ORDINANCE 21-02

AN ORDINANCE AMENDING ORDINANCE NO. 18-21, ADOPTED AUGUST 20, 2018, BY CHANGING THE ZONING CLASSIFICATION OF APPROXIMATELY 43.84 ACRES OF LAND FROM I-1, LIGHT INDUSTRIAL, TO PLANNED DEVELOPMENT (PDP 912-2020), WITH THE UNDERLYING BASE DISTRICT OF C-5 AND R-6, AND ADOPTING THE PRELIMINARY PLAN FOR KINGSLEY PLACE, BEING TAX MAP 027, PARCEL 03.06 AND PARCEL 04.00.

WHEREAS, the City of Spring Hill Zoning Ordinance, adopted via ordinance 18-21, authorizes the Planning Commission to make recommendations on Planned Development applications to the Board of Mayor and Aldermen; and

WHEREAS, the Planning Commission reviewed Planned Development application PDP 912-2020, Kingsley Place, at its December 14, 2020 regularly scheduled meeting; and

WHEREAS, the Planning Commission recommended, by a vote of 5-2, to not approve Planned Development application PDP 912-2020, Kingsley Place, asking that the Board of Mayor and Aldermen consider the conditions provided; and

WHEREAS, the Board of Mayor and Aldermen find that Planned Development application PDP 912-2020, Kingsley Place, meets the requirements and approval standards contained in Article 13.5 of the Unified Development Code, the same being the Zoning Ordinance for the City of Spring Hill; and

WHEREAS, The City of Spring Hill Board of Mayor and Aldermen desires to rezone the subject property from I-1, Light Industrial, to Planned Development (PD) and approve the Preliminary Plan for Kingsley Place.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY OF SPRING HILL, TENNESSEE, BOARD OF MAYOR AND ALDERMEN, WHILE IN REGULAR SESSION ON THE 19th DAY OF April, 2021 as follows:

SECTION 1: REZONING. Zoning Ordinance No. 18-21 (Zoning Map), adopted August 20, 2018, be and is hereby amended by rezoning those certain parcels of real property known as Kingsley Place, described below and as shown in the attached exhibits, from I-1 to Planned Development (PD) subject to the underlying base zoning classification of C-4 and R-6 as designated therein.

In the State of Tennessee, County of Maury, City of Spring Hill, and being more particularly described as follows:

Maury County Tax Map 027, Parcel 03.06 and Parcel 04.00 consisting of approximately 43.84 acres.

SECTION 2: EXHIBITS. The applicant has submitted updated Exhibits (A1 and B1) that differ substantially from the plan package acted upon by the Planning Commission. The following is a summary of the substantive changes to the plan package:

1. The C-5 base zoning for the commercial (non-multi-family) has been changed to C-4.
2. The number of residential units has been decreased from 516 to 396 residential units.
3. Residential density has been decreased from 17.86 to 14.62 dwelling units per acre.
4. The multi-family acreage has been reduced from 28.89 acres to 27.08 acres.

5. The commercial acreage has been increased from 13.57 acres to 16.5 acres.
6. The commercial area dedicated to the proposed police station has been increased from 3.5 acres to 5.0 acres.
7. Additional retail commercial areas have been increased to 8.25 acres, and office acreage has been increased to 3.25 acres.
8. Use restrictions on page 13 of the Vision Book (Exhibit B1) have been revised to include more use restrictions than previously provided.
9. Drive-Through Facilities have been added as a permitted use in the C-4 zoning.
10. A Phasing Plan has been provided in the updated Vision Book (Exhibit B1) and shows 3 phases of development.

The Preliminary Plan for Kingsley Place shall consist of the following revised Exhibits;

Exhibit A1: Preliminary Site Plans and Landscape Plans – Kingsley Place, by WES (Dated Feb. 24, 2021)

Exhibit B1: Vision Book for Kingsley Place, by WES (Dated Feb. 5, 2021)

Except as modified herein and explicitly on the approved Preliminary Master Plan (Exhibit A1-B1), the Kingsley Place PD shall comply with the requirements of the underlying C-5 and R-6 (multi-family site) zoning districts, in Ordinance 18-21, (Zoning Ordinance) as amended, be in substantial conformance with Exhibits A-B attached hereto, all other applicable rules, regulations and ordinances of the City of Spring Hill, as well as the following conditions:

1. Conveyance of the proposed police site to the City of Spring Hill shall be completed prior to the issuance of any construction related permits for this development.
2. Detailed elevations for each building will need to be provided at the time of a Planned Development Final Plan application.
3. Existing vegetation will need to be inventoried and preserved where possible. The applicant has indicated on the landscape plan certain areas to remain or supplemented with buffer material. A tree survey and preservation plan will need to be provided at the time of a Planned Development Final Plan application.
4. Foundation plantings are required for the commercial buildings and details for each building type will need to be provided at the time of a Planned Development Final Plan application.
5. Developer shall follow all of the conclusions and recommendations presented in the Traffic Impact Study prepared by Fischbach Transportation Group; LLC dated January 2021 for the Proposed Mixed-Use Development on Old Port Royal Road. These improvements should be listed and/or shown on the site plan.

SECTION 3: **PUBLIC HEARING**. The zoning change was the subject of a public hearing held on

April 19, 2021.

BE IT FURTHER ORDAINED
In case of conflict between this ordinance or any part hereof, and the whole part of any existing ordinance of the City, the conflicting ordinance is repealed to the extent of the conflict but no further. If any section, clause, or provision or portion of this ordinance is held to be invalid or unconstitutional by any court of competent jurisdiction, such holding shall not affect any other section, clause, or provision or portion of this ordinance.

Rick Graham, Mayor

ATTEST:

April Goad, City Recorder

LEGAL FORM APPROVED:

Patrick Carter, City Attorney

Passed on First Reading: February 16, 2021

Passed on Second Reading: April 19, 2021

DATE: April 5, 2021

TO: Board of Mayor and Aldermen (BOMA)

FROM: Austin Page, Associate Planner

SUBJECT: PDP 912-2020 (Kingsley Place)

Ordinance No. 21-02 – 2nd Reading

PDP 912-2020: Submitted by WES Engineers & Surveyors for Kingsley Place (Lunn Ridge Farms). The property is located at 3788 and 3812 Old Port Royal (behind Kroger) and contains approximately 43.84 acres. The applicant requests Planned Development Preliminary Plan approval for a mixed-use development that proposes the development of 516 multifamily residences, a grocery store, a flex space area, and a site for a future police station. The proposal includes a base zoning of R-6 and C-5.

Discussion: The Board of Mayor and Aldermen is to review the plans and exhibits that were included as part of the Planning Commission's review and recommendation on December 14, 2020. Those plans (dated December 3, 2020) have been provided as Exhibit A (Site Plans and Landscape Plans) and Exhibit B (Vision Book).

Staff has reviewed the submitted package against the requirements for Preliminary Plan Approval in Article 13.5.E.4.e of the City's Unified Development Code. Staff has determined that the proposed application meets all applicable requirements and is a complete package.

The Planned Development Preliminary Plan was deferred by the applicant following the January 4, 2021 Board of Mayor and Aldermen Work Session. The applicant was resubmitted and passed First Reading on February 16, 2021.

The applicant has provided Staff with updated Exhibits (A1 and B1) that differ substantially from the plan package acted upon by the Planning Commission. The following is a summary of the substantive changes to the plan package:

1. The C-5 base zoning for the commercial (non-multi-family) has been changed to C-4.
2. The number of residential units has been decreased from 516 to 396 residential units.
3. Residential density has been decreased from 17.86 to 14.62 dwelling units per acre.
4. The multi-family acreage has been reduced from 28.89 acres to 27.08 acres.
5. The commercial acreage has been increased from 13.57 acres to 16.5 acres.
6. The commercial area dedicated to the proposed police station has been increased from 3.5 acres to 5.0 acres.
7. Additional retail commercial areas have been increased to 8.25 acres, and office acreage has been increased to 3.25 acres.
8. Use restrictions on page 13 of the Vision Book (Exhibit B1) have been revised to include more use restrictions.
9. Drive-Through Facilities have been added as a permitted use in the C-4 zoning.
10. A Phasing Plan has been provided in the updated Vision Book (Exhibit B1) and shows 3 phases of development.

As noted above, the Board of Mayor and Aldermen is to review the plans and exhibits that were included as part of the Planning Commission review and recommendation for denial. While the applicant has presented for consideration an updated set of site and landscape plans (Exhibit A1) and Vision Book (Exhibit B1) reflecting the above-referenced modifications, the plans represent a significant alteration of the plan package considered by the Planning Commission. These modifications justify consideration by the Board to redirect the revised plan documentation back to the Planning Commission for reconsideration and a recommendation on the revised plan documentation package presented by the applicant. The Unified Development Code provides that where an applicant wishes to significantly amend an approved preliminary development plan that the applicant would be required to submit an amended plan package to the Planning Commission and Board of Mayor and Aldermen for consideration. Similarly, the applicant, in this case, has submitted a substantially revised plan document package that no longer resembles the plan package initially considered and acted upon by the Planning Commission. It is reasonable that consideration should first be given by the Planning Commission on the substantially revised plan before consideration is given by the Board of Mayor and Aldermen as provided in the requirements for approval of a preliminary development plan.

Should the Board of Mayor and Aldermen disagree with the recommendation to refer the substantially amended plan document package back to the Planning Commission for reconsideration, the Board of Mayor and Aldermen should then properly differentiate the prior plan document package from the amended plan package to ensure that the preliminary development plan package acted upon by the Board is the amended plan package to avoid any confusion between the initial preliminary plan and the amended preliminary plan package. The initial plan package approved on the first reading should be removed in its entirety and replaced with the full amended plan package to avoid any conflicting plan documentation or confusion as the plan is being implemented should the Board approve the Planned Development application as amended.

Additional updates have been provided and are not included as part of the Exhibits:

1. A revised Traffic Impact Study, dated January 2021, has been provided. Staff has included the updated recommendations from the study under the Traffic Impact Study section on page 8 of the staff report. The revised Traffic Impact Study is attached.
2. The City's Engineering Consultant, Dempsey, Dilling & Associates, P.C. have provided updated water and sewer summaries based on the recent site modifications. Details of the summary are provided under the Utilities section, on page 7 of the staff report. Updated Summaries are attached.

Planning Commission Recommendation: The Planning Commission considered this request at their meeting on December 14, 2020. A motion to approve PC Resolution 20-158 recommending approval of the Planned Development Preliminary Plan to the Board of Mayor and Aldermen included 7 conditions of approval and was amended to add an 8th condition of approval. This 8th condition of approval changed the initial base zoning from C-5 to C-4 and included that non-food drive-through facilities may be considered during site plan approval by the Planning Commission. The motion to amend was approved unanimously (7-0). However, the motion as amended to approve PC Resolution 20-158 recommending approval was denied by a vote of 3-4.

A subsequent motion to approve PC Resolution 20-158 forwarding a recommendation to not approve the Planned Development Preliminary Plan was made and amended to advise the Board of Mayor and Aldermen that they may want to consider the eight conditions of approval that were previously discussed and referenced in the staff report including the additional eighth condition to change the initial base zoning from C-5 to C-4 and that non-food drive-through facilities may be considered during site plan approval by the Planning Commission. The motion to amend was approved unanimously (7-0) and the original motion to not recommend approval was approved by a vote of 5-2. The eight conditions discussed by the Planning Commission during its deliberation are:

1. *Conveyance of the proposed police site to the City of Spring Hill shall be completed prior to the issuance of any construction related permits for this development.*
2. *Detailed elevations for each building will need to be provided at the time of Planned Development Final Plan application.*
3. *A phasing plan has not been provided but the applicant has provided a "Site Phase Schedule" on the Proposed Site Layout Plan (C-2.0). An actual phasing plan will need to be provided at time of Planned Development Final Plan application.*
4. *Existing vegetation will need to be inventoried and preserved where possible. The applicant has indicated on the landscape plan certain areas to remain or supplemented with buffer material. A tree survey and preservation plan will need to be provided at Planned Development Final Plan application.*
5. *Foundation plantings are required for the commercial buildings and details for each building type will need to be provided at time of a Planned Development Final Plan application.*
6. *The property must be modeled to ensure that the sanitary sewer has the capacity to accept the wastewater flows from the proposed development. The applicant will need to provide sanitary sewer flow requirements calculated at 350 GPD per dwelling unit. These calculations shall be used to determine adequate capacity in City's sewer system or if any upgrades will be required. The applicant will need to continue to work with both departments on coordinating capacity and design.*
7. *Developer shall follow all of the conclusions and recommendations presented in the Traffic Impact Study prepared by Fischbach Transportation Group; LLC dated November 2020 for the Proposed Mixed-Use Development on Old Port Royal Road. These improvements should be listed and/or shown on the site plan.*
8. *The base zone for the commercial (non-multi-family) areas shall be C-4 and a non-food drive-thru may be considered during site plan approval by the Planning Commission.*

According to Article 13.4.E.4.c of the Unified Development Code, "*The Board of Mayor and Aldermen will review the preliminary plan upon receipt of the Planning Commission recommendation, and may approve, approve with conditions, deny, table, or defer the preliminary plan. If the Planning Commission has recommended denial, the Board of Mayor and Aldermen must approve with a favorable two-thirds vote."*

Property Description and History: This property is located off of Old Port Royal Road and Lovell Lane, behind the Kroger and other commercial sites fronting on Port Royal Road. The subject site is approximately 625' east of the Port Royal Road and Old Port Royal Road intersection. The proposal includes two properties that are both zoned I-1 and contain a combined 43.84 acres. This application is being processed under the current Unified Development Code. A concept plan (PDC 898-2020) was reviewed by the Planning Commission at the October 26, 2020, Work Session and November 9, 2020, Regular Meeting. As stated above, the Planning Commission considered this request at their December 14, 2020, meeting and forwarded a recommendation to not approve the request. This application was deferred at the March 15, 2020 Board of Mayor and Aldermen Meeting.

Spring Hill Rising: 2040: The future land use classification for this site is Innovation Area. According to the Comprehensive Plan, the development pattern of Innovation Areas is of moderate density and intensity while, "*Building development should be variable to promote the specific needs of an area that accommodates a variety of scale and building design that supports the goal of encouraging a walkable development form, and mixed-use opportunities are encouraged."*

The plan also states that "*Future development should reflect unified development pattern that includes connectivity between uses, controlled signage (height, size, type) to prevent "visual clutter" and supporting commercial uses to serve workers and patrons of these developments. The area should include an extensive pedestrian circulation system that makes walking convenient. It should also accommodate housing that would benefit from proximity to innovation areas."*

Primary future land uses include technology and research centers, hospitals, clinics, specialized medical offices, professional offices, restaurants, lodging, and municipal services. Currently, the property is adjacent to commercial properties to the west and north, and industrial zoned properties to the south and west. The property is adjacent to 500' of R-2 property on the north side of Lovell Lane.

Based upon the adopted Spring Hill Rising 2040 Plan, residential land uses are not an intended use with the Innovation Area land use designation. While the project proposed is a mixed-use development containing retail, office, and municipal facilities that may be deemed appropriate land use types, the proposed multifamily use for the northern portion of the property is not consistent with the adopted Plan.

Analysis: The site contains approximately 43.84 acres. The preliminary plan proposes 516 multi-family units on the northern 28.89 acres, with a base zoning of R-6 that provides an allowable residential density of 17.86 dwelling units per acre. The remaining 14.95 acres along Old Port Royal Road contains grocery, retail, and flex space while proposing a base zoning of C-5. The applicant proposes gross floor area amounts of 43,681-sf for grocery store, 25,190-sf for retail, and 29,269-sf for flex-office/retail space.

This C-5 area contains 3.68 acres of land proposed to be dedicated to the City of Spring Hill for a new Police Station. This application does not include the construction of the police station which would be the responsibility of the City to design and construct should the City desire to accept the land dedication offer. Any conveyance of property from the applicant to the City will require approval from the Board of Mayor and Aldermen. Below is the site data pertaining to this site:

Acreage of site:

43.84 acres - Total
28.89 acres – Multi-Family
2.75 acres – Flex – Office/Retail
3.68 acres – Police Station
7.14 acres – Grocery Store
1.88 acres – R/W Dedication

Coverage Area:

Multi-Family
Pervious = 13.27 acres
Impervious = 15.62 acres
Total = 28.89 acres
(11.98 acres open space including clubhouse, pool & amenities)
Density: 17.86 units/acre (Max. permitted 18.0)

Flex / Office Retail
Pervious = 0.85 acres (30.9%)
Impervious = 1.90 acres (69.1%)
Total = 2.75 acres

Police Station
Pervious = 1.87 acres (50.8%)
Impervious = 1.81 acres (49.2%)
Total = 3.68 acres

Grocery Store / Retail
Pervious = 1.88 acres (26.3%)
Impervious = 5.26 acres (73.7%)

Waivers and/or Variance Requests: The only variance or waiver associated with this request is in regards to the residential building lengths. In the R-6 zoning district, the UDC states that the maximum building length is 175'. According to the plans, the longest building is L-shaped and is 384'. The façade lengths on these buildings are 192' on each side (17' waiver). The double buildings are 183.4' long (8'4" waiver) and the triple buildings are 253'4" long (78'4'' waiver).

The applicant has provided use restrictions for the proposed Planned Development areas with an underlying C-5 zoning. The following uses are not permitted:

- Outdoor Amusement Facility
- Dwelling-Above Ground Floor
- Educational Facility-Vocational
- Food Bank
- Food Pantry
- Chronic Pain and Recover Clinics
- Gas Station
- Green House/Nursery
- Homeless Shelter
- Live Performance Venue
- Vehicle Repair
- Communication Towers
- All Temporary Uses Prohibited

All other permitted uses in the C-5 district are allowed. Regarding the request for C-5, this district is referred to as the "Regional Commercial District". The proposed development plan does not fit the intent of this classification. The C-4 District is the most appropriate district for this location, scale, and type of development. A review of the C-4 district and the proposed uses reveals that the Planned Development request would need to request permission to have drive-throughs in the C-4 underlying district. This would normally be by special use but could be subject to site plan approval by the Planning Commission. There are some bulk regulations that would be different but do not appear to cause a conflict with the concept plan. As stated above, the Planning Commission's recommendation to the Board of Mayor and Aldermen included an amendment that the Board of Mayor and Aldermen may want to consider the eight (8) conditions of approval that are provided under the Recommendation section of this report.

Access: The main access to the site is via a boulevard-style entrance off of Old Port Royal Road. The plan also proposes an access point onto Lovell Lane that will only be used for the multifamily development. The multi-family portion has access to the commercial site to the south via controlled access in the form of a gate and key card access to Lovell Lane. Access for Fire and Rescue will be coordinated with the City of Spring Hill Fire and Police Departments. Pedestrian access as recommended by Staff is provided to Lovell Lane that connects to Kroger.

Fire Access: The entrance road and access to all parts of the development must be approved by the Fire Marshal. Currently, the preliminary plan shows one main entrance boulevard off of Old Port Royal Road. Additional emergency access to the multi-family site will be required and is provided via Lovell Lane.

Streets and Sidewalk: The preliminary plan proposes all internal roads to be private. The main boulevard is shown having 80' of right-of-way. All other roads and drive aisles are shown having 25' widths. A 5' wide sidewalk is shown on both sides of the main entrance boulevard. An additional 5' wide sidewalk is provided along Lovell Lane for pedestrian connectivity to adjacent commercial properties. All additional sidewalks in the development are shown as 5' wide. All pedestrian crossings shall be properly marked and compliant with ADA requirements.

The applicant pursued the ability to provide the Planning Commission suggestion of connecting to the property to the west without success. Via the applicant during the December 14, 2020, Planning Commission Meeting, the western property owner has not provided the applicant with a definitive answer and is concerned with how the development would hinder the Kroger site. The applicant has shown a 12' wide multi-use trail along the northern side of Old Port Royal Road. The applicant is proposing improvements to Lovell Lane with includes widening travel lanes to a total width of 24'. Improvements to Old Port Royal Road are also proposed, which include two travel lanes with a center turn lane.

All names for the development and roads will need to be reserved and approved through Maury County E-911.

Uses, Bulk Area Regulations: This site(s) is currently zoned I-1, but if rezoned will be subject to the C-5 District's use, zoning, and bulk and area requirements, except as explicitly modified by the approved PD Master Plan. The applicant has provided a criteria exception sheet on page 12 of the Vision Book. The only variance or waiver associated with this request is in regards to the residential building lengths and 13 permitted uses in the C-5 district to be restricted. This information has been provided above under the Analysis Section of the report.

Building & Site Design: The site contains 43.84 acres. The preliminary plan calls for a total of 516 multi-family units with amenities and a clubhouse on 28.89 acres, located towards the north and central part of the site. The multi-family site is designed with the swimming pool and amenity center in the center of the development with residential buildings directly to the east, west, and north. Other residential buildings are placed around the site towards the exterior property lines. Buildings are shown in clusters of 2 and 3. There are 42 total residential buildings. Proposed primary façade materials include brick and a combination of lap and batten cement board siding. The roof is primarily proposed of architectural asphalt roof shingles with standing seam metal roof accents. The applicant is proposing the residential buildings to be 3 stories. The heights of the buildings are shown as 37.7' and are under the 50' maximum height requirement.

The main access to the site is via the main entrance boulevard via Old Port Royal. Additional access is provided via Lovell Lane but only provides access to the multi-family portion of the site. Access into the multi-family portion of the site will be gated and accessible with a key card. This access can also be used for emergency access.

The southern portion of the site proposes 7.14 acres for the grocery site, 2.75 acres for flex – office/retail, and 3.68 for the proposed Police Station. These buildings are proposed along the main boulevard and provide parking in the rear. The applicant has identified primary façade materials for the office and retail which includes a 20% EIFS maximum, clay bricks, cultured stone, split face CMU, standing seam metal roof, and metal awnings and canopies with detailed elements. This proposal only includes the dedication of land to the City and does not include the construction of the police station. Any conveyance of property from the applicant to the City will require approval from the Board of Mayor and Aldermen. Full elevations will be required with the final master development plan.

The remaining 1.88 acres on the site are proposed for right-of-way dedication.

A Photometric plan has been provided and meets the UDC requirements of no more than 1.0 foot-candles at the property line.

Open Space & Amenities: Open space and overall amenities are required with the Preliminary PD application. The preliminary plan shows a private centralized amenity area on the multi-family portion of the property. Additional open spaces are provided throughout the multi-family site. All such areas should be identified as to their use and clearly labeled. The provided site layout plan shows all sidewalks as 5' wide. This development will require centralized mailboxes and the applicant has called out two "Mail Kiosk" locations. A full open space and amenity plan was required at this Preliminary PD submittal but has not been provided.

Landscaping & Buffering: The landscaping on the site will follow the requirements of Article 11 of the UDC unless modified by the PD approval. An illustrated design master plan has been submitted showing substantial street trees and buffer plantings around the site. The main boulevard is lined with street trees and street trees are provided along Old Port Royal Road and meet the one tree per 35' requirement. Parking lot islands are landscaped, as well as all other road medians and islands.

A detailed landscape plan indicating buffer widths or plant types has been submitted as part of this preliminary plan submittal. A detail for the boulevard has been provided, along with a buffer portraying

various planting types along the C-5 and R-6 property lines. This buffer is proposed to have a width of at least 30'. Additional landscape buffers are proposed along the west and eastern property lines and will have a minimum width of 15', as indicated in the provided detail. All requirements of Article 8.3K will apply to the multi-family site.

Foundation planting details have been provided for the multi-family buildings and propose substantial landscaping around all sides of the buildings. No foundation plantings are shown for any of the commercial buildings and will need to be provided. A detail for each building should be provided showing compliance with the foundation planting requirements of the UDC and will need to be provided at the time of a Planned Development Final Plan application.

Existing vegetation will need to be inventoried and preserved where possible. The applicant has indicated on the landscape plan certain areas to remain or be supplemented with buffer material. A tree survey and preservation plan will need to be provided at time of a Planned Development Final Plan application.

Bicycle & Greenway Plan: The Bicycle & Greenway Plan calls for a proposed bike lane along Old Port Royal Road. The Parks and Recreation Department recommended consideration be given to changing the bike lane to a multi-use trail. A multi-use trail along Old Port Royal Road would link two major greenways together, the Peter Jenkins Greenway (just west of the intersection at Port Royal) and the Saturn Greenway (at the end of Old Port Royal). The applicant has provided a 12' multi-use trail along Old Port Royal Road.

Parking: As part of the planned development, the applicant is requesting that no changes be made to the parking requirements for multi-family and non-residential commercial uses in Article 10.3 of the Unified Development Code. Bicycle parking is required and will need to be addressed in detail at the Planned Development Final Plan submittal for the individual developments and/or phases.

Phasing: A phasing plan has not been provided but the applicant has provided a "Site Phase Schedule" on the Proposed Site Layout Plan (C-2.0). Phase 1 is to include the construction of the main boulevard and apartments. Phases 2 and 3 will contain the grocery store and retail space. An actual phasing plan should be provided at time of Planned Development Final Plan application.

Utilities: Water Service is available to the subject property and is served by an 18" water line along Old Port Royal Road and an 8" water line on Lovell Ln. The site is located within the City's Southside Pressure Zone. Modeling Results of Spring Hill's water system show that with Tanks at 50% capacity (elevation 883), the site (at elevation 730) will see static pressures in the range of 64 psi. The site can also meet Spring Hill's minimum requirement to flow a 750 gpm fire flow while maintaining 30 psi.

Sewer service is available to the subject property and is served by an 8" and 12" gravity sewer line along Old Port Royal Road to the 24" Grassy Branch Trunk Line. Results of the immediate receiving pipe and downstream pipe are provided below.

Proposed Discharge Summary: 188 gpm (residential) + 25 gpm (commercial) = 213 gpm average
387 gpm (residential) + 61 gpm (commercial) = 448 gpm average

Receiving Pipe: GRB-128	Existing	Average	Peak
Capacity of 8" Line at Receiving Location:	565 gpm		
Percent Full Dry Weather Conditions	0.3%	38.0%	79.6%
Percent Full Peak Wet Weather Conditions	0.9%	38.6%	80.2%

Receiving Pipe: GRB-122	Existing	Average	Peak
Capacity of 12" Line at Downstream Location:	1909 gpm		

Percent Full Dry Weather Conditions	1.5%	12.7%	25.0%
Percent Full Peak Wet Weather Conditions	4.7%	15.9%	28.2%

The receiving pipe and the critical downstream pipe have adequate capacity. The summary From Dempsey, Dilling & Associates, P.C. has been provided alongside this report.

Traffic Impact Study: The Developer shall follow all of the conclusions and recommendations presented in the Traffic Impact Study prepared by Fischbach Transportation Group; LLC dated January 2021 for the Proposed Mixed-Use Development on Old Port Royal Road. Recommendations from the Traffic Impact Study are as follows:

- ***Intersection of Port Royal Road and Lovell Lane***
  The analyses conducted for the purposes of this study indicate that this intersection operates acceptably during both peak hours and will continue to do so under background and total projected conditions. Therefore, no laneage or traffic control modifications to this intersection are recommended in conjunction with the proposed project.

- ***Intersection of Port Royal Road and Reserve Boulevard / Old Port Royal Road***
  The analyses conducted for the purposes of this study indicate that this intersection operates acceptably during both peak hours and will continue to do so under background and total projected conditions with the apartments. However, the analyses conducted for the purposes of this study indicate that the eastbound left turns and through movements will experience significant queues under total projected conditions with the future commercial development.

  In conjunction with the proposed apartment complex, which would occur during the initial phase of development on the project site, the existing traffic signal at the intersection of Port Royal Road and Reserve Boulevard / Old Port Royal Road should be modified to include right turn overlap signal phases for the northbound, southbound, and westbound approaches. This modification will help to reduce the vehicle delays and queues for these turning movements.

- ***Intersection of Port Royal Road and the Ramps for Westbound Saturn Parkway***
  The analyses conducted for the purposes of this study indicate that this intersection operates acceptably during both peak hours and will continue to do so under background and total projected conditions. Therefore, no laneage or traffic control modifications to this intersection are recommended in conjunction with the proposed project.

- ***Intersection of Port Royal Road and the Ramps for Eastbound Saturn Parkway***
  The analyses conducted for the purposes of this study indicate that this intersection operates acceptably during both peak hours and will continue to do so under background and total projected conditions. Therefore, no laneage or traffic control modifications to this intersection are recommended in conjunction with the proposed project.

- ***Old Port Royal Road***
  Old Port Royal Road should be improved to the standards established by the City of Spring Hill from approximately 350 feet east of Port Royal Road to the eastern boundary of the project site. In particular, the cross-section should include a left turn lane for turning movements into the proposed project site.

- ***Future Commercial Development***
  For the purposes of this study, a land use scenario was established for the future commercial development that could occur between the proposed apartment complex and Old Port Royal

Road. When specific land uses and tenants are planned, an updated Traffic Impact Study should be prepared in order to identify the specific impacts of such development. In particular, consideration should be given to the need for connectivity to the existing commercial development west of the project site and the need for any additional traffic signal control on Port Royal Road at the existing commercial development north of Old Port Royal Road.

Public Benefit: Page 9 of the Vision Book (Exhibit B) addresses the public benefits associated with this development.

- $2.5M Development Fees
- $17.9M Property Tax
- $54.2M Sales tax
- 3.70 Acres Municipal Land
- Improvements to N. Old Port Royal Road
- Improvements to Lovell Lane

Public Comments: Staff has received no public comment via the PCPublicComment@springhilltn.org or the BOMAPublicComment@springhilltn.org email address.

Submitted Exhibits: The applicant has provided various plans and documents that staff is organizing as Zoning Exhibits to Ordinance 21-02. They include the following:

1. Exhibit A: Preliminary Site Plans and Landscape Plans – Kingsley Place, by WES dated Dec. 3, 2020
2. Exhibit B: Vision Book for Kingsley Place, by WES, dated Dec. 3, 2020

Planned Development Preliminary Plan: Approval standards for Planned Development Preliminary Plans, as found in the Unified Development Code, Article 13.5.E.4.e, are below:

E. Approval Standards

The recommendation of the Planning Commission and decision of the Board of Mayor and Aldermen must make a finding that the following standards for a planned development have generally been met.

1. Approval Standards for Planned Development Preliminary Plan.

i. *The consistency of the proposed planned development with the Comprehensive Plan and any adopted land use policies.*

ii. *The proposed planned development meets the purpose of a planned development.*

iii. *The proposed planned development will not be injurious to the use and enjoyment of other property in the vicinity.*

iv. *The proposed planned development will not impede the normal and orderly development and improvement of surrounding property.*

v. *There is provision for adequate utilities and road infrastructure, drainage, off-street parking and loading, pedestrian access, and all other necessary facilities.*

vi. *There is provision for adequate vehicular ingress and egress designed to minimize traffic congestion upon public streets.*

vii. *The location and arrangement of structures, parking areas, walks, landscape, lighting, and other site design elements, are compatible with the surrounding neighborhood and adjacent land uses.*

Findings: Staff has reviewed the criteria listed above from Section 13.5.E.4.e of the UDC and has provided responses below.

i. The 2040 Spring Hill Rising plan classifies the area as Innovation Area. This is the third commercial mixed-use development recently considered within this classification. The adopted Spring Hill Rising 2040 Plan does not provide for residential multifamily land use as a recommended land use for the Innovation Area designation. Any deviation from the adopted Spring Hill Rising 2040 Plan should be given careful consideration and reasoning for deviating from the recommended land uses provided in the adopted plan
ii. The purpose of a Planned Development request is: to encourage and allow more creative and flexible development of land than is possible under district zoning regulations and should only be applied to further those applications that provide enhanced amenities or design features to the City.
iii. The proposed development is not expected to be injurious to the use and enjoyment of other property in the vicinity. Based on the recently announced expansion of the Kroger store on Port Royal Road, staff questions whether the proposal to locate a new grocery store off of a main thoroughfare out of public view is a viable development component of the project.
iv. The proposed development will not impede the normal and orderly development of the surrounding property. The project proposes an orderly extension of public infrastructure and the proposed land uses complement surrounding development patterns.
v. Utilities are available to the site. Staff has received information on what the impact of the development will be for the Spring Hill sewer capacity within the existing sewer main serving this area. No models have been provided regarding the impact on the sewer treatment plant and will need to be addressed.
vi. Vehicular ingress and egress are acceptable and select road improvements are proposed including those recommended in the Traffic Impact Study. Consideration should be given to the sufficiency of the proposed road and intersection improvement to address projected traffic impacts as well as whether additional street improvements will be needed for Lovell Lane.
vii. The development, in general, is compatible with adjacent land uses.

Recommendation: The Planning Commission recommended to the Board of Mayor and Aldermen to not approve the Planned Development Preliminary Plan via PC Resolution 20-158 (5-2 vote). The recommendation included an amendment to advise the Board of Mayor and Aldermen that they may want to consider the eight conditions of approval that were discussed as part of the original motion to approve (which was denied). Because of the Planning Commission's recommendation of denial, the original plan must be approved with a favorable two-thirds vote, per Article 13.4.5.4.c of the Unified Development Code. The eight conditions are listed below.

1. Conveyance of the proposed police site to the City of Spring Hill shall be completed prior to the issuance of any construction related permits for this development.
2. Detailed elevations for each building will need to be provided at the time of Planned Development Final Plan application.
3. A phasing plan has not been provided but the applicant has provided a "Site Phase Schedule" on the Proposed Site Layout Plan (C-2.0). An actual phasing plan will need to be provided at time of Planned Development Final Plan application.
4. Existing vegetation will need to be inventoried and preserved where possible. The applicant has indicated on the landscape plan certain areas to remain or supplemented with buffer material. A

tree survey and preservation plan will need to be provided at Planned Development Final Plan application.

5. Foundation plantings are required for the commercial buildings and details for each building type will need to be provided at time of a Planned Development Final Plan application.
6. The property must be modeled to ensure that the sanitary sewer has the capacity to accept the wastewater flows from the proposed development. The applicant will need to provide sanitary sewer flow requirements calculated at 350 GPD per dwelling unit. These calculations shall be used to determine adequate capacity in City's sewer system or if any upgrades will be required. The applicant will need to continue to work with both departments on coordinating capacity and design.
7. Developer shall follow all of the conclusions and recommendations presented in the Traffic Impact Study prepared by Fischbach Transportation Group; LLC dated November 2020 for the Proposed Mixed-Use Development on Old Port Royal Road. These improvements should be listed and/or shown on the site plan.
8. The base zone for the commercial (non-multi-family) areas shall be C-4 and a non-food drive-thru may be considered during site plan approval by the Planning Commission.

The Board of Mayor and Aldermen is to review the plans and exhibits that were included as part of the Planning Commission review and recommendation for denial. While the applicant has provided an updated set of site and landscape plans (Exhibit A1) and Vision Book (Exhibit B1) for consideration, the plans represent a significant alteration of the plan package considered by the Planning Commission. These modifications justify consideration by the Board to redirect the revised plan documentation back to the Planning Commission for reconsideration and a recommendation. The applicant, in this case, has submitted a substantially revised plan document package that no longer resembles the plan package initially considered and acted upon by the Planning Commission. It is reasonable that consideration should first be given by the Planning Commission on the substantially revised plan before consideration is given by the Board of Mayor and Aldermen as provided in the requirements for approval of a preliminary development plan.

Should the Board of Mayor and Aldermen disagree with the recommendation to refer the amended plan document package back to the Planning Commission for reconsideration, the initial plan package approved on the first reading should be removed in its entirety and replaced with the full amended plan package to avoid any conflicting plan documentation or confusion as the plan is being implemented should the Board approve the Planned Development application as amended. The revised Exhibits and documents have addressed three of the eight Planning Commission conditions listed above. Those conditions included the submittal of a Phasing Plan, modeling the sewer capacity, and changing the C-5 base zoning to C-4. The remaining items to be addressed are listed below.

1. Conveyance of the proposed police site to the City of Spring Hill shall be completed prior to the issuance of any construction related permits for this development.
2. Detailed elevations for each building will need to be provided at the time of a Planned Development Final Plan application.
3. Existing vegetation will need to be inventoried and preserved where possible. The applicant has indicated on the landscape plan certain areas to remain or supplemented with buffer material. A tree survey and preservation plan will need to be provided at the time of a Planned Development Final Plan application.
4. Foundation plantings are required for the commercial buildings and details for each building type will need to be provided at the time of a Planned Development Final Plan application.
5. Developer shall follow all of the conclusions and recommendations presented in the Traffic Impact Study prepared by Fischbach Transportation Group; LLC dated January 2021 for the Proposed Mixed-Use Development on Old Port Royal Road. These improvements should be listed and/or shown on the site plan.

Staff has provided The Board of Mayor and Aldermen with three options for planned development preliminary plan application PDP 912-2020 (Kingsley Place):

Option A – Approve Ordinance 21-02 with the Exhibits (A & B) reviewed and provided as part of the Planning Commission recommendation. These were the plans approved by the BOMA on First Reading (February 16, 2021).

Option B – Approve Ordinance 21-02 with the revised Exhibits (A1 & B1) replacing the previous Exhibits (A & B) approved on First Reading.

Option C – Approve Resolution 21-49 sending the revised plan package back to the Planning Commission for review and recommendation to the Board of Mayor and Aldermen.

ORDINANCE 21-02

AN ORDINANCE AMENDING ORDINANCE NO. 18-21, ADOPTED AUGUST 20, 2018, BY CHANGING THE ZONING CLASSIFICATION OF APPROXIMATELY 43.84 ACRES OF LAND FROM I-1, LIGHT INDUSTRIAL, TO PLANNED DEVELOPMENT (PDP 912-2020), WITH THE UNDERLYING BASE DISTRICT OF C-5 AND R-6, AND ADOPTING THE PRELIMINARY PLAN FOR KINGSLEY PLACE, BEING TAX MAP 027, PARCEL 03.06 AND PARCEL 04.00.

WHEREAS, the City of Spring Hill Zoning Ordinance, adopted via ordinance 18-21, authorizes the Planning Commission to make recommendations on Planned Development applications to the Board of Mayor and Aldermen; and

WHEREAS, the Planning Commission reviewed Planned Development application PDP 912-2020, Kingsley Place, at its December 14, 2020 regularly scheduled meeting; and

WHEREAS, the Planning Commission recommended, by a vote of 5-2, to not approve Planned Development application PDP 912-2020, Kingsley Place, asking that the Board of Mayor and Aldermen consider the conditions provided; and

WHEREAS, the Board of Mayor and Aldermen find that Planned Development application PDP 912-2020, Kingsley Place, meets the requirements and approval standards contained in Article 13.5 of the Unified Development Code, the same being the Zoning Ordinance for the City of Spring Hill; and

WHEREAS, The City of Spring Hill Board of Mayor and Aldermen desires to rezone the subject property from I-1, Light Industrial, to Planned Development (PD) and approve the Preliminary Plan for Kingsley Place.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY OF SPRING HILL, TENNESSEE, BOARD OF MAYOR AND ALDERMEN, WHILE IN REGULAR SESSION ON THE _____ DAY OF _____, 2021 as follows:

SECTION 1: REZONING. Zoning Ordinance No. 18-21 (Zoning Map), adopted August 20, 2018, be and is hereby amended by rezoning those certain parcels of real property known as Kingsley Place, described below and as shown in the attached exhibits, from I-1 to Planned Development (PD) subject to the underlying base zoning classification of C-4 and R-6 as designated therein.

In the State of Tennessee, County of Maury, City of Spring Hill, and being more particularly described as follows:

Maury County Tax Map 027, Parcel 03.06 and Parcel 04.00 consisting of approximately 43.84 acres.

SECTION 2: EXHIBITS. The Preliminary Plan for Kingsley Place shall consist of the following Exhibits dated December 3, 2020:

Exhibit A: Preliminary Site Plans and Landscape Plans – Kingsley Place, by WES
Exhibit B: Vision Book for Kingsley Place, by WES

Except as modified herein and explicitly on the approved Preliminary Master Plan (Exhibit A-B), the Kingsley Place PD shall comply with the requirements of the underlying C-5 and R-6 (multi-family site) zoning districts, in Ordinance 18-21, (Zoning Ordinance) as amended, be in substantial conformance with Exhibits A-B attached hereto, all other applicable rules, regulations and ordinances of the City of Spring Hill, as well as the following conditions:

1. Conveyance of the proposed police site to the City of Spring Hill shall be completed prior to the issuance of any construction related permits for this development.
2. Detailed elevations for each building will need to be provided at the time of Planned Development Final Plan application.
3. A phasing plan has not been provided but the applicant has provided a "Site Phase Schedule" on the Proposed Site Layout Plan (C-2.0). An actual phasing plan will need to be provided at time of Planned Development Final Plan application.
4. Existing vegetation will need to be inventoried and preserved where possible. The applicant has indicated on the landscape plan certain areas to remain or supplemented with buffer material. A tree survey and preservation plan will need to be provided at Planned Development Final Plan application.
5. Foundation plantings are required for the commercial buildings and details for each building type will need to be provided at time of a Planned Development Final Plan application.
6. The property must be modeled to ensure that the sanitary sewer has the capacity to accept the wastewater flows from the proposed development. The applicant will need to provide sanitary sewer flow requirements calculated at 350 GPD per dwelling unit. These calculations shall be used to determine adequate capacity in City's sewer system or if any upgrades will be required. The applicant will need to continue to work with both departments on coordinating capacity and design.
7. Developer shall follow all of the conclusions and recommendations presented in the Traffic Impact Study prepared by Fischbach Transportation Group; LLC dated November 2020 for the Proposed Mixed-Use Development on Old Port Royal Road. These improvements should be listed and/or shown on the site plan.
8. The base zone for the commercial (non-multi-family) areas shall be C-4 and a non-food drive-thru may be considered during site plan approval by the Planning Commission.

SECTION 3: **PUBLIC HEARING**. The zoning change was the subject of a public hearing held on _____.

BE IT FURTHER ORDAINED
In case of conflict between this ordinance or any part hereof, and the whole part of any existing ordinance of the City, the conflicting ordinance is repealed to the extent of the conflict but no further. If any section, clause, or provision or portion of this ordinance is held to be invalid or unconstitutional by any court of competent jurisdiction, such holding shall not affect any other section, clause, or provision or portion of this ordinance.

_____
Rick Graham, Mayor

ATTEST:

_____
April Goad, City Recorder

LEGAL FORM APPROVED:

_____

Patrick Carter, City Attorney

Passed on First Reading: _____ Passed on Second Reading: _____

ORDINANCE 21-02

AN ORDINANCE AMENDING ORDINANCE NO. 18-21, ADOPTED AUGUST 20, 2018, BY CHANGING THE ZONING CLASSIFICATION OF APPROXIMATELY 43.84 ACRES OF LAND FROM I-1, LIGHT INDUSTRIAL, TO PLANNED DEVELOPMENT (PDP 912-2020), WITH THE UNDERLYING BASE DISTRICT OF C-5 AND R-6, AND ADOPTING THE PRELIMINARY PLAN FOR KINGSLEY PLACE, BEING TAX MAP 027, PARCEL 03.06 AND PARCEL 04.00.

WHEREAS, the City of Spring Hill Zoning Ordinance, adopted via ordinance 18-21, authorizes the Planning Commission to make recommendations on Planned Development applications to the Board of Mayor and Aldermen; and

WHEREAS, the Planning Commission reviewed Planned Development application PDP 912-2020, Kingsley Place, at its December 14, 2020 regularly scheduled meeting; and

WHEREAS, the Planning Commission recommended, by a vote of 5-2, to not approve Planned Development application PDP 912-2020, Kingsley Place, asking that the Board of Mayor and Aldermen consider the conditions provided; and

WHEREAS, the Board of Mayor and Aldermen find that Planned Development application PDP 912-2020, Kingsley Place, meets the requirements and approval standards contained in Article 13.5 of the Unified Development Code, the same being the Zoning Ordinance for the City of Spring Hill; and

WHEREAS, The City of Spring Hill Board of Mayor and Aldermen desires to rezone the subject property from I-1, Light Industrial, to Planned Development (PD) and approve the Preliminary Plan for Kingsley Place.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY OF SPRING HILL, TENNESSEE, BOARD OF MAYOR AND ALDERMEN, WHILE IN REGULAR SESSION ON THE _____ DAY OF _____, 2021 as follows:

SECTION 1: REZONING. Zoning Ordinance No. 18-21 (Zoning Map), adopted August 20, 2018, be and is hereby amended by rezoning those certain parcels of real property known as Kingsley Place, described below and as shown in the attached exhibits, from I-1 to Planned Development (PD) subject to the underlying base zoning classification of C-4 and R-6 as designated therein.

In the State of Tennessee, County of Maury, City of Spring Hill, and being more particularly described as follows:

Maury County Tax Map 027, Parcel 03.06 and Parcel 04.00 consisting of approximately 43.84 acres.

SECTION 2: EXHIBITS. The applicant has submitted updated Exhibits (A1 and B1) that differ substantially from the plan package acted upon by the Planning Commission. The following is a summary of the substantive changes to the plan package:

1. The C-5 base zoning for the commercial (non-multi-family) has been changed to C-4.
2. The number of residential units has been decreased from 516 to 396 residential units.
3. Residential density has been decreased from 17.86 to 14.62 dwelling units per acre.
4. The multi-family acreage has been reduced from 28.89 acres to 27.08 acres.

5. The commercial acreage has been increased from 13.57 acres to 16.5 acres.
6. The commercial area dedicated to the proposed police station has been increased from 3.5 acres to 5.0 acres.
7. Additional retail commercial areas have been increased to 8.25 acres, and office acreage has been increased to 3.25 acres.
8. Use restrictions on page 13 of the Vision Book (Exhibit B1) have been revised to include more use restrictions than previously provided.
9. Drive-Through Facilities have been added as a permitted use in the C-4 zoning.
10. A Phasing Plan has been provided in the updated Vision Book (Exhibit B1) and shows 3 phases of development.

The Preliminary Plan for Kingsley Place shall consist of the following revised Exhibits;

Exhibit A1: Preliminary Site Plans and Landscape Plans – Kingsley Place, by WES (Dated Feb. 24, 2021)

Exhibit B1: Vision Book for Kingsley Place, by WES (Dated Feb. 5, 2021)

Except as modified herein and explicitly on the approved Preliminary Master Plan (Exhibit A1-B1), the Kingsley Place PD shall comply with the requirements of the underlying C-5 and R-6 (multi-family site) zoning districts, in Ordinance 18-21, (Zoning Ordinance) as amended, be in substantial conformance with Exhibits A-B attached hereto, all other applicable rules, regulations and ordinances of the City of Spring Hill, as well as the following conditions:

1. Conveyance of the proposed police site to the City of Spring Hill shall be completed prior to the issuance of any construction related permits for this development.
2. Detailed elevations for each building will need to be provided at the time of a Planned Development Final Plan application.
3. Existing vegetation will need to be inventoried and preserved where possible. The applicant has indicated on the landscape plan certain areas to remain or supplemented with buffer material. A tree survey and preservation plan will need to be provided at the time of a Planned Development Final Plan application.
4. Foundation plantings are required for the commercial buildings and details for each building type will need to be provided at the time of a Planned Development Final Plan application.
5. Developer shall follow all of the conclusions and recommendations presented in the Traffic Impact Study prepared by Fischbach Transportation Group; LLC dated January 2021 for the Proposed Mixed-Use Development on Old Port Royal Road. These improvements should be listed and/or shown on the site plan.

SECTION 3: **PUBLIC HEARING**. The zoning change was the subject of a public hearing held on

_____.

BE IT FURTHER ORDAINED
In case of conflict between this ordinance or any part hereof, and the whole part of any existing ordinance of the City, the conflicting ordinance is repealed to the extent of the conflict but no further. If any section, clause, or provision or portion of this ordinance is held to be invalid or unconstitutional by any court of competent jurisdiction, such holding shall not affect any other section, clause, or provision or portion of this ordinance.

_____

Rick Graham, Mayor

ATTEST:

_____

April Goad, City Recorder

LEGAL FORM APPROVED:

_____

Patrick Carter, City Attorney

Passed on First Reading: _____ Passed on Second Reading: _____

RESOLUTION 21-49

A RESOLUTION SENDING PLANNED DEVELOPMENT PRELIMINARY PLAN APPLICATION PDP 912-2020, FOR KINGSLEY PLACE, BACK TO THE SPRING HILL PLANNING COMMISSION FOR REVIEW AND RECOMMENDATION TO THE BOARD OF MAYOR AND ALDERMEN

WHEREAS, the City of Spring Hill Zoning Ordinance, adopted via ordinance 18-21, authorizes the Planning Commission to make recommendations on planned development applications to the Board of Mayor and Aldermen; and

WHEREAS, the Planning Commission reviewed planned development application PDP 912-2020, Kingsley Place, at its December 14, 2020 regularly scheduled meeting; and

WHEREAS, the Planning Commission recommended, by a vote of 5-2, to not approve Planned Development application PDP 912-2020, Kingsley Place, asking that the Board of Mayor and Aldermen consider the eight conditions provided; and

WHEREAS, the Board of Mayor and Aldermen approved the Planning Commission recommended plans on First Reading on February 16, 2021; and

WHEREAS, the applicant has submitted a revised plan package and the Board of Mayor and Aldermen has determined that the revised plan package provided as part of planned development preliminary plan application PDP 912-2020, Kingsley Place, has substantially changed and no longer resembles the plan package initially considered and acted upon by the Planning Commission; and

WHEREAS, The City of Spring Hill Board of Mayor and Aldermen desires the Planning Commission to review the amended plan package and provide a new recommendation for the Kinsley Place planned development preliminary plan.

NOW, THEREFORE, BE IT RESOLVED, that the City of Spring Hill authorizes the Board of Mayor and Aldermen to send the Kinglsey Place planned development preliminary plan, application PDP 912-2020, back to the Planning Commission for review and a recommendation.

Passed and adopted by the Board of Mayor and Aldermen of the City of Spring Hill, Tennessee on this 15th day of March, 2021.

_____
Rick Graham, Mayor

ATTEST:

_____
April Goad, City Recorder

LEGAL FORM APPROVED:

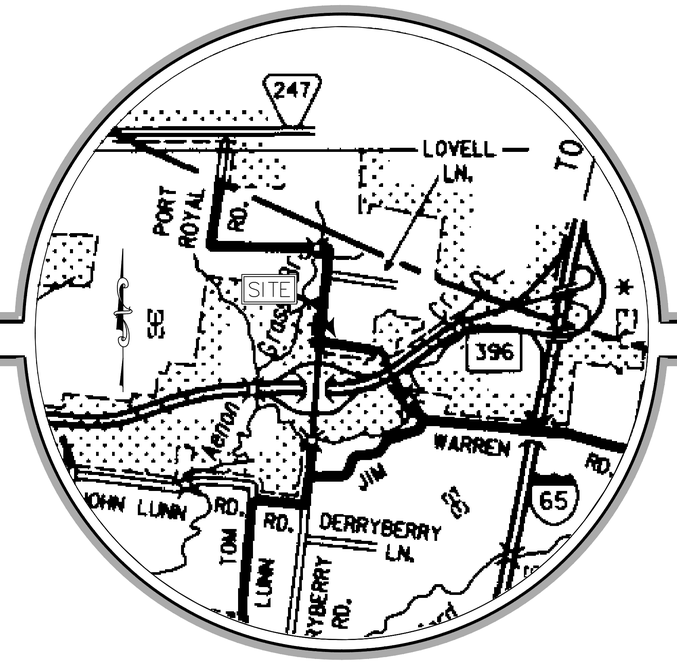
_____

Patrick Carter, City Attorney

A SITE PLAN FOR

KINGSLEY PLACE

OLD PORT ROYAL ROAD, SPRING HILL, TENNESSEE
TAX MAP 27, PARCEL 03.06 & 4.00
COMMERCIAL/RESIDENTIAL DEVELOPMENT



LOCATION MAP
NOT TO SCALE
SPRING HILL, MAURY COUNTY, TENNESSEE

SPECIFIED SEQUENCE OF WORK FOR THE SELECTED CONTRACTOR:

1. INSTALL PHASE 1 OF EROSION PREVENTION & SEDIMENT CONTROL MEASURES.
2. BEGIN EXCAVATION & FILLING TO CONSTRUCT DETENTION BASINS TO FUNCTION AS SEDIMENT BASINS DURING CONSTRUCTION.
3. CONTINUE EXCAVATION & FILLING TO BRING THE SITE TO FINAL SUBGRADE.
4. CONSTRUCT / INSTALL PAVEMENT BASE STONE & BINDER AND SIDEWALK BASE STONE.
5. COMPLETE SITE APPURTENANCES (FINAL PAVING, CURBING, DRESSING SITE).
6. COMPLETE SOIL STABILIZATION (FINAL DRESSING OF SITE) ONCE BUILDING CONSTRUCTION IS NEARING COMPLETION.
7. COMPLETE PUNCH LIST ITEMS, AS-BUILT, INFRASTRUCTURE CERTIFICATIONS AS REQUIRED.

