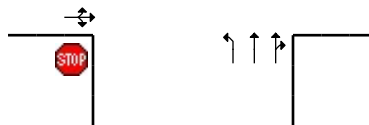
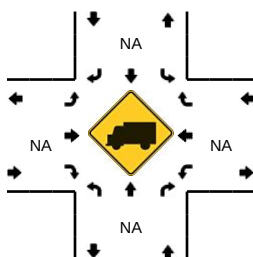
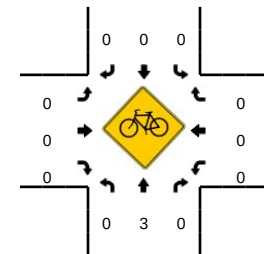
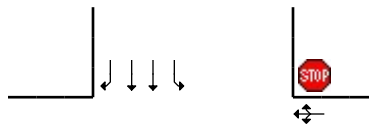
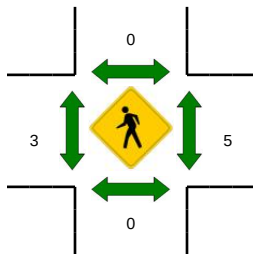
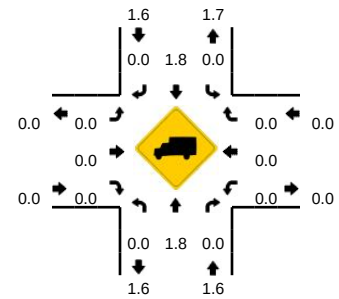
Method for determining peak hour: Total Entering Volume

LOCATION: Elden St -- Dulles Park Shopping Center Middle Dwy
CITY/STATE: Herndon, VA

QC JOB #: 14514504
DATE: Tue, Oct 10 2017



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

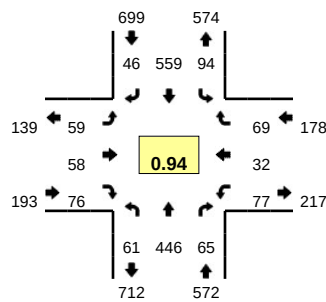


15-Min Count Period Beginning At	Elden St (Northbound)				Elden St (Southbound)				Dulles Park Shopping Center Middle Dwy (Eastbound)				Dulles Park Shopping Center Middle Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	14	131	1	0	0	119	9	0	10	0	5	0	6	2	8	0	305	
3:45 PM	16	136	0	0	2	142	13	0	6	0	10	0	2	0	10	0	337	
4:00 PM	18	167	1	0	0	140	13	0	10	0	7	0	3	1	7	0	367	
4:15 PM	17	154	1	0	1	162	12	0	11	0	10	0	4	2	14	0	388	1397
4:30 PM	24	183	0	0	1	188	19	0	10	0	11	0	2	0	13	0	451	1543
4:45 PM	35	193	2	0	0	165	12	0	14	0	12	0	1	0	11	0	445	1651
5:00 PM	30	234	5	0	1	201	20	0	12	0	20	0	5	0	8	0	536	1820
5:15 PM	32	226	1	0	4	178	12	0	7	0	16	0	4	0	8	0	488	1920
5:30 PM	28	236	3	0	1	182	11	0	7	0	20	0	5	2	22	0	517	1986
5:45 PM	27	227	4	0	2	174	16	0	5	1	17	0	4	0	12	0	489	2030
6:00 PM	33	215	1	0	3	179	6	0	14	0	21	0	1	0	14	0	487	1981
6:15 PM	30	222	2	0	3	182	13	0	6	0	15	0	0	1	8	0	482	1975
6:30 PM	39	199	6	1	2	212	18	0	7	0	15	0	6	0	11	0	516	1974
6:45 PM	32	204	2	0	2	200	8	0	8	0	19	0	6	0	11	0	492	1977
7:00 PM	32	165	1	0	2	180	16	0	4	0	15	0	3	0	15	0	433	1923
7:15 PM	26	150	1	0	7	157	13	0	13	0	17	0	2	0	13	0	399	1840
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	120	936	20	0	4	804	80	0	48	0	80	0	20	0	32	0	2144	
Heavy Trucks	0	28	0	0	0	20	0	0	0	0	0	0	0	0	0	0	48	
Pedestrians	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	8	
Bicycles	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Railroad																		
Stopped Buses																		

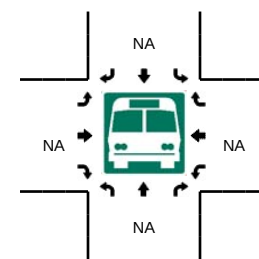
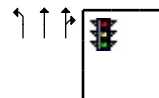
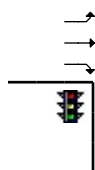
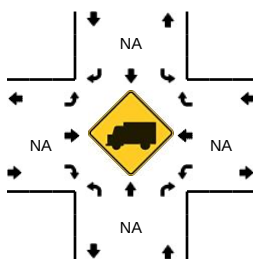
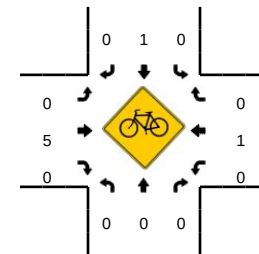
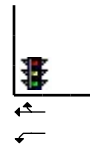
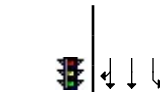
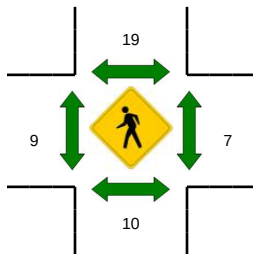
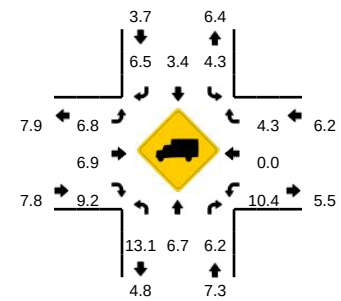
Comments:

LOCATION: Elden St -- Alabama Dr
CITY/STATE: Herndon, VA

QC JOB #: 14514505
DATE: Tue, Oct 10 2017



Peak-Hour: 8:15 AM -- 9:15 AM
Peak 15-Min: 9:00 AM -- 9:15 AM

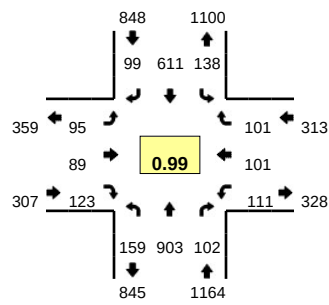


15-Min Count Period Beginning At	Elden St (Northbound)				Elden St (Southbound)				Alabama Dr (Eastbound)				Alabama Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	12	59	5	0	14	83	6	0	14	10	24	0	14	16	17	0	274	
6:45 AM	11	71	5	0	17	101	13	0	19	12	18	0	16	12	13	0	308	
7:00 AM	13	74	12	0	18	100	12	0	25	14	14	0	27	11	17	0	337	
7:15 AM	6	76	12	0	19	117	15	0	18	21	24	0	20	19	22	0	369	1288
7:30 AM	7	99	12	0	18	101	19	0	15	12	33	0	22	10	32	0	380	1394
7:45 AM	6	118	14	0	26	136	15	0	23	15	18	1	18	7	14	0	411	1497
8:00 AM	9	85	6	0	32	113	8	0	20	15	18	0	15	14	22	0	357	1517
8:15 AM	13	105	13	0	29	169	11	0	17	9	27	0	13	7	17	0	430	1578
8:30 AM	19	103	16	0	21	123	13	0	14	19	23	0	15	6	9	0	381	1579
8:45 AM	5	126	17	0	25	121	7	0	14	14	12	0	24	4	24	0	393	1561
9:00 AM	24	112	19	0	19	146	15	0	14	16	14	0	25	15	19	0	438	1642
9:15 AM	19	130	22	0	27	120	9	0	13	7	15	0	12	7	22	0	403	1615
9:30 AM	18	118	13	0	18	112	16	0	13	13	7	0	10	14	18	0	370	1604
9:45 AM	13	94	11	1	18	72	6	0	16	9	15	0	21	9	19	0	304	1515
10:00 AM	18	93	21	0	15	89	15	0	19	3	15	0	10	8	12	0	318	1395
10:15 AM	13	90	9	0	11	85	10	0	13	8	11	0	18	5	11	0	284	1276
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	96	448	76	0	76	584	60	0	56	64	56	0	100	60	76	0	1752	
Heavy Trucks	4	40	4		4	24	8		0	0	4		8	0	0		96	
Pedestrians		24				20				16				12			72	
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1	
Railroad																		
Stopped Buses																		

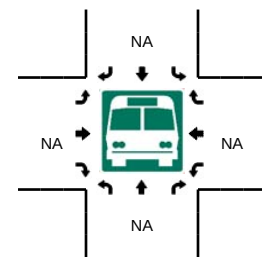
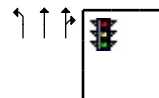
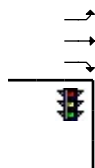
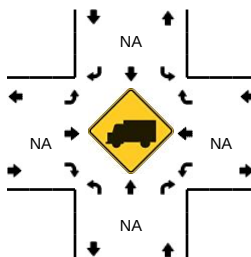
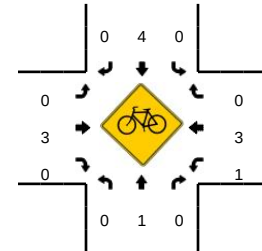
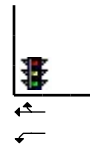
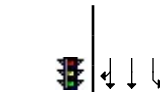
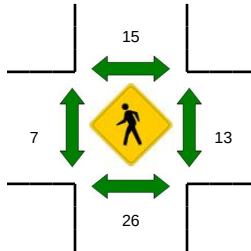
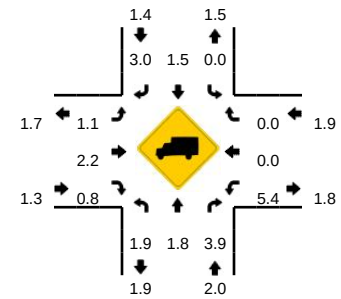
Comments:

LOCATION: Elden St -- Alabama Dr
CITY/STATE: Herndon, VA

QC JOB #: 14514506
DATE: Tue, Oct 10 2017



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:30 PM -- 5:45 PM



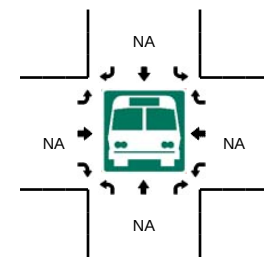
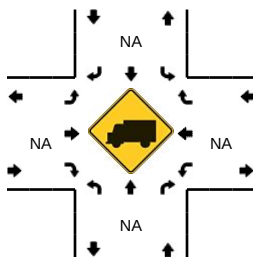
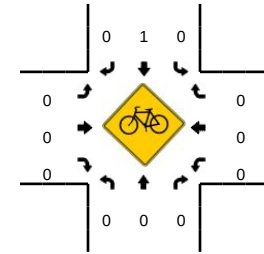
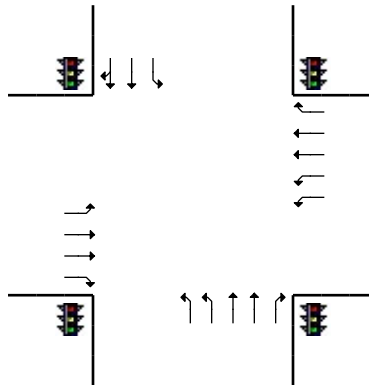
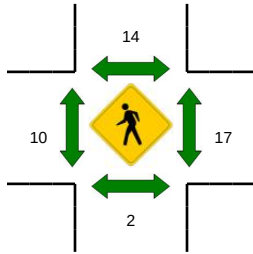
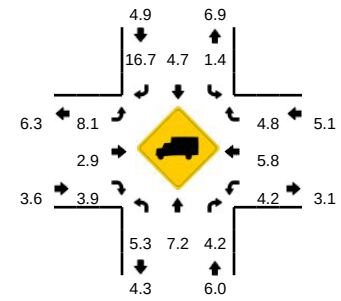
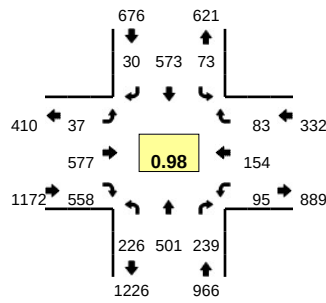
15-Min Count Period Beginning At	Elden St (Northbound)				Elden St (Southbound)				Alabama Dr (Eastbound)				Alabama Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	26	121	22	0	20	119	11	0	17	12	23	0	26	23	14	0	434	1892
3:45 PM	30	133	23	0	24	107	23	0	22	17	15	0	19	16	17	0	446	
4:00 PM	30	149	23	0	30	114	19	0	28	18	24	0	39	24	18	0	516	
4:15 PM	40	139	23	0	35	128	11	0	17	26	21	0	20	15	21	0	496	
4:30 PM	36	170	20	0	32	152	19	0	20	20	22	0	20	20	24	0	555	
4:45 PM	44	195	24	0	23	138	23	0	25	20	26	0	37	28	16	0	599	2166
5:00 PM	36	237	17	0	30	156	37	1	22	20	33	0	25	21	19	0	654	2304
5:15 PM	40	225	22	0	28	151	20	0	23	25	39	0	25	19	29	0	646	2454
5:30 PM	39	213	36	0	39	151	22	0	30	28	21	0	26	31	32	0	668	2567
5:45 PM	44	228	27	0	40	153	20	0	20	16	30	0	35	30	21	0	664	2632
6:00 PM	40	223	30	0	34	154	20	0	18	21	37	0	24	24	23	0	648	2626
6:15 PM	33	211	22	0	24	159	22	0	24	10	31	0	15	15	25	0	591	2571
6:30 PM	42	208	25	0	26	197	26	0	16	13	24	0	18	21	19	0	635	2538
6:45 PM	31	188	19	0	40	162	15	0	25	16	26	0	21	27	33	0	603	2477
7:00 PM	31	146	23	0	27	163	13	0	27	24	36	0	19	22	21	0	552	2381
7:15 PM	26	141	13	0	32	145	15	0	19	20	32	0	27	27	27	0	524	2314
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	156	852	144	0	156	604	88	0	120	112	84	0	104	124	128	0	2672	
Heavy Trucks	8	12	8		0	4	0		0	0	0		4	0	0		36	
Pedestrians		32				4				0				16			52	
Bicycles	0	0	0		0	0	0		0	1	0		1	0	0		2	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Elden St -- Herndon Pkwy
CITY/STATE: Herndon, VA

QC JOB #: 14514507
DATE: Tue, Oct 10 2017

Peak-Hour: 8:15 AM -- 9:15 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

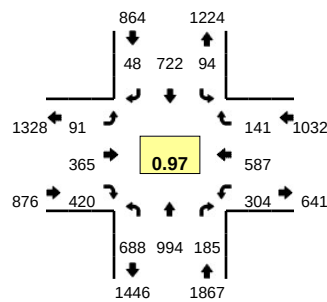


15-Min Count Period Beginning At	Elden St (Northbound)				Elden St (Southbound)				Herndon Pkwy (Eastbound)				Herndon Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	45	68	13	0	13	111	7	0	3	82	85	0	30	38	17	0	512	
6:45 AM	36	70	27	0	11	109	6	0	13	103	93	0	27	33	12	0	540	
7:00 AM	34	85	16	0	19	115	7	1	15	122	129	0	21	37	22	0	623	
7:15 AM	41	75	27	0	10	142	14	0	8	130	119	0	28	42	21	0	657	2332
7:30 AM	56	110	43	1	20	153	5	0	6	159	120	0	33	45	19	0	770	2590
7:45 AM	48	107	38	1	19	140	5	1	12	179	125	0	29	37	32	0	773	2823
8:00 AM	43	99	47	0	20	126	11	0	7	138	131	0	21	36	18	0	697	2897
8:15 AM	50	102	48	0	22	168	7	0	4	154	131	0	21	37	21	0	765	3005
8:30 AM	74	124	60	0	17	130	7	0	14	139	150	0	23	39	20	1	798	3033
8:45 AM	50	153	73	1	18	140	5	0	10	148	125	1	24	35	19	0	802	3062
9:00 AM	51	122	58	0	15	135	11	1	8	136	152	0	26	43	23	0	781	3146
9:15 AM	46	135	39	1	25	134	5	0	9	130	122	0	23	34	25	0	728	3109
9:30 AM	45	112	52	1	12	105	4	0	13	133	130	1	21	34	22	0	685	2996
9:45 AM	50	94	32	2	17	92	11	0	17	105	101	0	18	27	25	0	591	2785
10:00 AM	34	98	18	0	12	80	7	1	15	79	88	2	19	35	27	0	515	2519
10:15 AM	34	97	26	2	16	103	7	0	13	63	57	1	16	34	16	0	485	2276
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	200	612	292	4	72	560	20	0	40	592	500	4	96	140	76	0	3208	
Heavy Trucks	8	60	12		0	16	4		4	4	24		0	8	4		144	
Pedestrians		0				0				20				8			28	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

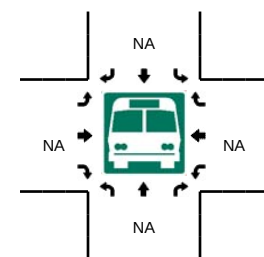
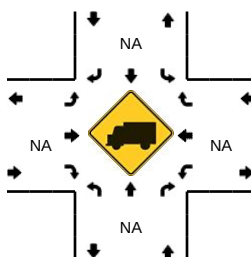
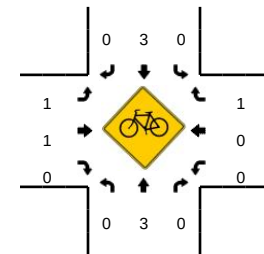
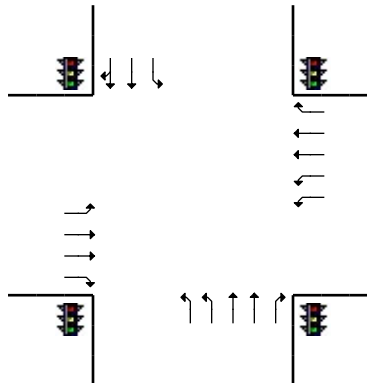
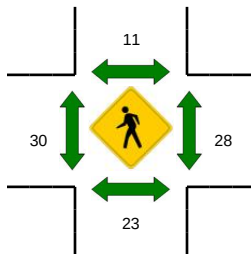
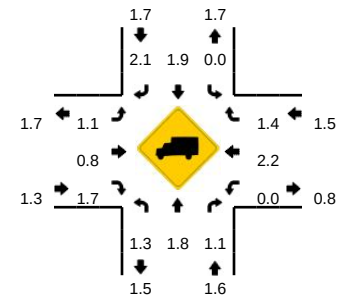
Comments:

LOCATION: Elden St -- Herndon Pkwy
CITY/STATE: Herndon, VA

QC JOB #: 14514508
DATE: Tue, Oct 10 2017



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:15 PM -- 5:30 PM



15-Min Count Period Beginning At	Elden St (Northbound)				Elden St (Southbound)				Herndon Pkwy (Eastbound)				Herndon Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	81	124	26	3	24	129	15	0	20	63	78	0	51	99	31	0	744	
3:45 PM	81	133	28	0	14	120	10	0	24	56	71	1	37	106	30	0	711	
4:00 PM	110	158	37	1	27	125	9	0	22	80	74	0	43	111	31	0	828	
4:15 PM	135	189	38	1	15	138	20	1	15	72	97	0	54	119	28	0	922	3205
4:30 PM	157	188	33	1	23	158	10	0	25	65	101	1	57	147	23	0	989	3450
4:45 PM	159	214	38	0	20	160	18	1	25	87	106	1	59	150	42	0	1080	3819
5:00 PM	163	245	39	0	29	181	16	1	22	88	109	1	58	165	36	0	1153	4144
5:15 PM	187	248	47	0	32	175	12	0	19	104	89	1	90	151	40	0	1195	4417
5:30 PM	175	233	56	0	15	179	12	1	24	82	108	1	81	150	39	0	1156	4584
5:45 PM	163	268	43	0	15	187	8	1	21	91	114	2	75	121	26	0	1135	4639
6:00 PM	168	234	37	2	16	197	18	1	35	93	112	1	64	127	43	0	1148	4634
6:15 PM	145	205	43	2	23	177	16	0	29	69	97	1	53	105	51	0	1016	4455
6:30 PM	152	240	33	1	28	198	10	0	25	72	102	2	45	108	23	0	1039	4338
6:45 PM	112	180	34	0	25	171	12	0	26	66	80	0	40	93	41	0	880	4083
7:00 PM	109	147	33	0	27	197	9	2	29	50	86	1	40	80	36	0	846	3781
7:15 PM	80	124	24	1	22	184	15	0	31	52	96	2	32	77	33	1	774	3539
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	748	992	188	0	128	700	48	0	76	416	356	4	360	604	160	0	4780	
Heavy Trucks	4	12	4		0	12	0		0	4	4		0	4	0		44	
Pedestrians		16				20				32				28			96	
Bicycles	0	2	0		0	3	0		0	0	0		0	0	1		6	
Railroad																		
Stopped Buses																		

Comments:

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	553	549	97	151	87	223	534	230	76	539	28
Future Volume (vph)	42	553	549	97	151	87	223	534	230	76	539	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1671	3505	1528	3367	3406	1479	3335	3374	1498	1787	3387	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1671	3505	1528	3367	3406	1479	3335	3374	1498	1787	3387	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	43	564	560	99	154	89	228	545	235	78	550	29
RTOR Reduction (vph)	0	0	228	0	0	45	0	0	182	0	2	0
Lane Group Flow (vph)	43	564	332	99	154	45	228	545	53	78	577	0
Confl. Peds. (#/hr)	15		3	3		15	13		15	15		13
Heavy Vehicles (%)	8%	3%	4%	4%	6%	5%	5%	7%	4%	1%	5%	17%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	7.8	72.9	72.9	9.9	75.0	75.0	15.2	34.1	34.1	11.1	30.0	
Effective Green, g (s)	7.8	72.9	72.9	9.9	75.0	75.0	15.2	34.1	34.1	11.1	30.0	
Actuated g/C Ratio	0.05	0.49	0.49	0.07	0.50	0.50	0.10	0.23	0.23	0.07	0.20	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.5	4.0	4.0	3.0	2.5	2.5	2.5	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	86	1703	742	222	1703	739	337	767	340	132	677	
v/s Ratio Prot	0.03	0.16		c0.03	0.05		c0.07	c0.16		0.04	c0.17	
v/s Ratio Perm			c0.22			0.03			0.04			
v/c Ratio	0.50	0.33	0.45	0.45	0.09	0.06	0.68	0.71	0.16	0.59	0.85	
Uniform Delay, d1	69.2	23.6	25.3	67.4	19.6	19.3	65.0	53.4	46.4	67.3	57.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.16	1.09	
Incremental Delay, d2	3.3	0.5	1.9	1.4	0.1	0.2	4.8	2.6	0.1	4.5	9.5	
Delay (s)	72.5	24.1	27.3	68.8	19.7	19.5	69.9	56.0	46.5	82.6	72.4	
Level of Service	E	C	C	E	B	B	E	E	D	F	E	
Approach Delay (s)		27.4			33.9			56.9			73.6	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			47.0				HCM 2000 Level of Service		D			
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		22.0			
Intersection Capacity Utilization			75.7%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	56	64	76	32	74	67	471	74	92	510	44
Future Volume (vph)	55	56	64	76	32	74	67	471	74	92	510	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.97		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.90		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1663	1776	1436	1624	1612		1589	3290		1730	3437	
Flt Permitted	0.68	1.00	1.00	0.61	1.00		0.40	1.00		0.40	1.00	
Satd. Flow (perm)	1198	1776	1436	1047	1612		666	3290		721	3437	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	59	60	68	81	34	79	71	501	79	98	543	47
RTOR Reduction (vph)	0	0	60	0	62	0	0	5	0	0	2	0
Lane Group Flow (vph)	59	60	8	81	51	0	71	575	0	98	588	0
Confl. Peds. (#/hr)	16		13	13		16	13		6	6		13
Heavy Vehicles (%)	7%	7%	9%	10%	0%	4%	13%	7%	6%	4%	3%	7%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	27.0	18.6	18.6	33.4	21.8		95.1	87.0		96.5	87.7	
Effective Green, g (s)	27.0	18.6	18.6	33.4	21.8		95.1	87.0		96.5	87.7	
Actuated g/C Ratio	0.18	0.12	0.12	0.22	0.15		0.63	0.58		0.64	0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	241	220	178	277	234		472	1908		523	2009	
v/s Ratio Prot	0.01	0.03		c0.02	0.03		0.01	c0.17		c0.01	0.17	
v/s Ratio Perm	0.03		0.01	c0.04			0.09			0.11		
v/c Ratio	0.24	0.27	0.05	0.29	0.22		0.15	0.30		0.19	0.29	
Uniform Delay, d1	52.3	59.6	57.9	47.7	56.6		10.7	16.0		10.3	15.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.23	0.16		1.00	1.00	
Incremental Delay, d2	0.5	0.7	0.1	0.6	0.5		0.1	0.4		0.2	0.4	
Delay (s)	52.8	60.2	58.0	48.3	57.0		2.6	2.9		10.5	16.0	
Level of Service	D	E	E	D	E		A	A		B	B	
Approach Delay (s)		57.1			53.4			2.9			15.2	
Approach LOS		E			D			A			B	
Intersection Summary												
HCM 2000 Control Delay			19.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			58.0%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	7	0	20	20	2	62	46	498	4	2	654	24
Future Volume (Veh/h)	7	0	20	20	2	62	46	498	4	2	654	24
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	7	0	21	21	2	64	47	513	4	2	674	25
Pedestrians		9			6			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		3.5			3.5			3.5				
Percent Blockage		1			1			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								651			620	
pX, platoon unblocked	0.98	0.98		0.98	0.98	0.98				0.98		
vC, conflicting volume	1102	1304	348	979	1327	264	708			523		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1057	1263	348	931	1287	199	708			464		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.2		
p0 queue free %	95	100	97	89	99	92	94			100		
cM capacity (veh/h)	151	155	647	191	150	791	822			1076		
Direction, Lane #	EB 1	WB 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3	SW 4			
Volume Total	28	87	47	342	175	2	337	337	25			
Volume Left	7	21	47	0	0	2	0	0	0			
Volume Right	21	64	0	0	4	0	0	0	25			
cSH	356	426	822	1700	1700	1076	1700	1700	1700			
Volume to Capacity	0.08	0.20	0.06	0.20	0.10	0.00	0.20	0.20	0.01			
Queue Length 95th (ft)	6	19	5	0	0	0	0	0	0			
Control Delay (s)	16.0	15.6	9.6	0.0	0.0	8.4	0.0	0.0	0.0			
Lane LOS	C	C	A			A						
Approach Delay (s)	16.0	15.6	0.8			0.0						
Approach LOS	C	C										
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			37.9%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	410	246	328	41	94	2	135	385	41	7	356	176
Future Volume (vph)	410	246	328	41	94	2	135	385	41	7	356	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1810	1568	1612	1858		1766	3280		1398	3204	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.28	1.00		0.48	1.00	
Satd. Flow (perm)	1736	1810	1568	1612	1858		517	3280		700	3204	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	466	280	373	47	107	2	153	438	47	8	405	200
RTOR Reduction (vph)	0	0	284	0	1	0	0	4	0	0	38	0
Lane Group Flow (vph)	466	280	89	47	108	0	153	481	0	8	567	0
Confl. Peds. (#/hr)	1		4	4		1	13		1	1		13
Heavy Vehicles (%)	4%	5%	3%	12%	2%	0%	2%	6%	29%	29%	5%	6%
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4	4	3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	30.1	30.1	30.1	14.5	14.5		63.8	56.4		46.4	45.0	
Effective Green, g (s)	30.1	30.1	30.1	14.5	14.5		63.8	56.4		46.4	45.0	
Actuated g/C Ratio	0.24	0.24	0.24	0.11	0.11		0.50	0.45		0.37	0.36	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	413	431	373	184	213		387	1463		264	1140	
v/s Ratio Prot	c0.27	0.15	0.06	0.03	c0.06		c0.04	0.15		0.00	c0.18	
v/s Ratio Perm							0.16			0.01		
v/c Ratio	1.13	0.65	0.24	0.26	0.51		0.40	0.33		0.03	0.50	
Uniform Delay, d1	48.2	43.4	38.9	51.0	52.6		18.5	22.7		25.5	31.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	84.1	3.8	0.5	1.0	2.6		0.9	0.6		0.1	1.6	
Delay (s)	132.2	47.1	39.3	52.0	55.2		19.4	23.3		25.5	33.4	
Level of Service	F	D	D	D	E		B	C		C	C	
Approach Delay (s)		80.0			54.2			22.4			33.3	
Approach LOS		E			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			52.5				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			126.4				Sum of lost time (s)			24.0		
Intersection Capacity Utilization			78.3%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: Elden St & Herndon Parkway

12/14/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	365	420	304	587	141	688	994	185	94	722	48
Future Volume (vph)	91	365	420	304	587	141	688	994	185	94	722	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3574	1517	3502	3539	1549	3467	3539	1509	1805	3494	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	3574	1517	3502	3539	1549	3467	3539	1509	1805	3494	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	376	433	313	605	145	709	1025	191	97	744	49
RTOR Reduction (vph)	0	0	321	0	0	102	0	0	87	0	3	0
Lane Group Flow (vph)	94	376	112	313	605	43	709	1025	104	97	790	0
Confl. Peds. (#/hr)	11		23	23		11	30		28	28		30
Heavy Vehicles (%)	1%	1%	2%	0%	2%	1%	1%	2%	1%	0%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	12.5	38.9	38.9	17.9	44.3	44.3	34.9	58.6	58.6	12.6	36.3	
Effective Green, g (s)	12.5	38.9	38.9	17.9	44.3	44.3	34.9	58.6	58.6	12.6	36.3	
Actuated g/C Ratio	0.08	0.26	0.26	0.12	0.30	0.30	0.23	0.39	0.39	0.08	0.24	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.5	4.0	4.0	3.0	2.5	2.5	2.5	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	148	926	393	417	1045	457	806	1382	589	151	845	
v/s Ratio Prot	0.05	0.11		c0.09	c0.17		c0.20	0.29		0.05	c0.23	
v/s Ratio Perm			0.07			0.03			0.07			
v/c Ratio	0.64	0.41	0.29	0.75	0.58	0.09	0.88	0.74	0.18	0.64	0.93	
Uniform Delay, d1	66.5	46.0	44.4	63.9	44.9	38.3	55.5	39.2	29.9	66.5	55.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.84	
Incremental Delay, d2	7.6	1.3	1.8	7.4	2.3	0.4	10.7	1.9	0.1	6.5	16.3	
Delay (s)	74.1	47.3	46.3	71.3	47.3	38.7	66.2	41.1	30.0	68.6	63.1	
Level of Service	E	D	D	E	D	D	E	D	C	E	E	
Approach Delay (s)		49.6			53.2			49.3			63.7	
Approach LOS		D			D			D			E	
Intersection Summary												
HCM 2000 Control Delay			52.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			22.0		
Intersection Capacity Utilization			97.7%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	89	123	111	101	101	159	903	102	138	611	99
Future Volume (vph)	95	89	123	111	101	101	159	903	102	138	611	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1777	1863	1519	1684	1727		1767	3454		1805	3442	
Flt Permitted	0.41	1.00	1.00	0.64	1.00		0.31	1.00		0.20	1.00	
Satd. Flow (perm)	764	1863	1519	1128	1727		578	3454		376	3442	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	96	90	124	112	102	102	161	912	103	139	617	100
RTOR Reduction (vph)	0	0	104	0	25	0	0	5	0	0	7	0
Lane Group Flow (vph)	96	90	20	112	179	0	161	1010	0	139	710	0
Confl. Peds. (#/hr)	15		26	26		15	7		13	13		7
Heavy Vehicles (%)	1%	2%	1%	5%	0%	0%	2%	2%	4%	0%	2%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	35.3	23.7	23.7	38.5	25.3		90.0	78.5		88.2	77.6	
Effective Green, g (s)	35.3	23.7	23.7	38.5	25.3		90.0	78.5		88.2	77.6	
Actuated g/C Ratio	0.24	0.16	0.16	0.26	0.17		0.60	0.52		0.59	0.52	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	258	294	240	338	291		437	1807		322	1780	
v/s Ratio Prot	0.03	0.05		c0.03	c0.10		0.03	c0.29		c0.03	0.21	
v/s Ratio Perm	0.06		0.01	0.06			0.19			0.22		
v/c Ratio	0.37	0.31	0.08	0.33	0.62		0.37	0.56		0.43	0.40	
Uniform Delay, d1	46.6	55.9	53.9	44.4	57.8		14.1	24.1		16.2	22.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		2.14	2.10		1.00	1.00	
Incremental Delay, d2	0.9	0.6	0.1	0.6	3.8		0.4	0.9		0.9	0.7	
Delay (s)	47.5	56.5	54.0	45.0	61.7		30.6	51.6		17.2	22.7	
Level of Service	D	E	D	D	E		C	D		B	C	
Approach Delay (s)		52.7			55.8			48.7			21.8	
Approach LOS		D			E			D			C	
Intersection Summary												
HCM 2000 Control Delay			41.4			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				24.0		
Intersection Capacity Utilization			79.1%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	31	1	73	18	2	50	117	923	13	8	735	59
Future Volume (Veh/h)	31	1	73	18	2	50	117	923	13	8	735	59
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	33	1	77	19	2	53	123	972	14	8	774	62
Pedestrians		3			5							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								651			620	
pX, platoon unblocked	0.85	0.85	0.96	0.85	0.85	0.83	0.96			0.83		
vC, conflicting volume	1579	2030	390	1710	2085	498	839			991		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1114	1645	281	1269	1710	0	749			577		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	71	99	89	77	97	94	85			99		
cM capacity (veh/h)	113	72	691	83	65	900	832			831		
Direction, Lane #	EB 1	WB 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3	SW 4			
Volume Total	111	74	123	648	338	8	387	387	62			
Volume Left	33	19	123	0	0	8	0	0	0			
Volume Right	77	53	0	0	14	0	0	0	62			
cSH	266	232	832	1700	1700	831	1700	1700	1700			
Volume to Capacity	0.42	0.32	0.15	0.38	0.20	0.01	0.23	0.23	0.04			
Queue Length 95th (ft)	49	33	13	0	0	1	0	0	0			
Control Delay (s)	28.0	27.6	10.1	0.0	0.0	9.4	0.0	0.0	0.0			
Lane LOS	D	D	B			A						
Approach Delay (s)	28.0	27.6	1.1			0.1						
Approach LOS	D	D										
Intersection Summary												
Average Delay			3.0									
Intersection Capacity Utilization			48.1%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	114	211	64	135	10	323	588	85	9	533	263
Future Volume (vph)	275	114	211	64	135	10	323	588	85	9	533	263
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.98		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1881	1583	1770	1863		1768	3475		1802	3292	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.16	1.00		0.39	1.00	
Satd. Flow (perm)	1805	1881	1583	1770	1863		307	3475		741	3292	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	281	116	215	65	138	10	330	600	87	9	544	268
RTOR Reduction (vph)	0	0	174	0	2	0	0	6	0	0	38	0
Lane Group Flow (vph)	281	116	41	65	146	0	330	681	0	9	774	0
Confl. Peds. (#/hr)			4	4			19		4	4		19
Heavy Vehicles (%)	0%	1%	2%	2%	1%	0%	2%	1%	5%	0%	2%	2%
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4	4	3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	25.2	25.2	25.2	16.4	16.4		71.2	63.8		46.5	45.1	
Effective Green, g (s)	25.2	25.2	25.2	16.4	16.4		71.2	63.8		46.5	45.1	
Actuated g/C Ratio	0.19	0.19	0.19	0.13	0.13		0.54	0.49		0.36	0.34	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	347	362	304	221	233		391	1694		274	1135	
v/s Ratio Prot	c0.16	0.06	0.03	0.04	c0.08		c0.13	0.20		0.00	0.24	
v/s Ratio Perm							c0.33			0.01		
v/c Ratio	0.81	0.32	0.14	0.29	0.63		0.84	0.40		0.03	0.68	
Uniform Delay, d1	50.5	45.4	43.8	51.9	54.3		24.2	21.3		27.3	36.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.7	0.7	0.3	1.0	5.9		15.8	0.7		0.1	3.3	
Delay (s)	64.2	46.1	44.1	53.0	60.2		40.0	22.1		27.4	40.0	
Level of Service	E	D	D	D	E		D	C		C	D	
Approach Delay (s)		53.7			58.0			27.9			39.9	
Approach LOS		D			E			C			D	
Intersection Summary												
HCM 2000 Control Delay			39.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			130.8				Sum of lost time (s)			24.0		
Intersection Capacity Utilization			84.6%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Elden St & Herndon Parkway