UTILITY COMPANIES:

UTILITIES SHOWN ARE BASED ON LIMITED DATA. THERE IS NO GARANTEE AS TO THEIR LOCATION OR SIZE. PLEASE CONTACT THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION. POSSIBLE CONTACTS IN THIS AREA INCLUDE:

TENNESSEE ONE CALL:

1-800-351-1111

MUNICIPALITY:

CITY OF SPRING HILL
199 TOWN CENTER PARKWAY
SPRING HILL, TENNESSEE 37174

CODES:

CITY OF SPRING HILL
CODES & INSPECTIONS
199 TOWN CENTER PARKWAY
SPRING HILL, TENNESSEE 37174
931-486-2252 Ext. 214

STORMWATER:

CITY OF SPRING HILL
199 TOWN CENTER PARKWAY
SPRING HILL, TENNESSEE 37174
THOMAS WOLF: CITY ENGINEER
931-486-2252 Ext. 488

SANITARY:

CITY OF SPRING HILL
3893 MAHLON MOORE ROAD
SPRING HILL, TENNESSEE 37174
931-486-2252

WATER:

CITY OF SPRING HILL
WATER DISTRIBUTION SYSTEM
3893 MAHLON MOORE RD
SPRING HILL, TENNESSEE 37174
931-486-2252

ELECTRIC:

MIDDLE TENNESSEE ELECTRIC
MEMBERSHIP CORPORATION
2156 EDWARD CURD LANE
FRANKLIN, TN 37067
615-794-3561

TELEPHONE:

ATT (BELLSOUTH)
500 LIBERTY PIKE
FRANKLIN, TENNESSEE 37064
888-757-6500

NATURAL GAS:

ATMOS ENERGY
810 NASHVILLE HWY.
COLUMBIA, TN 38401
888-824-3434

CABLE TELEVISION:

CHARTER
COMMUNICATIONS
2008 S. MAIN STREET
COLUMBIA, TN 38401
931-388-1326

Tennessee811
Know what's **below**
Call before you dig.

CITY OF SPRING HILL APPROVAL

TOM WOLF, CITY ENGINEER

*APPROVED PLANS MUST BE KEPT ON JOB SITE AT ALL TIMES.

THIS SITE PLAN HAS BEEN DESIGNED TO MEET THE CRITERIA OF THE CITY OF SPRING HILL, TENNESSEE. THE PLANS ARE NOT RELEASED FOR CONSTRUCTION UNTIL THE RELATIVE PERMIT HAS BEEN ISSUED BY THE MUNICIPALITY. CHANGES SHALL NOT BE MADE TO THE APPROVED SITE PLAN UNLESS APPROVED BY THE RELEVANT DEPARTMENT SUPERINTENDANT OR THE PLANNING COMMISSION.

PRIMARY CONTRACTOR INFORMATION:

COMPANY NAME: _____
CONTACT PHONE: _____

TDEC LEVEL I CERTIFIED 24 HOUR POINT OF CONTACT FOR SOIL EROSION CONTROL:
NAME: _____
PHONE: _____

STATE OF TENNESSEE NPDES PERMIT - NOTICE OF COVERAGE TRACKING NUMBER: _____
DATE: _____

EXHIBIT A - PC PLANS

© 2020

gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

SHEET INDEX

C-0.0 COVER
C.1.0 EXISTING CONDITIONS PLAN
C-2.0 OVERALL LAYOUT PLAN
C-3.0 OVERALL GRADING PLAN
C-4.0 EMERGENCY VEHICLE ACCESS PLAN
C-5.0 UDC COMPLIANCE PLAN
L-1.0 OVERALL LANDSCAPE PLAN
L-1.1 ENLARGED LANDSCAPE PLAN
L-1.2 TYPICAL FOUNDATION PLANTING PLANS
L-1.3 LANDSCAPE BUFFERS
L-2.0 LANDSCAPE NOTES & DETAILS
SP-1.0 SITE LIGHTING PLAN
SP-2.0 SITE LIGHTING PLAN

GENERAL NOTES

1. PROPOSED USE: COMMERCIAL/RESIDENTIAL DEVELOPMENT
2. A PRE CONSTRUCTION MEETING WITH THE MUNICIPALITY IS REQUIRED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING AND PROPOSED UTILITIES FROM DAMAGE DURING ALL STAGES OF CONSTRUCTION.
4. THE ENGINEER AND APPLICABLE AGENCY MUST APPROVE, PRIOR TO CONSTRUCTION, ANY ALTERATION, OR VARIANCE FROM THESE PLANS.
5. DEVELOPER SHALL COMPLY WITH TDEC EROSION PREVENTION AND SEDIMENTATION CONTROL HANDBOOK, CURRENT EDITION.
6. UNDERGROUND DRY UTILITIES SHALL BE EXTENDED FROM EXISTING LOCATIONS TO SERVICE THIS SITE AS REQUIRED BY UTILITY COMPANIES.
7. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES OR SAFETY PRECAUTIONS OR PROGRAMS UTILIZED IN CONNECTION WITH THE WORK, AND WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
8. HANDICAP PARKING SPACES SHALL BE MARKED WITH ABOVE GRADE SIGNS IN ACCORDANCE WITH CURRENT ADA STANDARDS. VAN ACCESSIBLE SPACES SHALL BE MARKED AS SUCH.
9. ALL ON-SITE TRAFFIC SIGNS SHALL MEET THE REQUIREMENTS OF THE CITY ENGINEERING REQUIREMENT, ZONING ORDINANCE, & THE MUTCD.
10. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF SPRING HILL, TENNESSEE.
11. UTILITIES AS SHOWN INDICATE THE APPROXIMATE LOCATION OF FACILITIES ONLY AND NO GUARANTEE IS GIVEN TO THE COMPLETENESS OR ACCURACY THEREOF. NO EXCAVATION MAY BE MADE WITHIN 4 FEET OF THESE UTILITIES UNLESS AND UNTIL SUCH UTILITIES HAVE BEEN POSITIVELY LOCATED AS TO HORIZONTAL AND VERTICAL POSITION. CONTRACTOR SHALL CONTACT UTILITY COMPANY AND "TENNESSEE ONE CALL" AT 811 (1-800-351-1111) THREE WORKING DAYS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATION OF ALL EXISTING UTILITIES.
12. THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD BOUNDARY AND FLOODWAY MAP COMMUNITY PANEL NO. 47119C0185E. ('ZONE X')
13. THE LIMIT OF CONSTRUCTION IS SHOWN ON THE CONSTRUCTION PLANS. ANY WORK OUTSIDE OF THE LIMIT OF CONSTRUCTION IS TO BE COORDINATED BY THE CONTRACTOR AND PRE-APPROVED BY THE APPROPRIATE PROPERTY OWNER.

SITE DATA

PARCEL NUMBER	TAX MAP 27, PARCELS 03.06 & 04.00 DEED BOOK: R2230, PG 1035 R2263, PG 924
PARCEL ADDRESS:	3788 & 3812 OLD PORT ROYAL ROAD SPRING HILL, TENNESSEE 37174
EXISTING ZONING:	I-1 (LIGHT INDUSTRIAL)
PROPOSED ZONING:	C-5 (REGIONAL COMMERCIAL DISTRICT) R-6 (MULTI-FAMILY DISTRICT)
ACREAGE OF SITE:	±43.84 ACRES
DISTURBED ACREAGE:	±43.84 ACRES
MINIMUM REQUIRED BUILDING SETBACK LINES:	
	20' FRONT (MINOR) 30' REAR 15' MINIMUM BETWEEN BUILDINGS
PROPERTY OWNER:	OLIVIA BROWN LUNN ETALL S. CHEATHAM BROWNIE & KAITLYNN O. LUNN 3788 OLD PORT ROYAL ROAD NORTH SPRING HILL, TN 37174 SAMUEL S. LUNN 3812 OLD PORT ROYAL ROAD NORTH SPRING HILL, TN 37174

KINGSLEY PLACE
OLD PORT ROYAL ROAD
SPRING HILL, TENNESSEE

PROPRIETOR

PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TENNESSEE 37174
CONTACT: PAUL VARNEY

WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com

KINGSLEY PLACE
OLD PORT ROYAL ROAD

SPRING HILL, TENNESSEE 38401

ENGINEER'S SEAL

GERALD W. WYCK
REGISTERED ENGINEER
AGRICULTURAL
No. 107415
STATE OF TENNESSEE
12-31-20

REVISIONS	DATE

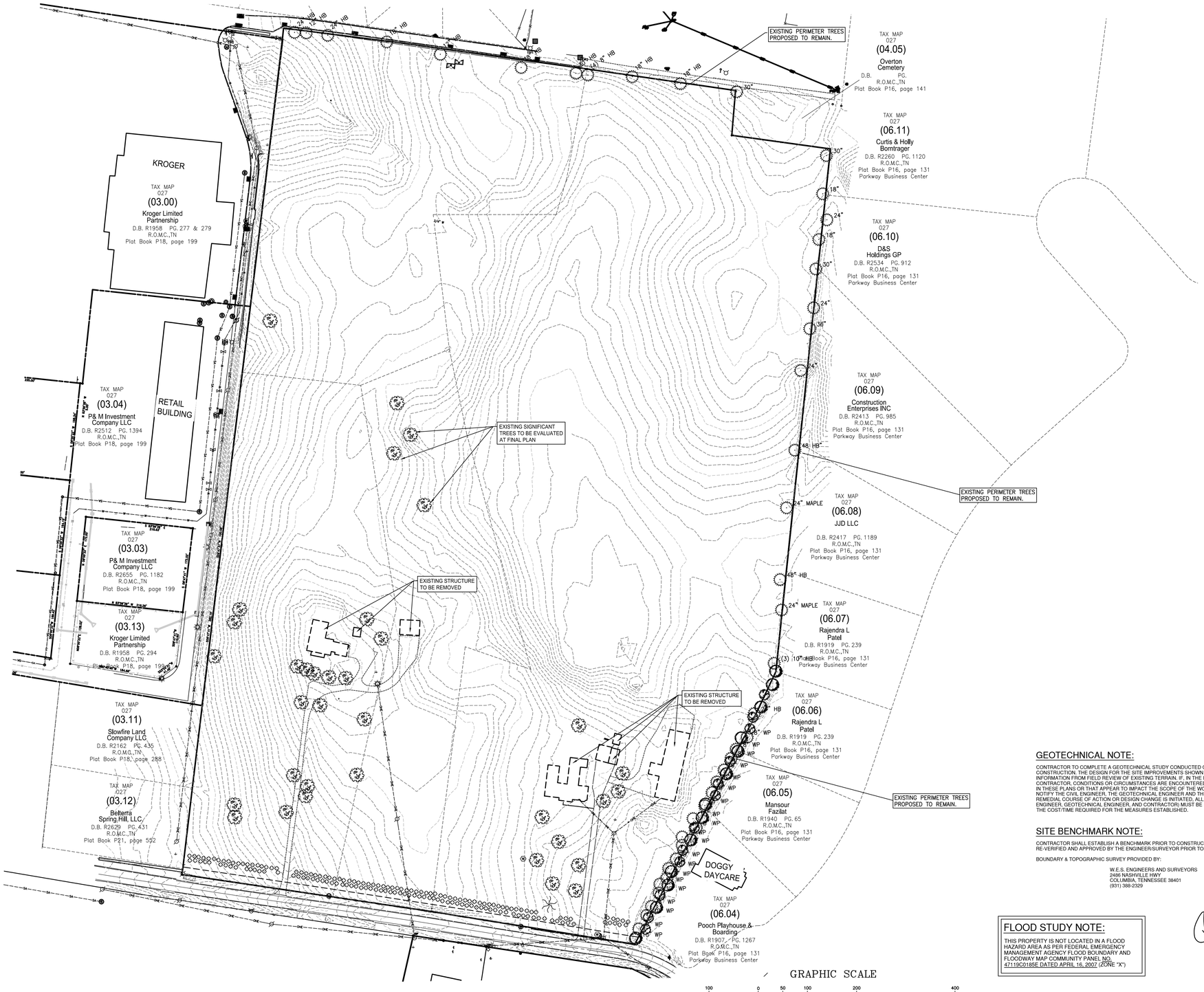
PROJECT No.

DATE: DATE

SPRING HILL CONTROL NUMBER: _____

FILE: J:\WES_Engineers_Surveyors 2019\19633 - Old Port Royal - PVC-Gross\Dwg\Engineering\19633 Base.dwg

PLANNED DEVELOPMENT CONCEPT PLAN EXISTING CONDITIONS



BENCHMARK

BENCHMARK #1
IRON ROD
ELEV. = 638.68'

WARNING! UTILITY LINES!

THE CONTRACTOR WILL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND UTILITY WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN CLOSE PROXIMITY OF OVERHEAD OR UNDERGROUND SERVICES, THE UTILITY COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION. THE UNDERGROUND UTILITY LINES HAVE BEEN SHOWN AS BEST AS CAN BE DETERMINED AT THIS TIME FROM THE INFORMATION OBTAINED FROM THE SURVEY. THE CONTRACTOR SHALL CONTACT EACH OF THESE COMPANIES PRIOR TO BEGINNING CONSTRUCTION AND HAVE THEM DETERMINE THE EXACT LOCATION AND TYPE OF THEIR SERVICES.

Tennessee811 Know what's below Call before you dig.

LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK		

TREE LINE
STORM STRUCTURE LABEL (ST1)
ASPHALT
CONCRETE
PARKING SPACES (14)
P.U.D.E.

GEOTECHNICAL NOTE:

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BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:

W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD BOUNDARY AND FLOODWAY MAP COMMUNITY PANEL NO. 47119C0185E DATED APRIL 16, 2007 (ZONE "X")

GERALD W. JOYCE — REGISTERED ENGINEER — AGRICULTURE — COMMERCE — No. 107415 — 12-2-20 — STATE OF TENNESSEE
gerald@wesengineers.com

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TN GRID NORTH

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Client
PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TN 37174

REVISIONS	DATE

KINGSLEY PLACE
OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
PLAN DEVELOPMENT EXISTING CONDITIONS

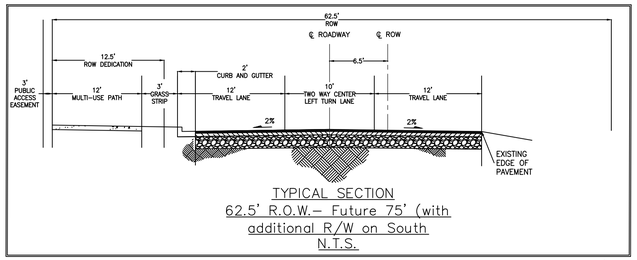
Drawn: RP
Checked: JG
Approved: GW
Date: 11-02-2020

Job. no. 19633
Scale: Vertical: 1"=100' Horizontal:

C 1.0

FILE: J:\WES_Engineers_Surveyors 2019\19633 - Old Port Royal - PVC-Gross\Dwg\Engineering\19633 Base.dwg

PROPOSED SITE LAYOUT PLAN



TYPICAL SECTION
62.5' R.O.W.– Future 75' (with additional R/W on South
N.T.S.



TAX MAP 027 (03.00) Kroger Limited Partnership D.B. R1958 PG. 277 & 279 R.O.M.C.,TN Plat Book P18, page 199

TAX MAP 027 (03.04) P& M Investment Company LLC D.B. R2512 PG. 1394 R.O.M.C.,TN Plat Book P18, page 199

TAX MAP 027 (03.03) P& M Investment Company LLC D.B. R2655 PG. 1182 R.O.M.C.,TN Plat Book P18, page 199

TAX MAP 027 (03.13) Kroger Limited Partnership D.B. R1958 PG. 294 R.O.M.C.,TN Plat Book P18, page 199

TAX MAP 027 (03.11) Slowfire Land Company LLC D.B. R2162 PG. 435 R.O.M.C.,TN Plat Book P18, page 288

TAX MAP 027 (03.12) Belterra Spring Hill, LLC. D.B. R2629 PG. 431 R.O.M.C.,TN Plat Book P21, page 552

TAX MAP 027 (04.05) Overton Cemetery D.B. PG. R.O.M.C.,TN Plat Book P16, page 141

TAX MAP 027 (06.11) Curtis & Holly Bomtrager D.B. R2260 PG. 1120 R.O.M.C.,TN Plat Book P16, page 131 Parkway Business Center

TAX MAP 027 (06.10) D&S Holdings GP D.B. R2534 PG. 912 R.O.M.C.,TN Plat Book P16, page 131 Parkway Business Center

TAX MAP 027 (06.09) Construction Enterprises INC D.B. R2413 PG. 985 R.O.M.C.,TN Plat Book P16, page 131 Parkway Business Center

TAX MAP 027 (06.08) JJD LLC D.B. R2417 PG. 1189 R.O.M.C.,TN Plat Book P16, page 131 Parkway Business Center

TAX MAP 027 (06.07) Rajendra L Patel D.B. R1919 PG. 239 R.O.M.C.,TN Plat Book P16, page 131 Parkway Business Center

TAX MAP 027 (06.06) Rajendra L Patel D.B. R1919 PG. 239 R.O.M.C.,TN Plat Book P16, page 131 Parkway Business Center

TAX MAP 027 (06.05) Mansour Fazilat D.B. R1940 PG. 65 R.O.M.C.,TN Plat Book P16, page 131 Parkway Business Center

TAX MAP 027 (06.04) Pooch Playhouse & Boarding D.B. R1907 PG. 1267 R.O.M.C.,TN Plat Book P16, page 131 Parkway Business Center

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

SITE DATA:

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OWNER: SAMUEL S. LUNN
3812 OLD PORT ROYAL ROAD NORTH
SPRING HILL, TN 37174

OLIVIA BROWN LUNN ETAL
S. CHEATHAM BROWNIE & KAITLYNN O. LUNN
3788 OLD PORT ROYAL ROAD NORTH
SPRING HILL, TN 37174

PARCEL NUMBER: TAX MAP 27 PARCELS 03.06 & 04.00
DEED BOOK: R2230, PG 1035 & R2263, PG 924

SUBJECT PARCEL ZONING:

CURRENT ZONING: I - 1 (LIGHT INDUSTRIAL)
PROPOSED ZONING: R-6 (MULTI-FAMILY)
C-5 (RETAIL COMMERCIAL)

ACREAGE OF SITE: TOTAL: 43.84 ACRES
30.01 ACRES MULTI-FAMILY
2.75 ACRES FLEX - OFFICE / RETAIL
3.68 ACRES POLICE STATION
7.14 ACRES GROCERY STORE
0.26 ACRES R.O.W. DEDICATION

MINIMUM REQUIRED BUILDING SETBACKS:
R-6 SETBACK:
MIN. FRONT YARD - 20'
MIN. REAR YARD - 30'
MIN. DIST. BETWEEN BLDGS - 15'

C-5 SETBACK:
MIN. FRONT YARD - 30'
MIN. SIDE YARD - 15' - 25' WHEN ABUTTING RESIDENTIAL
MIN. REAR YARD - 15' - 25' WHEN ABUTTING RESIDENTIAL

1. THE PROPERTY IS NOT LOCATED WITHIN FLOOD ZONE AS DEPICTED ON FEMA COMMUNITY PANEL 47119C0185E, EFFECTIVE DATE APRIL 16, 2007.
2. ACTUAL DETENTION/DRAINAGE SWALES ARE SUBJECT TO CHANGE.
3. OPEN SPACE SHALL BE PRIVATE USE AREAS PROVIDED FOR ALL DWELLING UNITS LOCATED WITHIN THE DEVELOPMENT.
4. DWELLING UNITS SHALL HAVE ACCESS TO BOTH ACTIVE AND PASSIVE OPEN SPACE AREAS.

UTILITY SERVICES: WATER SERVICE
SPRING HILL WATER DISTRIBUTION SYSTEM
3893 MAHLON MOORE ROAD
SPRING HILL, TENNESSEE 37174
(931) 486-2252

ELECTRIC SERVICE
DUCK RIVER ELECTRIC MEMBERSHIP
798 NEW LEWISBURG HIGHWAY
COLUMBIA, TENNESSEE 38401
(931) 388-3131

PURPOSE NOTE:

THE PURPOSE OF THIS PRELIMINARY PLANNED DEVELOPMENT IS TO REZONE EXISTING INDUSTRIAL 1 TO R-6 & C-5 PLANNED DEVELOPMENT & TO CREATE MULTI-FAMILY UNITS, GROCERY / RETAIL, POLICE STATION & FLEX RETAIL OFFICE.

COVERAGE AREA:

MULTI-FAMILY:
PERVIOUS = 13.57 ACRES
IMPERVIOUS = 16.44 ACRES
TOTAL = 30.01 ACRES
(11.98 ACRES OPEN SPACE INCLUDING CLUBHOUSE, POOL & AMENITIES)
DENSITY: 17.19 UNITS/ACRE

FLEX / OFFICE RETAIL:
PERVIOUS = 0.85 ACRES (30.9%)
IMPERVIOUS = 1.90 ACRES (69.1%)
TOTAL = 2.75 ACRES
DENSITY: 0.36 UNITS/ACRE

POLICE STATION:
PERVIOUS = 1.87 ACRES (50.8%)
IMPERVIOUS = 1.81 ACRES (49.2%)
TOTAL = 3.68 ACRES
DENSITY: 0.27 UNITS/ACRE

GROCERY STORE / RETAIL
PERVIOUS = 1.88 ACRES (26.3%)
IMPERVIOUS = 5.26 ACRES (73.7%)
TOTAL = 7.14 ACRES
DENSITY: 0.42 UNITS/ACRE

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COLUMBIA, TENNESSEE 38401
(931) 388-2329

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LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK		

TREE LINE
STORM STRUCTURE LABEL
ASPHALT
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PARKING SPACES
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GERALD W. LOVICK 12-2-20 LICENSED PROFESSIONAL ENGINEER AGRICULTURAL & BIOSYSTEMS ENGINEER No. 107415 STATE OF TENNESSEE

gerald@wesengineers.com

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ENGINEERS & SURVEYORS

Client: PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TN 37174

REVISIONS | DATE

KINGSLEY PLACE
OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
OVERALL LAYOUT PLAN

Drawn: RP | Checked: JG | Approved: GV | Date: 11-02-2020

Job. no. 19633 | Scale: Vertical: 1"=100' Horizontal: | C-2.0

FILE:J:\WES_Engineers_Surveyors 2019\19633 – Old Port Royal – PVC-Gross\Dwg\Engineering\19633 Base.dwg

GRADING & DRAINAGE PLAN



GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch = 100 ft.

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GENERAL GRADING AND DRAINAGE NOTES

1. ALL GRADING AND DRAINAGE WORK AS SHOWN ON THIS PLAN SHALL BE DONE IN STRICT ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL ENGINEERING DEPARTMENT.
2. THE NECESSARY PERMITS FOR THE WORK SHOWN ON THESE SITE DEVELOPMENT PLANS WILL BE OBTAINED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK ON THIS PROJECT. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS AND PAY ALL FEES INVOLVED IN SECURING SAID PERMITS. THE CONTRACTOR SHALL ALSO COMPLY WITH ALL LOCAL AND STATE BUILDING CODES, ORDINANCES AND REGULATIONS RELATING TO THE CONSTRUCTION OF THE ITEMS SHOWN ON THESE PLANS.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO AVOID DAMAGE TO ALL EXISTING UTILITIES TO REMAIN DURING CONSTRUCTION. IF DAMAGE DOES OCCUR TO ANY SUCH EXISTING INSTALLATIONS, FULL REPAIR SHALL BE AT THE EXPENSE OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED AS PER THE CURRENT SPECIFICATIONS FOR SUCH WORK FOR THE RESPONSIBLE AGENCY.
4. THE LOCATION OF EXISTING PIPING AND UNDERGROUND UTILITIES (I.E., WATER AND GAS LINES, ELECTRICAL AND TELEPHONE CONDUITS, ETC.) AS SHOWN ON THIS PORTION OF THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION FROM ACTUAL SURVEYS, OR TAKEN FROM THE RECORDS AND DRAWINGS OF THE EXISTING UTILITIES. HOWEVER, THE CIVIL ENGINEER DOES NOT ASSUME RESPONSIBILITY THAT, DURING CONSTRUCTION, THE POSSIBILITY OF UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED OR THAT THE ACTUAL LOCATIONS OF UTILITIES SHOWN MAY VARY SOMEWHAT FROM THE LOCATIONS DESIGNATED ON THIS PORTION OF THE PLANS. IN AREAS WHERE IT IS NECESSARY THAT THE EXACT LOCATIONS OF UNDERGROUND UTILITIES BE KNOWN, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, FURNISH ALL LABOR AND TOOLS TO EITHER VERIFY AND SUBSTANTIATE OR DEFINITELY ESTABLISH THE LOCATION OF THE UTILITIES.
5. ALL DELETERIOUS MATERIAL SHALL BE REMOVED AND DISPOSED OF OFF-SITE BY THE CONTRACTOR AS PER THE INSPECTION AND FINAL APPROVAL OF THE ENGINEER AND OWNER. ALL FILL MATERIAL TO BE USED FOR SITE GRADING SHALL BE AN INORGANIC SOIL, FREE OF DEBRIS AND APPROVED BY THE ENGINEER AND OWNER.
6. THE PLACING AND SPREADING OF ANY FILL MATERIAL IS TO BE STARTED AT THE LOWEST POINT AND BROUGHT UP IN HORIZONTAL LAYERS OF 8-INCH THICKNESS. SAID FILL MATERIAL IS TO BE SOIL AND ROCK ONLY, FREE OF SOD, ROOTS, FROZEN SOILS, OR ANY OTHER DECOMPOSABLE MATERIAL. THE RELATIVE COMPACTION OF EACH LAYER SHALL NOT BE LESS THAN 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698) IN ALL AREAS OF FILL, AND COMPACTION OF 98% OF SAME SPECIFICATION FOR MATERIALS USED IN THE UPPER 12 INCHES BENEATH PAVEMENT AND GRADE SLABS.
7. THE CONTRACTOR IS TO CHECK AND VERIFY ALL MEASUREMENTS, LEVELS, ETC., BEFORE ORDERING MATERIALS AND PROCEEDING WITH WORK, AND IS RESPONSIBLE FOR THE SAME.
8. CONTRACTOR IS RESPONSIBLE FOR SECURING WRITTEN APPROVAL FROM ADJOINING PROPERTY OWNER FOR OFF-SITE GRADING WORK THAT RESULTS FROM CONSTRUCTION ACTIVITIES.

BERM CONSTRUCTION NOTES

1. AREAS UNDER THE EMBANKMENT OR ANY STRUCTURAL WORKS RELATED TO THE BASIN SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL , TREES, VEGETATION, ROOTS, OR OTHER OBJECTIONABLE MATERIAL. IN ORDER TO FACILITATE CLEANOUT AND RESTORATION, THE AREA OF MOST FREQUENT INUNDATION (MEASURED FROM THE TOP OF THE PRINCIPAL SPILLWAY) WILL BE CLEARED OF ALL BRUSH AND TREES.
2. THE PLACING AND SPREADING OF EMBANKMENT MATERIALS IS TO BE STARTED AT THE LOWEST POINT AND BROUGHT UP IN HORIZONTAL LAYERS OF 8" THICKNESS. SAID MATERIAL IS TO BE FREE OF SOD, ROOTS, FROZEN SOIL, OR ANY OTHER DECOMPOSABLE MATERIAL. THE RELATIVE COMPACTION OF EACH LAYER SHALL NOT BE LESS THAN 95% OF STANDARD PROCTOR TEST IN ALL AREAS.
3. FOR EARTH-FILL EMBANKMENTS, A CUTOFF TRENCH SHALL BE EXCAVATED ALONG THE CENTERLINE OF THE BERM. THE TRENCH MUST EXTEND AT LEAST 1 FOOT INTO A STABLE, IMPERVIOUS LAYER OF SOIL AND HAVE A MINIMUM DEPTH OF TWO FEET. THE CUTOFF TRENCH SHALL EXTEND UP BOTH ABUTMENTS TO THE RISER CREST ELEVATION. THE MINIMUM BOTTOM WIDTH SHALL BE FOUR FEET, BUT ALSO MUST BE WIDE ENOUGH TO PERMIT OPERATION OF COMPACTION EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1:1. COMPACTION REQUIREMENTS SHALL BE THE SAME AS THOSE FOR THE EMBANKMENT. THE TRENCH SHALL BE DRY DURING THE BACKFILLING AND COMPACTION OPERATIONS.
4. THE EMBANKMENT SHALL BE CONSTRUCTED TO AN ELEVATION 10 PERCENT HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT IF COMPACTION IS OBTAINED WITH HAULING EQUIPMENT. IF COMPACTORS ARE USED FOR COMPACTION, THE OVERBUILD MAY BE REDUCED TO NOT LESS THAN 5 PERCENT.
5. THE EMBANKMENT OF THE DETENTION POND SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT VEGETATION IMMEDIATELY AFTER INSTALLATION OF THE BASIN.
6. ALL STATE AND LOCAL REQUIREMENTS SHALL BE MET CONCERNING FENCING AND SIGNS WARNING THE PUBLIC OF THE HAZARDS OF SOFT, SATURATED SEDIMENT AND FLOOD WATERS.

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GERALD W. JOYCK — REGISTERED ENGINEER — AGRICULTURAL ENGINEER — No. 107415 — STATE OF TENNESSEE

gerald@wesengineers.com

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LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER	18"ST	18"ST
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	

TREE LINE
STORM STRUCTURE LABEL (S1)
ASPHALT
CONCRETE
PARKING SPACES (14)
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REVISIONS	DATE

KINGSLEY PLACE

OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
OVERALL GRADING & DRAINAGE PLAN

Drawn: RP
Checked: JG
Approved: GV
Date: 11-02-2020

Job. no. 19633
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Horizontal:

C-3.0

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EMERGENCY VEHICLE ACCESS PLAN



GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER	15"ST	18"ST
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN	IP	
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	

TREE LINE
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ASPHALT
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SPRING HILL, TN 37174

REVISIONS	DATE

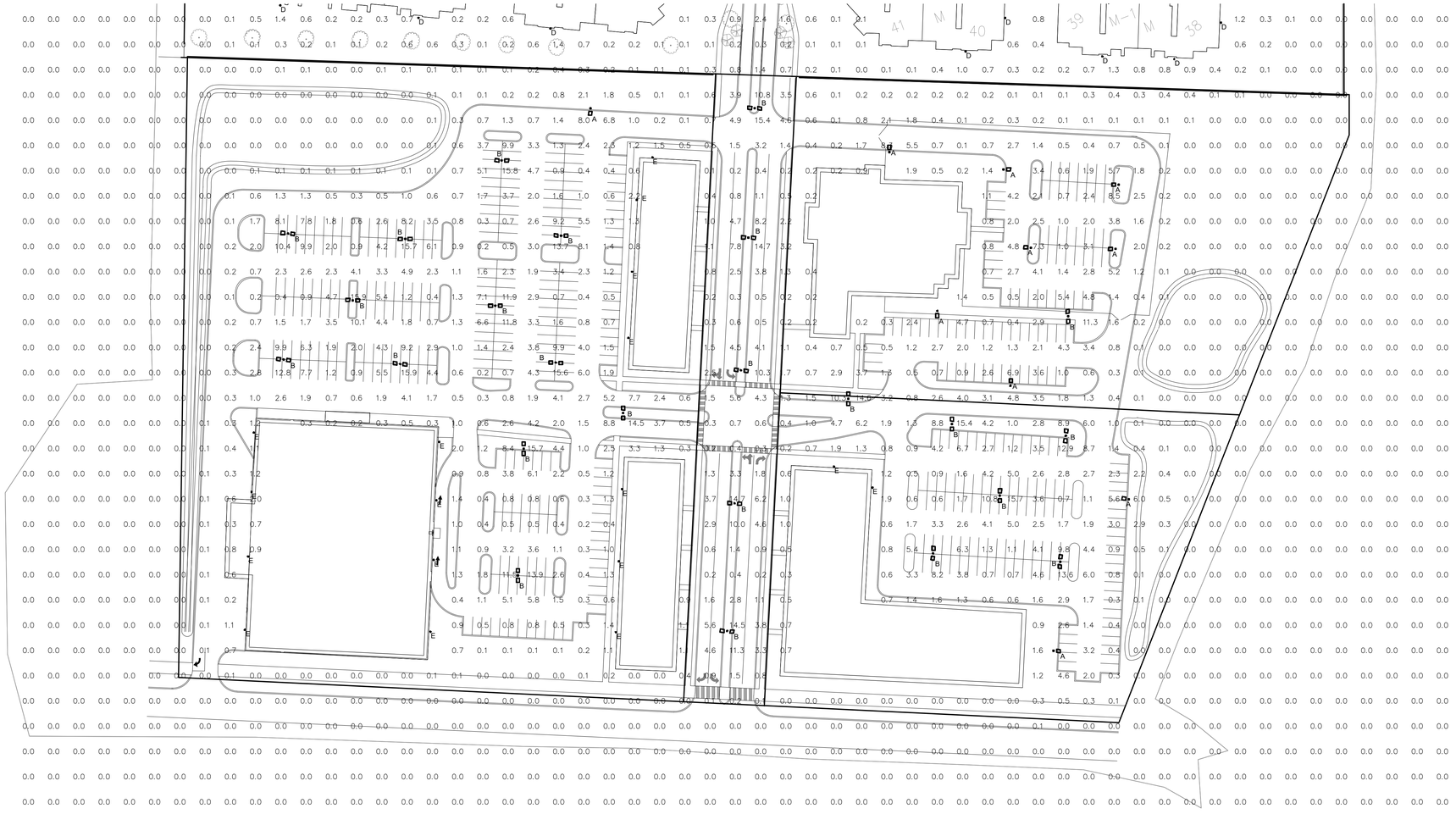
KINGSLEY PLACE

OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
EMERGENCY VEHICLE ACCESS PLAN

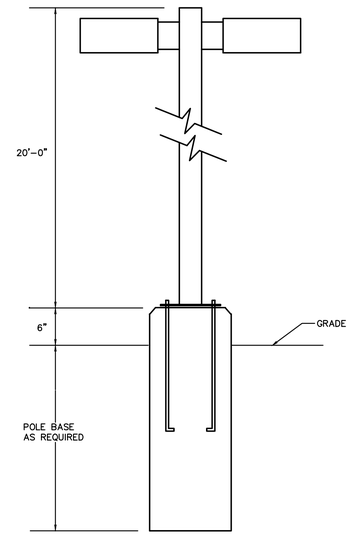
Drawn: RP | Checked: JG | Approved: GV | Date: 11-02-2020

Job. no. 19633 | Scale: Vertical: 1"=100' Horizontal: | C-4.0

FILE: I:\ WES_Engineers_Surveyors 2019\19633 - Old Port Royal - PVC-Gross\Dwg\Engineering\19633 Base.dwg



SITE PHOTOMETRIC PLAN
SCALE: 1"=60'-0"



POLE BASE/PARKING LOT LIGHT FIXTURE DETAIL
NO SCALE



FIXTURE TYPES "A"&"B"
NO SCALE



FIXTURE TYPES "C"&"D"
NO SCALE

SITE PHOTOMETRIC NOTES

1. CALCULATIONS SHOWN REPRESENT MAINTAINED LIGHTING LEVELS IN FOOTCANDLES AT GRADE WITH A TOTAL LIGHT LOSS FACTOR OF 0.91. CALCULATIONS DO NOT INCLUDE CONTRIBUTIONS FROM OTHER LIGHT SOURCES.

2. CIVIL BASE PLAN AS PROVIDED TO PARSONS ENGINEERING, INC. SHOWED NO OVERHEAD UTILITIES. THE CIVIL ENGINEER SHALL VERIFY THAT THERE ARE NO CONFLICTS WITH EXISTING OR PROPOSED UTILITY LINES OR EASEMENTS.

3. THESE CALCULATIONS HAVE BEEN GENERATED FROM MANUFACTURER SUPPLIED PHOTOMETRIC FILES. PARSONS ENGINEERING, INC. HAS MADE A REASONABLE ATTEMPT TO OBTAIN THE MOST CURRENT PHOTOMETRIC REPORT. PARSONS ENGINEERING, INC. IS NOT RESPONSIBLE FOR ERRANT RESULTS DUE TO MANUFACTURERS' QUALITY CONTROL OR DESIGN CHANGES.

Statistics

Description	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	0.9 fc	16.7 fc	0.0 fc	N/A	N/A

Schedule

Symbol	Label	QTY	Description	Number Lamps	Lumens per Lamp	LLF	Wattage	Mounting Height
	A	25	D804-LED-150-40-T3	1	19457	0.91	155.1	20'-0"
	B	42	D804-LED-150-40-T3	1	19457	0.91	310.2	20'-0"
	C	42	D464-L-20-30-U-Z-T	1	2663	0.91	24	10'-0"
	D	102	D464-L-20-30-U-Z-T	1	2663	0.91	24	20'-0"
	E	17	D464-L-20-30-U-Z-T	1	2663	0.91	24	15'-0"

GF55
225 WEST 39TH STREET
NEW YORK, NY 10018
212 352 3099
GF55 ARCHITECTS, LLP 2020

KINGSLEY PLACE
SPRING HILL, TENNESSEE

OWNER

MECHANICAL ENGINEER

STRUCTURAL ENGINEER

ISSUE

0	ISSUE FOR PERMIT	XX XXX. 2020

KEY PLAN

ANTHONY JOSEPH PIZZI
REGISTERED PROFESSIONAL ENGINEER
AGRICULTURE
No. 106073
STATE OF TENNESSEE
11/13/20

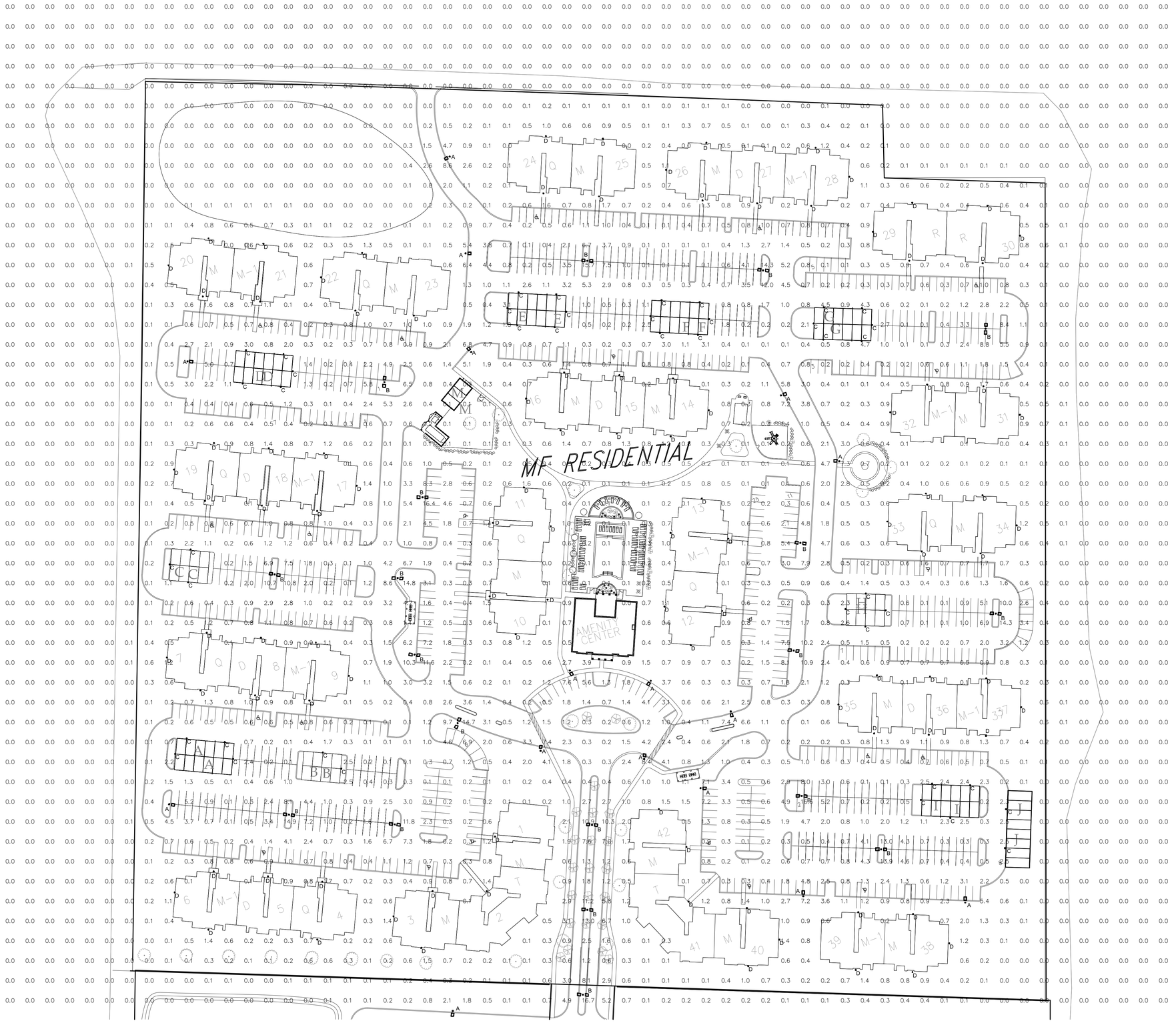
PE
PARSONS
ENGINEERING, INC.
NASHVILLE, TENNESSEE
PARSONSENGINEERING.COM

SCALE
AS NOTED

SEAL AND SIGNATURE

DATE: 10/30/2020
PROJECT NO:
DRAWING BY:
CHK BY:
DWG NO: SP2.0
SHEET NO.: ____ OF

Project: 20271 Drawing: 20271-SP2.0 (B).dwg



SITE PHOTOMETRIC PLAN
SCALE: 1"=60'-0"

GF55
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KINGSLEY PLACE
SPRING HILL, TENNESSEE

OWNER

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ISSUE

0	ISSUE FOR PERMIT	XX XXX. 2020

KEY PLAN



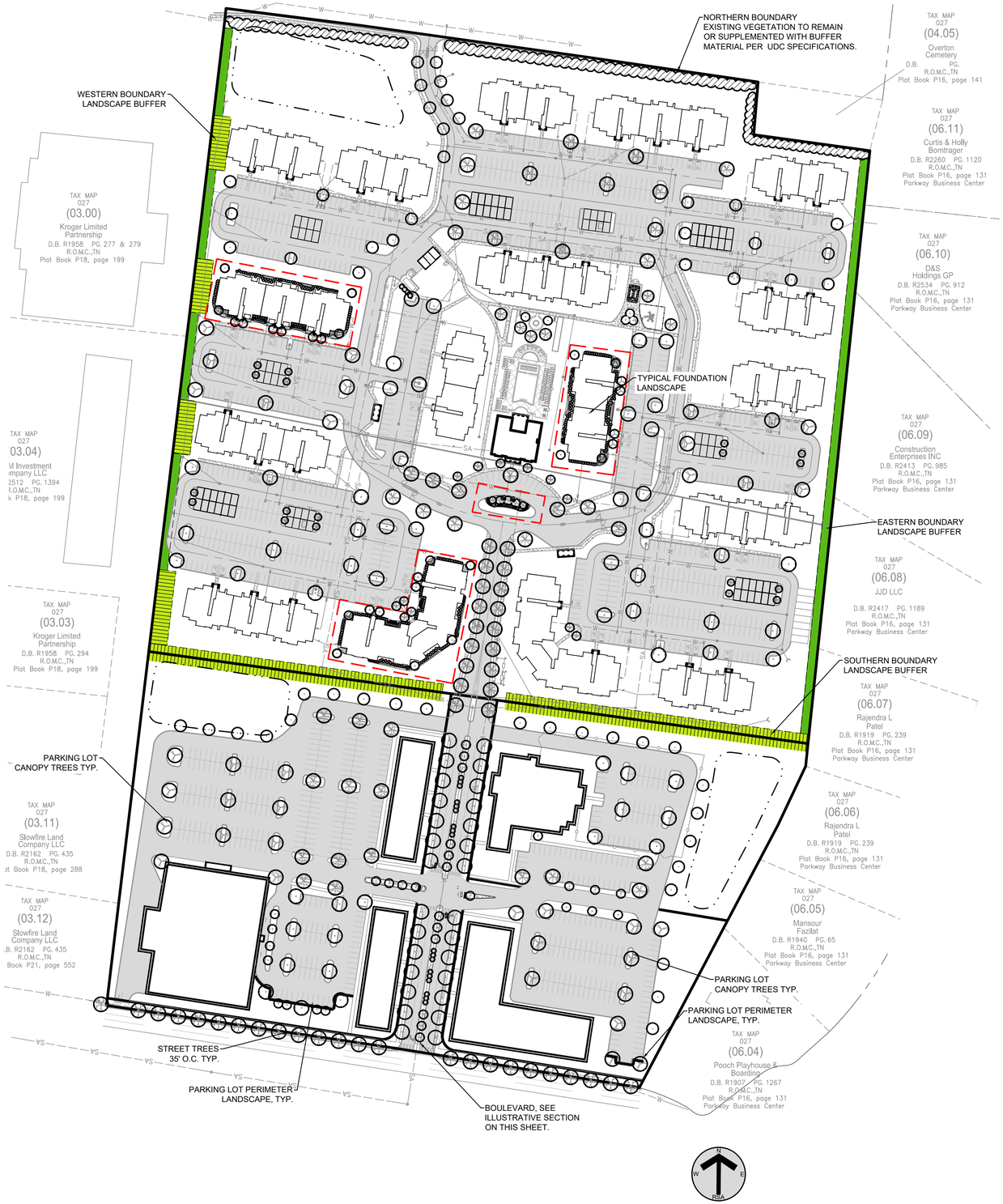
PE
PARSONS
ENGINEERING, INC.
NASHVILLE, TENNESSEE
PARSONSENGINEERING.COM

SCALE
AS NOTED

SEAL AND SIGNATURE

DATE: 10/30/2020
PROJECT NO:
DRAWING BY:
CHK BY:
DWG NO:
SP1.0
SHEET NO.: ____ OF

Project: 20271 Drawing: 20271-SP1.0.dwg



KEY:

PROPOSED LANDSCAPE BUFFER

ENHANCED LANDSCAPE BUFFER

EXISTING VEGETATION TO REMAIN

TYPICAL FOUNDATION LANDSCAPE

LANDSCAPE SITE DATA

PROPERTY INFORMATION:

PROJECT NAME:	KINGSLEY PLACE
STREET ADDRESS:	3812 & 3788 OLD PORT ROYAL RD
PROPOSED ZONING:	R-6 & C-5
TOTAL ACREAGE:	43.84± AC [1,909,670± SF]
R-6:	28.89± AC
C-5:	14.95± AC

MULTI-FAMILY DISTRICT (R-6)

TOTAL UNITS: 516
TOTAL DENSITY: 17.9 UNITS PER AC

OPEN SPACE

REQUIRED (100 SF PER UNIT):	51,600± SF
*PROVIDED:	521,848± SF

*PROVIDED OPEN SPACE DOES NOT INCLUDE THE LANDSCAPE BUFFERS OR REQUIRED YARD AREAS.

BUFFERS:

NORTHERN BOUNDARY 1,196 LF

REQUIRED:	48 TREES
	399 SHRUBS
PROVIDED:	EXISTING VEGETATION TO REMAIN

EASTERN BOUNDARY 1,028 LF

REQUIRED:	42 TREES
	343 SHRUBS
*PROVIDED:	102 TREES
	147 SHRUBS

SOUTHERN BOUNDARY 1,064 LF (ENHANCED LANDSCAPE BUFFER)

REQUIRED:	43 TREES
	355 SHRUBS
**PROVIDED:	125 TREES
	355 SHRUBS

WESTERN BOUNDARY 1,119 LF

REQUIRED:	45 TREES
	373 SHRUBS
*PROVIDED:	111 TREES
	160 SHRUBS

* ALTERNATE LANDSCAPE BUFFER PROPOSED. SHRUB COUNTS HAVE BEEN REDUCE TO ALLOW FOR ADDITIONAL EVERGREEN TREES.

** ENHANCED LANDSCAPE BUFFER IS A OF MIN. 30' WIDE WITH ADDITIONAL PLANT MATERIAL ABOVE AND BEYOND UDC STANDARDS.

PLANT SCHEDULE SITE

CANOPY TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
AA	6	ACER RUBRUM 'AUTUMN FLAME' / AUTUMN FLAME RED MAPLE	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
LA	16	LIRODENDRON TULIPIFERA 'ARNOLD' / ARNOLD TULIP POPLAR	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
PA	23	PLATANUS X ACERIFOLIA / LONDON PLANE TREE	DECIDUOUS	3" CAL.	14–16' HT	AS SHOWN	B&B, 7' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
QC	33	QUERCUS COCCINEA / SCARLET OAK	DECIDUOUS	3" CAL.	14–16' HT	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
QN	46	QUERCUS NUTTALLII / NUTTALL OAK	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 7' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
QP	38	QUERCUS PHELLOS / WILLOW OAK	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
TD	30	TAXODIUM DISTICHUM / BALD CYPRESS	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
UP	37	ULMUS PARVIFOLIA "ALLEE" / ALLEE LACEBARK ELM	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 7' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
ZG	19	ZELKOVA SERRATA 'GREEN VASE' / GREEN VASE SAWLEAF ZELKOVA	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER

UNDERSTORY TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
AC	9	AMELANCHIER CANADENSIS 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE SERVICEBERRY	DECIDUOUS	2.5" CAL.	10 – 12' HT.	AS SHOWN	B&B, MULTI-STEM, 3 CANES MIN. 5 CANES MAX.
CC	2	CERCIS CANADENSIS 'FOREST PANSY' TM / FOREST PANSY REDBUD	DECIDUOUS	2.5" CAL.	10 – 12' HT.	AS SHOWN	B&B, FULL CANOPY
IF	22	ILEX X ATTENUATA 'FOSTER NO. 2' / FOSTER NO. 2 HOLLY	EVERGREEN	---	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
IN	1	ILEX 'NELLIE R. STEVENS' / 'NELLIE R. STEVENS' HOLLY	EVERGREEN	---	6'–8' HT.	AS SHOWN	B&B, FULL CANOPY TO BASE
LN	13	LAGERSTROEMIA INDICA 'NATCHEZ' / CRAPE MYRTLE	DECIDUOUS	2.5" CAL.	10–12' HT	AS SHOWN	B&B, MULTI-STEM, 3 CANES MIN. 5 CANES MAX.
ML	1	MAGNOLIA GRANDIFLORA 'LITTLE GEM' / DWARF SOUTHERN MAGNOLIA	DECIDUOUS	---	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
MG	27	MAGNOLIA VIRGINIANA 'GREEN SHADOW' / GREEN SHADOW MAGNOLIA	EVERGREEN	---	8' MIN.	AS SHOWN	B&B, FULL CANOPY TO BASE

SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
AG	5	ABELIA X GRANDIFLORA / GLOSSY ABELIA	EVERGREEN	30" HT.	30"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
BF	4	BUXUS MICROPHYLLA 'FAULKNER' / FAULKNER BOXWOOD	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
HP	9	HYDRANGEA PANICULATA 'LIMELIGHT' TM / LIMELIGHT HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
HA	19	HYDRANGEA QUERCIFOLIA 'ALICE' / ALICE OAKLEAF HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
IB	105	ILEX CORNUTA 'BURFORDII NANA' / DWARF BURFORD HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
IG	15	ILEX GLABRA 'CHAMZIN' TM / NORDIC HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
IS	15	ITEA VIRGINICA 'SPRICH' TM / LITTLE HENRY VIRGINIA SWEETSPIRE	SEMI-EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINE
LG	1	LAGERSTROEMIA INDICA 'GAMAD I' / CHERRY DAZZLE CRAPE MYRTLE	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
LD	9	LOROPETALUM CHINENSE 'DARUMA' / DARUMA DWARF LOROPETALUM	EVERGREEN	24" HT	24"	24"O.C.	FULL CONTAINER
PO	10	PRUNUS LAUROCERASUS 'OTTO LUYKEN' / LUYKENS LAUREL	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER

GRASSES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
CR	22	CALAMAGROSTIS BRACHYTRICHA / REED GRASS	DECIDUOUS	24" HT	---	24"O.C.	TRIANGULATE SPACING
PV	2	PANICUM VIRGATUM / SWITCH GRASS	DECIDUOUS	24" HT	---	24"O.C.	TRIANGULATE SPACING

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	TYPE	CONT	SPREAD	SPACING	REMARKS
LM	812	LIRIOPE MUSCARI 'ROYAL PURPLE' / ROYAL PURPLE LIRIOPE	PERENNIAL	4" POT	---	18"O.C.	TRIANGULATE SPACING

NOTES:
1. SCHEDULES ABOVE DO NOT INCLUDE BUFFER OR TYPICAL FOUNDATION LANDSCAPES
2. ALL DISTURBED LAND NOT OTHERWISE PLANTED SHALL RECEIVE SOD OR SEED PER NOTES ON SHEET 2.0



BOULEVARD ROADWAY SECTION: 10 SCALE

RAGAN•SMITH
LAND PLANNERS • CIVIL ENGINEERS
LANDSCAPE ARCHITECTS • SURVEYORS
Chattanooga 423-499-9480
Nashville 615-244-8591
Murfreesboro 615-546-9555
ragansmith.com

HEATHER HOUSER GRIMES REGISTERED LANDSCAPE ARCHITECT AGRICULTURE 12-31-2021 TENNESSEE NO. 1001 FORMER

KINGSLEY PLACE

FOR

GROSS RESIDENTIAL

SPRING HILL

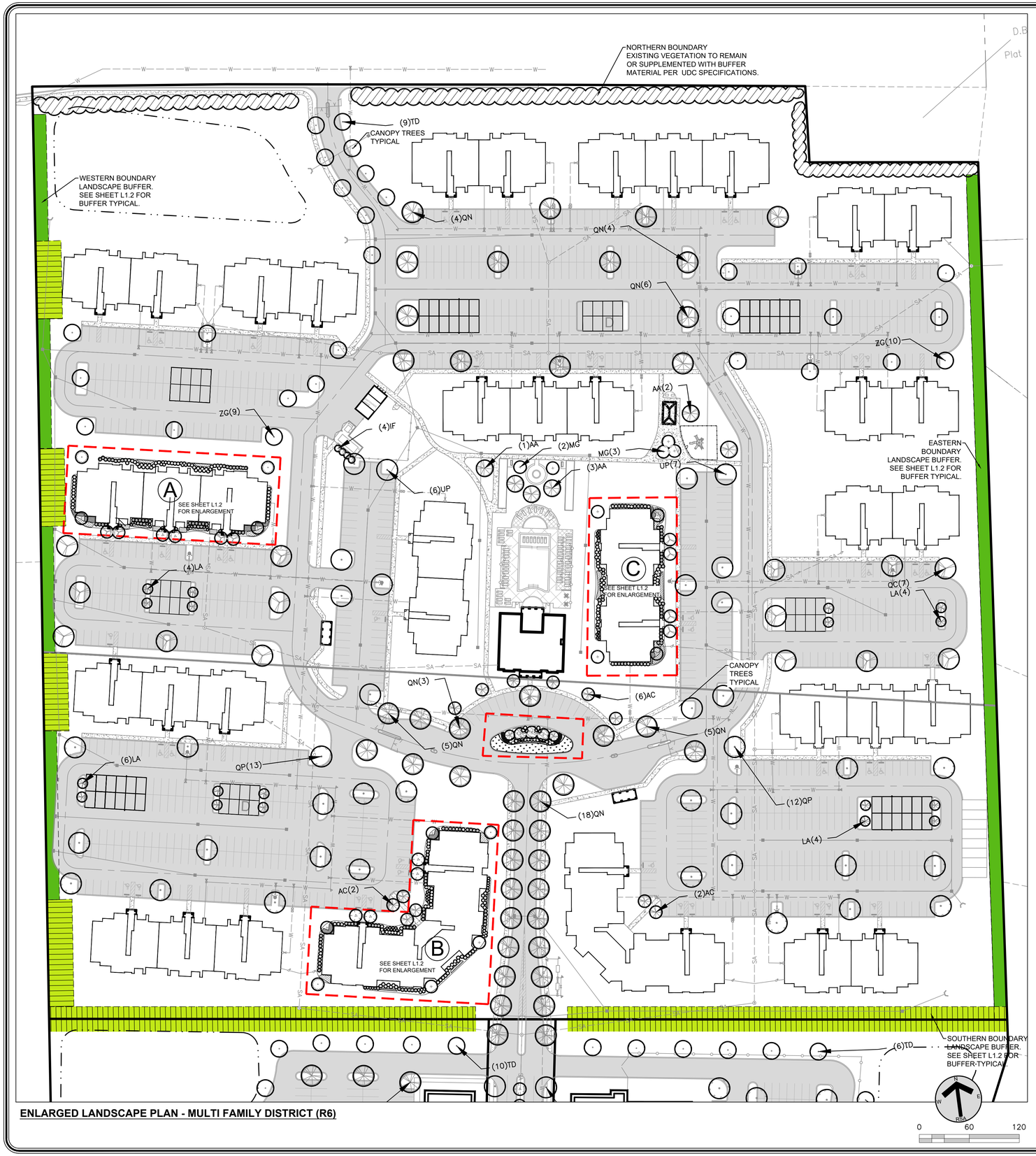
REV. #	DATE:	DESCRIPTION:
-	-	-
-	-	-
-	-	-
-	-	-
2	12/3/2020	PER STAFF COMMENTS
1	11/16/2020	PER STAFF COMMENTS

JOB NO. 20-194
WK. ORDER 2057
DESIGNED: H.GRIMES
DRAWN: P.KEFFABER
SCALE: VARIES SEE PLAN
DATE: NOVEMBER 2, 2020

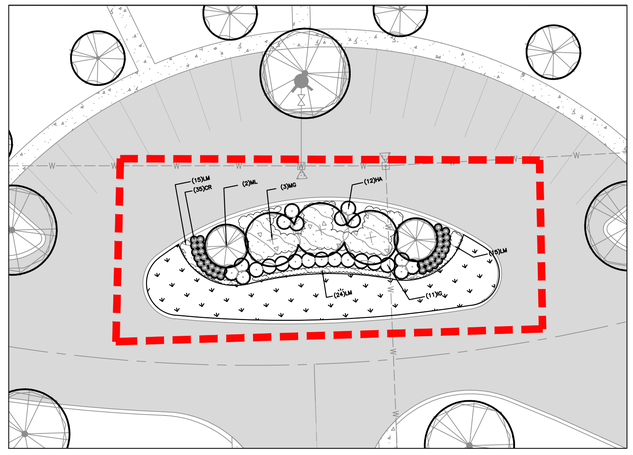
OVERALL LANDSCAPE PLAN

L1.0

G:\20194-2057\CIVIL ENGINEERING\LA PLAN SHEETS\2057 LAND.DWG
PLOTTED BY: HEATHER ET. GRIMES ON - 12/1/2020 9:15 AM LAST UPDATED BY PWOPPAERT ON -12/1/2020 9:13 AM



ENLARGED LANDSCAPE PLAN - MULTI FAMILY DISTRICT (R6)



ENTRY ENLARGEMENT

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HEATHER HOUSER GRIMES
REGISTERED
AGRICULTURE
COMMERCE
TENNESSEE NO. 1679
LANDSCAPE ARCHITECT
12-2-2020

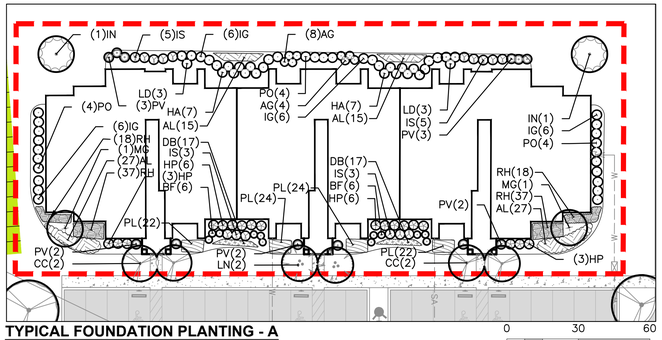
KINGSLEY PLACE
FOR
GROSS RESIDENTIAL
SPRING HILL

REV. #	DATE:	DESCRIPTION:
-	-	-
-	-	-
-	-	-
-	-	-
2	12/3/2020	PER STAFF COMMENTS
1	11/16/2020	PER STAFF COMMENTS

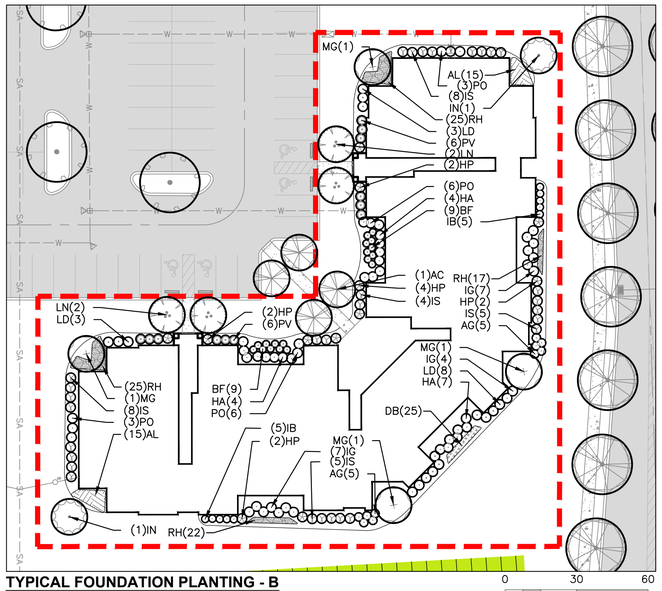
JOB NO. 20-194
WK. ORDER 2057
DESIGNED: H.GRIMES
DRAWN: P.KEFFABER
SCALE: VARIES SEE PLAN
DATE: NOVEMBER 2, 2020

ENLARGED LANDSCAPE PLAN

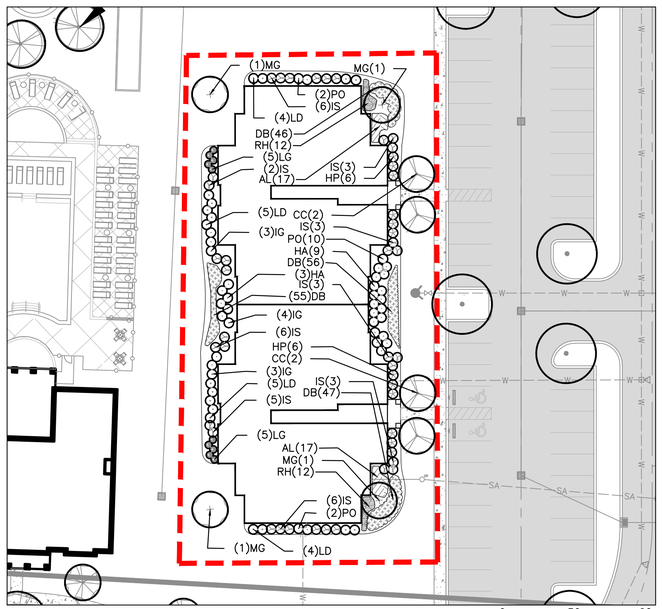
L1.1



TYPICAL FOUNDATION PLANTING - A



TYPICAL FOUNDATION PLANTING - B



TYPICAL FOUNDATION PLANTING - C

PLANT SCHEDULE TYPICAL FOUNDATION PLANTING - A

UNDERSTORY TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
CC	4	CERCIS CANADENSIS 'FOREST PANSY' TM / FOREST PANSY REDBUD	DECIDUOUS	2.5" CAL.	10 – 12' HT.	AS SHOWN	B&B, FULL CANOPY
IN	2	ILEX 'NELLIE R. STEVENS' / 'NELLIE R. STEVENS' HOLLY	EVERGREEN	--	6'-8' HT.	AS SHOWN	B&B, FULL CANOPY TO BASE
LN	2	LAGERSTROEMIA INDICA 'NATCHEZ' / CRAPE MYRTLE	DECIDUOUS	2.5" CAL.	10-12' HT	AS SHOWN	B&B, MULTI-STEM, 3 CANES MIN. 5 CANES MAX.
MG	2	MAGNOLIA VIRGINIANA 'GREEN SHADOW' / GREEN SHADOW MAGNOLIA	EVERGREEN	--	8' MIN.	AS SHOWN	B&B, FULL CANOPY TO BASE
SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
AG	8	ABELIA X GRANDIFLORA / GLOSSY ABELIA	EVERGREEN	30" HT.	30"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
BF	12	BUXUS MICROPHYLLA 'FAULKNER' / FAULKNER BOXWOOD	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
HP	18	HYDRANGEA PANICULATA 'LIMELIGHT' TM / LIMELIGHT HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
HA	14	HYDRANGEA QUERCIFOLIA 'ALICE' / ALICE OAKLEAF HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
IG	24	ILEX GLABRA 'CHAMZIN' TM / NORDIC HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
IS	16	ITEA VIRGINICA 'SPRICH' TM / LITTLE HENRY VIRGINIA SWEETSPIRE	SEMI-EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINE
LD	6	LOROPETALUM CHINENSE 'DARUMA' / DARUMA DWARF LOROPETALUM	EVERGREEN	24" HT	24"	24"O.C.	FULL CONTAINER
PO	12	PRUNUS LAUROCERASUS 'OTTO LUYKEN' / LUYKENS LAUREL	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
GRASSES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
PV	12	PANICUM VIRGATUM / SWITCH GRASS	DECIDUOUS	24" HT	--	24"O.C.	TRIANGULATE SPACING
GROUND COVERS	QTY	BOTANICAL / COMMON NAME	TYPE	CONT	SPREAD	SPACING	REMARKS
AL	84	ASTER LAEVIS / SMOOTH BLUE ASTER	PERENNIAL	4" POT	--	24"O.C.	TRIANGULATE SPACING
DB	34	DIANTHUS X 'BEWITCHED' / BEWITCHED PINK	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING
PL	92	PEROVSKIA X 'LITTLE SPIRE' / RUSSIAN SAGE	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING
RH	110	RUDBECKIA HIRTA / BLACK-EYED SUSAN	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING

NOTES:
1. SCHEDULES ABOVE DO NOT INCLUDE BUFFER LANDSCAPE
2. ALL DISTURBED LAND NOT OTHERWISE PLANTED SHALL RECEIVE SOD OR SEED PER NOTES ON SHEET 2.0

PLANT SCHEDULE TYPICAL FOUNDATION PLANTING - B

UNDERSTORY TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
AC	2	AMELANCHIER CANADENSIS 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE SERVICEBERRY	DECIDUOUS	2.5" CAL.	10 – 12' HT.	AS SHOWN	B&B, MULTI-STEM, 3 CANES MIN. 5 CANES MAX.
IN	2	ILEX 'NELLIE R. STEVENS' / 'NELLIE R. STEVENS' HOLLY	EVERGREEN	--	6'-8' HT.	AS SHOWN	B&B, FULL CANOPY TO BASE
LN	4	LAGERSTROEMIA INDICA 'NATCHEZ' / CRAPE MYRTLE	DECIDUOUS	2.5" CAL.	10-12' HT	AS SHOWN	B&B, MULTI-STEM, 3 CANES MIN. 5 CANES MAX.
MG	4	MAGNOLIA VIRGINIANA 'GREEN SHADOW' / GREEN SHADOW MAGNOLIA	EVERGREEN	--	8' MIN.	AS SHOWN	B&B, FULL CANOPY TO BASE
SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
AG	10	ABELIA X GRANDIFLORA / GLOSSY ABELIA	EVERGREEN	30" HT.	30"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
BF	18	BUXUS MICROPHYLLA 'FAULKNER' / FAULKNER BOXWOOD	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
HP	12	HYDRANGEA PANICULATA 'LIMELIGHT' TM / LIMELIGHT HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
HA	15	HYDRANGEA QUERCIFOLIA 'ALICE' / ALICE OAKLEAF HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
IB	10	ILEX CORNUTA 'BURFORDII NANA' / DWARF BURFORD HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
IG	18	ILEX GLABRA 'CHAMZIN' TM / NORDIC HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
IS	30	ITEA VIRGINICA 'SPRICH' TM / LITTLE HENRY VIRGINIA SWEETSPIRE	SEMI-EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINE
LD	14	LOROPETALUM CHINENSE 'DARUMA' / DARUMA DWARF LOROPETALUM	EVERGREEN	24" HT	24"	24"O.C.	FULL CONTAINER
PO	18	PRUNUS LAUROCERASUS 'OTTO LUYKEN' / LUYKENS LAUREL	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
GRASSES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
PV	12	PANICUM VIRGATUM / SWITCH GRASS	DECIDUOUS	24" HT	--	24"O.C.	TRIANGULATE SPACING
GROUND COVERS	QTY	BOTANICAL / COMMON NAME	TYPE	CONT	SPREAD	SPACING	REMARKS
AL	30	ASTER LAEVIS / SMOOTH BLUE ASTER	PERENNIAL	4" POT	--	24"O.C.	TRIANGULATE SPACING
DB	25	DIANTHUS X 'BEWITCHED' / BEWITCHED PINK	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING
RH	89	RUDBECKIA HIRTA / BLACK-EYED SUSAN	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING

NOTES:
1. SCHEDULES ABOVE DO NOT INCLUDE BUFFER LANDSCAPE
2. ALL DISTURBED LAND NOT OTHERWISE PLANTED SHALL RECEIVE SOD OR SEED PER NOTES ON SHEET 2.0

PLANT SCHEDULE TYPICAL FOUNDATION PLANTING - C

UNDERSTORY TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
CC	4	CERCIS CANADENSIS 'FOREST PANSY' TM / FOREST PANSY REDBUD	DECIDUOUS	2.5" CAL.	10 – 12' HT.	AS SHOWN	B&B, FULL CANOPY
MG	4	MAGNOLIA VIRGINIANA 'GREEN SHADOW' / GREEN SHADOW MAGNOLIA	EVERGREEN	--	8' MIN.	AS SHOWN	B&B, FULL CANOPY TO BASE
SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
HP	12	HYDRANGEA PANICULATA 'LIMELIGHT' TM / LIMELIGHT HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
HA	12	HYDRANGEA QUERCIFOLIA 'ALICE' / ALICE OAKLEAF HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
IG	10	ILEX GLABRA 'CHAMZIN' TM / NORDIC HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
IS	34	ITEA VIRGINICA 'SPRICH' TM / LITTLE HENRY VIRGINIA SWEETSPIRE	SEMI-EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINE
LG	10	LAGERSTROEMIA INDICA 'GAMAD I' / CHERRY DAZZLE CRAPE MYRTLE	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
LD	18	LOROPETALUM CHINENSE 'DARUMA' / DARUMA DWARF LOROPETALUM	EVERGREEN	24" HT	24"	24"O.C.	FULL CONTAINER
PO	14	PRUNUS LAUROCERASUS 'OTTO LUYKEN' / LUYKENS LAUREL	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
GROUND COVERS	QTY	BOTANICAL / COMMON NAME	TYPE	CONT	SPREAD	SPACING	REMARKS
AL	34	ASTER LAEVIS / SMOOTH BLUE ASTER	PERENNIAL	4" POT	--	24"O.C.	TRIANGULATE SPACING
DB	204	DIANTHUS X 'BEWITCHED' / BEWITCHED PINK	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING
RH	24	RUDBECKIA HIRTA / BLACK-EYED SUSAN	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING

NOTES:
1. SCHEDULES ABOVE DO NOT INCLUDE BUFFER LANDSCAPE
2. ALL DISTURBED LAND NOT OTHERWISE PLANTED SHALL RECEIVE SOD OR SEED PER NOTES ON SHEET 2.0

GENERAL FOUNDATION PLANTING NOTE:
1. FOUNDATION LANDSCAPE TO WRAP AROUND THE BUILDINGS EXCLUDING UNITS THAT BACK UP TO AN EXISTING OR PROPOSED BUFFER. THESE UNITS WILL ONLY RECEIVE FOUNDATION LANDSCAPE ALONG THE FRONTS AND EXPOSED SIDES.

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ragansmith.com

HEATHER HOUSER GRIMES
REGISTERED
AGRICULTURE
12-31-2021
TENNESSEE NO. 1357
LANDSCAPE ARCHITECT

KINGSLEY PLACE
FOR
GROSS RESIDENTIAL
SPRING HILL

REV. #	DATE:	DESCRIPTION:
-	-	-
-	-	-
-	-	-
-	-	-
2	12/3/2020	PER STAFF COMMENTS
1	11/16/2020	PER STAFF COMMENTS

JOB NO. 20-194
WK. ORDER 2057
DESIGNED: H.GRIMES
DRAWN: P.KEFFABER
SCALE: 1"=30'
DATE: NOVEMBER 2, 2020

TYPICAL FOUNDATION PLANTING PLANS

L1.2

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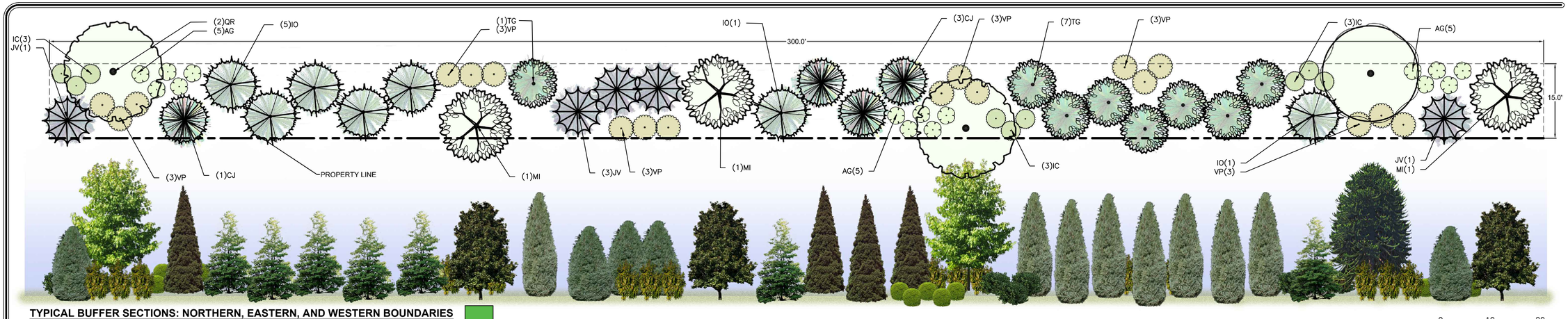
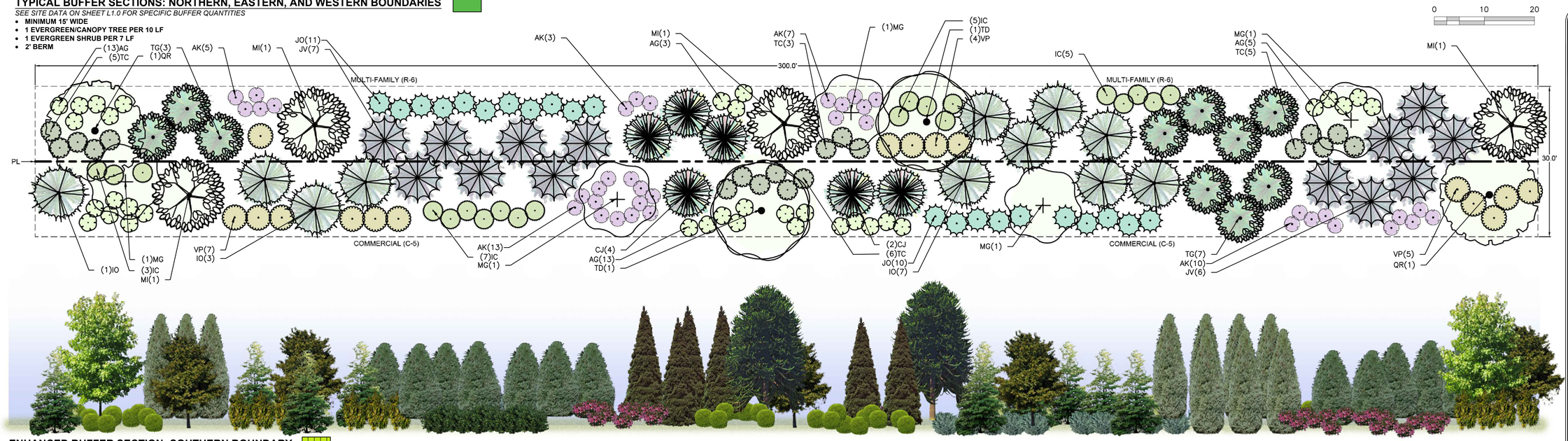
G:\2019\19-2057\CIVIL ENGINEERING\PLAN SHEETS\SHEET 1.1.DWG
PLOTTED BY: HEATHER H. GRIMES ON - 12/1/2020 8:19 AM LAST UPDATED BY: PKEFFABER ON - 12/1/2020 8:13 AM



TYPICAL BUFFER SECTIONS: NORTHERN, EASTERN, AND WESTERN BOUNDARIES

SEE SITE DATA ON SHEET L1.0 FOR SPECIFIC BUFFER QUANTITIES

- **MINIMUM 15' WIDE**
- **1 EVERGREEN/CANOPY TREE PER 10 LF**
- **1 EVERGREEN SHRUB PER 7 LF**
- **2' BERM**



ENHANCED BUFFER SECTION: SOUTHERN BOUNDARY

SEE SITE DATA ON SHEET L1.0 FOR SPECIFIC BUFFER QUANTITIES

- **MINIMUM 30' WIDE**
- **1 EVERGREEN/CANOPY TREE PER 10 LF + 1 ORNAMENTAL TREE PER 60 LF**
- **1 EVERGREEN SHRUB PER 3 LF**
- **2' BERM**

PLANT SCHEDULE TYPICAL BUFFER

BUFFER TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
CJ	4	CRYPTOMERIA JAPONICA 'RADICANS' / RADICANS JAPANESE CEDAR	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
IO	7	ILEX OPACA / AMERICAN HOLLY	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
JV	5	JUNIPERUS VIRGINIANA 'BURKII' / BURK RED CEDAR	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
MI	3	MAGNOLIA GRANDIFLORA 'LITTLE GEM' / DWARF SOUTHERN MAGNOLIA	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
QR	2	QUERCUS RUBRA / RED OAK	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
TD	1	TAXODIUM DISTICHUM / BALD CYPRESS	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
TG	8	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
BUFFER SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
AG	15	ABELIA X GRANDIFLORA / GLOSSY ABELIA	EVERGREEN	30" HT.	30"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
IC	9	ILEX CORNUTA 'BURFORDII' / BURFORD HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
VP	18	VIBURNUM X PRAGENSE / PRAGUE VIBURNUM	EVERGREEN	30" HT.	24"	48"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION

PLANT SCHEDULE ENHANCED BUFFER

BUFFER TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
CJ	6	CRYPTOMERIA JAPONICA 'RADICANS' / RADICANS JAPANESE CEDAR	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
IO	11	ILEX OPACA / AMERICAN HOLLY	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
JV	13	JUNIPERUS VIRGINIANA 'BURKII' / BURK RED CEDAR	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
MI	4	MAGNOLIA GRANDIFLORA 'LITTLE GEM' / DWARF SOUTHERN MAGNOLIA	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
MG	5	MAGNOLIA VIRGINIANA 'GREEN SHADOW' / GREEN SHADOW MAGNOLIA	EVERGREEN	--	8' MIN.	AS SHOWN	B&B, FULL CANOPY TO BASE
QR	2	QUERCUS RUBRA / RED OAK	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
TD	2	TAXODIUM DISTICHUM / BALD CYPRESS	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
TG	10	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
BUFFER SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
AG	34	ABELIA X GRANDIFLORA / GLOSSY ABELIA	EVERGREEN	30" HT.	30"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
AK	38	AZALEA KURUME HYBRID 'CORAL BELLS' / KURUME AZALEA	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
IC	20	ILEX CORNUTA 'BURFORDII' / BURFORD HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
JO	21	JUNIPERUS VIRGINIANA 'GREY OWL' / GREY OWL JUNIPER	EVERGREEN	30" HT.	48"	60" O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
TC	19	TAXUS CUSPIDATA 'DENSA' / DENSE JAPANESE YEW	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
VP	16	VIBURNUM X PRAGENSE / PRAGUE VIBURNUM	EVERGREEN	30" HT.	24"	48"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION

BUFFER KEY MAP

PROPOSED LANDSCAPE BUFFER

ENHANCED LANDSCAPE BUFFER

EXISTING VEGETATION TO REMAIN



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KINGSLEY PLACE

FOR

GROSS RESIDENTIAL

SPRING HILL

JOB NO.	20-194
WK. ORDER	2055
DESIGNED:	H.GRIMES
DRAWN:	P.KEFFABER
SCALE:	VARIES SEE PLAN
DATE:	NOVEMBER 2, 2020

REV.	DATE:	DESCRIPTION:
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LANDSCAPE BUFFERS

L1.3

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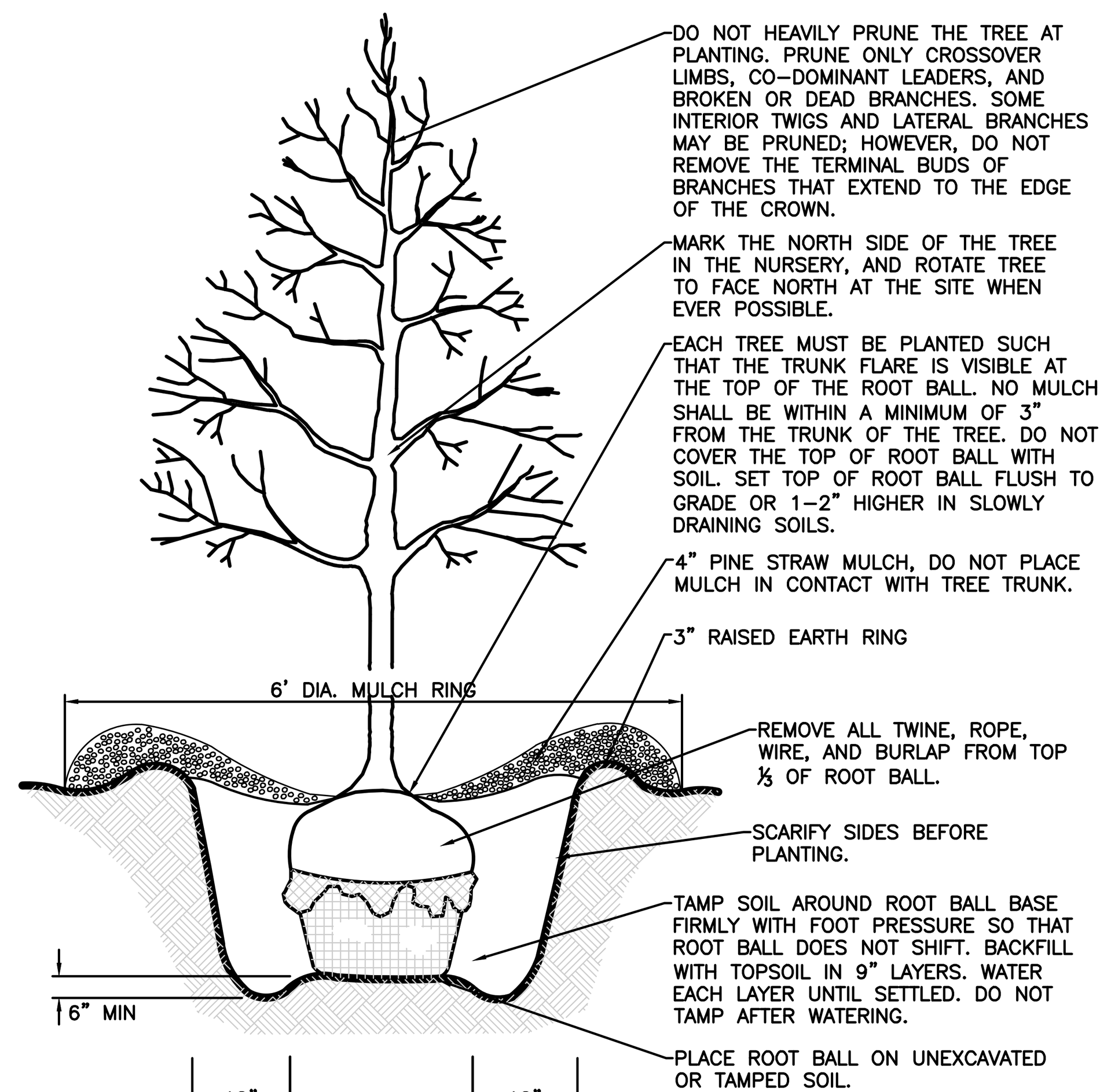
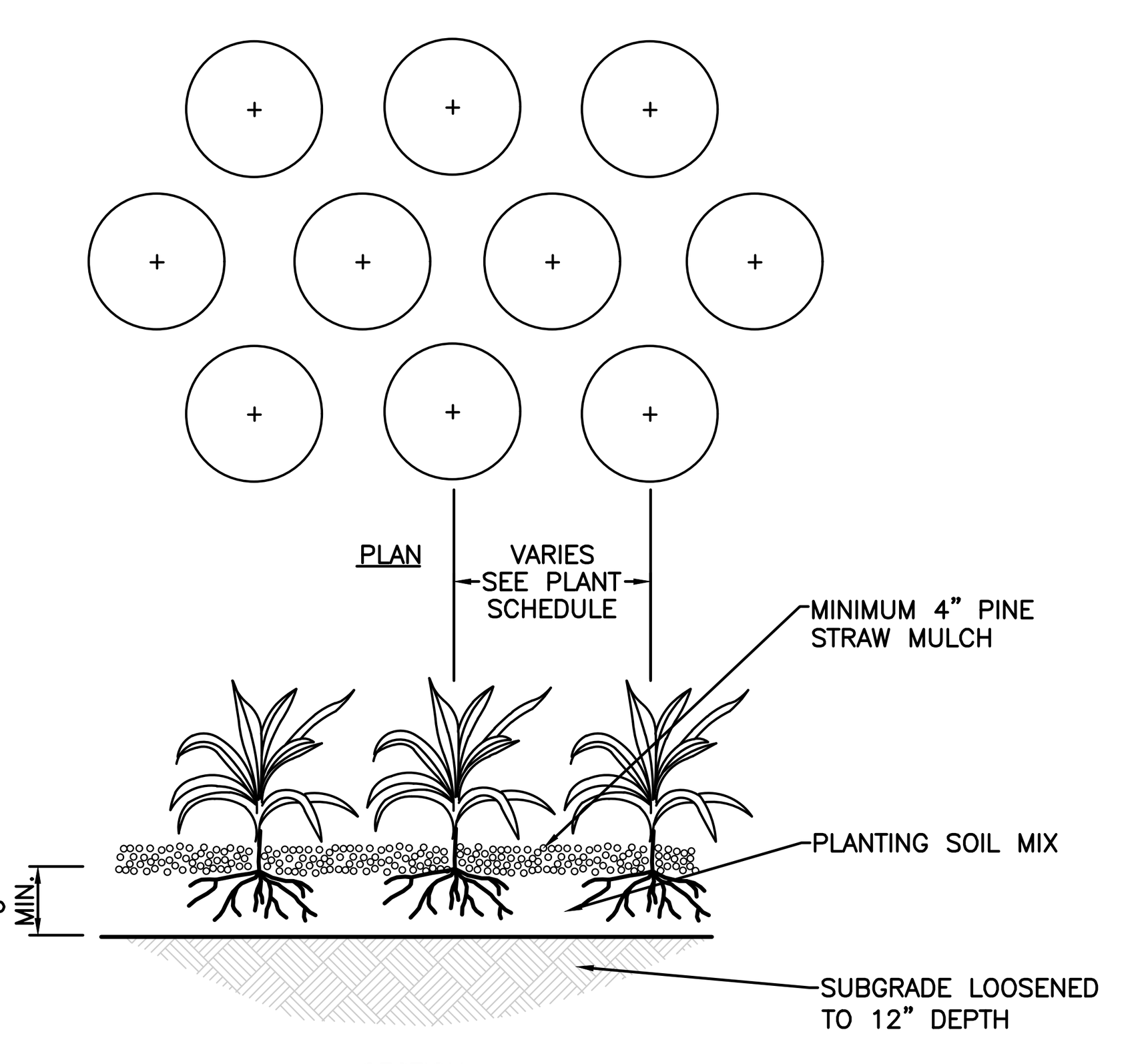
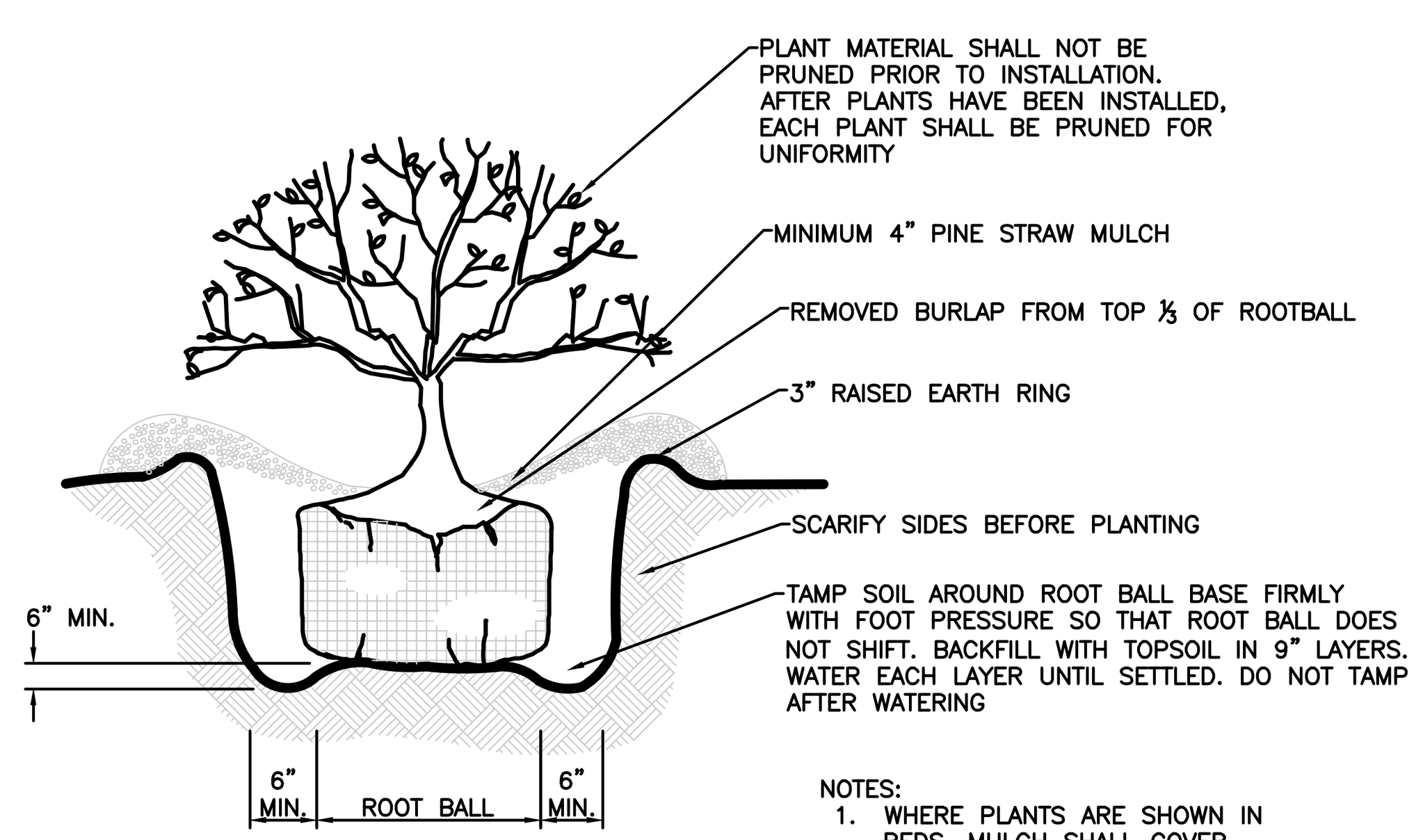


NOTES:
1. DO NOT STAKE TREES UNLESS APPROVED BY THE LANDSCAPE ARCHITECT. IF STAKED, REMOVE AFTER ONE GROWING SEASON.
2. DO NOT WRAP TREE TRUNKS UNLESS APPROVED BY THE LANDSCAPE ARCHITECT. REMOVE WRAP AFTER PLANTING.
3. NON–BIODEGRADABLE BURLAP TO BE REMOVED OR ROLLED UNDER ROOT BALL AFTER PLANT IS PLACED IN HOLE.

TREE PLANTING
NOT TO SCALE



GROUNDCOVER PLANTING
NOT TO SCALE



NOTES:
1. WHERE PLANTS ARE SHOWN IN BEDS, MULCH SHALL COVER ENTIRE BED AS DENOTED ON THE PLANS.
2. CONTAINER GROWN PLANT MATERIAL MAY BE SUBSTITUTED FOR BURLAP MATERIAL

SHRUB PLANTING
NOT TO SCALE

PLANTING NOTES:

1. ANY SERIES OF TREES TO BE PLACED IN A PARTICULAR ARRANGEMENT WILL BE FIELD CHECKED FOR ACCURACY. ANY PLANTS MISARRANGED WILL BE RELOCATED.
2. SOIL USED IN BACKFILLING PLANTING PITS SHALL BE TOPSOIL AND MIXED WITH 25% PEAT BY VOLUME. EXCEPT FOR ERICACEOUS PLANTS, VERY ACID OR SOUR SOIL (SOIL HAVING A pH less than 6) SHALL BE MIXED WITH SUFFICIENT LIME TO PRODUCE A SLIGHTLY ACID REACTION (A pH of 6.0 to 6.5). ADD 10–10–10 COMMERCIAL FERTILIZER AT THE RATE OF 2 POUNDS PER CUBIC YARD. MIX BOTH FERTILIZER AND PEAT THOROUGHLY BY HAND OR ROTARY TILLER.
3. SOIL USED IN BACKFILLING ERICACEOUS PLANTS SHALL BE TOPSOIL MIXED WITH 50% PEAT BY VOLUME. ADD 5–10–5 COMMERCIAL FERTILIZER AT THE RATE OF 5 POUNDS PER CUBIC YARD. MIX BOTH FERTILIZER AND PEAT THOROUGHLY BY HAND OR ROTARY TILLER.
4. UPON SECURING PLANT MATERIAL AND BEFORE INSTALLATION, THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE FOR A PRE–INSTALLATION INSPECTION TO VERIFY ALL PLANT MATERIAL MEETS SPECIFICATION. MATCH TREES OF SAME SPECIES IN GROWTH CHARACTER AND UNIFORMITY.
5. APPLY HERBICIDE (TREFLAN OR EQUIVALENT) TO ALL PLANT BEDS PRIOR TO PLANTING FOR NOXIOUS WEED CONTROL AT A RATE OF 2 POUNDS PER 1,000 SQUARE FEET.
6. CONTRACTOR SHALL SUBMIT A 10 OUNCE SAMPLE OF THE TOPSOIL PROPOSED TO A TESTING LABORATORY FOR ANALYSIS. SUBMIT TEST RESULTS WITH RECOMMENDATIONS FOR SUITABILITY TO THE OWNER'S REPRESENTATIVE FOR APPROVAL.
7. PLANTS SHALL BE ORIENTED FOR BEST APPEARANCE AND VERTICAL.ALL NON–BIODEGRADABLE ROOT CONTAINERS SHALL BE REMOVED.
8. SELECTIVELY TRIM TREE BRANCHES BY 25%, MAINTAINING NATURAL SHAPE. PRUNE ALL DEAD AND BROKEN BRANCHES IN TREES AND SHRUBS. REMOVE TAGS, TWINE OR OTHER NON–BIODEGRADABLE MATERIAL.
9. SCARIFY SUBSOIL IN PLANTING BEDS TO A DEPTH OF 3 INCHES. ALL PLANTING BEDS SHALL RECEIVE A MINIMUM OF 6 INCHES OF TOPSOIL.
10. CONTRACTOR SHALL PROVIDE SMOOTH, NEATLY TRENCHED (3 INCH DEEP) BED EDGES.
11. ALL PLANTING BEDS TO HAVE A MINIMUM 4 INCH DEEP PINE BARK MULCH, PINE STRAW MULCH OR OTHER MULCH AS SPECIFIED.
12. DIMENSIONS FOR TRUNK CALIPER, HEIGHTS, AND SPREAD SPECIFIED ON THE MATERIAL SCHEDULE ARE A GENERAL GUIDE FOR THE MINIMUM REQUIRED SIZE OF EACH PLANT. QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH A.N.S.I. Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK" (CURRENT EDITION) AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
13. TREES OF THE SAME SPECIES SHALL HAVE THE FOLLOWING CHARACTERISTICS: MATCHED BY BRANCHING HEIGHT, CALIPER, HEIGHT OF TREE, SPREAD OF BRANCHES AND BRANCHING STRUCTURE, AND OVERALL CANOPY SHAPE.
14. THE QUANTITIES INDICATED ON THE MATERIAL SCHEDULE ARE PROVIDED FOR THE BENEFIT OF THE CONTRACTOR, BUT SHOULD NOT BE ASSUMED TO ALWAYS BE CORRECT. IN THE EVENT OF A DISCREPANCY, THE PLANTING PLAN (PLANT SYMBOLS) WILL TAKE PRECEDENCE OVER THE MATERIAL SCHEDULE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS/HER OWN QUANTITY CALCULATIONS AND THE LIABILITY PERTAINING TO THOSE QUANTITIES AND ANY RELATED CONTRACT DOCUMENTS AND/OR PRICE QUOTATIONS.
15. CONTRACTOR TO WARRANTY ALL MATERIAL FOR ONE YEAR AFTER DATE OF FINAL ACCEPTANCE.

IRRIGATION NOTES:

1. ALL PROPOSED PLANTED AREAS ARE TO BE IRRIGATED UTILIZING FULL COVERAGE DESIGN.
2. SUBMIT PROPOSED IRRIGATION PLAN TO THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE FOR GENERAL REVIEW AND ACCEPTANCE.
3. PROPOSED IRRIGATION SYSTEM SHOULD UTILIZE ANY RECLAIMED/REUSED/GRAY WATER PUBLIC SYSTEMS IF ACCESSIBLE.
4. SHOULD RECLAIMED/REUSED/GRAY WATER NOT BE AVAILABLE, BELOW GRADE CISTERNS OR ON–SITE RETENTION PONDS SHOULD BE CONSIDERED FOR AN IRRIGATION WATER SOURCE. USE OF PUBLIC POTABLE WATER SOURCE SHOULD BE A LAST CASE RESORT AND DESIGNED AS A TEMPORARY IRRIGATION SYSTEM UTILIZED TO ESTABLISHED PROPOSED PLANT MATERIAL THROUGH ITS FIRST TWO YEARS OF GROWTH.
5. PROPOSED IRRIGATION DESIGN SHOULD UTILIZE WATER EFFICIENT DESIGN TECHNIQUES SUCH AS THE USE OF DRIP IRRIGATION, MOISTURE SENSORS AND RAIN SENSORS TO MAXIMIZE WATER EFFICIENCY.
6. IRRIGATION CONTRACTOR IS RESPONSIBLE FOR INSTALLING AN IRRIGATION SYSTEM THAT FUNCTIONS PROPERLY PER THE INTENT OF THE DESIGN. SHOULD THE IRRIGATION CONTRACTOR SEE A FLAW IN THE PROPOSED DESIGN AND/OR FINDS A PROBLEM IN THE FIELD THAT WILL NEGATIVELY AFFECT THE PERFORMANCE OF THE PROPOSED IRRIGATION SYSTEM, THE SAID CONTRACTOR IS RESPONSIBLE FOR INFORMING THE LANDSCAPE ARCHITECT/OWNER'S REPRESENTATIVE PRIOR TO INSTALLING OR ORDERING MATERIAL FOR THE PROPOSED IRRIGATION SYSTEM.
7. IRRIGATION PLANS TO BE SUBMITTED AS PART OF THE SUBMITTAL, PRIOR TO ISSUANCE OF PERMITS.

SODDING NOTES:

1. AREAS INDICATED FOR SOD SHALL BE TURF–TYPE TALL FESCUE, A BLEND OF 3–5 VARIETIES (ADDRESSING BOTH COLD HARDINESS AND DROUGHT TOLERANCE) FROM THE TOP 10% SELECTIONS IN THE NATIONAL TURFGRASS EVALUATION PROGRAM (N.T.E.P) TALL FESCUE TRIALS, MOST RECENT EVALUATION YEAR (WWW.NTEP.ORG). MINIMUM AGE SHALL BE 18 MONTHS, WITH ROOT DEVELOPMENT THAT WILL SUPPORT ITS OWN WEIGHT WITHOUT TEARING WHEN SUSPENDED VERTICALLY BY HOLDING THE UPPER TWO CORNERS.
2. SUBMIT SOD CERTIFICATION FOR GRASS SPECIES AND LOCATION OF SOD SOURCE. INCLUDE CERTIFICATION THAT SOD IS FREE OF DISEASE, NEMATODES, UNDESIRABLE INSECTS, AND QUARANTINE RESTRICTIONS.
3. SOD SHALL BE DELIVERED ON PALLETS. STORE SOD AT A LOCATION PROTECTED FROM DAMAGING WINDS.
4. APPLY 6–12–12 COMMERCIAL TYPE FERTILIZER, WITH 50% OF THE ELEMENT DERIVED FROM ORGANIC SOURCES AT A RATE RECOMMENDED BY THE MANUFACTURER. APPLY AFTER SMOOTH RAKING OF TOPSOIL AND NO MORE THAN 48 HOURS BEFORE LAYING SOD. MIX THOROUGHLY IN THE UPPER 2 INCHES OF TOPSOIL AND LIGHTLY WATER TO AID BREAKDOWN.
5. LIGHTLY MOISTEN AREA TO RECEIVE SOD IMMEDIATELY PRIOR TO LAYING SOD.
6. LAY SOD TIGHTLY WITH NO OPEN JOINTS VISIBLE AND NOT OVERLAPPING. STAGGER END JOINTS A MINIMUM OF 12 INCHES AND DO NOT STRETCH SOD PIECES.
7. ON SLOPES 6 INCHES PER FOOT AND STEEPER, LAY SOD PERPENDICULAR TO SLOPE AND SECURE EVERY ROW WITH WOODEN PEGS AT AN MAXIMUM 2 FEET O.C. DRIVE PEGS FLUSH WITH SOD PORTION OF SOD.
8. PRIOR TO PLACING SOD ON SLOPES OF 8 INCHES PER FOOT AND STEEPER, PLACE JUTE EROSION CONTROL MESH OVER TOPSOIL. SECURELY ANCHOR IN PLACE WITH PEGS SUNK FIRMLY INTO THE GROUND. CONTRACTOR SHALL SUBMIT 12" X 12" SAMPLES OF JUTE MESH FOR REVIEW TO LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
9. IMMEDIATELY AFTER INSTALLATION, WATER SODDED AREAS TO A DEPTH OF 4 INCHES.
10. AFTER SOD AND SOIL HAVE DRIED, ROLL SODDED AREAS TO ENSURE A GOOD BOND BETWEEN SOIL AND SOD. ROLLER SHALL NOT EXCEED 150 POUNDS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING (MOWING, TRIMMING, WATERING) THE SOD UNTIL THE INSTALLATION IS INSPECTED AND ACCEPTED BY THE OWNER'S REPRESENTATIVE.
12. THE CONTRACTOR SHALL REPLACE SOD AREAS THAT SHOW DETERIORATION FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE INSTALLATION. REPLACE DETERIORATED MATERIAL WITH SOD OF EQUAL QUALITY ORIGINALLY SPECIFIED.