12/14/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	483	479	97	151	87	481	1152	496	58	710	21
Future Volume (vph)	37	483	479	97	151	87	481	1152	496	58	710	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1671	3505	1528	3367	3406	1479	3335	3374	1498	1787	3409	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1671	3505	1528	3367	3406	1479	3335	3374	1498	1787	3409	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	38	493	489	99	154	89	491	1176	506	59	724	21
RTOR Reduction (vph)	0	0	283	0	0	57	0	0	191	0	1	0
Lane Group Flow (vph)	38	493	206	99	154	32	491	1176	315	59	744	0
Confl. Peds. (#/hr)	15		3	3		15	13		15	15		13
Heavy Vehicles (%)	8%	3%	4%	4%	6%	5%	5%	7%	4%	1%	5%	17%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	7.4	51.5	51.5	9.9	54.0	54.0	26.5	58.2	58.2	8.4	40.1	
Effective Green, g (s)	7.4	51.5	51.5	9.9	54.0	54.0	26.5	58.2	58.2	8.4	40.1	
Actuated g/C Ratio	0.05	0.34	0.34	0.07	0.36	0.36	0.18	0.39	0.39	0.06	0.27	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.5	4.0	4.0	3.0	2.5	2.5	2.5	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	82	1203	524	222	1226	532	589	1309	581	100	911	
v/s Ratio Prot	0.02	c0.14		c0.03	0.05		c0.15	c0.35		0.03	0.22	
v/s Ratio Perm			0.13			0.02			0.21			
v/c Ratio	0.46	0.41	0.39	0.45	0.13	0.06	0.83	0.90	0.54	0.59	0.82	
Uniform Delay, d1	69.4	37.6	37.4	67.4	32.2	31.4	59.6	43.1	35.6	69.1	51.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.09	0.92	
Incremental Delay, d2	3.0	1.0	2.2	1.4	0.2	0.2	9.7	8.3	0.6	5.4	5.2	
Delay (s)	72.4	38.7	39.6	68.8	32.4	31.6	69.3	51.4	36.1	80.7	52.5	
Level of Service	E	D	D	E	C	C	E	D	D	F	D	
Approach Delay (s)		40.4			42.7			51.9			54.5	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			48.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		22.0			
Intersection Capacity Utilization			86.8%				ICU Level of Service		E			
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	84	96	76	66	96	144	1000	159	115	636	55
Future Volume (vph)	83	84	96	76	66	96	144	1000	159	115	636	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1677	1776	1436	1622	1654		1593	3289		1736	3437	
Flt Permitted	0.39	1.00	1.00	0.69	1.00		0.31	1.00		0.14	1.00	
Satd. Flow (perm)	691	1776	1436	1174	1654		525	3289		262	3437	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	88	89	102	81	70	102	153	1064	169	122	677	59
RTOR Reduction (vph)	0	0	88	0	40	0	0	6	0	0	3	0
Lane Group Flow (vph)	88	89	14	81	132	0	153	1227	0	122	733	0
Confl. Peds. (#/hr)	16		13	13		16	13		6	6		13
Heavy Vehicles (%)	7%	7%	9%	10%	0%	4%	13%	7%	6%	4%	3%	7%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	32.2	20.5	20.5	31.4	20.1		95.1	83.7		93.3	82.8	
Effective Green, g (s)	32.2	20.5	20.5	31.4	20.1		95.1	83.7		93.3	82.8	
Actuated g/C Ratio	0.21	0.14	0.14	0.21	0.13		0.63	0.56		0.62	0.55	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	242	196	279	221		414	1835		266	1897	
v/s Ratio Prot	c0.03	0.05		0.02	c0.08		0.03	c0.37		c0.03	0.21	
v/s Ratio Perm	0.05		0.01	0.04			0.21			0.25		
v/c Ratio	0.39	0.37	0.07	0.29	0.60		0.37	0.67		0.46	0.39	
Uniform Delay, d1	49.1	58.9	56.4	49.4	61.1		11.9	23.4		15.9	19.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.59	0.30		1.00	1.00	
Incremental Delay, d2	1.1	0.9	0.2	0.6	4.3		0.3	1.2		1.3	0.6	
Delay (s)	50.2	59.8	56.6	49.9	65.5		7.3	8.2		17.2	19.7	
Level of Service	D	E	E	D	E		A	A		B	B	
Approach Delay (s)		55.6			60.5			8.1			19.4	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM 2000 Control Delay			21.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				24.0		
Intersection Capacity Utilization			79.8%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	14	2	27	40	4	102	96	990	46	16	784	36
Future Volume (Veh/h)	14	2	27	40	4	102	96	990	46	16	784	36
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	14	2	28	41	4	105	99	1021	47	16	808	37
Pedestrians		9			6			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		3.5			3.5			3.5				
Percent Blockage		1			1			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								651			620	
pX, platoon unblocked	0.78	0.78		0.78	0.78	0.78				0.78		
vC, conflicting volume	1664	2121	415	1716	2134	540	854			1074		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1296	1878	415	1361	1896	0	854			542		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.2		
p0 queue free %	79	96	95	37	91	88	86			98		
cM capacity (veh/h)	68	47	586	65	46	850	720			808		
Direction, Lane #	EB 1	WB 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3	SW 4			
Volume Total	44	150	99	681	387	16	404	404	37			
Volume Left	14	41	99	0	0	16	0	0	0			
Volume Right	28	105	0	0	47	0	0	0	37			
cSH	148	177	720	1700	1700	808	1700	1700	1700			
Volume to Capacity	0.30	0.85	0.14	0.40	0.23	0.02	0.24	0.24	0.02			
Queue Length 95th (ft)	29	149	12	0	0	2	0	0	0			
Control Delay (s)	39.3	85.0	10.8	0.0	0.0	9.5	0.0	0.0	0.0			
Lane LOS	E	F	B			A						
Approach Delay (s)	39.3	85.0	0.9			0.2						
Approach LOS	E	F										
Intersection Summary												
Average Delay			7.1									
Intersection Capacity Utilization			53.0%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

4: Elden St & Sterling Rd/Locust Dr

12/14/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	564	338	451	58	133	3	262	746	79	7	368	182
Future Volume (vph)	564	338	451	58	133	3	262	746	79	7	368	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1810	1568	1612	1858		1766	3281		1399	3201	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.25	1.00		0.27	1.00	
Satd. Flow (perm)	1736	1810	1568	1612	1858		468	3281		404	3201	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	641	384	512	66	151	3	298	848	90	8	418	207
RTOR Reduction (vph)	0	0	398	0	1	0	0	4	0	0	39	0
Lane Group Flow (vph)	641	384	115	66	153	0	298	934	0	8	586	0
Confl. Peds. (#/hr)	1		4	4		1	13		1	1		13
Heavy Vehicles (%)	4%	5%	3%	12%	2%	0%	2%	6%	29%	29%	5%	6%
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4	4	3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	30.1	30.1	30.1	17.2	17.2		69.5	62.0		46.5	45.0	
Effective Green, g (s)	30.1	30.1	30.1	17.2	17.2		69.5	62.0		46.5	45.0	
Actuated g/C Ratio	0.22	0.22	0.22	0.13	0.13		0.52	0.46		0.34	0.33	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	387	404	350	205	237		419	1509		150	1068	
v/s Ratio Prot	c0.37	0.21	0.07	0.04	c0.08		c0.10	0.28		0.00	0.18	
v/s Ratio Perm							c0.27			0.02		
v/c Ratio	1.66	0.95	0.33	0.32	0.65		0.71	0.62		0.05	0.55	
Uniform Delay, d1	52.4	51.6	43.9	53.5	55.9		21.5	27.5		29.2	36.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	306.7	32.4	0.7	1.2	6.6		6.0	1.9		0.2	2.0	
Delay (s)	359.0	84.0	44.6	54.7	62.5		27.5	29.4		29.4	38.6	
Level of Service	F	F	D	D	E		C	C		C	D	
Approach Delay (s)		185.5			60.2			28.9			38.5	
Approach LOS		F			E			C			D	
Intersection Summary												
HCM 2000 Control Delay			98.9				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			134.8				Sum of lost time (s)			24.0		
Intersection Capacity Utilization			95.9%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: Elden St & Herndon Parkway

12/14/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	420	483	417	806	194	644	930	173	166	1075	85
Future Volume (vph)	105	420	483	417	806	194	644	930	173	166	1075	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3574	1517	3502	3539	1549	3467	3539	1509	1805	3485	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	3574	1517	3502	3539	1549	3467	3539	1509	1805	3485	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	108	433	498	430	831	200	664	959	178	171	1108	88
RTOR Reduction (vph)	0	0	339	0	0	139	0	0	88	0	4	0
Lane Group Flow (vph)	108	433	159	430	831	61	664	959	90	171	1192	0
Confl. Peds. (#/hr)	11		23	23		11	30		28	28		30
Heavy Vehicles (%)	1%	1%	2%	0%	2%	1%	1%	2%	1%	0%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	13.3	34.1	34.1	19.9	40.7	40.7	33.3	56.8	56.8	17.2	40.7	
Effective Green, g (s)	13.3	34.1	34.1	19.9	40.7	40.7	33.3	56.8	56.8	17.2	40.7	
Actuated g/C Ratio	0.09	0.23	0.23	0.13	0.27	0.27	0.22	0.38	0.38	0.11	0.27	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.5	4.0	4.0	3.0	2.5	2.5	2.5	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	158	812	344	464	960	420	769	1340	571	206	945	
v/s Ratio Prot	0.06	0.12		c0.12	c0.23		c0.19	0.27		0.09	c0.34	
v/s Ratio Perm			0.10			0.04			0.06			
v/c Ratio	0.68	0.53	0.46	0.93	0.87	0.14	0.86	0.72	0.16	0.83	1.26	
Uniform Delay, d1	66.3	51.0	50.0	64.3	52.0	41.5	56.2	39.7	30.8	65.0	54.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.08	0.82	
Incremental Delay, d2	10.6	2.5	4.4	24.5	10.3	0.7	9.8	1.5	0.0	18.7	124.6	
Delay (s)	76.9	53.5	54.4	88.9	62.4	42.2	66.0	41.3	30.8	88.9	169.3	
Level of Service	E	D	D	F	E	D	E	D	C	F	F	
Approach Delay (s)		56.4			67.4			49.3			159.2	
Approach LOS		E			E			D			F	
Intersection Summary												
HCM 2000 Control Delay			81.8		HCM 2000 Level of Service				F			
HCM 2000 Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			150.0		Sum of lost time (s)				22.0			
Intersection Capacity Utilization			109.6%		ICU Level of Service				H			
Analysis Period (min)			15									
c Critical Lane Group												