SEEDING NOTES:

1. SEED ALL DISTURBED AREAS WITH TURF–TYPE TALL FESCUE. THE SEED SHALL BE A BLEND OF 3–5 VARIETIES (ADDRESSING BOTH COLD HARDINESS AND DROUGHT TOLERANCE) FROM THE TOP 10% SELECTIONS IN THE NATIONAL TURFGRASS EVALUATION PROGRAM (N.T.E.P) TALL FESCUE TRIALS, MOST RECENT EVALUATION YEAR (WWW.NTEP.ORG). THE SEED SHALL BE CROP AND WEED FREE. SEED AT THE RATE OF 5 POUNDS PER 1,000 S.F. ALL SEED TO BE 98% PURE WITH 85% GERMINATION AND CONFORM TO ALL STATE REQUIREMENTS FOR GRASS SEED. THE FERTILIZER TO BE 6–12–12 COMMERCIAL TYPE WITH 50% OF ITS ELEMENTS DERIVED FROM ORGANIC SOURCES.
2. PLACE STRAW MULCH ON SEEDED AREAS. STRAW TO BE OATS OR WHEAT STRAW, FREE FROM WEEDS, FOREIGN MATTER DETRIMENTAL TO PLANT LIFE, AND DRY. HAY OR CHOPPED CORNSTALKS ARE NOT ACCEPTABLE.
3. THE CONTRACTOR SHALL VERIFY THAT THE PREPARED SOIL BASE IS READY TO RECEIVE WORK. CULTIVATE THE TOPSOIL TO A DEPTH OF 4 INCHES WITH A MECHANICAL TILLER AND SUBSEQUENTLY RAKE UNTIL SMOOTH. REMOVE FOREIGN MATERIALS COLLECTED DURING CULTIVATION AND RAKING OPERATIONS.
4. APPLY FERTILIZER ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. LIMESTONE MAY BE APPLIED WITH THE FERTILIZER. APPLY FERTILIZER AFTER SMOOTH RAKING AND PRIOR TO ROLLER COMPACTION AND MIX THOROUGHLY IN THE UPPER 2 INCHES OF TOPSOIL.
5. APPLY SEED EVENLY IN TWO INTERSECTING DIRECTIONS AND RAKE IN LIGHTLY. WATER TOPSOIL LIGHTLY PRIOR TO APPLYING SEED. DO NOT SEED AREA IN EXCESS OF THAT WHICH CAN BE MULCHED ON THE SAME DAY.
6. ROLL SEEDED AREA WITH ROLLER NOT EXCEEDING 112 POUNDS.
7. IMMEDIATELY FOLLOWING SEEDING AND COMPACTING, APPLY STRAW MULCH AT THE RATE OF ONE AND ONE HALF BALES PER 1,000 SQUARE FEET. IMMEDIATELY AFTER MULCHING, APPLY WATER WITH A FINE SPRAY AND SATURATE THE GROUND TO A DEPTH OF 4 INCHES.
8. CONTRACTOR IS RESPONSIBLE FOR WATERING SEEDED AREAS TO PREVENT GRASS AND SOIL FROM DRYING OUT UNTIL THE INSTALLATION IS INSPECTED AND ACCEPTED BY THE OWNER'S REPRESENTATIVE.
9. CONTRACTOR IS RESPONSIBLE FOR RESEEDING BARE SPOTS FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF INSTALLATION.

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Nashville 615-244-8591
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ragansmith.com

KINGSLEY PLACE
FOR
GROSS RESIDENTIAL
SPRING HILL

REV. #	DATE:	DESCRIPTION:
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-	-	-
-	-	-
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JOB NO. 20-194	WK. ORDER 2055
DESIGNED:	H.GRIMES
DRAWN:	P.KEFFABER
SCALE:	NO SCALE
DATE:	NOVEMBER 2, 2020

LANDSCAPE NOTES & DETAILS

L2.0

G:\20194-2057\1-CIVIL ENGINEERING\3-PLAN SHEETS\2057 LAND.DWG
PLOTTED BY PAYTEN KEFFABER ON: 11/13/2020 3:02 PM LAST UPDATED BY PKEFFABER ON: 11/13/2020 1:53 PM

KINGSLEY PLACE

PROPOSED REZONING

INDUSTRIAL 1 TO R-6 & C-5 PLANNED DEVELOPMENT

DECEMBER 3, 2020

EXHIBIT B - PC PLANS

KINGSLEY PLACE

DEVELOPER
PORT ROYAL EAST 124 KEDRON PARKWAY, TENNESSEE 37174

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OFFICE
MUNICIPAL

PAUL VARNEY
PORT ROYAL EAST

GROSS RESIDENTIAL

WES ENGINEERS & SURVEYORS

RAGAN•SMITH

KINGSLEY PLACE

INTRODUCTION
SITE LOCATION



VICINITY MAP

KINGSLEY PLACE

INTRODUCTION

Submitted for your consideration is a proposed rezoning and planned development project. The subject property consists of approximately 43.84 acres fronting on Old Port Royal Road. These parcels are currently zoned I-1 and the applicants request this rezoning to allow for both residential and commercial uses. An approximate area of 28.89 acres is requested to be rezoned to R-6 with the remaining 14.95 acres rezoned to C-5. The applicants believe this mix of uses is consistent with the surrounding land uses, promotes good planning principles, and is consistent with the goals of the Spring Hill Rising Comprehensive Plan and compliant with 2018 unified development code.

PLANNING OBJECTIVE

The Applicants' goal is to provide a mixed use commerce and living center with connections to existing commercial, retail, and job centers.

The Planned Development will also restrict certain uses under the C-5 zoning so that the development can maintain a character consistent with the surrounding areas the Comprehensive Plan. The C-5 zoning will allow retail, office and municipal uses to enhance the Port Royal area of Spring Hill.

The residential portion of the planned development will provide housing for the nearby job center employees as well as helping to support the local retail economy. The residential portion of the development is an ideal transition between the commercial, industrial and nearby detached residential areas.

As a Planned Development, the character of the development will be controlled by design guidelines that define the building style, signage, and landscape requirements. Additionally, providing opportunities for small businesses, providing space for new municipal resources, and provide housing options near retail and commercial centers were principles addressed in the Comprehensive Plan.

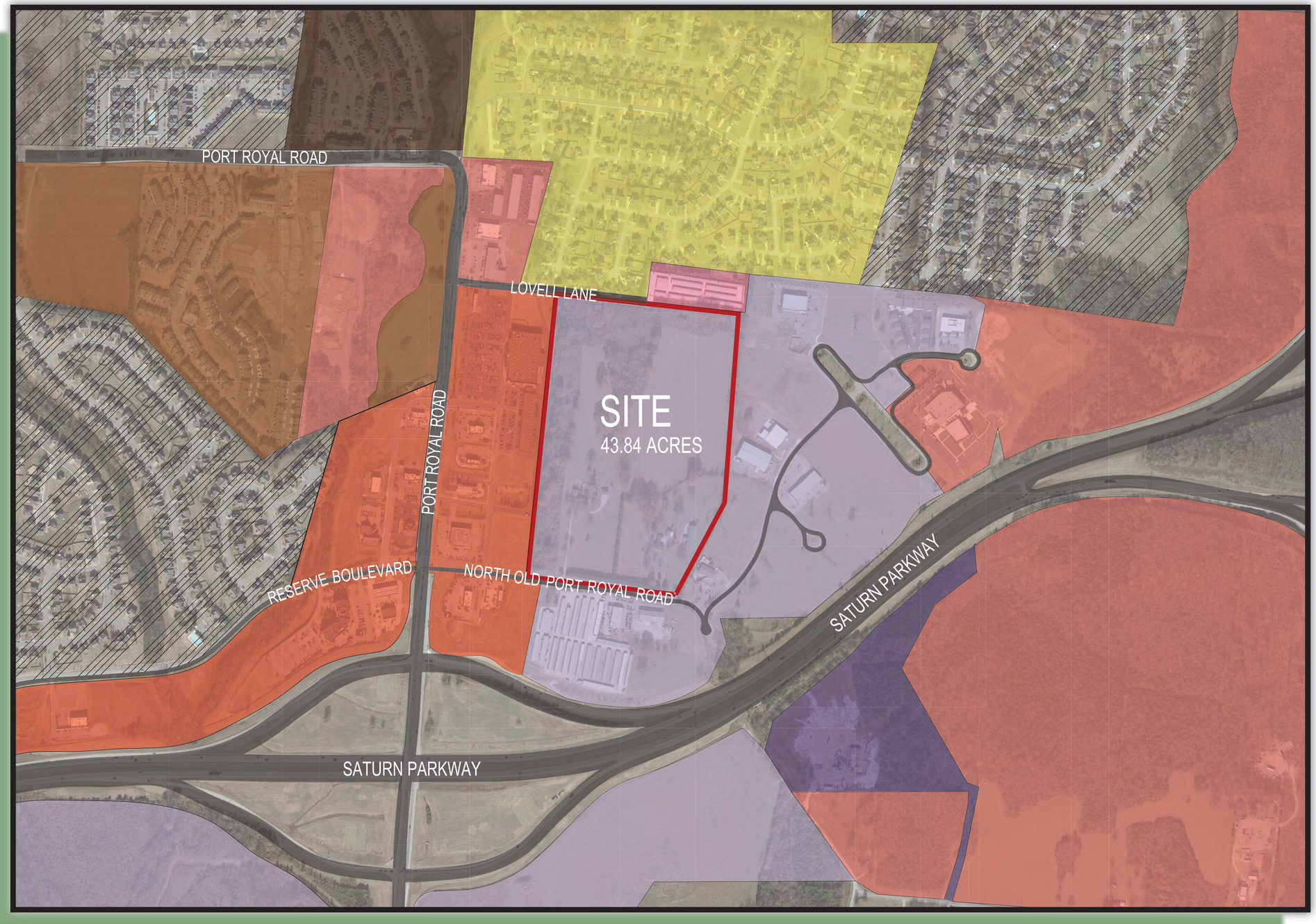
With these objectives, this development will provide the Port Royal area a unique and quality development that is expected by its citizens.

KINGSLEY PLACE

THE SITE
EXISTING ZONING

- R-2 SINGLE FAMILY
- R-2 PUD
- R-6 MULTI FAMILY
- R-7 HIGH DENSITY
- I-1 LIGHT INDUSTRIAL
- I-2 GEN. INDUSTRIAL
- C-1 NEIGHBORHOOD
- C-3 CORRIDOR
- C-4 GENERAL

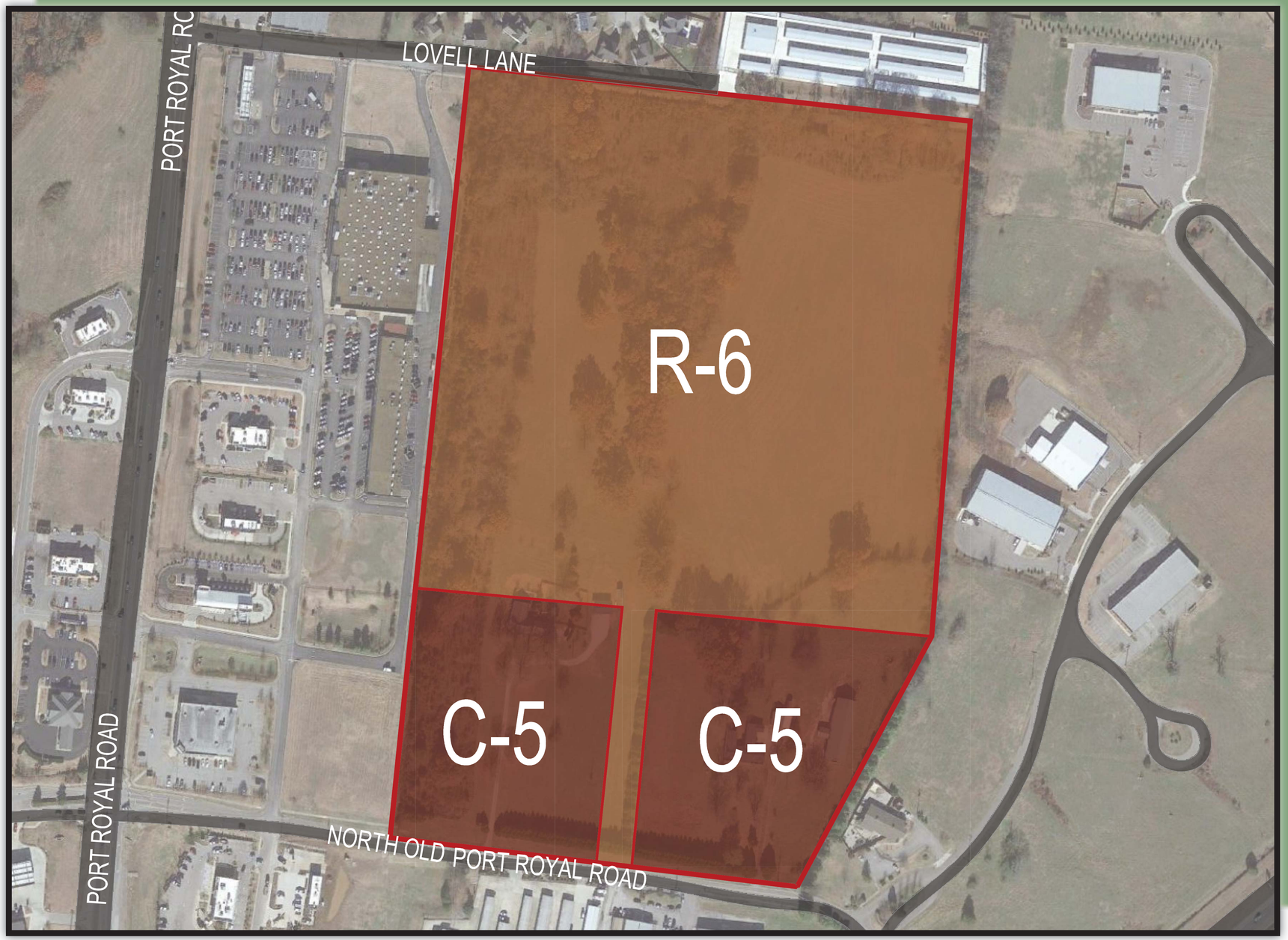
The Port Royal road area is comprised of mostly C-4 zoning along the main thoroughfare, commercial and light industrial at Old Port Royal, higher density residential along collector streets, and detached residential along local streets.

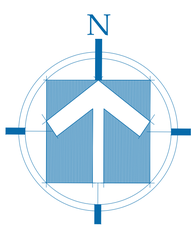


KINGSLEY PLACE

THE SITE
PROPOSED ZONING & USES

The Applicants are proposing to rezone the north portion of the property to R-6 which would allow up to 18 dwelling units per acre and C-5 which would provide retail, office and municipal use opportunities along the frontage of North Old Port Royal Road.





KINGSLEY PLACE

THE SITE
EXISTING CONDITIONS SURVEY

PLANNED DEVELOPMENT CONCEPT PLAN - EXISTING CONDITIONS



Legend

- CIP — Iron Rod Found
- IPS — Iron Rod Set
- I.P.F. — Iron Pipe Found
- AXLE — Axle Found
- ECM — Fence Post
- CONC — Concrete Monument Existing
- P.K.F. — PK Nail Found
- P.K.S. — PK Nail Set
- R.R.S.F. — Railroad Spike Found
- R.R.S.S. — Railroad Spike Set
- Bench Mark
- Stake Found
- Fire Hydrant
- Water Meter
- Water Valve
- Water Reducer
- Clean Out
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Catch Basin
- Curb Inlet
- Storm Pipe
- Cable Manhole
- Electric Manhole
- Telephone Manhole
- Water Manhole
- Electric Meter
- Cable Riser
- Electric Riser
- Telephone Riser
- Telephone Booth
- Gas Meter
- Gas Valve
- Light Pole
- Power Pole
- Telephone Pole
- Guy Pole
- Power Pole
- Flag Pole
- Guy Wire
- Mailbox
- Parking Block
- Satellite Dish
- Handicap Parking
- Water Spigot
- Bollard
- Water Irrigation
- Evergreen Tree
- Deciduous Tree
- Bush
- Sign
- Adjoining Property Line
- Subject Property Line
- Easement Line
- Building Setback Line
- Centerline
- Edge of Pavement
- Edge of Gravel
- Fence Line
- Landscape
- Woods / Tree line
- Edge of Water
- Ditch / Creek Centerline
- Minor Contour Line
- Index Contour Line
- G — Gas Line
- SA — Sanitary Sewer Line
- W — Water Line
- ST — Storm Sewer Line
- OH — Overhead Utility Line
- OHC — Overhead Cable Line
- OHE — Overhead Electric Line
- OHT — Overhead Telephone Line
- UG — Underground Utility Line
- UGC — Underground Cable Line
- UGE — Underground Electric Line
- UGT — Underground Telephone Line
- FM — Forced Main Line

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

ALLEN B. OLEARY — AGRICULTURE — TENNESSEE — LICENSED — TENNESSEE NO. 1987

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WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2529
www.wesengineers.com
ENGINEERS & SURVEYORS

Client
PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TN 37174

REVISIONS	DATE
PLANNING COMMENTS ADDRESSED	10-19-2020

LUNN RIDGE FARMS
OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
PLANNED DEVELOPMENT CONCEPT PLAN

Drawn: JG
Checked: AO
Approved: AO
Date: 10-05-2020

Job. no. 19633
Scale:
Vertical:
Horizontal: 1"=100'

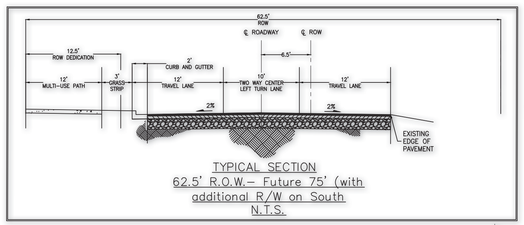
MP-1

FILE: J:\WES_Engineers_Surveyors 2019\19633 - Old Port Royal - PVC-Gross\Dwg\Prelim\19633 Prelim Exhibit POLICE (ALT).dwg

KINGSLEY PLACE

THE SITE
PRELIMINARY SITE PLAN

PROPOSED SITE LAYOUT PLAN



TYPICAL SECTION
62.5' R.O.W.– Future 75' (with additional R/W on South
N.T.S.



LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	
TREE LINE		
STORM STRUCTURE LABEL		
ASPHALT		
CONCRETE		
# PARKING SPACES		
P.U.D.E.		

Tennessee811 Know what's below Call before you dig.

SITE DATA:

© 2020

OWNER: SAMUEL S. LUNN
3812 OLD PORT ROYAL ROAD NORTH
SPRING HILL, TN 37174

OLIVIA BROWN LUNN ETAL
S. CHEATHAM BROWNIE & KAITLYNN O. LUNN
3788 OLD PORT ROYAL ROAD NORTH
SPRING HILL, TN 37174

PARCEL NUMBER: TAX MAP 27 PARCELS 03.06 & 04.00
DEED BOOK: R2230, PG 1035 & R2263, PG 924

SUBJECT PARCEL ZONING:
CURRENT ZONING: I - 1 (LIGHT INDUSTRIAL)
PROPOSED ZONING: R-6 (MULTI-FAMILY)
C-5 (RETAIL COMMERCIAL)

ACREAGE OF SITE: TOTAL: 43.84 ACRES
28.89 ACRES MULTI-FAMILY
2.75 ACRES FLEX - OFFICE / RETAIL
3.68 ACRES POLICE STATION
7.14 ACRES GROCERY STORE
1.88 ACRES R.O.W. DEDICATION

MINIMUM REQUIRED BUILDING SETBACKS:
R-6 SETBACK:
MIN. FRONT YARD - 20'
MIN. REAR YARD - 30'
MIN. DIST. BETWEEN BLDGS - 15'

C-5 SETBACK:
MIN. FRONT YARD - 30'
MIN. SIDE YARD - 15' - 25' WHEN ABUTTING RESIDENTIAL
MIN. REAR YARD - 15' - 25' WHEN ABUTTING RESIDENTIAL

1. THE PROPERTY IS NOT LOCATED WITHIN FLOOD ZONE AS DEPICTED ON FEMA COMMUNITY PANEL 47119C0185E, EFFECTIVE DATE APRIL 16, 2007.
2. ACTUAL DETENTION/DRAINAGE SWALES ARE SUBJECT TO CHANGE.
3. OPEN SPACE SHALL BE PRIVATE USE AREAS PROVIDED FOR ALL DWELLING UNITS LOCATED WITHIN THE DEVELOPMENT.
4. DWELLING UNITS SHALL HAVE ACCESS TO BOTH ACTIVE AND PASSIVE OPEN SPACE AREAS.

UTILITY SERVICES:
WATER SERVICE
SPRING HILL WATER DISTRIBUTION SYSTEM
3893 MAHLON MOORE ROAD
SPRING HILL, TENNESSEE 37174
(931) 486-2252

ELECTRIC SERVICE
DUCK RIVER ELECTRIC MEMBERSHIP
798 NEW LEWISBURG HIGHWAY
COLUMBIA, TENNESSEE 38401
(931) 388-3131

PURPOSE NOTE:

THE PURPOSE OF THIS PRELIMINARY PLANNED DEVELOPMENT IS TO REZONE EXISTING INDUSTRIAL 1 TO R-6 & C-5 PLANNED DEVELOPMENT & TO CREATE MULTI-FAMILY UNITS, GROCERY / RETAIL, POLICE STATION & FLEX RETAIL OFFICE.

COVERAGE AREA:

MULTI-FAMILY:
PERVIOUS = 13.27 ACRES
IMPERVIOUS = 15.62 ACRES
TOTAL = 28.89 ACRES
(11.98 ACRES OPEN SPACE INCLUDING CLUBHOUSE, POOL & AMENITIES)
DENSITY: 17.86 UNITS/ACRE

FLEX / OFFICE RETAIL:
PERVIOUS = 0.85 ACRES (30.9%)
IMPERVIOUS = 1.90 ACRES (69.1%)
TOTAL = 2.75 ACRES
DENSITY: 0.36 UNITS/ACRE

POLICE STATION:
PERVIOUS = 1.87 ACRES (50.8%)
IMPERVIOUS = 1.81 ACRES (49.2%)
TOTAL = 3.68 ACRES
DENSITY: 0.27 UNITS/ACRE

GROCERY STORE / RETAIL
PERVIOUS = 1.88 ACRES (26.3%)
IMPERVIOUS = 5.26 ACRES (73.7%)
TOTAL = 7.14 ACRES
DENSITY: 0.42 UNITS/ACRE

SITE PHASE SCHEDULE

PHASE 1

BOULEVARD & APARTMENTS

PHASE 2 & 3

GROCERY STORE / RETAIL

NON RESIDENTIAL DEVELOPMENT

GROCERY STORE
GROSS FLOOR AREA = 43,681 SQUARE FEET

RETAIL
GROSS FLOOR AREA = 25,190 SQUARE FEET

POLICE STATION
GROSS FLOOR AREA = 19,731 SQUARE FEET

FLEX - OFFICE / RETAIL
GROSS FLOOR AREA = 29,269 SQUARE FEET

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMMCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN. IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER. BEFORE ANY REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED, ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

SITE BENCHMARK NOTE:

CONTRACTOR SHALL ESTABLISH A BENCHMARK PRIOR TO CONSTRUCTION. EXISTING BENCHMARK MUST BE RE-VERIFIED AND APPROVED BY THE ENGINEER/SURVEYOR PRIOR TO USE.

BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:
W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD BOUNDARY AND FLOODWAY MAP COMMUNITY PANEL NO. 47119C0185E DATED APRIL 16, 2007 (ZONE "X")

geraldl@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

W E S ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com
ENGINEERS & SURVEYORS

Client
PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TN 37174

REVISIONS / DATE

KINGSLEY PLACE
OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
OVERALL LAYOUT PLAN

Drawn: RP | Checked: JO | Approved: GV | Date: 11-02-2020

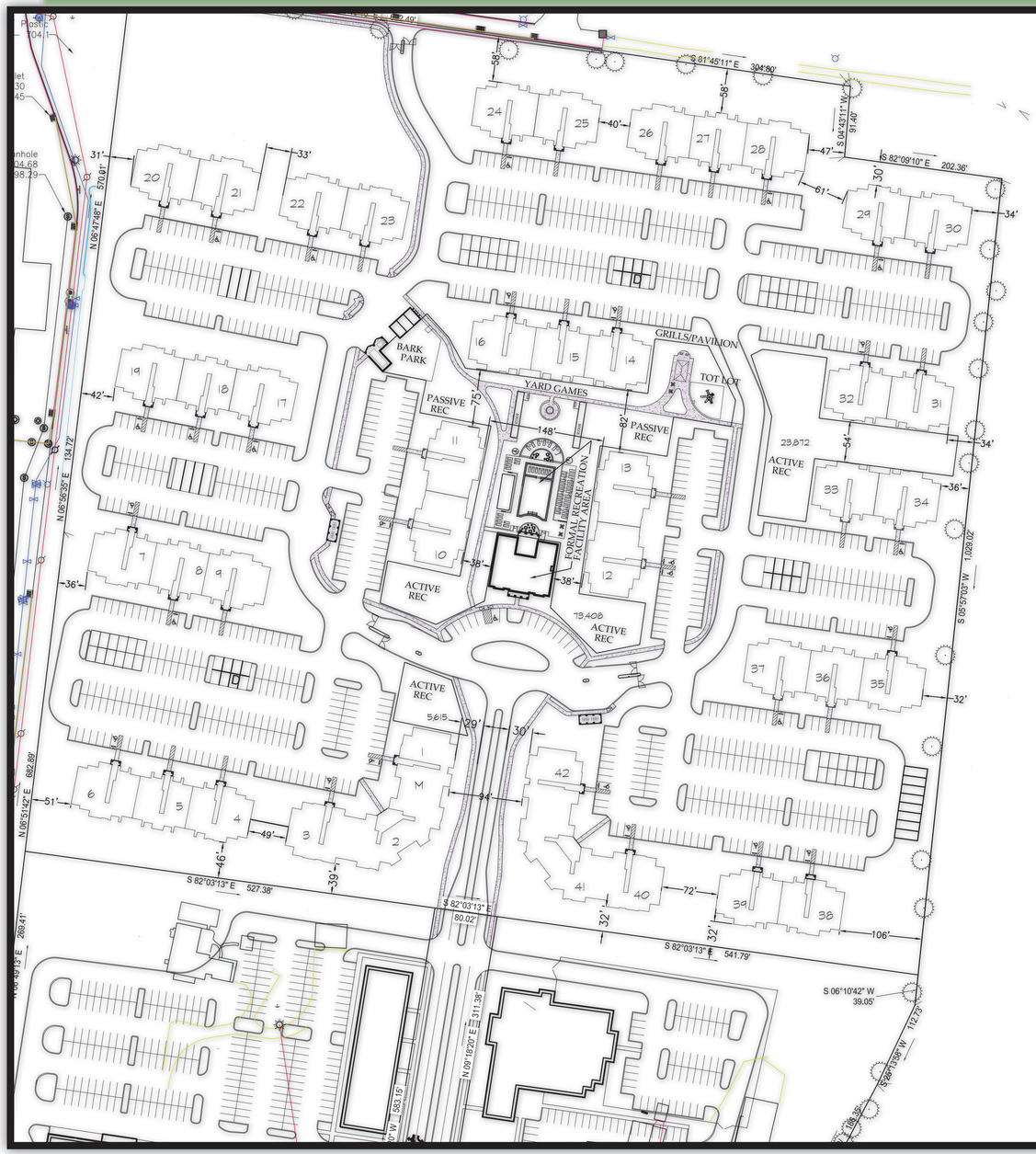
Job. no. 19633
Scale: Vertical: 1"=100' Horizontal:

C-1.0

FILE: J:\WES_Engineers_Surveyors 2019\19633 – Old Port Royal – PVC-Gross\Dwg\Engineering\19633 Base.dwg

KINGSLEY PLACE

THE SITE
ZONING USE COMPLIANCE PLAN



UDC 8.3 PRINCIPAL USE STANDARDS
SECTION K-MULTI-FAMILY

REQUIREMENTS		MIN. PROVIDED
SIDEWALL SETBACK	15'	33'
FRONT/REAR WALL SETBACK	30'	54'
SIDE SETBACK 10' + 5' (3RD FLR)	15'	31'
FRONT YARD SETBACK	20'	32'
REAR YARD SETBACK	30'	30'
PRIVATE DRIVE/STREET	10'	29'
BUFFER YARD	15'	31'

OPEN SPACE PER 8.3K(c)

REQUIRED- 516units x 100sf = 1.18 AC.

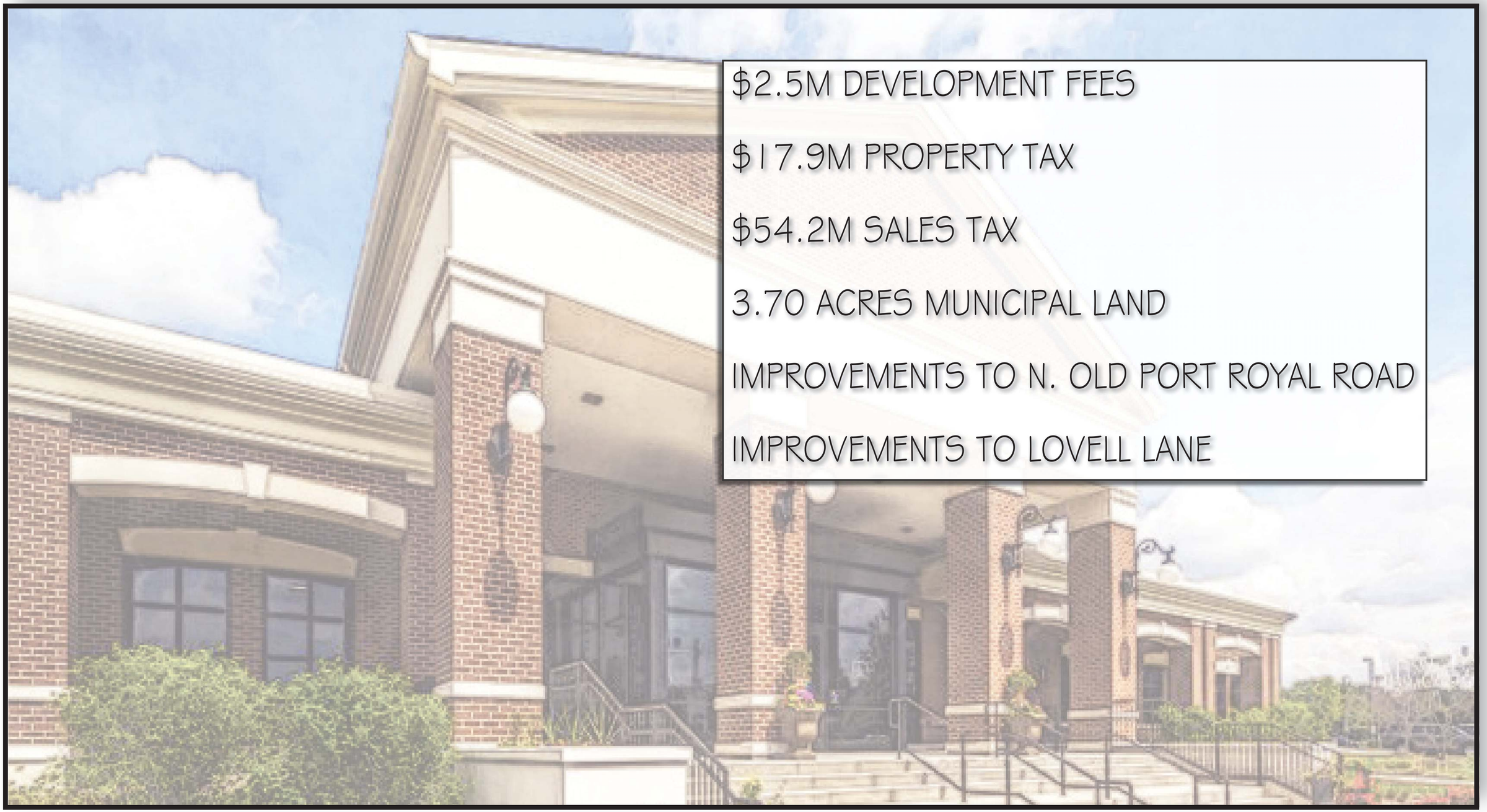
OPEN REC AREA PROVIDED	2.36 AC.
OTHER OPEN AREA	9.36 AC.
TOTAL AREA PER 8.3K(c)	11.97 AC.

FORMAL RECREATION FACILITY PER 8.3K(c) VII

FITNESS ROOM, SOCIAL ROOM, BILLIARDS & GAMING, POOL, FIRE PIT, TOT LOT, BARK PARK, OUTDOOR KITCHEN, YARD GAME AREA

KINGSLEY PLACE

THE SITE
PUBLIC BENEFIT



$2.5M DEVELOPMENT FEES

$17.9M PROPERTY TAX

$54.2M SALES TAX

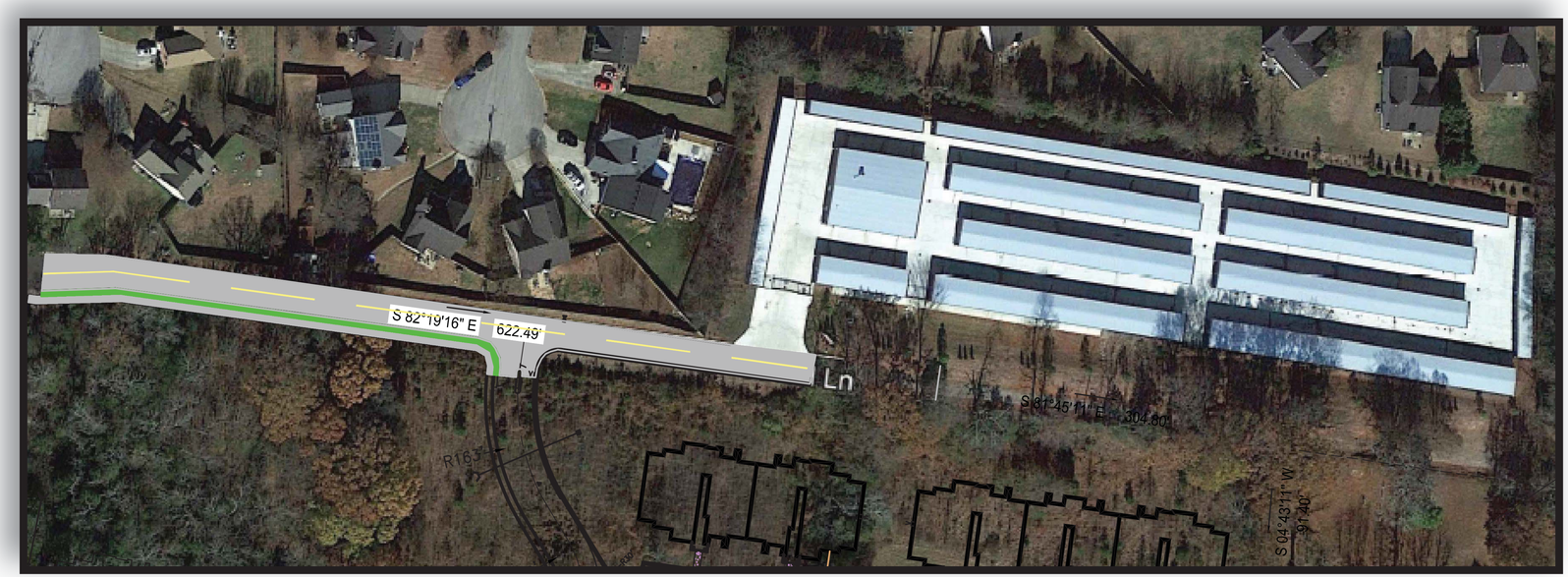
3.70 ACRES MUNICIPAL LAND

IMPROVEMENTS TO N. OLD PORT ROYAL ROAD

IMPROVEMENTS TO LOVELL LANE

KINGSLEY PLACE

THE SITE
ROAD IMPROVEMENTS



IMPROVEMENTS TO LOVELL LANE:

IMPROVE TRAVEL LANES TO 24' WIDTH TOTAL

CONNECT SIDEWALK FROM RESIDENTIAL ACCESS DRIVE TO COMMERCIAL PROPERTY



IMPROVEMENTS TO N. OLD PORT ROYAL RD

TWO TRAVEL LANES WITH CENTER TURN LANE

12' MULTI USE TRAIL ALONG STREET R.O.W. TO CONNECT TO COMMERCIAL PROPERTY AND LINK GREENWAYS

KINGSLEY PLACE

THE DESIGN

PROJECT OVERVIEW

The Planned Development is located on Old Port Royal road a tenth of a mile east of Port Royal and a quarter mile from Saturn Parkway. The location and land uses outlined on the site plan fit into the context of the overall Port Royal area.

The commercial and office components of the planned development are located along the front of Old Port Royal road. A boulevard private street will intersect the property to provide access to the commercial parcels and lead into the residential portion of the development.

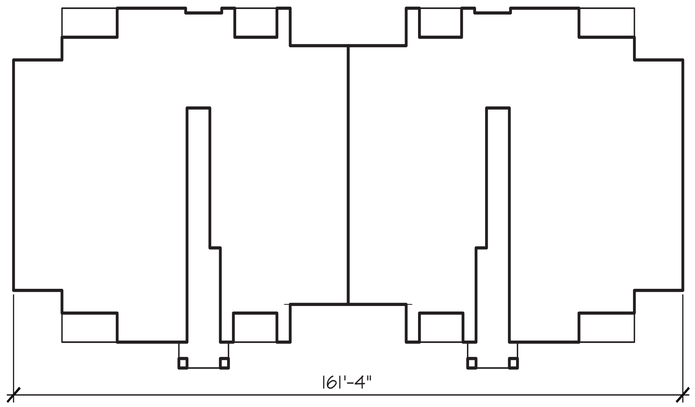
The commercial portions of the property represent a total of 14.95 acres. Along the Old Port Royal frontage is a retail anchor and out parcel attached retail. Across the boulevard is flex office space and acreage available for municipal use such as a police department. While these areas have been located on the site plan, the Planned Development allows for other use opportunities in the C-5 district and for the various uses to be located in anywhere within the PD district. Further use restrictions for the C-5-PD have been provided in the table on the following page. All parcels will have access to the boulevard street to limit access points on Old Port Royal.

Providing a transition between the commercial and the existing residential development to the north, a multi-family development is shown on 28.89 acres. The stacked flats are in three story structures at a density of 17.86 units per acre. The R-6-PD is requesting a criteria exception to table 4.1 as described on the following page. The multi-family development provides its residents private recreational amenities and services which reduces the demand on the existing city facilities. The boulevard street, its lighting and landscaping will be privately owned and maintained by the apartment ownership entity.

Internal pedestrian links will connect the elements of this PD. Improvements along Old Port Royal Road and Lovell Lane will provide pedestrian links to the existing retail and business centers in the Port Royal area.

KINGSLEY PLACE

THE DESIGN
CRITERIA EXCEPTIONS

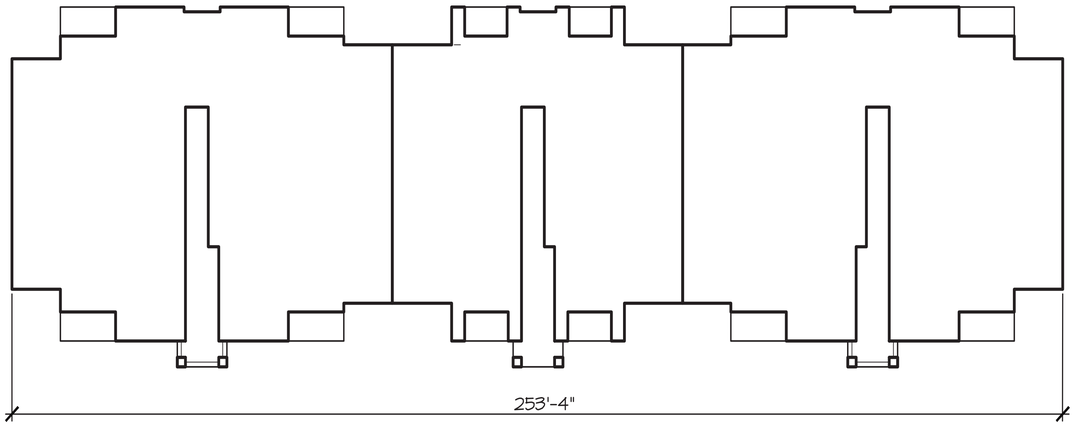


TYPICAL 24 UNIT STRUCTURE
COMPLIANT

Old Port Royal PD-C-5 Use Restrictions	
	Gas Station
Outdoor Amusement Facility	Green House/Nursery
Dwelling-Above Ground Floor	Homeless Shelter
Educational Facility-Vocational	Live Performance Venue
Food Bank	Vehicle Repair
Food Pantry	Communication Towers
Chronic Pain and Recovery Clinics	All Temporary Uses Prohibited

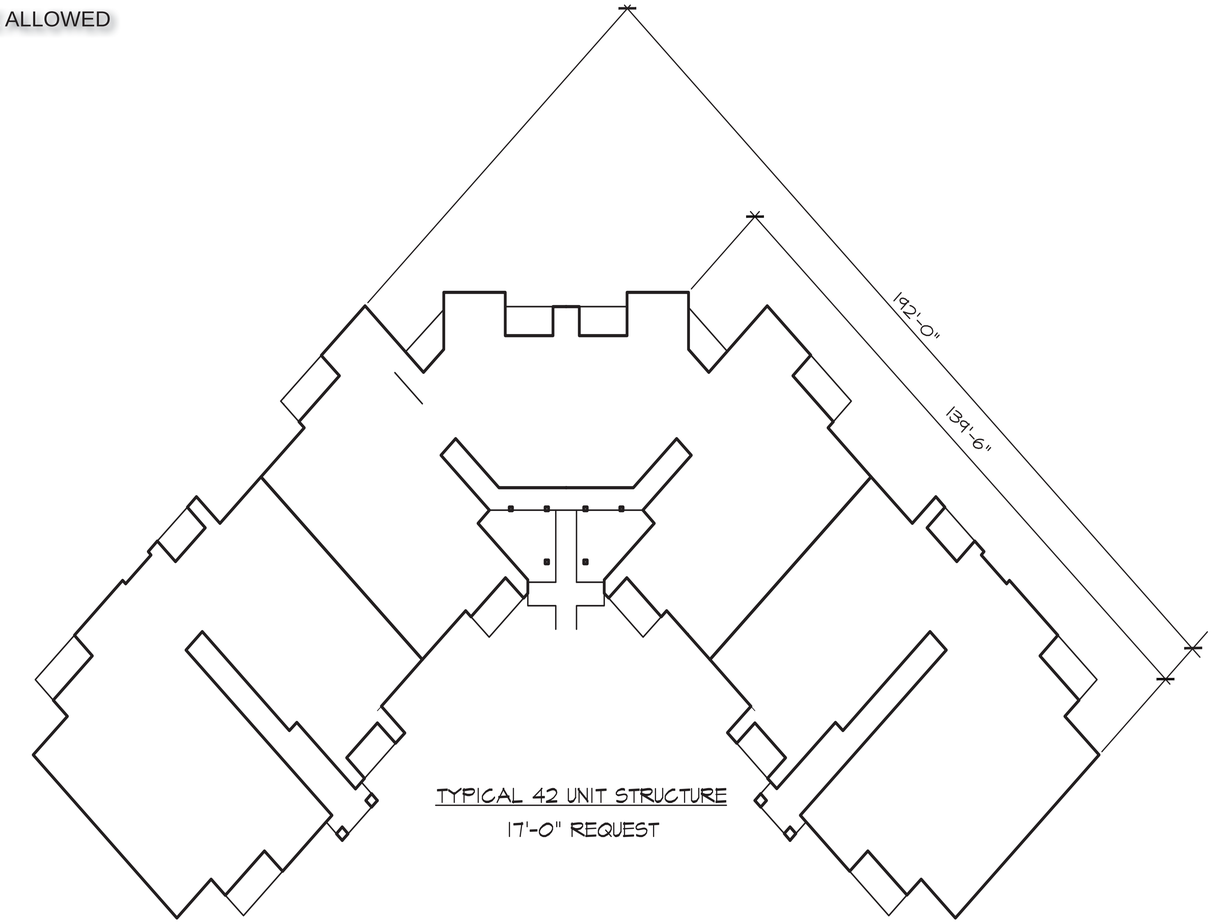
*ALL OTHER PERMITTED USES IN C-5 ARE ALLOWED

SITE DATA	
ADDRESS	3812 & 3788 Old Port Royal Road
PARCEL NUMBERS	060027 00306
	060027 00400
TOTAL SITE AREA	43.85 (1,910,106 s.f.)
EXISTING ZONING	I-1
PROPOSED ZONING	R-6 & C-5 Planned Development



TYPICAL 36 UNIT STRUCTURE
78'-4" REQUEST

BUILDING LENGTH PER TABLE 4.1:RESIDENTIAL STANDARDS (175' MAX.)			
BUILDING TYPE	NO. OF STRUCTURES	BUILDING LENGTH	CRITERIA REQUEST
24 UNITS	8 STRUCTURES	161'-4"	COMPLIANT
36 UNITS	6 STRUCTURES	253'-4"	78'-4"
42 UNITS	2 STRUCTURES	192'-0"	17'-0"
BLDG 29 & 30	1 STRUCTURE	183'-4"	8'-4"



TYPICAL 42 UNIT STRUCTURE
17'-0" REQUEST

PLANNED DEVELOPMENT CRITERIA REQUEST
RESIDENTIAL MAXIMUM BLDG LENGTH

KINGSLEY PLACE

THE DESIGN
MASTER PLAN

AMENITIES:

① TOT LOT

② OPEN FIELD SPORTS AREA

③ POOL

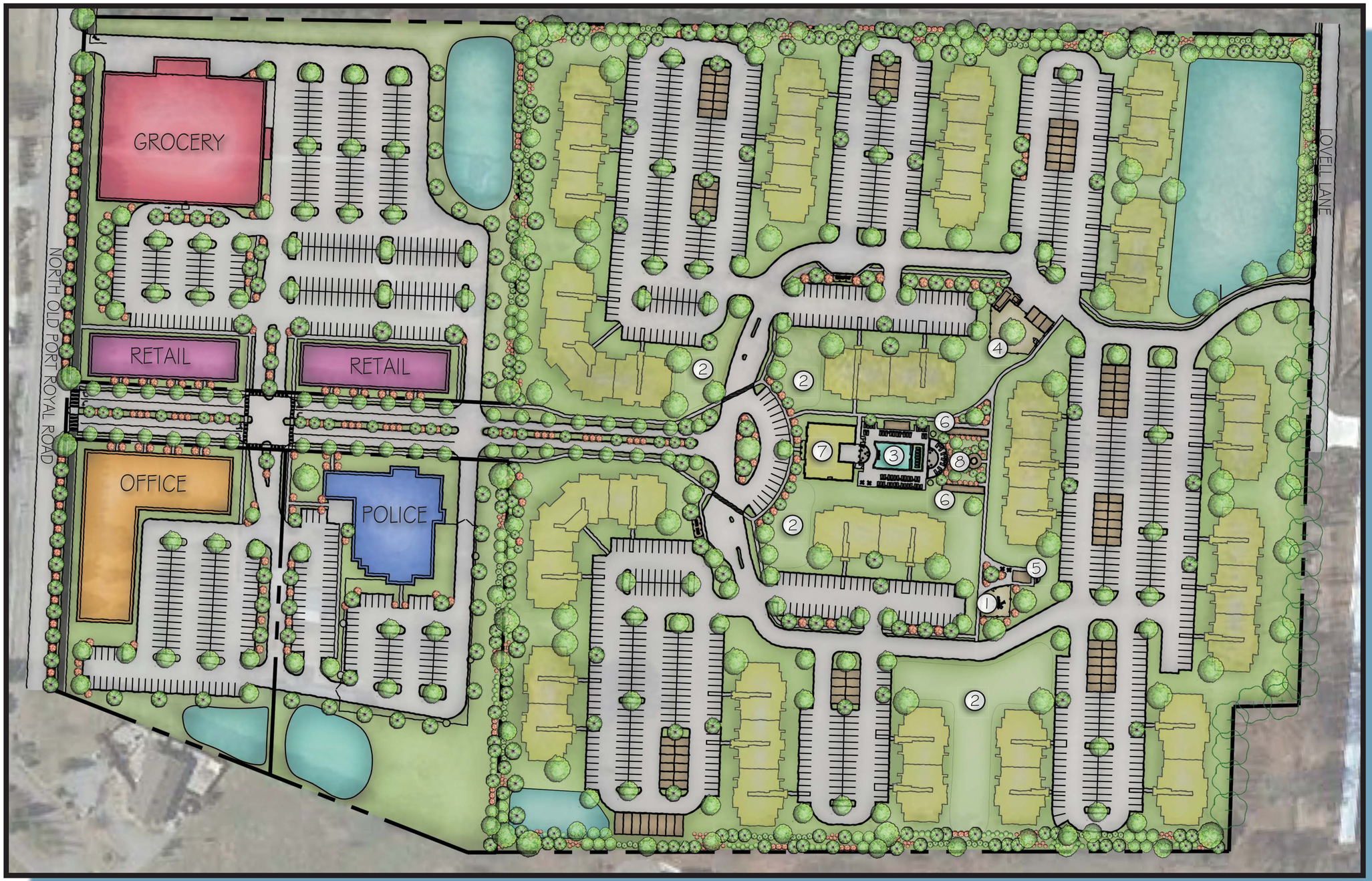
④ BARK PARK W/ DOG WASH

⑤ GRILL/ PAVILLION

⑥ YARD GAME AREA

⑦ FORMAL RECREATION FACILITY

⑧ FIRE PIT



KINGSLEY PLACE

THE DESIGN
RESIDENTIAL AREA AMENITIES

AMENITIES:

① TOT LOT

② OPEN FIELD SPORTS AREA

③ POOL

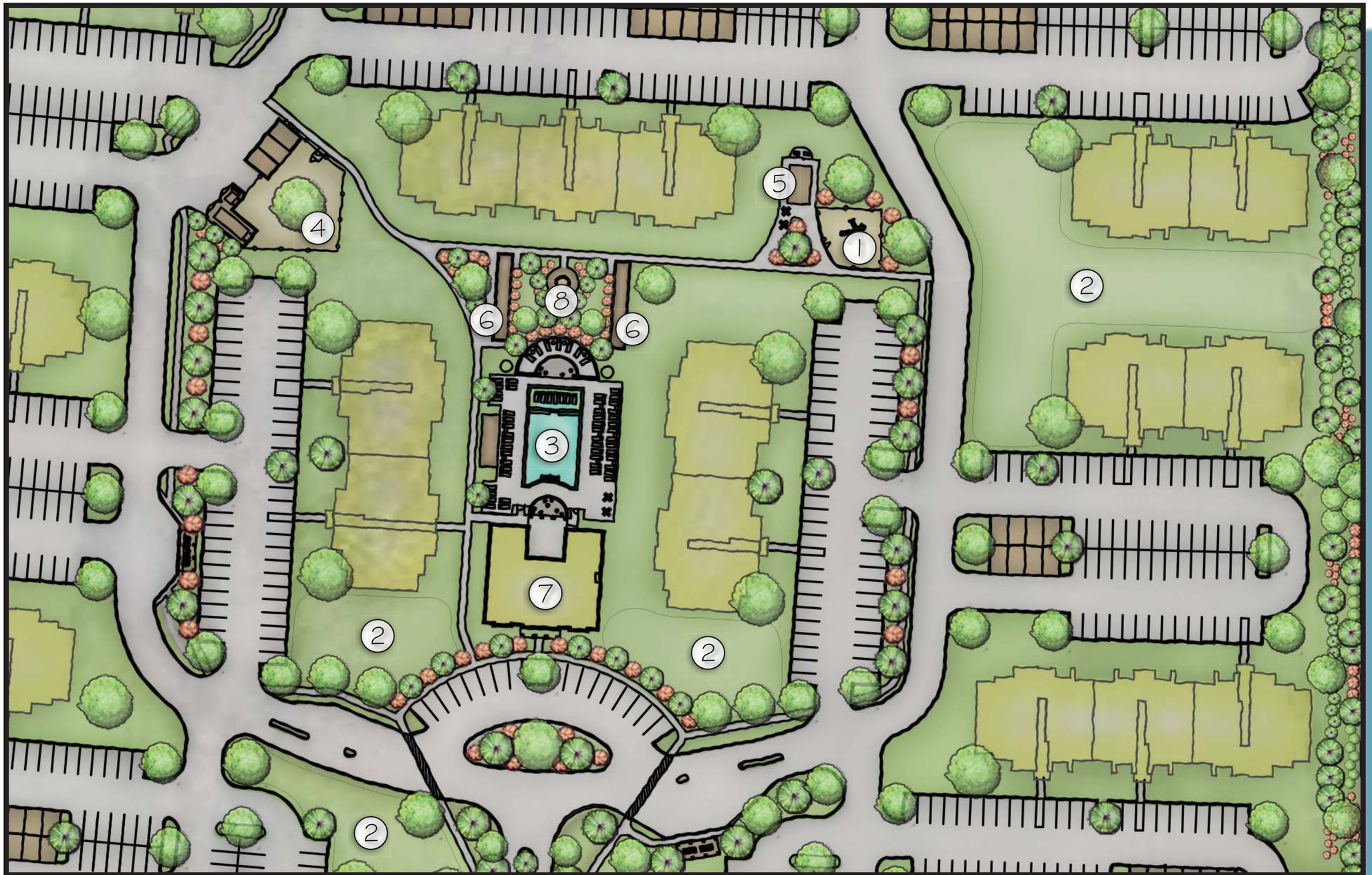
④ BARK PARK W/ DOG WASH

⑤ GRILL/ PAVILLION

⑥ YARD GAME AREA

⑦ FORMAL RECREATION FACILITY

⑧ FIRE PIT



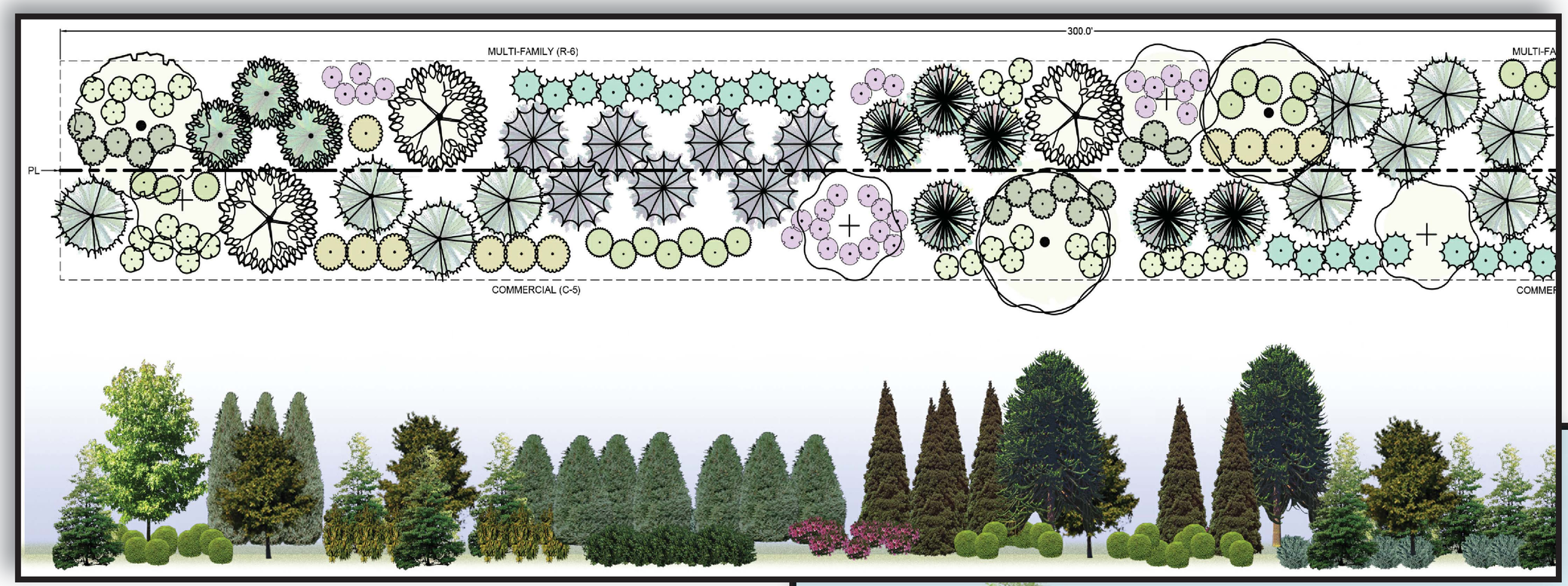
KINGSLEY PLACE

THE DESIGN
BOULEVARD CONCEPT



KINGSLEY PLACE

THE DESIGN
BUFFER & BOULEVARD



ENHANCED BUFFER CONCEPT



BOULEVARD CONCEPT

KINGSLEY PLACE

THE DESIGN
SITE SIGNAGE

SIGN REQUIREMENTS:

FREESTANDING SIGN
- 1 PER LOT
- MAX AREA: 32 SF
- MAX HEIGHT: 8 FT

MULTI-TENANT RETAIL
- 1 PER LOT OVER 10 ACRES
- MAX AREA: 150 SF
- MAX HEIGHT: 20 FT



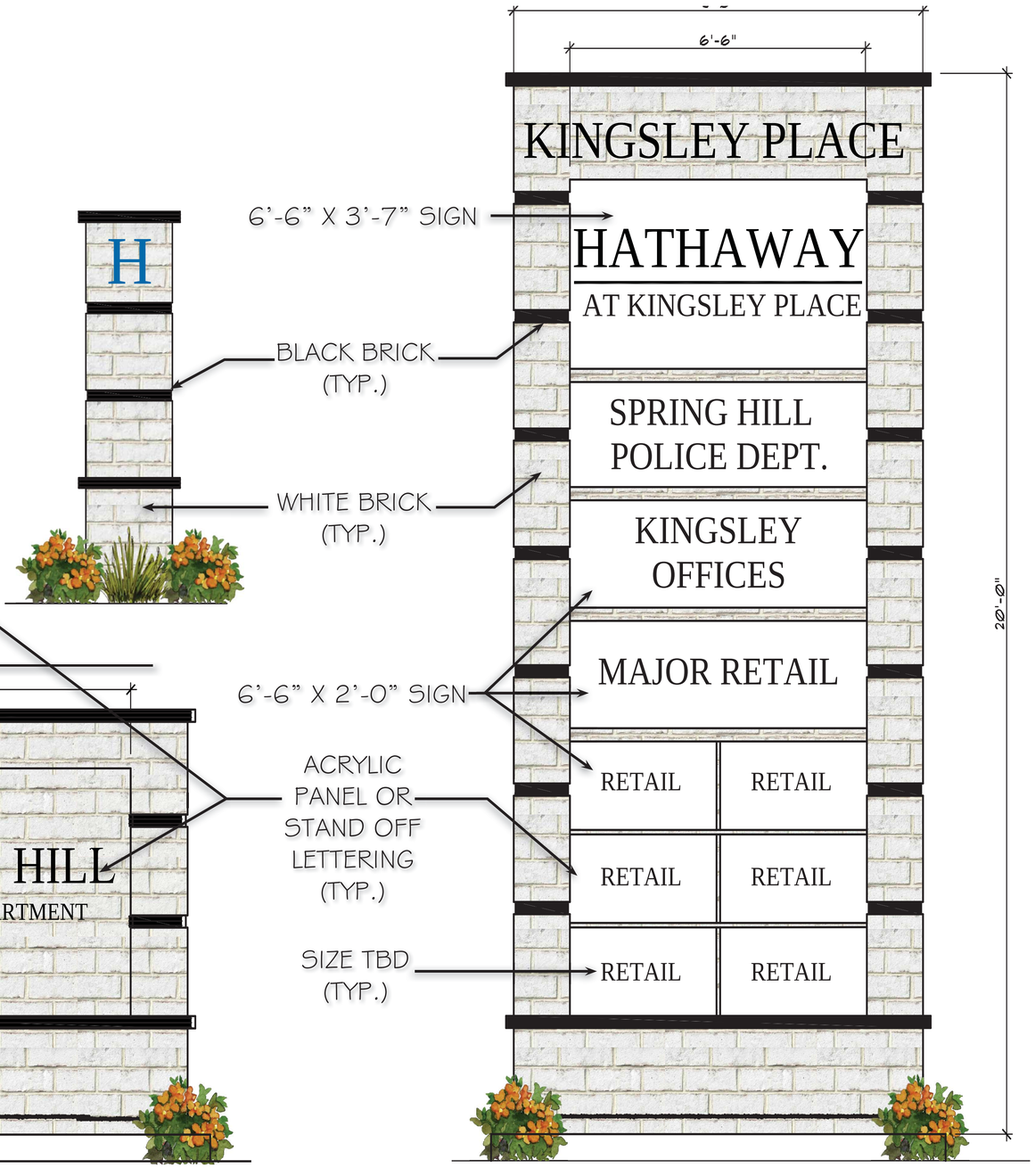
SIGN 1



SIGN 2



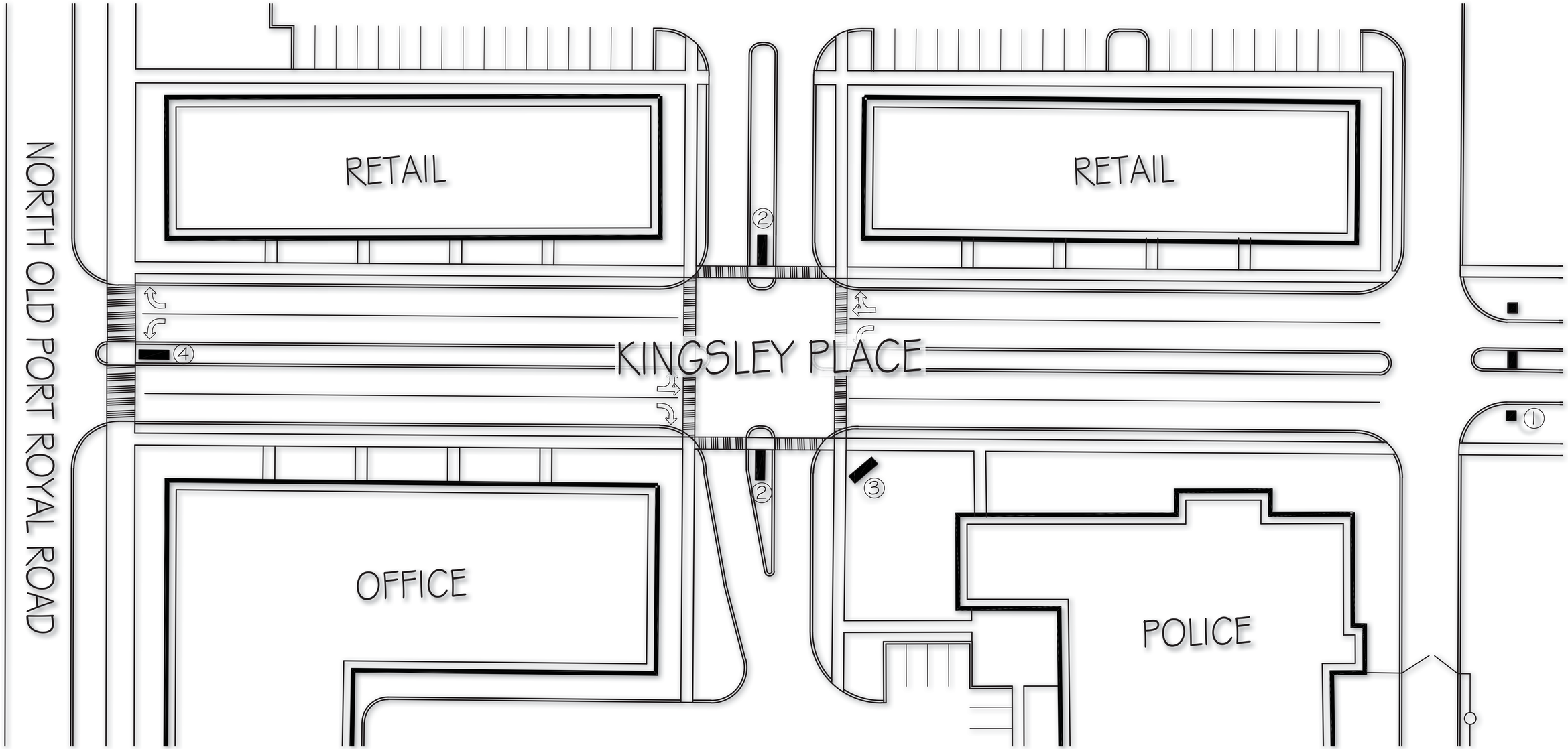
SIGN 3



SIGN 4

KINGSLEY PLACE

THE DESIGN
SITE SIGNAGE PLAN



KINGSLEY PLACE

THE ARCHITECTURE
RESIDENTIAL



KINGSLEY PLACE

THE ARCHITECTURE
TYPICAL RESIDENTIAL ELEVATION



FRONT ELEVATION

KINGSLEY PLACE

THE ARCHITECTURE
RETAIL



DESIGN STANDARDS IN ACCORDANCE WITH UDC SECTION 5.4

PRIMARY FACADE MATERIALS:

- No more than 20% EIFS
- Clay Brick
- Cultured Stone
- Split Face CMU
- Standing Seam Metal Roof
- Metal Awnings/Canopies & Detail Elements



KINGSLEY PLACE

THE ARCHITECTURE
OFFICE





DESIGN STANDARDS IN ACCORDANCE WITH UDC SECTION 5.4

PRIMARY FACADE MATERIALS:

- No more than 20% EIFS
- Clay Brick
- Cultured Stone
- Split Face CMU
- Standing Seam Metal Roof
- Metal Awnings/Canopies & Detail Elements

KINGSLEY PLACE

THE ARCHITECTURE
MUNICIPAL



February 24, 2021

Austin Page, Associate Planner
City of Spring Hill
199 Town Center Parkway
Spring Hill, TN 37174

RE: Kingsley Place Development
Old Port Royal Road

To Spring Hill Board of Mayor and Aldermen:

On behalf of the Paul Varney and Gross Residential, WES Engineers & Surveyors would like to submit this revised Concept Plan for your review and approval.

The subject property is located at 3788 and 3812 Old Port Royal Road and is approximately 43.85 acres, directly behind the Port Royal Road Kroger site, the zoning of these 2 parcels of land is I-1 currently. We are requesting approval to change these parcels to R-6 and C-4.

The development team has been in attendance at previous Planning Commission meetings and the January BOMA workshop meeting. Additionally, we have been in contact with City officials, administration, and staff and have revised the attached site plan to respond to comments we have received with respect to our planned development. The revised plan reflects changes to the residential density and the amount of land available for commercial uses.

Please note we have reduced the residential density from 516 units to 396 units. While there is a reduction in the density of the residential site, the Development team maintained the high level of amenities that was previously presented to Planning and BOMA.

The Development team was also able to increase the acreage on the commercial portion of the property. The commercial acreage was increased from 13.57 acres to 16.5 acres. A portion of this commercial acreage is being dedicated for a proposed police department. The acreage dedicated for this municipal use was increased from 3.5 acres to 5.0 acres. The retail acreage increased to 8.25 acres, and the office portion of the property increased to 3.25 acres. This increase will allow more square footage of retail and office which will increase sales tax revenue and provide more job opportunities within the City.

We appreciate the feedback we received from the City and believe these revisions address the density and traffic concerns that we were asked to consider. Our Development team looks forward to discussing this project with the Board on March 1.

Sincerely,
WES Engineers & Surveyors

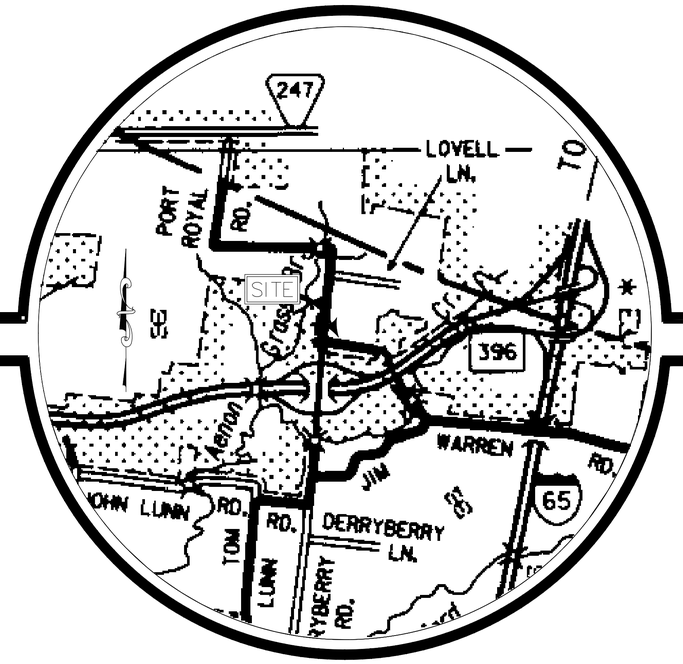


Allen B. O'Leary, RLS
Principal

A SITE PLAN FOR

KINGSLEY PLACE

OLD PORT ROYAL ROAD, SPRING HILL, TENNESSEE
TAX MAP 27, PARCEL 03.06 & 4.00
COMMERCIAL/RESIDENTIAL DEVELOPMENT



LOCATION MAP
NOT TO SCALE
SPRING HILL, MAURY COUNTY, TENNESSEE

SPECIFIED SEQUENCE OF WORK FOR THE SELECTED CONTRACTOR:

1. INSTALL PHASE 1 OF EROSION PREVENTION & SEDIMENT CONTROL MEASURES.
2. BEGIN EXCAVATION & FILLING TO CONSTRUCT DETENTION BASINS TO FUNCTION AS SEDIMENT BASINS DURING CONSTRUCTION.
3. CONTINUE EXCAVATION & FILLING TO BRING THE SITE TO FINAL SUBGRADE.
4. CONSTRUCT / INSTALL PAVEMENT BASE STONE & BINDER AND SIDEWALK BASE STONE.
5. COMPLETE SITE APPURTENANCES (FINAL PAVING, CURBING, DRESSING SITE).
6. COMPLETE SOIL STABILIZATION (FINAL DRESSING OF SITE) ONCE BUILDING CONSTRUCTION IS NEARING COMPLETION.
7. COMPLETE PUNCH LIST ITEMS, AS-BUILT, INFRASTRUCTURE CERTIFICATIONS AS REQUIRED.

UTILITY COMPANIES:

UTILITIES SHOWN ARE BASED ON LIMITED DATA. THERE IS NO GARANTEE AS TO THEIR LOCATION OR SIZE. PLEASE CONTACT THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION. POSSIBLE CONTACTS IN THIS AREA INCLUDE:

TENNESSEE ONE CALL:
1-800-351-1111

MUNICIPALITY:
CITY OF SPRING HILL
199 TOWN CENTER PARKWAY
SPRING HILL, TENNESSEE 37174

CODES:
CITY OF SPRING HILL
CODES & INSPECTIONS
199 TOWN CENTER PARKWAY
SPRING HILL, TENNESSEE 37174
931-486-2252 Ext. 214

STORMWATER:
CITY OF SPRING HILL
199 TOWN CENTER PARKWAY
SPRING HILL, TENNESSEE 37174
THOMAS WOLF- CITY ENGINEER
931-486-2252 Ext. 488

SANITARY:
CITY OF SPRING HILL
3893 MAHLON MOORE ROAD
SPRING HILL, TENNESSEE 37174
931-486-2252

WATER:
CITY OF SPRING HILL
WATER DISTRIBUTION SYSTEM
3893 MAHLON MOORE RD
SPRING HILL, TENNESSEE 37174
931-486-2252

ELECTRIC:
MIDDLE TENNESSEE ELECTRIC
MEMBERSHIP CORPORATION
2156 EDWARD CURD LANE
FRANKLIN, TN 37067
615-794-3561

TELEPHONE:
ATT (BELLSOUTH)
500 LIBERTY PIKE
FRANKLIN, TENNESSEE 37064
888-757-6500

NATURAL GAS:
ATMOS ENERGY
810 NASHVILLE HWY.
COLUMBIA, TN 38401
888-824-3434

CABLE TELEVISION:
CHARTER
COMMUNICATIONS
2008 S. MAIN STREET
COLUMBIA, TN 38401
931-388-1326

Tennessee811
Know what's **below** **Call** before you dig.

CITY OF SPRING HILL APPROVAL

CITY ENGINEER

*APPROVED PLANS MUST BE KEPT ON JOB SITE AT ALL TIMES.

THIS SITE PLAN HAS BEEN DESIGNED TO MEET THE CRITERIA OF THE CITY OF SPRING HILL, TENNESSEE. THE PLANS ARE NOT RELEASED FOR CONSTRUCTION UNTIL THE RELATIVE PERMIT HAS BEEN ISSUED BY THE MUNICIPALITY. CHANGES SHALL NOT BE MADE TO THE APPROVED SITE PLAN UNLESS APPROVED BY THE RELEVANT DEPARTMENT SUPERINTENDANT OR THE PLANNING COMMISSION.

EXHIBIT A1 - REVISED SITE PLANS

Received 2/24/21

PRIMARY CONTRACTOR INFORMATION:

COMPANY NAME: _____
CONTACT PHONE: _____

TDEC LEVEL I CERTIFIED 24 HOUR POINT OF CONTACT FOR SOIL EROSION CONTROL:
NAME: _____
PHONE: _____

STATE OF TENNESSEE NPDES PERMIT - NOTICE OF COVERAGE
TRACKING NUMBER: _____
DATE: _____

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gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

SHEET INDEX

C-0.0 COVER
C.1.0 EXISTING CONDITIONS PLAN
C-2.0 OVERALL LAYOUT PLAN
C-3.0 OVERALL GRADING PLAN
C-4.0 EMERGENCY VEHICLE ACCESS PLAN
C-5.0 UDC COMPLIANCE PLAN
L-1.0 OVERALL LANDSCAPE PLAN
L-1.1 ENLARGED LANDSCAPE PLAN
L-1.2 TYPICAL FOUNDATION PLANTING PLANS
L-1.3 LANDSCAPE BUFFERS
L-2.0 LANDSCAPE NOTES & DETAILS
SP-1.0 SITE LIGHTING PLAN
SP-2.0 SITE LIGHTING PLAN

GENERAL NOTES

1. PROPOSED USE: COMMERCIAL/RESIDENTIAL DEVELOPMENT
2. A PRE CONSTRUCTION MEETING WITH THE MUNICIPALITY IS REQUIRED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING AND PROPOSED UTILITIES FROM DAMAGE DURING ALL STAGES OF CONSTRUCTION.
4. THE ENGINEER AND APPLICABLE AGENCY MUST APPROVE, PRIOR TO CONSTRUCTION, ANY ALTERATION, OR VARIANCE FROM THESE PLANS.
5. DEVELOPER SHALL COMPLY WITH TDEC EROSION PREVENTION AND SEDIMENTATION CONTROL HANDBOOK, CURRENT EDITION.
6. UNDERGROUND DRY UTILITIES SHALL BE EXTENDED FROM EXISTING LOCATIONS TO SERVICE THIS SITE AS REQUIRED BY UTILITY COMPANIES.
7. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES OR SAFETY PRECAUTIONS OR PROGRAMS UTILIZED IN CONNECTION WITH THE WORK, AND WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
8. HANDICAP PARKING SPACES SHALL BE MARKED WITH ABOVE GRADE SIGNS IN ACCORDANCE WITH CURRENT ADA STANDARDS. VAN ACCESSIBLE SPACES SHALL BE MARKED AS SUCH.
9. ALL ON-SITE TRAFFIC SIGNS SHALL MEET THE REQUIREMENTS OF THE CITY ENGINEERING REQUIREMENT, ZONING ORDINANCE, & THE MUTCD.
10. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF SPRING HILL, TENNESSEE.
11. UTILITIES AS SHOWN INDICATE THE APPROXIMATE LOCATION OF FACILITIES ONLY AND NO GUARANTEE IS GIVEN TO THE COMPLETENESS OR ACCURACY THEREOF. NO EXCAVATION MAY BE MADE WITHIN 4 FEET OF THESE UTILITIES UNLESS AND UNTIL SUCH UTILITIES HAVE BEEN POSITIVELY LOCATED AS TO HORIZONTAL AND VERTICAL POSITION. CONTRACTOR SHALL CONTACT UTILITY COMPANY AND "TENNESSEE ONE CALL" AT 811 (1-800-351-1111) THREE WORKING DAYS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATION OF ALL EXISTING UTILITIES.
12. THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD BOUNDARY AND FLOODWAY MAP COMMUNITY PANEL NO. 47119C0185E. ('ZONE X')
13. THE LIMIT OF CONSTRUCTION IS SHOWN ON THE CONSTRUCTION PLANS. ANY WORK OUTSIDE OF THE LIMIT OF CONSTRUCTION IS TO BE COORDINATED BY THE CONTRACTOR AND PRE-APPROVED BY THE APPROPRIATE PROPERTY OWNER.

SITE DATA

PARCEL NUMBER	TAX MAP 27, PARCELS 03.06 & 04.00 DEED BOOK: R2230, PG 1035 R2263, PG 924
PARCEL ADDRESS:	3788 & 3812 OLD PORT ROYAL ROAD SPRING HILL, TENNESSEE 37174
EXISTING ZONING:	I-1 (LIGHT INDUSTRIAL)
PROPOSED ZONING:	C-4 (REGIONAL COMMERCIAL DISTRICT) R-6 (MULTI-FAMILY DISTRICT) UDC VERSION 2018
ACREAGE OF SITE:	±43.84 ACRES
DISTURBED ACREAGE:	±43.84 ACRES
MINIMUM REQUIRED BUILDING SETBACK LINES:	20' FRONT (MINOR) 30' REAR 15' MINIMUM BETWEEN BUILDINGS
PROPERTY OWNER:	OLIVIA BROWN LUNN ETALL S. CHEATHAM BROWNIE & KAITLYNN O. LUNN 3788 OLD PORT ROYAL ROAD NORTH SPRING HILL, TN 37174 SAMUEL S. LUNN 3812 OLD PORT ROYAL ROAD NORTH SPRING HILL, TN 37174

KINGSLEY PLACE
OLD PORT ROYAL ROAD
SPRING HILL, TENNESSEE

PROPRIETOR

PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TENNESSEE 37174
CONTACT: PAUL VARNEY

WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com

KINGSLEY PLACE
OLD PORT ROYAL ROAD

SPRING HILL, TENNESSEE 37174

ENGINEER'S SEAL

GERALD W. LOVICK — REGISTERED ENGINEER — 2-22-21 — NO. 107415 — STATE OF TENNESSEE

REVISIONS	DATE

PROJECT No.

DATE: DATE

SPRING HILL CONTROL NUMBER: _____

FILE: J:\WES_Engineers_Surveyors 2019\19633 - Old Port Royal - PVC-Gross\Dwg\Engineering\19633 Kingsley_Base_396.dwg

PLANNED DEVELOPMENT CONCEPT PLAN EXISTING CONDITIONS



BENCHMARK

BENCHMARK #1
IRON ROD
ELEV. = 638.68'

WARNING! UTILITY LINES!

THE CONTRACTOR WILL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND UTILITY WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN CLOSE PROXIMITY OF OVERHEAD OR UNDERGROUND SERVICES, THE UTILITY COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION. THE UNDERGROUND UTILITY LINES HAVE BEEN SHOWN AS BEST AS CAN BE DETERMINED AT THIS TIME FROM THE INFORMATION OBTAINED FROM THE SURVEY. THE CONTRACTOR SHALL CONTACT EACH OF THESE COMPANIES PRIOR TO BEGINNING CONSTRUCTION AND HAVE THEM DETERMINE THE EXACT LOCATION AND TYPE OF THEIR SERVICES.

Tennessee811 Know what's **below** **Call** before you dig.

LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	

TREE LINE
STORM STRUCTURE LABEL (S-1)
ASPHALT
CONCRETE
PARKING SPACES (14)
P.U.D.E.

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMINCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN. IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER. BEFORE ANY REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED, ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

SITE BENCHMARK NOTE:

CONTRACTOR SHALL ESTABLISH A BENCHMARK PRIOR TO CONSTRUCTION. EXISTING BENCHMARK MUST BE RE-VERIFIED AND APPROVED BY THE ENGINEER/SURVEYOR PRIOR TO USE.

BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:

W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD BOUNDARY AND FLOODWAY MAP COMMUNITY PANEL NO. 47119C0185E DATED APRIL 16, 2007 (ZONE "X")

GERALD W. LOLLICK
REGISTERED ENGINEER
AGRICULTURAL
No. 107415
STATE OF TENNESSEE
gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
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TN GRID NORTH

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CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com
ENGINEERS & SURVEYORS

Client
PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TN 37174

REVISIONS	DATE

KINGSLEY PLACE
OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
PLAN DEVELOPMENT EXISTING CONDITIONS

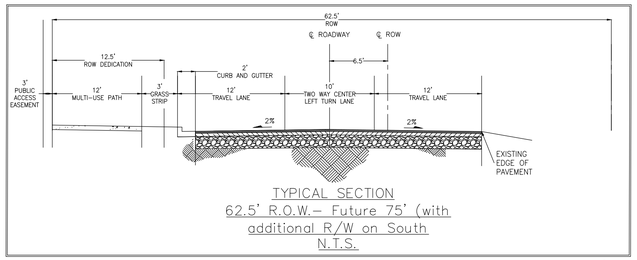
Drawn: RP
Checked: JG
Approved: GW
Date: 11-02-2020

Job. no. 19633
Scale: Vertical: 1"=100' Horizontal:

C 1.0

FILE:J:\WES_Engineers_Surveyors 2019\19633 - Old Port Royal - PVC-Gross\Dwg\Engineering\19633 Base.dwg

PROPOSED SITE LAYOUT PLAN



TYPICAL SECTION
62.5' R.O.W.– Future 75' (with additional R/W on South
N.T.S.



GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

SITE DATA:

© 2021

OWNER: SAMUEL S. LUNN
3812 OLD PORT ROYAL ROAD NORTH
SPRING HILL, TN 37174

OLIVIA BROWN LUNN ETAL
S. CHEATHAM BROWNIE & KAITLYNN O. LUNN
3788 OLD PORT ROYAL ROAD NORTH
SPRING HILL, TN 37174

PARCEL NUMBER: TAX MAP 27 PARCELS 03.06 & 04.00
DEED BOOK: R2230, PG 1035 & R2263, PG 924

SUBJECT PARCEL ZONING:

CURRENT ZONING: I - 1 (LIGHT INDUSTRIAL)
PROPOSED ZONING: R-6 (MULTI-FAMILY)
C-4 (GENERAL COMMERCIAL)

ACREAGE OF SITE: TOTAL: 43.84 ACRES
27.08 ACRES MULTI-FAMILY
3.25 ACRES FLEX - OFFICE / RETAIL
5.0 ACRES POLICE STATION
8.25 ACRES GROCERY STORE
0.26 ACRES R.O.W. DEDICATION

MINIMUM REQUIRED BUILDING SETBACKS:
R-6 SETBACK:
MIN. FRONT YARD - 20'
MIN. REAR YARD - 30'
MIN. DIST. BETWEEN BLDGS - 15'

C-4 SETBACK:
MIN. FRONT YARD - 10'
MIN. SIDE YARD - 0' - 20' WHEN ABUTTING RESIDENTIAL
MIN. REAR YARD - 10' - 20' WHEN ABUTTING RESIDENTIAL

1. THE PROPERTY IS NOT LOCATED WITHIN FLOOD ZONE AS DEPICTED ON FEMA COMMUNITY PANEL 47119C0185E, EFFECTIVE DATE APRIL 16, 2007.
2. ACTUAL DETENTION/DRAINAGE SWALES ARE SUBJECT TO CHANGE.
3. OPEN SPACE SHALL BE PRIVATE USE AREAS PROVIDED FOR ALL DWELLING UNITS LOCATED WITHIN THE DEVELOPMENT.
4. DWELLING UNITS SHALL HAVE ACCESS TO BOTH ACTIVE AND PASSIVE OPEN SPACE AREAS.

UTILITY SERVICES: WATER SERVICE
SPRING HILL WATER DISTRIBUTION SYSTEM
3893 MAHLON MOORE ROAD
SPRING HILL, TENNESSEE 37174
(931) 486-2252

ELECTRIC SERVICE
MIDDLE TENNESSEE ELECTRIC MEMBERSHIP CORP
2156 EDWARD CURD LANE
FRANKLIN, TN 37067
(615) 794-3561

PURPOSE NOTE:

THE PURPOSE OF THIS PRELIMINARY PLANNED DEVELOPMENT IS TO REZONE EXISTING INDUSTRIAL 1 TO R-6 & C-4 PLANNED DEVELOPMENT & TO CREATE MULTI-FAMILY UNITS, GROCERY / RETAIL, POLICE STATION & FLEX RETAIL OFFICE.

COVERAGE AREA:

MULTI-FAMILY:
PERVIOUS = 11.60 ACRES
IMPERVIOUS = 15.48 ACRES
TOTAL = 27.08 ACRES
(4.5 ACRES OPEN SPACE INCLUDING CLUBHOUSE, POOL & AMENITIES)
DENSITY: 14.60 UNITS/ACRE

FLEX / OFFICE RETAIL:
PERVIOUS = 1.16 ACRES (35.6%)
IMPERVIOUS = 2.09 ACRES (64.4%)
TOTAL = 3.25 ACRES

POLICE STATION:
PERVIOUS = 3.39 ACRES (67.8%)
IMPERVIOUS = 1.61 ACRES (32.2%)
TOTAL = 5.0 ACRES

GROCERY STORE / RETAIL
PERVIOUS = 3.13 ACRES (37.4%)
IMPERVIOUS = 5.12 ACRES (62.6%)
TOTAL = 8.25 ACRES

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMINCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN. IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER. BEFORE ANY REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED, ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

SITE BENCHMARK NOTE:

CONTRACTOR SHALL ESTABLISH A BENCHMARK PRIOR TO CONSTRUCTION. EXISTING BENCHMARK MUST BE RE-VERIFIED AND APPROVED BY THE ENGINEER/SURVEYOR PRIOR TO USE.

BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:
W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD BOUNDARY AND FLOODWAY MAP COMMUNITY PANEL NO. 47119C0185E DATED APRIL 16, 2007 (ZONE "X")

LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN	EIP	
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	
TREE LINE		
STORM STRUCTURE LABEL		R-1
ASPHALT		
CONCRETE		
# PARKING SPACES		14
P.U.D.E.		

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CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com
ENGINEERS & SURVEYORS

Client
PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TN 37174

REVISIONS / DATE

KINGSLEY PLACE
OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
OVERALL LAYOUT PLAN

Drawn: RP
Checked: JG
Approved: GV
Date: 2/23/21

Job no. 19633
Scale:
Vertical: 1"=100'
Horizontal:

C-2.0

GERALD W. VICK II
REGISTERED
No. 107415
STATE OF TENNESSEE
AGRICULTURE
gerald@wesengineers.com

FILE: J:\WES_Engineers_Surveyors 2019\19633 – Old Port Royal – PVC–Gross\Dwg\Engineering\19633 Kingsley_Base_396.dwg

GRADING & DRAINAGE PLAN



LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	

TREE LINE
STORM STRUCTURE LABEL (ST1)
ASPHALT
CONCRETE
PARKING SPACES (14)
P.U.D.E.

Tennessee811 Know what's below. Call before you dig.

GENERAL GRADING AND DRAINAGE NOTES

1. ALL GRADING AND DRAINAGE WORK AS SHOWN ON THIS PLAN SHALL BE DONE IN STRICT ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL ENGINEERING DEPARTMENT.
2. THE NECESSARY PERMITS FOR THE WORK SHOWN ON THESE SITE DEVELOPMENT PLANS WILL BE OBTAINED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK ON THIS PROJECT. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS AND PAY ALL FEES INVOLVED IN SECURING SAID PERMITS. THE CONTRACTOR SHALL ALSO COMPLY WITH ALL LOCAL AND STATE BUILDING CODES, ORDINANCES AND REGULATIONS RELATING TO THE CONSTRUCTION OF THE ITEMS SHOWN ON THESE PLANS.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO AVOID DAMAGE TO ALL EXISTING UTILITIES TO REMAIN DURING CONSTRUCTION. IF DAMAGE DOES OCCUR TO ANY SUCH EXISTING INSTALLATIONS, FULL REPAIR SHALL BE AT THE EXPENSE OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED AS PER THE CURRENT SPECIFICATIONS FOR SUCH WORK FOR THE RESPONSIBLE AGENCY.
4. THE LOCATION OF EXISTING PIPING AND UNDERGROUND UTILITIES (I.E., WATER AND GAS LINES, ELECTRICAL AND TELEPHONE CONDUITS, ETC.) AS SHOWN ON THIS PORTION OF THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION FROM ACTUAL SURVEYS, OR TAKEN FROM THE RECORDS AND DRAWINGS OF THE EXISTING UTILITIES. HOWEVER, THE CIVIL ENGINEER DOES NOT ASSUME RESPONSIBILITY THAT, DURING CONSTRUCTION, THE POSSIBILITY OF UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED OR THAT THE ACTUAL LOCATIONS OF UTILITIES SHOWN MAY VARY SOMEWHAT FROM THE LOCATIONS DESIGNATED ON THIS PORTION OF THE PLANS. IN AREAS WHERE IT IS NECESSARY THAT THE EXACT LOCATIONS OF UNDERGROUND UTILITIES BE KNOWN, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, FURNISH ALL LABOR AND TOOLS TO EITHER VERIFY AND SUBSTANTIATE OR DEFINITELY ESTABLISH THE LOCATION OF THE UTILITIES.
5. ALL DELETERIOUS MATERIAL SHALL BE REMOVED AND DISPOSED OF OFF-SITE BY THE CONTRACTOR AS PER THE INSPECTION AND FINAL APPROVAL OF THE ENGINEER AND OWNER. ALL FILL MATERIAL TO BE USED FOR SITE GRADING SHALL BE AN INORGANIC SOIL, FREE OF DEBRIS AND APPROVED BY THE ENGINEER AND OWNER.
6. THE PLACING AND SPREADING OF ANY FILL MATERIAL IS TO BE STARTED AT THE LOWEST POINT AND BROUGHT UP IN HORIZONTAL LAYERS OF 8-INCH THICKNESS. SAID FILL MATERIAL IS TO BE SOIL AND ROCK ONLY, FREE OF SOD, ROOTS, FROZEN SOILS, OR ANY OTHER DECOMPOSABLE MATERIAL. THE RELATIVE COMPACTION OF EACH LAYER SHALL NOT BE LESS THAN 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698) IN ALL AREAS OF FILL, AND COMPACTION OF 98% OF SAME SPECIFICATION FOR MATERIALS USED IN THE UPPER 12 INCHES BENEATH PAVEMENT AND GRADE SLABS.
7. THE CONTRACTOR IS TO CHECK AND VERIFY ALL MEASUREMENTS, LEVELS, ETC., BEFORE ORDERING MATERIALS AND PROCEEDING WITH WORK, AND IS RESPONSIBLE FOR THE SAME.
8. CONTRACTOR IS RESPONSIBLE FOR SECURING WRITTEN APPROVAL FROM ADJOINING PROPERTY OWNER FOR OFF-SITE GRADING WORK THAT RESULTS FROM CONSTRUCTION ACTIVITIES.

BERM CONSTRUCTION NOTES

1. AREAS UNDER THE EMBANKMENT OR ANY STRUCTURAL WORKS RELATED TO THE BASIN SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL , TREES, VEGETATION, ROOTS, OR OTHER OBJECTIONABLE MATERIAL. IN ORDER TO FACILITATE CLEANOUT AND RESTORATION, THE AREA OF MOST FREQUENT INUNDATION (MEASURED FROM THE TOP OF THE PRINCIPAL SPILLWAY) WILL BE CLEARED OF ALL BRUSH AND TREES.
2. THE PLACING AND SPREADING OF EMBANKMENT MATERIALS IS TO BE STARTED AT THE LOWEST POINT AND BROUGHT UP IN HORIZONTAL LAYERS OF 8" THICKNESS. SAID MATERIAL IS TO BE FREE OF SOD, ROOTS, FROZEN SOIL, OR ANY OTHER DECOMPOSABLE MATERIAL. THE RELATIVE COMPACTION OF EACH LAYER SHALL NOT BE LESS THAN 95% OF STANDARD PROCTOR TEST IN ALL AREAS.
3. FOR EARTH-FILL EMBANKMENTS, A CUTOFF TRENCH SHALL BE EXCAVATED ALONG THE CENTERLINE OF THE BERM. THE TRENCH MUST EXTEND AT LEAST 1 FOOT INTO A STABLE, IMPERVIOUS LAYER OF SOIL AND HAVE A MINIMUM DEPTH OF TWO FEET. THE CUTOFF TRENCH SHALL EXTEND UP BOTH ABUTMENTS TO THE RISER CREST ELEVATION. THE MINIMUM BOTTOM WIDTH SHALL BE FOUR FEET, BUT ALSO MUST BE WIDE ENOUGH TO PERMIT OPERATION OF COMPACTION EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1:1. COMPACTION REQUIREMENTS SHALL BE THE SAME AS THOSE FOR THE EMBANKMENT. THE TRENCH SHALL BE DRY DURING THE BACKFILLING AND COMPACTION OPERATIONS.
4. THE EMBANKMENT SHALL BE CONSTRUCTED TO AN ELEVATION 10 PERCENT HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT IF COMPACTION IS OBTAINED WITH HAULING EQUIPMENT. IF COMPACTORS ARE USED FOR COMPACTION, THE OVERBUILD MAY BE REDUCED TO NOT LESS THAN 5 PERCENT.
5. THE EMBANKMENT OF THE DETENTION POND SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT VEGETATION IMMEDIATELY AFTER INSTALLATION OF THE BASIN.
6. ALL STATE AND LOCAL REQUIREMENTS SHALL BE MET CONCERNING FENCING AND SIGNS WARNING THE PUBLIC OF THE HAZARDS OF SOFT, SATURATED SEDIMENT AND FLOOD WATERS.

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMINCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN. IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER. BEFORE ANY REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED, ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

SITE BENCHMARK NOTE:

CONTRACTOR SHALL ESTABLISH A BENCHMARK PRIOR TO CONSTRUCTION. EXISTING BENCHMARK MUST BE RE-VERIFIED AND APPROVED BY THE ENGINEER/SURVEYOR PRIOR TO USE.

BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:

W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD BOUNDARY AND FLOODWAY MAP COMMUNITY PANEL NO. 47119C0185E DATED APRIL 16, 2007 (ZONE "X")

GERALD W. LYCK II — REGISTERED ENGINEER — AGRICULTURE — COMMERCE — No. 107415 — STATE OF TENNESSEE
gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

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2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com

ENGINEERS & SURVEYORS

Client
PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TN 37174

REVISIONS	DATE

KINGSLEY PLACE

OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
OVERALL GRADING & DRAINAGE PLAN

Drawn: RP | Checked: JG | Approved: GV | Date: 2/23/21

Job. no. 19633 | Scale: Vertical: 1"=100' Horizontal: | C-3.0

FILE: I:\WES_Engineers_Surveyors 2019\19633 - Old Port Royal - PVC-Gross\Dwg\Engineering\19633 Kingsley_Base_396.dwg

EMERGENCY VEHICLE ACCESS PLAN



GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

LEGEND

	EXISTING	PROPOSED
WATER MAIN		
SANITARY SEWER		
STORM SEWER		18"ST
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN	EIP	
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	

TREE LINE
STORM STRUCTURE LABEL (ST1)
ASPHALT
CONCRETE
PARKING SPACES (14)
P.U.D.E.

Tennessee811
Know what's below
Call before you dig.

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMINCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN. IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER, BEFORE ANY REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED. ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

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BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:

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W.E.S. ENGINEERS AND SURVEYORS
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COLUMBIA, TENNESSEE 38401
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GERALD W. WYCK II
REGISTERED ENGINEER
AGRICULTURAL & BIOSYSTEMS
COMMERCIAL
No. 107415
STATE OF TENNESSEE
12-31-21
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ENGINEERS & SURVEYORS

Client
PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TN 37174

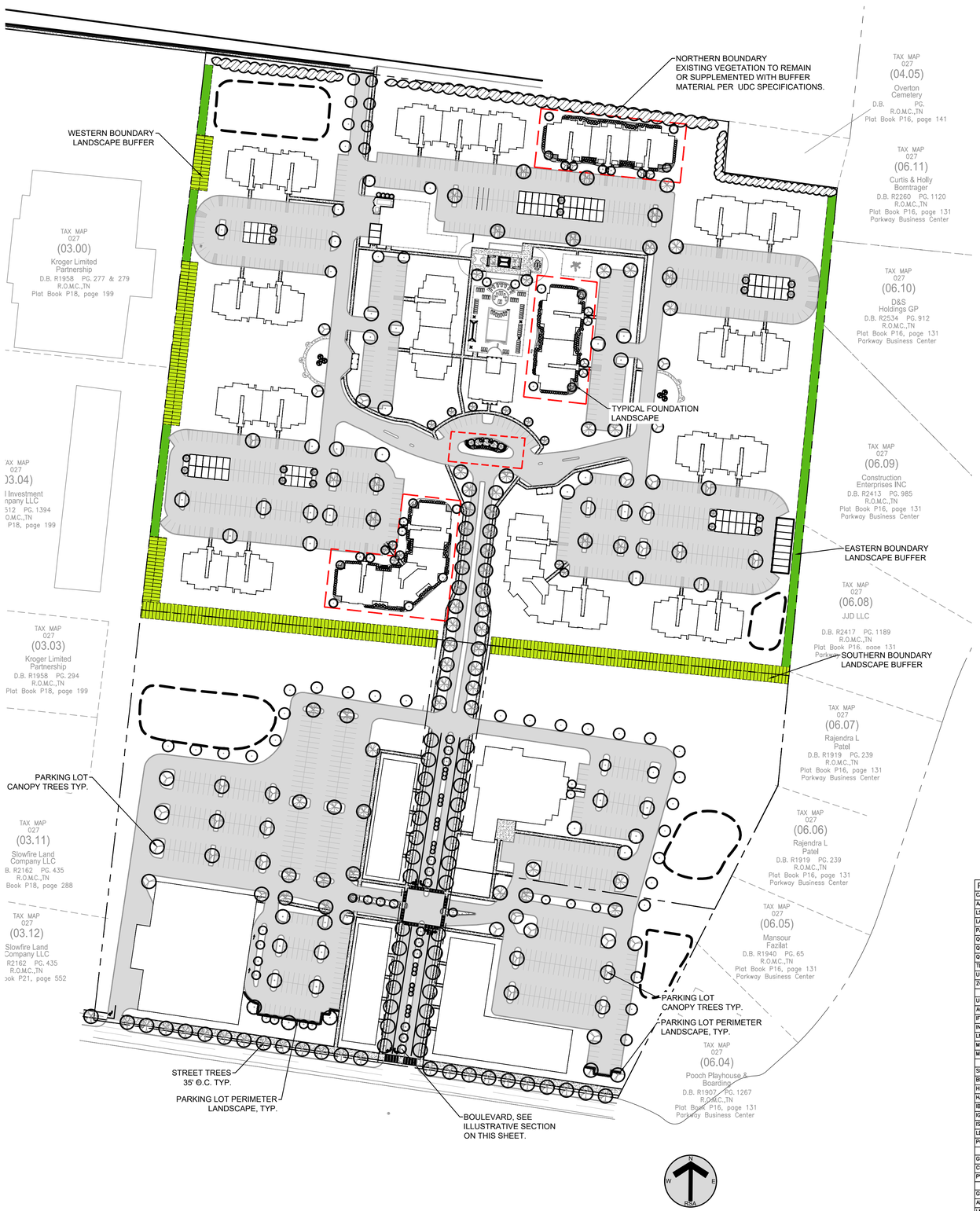
REVISIONS | DATE

KINGSLEY PLACE
OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
EMERGENCY VEHICLE ACCESS PLAN

Drawn: RP | Checked: JG | Approved: GV | Date: 2/23/21

Job. no. 19633 | Scale: Vertical: 1"=100' Horizontal: | C-4.0

FILE: J:\ WES_Engineers_Surveyors 2019\19633 - Old Port Royal - PVC-Gross\Dwg\Engineering\19633 Kingsley_Base_396.dwg



KEY:

PROPOSED LANDSCAPE BUFFER

ENHANCED LANDSCAPE BUFFER

EXISTING VEGETATION TO REMAIN

TYPICAL FOUNDATION LANDSCAPE

LANDSCAPE SITE DATA

PROPERTY INFORMATION:

PROJECT NAME:	KINGSLEY PLACE
STREET ADDRESS:	3812 & 3788 OLD PORT ROYAL RD
PROPOSED ZONING:	R-6 & C-4
TOTAL ACREAGE:	43.84± AC [1,909,670± SF]
R-6:	27.08± AC
C-4:	16.76± AC

MULTI-FAMILY DISTRICT (R-6)

TOTAL UNITS:	396
TOTAL DENSITY:	14.6 UNITS PER AC

OPEN SPACE

REQUIRED (100 SF PER UNIT):	47,868± SF (.91 AC)
*PROVIDED:	685,634± SF (15.74 AC)

*PROVIDED OPEN SPACE DOES NOT INCLUDE THE LANDSCAPE BUFFERS OR REQUIRED YARD AREAS.

BUFFERS:

NORTHERN BOUNDARY 1,196 LF

REQUIRED:	48 TREES
	399 SHRUBS
PROVIDED:	EXISTING VEGETATION TO REMAIN

EASTERN BOUNDARY 1,028 LF

REQUIRED:	42 TREES
	343 SHRUBS
*PROVIDED:	102 TREES
	147 SHRUBS

SOUTHERN BOUNDARY 1,064 LF (ENHANCED LANDSCAPE BUFFER)

REQUIRED:	43 TREES
	355 SHRUBS
**PROVIDED:	125 TREES
	355 SHRUBS

WESTERN BOUNDARY 1,119 LF

REQUIRED:	45 TREES
	373 SHRUBS
*PROVIDED:	111 TREES
	160 SHRUBS

* ALTERNATE LANDSCAPE BUFFER PROPOSED. SHRUB COUNTS HAVE BEEN REDUCE TO ALLOW FOR ADDITIONAL EVERGREEN TREES.

** ENHANCED LANDSCAPE BUFFER IS A OF MIN. 30' WIDE WITH ADDITIONAL PLANT MATERIAL ABOVE AND BEYOND UDC STANDARDS.



BOULEVARD ROADWAY SECTION: 10 SCALE

PLANT SCHEDULE SITE

CANOPY TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
AA	2	ACER RUBRUM 'AUTUMN FLAME' / AUTUMN FLAME RED MAPLE	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
LS	4	LIQUIDAMBAR STYRACIFLUA / AMERICAN SWEET GUM	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
LA	18	LIRIODENDRON TULIPIFERA 'ARNOLD' / ARNOLD TULIP POPLAR	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
PA	24	PLATANUS X ACERIFOLIA / LONDON PLANE TREE	DECIDUOUS	3" CAL.	14–16' HT	AS SHOWN	B&B, 7' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
QC	30	QUERCUS COCCINEA / SCARLET OAK	DECIDUOUS	3" CAL.	14–16' HT	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
QN	59	QUERCUS NUTTALLII / NUTTALL OAK	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 7' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
QP	23	QUERCUS PHELLOS / WILLOW OAK	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
TD	36	TAXODIUM DISTICHUM / BALD CYPRESS	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
UP	44	ULMUS PARVIFOLIA 'ALLEE' / ALLEE LACEBARK ELM	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 7' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
ZG	6	ZELKOVA SERRATA 'GREEN VASE' / GREEN VASE SAWLEAF ZELKOVA	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
UNDERSTORY TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
AC	10	AMELANCHIER CANADENSIS 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE SERVICEBERRY	DECIDUOUS	2.5" CAL.	10' – 12' HT.	AS SHOWN	B&B, MULTI-STEM, 3 CANES MIN. 5 CANES MAX.
IF	25	ILEX X ATTENUATA 'FOSTER NO. 2' / FOSTER NO. 2 HOLLY	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
IN	2	ILEX 'NELLIE R. STEVENS' / 'NELLIE R. STEVENS' HOLLY	EVERGREEN	--	6'–8' HT.	AS SHOWN	B&B, FULL CANOPY TO BASE
LN	15	LAGERSTROEMIA INDICA 'NATCHEZ' / CRAPE MYRTLE	DECIDUOUS	2.5" CAL.	10–12' HT	AS SHOWN	B&B, MULTI-STEM, 3 CANES MIN. 5 CANES MAX.
ML	2	MAGNOLIA GRANDIFLORA 'LITTLE GEM' / DWARF SOUTHERN MAGNOLIA	DECIDUOUS	---	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
MG	23	MAGNOLIA VIRGINIANA 'GREEN SHADOW' / GREEN SHADOW MAGNOLIA	EVERGREEN	--	8' MIN.	AS SHOWN	B&B, FULL CANOPY TO BASE
SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
BF	18	BUXUS MICROPHYLLA 'FAULKNER' / FAULKNER BOXWOOD	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
HP	8	HYDRANGEA PANICULATA 'LIMELIGHT' TM / LIMELIGHT HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
HA	20	HYDRANGEA QUERCIFOLIA 'ALICE' / ALICE OAKLEAF HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
IB	106	ILEX CORNUTA 'BURFORDII NANA' / DWARF BURFORD HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
IG	11	ILEX GLABRA 'CHAMZIN' TM / NORDIC HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
IS	17	ITEA VIRGINICA 'SPRICH' TM / LITTLE HENRY VIRGINIA SWEETSPIRE	SEMI–EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINE
LD	3	LOROPETALUM CHINENSE 'DARUMA' / DARUMA DWARF LOROPETALUM	EVERGREEN	24" HT	24"	24"O.C.	FULL CONTAINER
PO	17	PRUNUS LAUROCERASUS 'OTTO LUYKEN' / LUYKENS LAUREL	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
GRASSES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
CR	35	CALAMAGROSTIS BRACHYTRICHA / REED GRASS	DECIDUOUS	24" HT	--	24"O.C.	TRIANGULATE SPACING
PV	11	PANICUM VIRGATUM / SWITCH GRASS	DECIDUOUS	24" HT	--	24"O.C.	TRIANGULATE SPACING
GROUND COVERS	QTY	BOTANICAL / COMMON NAME	TYPE	CONT	SPREAD	SPACING	REMARKS
AL	43	ASTER LAEVIS / SMOOTH BLUE ASTER	PERENNIAL	4" POT	--	24"O.C.	TRIANGULATE SPACING
LM	770	LIRIOPE MUSCARI 'ROYAL PURPLE' / ROYAL PURPLE LIRIOPE	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING
RH	44	RUDBECKIA HIRTA / BLACK–EYED SUSAN	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING

NOTES:
1. SCHEDULES ABOVE DO NOT INCLUDE BUFFER OR TYPICAL FOUNDATION LANDSCAPES
2. ALL DISTURBED LAND NOT OTHERWISE PLANTED SHALL RECEIVE SOD OR SEED PER NOTES ON SHEET 2.0

RAGAN•SMITH
LAND PLANNERS • CIVIL ENGINEERS
LANDSCAPE ARCHITECTS • SURVEYORS
Chattanooga 423-499-9480
Murfreesboro 615-546-9655
Nashville 615-244-8591
ragansmith.com

HEATHER HOUSER GRIMES
REGISTERED
AGRICULTURE & ENVIRONMENT
TENNESSEE NO. 3717
LANDSCAPE ARCHITECT
12-15-2021

KINGSLEY PLACE

FOR

GROSS RESIDENTIAL

SPRING HILL

REV.	DATE:	DESCRIPTION:
-	-	-
-	-	-
3	02/10/2021	PER STAFF COMMENTS
2	12/03/2020	PER STAFF COMMENTS
1	11/16/2020	PER STAFF COMMENTS

JOB NO. 20-194
WK. ORDER 2057
DESIGNED: HHG
DRAWN: PMK
SCALE: 1"=100'
DATE: NOVEMBER 2, 2020

OVERALL LANDSCAPE PLAN

L1.0

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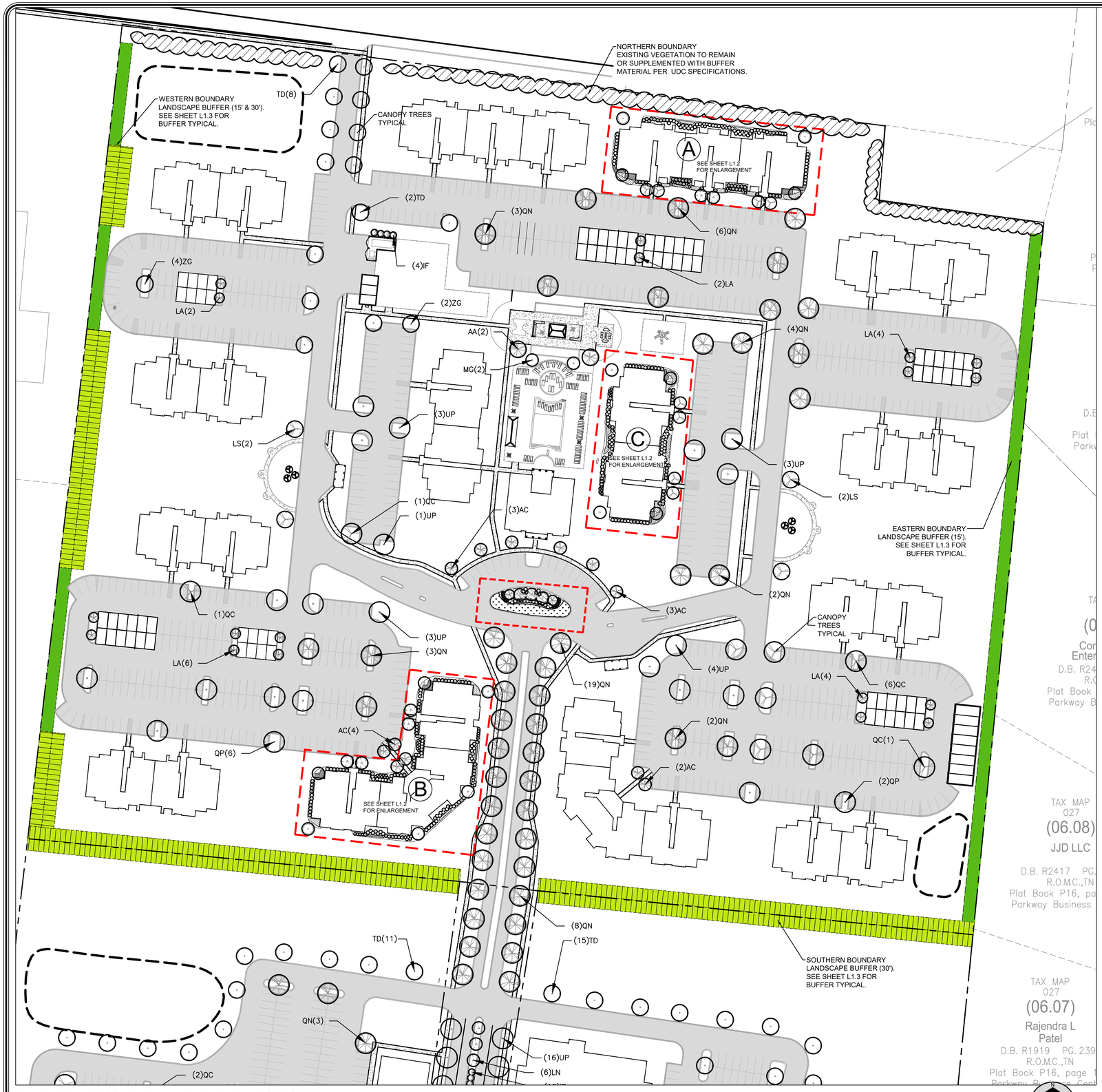
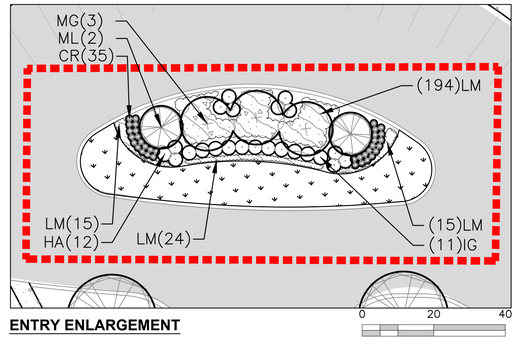


ENLARGED LANDSCAPE PLAN - MULTI FAMILY DISTRICT (R6)

KEY:

- PROPOSED LANDSCAPE BUFFER
- ENHANCED LANDSCAPE BUFFER
- EXISTING VEGETATION TO REMAIN
- TYPICAL FOUNDATION LANDSCAPE



ENTRY ENLARGEMENT

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LANDSCAPE ARCHITECTS • SURVEYORS
Chattanooga 423-499-9480
Nashville 615-244-8591
Murfreesboro 615-546-6655
ragansmith.com

HEATHER HOUSER GRIMES
REGISTERED
AGRICULTURE & ENVIRONMENT
TENNESSEE NO. 1037
12-15-2021
LANDSCAPE ARCHITECT

KINGSLEY PLACE

FOR

GROSS RESIDENTIAL

SPRING HILL

REV. #	DATE:	DESCRIPTION:
-	-	-
-	-	-
-	-	-
3	02/10/2021	PER STAFF COMMENTS
2	12/03/2020	PER STAFF COMMENTS
1	11/16/2020	PER STAFF COMMENTS

JOB NO.	20-194
WK. ORDER	2057
DESIGNED:	HHG
DRAWN:	PMK
SCALE:	1"=60'
DATE:	NOVEMBER 2, 2020

ENLARGED LANDSCAPE PLAN

L1.1

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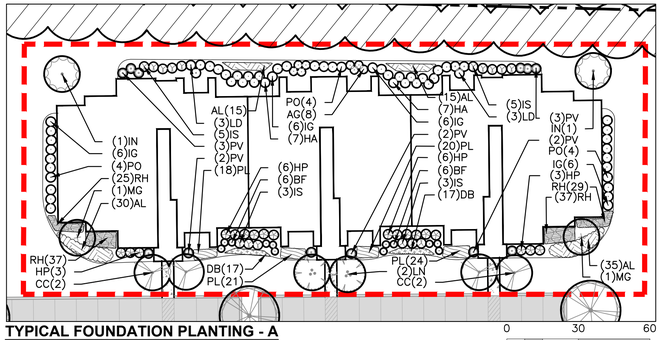
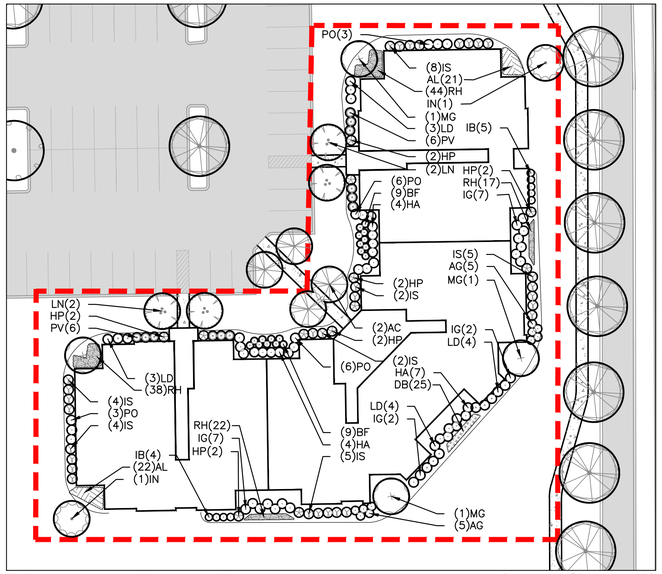
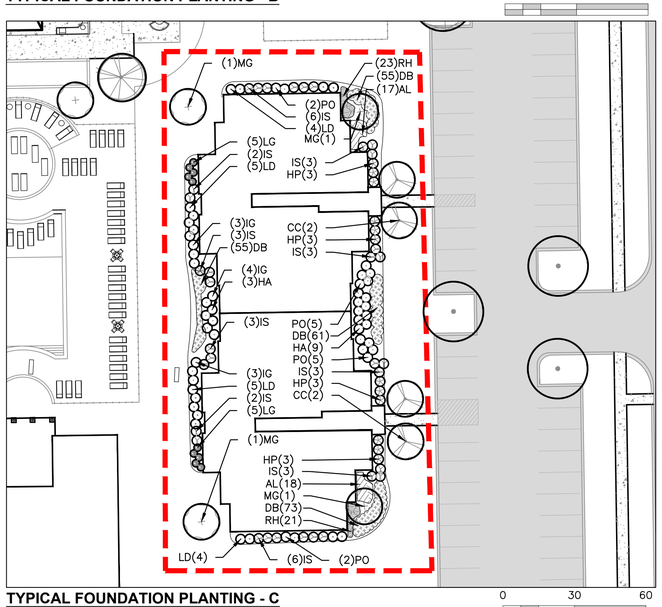


TYPICAL FOUNDATION PLANTING - A



TYPICAL FOUNDATION PLANTING - B



TYPICAL FOUNDATION PLANTING - C

PLANT SCHEDULE TYPICAL FOUNDATION PLANTING A

UNDERSTORY TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
CC	4	CERCIS CANADENSIS 'FOREST PANSY' TM / FOREST PANSY REDBUD	DECIDUOUS	2.5" CAL.	10 – 12' HT.	AS SHOWN	B&B, FULL CANOPY
IN	2	ILEX 'NELLIE R. STEVENS' / 'NELLIE R. STEVENS' HOLLY	EVERGREEN	--	6'-8' HT.	AS SHOWN	B&B, FULL CANOPY TO BASE
LN	2	LAGERSTROEMIA INDICA 'NATCHEZ' / CRAPE MYRTLE	DECIDUOUS	2.5" CAL.	10-12' HT	AS SHOWN	B&B, MULTI-STEM, 3 CANES MIN. 5 CANES MAX.
MG	2	MAGNOLIA VIRGINIANA 'GREEN SHADOW' / GREEN SHADOW MAGNOLIA	EVERGREEN	--	8' MIN.	AS SHOWN	B&B, FULL CANOPY TO BASE
SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
AG	8	ABELIA X GRANDIFLORA / GLOSSY ABELIA	EVERGREEN	30" HT.	30"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
BF	12	BUXUS MICROPHYLLA 'FAULKNER' / FAULKNER BOXWOOD	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
HP	18	HYDRANGEA PANICULATA 'LIMELIGHT' TM / LIMELIGHT HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
HA	14	HYDRANGEA QUERCIFOLIA 'ALICE' / ALICE OAKLEAF HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
IG	24	ILEX GLABRA 'CHAMZIN' TM / NORDIC HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
IS	16	ITEA VIRGINICA 'SPRICH' TM / LITTLE HENRY VIRGINIA SWEETSPIRE	SEMI-EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINE
LD	6	LOROPETALUM CHINENSE 'DARUMA' / DARUMA DWARF LOROPETALUM	EVERGREEN	24" HT	24"	24"O.C.	FULL CONTAINER
PO	12	PRUNUS LAUROCERASUS 'OTTO LUYKEN' / LUYKENS LAUREL	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
GRASSES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
PV	12	PANICUM VIRGATUM / SWITCH GRASS	DECIDUOUS	24" HT	--	24"O.C.	TRIANGULATE SPACING
GROUND COVERS	QTY	BOTANICAL / COMMON NAME	TYPE	CONT	SPREAD	SPACING	REMARKS
AL	95	ASTER LAEVIS / SMOOTH BLUE ASTER	PERENNIAL	4" POT	--	24"O.C.	TRIANGULATE SPACING
DB	34	DIANTHUS X 'BEWITCHED' / BEWITCHED PINK	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING
PL	83	PEROVSKIA X 'LITTLE SPIRE' / RUSSIAN SAGE	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING
RH	128	RUDBECKIA HIRTA / BLACK-EYED SUSAN	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING

NOTES:
1. SCHEDULES ABOVE DO NOT INCLUDE BUFFER LANDSCAPE
2. ALL DISTURBED LAND NOT OTHERWISE PLANTED SHALL RECEIVE SOD OR SEED PER NOTES ON SHEET 2.0

PLANT SCHEDULE TYPICAL FOUNDATION PLANTING B

UNDERSTORY TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
AC	2	AMELANCHIER CANADENSIS 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE SERVICEBERRY	DECIDUOUS	2.5" CAL.	10 – 12' HT.	AS SHOWN	B&B, MULTI-STEM, 3 CANES MIN. 5 CANES MAX.
IN	2	ILEX 'NELLIE R. STEVENS' / 'NELLIE R. STEVENS' HOLLY	EVERGREEN	--	6'-8' HT.	AS SHOWN	B&B, FULL CANOPY TO BASE
LN	4	LAGERSTROEMIA INDICA 'NATCHEZ' / CRAPE MYRTLE	DECIDUOUS	2.5" CAL.	10-12' HT	AS SHOWN	B&B, MULTI-STEM, 3 CANES MIN. 5 CANES MAX.
MG	4	MAGNOLIA VIRGINIANA 'GREEN SHADOW' / GREEN SHADOW MAGNOLIA	EVERGREEN	--	8' MIN.	AS SHOWN	B&B, FULL CANOPY TO BASE
SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
AG	10	ABELIA X GRANDIFLORA / GLOSSY ABELIA	EVERGREEN	30" HT.	30"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
BF	18	BUXUS MICROPHYLLA 'FAULKNER' / FAULKNER BOXWOOD	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
HP	12	HYDRANGEA PANICULATA 'LIMELIGHT' TM / LIMELIGHT HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
HA	15	HYDRANGEA QUERCIFOLIA 'ALICE' / ALICE OAKLEAF HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
IB	9	ILEX CORNUTA 'BURFORDII NANA' / DWARF BURFORD HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
IG	18	ILEX GLABRA 'CHAMZIN' TM / NORDIC HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
IS	30	ITEA VIRGINICA 'SPRICH' TM / LITTLE HENRY VIRGINIA SWEETSPIRE	SEMI-EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINE
LD	14	LOROPETALUM CHINENSE 'DARUMA' / DARUMA DWARF LOROPETALUM	EVERGREEN	24" HT	24"	24"O.C.	FULL CONTAINER
PO	18	PRUNUS LAUROCERASUS 'OTTO LUYKEN' / LUYKENS LAUREL	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
GRASSES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
PV	12	PANICUM VIRGATUM / SWITCH GRASS	DECIDUOUS	24" HT	--	24"O.C.	TRIANGULATE SPACING
GROUND COVERS	QTY	BOTANICAL / COMMON NAME	TYPE	CONT	SPREAD	SPACING	REMARKS
AL	43	ASTER LAEVIS / SMOOTH BLUE ASTER	PERENNIAL	4" POT	--	24"O.C.	TRIANGULATE SPACING
DB	25	DIANTHUS X 'BEWITCHED' / BEWITCHED PINK	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING
RH	121	RUDBECKIA HIRTA / BLACK-EYED SUSAN	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING

NOTES:
1. SCHEDULES ABOVE DO NOT INCLUDE BUFFER LANDSCAPE
2. ALL DISTURBED LAND NOT OTHERWISE PLANTED SHALL RECEIVE SOD OR SEED PER NOTES ON SHEET 2.0

PLANT SCHEDULE {\fArial

UNDERSTORY TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
CC	4	CERCIS CANADENSIS 'FOREST PANSY' TM / FOREST PANSY REDBUD	DECIDUOUS	2.5" CAL.	10 – 12' HT.	AS SHOWN	B&B, FULL CANOPY
MG	4	MAGNOLIA VIRGINIANA 'GREEN SHADOW' / GREEN SHADOW MAGNOLIA	EVERGREEN	--	8' MIN.	AS SHOWN	B&B, FULL CANOPY TO BASE
SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
HP	12	HYDRANGEA PANICULATA 'LIMELIGHT' TM / LIMELIGHT HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
HA	12	HYDRANGEA QUERCIFOLIA 'ALICE' / ALICE OAKLEAF HYDRANGEA	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
IG	10	ILEX GLABRA 'CHAMZIN' TM / NORDIC HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
IS	34	ITEA VIRGINICA 'SPRICH' TM / LITTLE HENRY VIRGINIA SWEETSPIRE	SEMI-EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINE
LG	10	LAGERSTROEMIA INDICA 'GAMAD I' / CHERRY DAZZLE CRAPE MYRTLE	DECIDUOUS	30" HT.	24"	36"O.C.	FULL CONTAINER
LD	18	LOROPETALUM CHINENSE 'DARUMA' / DARUMA DWARF LOROPETALUM	EVERGREEN	24" HT	24"	24"O.C.	FULL CONTAINER
PO	14	PRUNUS LAUROCERASUS 'OTTO LUYKEN' / LUYKENS LAUREL	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
GROUND COVERS	QTY	BOTANICAL / COMMON NAME	TYPE	CONT	SPREAD	SPACING	REMARKS
AL	35	ASTER LAEVIS / SMOOTH BLUE ASTER	PERENNIAL	4" POT	--	24"O.C.	TRIANGULATE SPACING
DB	244	DIANTHUS X 'BEWITCHED' / BEWITCHED PINK	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING
RH	44	RUDBECKIA HIRTA / BLACK-EYED SUSAN	PERENNIAL	4" POT	--	18"O.C.	TRIANGULATE SPACING

NOTES:
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2. ALL DISTURBED LAND NOT OTHERWISE PLANTED SHALL RECEIVE SOD OR SEED PER NOTES ON SHEET 2.0

GENERAL FOUNDATION PLANTING NOTE:
1. FOUNDATION LANDSCAPE TO WRAP AROUND THE BUILDINGS EXCLUDING UNITS THAT BACK UP TO AN EXISTING OR PROPOSED BUFFER. THESE UNITS WILL ONLY RECEIVE FOUNDATION LANDSCAPE ALONG THE FRONTS AND EXPOSED SIDES.

RAGAN SMITH
LAND PLANNERS • CIVIL ENGINEERS
LANDSCAPE ARCHITECTS • SURVEYORS
Chattanooga 423-499-9480
Nashville 615-244-8591
Murfreesboro 615-546-9555
ragansmith.com

HEATHER HOUSER GRIMES
REGISTERED
12-15-2020
AGRICULTURE & ARCHITECTURE
TENNESSEE NO. 102577
LANDSCAPE ARCHITECT

KINGSLEY PLACE
FOR
GROSS RESIDENTIAL
SPRING HILL

REV. #	DATE:	DESCRIPTION:
-	-	-
-	-	-
-	-	-
3	02/10/2021	PER STAFF COMMENTS
2	12/03/2020	PER STAFF COMMENTS
1	11/16/2020	PER STAFF COMMENTS

JOB NO. 20-194
WK. ORDER 2057
DESIGNED: HHG
DRAWN: PMK
SCALE: 1"=30'
DATE: NOVEMBER 2, 2020

TYPICAL FOUNDATION PLANTING PLANS

L1.2

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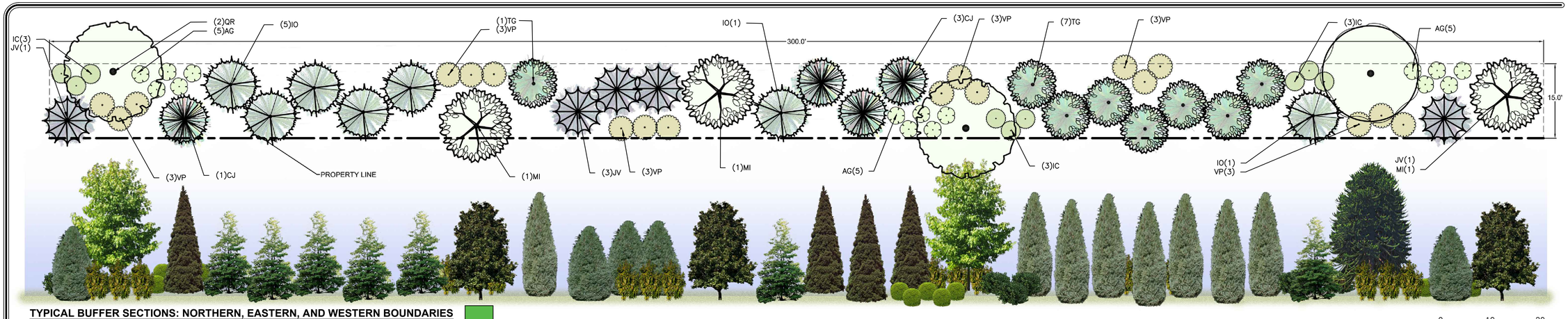
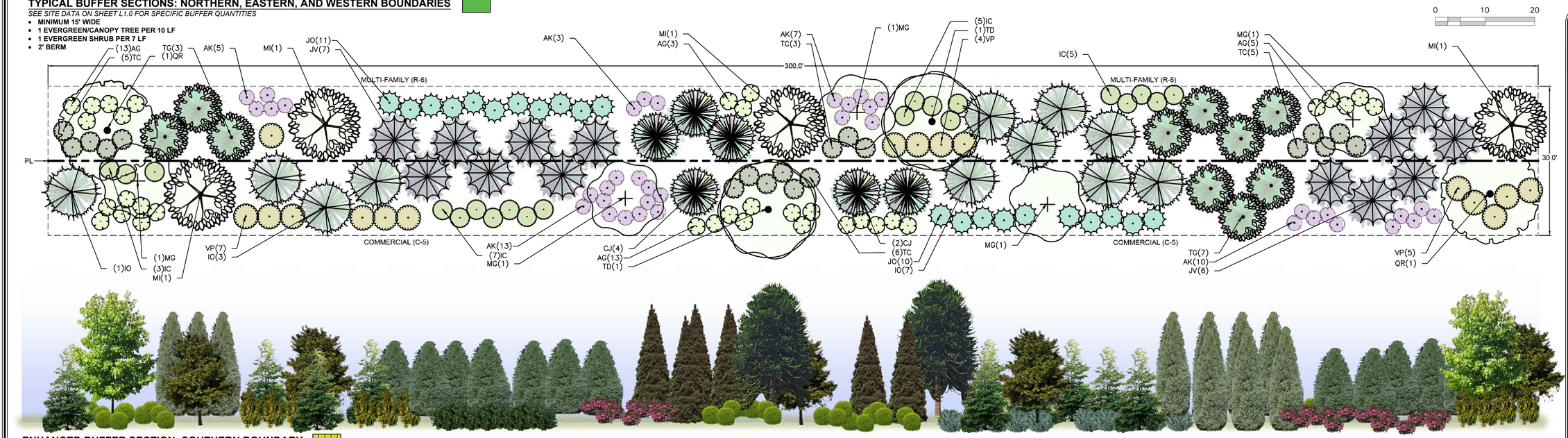
PLOTTED BY PAYTEN.KEITH@RAGANSMITH.COM, 2/9/2021 1:03 PM LAST UPDATED BY PAYTEN.KEITH@RAGANSMITH.COM, 2/9/2021 11:16 AM



TYPICAL BUFFER SECTIONS: NORTHERN, EASTERN, AND WESTERN BOUNDARIES

SEE SITE DATA ON SHEET L1.0 FOR SPECIFIC BUFFER QUANTITIES

- **MINIMUM 15' WIDE**
- **1 EVERGREEN/CANOPY TREE PER 10 LF**
- **1 EVERGREEN SHRUB PER 7 LF**
- **2' BERM**



ENHANCED BUFFER SECTION: SOUTHERN BOUNDARY

SEE SITE DATA ON SHEET L1.0 FOR SPECIFIC BUFFER QUANTITIES

- **MINIMUM 30' WIDE**
- **1 EVERGREEN/CANOPY TREE PER 10 LF + 1 ORNAMENTAL TREE PER 60 LF**
- **1 EVERGREEN SHRUB PER 3 LF**
- **2' BERM**

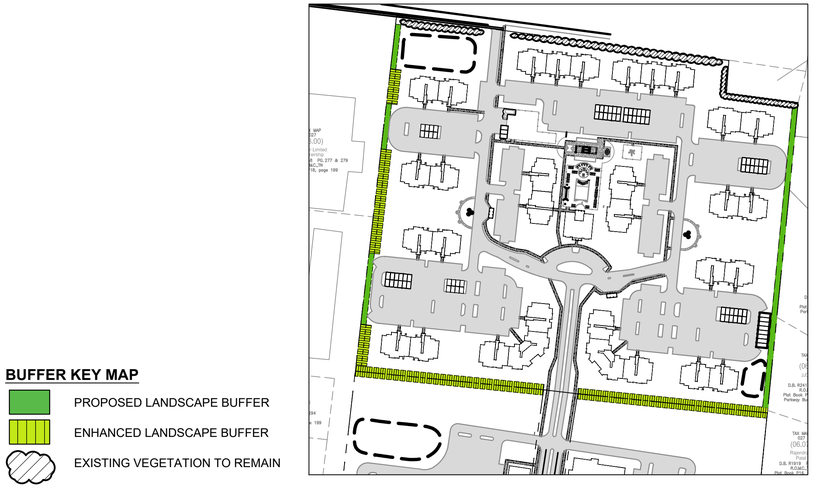
PLANT SCHEDULE TYPICAL BUFFER

BUFFER TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
CJ	4	CRYPTOMERIA JAPONICA 'RADICANS' / RADICANS JAPANESE CEDAR	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
IO	7	ILEX OPACA / AMERICAN HOLLY	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
JV	5	JUNIPERUS VIRGINIANA 'BURKII' / BURK RED CEDAR	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
MI	3	MAGNOLIA GRANDIFLORA 'LITTLE GEM' / DWARF SOUTHERN MAGNOLIA	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
QR	2	QUERCUS RUBRA / RED OAK	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
TD	1	TAXODIUM DISTICHUM / BALD CYPRESS	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
TG	8	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
BUFFER SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
AG	15	ABELIA X GRANDIFLORA / GLOSSY ABELIA	EVERGREEN	30" HT.	30"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
IC	9	ILEX CORNUTA 'BURFORDII' / BURFORD HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
VP	18	VIBURNUM X PRAGENSE / PRAGUE VIBURNUM	EVERGREEN	30" HT.	24"	48"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION

PLANT SCHEDULE ENHANCED BUFFER

BUFFER TREES	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE	HEIGHT	SPACING	REMARKS
CJ	6	CRYPTOMERIA JAPONICA 'RADICANS' / RADICANS JAPANESE CEDAR	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
IO	11	ILEX OPACA / AMERICAN HOLLY	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
JV	13	JUNIPERUS VIRGINIANA 'BURKII' / BURK RED CEDAR	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
MI	4	MAGNOLIA GRANDIFLORA 'LITTLE GEM' / DWARF SOUTHERN MAGNOLIA	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
MG	5	MAGNOLIA VIRGINIANA 'GREEN SHADOW' / GREEN SHADOW MAGNOLIA	EVERGREEN	--	8' MIN.	AS SHOWN	B&B, FULL CANOPY TO BASE
QR	2	QUERCUS RUBRA / RED OAK	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
TD	2	TAXODIUM DISTICHUM / BALD CYPRESS	DECIDUOUS	3" CAL.	14 – 16' HT.	AS SHOWN	B&B, 4' MIN. CLEAR TRUNK AT TIME OF INSTALLATION, STRONG CENTRAL LEADER
TG	10	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	EVERGREEN	--	8' HT. MIN.	AS SHOWN	B&B, FULL TO BASE
BUFFER SHRUBS	QTY	BOTANICAL / COMMON NAME	TYPE	SIZE/HT	SPREAD	SPACING	REMARKS
AG	34	ABELIA X GRANDIFLORA / GLOSSY ABELIA	EVERGREEN	30" HT.	30"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
AK	38	AZALEA KURUME HYBRID 'CORAL BELLS' / KURUME AZALEA	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER
IC	20	ILEX CORNUTA 'BURFORDII' / BURFORD HOLLY	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
JO	21	JUNIPERUS VIRGINIANA 'GREY OWL' / GREY OWL JUNIPER	EVERGREEN	30" HT.	48"	60" O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
TC	19	TAXUS CUSPIDATA 'DENSA' / DENSE JAPANESE YEW	EVERGREEN	30" HT.	24"	36"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION
VP	16	VIBURNUM X PRAGENSE / PRAGUE VIBURNUM	EVERGREEN	30" HT.	24"	48"O.C.	FULL CONTAINER, 30" HT AT TIME OF INSTALLATION

BUFFER KEY MAP



PROPOSED LANDSCAPE BUFFER

ENHANCED LANDSCAPE BUFFER

EXISTING VEGETATION TO REMAIN

RAGAN•SMITH
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Chattanooga 423-490-9400
Nashville 615-244-8591
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HEATHER HOUSER GRIMES
REGISTERED
AGRICULTURE & ENVIRONMENT
TENNESSEE NO. 1017
LANDSCAPE ARCHITECT
12-15-20

KINGSLEY PLACE

FOR

GROSS RESIDENTIAL

SPRING HILL

-	-	-	-	-	-
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-	-	-	-	-	-
-	-	-	3	02/10/2021	PER STAFF COMMENTS
-	-	-	2	12/03/2020	PER STAFF COMMENTS
-	-	-	1	11/16/2020	PER STAFF COMMENTS
REV.	BY			DATE:	DESCRIPTION:

JOB NO. 20-194 | WK. ORDER 2057
DESIGNED: HHG
DRAWN: PMK
SCALE: 1"=10'
DATE: NOVEMBER 2, 2020

LANDSCAPE BUFFERS

L1.3

G:\20194-2057\1-CIVIL ENGINEERING\3-PLAN SHEETS\2057-LAND.DWG
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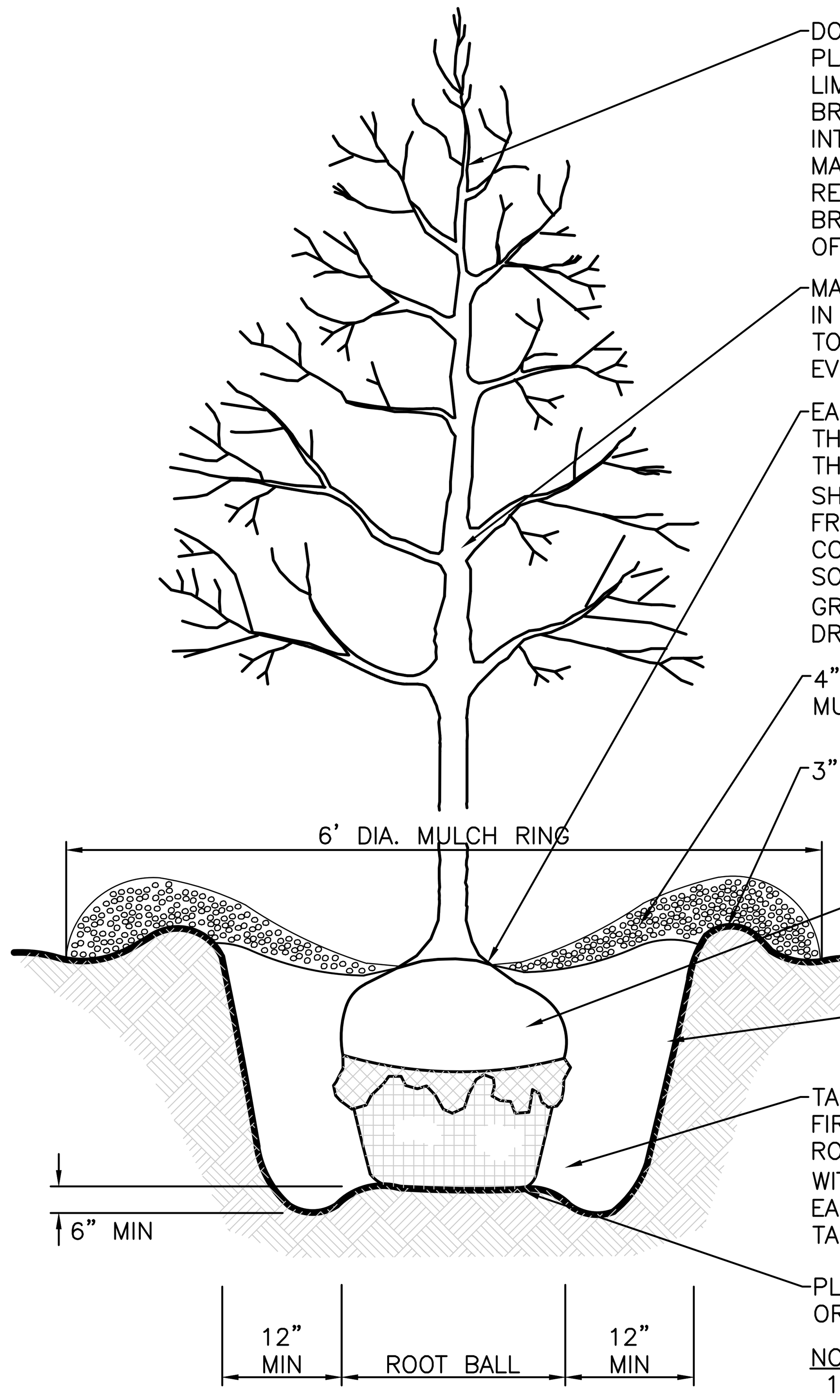


NOTES:
1. DO NOT STAKE TREES UNLESS APPROVED BY THE LANDSCAPE ARCHITECT. IF STAKED, REMOVE AFTER ONE GROWING SEASON.
2. DO NOT WRAP TREE TRUNKS UNLESS APPROVED BY THE LANDSCAPE ARCHITECT. REMOVE WRAP AFTER PLANTING.
3. NON-BIODEGRADABLE BURLAP TO BE REMOVED OR ROLLED UNDER ROOT BALL AFTER PLANT IS PLACED IN HOLE.

TREE PLANTING

NOT TO SCALE

PLANTING NOTES:

1. ANY SERIES OF TREES TO BE PLACED IN A PARTICULAR ARRANGEMENT WILL BE FIELD CHECKED FOR ACCURACY. ANY PLANTS MISARRANGED WILL BE RELOCATED.
2. SOIL USED IN BACKFILLING PLANTING PITS SHALL BE TOPSOIL AND MIXED WITH 25% PEAT BY VOLUME. EXCEPT FOR ERICACEOUS PLANTS, VERY ACID OR SOUR SOIL (SOIL HAVING A pH less than 6) SHALL BE MIXED WITH SUFFICIENT LIME TO PRODUCE A SLIGHTLY ACID REACTION (A pH of 6.0 to 6.5). ADD 10-10-10 COMMERCIAL FERTILIZER AT THE RATE OF 2 POUNDS PER CUBIC YARD. MIX BOTH FERTILIZER AND PEAT THOROUGHLY BY HAND OR ROTARY TILLER.
3. SOIL USED IN BACKFILLING ERICACEOUS PLANTS SHALL BE TOPSOIL MIXED WITH 50% PEAT BY VOLUME. ADD 5-10-5 COMMERCIAL FERTILIZER AT THE RATE OF 5 POUNDS PER CUBIC YARD. MIX BOTH FERTILIZER AND PEAT THOROUGHLY BY HAND OR ROTARY TILLER.
4. UPON SECURING PLANT MATERIAL AND BEFORE INSTALLATION, THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE FOR A PRE-INSTALLATION INSPECTION TO VERIFY ALL PLANT MATERIAL MEETS SPECIFICATION. MATCH TREES OF SAME SPECIES IN GROWTH CHARACTER AND UNIFORMITY.
5. APPLY HERBICIDE (TREFLAN OR EQUIVALENT) TO ALL PLANT BEDS PRIOR TO PLANTING FOR NOXIOUS WEED CONTROL AT A RATE OF 2 POUNDS PER 1,000 SQUARE FEET.
6. CONTRACTOR SHALL SUBMIT A 10 OUNCE SAMPLE OF THE TOPSOIL PROPOSED TO A TESTING LABORATORY FOR ANALYSIS. SUBMIT TEST RESULTS WITH RECOMMENDATIONS FOR SUITABILITY TO THE OWNER'S REPRESENTATIVE FOR APPROVAL.
7. PLANTS SHALL BE ORIENTED FOR BEST APPEARANCE AND VERTICAL.ALL NON-BIODEGRADABLE ROOT CONTAINERS SHALL BE REMOVED.
8. SELECTIVELY TRIM TREE BRANCHES BY 25%, MAINTAINING NATURAL SHAPE. PRUNE ALL DEAD AND BROKEN BRANCHES IN TREES AND SHRUBS. REMOVE TAGS, TWINE OR OTHER NON-BIODEGRADABLE MATERIAL.
9. SCARIFY SUBSOIL IN PLANTING BEDS TO A DEPTH OF 3 INCHES. ALL PLANTING BEDS SHALL RECEIVE A MINIMUM OF 6 INCHES OF TOPSOIL.
10. CONTRACTOR SHALL PROVIDE SMOOTH, NEATLY TRENCHED (3 INCH DEEP) BED EDGES.
11. ALL PLANTING BEDS TO HAVE A MINIMUM 4 INCH DEEP PINE BARK MULCH, PINE STRAW MULCH OR OTHER MULCH AS SPECIFIED.
12. DIMENSIONS FOR TRUNK CALIPER, HEIGHTS, AND SPREAD SPECIFIED ON THE MATERIAL SCHEDULE ARE A GENERAL GUIDE FOR THE MINIMUM REQUIRED SIZE OF EACH PLANT. QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH A.N.S.I. Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK" (CURRENT EDITION) AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
13. TREES OF THE SAME SPECIES SHALL HAVE THE FOLLOWING CHARACTERISTICS: MATCHED BY BRANCHING HEIGHT, CALIPER, HEIGHT OF TREE, SPREAD OF BRANCHES AND BRANCHING STRUCTURE, AND OVERALL CANOPY SHAPE.
14. THE QUANTITIES INDICATED ON THE MATERIAL SCHEDULE ARE PROVIDED FOR THE BENEFIT OF THE CONTRACTOR, BUT SHOULD NOT BE ASSUMED TO ALWAYS BE CORRECT. IN THE EVENT OF A DISCREPANCY, THE PLANTING PLAN (PLANT SYMBOLS) WILL TAKE PRECEDENCE OVER THE MATERIAL SCHEDULE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS/HER OWN QUANTITY CALCULATIONS AND THE LIABILITY PERTAINING TO THOSE QUANTITIES AND ANY RELATED CONTRACT DOCUMENTS AND/OR PRICE QUOTATIONS.
15. CONTRACTOR TO WARRANTY ALL MATERIAL FOR ONE YEAR AFTER DATE OF FINAL ACCEPTANCE.

IRRIGATION NOTES:

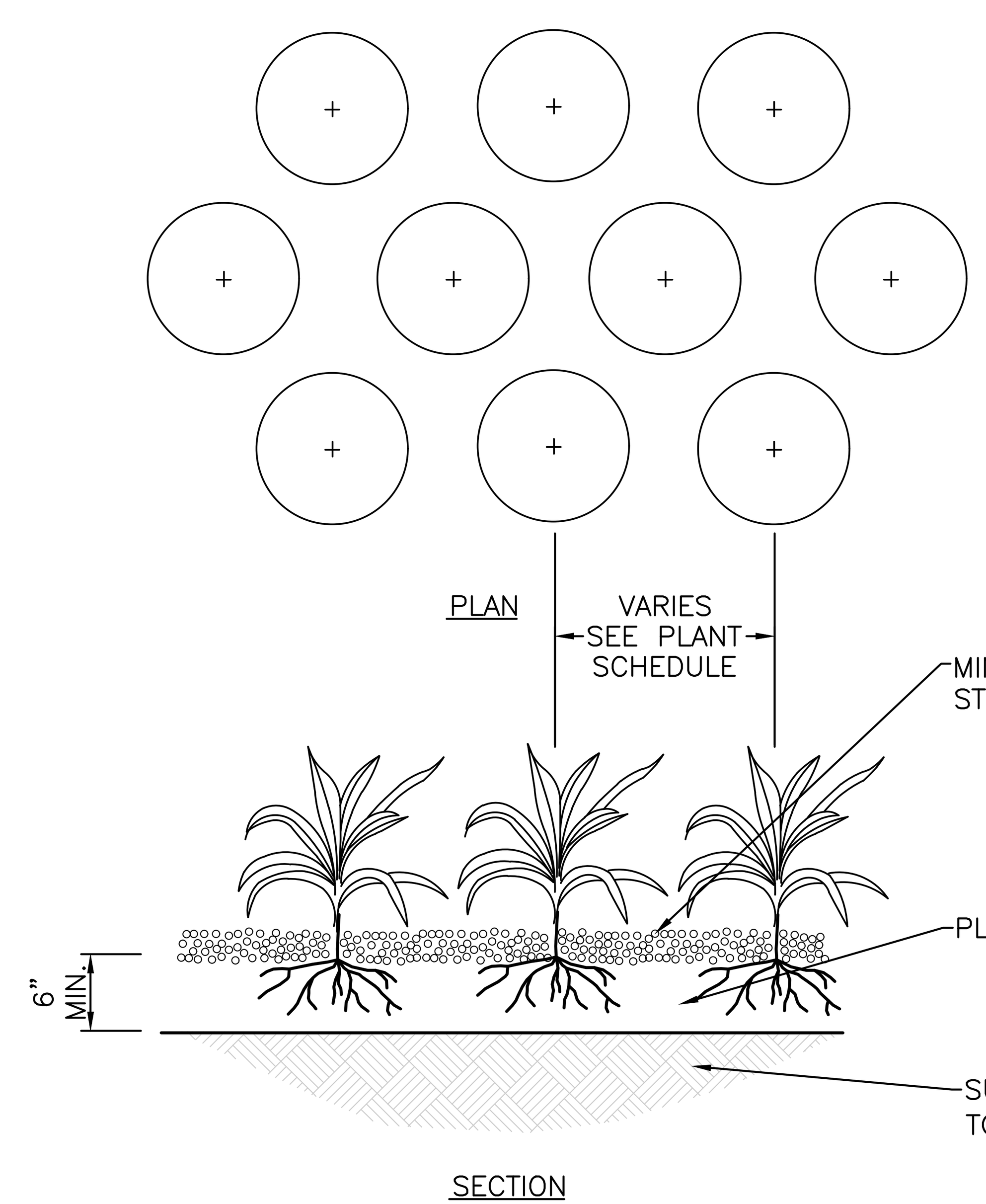
1. ALL PROPOSED PLANTED AREAS ARE TO BE IRRIGATED UTILIZING FULL COVERAGE DESIGN.
2. SUBMIT PROPOSED IRRIGATION PLAN TO THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE FOR GENERAL REVIEW AND ACCEPTANCE.
3. PROPOSED IRRIGATION SYSTEM SHOULD UTILIZE ANY RECLAIMED/REUSED/GRAY WATER PUBLIC SYSTEMS IF ACCESSIBLE.
4. SHOULD RECLAIMED/REUSED/GRAY WATER NOT BE AVAILABLE, BELOW GRADE CISTERNS OR ON-SITE RETENTION PONDS SHOULD BE CONSIDERED FOR AN IRRIGATION WATER SOURCE. USE OF PUBLIC POTABLE WATER SOURCE SHOULD BE A LAST CASE RESORT AND DESIGNED AS A TEMPORARY IRRIGATION SYSTEM UTILIZED TO ESTABLISHED PROPOSED PLANT MATERIAL THROUGH ITS FIRST TWO YEARS OF GROWTH.
5. PROPOSED IRRIGATION DESIGN SHOULD UTILIZE WATER EFFICIENT DESIGN TECHNIQUES SUCH AS THE USE OF DRIP IRRIGATION, MOISTURE SENSORS AND RAIN SENSORS TO MAXIMIZE WATER EFFICIENCY.
6. IRRIGATION CONTRACTOR IS RESPONSIBLE FOR INSTALLING AN IRRIGATION SYSTEM THAT FUNCTIONS PROPERLY PER THE INTENT OF THE DESIGN. SHOULD THE IRRIGATION CONTRACTOR SEE A FLAW IN THE PROPOSED DESIGN AND/OR FINDS A PROBLEM IN THE FIELD THAT WILL NEGATIVELY AFFECT THE PERFORMANCE OF THE PROPOSED IRRIGATION SYSTEM, THE SAID CONTRACTOR IS RESPONSIBLE FOR INFORMING THE LANDSCAPE ARCHITECT/OWNER'S REPRESENTATIVE PRIOR TO INSTALLING OR ORDERING MATERIAL FOR THE PROPOSED IRRIGATION SYSTEM.
7. IRRIGATION PLANS TO BE SUBMITTED AS PART OF THE SUBMITTAL, PRIOR TO ISSUANCE OF PERMITS.