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	131	181	264	235	235	143	964	92	251	861	180
Future Volume (vph)	140	131	181	264	235	235	143	964	92	251	861	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1863	1519	1694	1727		1769	3466		1805	3418	
Flt Permitted	0.13	1.00	1.00	0.53	1.00		0.16	1.00		0.11	1.00	
Satd. Flow (perm)	248	1863	1519	945	1727		289	3466		213	3418	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	141	132	183	267	237	237	144	974	93	254	870	182
RTOR Reduction (vph)	0	0	146	0	23	0	0	5	0	0	11	0
Lane Group Flow (vph)	141	132	37	267	451	0	144	1062	0	254	1041	0
Confl. Peds. (#/hr)	15		26	26		15	7		13	13		7
Heavy Vehicles (%)	1%	2%	1%	5%	0%	0%	2%	2%	4%	0%	2%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	44.2	30.4	30.4	51.8	34.2		73.4	61.8		82.6	66.4	
Effective Green, g (s)	44.2	30.4	30.4	51.8	34.2		73.4	61.8		82.6	66.4	
Actuated g/C Ratio	0.29	0.20	0.20	0.35	0.23		0.49	0.41		0.55	0.44	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	214	377	307	414	393		255	1427		289	1513	
v/s Ratio Prot	0.06	0.07		c0.08	c0.26		0.04	0.31		c0.09	c0.30	
v/s Ratio Perm	0.13		0.02	0.15			0.23			c0.39		
v/c Ratio	0.66	0.35	0.12	0.64	1.15		0.56	0.74		0.88	0.69	
Uniform Delay, d1	43.0	51.3	48.9	38.6	57.9		24.6	37.4		32.8	33.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.82	1.76		1.00	1.00	
Incremental Delay, d2	7.1	0.6	0.2	3.4	91.9		2.2	2.7		24.6	2.6	
Delay (s)	50.2	51.9	49.1	42.1	149.8		46.9	68.4		57.4	36.1	
Level of Service	D	D	D	D	F		D	E		E	D	
Approach Delay (s)		50.2			111.0			65.8			40.2	
Approach LOS		D			F			E			D	
Intersection Summary												
HCM 2000 Control Delay			63.9			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			98.8%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	62	6	146	36	12	100	117	1163	13	40	1085	100
Future Volume (Veh/h)	62	6	146	36	12	100	117	1163	13	40	1085	100
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	65	6	154	38	13	105	123	1224	14	42	1142	105
Pedestrians		3			5							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								651			620	
pX, platoon unblocked	0.87	0.87	0.77	0.87	0.87	0.76	0.77			0.76		
vC, conflicting volume	2198	2718	574	2294	2816	624	1250			1243		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	919	1515	0	1028	1627	0	742			685		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	47	93	82	64	81	87	82			94		
cM capacity (veh/h)	122	80	843	105	69	824	676			693		
Direction, Lane #	EB 1	WB 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3	SW 4			
Volume Total	225	156	123	816	422	42	571	571	105			
Volume Left	65	38	123	0	0	42	0	0	0			
Volume Right	154	105	0	0	14	0	0	0	105			
cSH	285	229	676	1700	1700	693	1700	1700	1700			
Volume to Capacity	0.79	0.68	0.18	0.48	0.25	0.06	0.34	0.34	0.06			
Queue Length 95th (ft)	154	108	17	0	0	5	0	0	0			
Control Delay (s)	52.3	48.7	11.5	0.0	0.0	10.5	0.0	0.0	0.0			
Lane LOS	F	E	B			B						
Approach Delay (s)	52.3	48.7	1.0			0.3						
Approach LOS	F	E										
Intersection Summary												
Average Delay			7.0									
Intersection Capacity Utilization			64.6%		ICU Level of Service				C			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	559	232	429	91	192	14	421	821	119	13	760	375
Future Volume (vph)	559	232	429	91	192	14	421	821	119	13	760	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.98		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1881	1583	1770	1864		1770	3476		1804	3288	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.08	1.00		0.25	1.00	
Satd. Flow (perm)	1805	1881	1583	1770	1864		150	3476		470	3288	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	570	237	438	93	196	14	430	838	121	13	776	383
RTOR Reduction (vph)	0	0	344	0	2	0	0	6	0	0	40	0
Lane Group Flow (vph)	570	237	94	93	208	0	430	953	0	13	1119	0
Confl. Peds. (#/hr)			4	4			19		4	4		19
Heavy Vehicles (%)	0%	1%	2%	2%	1%	0%	2%	1%	5%	0%	2%	2%
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4	4	3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	30.0	30.0	30.0	21.3	21.3		69.8	60.8		46.8	43.8	
Effective Green, g (s)	30.0	30.0	30.0	21.3	21.3		69.8	60.8		46.8	43.8	
Actuated g/C Ratio	0.22	0.22	0.22	0.15	0.15		0.50	0.44		0.34	0.31	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	389	405	341	271	285		308	1519		186	1035	
v/s Ratio Prot	c0.32	0.13	0.06	0.05	c0.11		c0.20	0.27		0.00	0.34	
v/s Ratio Perm							c0.50			0.02		
v/c Ratio	1.47	0.59	0.28	0.34	0.73		1.40	0.63		0.07	1.08	
Uniform Delay, d1	54.5	49.0	45.5	52.6	56.2		45.4	30.4		31.1	47.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	223.1	2.5	0.6	1.0	9.9		196.9	2.0		0.2	52.7	
Delay (s)	277.6	51.5	46.1	53.7	66.0		242.3	32.3		31.3	100.3	
Level of Service	F	D	D	D	E		F	C		C	F	
Approach Delay (s)		153.1			62.2			97.3			99.6	
Approach LOS		F			E			F			F	
Intersection Summary												
HCM 2000 Control Delay			112.3			HCM 2000 Level of Service				F		
HCM 2000 Volume to Capacity ratio			1.32									
Actuated Cycle Length (s)			139.1			Sum of lost time (s)				24.0		
Intersection Capacity Utilization			118.9%			ICU Level of Service				H		
Analysis Period (min)			15									
c Critical Lane Group												

DRAFT

2040 Build Scenario Traffic Operations Addendum

South Elden Street Corridor Plan

Town of Herndon

July 9, 2018

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Table 2: 2040 Build with Dulles Park Driveway Signalization Synchro Results 5

1. Introduction

As an addendum to the Traffic Operations Technical Memorandum, which evaluated traffic volumes and delays existing on South Elden Street and those projected for 2040 with the same existing roadway facilities, the traffic volumes and delays resulting from the conceptual design of South Elden Street and associated changes in land uses were projected for 2040. This addendum provides projected volumes, level of service, and seconds of delay at four intersections along South Elden Street in this Build scenario. This addendum also identifies potential improvements to signal timing and roadway geometry that should be evaluated through future design, engineering, and traffic analysis.

2. Future Build Condition Traffic Analysis

Projected traffic volumes for year 2040, as well as existing lane configuration and traffic signal timings, were the inputs to the future build condition traffic analysis. Similar to existing condition and future No Build analysis, Synchro was used to perform the capacity analysis using HCM methodologies. Future traffic volumes were developed for year 2040 using Metropolitan Washington Council of Government's Round 9 Cooperative Forecast model, with added growth to account for the 1.76% increase in households and employment within a mile of the corridor in the Build scenario. This growth reflects changes in land use proposed along South Elden Street that would accompany the new roadway design. **Figure 1** shows projected morning and evening traffic volumes at study intersections. Summary of the Synchro results are shown on **Table 1**. More detailed information, including LOS and delay for each individual approach, is provided on **Figure 2** for the AM peak hour and on **Figure 3** for the PM peak hour. Copies of the 2040 Build Synchro reports are included in **Appendix A**.

Table 1: 2040 Build Synchro Results

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (seconds)	LOS	Delay (seconds)
Signalized Intersections				
Herndon Parkway / Elden Street	D	48.7	E	74.5
Alabama Drive / Elden Street	B	18.4	D	41.6
Sterling Road/Locust Street and Elden Street	E	68.6	F	114.7
Unsignalized Intersections (worst LOS/Delay approach shown)				
Dulles Park Shopping Center / Elden Street*	F	61.2	E	48.5

*Minor Street approach Delay and LOS are reported.

As indicated in the analysis results, with existing lane use and traffic control assumed for the future Build analysis, most intersections are expected to operate with slightly improved delays in 2040 comparing to the No Build scenario condition.

Despite changes to the geometry of the intersection of the Dulles Shopping Center driveways, operation remains LOS F in the morning peak hour and LOS E in the

evening peak hour in the Build scenario, mainly due to significant increase of Elden Street traffic that makes driveway traffic incur more delays before they can find a gap on the main street traffic to make a turn.

Synchro result suggests that the signalized intersection of Sterling Road/Locust Street/Elden Street will also operate unfavorably in 2040 under the Build scenario. In AM peak hour, significant delay is observed on the side street approaches, though the eastbound delay is decreased in the Build scenario, down to 96.5 seconds compared to 185.5 seconds in the No Build scenario. In the evening peak hour, all approaches operate with LOS E or LOS F with overall intersection delay of 114.7 seconds.

At Alabama Drive intersection, the overall intersection level of service is changed to C from B in the morning peak hour, with the delay increase on side street approaches. The main street approach (Elden Street) continues to operate efficiently with LOS A and LOS B on the northbound and southbound approaches, respectively, during the morning peak hour. The intersection also performs slightly better in the PM peak, when the LOS changes from E in the No Build to LOS D in the Build scenario. Improvements to northbound delay account for this change, with a reduction of delay from 65.8 seconds in the No Build scenario to 18.1 seconds in the Build scenario.

The Herndon Parkway/Elden Street continues to operate acceptably at LOS D with 50 seconds of delay in the morning peak hour with delays almost evenly balanced between all approaches. Similar to other intersections, the intersection operation during evening peak hour is expected to be unfavorable, though the LOS does improve slightly from LOS F in the No Build scenario to LOS E in the Build scenario. This improvement is largely related to an improvement in delay on the southbound approach, reduced from 159.2 seconds in the No Build to 81.5 seconds in the Build scenario.

3. Recommendations for Future Analysis

The review of 2040 No Build and Build traffic analysis results suggest that increased vehicular traffic demand due to the future growth is the main contributing factor for degrading level of service at all the study intersections. The significant delay increase observed for individual movements or approaches suggests a need for mitigations in form of traffic signal phasing and/or potential lane configuration or roadway improvements.

At the intersection of South Elden Street and Sterling Road, the eastbound and westbound approaches operate poorly during the AM and PM peak hours. Potential signal phasing mitigations that could be studied in future designs could include concurrent side street signal phasing and provision of an overlap phase for eastbound right turn movements to operate concurrently with the northbound left-turn phase. Additional lane configurations that could reduce delay could include the provision of dual left-turn lanes on the eastbound approach and provision of a left-turn lane on the westbound approach to prevent the potential for through traffic being blocked by vehicles waiting to turn left.

At the entrance to Dulles Park shopping center, the driveways operate poorly, specifically during the AM peak hour. Signalizing this intersection would distribute the delay more evenly and improve the LOS, as shown in **Table 2**. Synchro analysis performed for this possibility showed an improvement from LOS F in the AM peak of the No Build scenario to an LOS B in an alternate Build scenario with a signalized intersection at the Dulles Park shopping center. PM peak results showed similar improvement, shifting from LOS E in the No Build scenario to LOS C in the alternate Build scenario. The signalization of the Dulles Park driveways would also have minor impacts on LOS at the Alabama Drive intersection, increasing the AM delay from 18.4 seconds in the Build scenario to 20.9 seconds in the signalized alternate Build, but decreasing the delay from 41.6 seconds in the PM peak to 34.5 seconds in the alternate Build scenario.