SODDING NOTES:

1. AREAS INDICATED FOR SOD SHALL BE TURF-TYPE TALL FESCUE, A BLEND OF 3-5 VARIETIES (ADDRESSING BOTH COLD HARDINESS AND DROUGHT TOLERANCE) FROM THE TOP 10% SELECTIONS IN THE NATIONAL TURFGRASS EVALUATION PROGRAM (N.T.E.P) TALL FESCUE TRIALS, MOST RECENT EVALUATION YEAR (WWW.NTEP.ORG). MINIMUM AGE SHALL BE 18 MONTHS, WITH ROOT DEVELOPMENT THAT WILL SUPPORT ITS OWN WEIGHT WITHOUT TEARING WHEN SUSPENDED VERTICALLY BY HOLDING THE UPPER TWO CORNERS.
2. SUBMIT SOD CERTIFICATION FOR GRASS SPECIES AND LOCATION OF SOD SOURCE. INCLUDE CERTIFICATION THAT SOD IS FREE OF DISEASE, NEMATODES, UNDESIRABLE INSECTS, AND QUARANTINE RESTRICTIONS.
3. SOD SHALL BE DELIVERED ON PALLETS. STORE SOD AT A LOCATION PROTECTED FROM DAMAGING WINDS.
4. APPLY 6-12-12 COMMERCIAL TYPE FERTILIZER, WITH 50% OF THE ELEMENT DERIVED FROM ORGANIC SOURCES AT A RATE RECOMMENDED BY THE MANUFACTURER. APPLY AFTER SMOOTH RAKING OF TOPSOIL AND NO MORE THAN 48 HOURS BEFORE LAYING SOD. MIX THOROUGHLY IN THE UPPER 2 INCHES OF TOPSOIL AND LIGHTLY WATER TO AID BREAKDOWN.
5. LIGHTLY MOISTEN AREA TO RECEIVE SOD IMMEDIATELY PRIOR TO LAYING SOD.
6. LAY SOD TIGHTLY WITH NO OPEN JOINTS VISIBLE AND NOT OVERLAPPING. STAGGER END JOINTS A MINIMUM OF 12 INCHES AND DO NOT STRETCH SOD PIECES.
7. ON SLOPES 6 INCHES PER FOOT AND STEEPER, LAY SOD PERPENDICULAR TO SLOPE AND SECURE EVERY ROW WITH WOODEN PEGS AT AN MAXIMUM 2 FEET O.C. DRIVE PEGS FLUSH WITH SOD PORTION OF SOD.
8. PRIOR TO PLACING SOD ON SLOPES OF 8 INCHES PER FOOT AND STEEPER, PLACE JUTE EROSION CONTROL MESH OVER TOPSOIL. SECURELY ANCHOR IN PLACE WITH PEGS SUNK FIRMLY INTO THE GROUND. CONTRACTOR SHALL SUBMIT 12" X 12" SAMPLES OF JUTE MESH FOR REVIEW TO LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
9. IMMEDIATELY AFTER INSTALLATION, WATER SODDED AREAS TO A DEPTH OF 4 INCHES.
10. AFTER SOD AND SOIL HAVE DRIED, ROLL SODDED AREAS TO ENSURE A GOOD BOND BETWEEN SOIL AND SOD. ROLLER SHALL NOT EXCEED 150 POUNDS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING (MOWING, TRIMMING, WATERING) THE SOD UNTIL THE INSTALLATION IS INSPECTED AND ACCEPTED BY THE OWNER'S REPRESENTATIVE.
12. THE CONTRACTOR SHALL REPLACE SOD AREAS THAT SHOW DETERIORATION FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE INSTALLATION. REPLACE DETERIORATED MATERIAL WITH SOD OF EQUAL QUALITY ORIGINALLY SPECIFIED.

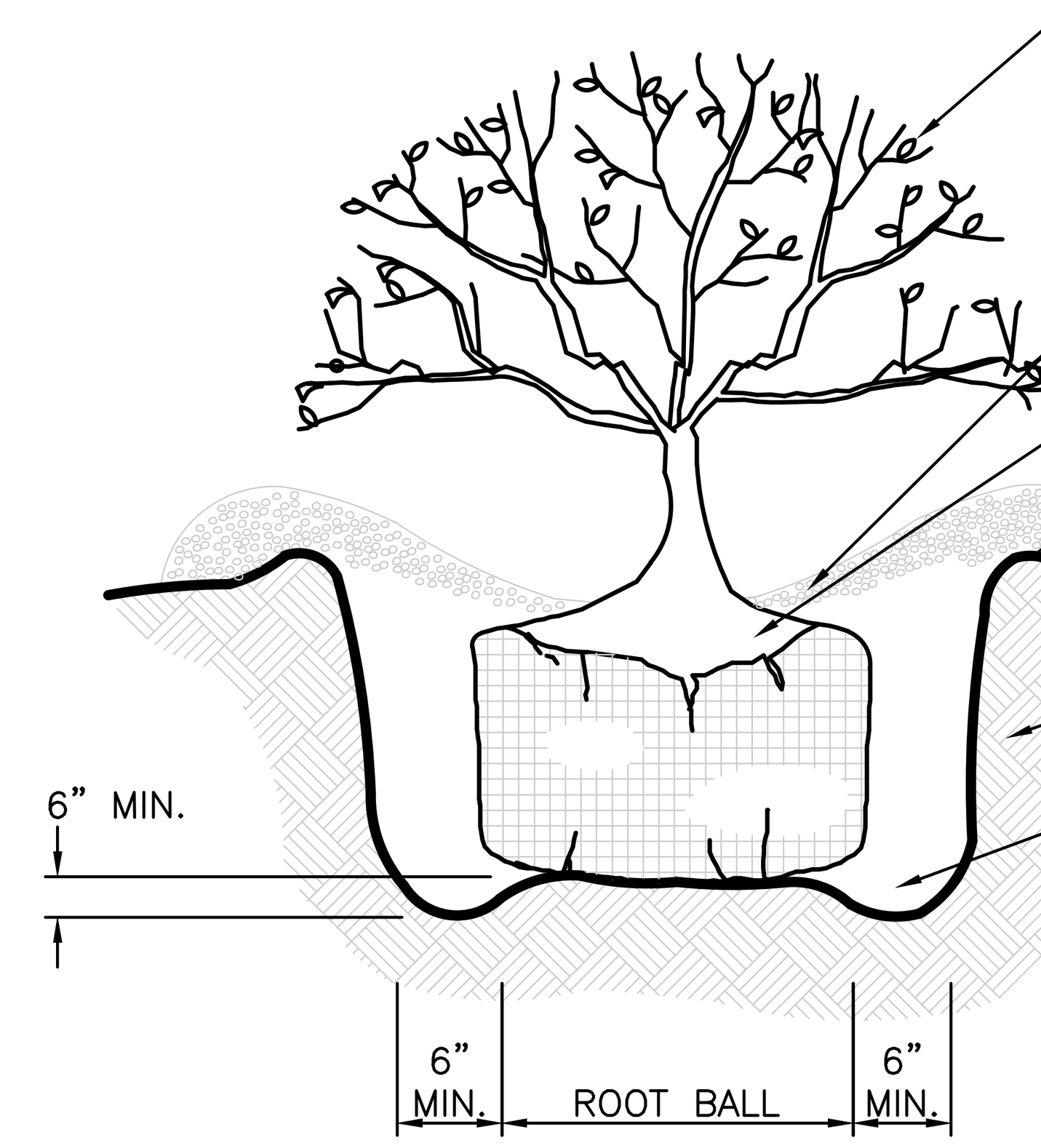
SEEDING NOTES:

1. SEED ALL DISTURBED AREAS WITH TURF-TYPE TALL FESCUE. THE SEED SHALL BE A BLEND OF 3-5 VARIETIES (ADDRESSING BOTH COLD HARDINESS AND DROUGHT TOLERANCE) FROM THE TOP 10% SELECTIONS IN THE NATIONAL TURFGRASS EVALUATION PROGRAM (N.T.E.P) TALL FESCUE TRIALS, MOST RECENT EVALUATION YEAR (WWW.NTEP.ORG). THE SEED SHALL BE CROP AND WEED FREE. SEED AT THE RATE OF 5 POUNDS PER 1,000 S.F. ALL SEED TO BE 98% PURE WITH 85% GERMINATION AND CONFORM TO ALL STATE REQUIREMENTS FOR GRASS SEED. THE FERTILIZER TO BE 6-12-12 COMMERCIAL TYPE WITH 50% OF ITS ELEMENTS DERIVED FROM ORGANIC SOURCES.
2. PLACE STRAW MULCH ON SEEDED AREAS. STRAW TO BE OATS OR WHEAT STRAW, FREE FROM WEEDS, FOREIGN MATTER DETRIMENTAL TO PLANT LIFE, AND DRY. HAY OR CHOPPED CORNSTALKS ARE NOT ACCEPTABLE.
3. THE CONTRACTOR SHALL VERIFY THAT THE PREPARED SOIL BASE IS READY TO RECEIVE WORK. CULTIVATE THE TOPSOIL TO A DEPTH OF 4 INCHES WITH A MECHANICAL TILLER AND SUBSEQUENTLY RAKE UNTIL SMOOTH. REMOVE FOREIGN MATERIALS COLLECTED DURING CULTIVATION AND RAKING OPERATIONS.
4. APPLY FERTILIZER ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. LIMESTONE MAY BE APPLIED WITH THE FERTILIZER. APPLY FERTILIZER AFTER SMOOTH RAKING AND PRIOR TO ROLLER COMPACTION AND MIX THOROUGHLY IN THE UPPER 2 INCHES OF TOPSOIL.
5. APPLY SEED EVENLY IN TWO INTERSECTING DIRECTIONS AND RAKE IN LIGHTLY. WATER TOPSOIL LIGHTLY PRIOR TO APPLYING SEED. DO NOT SEED AREA IN EXCESS OF THAT WHICH CAN BE MULCHED ON THE SAME DAY.
6. ROLL SEEDED AREA WITH ROLLER NOT EXCEEDING 112 POUNDS.
7. IMMEDIATELY FOLLOWING SEEDING AND COMPACTING, APPLY STRAW MULCH AT THE RATE OF ONE AND ONE HALF BALES PER 1,000 SQUARE FEET. IMMEDIATELY AFTER MULCHING, APPLY WATER WITH A FINE SPRAY AND SATURATE THE GROUND TO A DEPTH OF 4 INCHES.
8. CONTRACTOR IS RESPONSIBLE FOR WATERING SEEDED AREAS TO PREVENT GRASS AND SOIL FROM DRYING OUT UNTIL THE INSTALLATION IS INSPECTED AND ACCEPTED BY THE OWNER'S REPRESENTATIVE.
9. CONTRACTOR IS RESPONSIBLE FOR RESEEDING BARE SPOTS FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF INSTALLATION.



GROUNDCOVER PLANTING

NOT TO SCALE



NOTES:
1. WHERE PLANTS ARE SHOWN IN BEDS, MULCH SHALL COVER ENTIRE BED AS DENOTED ON THE PLANTS.
2. CONTAINER GROWN PLANT MATERIAL MAY BE SUBSTITUTED FOR BURLAP MATERIAL

SHRUB PLANTING

NOT TO SCALE

RAGAN·SMITH
LAND PLANNERS • CIVIL ENGINEERS
LANDSCAPE ARCHITECTS • SURVEYORS
Chattanooga 423-490-9400
Nashville 615-244-8591
Murfreesboro 615-546-6050
ragansmith.com

HEATHER HOUSER GRIMES
REGISTERED
AGRICULTURE
COMMERCE
TENNESSEE NO. 1079
LANDSCAPE ARCHITECT
2-10-2021

KINGSLEY PLACE

FOR

GROSS RESIDENTIAL

SPRING HILL

REV. #	DATE:	DESCRIPTION:
-	-	-
-	-	-
-	-	-
3	02/10/2021	PER STAFF COMMENTS
2	12/03/2020	PER STAFF COMMENTS
1	11/16/2020	PER STAFF COMMENTS

JOB NO.	20-194
WK. ORDER	2057
DESIGNED:	HHG
DRAWN:	PMK
SCALE:	NO SCALE
DATE:	NOVEMBER 2, 2020

LANDSCAPE NOTES AND DETAILS

L2.0

G:\20194-2057\1-CIVIL ENGINEERING\3-PLAN SHEETS\2057 LAND.DWG
PLOTTED BY PAYTEN KEFFABER ON: 2/9/2021 1:03 PM LAST UPDATED BY PKEFFABER ON: 2/9/2021 11:16 AM

KINGSLEY PLACE

PROPOSED REZONING

INDUSTRIAL 1 TO R-6 & C-4 PLANNED DEVELOPMENT

DECEMBER 3, 2020

REVISED: FEBRUARY 5, 2021

EXHIBIT B1 - REVISED PLANS

KINGSLEY PLACE

DEVELOPER
PORT ROYAL EAST 124 KEDRON PARKWAY, TENNESSEE 37174

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SITE LOCATION
OBJECTIVE

THE SITE 5-11

EXISTING ZONING
PROPOSED ZONING & USES
EXISTING CONDIIONS SURVEY
PRELIMINARY SITE PLAN
ZONING USE COMPLIANCE PLAN
PUBLIC BENEFIT
ROAD IMPROVEMENTS
PHASING PLAN

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CRITERIA EXCEPTIONS
MASTER PLAN
RESIDENTIAL AREA AMENITIES
BOULEVARD CONCEPT
BUFFER & BOULEVARD
SITE SIGNAGE

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RESIDENTIAL
TYPICAL RESIDENTIAL ELEVATION
RETAIL
OFFICE
MUNICIPAL

PAUL VARNEY
PORT ROYAL EAST

GROSS RESIDENTIAL

WES ENGINEERS & SURVEYORS

RAGAN•SMITH

KINGSLEY PLACE

INTRODUCTION
SITE LOCATION



VICINITY MAP

KINGSLEY PLACE

INTRODUCTION

Submitted for your consideration is a proposed rezoning and planned development project. The subject property consists of approximately 43.84 acres fronting on Old Port Royal Road. These parcels are currently zoned I-1 and the applicants request this rezoning to allow for both residential and commercial uses. An approximate area of 27.08 acres is requested to be rezoned to R-6 with the remaining 16.76 acres rezoned to C-4. The applicants believe this mix of uses is consistent with the surrounding land uses, promotes good planning principles, and is consistent with the goals of the Spring Hill Rising Comprehensive Plan and compliant with 2018 Unified Development Code.

PLANNING OBJECTIVE

The Applicants' goal is to provide a mixed use commerce and living center with connections to existing commercial, retail, and job centers.

The Planned Development will also restrict certain uses under the C-4 zoning so that the development can maintain a character consistent with the surrounding areas the Comprehensive Plan. The C-4 zoning will allow retail, office and municipal uses to enhance the Port Royal area of Spring Hill.

The residential portion of the planned development will provide housing for the nearby job center employees as well as helping to support the local retail economy. The residential portion of the development is an ideal transition between the commercial, industrial and nearby detached residential areas.

As a Planned Development, the character of the development will be controlled by design guidelines that define the building style, signage, and landscape requirements. Additionally, providing opportunities for small businesses, providing space for new municipal resources, and provide housing options near retail and commercial centers were principles addressed in the Comprehensive Plan.

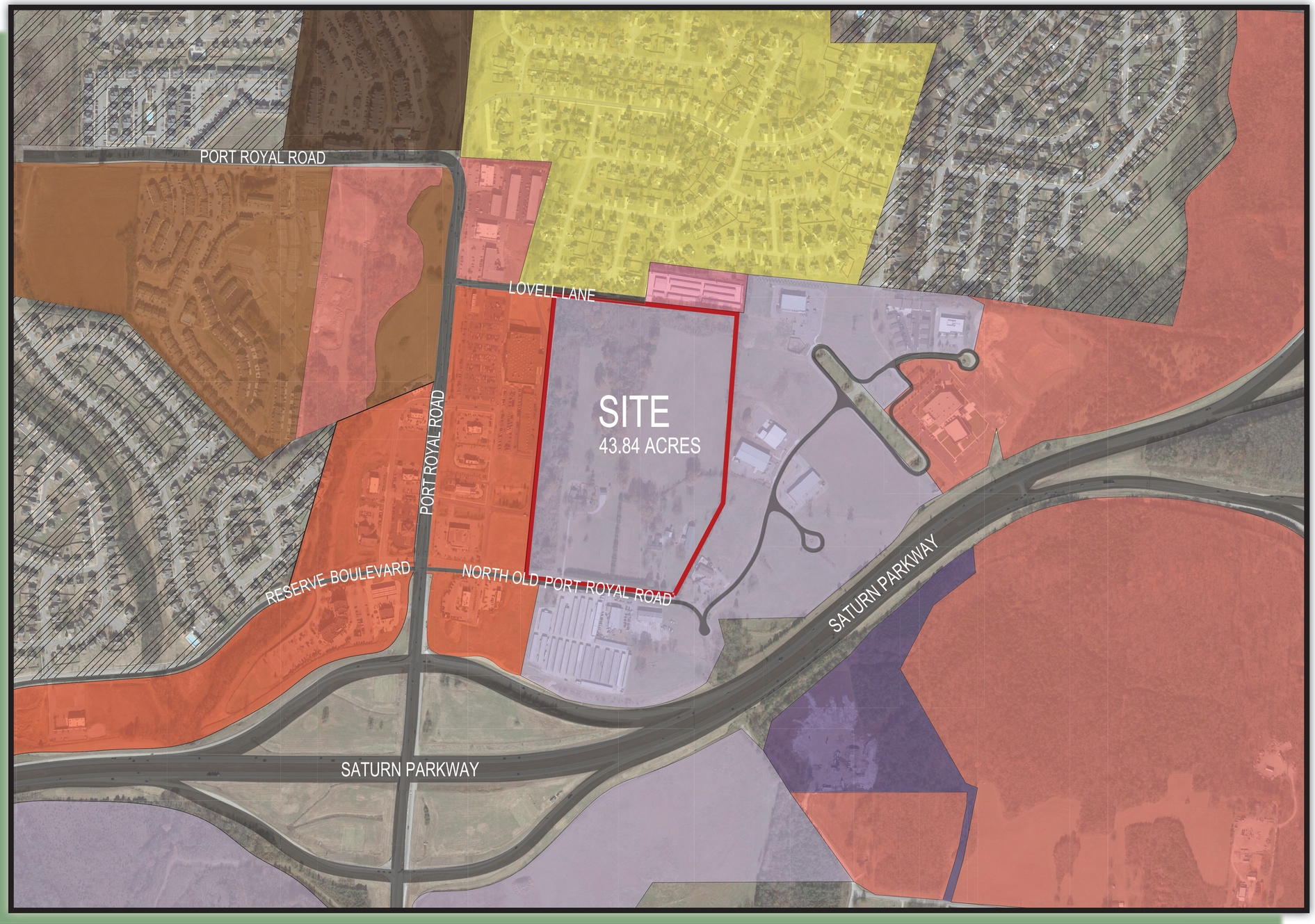
With these objectives, this development will provide the Port Royal area a unique and quality development that is expected by its citizens.

KINGSLEY PLACE

THE SITE
EXISTING ZONING

- R-2 SINGLE FAMILY
- R-2 PUD
- R-6 MULTI FAMILY
- R-7 HIGH DENSITY
- I-1 LIGHT INDUSTRIAL
- I-2 GEN. INDUSTRIAL
- C-1 NEIGHBORHOOD
- C-3 CORRIDOR
- C-4 GENERAL

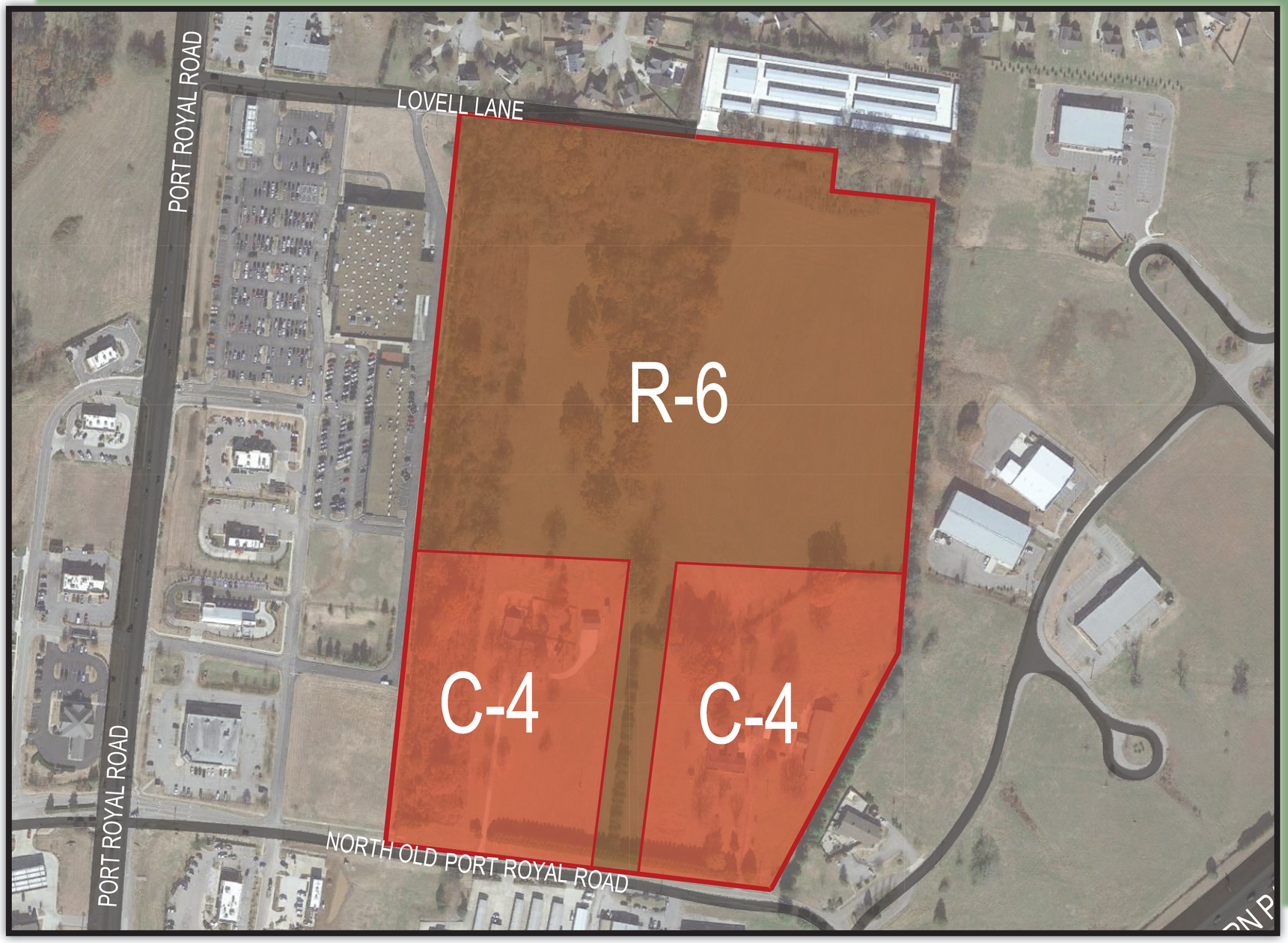
The Port Royal road area is comprised of mostly C-4 zoning along the main thoroughfare, commercial and light industrial at Old Port Royal, higher density residential along collector streets, and detached residential along local streets.

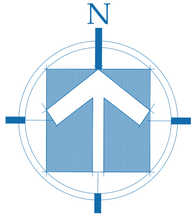


KINGSLEY PLACE

THE SITE
PROPOSED ZONING & USES

The Applicants are proposing to rezone the north portion of the property to R-6 which would allow up to 18 dwelling units per acre and C-4 which would provide retail, office and municipal use opportunities along the frontage of North Old Port Royal Road.





KINGSLEY PLACE

THE SITE
EXISTING CONDITIONS SURVEY

PLANNED DEVELOPMENT CONCEPT PLAN - EXISTING CONDITIONS



Legend

- ○ CIP — Iron Rod Found
- ● IPS — Iron Rod Set
- ● I.P.F. — Iron Pipe Found
- ✱ AXLE — Axle Found
- ○ ECM — Fence Post
- □ O.P.K.F. — Concrete Monument Existing
- O.P.K.S. — PK Nail Found
- ✱ R.R.S.F. — PK Nail Set
- ✱ R.R.S.S. — Railroad Spike Found
- Railroad Spike Set
- Bench Mark
- Stake Found
- Fire Hydrant
- Water Meter
- Water Valve
- Water Reducer
- Clean Out
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Catch Basin
- Curb Inlet
- Storm Pipe
- Cable Manhole
- Electric Manhole
- Telephone Manhole
- Water Manhole
- Electric Meter
- Cable Riser
- Electric Riser
- Telephone Riser
- Telephone Booth
- Gas Meter
- Gas Valve
- Light Pole
- Power Pole
- Telephone Pole
- Guy Pole
- Power Pole
- Flag Pole
- Guy Wire
- Mailbox
- Parking Block
- Satellite Dish
- Handicap Parking
- Water Spigot
- Bollard
- Water Irrigation
- Evergreen Tree
- Deciduous Tree
- Bush
- Sign
- Adjoining Property Line
- Subject Property Line
- Easement Line
- Building Setback Line
- Centerline
- Edge of Pavement
- Edge of Gravel
- Fence Line
- Landscape
- Woods / Tree line
- Edge of Water
- Ditch / Creek Centerline
- Minor Contour Line
- Index Contour Line
- G — Gas Line
- SA — Sanitary Sewer Line
- W — Water Line
- ST — Storm Sewer Line
- OH — Overhead Utility Line
- OHC — Overhead Cable Line
- OHE — Overhead Electric Line
- OHT — Overhead Telephone Line
- UG — Underground Utility Line
- UGC — Underground Cable Line
- UGE — Underground Electric Line
- UGT — Underground Telephone Line
- FM — Forced Main Line

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

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WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com
ENGINEERS & SURVEYORS

Client
PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TN 37174

REVISIONS	DATE
PLANNING COMMENTS ADDRESSED	10-19-2020

LUNN RIDGE FARMS
OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
PLANNED DEVELOPMENT CONCEPT PLAN

Drawn: JG
Checked: AD
Approved: AD
Date: 10-05-2020

Job. no. 19633
Scale:
Vertical:
Horizontal: 1"=100'

MP-1

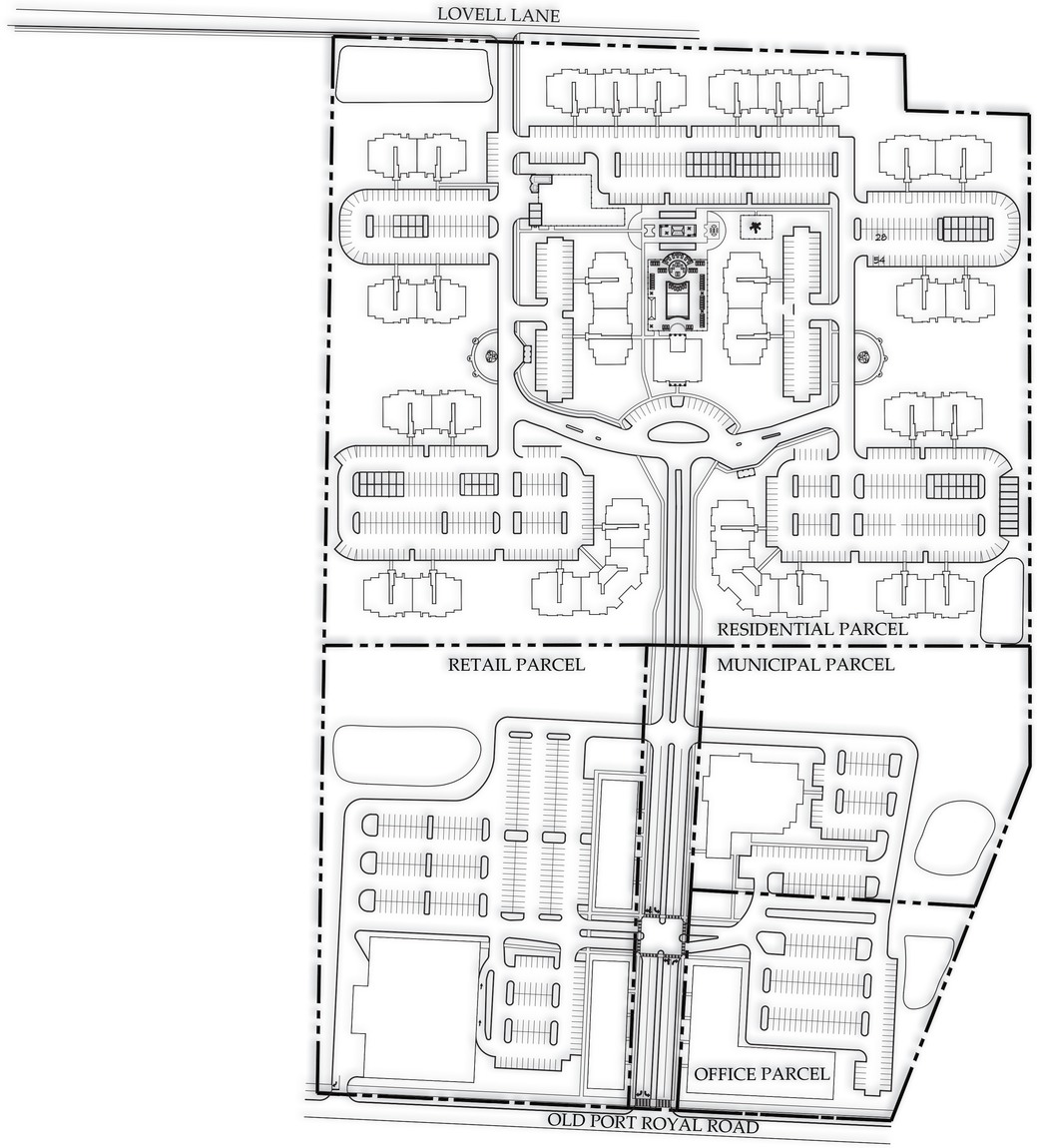
ALLEN D. LEWIS — AGRICULTURE — TENNESSEE NO. 1987

FILE: J:\WES_Engineers_Surveyors 2019\19633 - Old Port Royal - PVC-Gross\Dwg\Prelim\19633 Prelim Exhibit POLICE (ALT).dwg

KINGSLEY PLACE

THE SITE
PRELIMINARY SITE PLAN

PROPOSED SITE LAYOUT PLAN



TO OLD PORT RD

SITE DATA:

© 2020

OWNER: SAMUEL S. LUNN
3812 OLD PORT ROYAL ROAD NORTH
SPRING HILL, TN 37174

OLIVIA BROWN LUNN ETAL
S. CHEATHAM BROWNIE & KAITLYNN O. LUNN
3788 OLD PORT ROYAL ROAD NORTH
SPRING HILL, TN 37174

PARCEL NUMBER: TAX MAP 27 PARCELS 03.06 & 04.00
DEED BOOK: R2230, PG 1035 & R2263, PG 924

SUBJECT PARCEL ZONING:

CURRENT ZONING: I - 1 (LIGHT INDUSTRIAL)
PROPOSED ZONING: R-6 (MULTI-FAMILY)
C-4 (GENERAL COMMERCIAL)

ACREAGE OF SITE: TOTAL: 43.84 ACRES
27.08 ACRES MULTI-FAMILY
3.25 ACRES FLEX - OFFICE / RETAIL
5.0 ACRES POLICE STATION
8.25 ACRES GROCERY STORE
0.26 ACRES R.O.W. DEDICATION

MINIMUM REQUIRED BUILDING SETBACKS:
R-6 SETBACK:
MIN. FRONT YARD - 20'
MIN. REAR YARD - 30'
MIN. DIST. BETWEEN BLDGS - 15'

C-4 SETBACK:
MIN. FRONT YARD - 10'
MIN. SIDE YARD - 0' - 20' WHEN ABUTTING RESIDENTIAL
MIN. REAR YARD - 10' - 20' WHEN ABUTTING RESIDENTIAL

1. THE PROPERTY IS NOT LOCATED WITHIN FLOOD ZONE AS DEPICTED ON FEMA COMMUNITY PANEL 47119C0185E, EFFECTIVE DATE APRIL 16, 2007.
2. ACTUAL DETENTION/DRAINAGE SWALES ARE SUBJECT TO CHANGE.
3. OPEN SPACE SHALL BE PRIVATE USE AREAS PROVIDED FOR ALL DWELLING UNITS LOCATED WITHIN THE DEVELOPMENT.
4. DWELLING UNITS SHALL HAVE ACCESS TO BOTH ACTIVE AND PASSIVE OPEN SPACE AREAS.

UTILITY SERVICES: WATER SERVICE
SPRING HILL WATER DISTRIBUTION SYSTEM
3893 MAHLON MOORE ROAD
SPRING HILL, TENNESSEE 37174
(931) 486-2252

ELECTRIC SERVICE
DUCK RIVER ELECTRIC MEMBERSHIP
798 NEW LEWISBURG HIGHWAY
COLUMBIA, TENNESSEE 38401
(931) 388-3131

PURPOSE NOTE:

THE PURPOSE OF THIS PRELIMINARY PLANNED DEVELOPMENT IS TO REZONE EXISTING INDUSTRIAL 1 TO R-6 & C-4 PLANNED DEVELOPMENT & TO CREATE MULTI-FAMILY UNITS, GROCERY / RETAIL, POLICE STATION & FLEX RETAIL OFFICE.

COVERAGE AREA:

MULTI-FAMILY:
PERVIOUS = 11.80 ACRES
IMPERVIOUS = 15.48 ACRES
TOTAL = 27.08 ACRES
(4.5 ACRES OPEN SPACE INCLUDING CLUBHOUSE, POOL & AMENITIES)
DENSITY: 14.60 UNITS/ACRE

FLEX / OFFICE RETAIL:
PERVIOUS = 1.16 ACRES (35.6%)
IMPERVIOUS = 2.09 ACRES (64.4%)
TOTAL = 3.25 ACRES

POLICE STATION:
PERVIOUS = 3.39 ACRES (67.8%)
IMPERVIOUS = 1.61 ACRES (32.2%)
TOTAL = 5.0 ACRES

GROCERY STORE / RETAIL
PERVIOUS = 3.13 ACRES (37.4%)
IMPERVIOUS = 5.12 ACRES (62.6%)
TOTAL = 8.25 ACRES

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN. IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE OWNER/DEVELOPER. NO FURTHER WORK SHALL BE PERFORMED BY THE OWNER/DEVELOPER, BEFORE ANY NOMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED, ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST-TIME REQUIRED FOR THE MEASURES ESTABLISHED.

SITE BENCHMARK NOTE:

CONTRACTOR SHALL ESTABLISH A BENCHMARK PRIOR TO CONSTRUCTION. EXISTING BENCHMARK MUST BE RE-VERIFIED AND APPROVED BY THE ENGINEER/SURVEYOR PRIOR TO USE.

BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:

W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329

FLOOD STUDY NOTE:

THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD BOUNDARY AND FLOODWAY MAP COMMUNITY PANEL NO. 47119C0185E DATED APRIL 16, 2007 (ZONE "X")

gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com
ENGINEERS & SURVEYORS

Client
PAUL VARNEY CONSTRUCTION
124 KEDRON ROAD
SPRING HILL, TN 37174

REVISIONS	DATE
BOMA SUBMITTAL REVISIONS	01.28.21
BOMA SUBMITTAL REVISIONS	02.10.21

KINGSLEY PLACE
OLD PORT ROYAL ROAD
CITY OF SPRING HILL, MAURY COUNTY, TENNESSEE
OVERALL LAYOUT PLAN

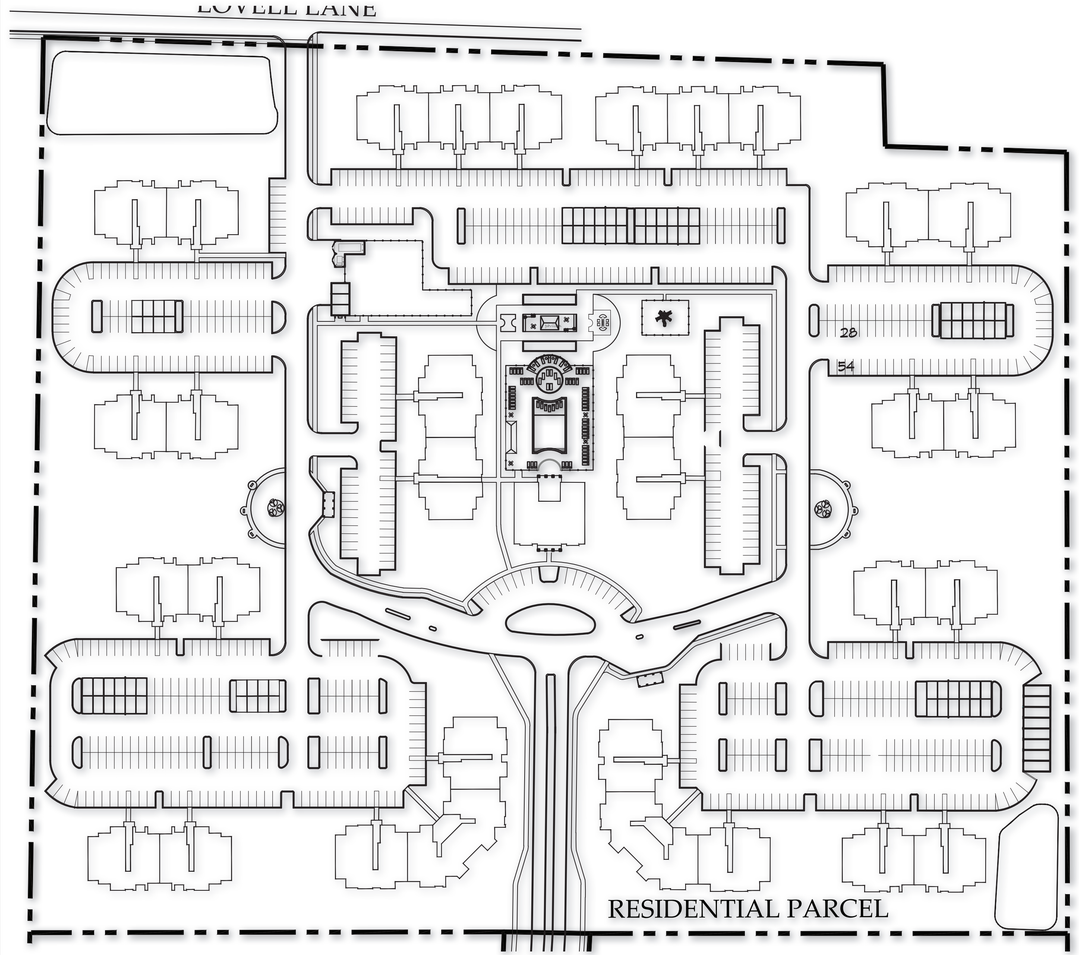
Drawn: RP
Checked: JC
Approved: cyr
Date: 11-06-2020

Job no. 19633
Scale:
Vertical:
Horizontal: 1"=100'

C-2.0

KINGSLEY PLACE

THE SITE
ZONING USE COMPLIANCE PLAN



UDC 8.3 PRINCIPAL USE STANDARDS
SECTION K-MULTI-FAMILY

REQUIREMENTS		MIN. PROVIDED
SIDEWALL SETBACK	15'	33'
FRONT/REAR WALL SETBACK	30'	54'
SIDE SETBACK 10' + 5' (3RD FLR)	15'	31'
FRONT YARD SETBACK	20'	32'
REAR YARD SETBACK	30'	30'
PRIVATE DRIVE/STREET	10'	29'
BUFFER YARD	15'	31'

OPEN SPACE PER 8.3K(c)

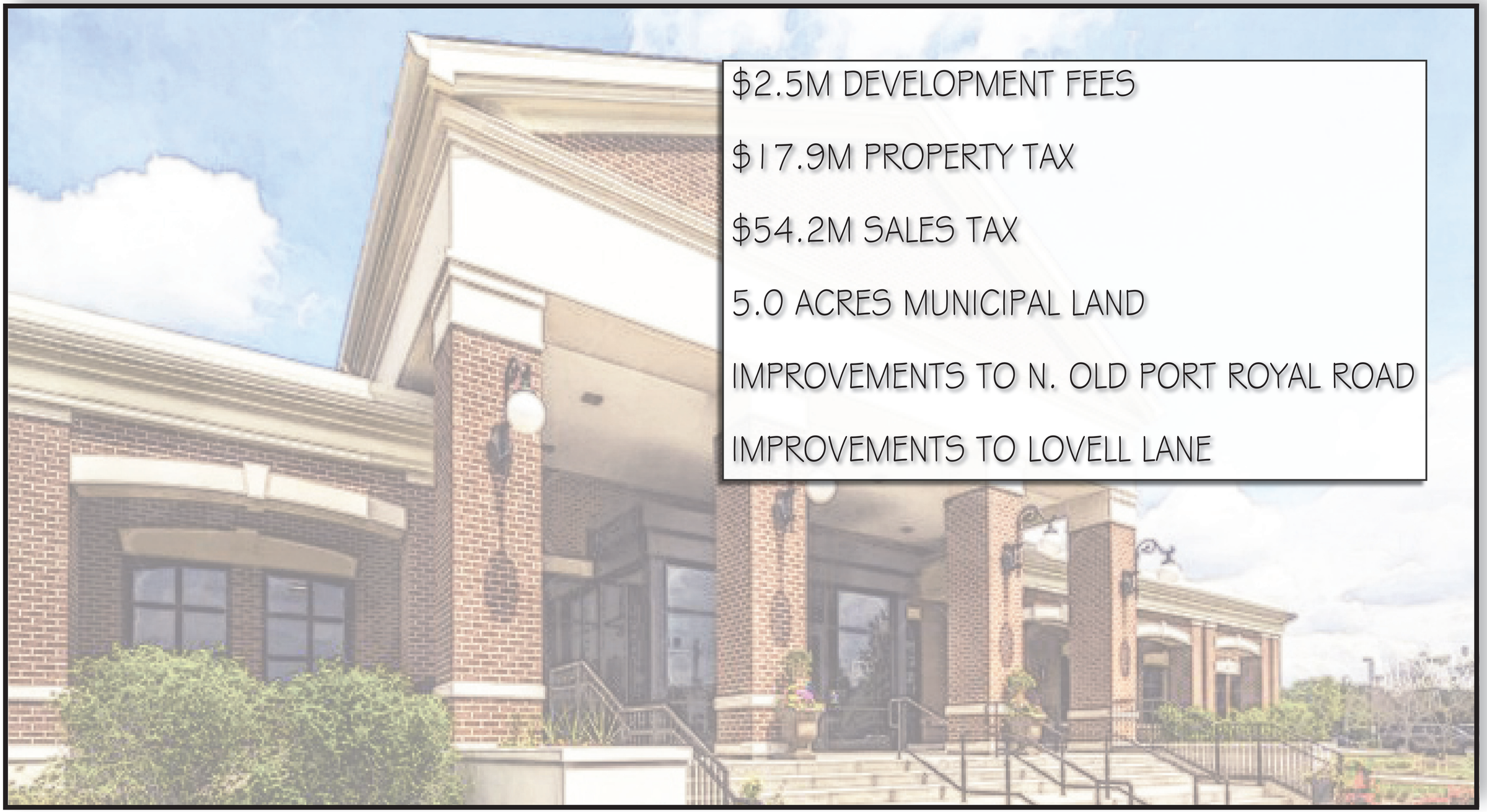
REQUIRED- 396unitsx100sf=	0.91 AC.
FORMAL REC AREA PROVIDED	1.15 AC.
OPEN REC AREA PROVIDED	3.35 AC.
TOTAL AREA PER 8.3K(c)	11.24 AC.

FORMAL RECREATION FACILITY PER 8.3K(c) VII

FITNESS ROOM, SOCIAL ROOM, BILLIARDS & GAMING, POOL, FIRE PIT, TOT LOT, BARK PARK, OUTDOOR KITCHEN, YARD GAME AREA

KINGSLEY PLACE

THE SITE
PUBLIC BENEFIT



$2.5M DEVELOPMENT FEES

$17.9M PROPERTY TAX

$54.2M SALES TAX

5.0 ACRES MUNICIPAL LAND

IMPROVEMENTS TO N. OLD PORT ROYAL ROAD

IMPROVEMENTS TO LOVELL LANE

KINGSLEY PLACE

THE SITE
ROAD IMPROVEMENTS



IMPROVEMENTS TO LOVELL LANE:

IMPROVE TRAVEL LANES TO 24' WIDTH TOTAL

CONNECT SIDEWALK FROM RESIDENTIAL ACCESS DRIVE TO COMMERCIAL PROPERTY



IMPROVEMENTS TO N. OLD PORT ROYAL RD

TWO TRAVEL LANES WITH CENTER TURN LANE

12' MULTI USE TRAIL ALONG STREET R.O.W. TO CONNECT TO COMMERCIAL PROPERTY AND LINK GREENWAYS

KINGSLEY PLACE

THE SITE
PHASING PLAN



PHASE I:

-SITE PREPARATION AND CLEARING
-INSTALL BMP'S PER NPDES
-MASS GRADE ALL 43.84 ACRES



PHASE II:

-DEDICATE PROPERTY FOR PUBLIC BENEFIT
-PERFORM TIA REQUIRED TRAFFIC IMPROVEMENTS
-PERFORM WORK ON KINGSLEY BOULEVARD



PHASE III:

-CONTINUED CONSTRUCTION OF PRIVATE INFRASTRUCTURE
-CONTINUED CONSTRUCTION OF VERTICAL STRUCTURES
-PROJECT COMPLETION SUBJECT TO MARKET CONDITIONS

KINGSLEY PLACE

THE DESIGN

PROJECT OVERVIEW

The Planned Development is located on Old Port Royal road a tenth of a mile east of Port Royal and a quarter mile from Saturn Parkway. The location and land uses outlined on the site plan fit into the context of the overall Port Royal area.

The commercial and office components of the planned development are located along the front of Old Port Royal road. A boulevard private street will intersect the property to provide access to the commercial parcels and lead into the residential portion of the development.

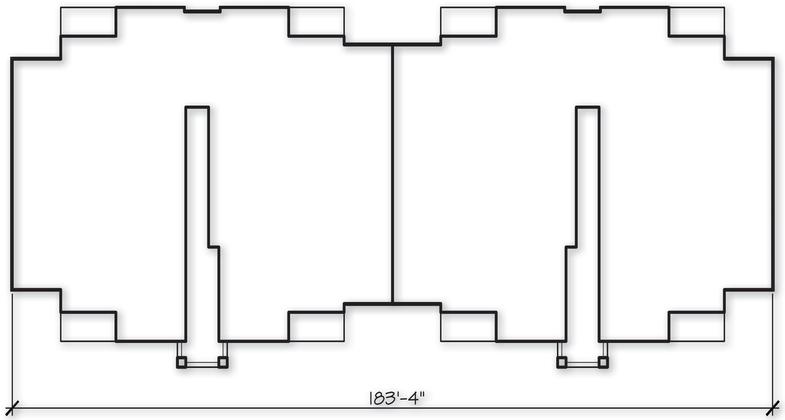
The commercial portions of the property represent a total of 16.76 acres. Along the Old Port Royal frontage is a retail anchor and out parcel attached retail. Across the boulevard is flex office space and acreage available for municipal use such as a police department. While these areas have been located on the site plan, the Planned Development allows for other use opportunities in the C-4 district and for the various uses to be located in anywhere within the PD district. Further use restrictions for the C-4-PD have been provided in the table on the following page. All parcels will have access to the boulevard street to limit access points on Old Port Royal.

Providing a transition between the commercial and the existing residential development to the north, a multi-family development is shown on 27.08 acres. The stacked flats are in three story structures at a density of 14.62 units per acre. The R-6-PD is requesting a criteria exception to table 4.1 as described on the following page. The multi-family development provides its residents private recreational amenities and services which reduces the demand on the existing city facilities. The boulevard street, its lighting and landscaping will be privately owned and maintained by the apartment ownership entity.

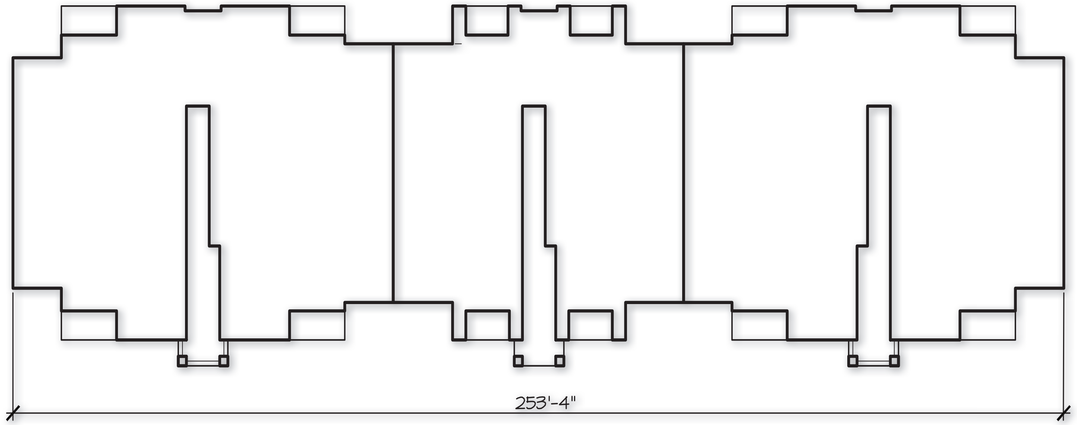
Internal pedestrian links will connect the elements of this PD. Improvements along Old Port Royal Road and Lovell Lane will provide pedestrian links to the existing retail and business centers in the Port Royal area.