Table 2: 2040 Build with Dulles Park Driveway Signalization Synchro Results

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (seconds)	LOS	Delay (seconds)
Signalized Intersections				
Herndon Parkway / Elden Street	D	49.7	E	75.8
Alabama Drive / Elden Street	C	20.9	C	34.5
Dulles Park Shopping Center / Elden Street	B	17.0	C	27.3
Sterling Road/Locust Street and Elden Street	E	68.6	F	114.7

While the Build scenario does indicate a reduction in delay for the southbound approach of South Elden Street at Herndon Parkway, this leg of the intersection still faces significant delay, particularly in the PM peak. Given the right-of-way constraints and alignment challenges across the intersection, an additional lane for through traffic may not be feasible, but longer signal phasing for this movement could improve traffic flow in the PM peak.

As specific land uses are determined and roadway designs move forward, the Town of Herndon will need to perform a full traffic impact analysis to estimate the impacts to roadway segments and intersections along South Elden Street and its connecting network of roads. While this current analysis provides an estimate of impacts to the major intersections based on the conceptual design and forecasted changes in households and employment in the corridor, a more robust traffic impact analysis will identify more specific impacts to local residents and businesses resulting from refinements in zoning and roadway engineering.

Figure 1: Future Build (2040) Traffic Volumes



Figure 2: Future Build (2040) AM Peak Hour LOS and Delay

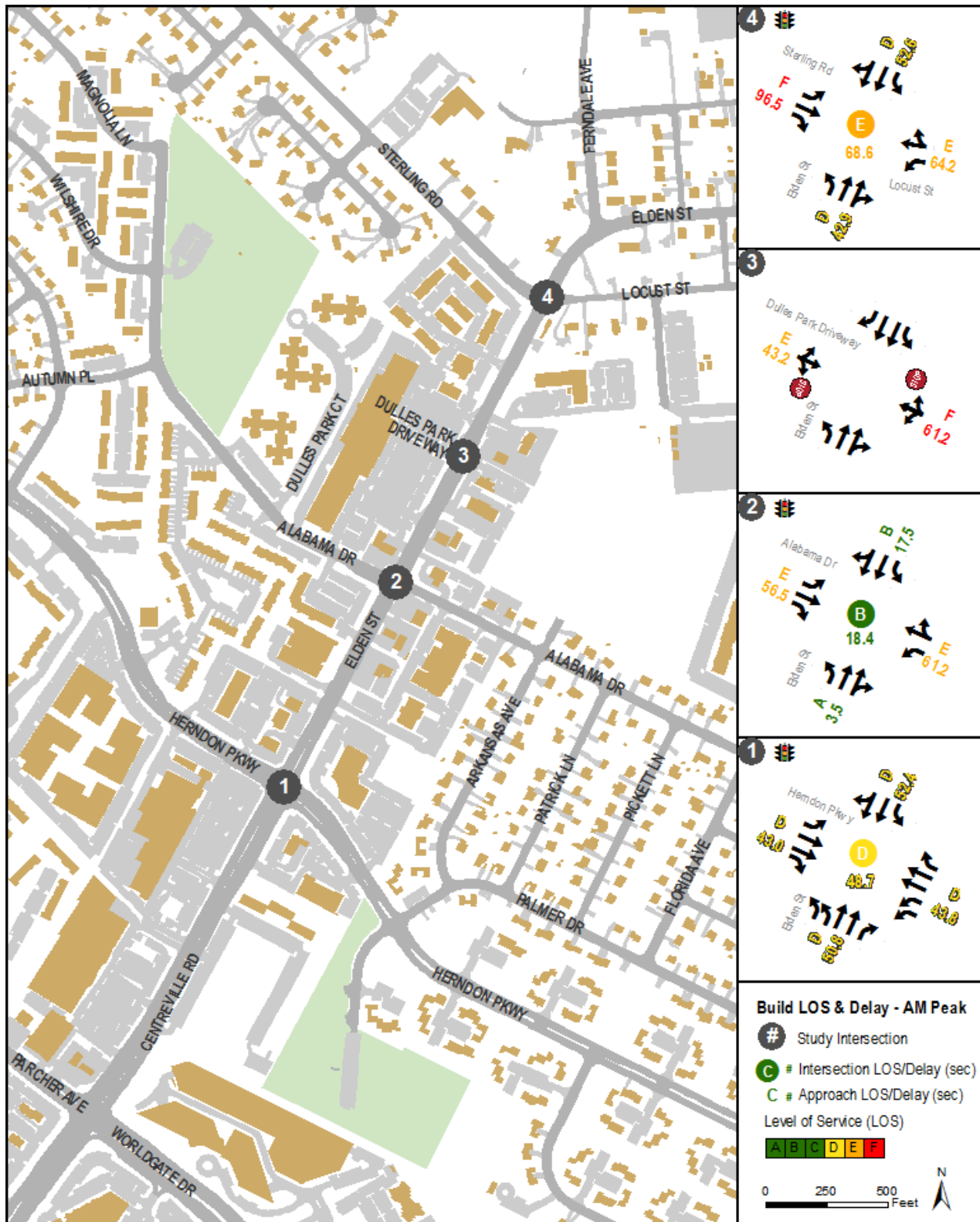
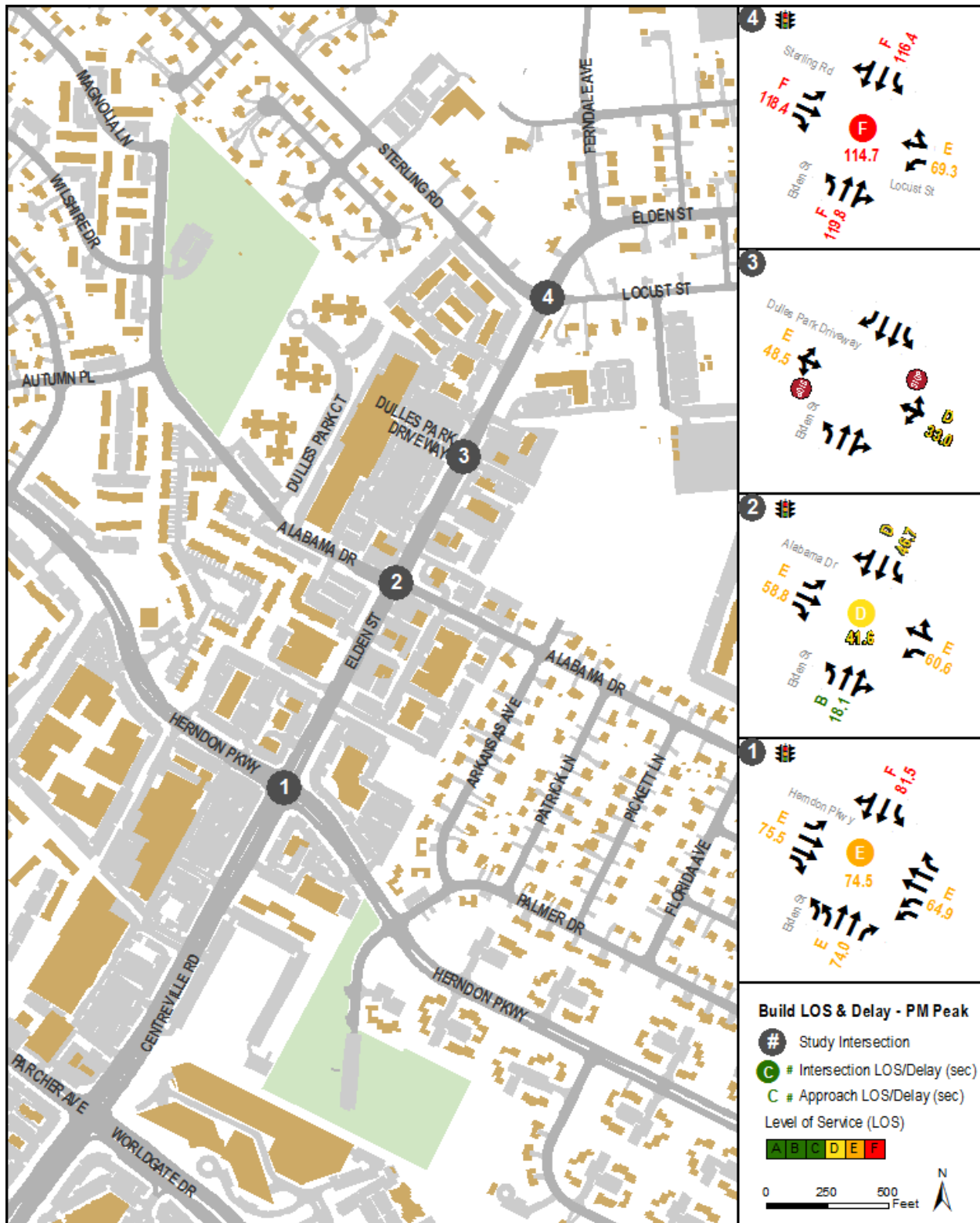


Figure 3: Future Build (2040) PM Peak Hour LOS and Delay



2040 AM Build Conditions

HCM Signalized Intersection Capacity Analysis

1: Elden St & Herndon Parkway

07/02/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	492	487	99	154	89	490	1172	505	59	723	21
Future Volume (vph)	38	492	487	99	154	89	490	1172	505	59	723	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1671	3505	1528	3367	3406	1479	3335	3374	1498	1787	3410	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1671	3505	1528	3367	3406	1479	3335	3374	1498	1787	3410	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	39	502	497	101	157	91	500	1196	515	60	738	21
RTOR Reduction (vph)	0	0	242	0	0	59	0	0	197	0	1	0
Lane Group Flow (vph)	39	502	255	101	157	32	500	1196	318	60	758	0
Confl. Peds. (#/hr)	15		3	3		15	13		15	15		13
Heavy Vehicles (%)	8%	3%	4%	4%	6%	5%	5%	7%	4%	1%	5%	17%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	7.1	50.0	50.0	9.4	52.3	52.3	26.2	60.1	60.1	8.5	42.4	
Effective Green, g (s)	7.1	50.0	50.0	9.4	52.3	52.3	26.2	60.1	60.1	8.5	42.4	
Actuated g/C Ratio	0.05	0.33	0.33	0.06	0.35	0.35	0.17	0.40	0.40	0.06	0.28	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.5	4.0	4.0	3.0	2.5	2.5	2.5	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	79	1168	509	210	1187	515	582	1351	600	101	963	
v/s Ratio Prot	0.02	0.14		c0.03	0.05		c0.15	c0.35		0.03	0.22	
v/s Ratio Perm			c0.17			0.02			0.21			
v/c Ratio	0.49	0.43	0.50	0.48	0.13	0.06	0.86	0.89	0.53	0.59	0.79	
Uniform Delay, d1	69.7	38.9	40.0	67.9	33.4	32.5	60.1	41.7	34.2	69.1	49.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	
Incremental Delay, d2	3.5	1.2	3.5	1.7	0.2	0.2	11.9	7.1	0.4	5.8	3.8	
Delay (s)	73.2	40.1	43.5	69.7	33.6	32.7	72.0	48.8	34.6	71.7	50.9	
Level of Service	E	D	D	E	C	C	E	D	C	E	D	
Approach Delay (s)		43.0			43.8			50.8			52.4	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			48.7				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			22.0		
Intersection Capacity Utilization			87.4%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Elden St & Alabama Dr

07/02/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	85	98	77	67	98	147	1018	162	117	647	56
Future Volume (vph)	84	85	98	77	67	98	147	1018	162	117	647	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1677	1776	1436	1623	1654		1593	3289		1736	3437	
Flt Permitted	0.39	1.00	1.00	0.67	1.00		0.32	1.00		0.14	1.00	
Satd. Flow (perm)	696	1776	1436	1152	1654		530	3289		264	3437	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	89	90	104	82	71	104	156	1083	172	124	688	60
RTOR Reduction (vph)	0	0	90	0	38	0	0	7	0	0	4	0
Lane Group Flow (vph)	89	90	14	82	137	0	156	1248	0	124	744	0
Confl. Peds. (#/hr)	16		13	13		16	13		6	6		13
Heavy Vehicles (%)	7%	7%	9%	10%	0%	4%	13%	7%	6%	4%	3%	7%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	29.4	20.6	20.6	29.2	20.5		97.1	86.9		96.3	86.5	
Effective Green, g (s)	29.4	20.6	20.6	29.2	20.5		97.1	86.9		96.3	86.5	
Actuated g/C Ratio	0.20	0.14	0.14	0.19	0.14		0.65	0.58		0.64	0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	193	243	197	251	226		415	1905		265	1982	
v/s Ratio Prot	c0.03	0.05		0.02	c0.08		0.03	c0.38		c0.03	0.22	
v/s Ratio Perm	0.06		0.01	0.04			0.22			0.27		
v/c Ratio	0.46	0.37	0.07	0.33	0.61		0.38	0.66		0.47	0.38	
Uniform Delay, d1	51.4	58.8	56.4	51.2	61.0		11.0	21.4		14.7	17.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.19	0.12		1.00	1.00	
Incremental Delay, d2	1.7	1.0	0.2	0.8	4.5		0.4	1.2		1.3	0.5	
Delay (s)	53.2	59.8	56.5	52.0	65.5		2.5	3.7		16.0	17.7	
Level of Service	D	E	E	D	E		A	A		B	B	
Approach Delay (s)		56.5			61.2			3.5			17.5	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM 2000 Control Delay			18.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				24.0		
Intersection Capacity Utilization			80.7%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: Elden St & Dulles Park Driveway 2

07/02/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	14	2	27	41	4	104	98	1008	47	16	798	37
Future Volume (Veh/h)	14	2	27	41	4	104	98	1008	47	16	798	37
Sign Control	Stop				Stop				Free			
Grade	0%				0%				0%			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	14	2	28	42	4	107	101	1039	48	16	823	38
Pedestrians	9				6				2			
Lane Width (ft)	12.0				12.0				12.0			
Walking Speed (ft/s)	3.5				3.5				3.5			
Percent Blockage	1				1				0			
Right turn flare (veh)												
Median type	None								None			
Median storage (veh)												
Upstream signal (ft)	651								620			
pX, platoon unblocked	0.79	0.79		0.79	0.79	0.79				0.79		
vC, conflicting volume	1694	2159	422	1746	2173	550	870			1093		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1345	1934	422	1410	1952	0	870			583		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.2		
p0 queue free %	77	95	95	29	91	87	86			98		
cM capacity (veh/h)	62	44	579	59	42	856	710			786		
Direction, Lane #	EB 1	WB 1	WB 2	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3	SW 4		
Volume Total	44	46	107	101	693	394	16	412	412	38		
Volume Left	14	42	0	101	0	0	16	0	0	0		
Volume Right	28	0	107	0	0	48	0	0	0	38		
cSH	137	57	856	710	1700	1700	786	1700	1700	1700		
Volume to Capacity	0.32	0.80	0.13	0.14	0.41	0.23	0.02	0.24	0.24	0.02		
Queue Length 95th (ft)	32	88	11	12	0	0	2	0	0	0		
Control Delay (s)	43.2	180.7	9.8	10.9	0.0	0.0	9.7	0.0	0.0	0.0		
Lane LOS	E	F	A	B				A				
Approach Delay (s)	43.2	61.2	0.9					0.2				
Approach LOS	E	F										
Intersection Summary												
Average Delay	5.5											
Intersection Capacity Utilization	52.3%			ICU Level of Service						A		
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis

4: Elden St & Sterling Rd/Locust Dr

07/02/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	574	344	459	59	135	3	267	759	80	7	375	185
Future Volume (vph)	574	344	459	59	135	3	267	759	80	7	375	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1810	1568	1612	1858		1768	3282		1399	3200	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.18	1.00		0.23	1.00	
Satd. Flow (perm)	1736	1810	1568	1612	1858		338	3282		334	3200	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	652	391	522	67	153	3	303	862	91	8	426	210
RTOR Reduction (vph)	0	0	363	0	1	0	0	4	0	0	40	0
Lane Group Flow (vph)	652	391	159	67	155	0	303	950	0	8	596	0
Confl. Peds. (#/hr)	1		4	4		1	13		1	1		13
Heavy Vehicles (%)	4%	5%	3%	12%	2%	0%	2%	6%	29%	29%	5%	6%
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4	4	3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	43.0	43.0	43.0	17.7	17.7		62.9	55.3		38.5	36.9	
Effective Green, g (s)	43.0	43.0	43.0	17.7	17.7		62.9	55.3		38.5	36.9	
Actuated g/C Ratio	0.30	0.30	0.30	0.12	0.12		0.44	0.39		0.27	0.26	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	527	549	476	201	232		352	1281		102	833	
v/s Ratio Prot	c0.38	0.22	0.10	0.04	c0.08		c0.12	0.29		0.00	0.19	
v/s Ratio Perm							c0.26			0.02		
v/c Ratio	1.24	0.71	0.33	0.33	0.67		0.86	0.74		0.08	0.72	
Uniform Delay, d1	49.3	43.8	38.2	56.6	59.2		29.7	37.0		38.0	47.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	122.3	4.7	0.6	1.3	7.8		19.4	3.9		0.5	5.2	
Delay (s)	171.6	48.5	38.8	57.9	66.9		49.2	40.9		38.5	52.8	
Level of Service	F	D	D	E	E		D	D		D	D	
Approach Delay (s)		96.5			64.2			42.9			52.6	
Approach LOS		F			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			68.6			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			141.6			Sum of lost time (s)				24.0		
Intersection Capacity Utilization			96.8%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

2040 PM Build Conditions

HCM Signalized Intersection Capacity Analysis

1: Elden St & Herndon Parkway

07/02/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	427	492	424	820	197	655	946	176	169	1094	87
Future Volume (vph)	107	427	492	424	820	197	655	946	176	169	1094	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3574	1517	3502	3539	1549	3467	3539	1509	1805	3485	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	3574	1517	3502	3539	1549	3467	3539	1509	1805	3485	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	110	440	507	437	845	203	675	975	181	174	1128	90
RTOR Reduction (vph)	0	0	292	0	0	143	0	0	100	0	4	0
Lane Group Flow (vph)	110	440	215	437	845	60	675	975	81	174	1214	0
Confl. Peds. (#/hr)	11		23	23		11	30		28	28		30
Heavy Vehicles (%)	1%	1%	2%	0%	2%	1%	1%	2%	1%	0%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	10.0	34.0	34.0	18.0	42.0	42.0	28.0	46.9	46.9	29.1	48.0	
Effective Green, g (s)	10.0	34.0	34.0	18.0	42.0	42.0	28.0	46.9	46.9	29.1	48.0	
Actuated g/C Ratio	0.07	0.23	0.23	0.12	0.28	0.28	0.19	0.31	0.31	0.19	0.32	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.5	4.0	4.0	3.0	2.5	2.5	2.5	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	119	810	343	420	990	433	647	1106	471	350	1115	
v/s Ratio Prot	0.06	0.12		c0.12	c0.24		c0.19	0.28		0.10	c0.35	
v/s Ratio Perm			0.14			0.04			0.05			
v/c Ratio	0.92	0.54	0.63	1.04	0.85	0.14	1.04	0.88	0.17	0.50	1.09	
Uniform Delay, d1	69.6	51.2	52.3	66.0	51.1	40.5	61.0	48.9	37.5	53.9	51.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.70	
Incremental Delay, d2	59.0	2.6	8.4	54.8	9.3	0.7	47.2	8.2	0.1	0.3	51.8	
Delay (s)	128.6	53.8	60.7	120.8	60.4	41.1	108.2	57.1	37.5	40.1	87.4	
Level of Service	F	D	E	F	E	D	F	E	D	D	F	
Approach Delay (s)		64.9			75.5			74.0			81.5	
Approach LOS		E			E			E			F	
Intersection Summary												
HCM 2000 Control Delay			74.5				HCM 2000 Level of Service		E			
HCM 2000 Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		22.0			
Intersection Capacity Utilization			110.7%				ICU Level of Service		H			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Elden St & Alabama Dr

07/02/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	133	184	269	239	239	146	981	94	255	876	183
Future Volume (vph)	142	133	184	269	239	239	146	981	94	255	876	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1786	1863	1519	1697	1727		1770	3465		1805	3418	
Flt Permitted	0.16	1.00	1.00	0.50	1.00		0.11	1.00		0.11	1.00	
Satd. Flow (perm)	299	1863	1519	886	1727		207	3465		203	3418	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	143	134	186	272	241	241	147	991	95	258	885	185
RTOR Reduction (vph)	0	0	148	0	25	0	0	4	0	0	11	0
Lane Group Flow (vph)	143	134	38	272	457	0	147	1082	0	258	1059	0
Confl. Peds. (#/hr)	15		26	26		15	7		13	13		7
Heavy Vehicles (%)	1%	2%	1%	5%	0%	0%	2%	2%	4%	0%	2%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	39.7	30.7	30.7	58.1	43.1		66.9	56.9		79.9	63.9	
Effective Green, g (s)	39.7	30.7	30.7	58.1	43.1		66.9	56.9		79.9	63.9	
Actuated g/C Ratio	0.26	0.20	0.20	0.39	0.29		0.45	0.38		0.53	0.43	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	168	381	310	458	496		196	1314		289	1456	
v/s Ratio Prot	c0.05	0.07		0.08	c0.26		0.05	0.31		c0.10	0.31	
v/s Ratio Perm	0.17		0.03	0.15			0.28			c0.37		
v/c Ratio	0.85	0.35	0.12	0.59	0.92		0.75	0.82		0.89	0.73	
Uniform Delay, d1	46.9	51.1	48.7	33.9	51.8		55.4	42.0		51.6	35.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.49	0.27		1.00	1.00	
Incremental Delay, d2	31.6	0.6	0.2	2.1	22.6		10.5	4.2		27.3	3.2	
Delay (s)	78.6	51.7	48.8	36.0	74.4		37.7	15.5		78.9	39.0	
Level of Service	E	D	D	D	E		D	B		E	D	
Approach Delay (s)		58.8			60.6			18.1			46.7	
Approach LOS		E			E			B			D	
Intersection Summary												
HCM 2000 Control Delay			41.6			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				24.0		
Intersection Capacity Utilization			100.2%			ICU Level of Service				G		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

3: Elden St & Dulles Park Driveway 2

07/02/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	63	6	149	37	12	102	119	1184	13	41	1104	102
Future Volume (Veh/h)	63	6	149	37	12	102	119	1184	13	41	1104	102
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	66	6	157	39	13	107	125	1246	14	43	1162	107
Pedestrians		3			5							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								651			620	
pX, platoon unblocked	0.86	0.86	0.76	0.86	0.86	0.74	0.76			0.74		
vC, conflicting volume	2238	2766	584	2335	2866	635	1272			1265		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	866	1483	0	980	1600	0	737			647		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	49	93	81	65	81	87	81			94		
cM capacity (veh/h)	130	82	831	110	69	800	668			696		
Direction, Lane #	EB 1	WB 1	WB 2	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3	SW 4		
Volume Total	229	52	107	125	831	429	43	581	581	107		
Volume Left	66	39	0	125	0	0	43	0	0	0		
Volume Right	157	0	107	0	0	14	0	0	0	107		
cSH	297	96	800	668	1700	1700	696	1700	1700	1700		
Volume to Capacity	0.77	0.54	0.13	0.19	0.49	0.25	0.06	0.34	0.34	0.06		
Queue Length 95th (ft)	149	61	12	17	0	0	5	0	0	0		
Control Delay (s)	48.5	80.1	10.2	11.6	0.0	0.0	10.5	0.0	0.0	0.0		
Lane LOS	E	F	B	B			B					
Approach Delay (s)	48.5	33.0		1.0			0.3					
Approach LOS	E	D										
Intersection Summary												
Average Delay			5.9									
Intersection Capacity Utilization			66.7%		ICU Level of Service					C		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

4: Elden St & Sterling Rd/Locust Dr

07/02/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	569	236	437	93	195	14	428	836	121	13	773	382
Future Volume (vph)	569	236	437	93	195	14	428	836	121	13	773	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.98		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1881	1583	1770	1864		1770	3475		1804	3286	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.08	1.00		0.22	1.00	
Satd. Flow (perm)	1805	1881	1583	1770	1864		147	3475		413	3286	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	581	241	446	95	199	14	437	853	123	13	789	390
RTOR Reduction (vph)	0	0	266	0	2	0	0	7	0	0	41	0
Lane Group Flow (vph)	581	241	180	95	211	0	437	969	0	13	1138	0
Confl. Peds. (#/hr)			4	4			19		4	4		19
Heavy Vehicles (%)	0%	1%	2%	2%	1%	0%	2%	1%	5%	0%	2%	2%
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4	4	3	3		1	6		5	2	
Permitted Phases							6			2		
Actuated Green, G (s)	36.0	36.0	36.0	20.8	20.8		69.7	60.6		47.8	44.7	
Effective Green, g (s)	36.0	36.0	36.0	20.8	20.8		69.7	60.6		47.8	44.7	
Actuated g/C Ratio	0.25	0.25	0.25	0.14	0.14		0.48	0.42		0.33	0.31	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	449	468	394	254	268		284	1457		166	1016	
v/s Ratio Prot	c0.32	0.13	0.11	0.05	c0.11		c0.20	0.28		0.00	0.35	
v/s Ratio Perm							c0.54			0.02		
v/c Ratio	1.29	0.51	0.46	0.37	0.79		1.54	0.67		0.08	1.12	
Uniform Delay, d1	54.2	46.7	46.0	56.0	59.7		47.1	33.8		33.1	49.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	148.1	1.3	1.1	1.3	15.0		259.4	2.4		0.3	67.4	
Delay (s)	202.3	48.0	47.1	57.2	74.7		306.4	36.2		33.3	117.3	
Level of Service	F	D	D	E	E		F	D		C	F	
Approach Delay (s)		118.4			69.3			119.8			116.4	
Approach LOS		F			E			F			F	
Intersection Summary												
HCM 2000 Control Delay			114.7				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			1.37									
Actuated Cycle Length (s)			144.5				Sum of lost time (s)			24.0		
Intersection Capacity Utilization			120.6%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

ACCESS SPACING ALONG ELDEN STREET FROM HERNDON PARKWAY (SOUTH) TO STERLING ROAD, in feet 2018 Conditions and Future Conditions with Proposed Street Improvements And Also Showing VDOT Minimum Spacing Standards For Commercial Entrances, Intersections and Median Crossovers (minimum centerline to centerline spacing, in feet)								
100	Denotes <u>existing</u> distance, in feet (no italics, no underline)	<u>100</u>	Denotes <u>future</u> distance, in feet (italics, underline)	100 or <u>100</u>	Distance <u>meets</u> VDOT spacing standard (black font)	100* or <u>100*</u>	Distance <u>does not meet</u> VDOT spacing standard (red font with asterisk)	
	Applicable Segment in Proposed Improvements	Spacing from Signalized Intersections to Other Signalized Intersections	Spacing from Unsignalized intersections & Full Median Crossovers to Signalized or Unsignalized Intersections & Full Median Crossovers	Spacing from Full Access Entrances & Directional Median to Other Full Access Entrances and Any Intersection or Median Crossover	Spacing from Partial Access One or Two Way Entrances to any Type of Entrance, Intersection or Median Crossover	Shared Access Available	Change from full access to partial or no access	
VDOT Minimum Centerline to Centerline Spacing (Distance) in Feet		880	660	355	200			
Sterling Road to Alabama Drive		1,311						
Alabama Drive to Herndon Parkway (south)		911						
1	Sterling Road to Dulles Park Shopping Center Main Entrance							
a	Sterling Road to Crossroads of Dulles northerly entrance				290/ <u>290</u>	yes	✓	
b	Crossroads of Dulles entrance to Dulles Park Shopping Center northerly entrance				250/ <u>250</u>	yes		
c	Dulles Park Shopping Center northerly entrance to Dulles Park Shopping Center main entrance [Dulles Park Shopping Center northerly entrance proposed to be eliminated]				158*	yes	✓	
c 1	Future condition: Crossroads of Dulles entrance to Dulles Park Shopping Center main entrance, with no driveways between				<u>408</u>		✓	

ACCESS SPACING ALONG ELDEN STREET FROM HERNDON PARKWAY (SOUTH) TO STERLING ROAD, in feet 2018 Conditions and Future Conditions with Proposed Street Improvements And Also Showing VDOT Minimum Spacing Standards For Commercial Entrances, Intersections and Median Crossovers (minimum centerline to centerline spacing, in feet)								
100	Denotes <u>existing</u> distance, in feet (no italics, no underline)	<u>100</u>	Denotes <u>future</u> distance, in feet (italics, underline)	100 or <u>100</u>	Distance <u>meets</u> VDOT spacing standard (black font)	100* or <u>100*</u>	Distance <u>does not meet</u> VDOT spacing standard (red font with asterisk)	
	Applicable Segment in Proposed Improvements	Spacing from Signalized Intersections to Other Signalized Intersections	Spacing from Unsignalized intersections & Full Median Crossovers to Signalized or Unsignalized Intersections & Full Median Crossovers	Spacing from Full Access Entrances & Directional Median to Other Full Access Entrances and Any Intersection or Median Crossover	Spacing from Partial Access One or Two Way Entrances to any Type of Entrance, Intersection or Median Crossover	Shared Access Available	Change from full access to partial or no access	
VDOT Minimum Centerline to Centerline Spacing (Distance) in Feet		880	660	355	200			
d	Locust Street to Extended Stay America entrance		540*		<u>540</u>	yes	✓	
e	Extended Stay America entrance to Avis Car Rental driveway			180*	<u>180*</u>	no		
2	Dulles Park Shopping Center Main Entrance to Alabama Drive							
a	Dulles Park Shopping Center Main Entrance to Dulles Park southerly entrance				294/ <u>294</u>		✓	
b	Dulles Park Shopping Center southerly entrance to Gulf entrance 1				110*/ <u>110*</u>		✓	
c	Gulf entrance 1 to Gulf entrance 2			70*				
d	Gulf entrance 2 to Alabama Drive [<i>Gulf entrance 2 proposed to be eliminated</i>]			90*				
d 1	Future condition: Gulf entrance 1 to Alabama Drive with no driveway between				<u>160*</u>		✓	
e	Avis Car Rental/Pizza Hut to McDonalds			205*	<u>205</u>	yes	✓	
f	McDonalds to Exxon Entrance 1			75*	<u>75*</u>			

ACCESS SPACING ALONG ELDEN STREET FROM HERNDON PARKWAY (SOUTH) TO STERLING ROAD, in feet										
2018 Conditions and Future Conditions with Proposed Street Improvements										
And Also Showing VDOT Minimum Spacing Standards For Commercial Entrances, Intersections and Median Crossovers										
(minimum centerline to centerline spacing, in feet)										
100	Denotes <u>existing</u> distance, in feet (no italics, no underline)		<u>100</u>	Denotes <u>future</u> distance, in feet (italics, underline)		100 or <u>100</u>	Distance <u>meets</u> VDOT spacing standard (black font)		100* or <u>100*</u>	Distance <u>does not meet</u> VDOT spacing standard (red font with asterisk)
		Applicable Segment in Proposed Improvements		Spacing from Signalized Intersections to Other Signalized Intersections	Spacing from Unsignalized intersections & Full Median Crossovers to Signalized or Unsignalized Intersections & Full Median Crossovers	Spacing from Full Access Entrances & Directional Median to Other Full Access Entrances and Any Intersection or Median Crossover	Spacing from Partial Access One or Two Way Entrances to any Type of Entrance, Intersection or Median Crossover	Shared Access Available	Change from full access to partial or no access	
VDOT Minimum Centerline to Centerline Spacing (Distance) in Feet			880	660	355	200				
	g	Exxon Entrance 1 to Exxon Entrance 2			83*	<u>83*</u>		✓		
	h	Exxon Entrance 2 to Wells Fargo One-Way Driveway				50*/ <u>50*</u>				
	i	Wells Fargo One Way Exit to Alabama Drive				140				
3	Alabama Drive to Herndon Parkway									
	a	Alabama Drive to Dulles One driveway				232				
	b	Dulles One Driveway to Verizon driveway				248				
	c	Verizon driveway to Starbucks driveway [Verizon driveway proposed to be combined with Starbucks driveway]			68*					
	d	Starbucks driveway to Bank driveway			195*		yes	✓		
	e	Bank driveway to Herndon Parkway [bank driveway proposed to be eliminated]			168*		yes	✓		
	e1	Future Condition: Starbucks/Verizon driveway to Herndon Parkway with no driveway between				385	yes	✓		

ACCESS SPACING ALONG ELDEN STREET FROM HERNDON PARKWAY (SOUTH) TO STERLING ROAD, in feet

2018 Conditions and Future Conditions with Proposed Street Improvements

And Also Showing VDOT Minimum Spacing Standards For Commercial Entrances, Intersections and Median Crossovers
(minimum centerline to centerline spacing, in feet)

100	Denotes <u>existing</u> distance, in feet (no italics, no underline)	<u>100</u>	Denotes <u>future</u> distance, in feet (italics, underline)	100 or <u>100</u>	Distance <u>meets</u> VDOT spacing standard (black font)	100* or <u>100*</u>	Distance <u>does not meet</u> VDOT spacing standard (red font with asterisk)
	Applicable Segment in Proposed Improvements	Spacing from Signalized Intersections to Other Signalized Intersections	Spacing from Unsignalized intersections & Full Median Crossovers to Signalized or Unsignalized Intersections & Full Median Crossovers	Spacing from Full Access Entrances & Directional Median to Other Full Access Entrances and Any Intersection or Median Crossover	Spacing from Partial Access One or Two Way Entrances to any Type of Entrance, Intersection or Median Crossover	Shared Access Available	Change from full access to partial or no access
VDOT Minimum Centerline to Centerline Spacing (Distance) in Feet		880	660	355	200		
g	Alabama Drive to Seven-11 driveway			100*	<u>100*</u>	yes	✓
h	Seven-11 driveway to Shell Station north driveway			65*	<u>65*</u>	yes	✓
i	Shell Station north driveway to Shell Station south driveway			65*	<u>65*</u>	yes	✓
j	Shell Station south driveway to Herndon Auto Care north driveway			80*	<u>80*</u>		✓
k	Herndon Auto Care north driveway to Herndon Auto Care south driveway			60*	<u>60*</u>	yes	✓
l	Herndon Auto Care south driveway to Amphora entrance			120*	<u>120*</u>		✓
m	Amphora entrance to the Ford Center driveway [proposed to combine the Amphora entrance with the Ford Center driveway]			63*			
n	Ford Center driveway to Herndon Parkway		360*				
n1	Future condition: Amphora/Ford				<u>385</u>	yes	✓

ACCESS SPACING ALONG ELDEN STREET FROM HERNDON PARKWAY (SOUTH) TO STERLING ROAD, in feet 2018 Conditions and Future Conditions with Proposed Street Improvements And Also Showing VDOT Minimum Spacing Standards For Commercial Entrances, Intersections and Median Crossovers (minimum centerline to centerline spacing, in feet)							
100	Denotes <u>existing</u> distance, in feet (no italics, no underline)	<u>100</u>	Denotes <u>future</u> distance, in feet (italics, underline)	100 or <u>100</u>	Distance <u>meets</u> VDOT spacing standard (black font)	100* or <u>100*</u>	Distance <u>does not meet</u> VDOT spacing standard (red font with asterisk)
	Applicable Segment in Proposed Improvements	Spacing from Signalized Intersections to Other Signalized Intersections	Spacing from Unsignalized intersections & Full Median Crossovers to Signalized or Unsignalized Intersections & Full Median Crossovers	Spacing from Full Access Entrances & Directional Median to Other Full Access Entrances and Any Intersection or Median Crossover	Spacing from Partial Access One or Two Way Entrances to any Type of Entrance, Intersection or Median Crossover	Shared Access Available	Change from full access to partial or no access
VDOT Minimum Centerline to Centerline Spacing (Distance) in Feet		880	660	355	200		
	Center entrance to Herndon Parkway with no driveway between						