KINGSLEY PLACE

THE DESIGN
CRITERIA EXCEPTIONS



BUILDINGS 20 & 21
8'-4" REQUEST



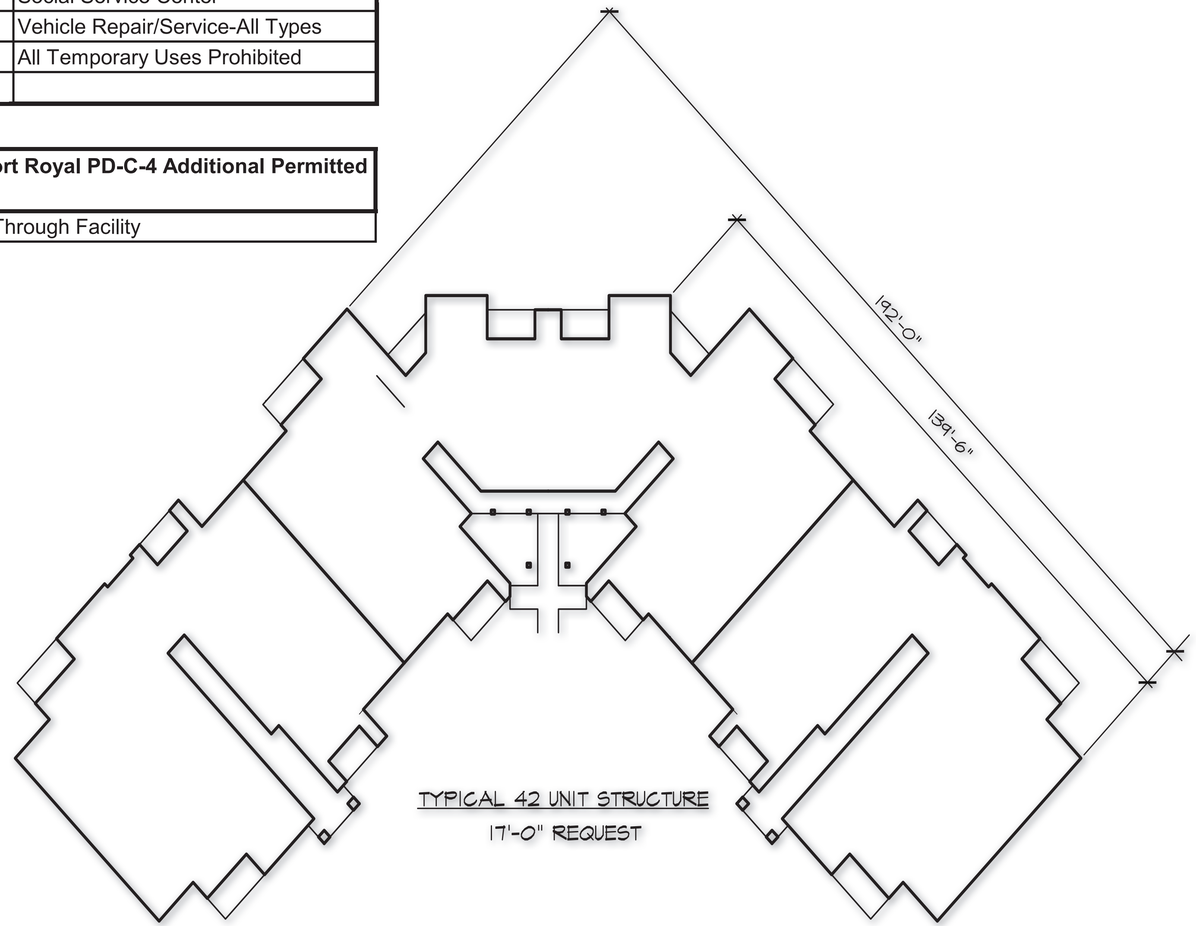
TYPICAL 36 UNIT STRUCTURE
78'-4" REQUEST

Old Port Royal PD-C-4 Use Restrictions	
Amusement Facility-All Types	Halfway House
Chronic pain and recovery clinics	Heavy Retail,Rental, Service
Contractor's Yard	Homeless Shelter
Communication Towers	Live Enterntainment-Secondary Use
Domestic Violence Shelter	Live Performance Venue
Drug/Alcohol Treatment Facility-Residential	Parking Lot (Principal Use)
Dwelling-Above Ground Floor	Parking Structure (Principal Use)
Educational Facility-Vocational	Residential Care Facility
Financial Institution-Alternative	Social Service Center
Food Pantry	Vehicle Repair/Service-All Types
Gas Station	All Temporary Uses Prohibited
Green House/Nursery	

*All other permitted uses in C-4 are allowed

Old Port Royal PD-C-4 Additional Permitted Use
Drive-Through Facility

SITE DATA	
ADDRESS	3812 & 3788 Old Port Royal Road
PARCEL NUMBERS	060027 00306
	060027 00400
TOTAL SITE AREA	43.85 (1,910,106 s.f.)
EXISTING ZONING	I-1
PROPOSED ZONING	R-6 & C-4 Planned Development



TYPICAL 42 UNIT STRUCTURE
17'-0" REQUEST

BUILDING LENGTH PER TABLE 4.1:RESIDENTIAL STANDARDS (175' MAX.)			
BUILDING TYPE	NO. OF STRUCTURES	BUILDING LENGTH	CRITERIA REQUEST
24 UNITS	9 STRUCTURES	161'-4"	COMPLIANT
36 UNITS	2 STRUCTURES	253'-4"	78'-4"
42 UNITS	2 STRUCTURES	192'-0"	17'-0"
BLDG 20 & 21	1 STRUCTURE	183'-4"	8'-4"

PLANNED DEVELOPMENT CRITERIA REQUEST

RESIDENTIAL MAXIMUM BLDG LENGTH

KINGSLEY PLACE

THE DESIGN
MASTER PLAN

AMENITIES:

① TOT LOT

② OPEN FIELD SPORTS AREA

③ POOL

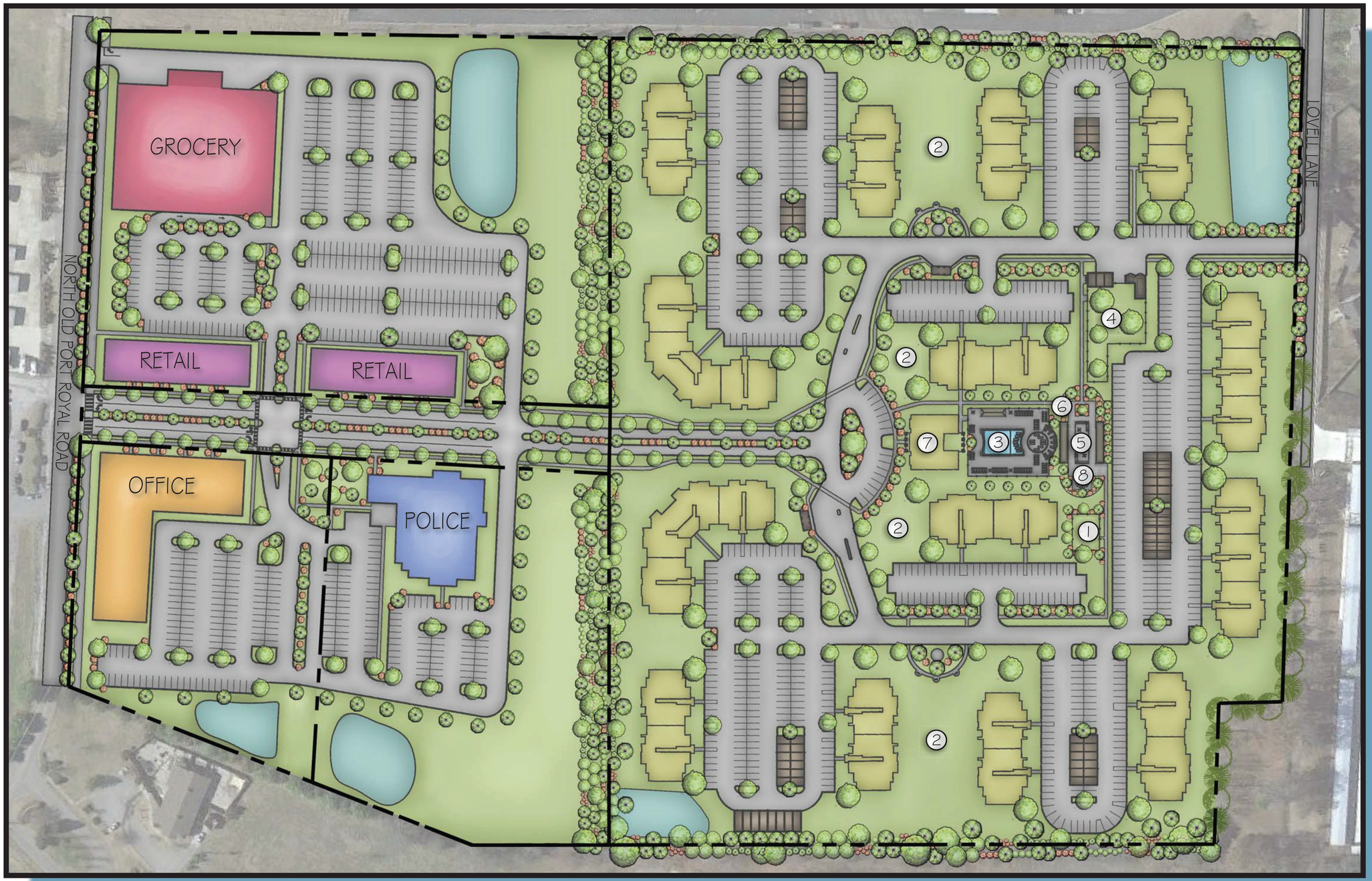
④ BARK PARK W/ DOG WASH

⑤ GRILL/ PAVILLION

⑥ YARD GAME AREA

⑦ FORMAL RECREATION FACILITY

⑧ FIRE PIT



KINGSLEY PLACE

THE DESIGN
RESIDENTIAL AREA AMENITIES

AMENITIES:

① TOT LOT

② OPEN FIELD SPORTS AREA

③ POOL

④ BARK PARK W/ DOG WASH

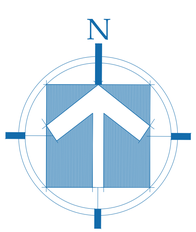
⑤ GRILL/ PAVILLION

⑥ YARD GAME AREA

⑦ FORMAL RECREATION FACILITY

⑧ FIRE PIT





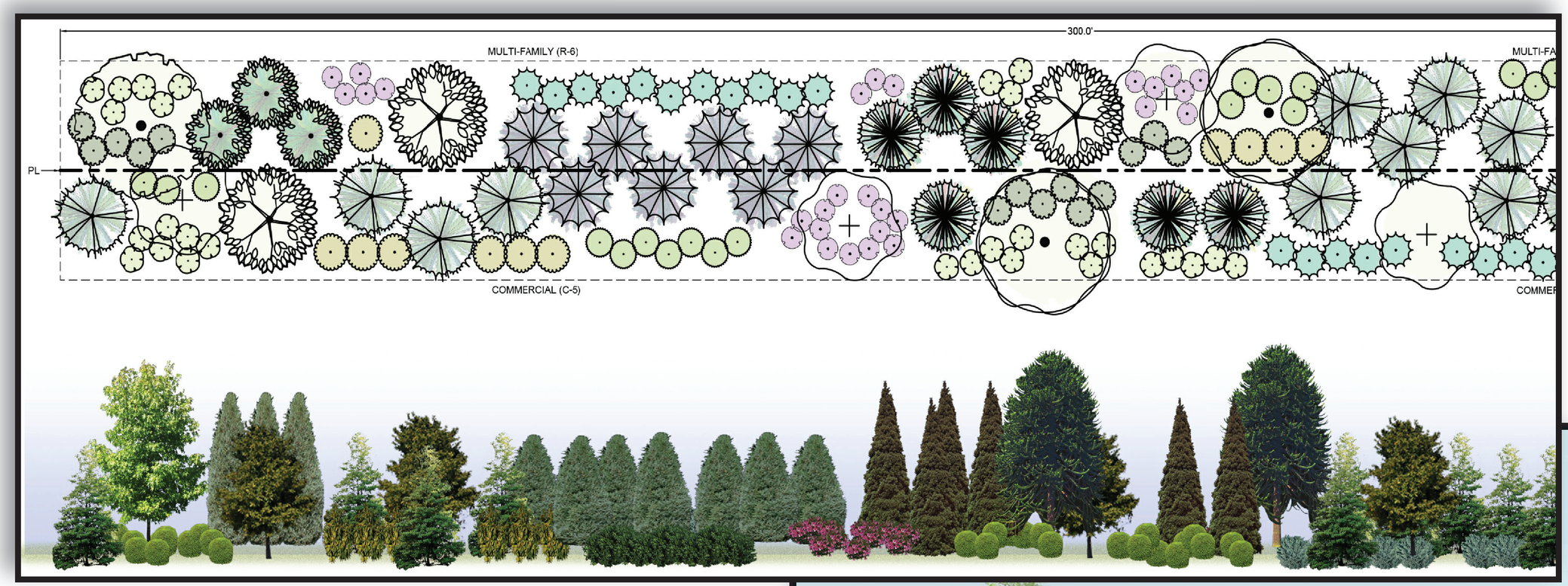
KINGSLEY PLACE

THE DESIGN
BOULEVARD CONCEPT



KINGSLEY PLACE

THE DESIGN
BUFFER & BOULEVARD



ENHANCED BUFFER CONCEPT



BOULEVARD CONCEPT

KINGSLEY PLACE

THE DESIGN
SITE SIGNAGE

SIGN REQUIREMENTS:

FREESTANDING SIGN
- 1 PER LOT
- MAX AREA: 32 SF
- MAX HEIGHT: 8 FT

MULTI-TENANT RETAIL
- 1 PER LOT OVER 10 ACRES
- MAX AREA: 150 SF
- MAX HEIGHT: 20 FT



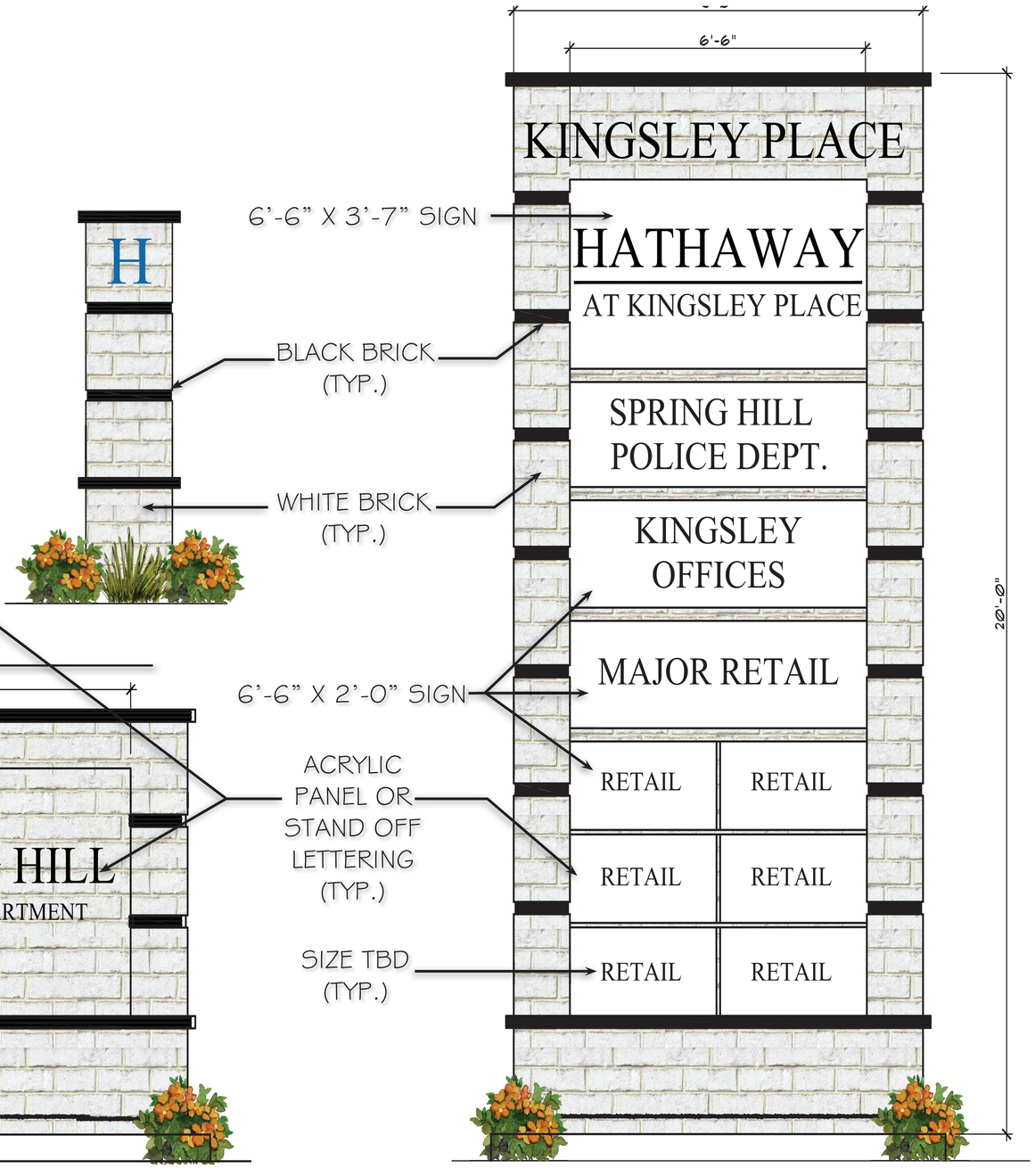
SIGN 1



SIGN 2



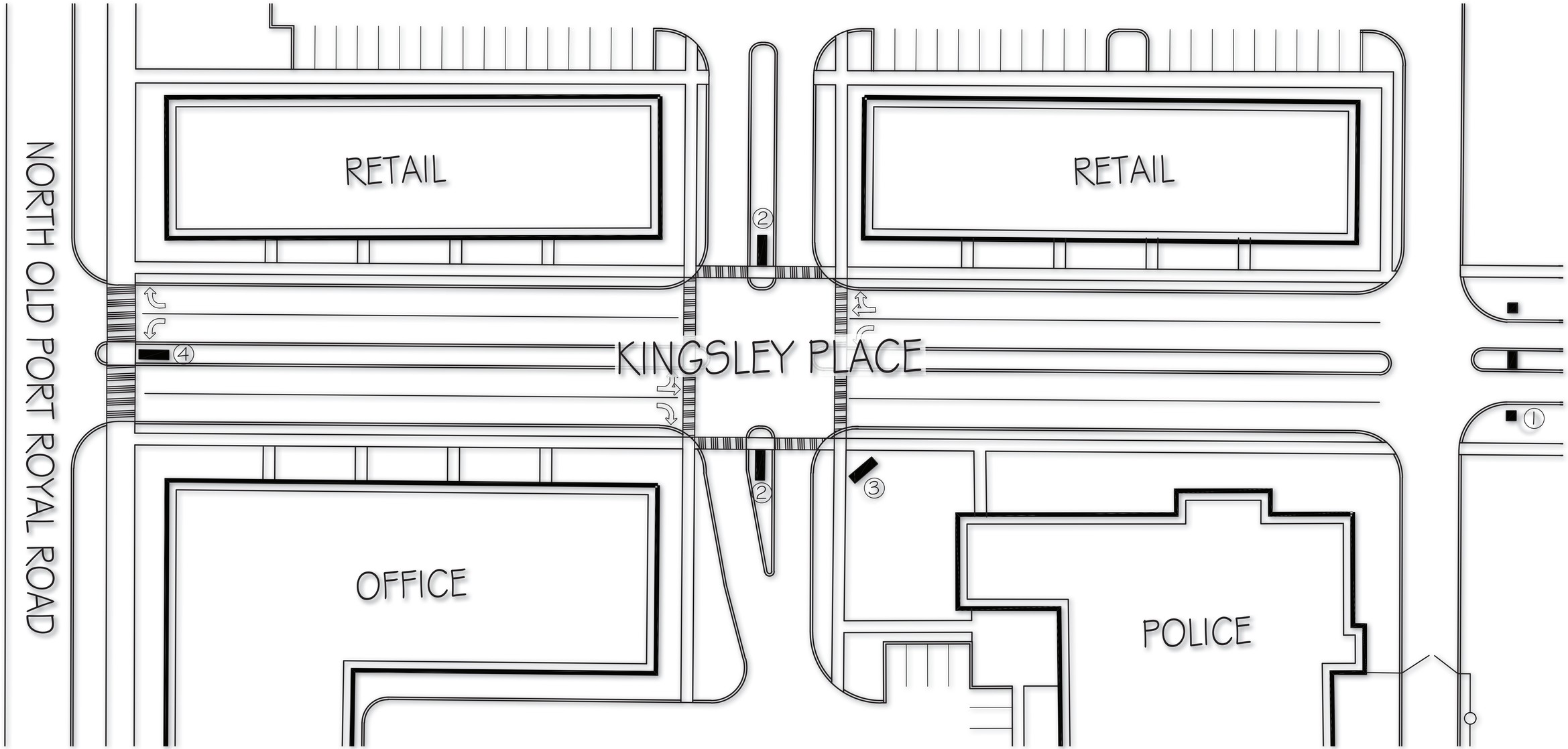
SIGN 3



SIGN 4

KINGSLEY PLACE

THE DESIGN
SITE SIGNAGE PLAN



KINGSLEY PLACE

THE ARCHITECTURE
RESIDENTIAL



KINGSLEY PLACE

THE ARCHITECTURE
TYPICAL RESIDENTIAL ELEVATION



FRONT ELEVATION

KINGSLEY PLACE

THE ARCHITECTURE
RETAIL



DESIGN STANDARDS IN ACCORDANCE WITH UDC SECTION 5.4

PRIMARY FACADE MATERIALS:

- No more than 20% EIFS
- Clay Brick
- Cultured Stone
- Split Face CMU
- Standing Seam Metal Roof
- Metal Awnings/Canopies & Detail Elements



KINGSLEY PLACE

THE ARCHITECTURE
OFFICE





DESIGN STANDARDS IN ACCORDANCE WITH UDC SECTION 5.4

PRIMARY FACADE MATERIALS:

- No more than 20% EIFS
- Clay Brick
- Cultured Stone
- Split Face CMU
- Standing Seam Metal Roof
- Metal Awnings/Canopies & Detail Elements

KINGSLEY PLACE

THE ARCHITECTURE
MUNICIPAL



Water Distribution Pressure Summary 01-28-2021

Project: **Kingsley Place**

Summary:

Water Service is available to the subject property and is served by an 18" water line along Old Port Royal Road and an 8" water line on Lovell Ln. The site is located within the City's Southside Pressure Zone. Modeling Results of Spring Hill's water system show that with Tanks at 50% capacity (elevation 883), the site (at elevation 730) will see static pressures in the range of 64 psi. The site can also meet Spring Hill's minimum requirement to flow a 750 gpm fire flow while maintaining 30 psi.

Model inputs:

Demands:	297 gpm	396units @ 0.75 gpm	(source TDEC)
	Approximately 30 gpm for commercial parcels		
	Fire flow 750 gpm (30 min psi required)		
Tanks at 50%	Elevation 883 feet (Southside)		
Fed from:	18" line on Port Royal Rd		
Site elevation:	Approx. 730 feet (high ground elevation at site)		

Results:

Static Pressures available at the site:	64 psi
Residual pressure with 750 gpm Fire flow:	56 psi

Meets minimum pressure requirements.

Results are based on the assumptions listed above, any variation would require additional analysis to be performed during a site plan application process

Sewer Collection Summary 1-28-2021

Project: **Kingsley Place (Lunn Ridge Farms)**

Summary:

Sewer Service is available to the subject property and is served by an 8" and 12" gravity sewer line along Old Port Royal Rd to the 24" Grassy Branch Trunk Line. Results of the immediate receiving pipe and downstream pipe are presented below.

Proposed Discharge Summary: 144 gpm (residential) +25 gpm (commercial) = 169 gpm average

297 gpm (residential) +61 gpm (commercial) = 358 gpm peak

Receiving Pipe: GRB-128	Existing	Average	Peak
Capacity of 8" Line at Receiving location:	565 gpm		
Percent Full Dry Weather conditions	0.3%	30.2%	63.7%
Percent Full Peak Wet Weather conditions*	0.9%	30.9%	64.3%

Downstream Pipe: GRB-122	Existing	Average	Peak
Capacity of 12" Line at Downstream location:	1909 gpm		
Percent Full Dry Weather conditions	1.5%	10.4%	20.2%
Percent Full Peak Wet Weather conditions*	4.7%	13.6%	23.5%

Model notes:

1. The results presented is a static snapshot of the pipe collection system. It is meant to represent the upper limits of what the individual pipe segments might encounter. Peaks are not meant to represent a sustained flow condition.
2. The existing condition as shown includes subdivisions/developments which have been approved but not yet built out.

Recommendations:

1. The Receiving pipe has adequate capacity.
2. The Critical downstream pipe has adequate capacity.

**Peak WWFactor as measured by Meter 3 on Grassy Branch Trunk Line (Aug 2018) 3.15*

Results are based on the assumptions listed above, any variation would require additional analysis to be performed during a site plan application process

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Transportation Group, LLC
Traffic Engineering and Planning

Traffic Impact Study

Kingsley Place Mixed-Use Development
Old Port Royal Road
Spring Hill, TN

Prepared January 2021
For WES Engineers & Surveyors

FTG, LLC
P.O. Box 682736
Franklin, TN 37068
(615) 771-8022 phone
Gillian@FTGtraffic.com

Traffic Impact Study

Kingsley Place Mixed-Use Development

Old Port Royal Road
Spring Hill, Tennessee

Prepared January 2021

PREPARED FOR:
WES Engineers & Surveyors
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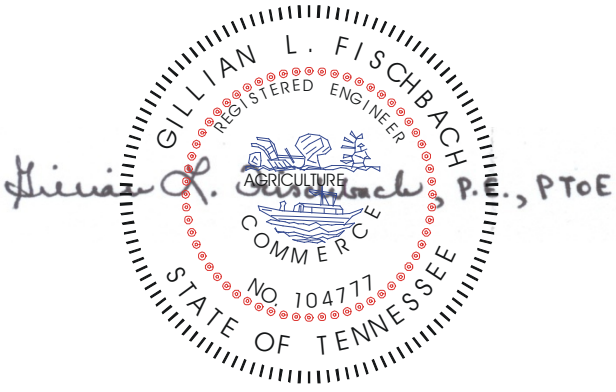

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1. INTRODUCTION

This traffic study has been prepared in order to identify the traffic impacts of a mixed-use development that is proposed to be constructed on the north side of Old Port Royal Road, east of Port Royal Road, in Spring Hill, Tennessee.

For the purposes of this study, existing and background traffic volumes were established, and capacity analyses were conducted for these conditions. Also, trip generation calculations were performed, and the trips which are expected to be generated by the proposed project were distributed to the roadway system and added to the background traffic volumes. The roadways and intersections which provide access to the site were then re-evaluated to determine the traffic impacts of the proposed project. Access needs for the project were evaluated, and the necessary roadway and/or traffic control improvements were identified. This report presents the results of these analyses and the subsequent recommendations.

2. PROJECT DESCRIPTION

The location of the proposed project is shown in Figure 1. As shown, the project site is located on the north side of Old Port Royal Road, east of Port Royal Road, in Spring Hill, Tennessee. The developer of the proposed project plans to construct 396 apartments. This development will be gated, and primary access will be provided at one location on Old Port Royal Road. Secondary, gated access will be provided on Lovell Lane for the apartments but not for the commercial land uses.

Also, in the future, the developer anticipates commercial development that could include the following:

- a 49,000 sq.ft. grocery store,
- 9,600 sq.ft. of retail space, and
- 24,000 sq.ft. of office space.

Access to this future commercial development would be provided by the access that will be constructed on Old Port Royal Road for the apartments.

The current site plan for the proposed project is shown in Figure 2. In large part, economic and market considerations will dictate the pace and timing with which the proposed project is actually completed. For the purposes of this study, it was assumed that the proposed project will be completed by Year 2023.

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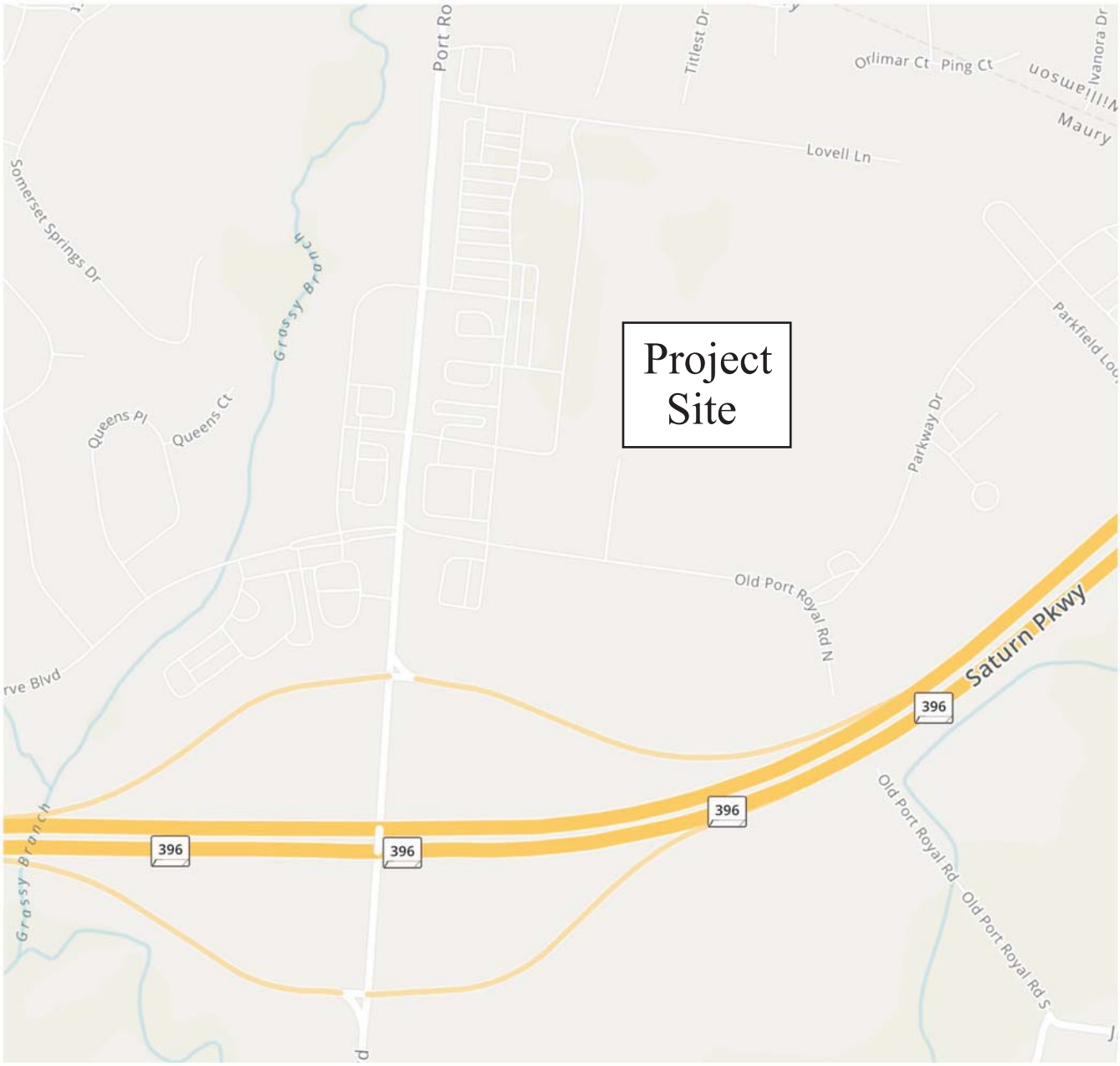

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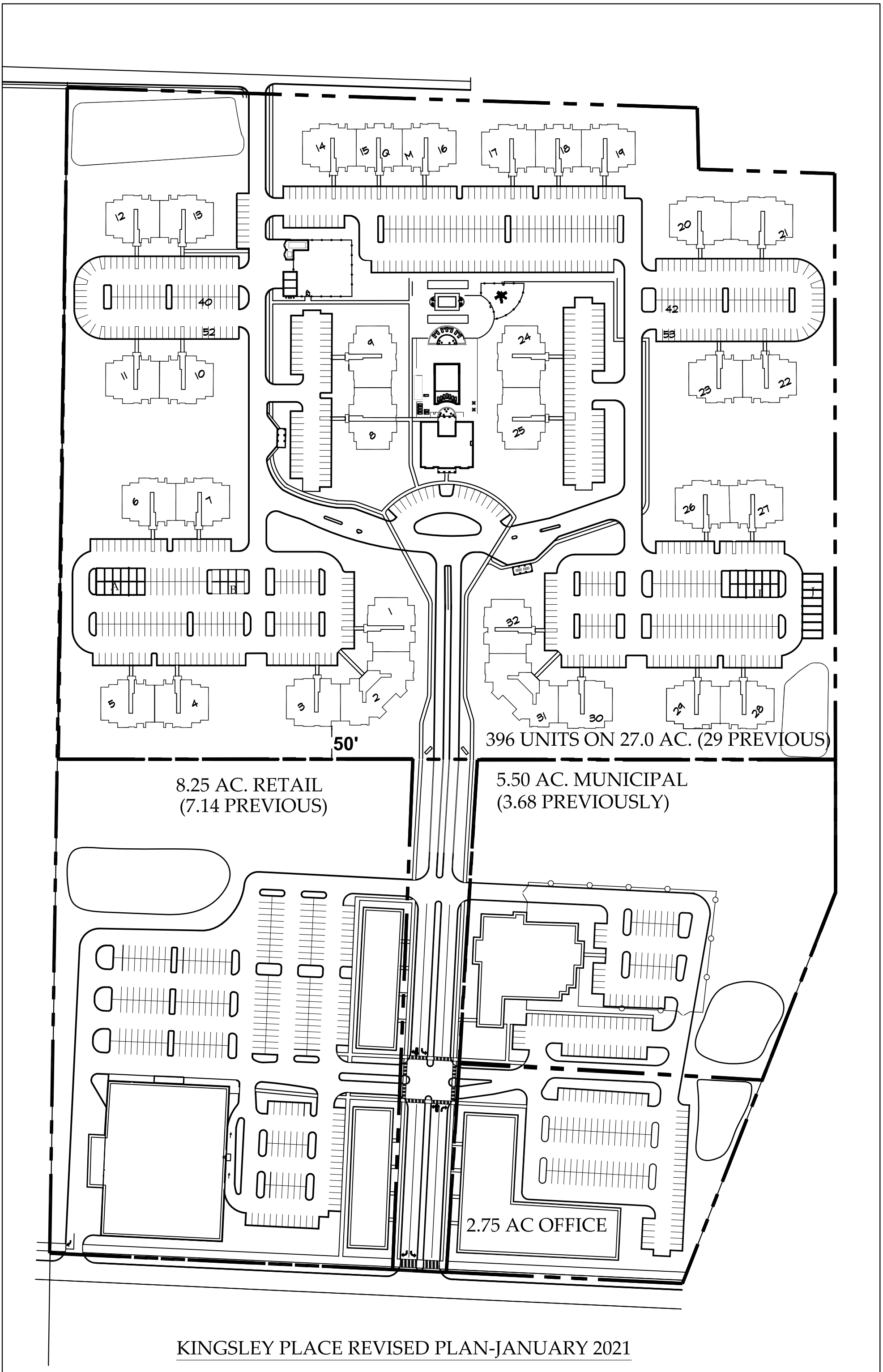
Figure 1.
Location of the Proposed Project Site



KINGSLEY PLACE REVISED PLAN-JANUARY 2021

3. YEAR 2020 EXISTING CONDITIONS

In order to provide data for the traffic impact analysis, peak hour traffic volumes were identified for the following intersections:

1. Port Royal Road and Reserve Boulevard / Old Port Royal Road
2. Port Royal Road and the Ramps for Westbound Saturn Parkway
3. Port Royal Road and the Ramps for Eastbound Saturn Parkway

The existing laneage and traffic control at the intersections within the study area are shown in Figure 3. The raw traffic volumes are included in Appendix A and shown in Figure 4A. The raw peak hour traffic volumes were adjusted to show balanced traffic flows, as shown in Figure 4B.

Using the Year 2020 peak hour traffic volumes shown in Figure 4B, capacity analyses were conducted for the intersections studied. Specifically, in order to identify current peak hour levels of operation within the study area, the capacity calculations were performed according to the methods outlined in the Highway Capacity Manual 6 (HCM 6). These analyses result in the determination of a Level of Service (LOS), which is a measure of evaluation is used to describe how well an intersection or roadway operates. LOS A represents free flow traffic operations, and LOS F suggests that the traffic demand exceeds the available capacity. In an urbanized area, LOS D is typically considered to be the minimum acceptable LOS. Table 1 presents the descriptions of LOS for signalized intersections, and Table 2 presents the descriptions of LOS for unsignalized intersections.

The results of the capacity analyses for the existing peak hour traffic volumes are shown in Table 3, and Appendix B includes the capacity analyses worksheets. These analyses indicate that:

- At the unsignalized intersection of Port Royal Road and Lovell Lane, all of the critical turning movements operate at LOS C or better during both peak hours.

- The signalized intersection of Port Royal Road and Reserve Boulevard / Old Port Royal Road operates at LOS C during both peak hours.

- The signalized intersection of Port Royal Road and the Ramps for Westbound Saturn Parkway operates at LOS C or better during both peak hours.

- The signalized intersection of Port Royal Road and the Ramps for Eastbound Saturn Parkway operates at LOS C or better during both peak hours.

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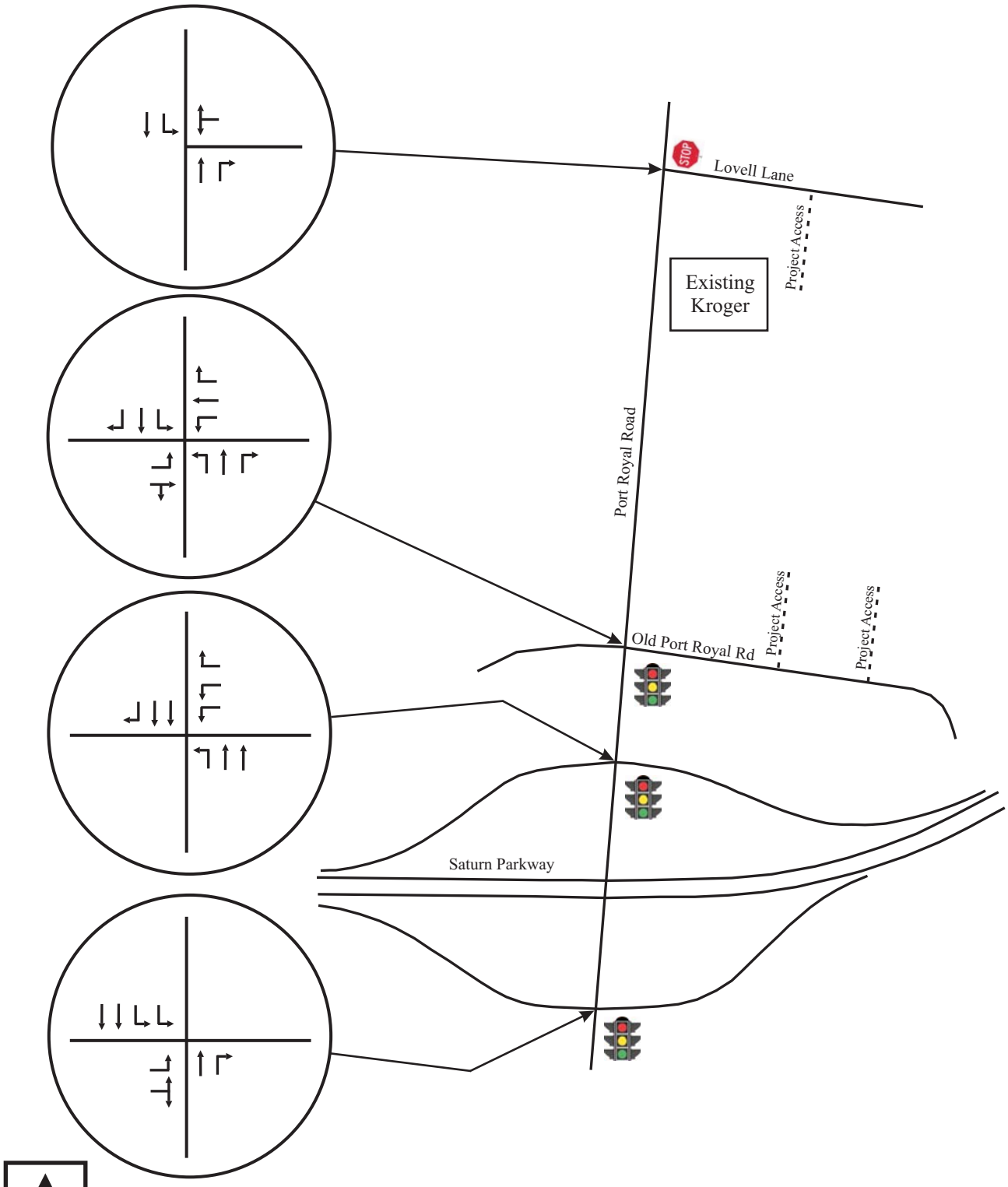

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Figure 3.
Existing Laneage within the Study Area

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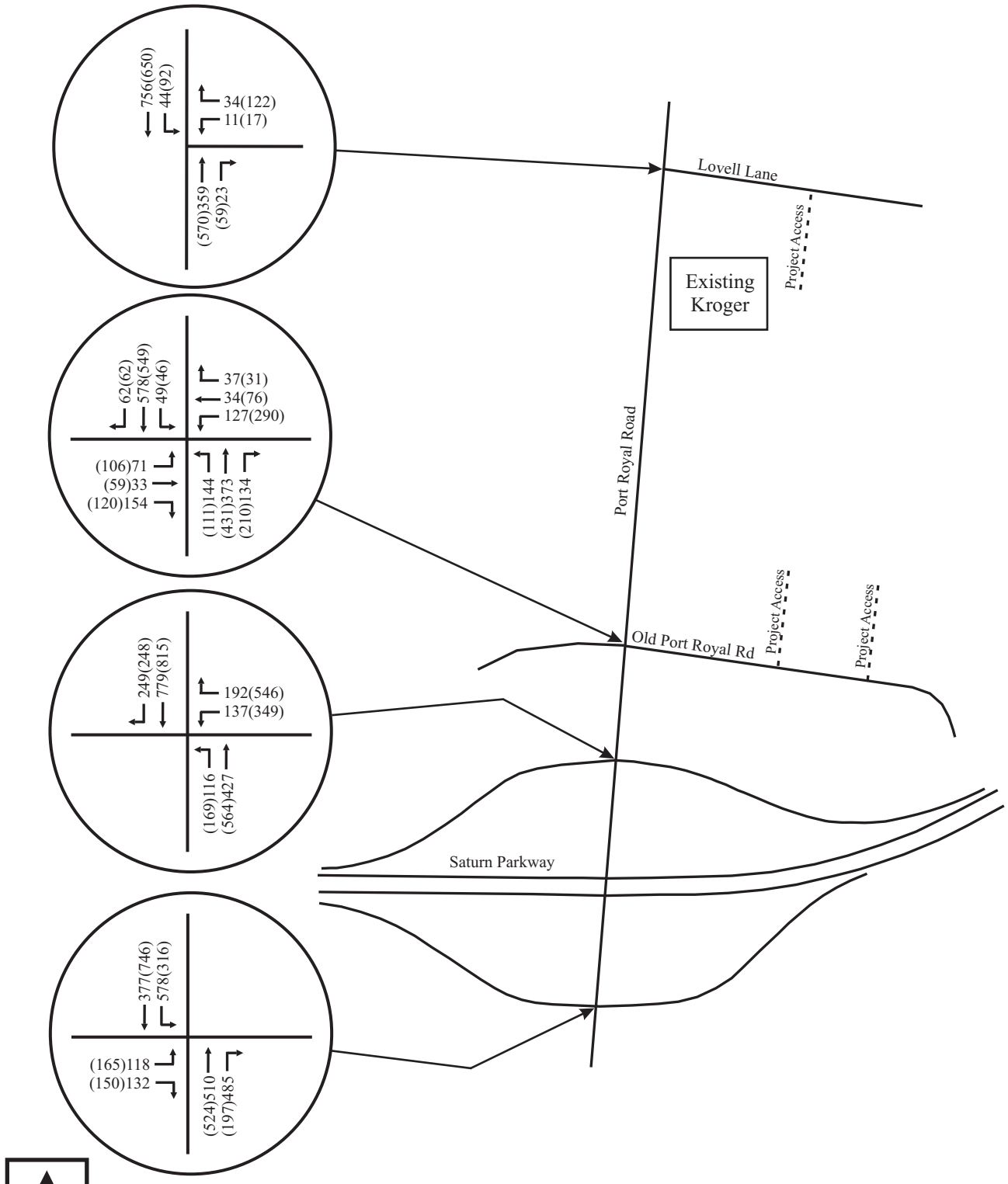

No Scale

XX - AM Peak Hour Volumes
(XX) - PM Peak Hour Volumes

Figure 4A.
Raw Peak Hour Traffic Volumes
(Collected October 2020)

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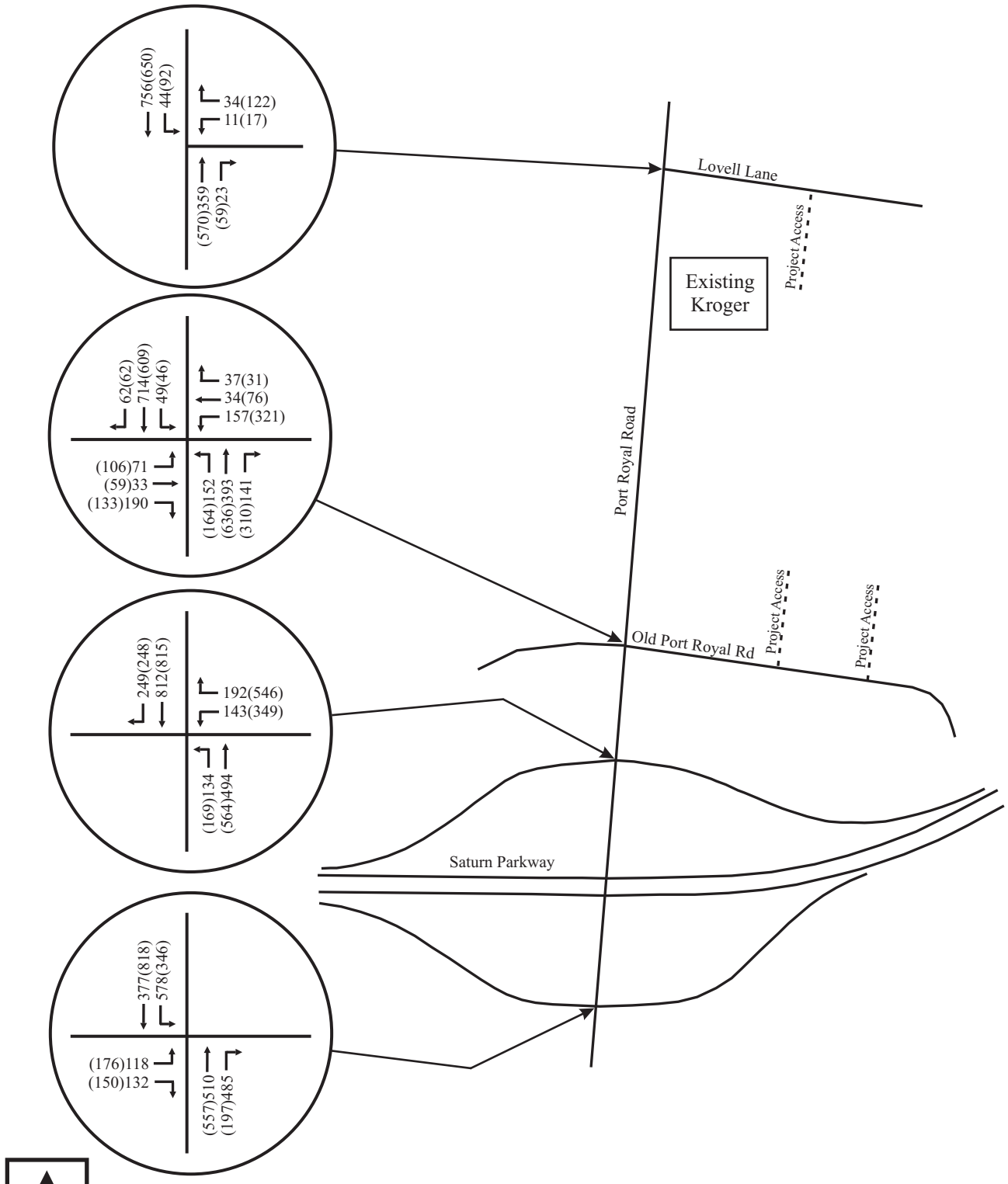

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XX - AM Peak Hour Volumes
(XX) - PM Peak Hour Volumes

Figure 4B.
Adjusted Year 2020 Peak Hour Traffic Volumes

TABLE 1. DESCRIPTIONS OF LOS FOR SIGNALIZED INTERSECTIONS

Level of Service	Description	Average Control Delay per Vehicle (sec)
A	Operations with very low control delay. Progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10
B	Operations with stable flows. This generally occurs with good progression, short cycle lengths, or both. More vehicles stop than for LOS A, causing higher levels of average delay.	> 10 and ≤ 20
C	Operations with stable flow. Occurs with fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	> 20 and ≤ 35
D	Approaching unstable flow. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop.	> 35 and ≤ 55
E	Unstable flow. In many cases, this is considered to be the limit for acceptable delay. These high delays generally indicate poor progression, long cycle lengths, and high v/c ratios.	> 55 and ≤ 80
F	Unacceptable delay. This condition often occurs with oversaturation or with high v/c ratios. Poor progression and long cycle lengths may also cause such delay levels.	> 80

Source: Highway Capacity Manual 6 (HCM 6)

TABLE 2. DESCRIPTIONS OF LOS FOR UNSIGNALIZED INTERSECTIONS

Level of Service	Description	Average Control Delay (sec/veh)
A	Minimal delay	≤ 10
B	Brief delay	> 10 and ≤ 15
C	Average delay	> 15 and ≤ 25
D	Significant delay	> 25 and ≤ 35
E	Long delay	> 35 and ≤ 50
F	Extreme delay	> 50

Source: Highway Capacity Manual 6 (HCM 6)

TABLE 3. EXISTING PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LEVEL OF SERVICE	95TH %-ILE QUEUE	LEVEL OF SERVICE	95TH %-ILE QUEUE
Port Royal Road and Lovell Lane	Westbound Left / Right Turns	LOS B	1 veh (15 sec/veh)	LOS C	2 veh (21 sec/veh)
	Southbound Left Turns	LOS A	1 veh (8 sec/veh)	LOS A	1 veh (9 sec/veh)
Port Royal Road and Reserve Boulevard / Old Port Royal Road	Eastbound Left Turns	LOS C	3 veh (32 sec/veh)	LOS C	4 veh (34 sec/veh)
	Eastbound Thrus / Right Turns	LOS D	10 veh (44 sec/veh)	LOS D	9 veh (45 sec/veh)
	Westbound Left Turns	LOS E	5 veh (59 sec/veh)	LOS D	14 veh (52 sec/veh)
	Westbound Thrus	LOS C	1 veh (34 sec/veh)	LOS C	3 veh (32 sec/veh)
	Westbound Right Turns	LOS C	2 veh (35 sec/veh)	LOS C	1 veh (31 sec/veh)
	Northbound Left Turns	LOS C	3 veh (23 sec/veh)	LOS C	4 veh (21 sec/veh)
	Northbound Thrus	LOS B	8 veh (14 sec/veh)	LOS C	17 veh (26 sec/veh)
	Northbound Right Turns	LOS B	4 veh (16 sec/veh)	LOS B	6 veh (19 sec/veh)
	Southbound Left Turns	LOS B	1 veh (13 sec/veh)	LOS B	1 veh (20 sec/veh)
	Southbound Thrus	LOS D	27 veh (41 sec/veh)	LOS D	22 veh (38 sec/veh)
	Southbound Right Turns	LOS B	2 veh (16 sec/veh)	LOS B	2 veh (19 sec/veh)
	OVERALL INTERSECTION	**LOS C (32 sec/veh)**		**LOS C (33 sec/veh)**	
Port Royal Road and the Ramps for Westbound Saturn Parkway	Westbound Left Turns	LOS D	3 veh (38 sec/veh)	LOS C	5 veh (22 sec/veh)
	Westbound Right Turns	LOS D	9 veh (44 sec/veh)	LOS C	18 veh (33 sec/veh)
	Northbound Left Turns	LOS D	6 veh (43 sec/veh)	LOS D	7 veh (43 sec/veh)
	Northbound Thrus	LOS A	1 veh (2 sec/veh)	LOS A	4 veh (9 sec/veh)
	Southbound Thrus	LOS A	6 veh (10 sec/veh)	LOS C	10 veh (25 sec/veh)

	Southbound Right Turns	LOS A	3 veh (5 sec/veh)	LOS B	4 veh (14 sec/veh)
	OVERALL INTERSECTION	**LOS B (15 sec/veh)**		**LOS C (23 sec/veh)**	
Port Royal Road and the Ramps for Eastbound Saturn Parkway	Eastbound Left Turns	LOS D	6 veh (44 sec/veh)	LOS D	8 veh (45 sec/veh)
	Eastbound Thrus/Right Turns	LOS D	6 veh (46 sec/veh)	LOS D	7 veh (45 sec/veh)
	Northbound Left Turns	LOS C	14 veh (20 sec/veh)	LOS B	12 veh (15 sec/veh)
	Northbound Thrus	LOS C	14 veh (23 sec/veh)	LOS B	4 veh (11 sec/veh)
	Southbound Thrus	LOS C	10 veh (34 sec/veh)	LOS D	6 veh (35 sec/veh)
	Southbound Right Turns	LOS A	1 veh (1 sec/veh)	LOS A	2 veh (2 sec/veh)
	OVERALL INTERSECTION	**LOS C (24 sec/veh)**		**LOS B (17 sec/veh)**	

4. YEAR 2028 BACKGROUND TRAFFIC VOLUMES

In order to account for the traffic growth which will occur within the study area because of typical growth, as well as other approved developments, background traffic volumes were established for the intersections within the study area. Specifically, in order to account for growth within the study area, consideration was given to the historical traffic volumes near the project site. The Tennessee Department of Transportation (TDOT) conducts an annual count program throughout the state. This count program includes the annual collection of average daily traffic (ADT) counts at numerous fixed locations. As shown in Table 4, the daily traffic volumes within the study area increased steadily 2003-2017.

As previously noted, the entire proposed project is expected to be completed within three years. Per the Traffic Study Requirements that have been established by the City of Spring Hill, background traffic volumes should be established for five years beyond the anticipated build-out year, or Year 2028. Therefore, the existing traffic volumes at the intersections within the study area were increased by 16% to represent initial Year 2028 background traffic volumes, as shown in Figure 5A.

TABLE 4. HISTORICAL TRAFFIC VOLUMES IN THE STUDY AREA

Year	Station 222 Saturn Parkway ADT	Annual Growth	Overall Growth
2003	25,792		
2004	26,389	2.31%	
2005	27,826	5.45%	
2006	27,972	0.52%	
2007	28,212	0.86%	
2008	29,233	3.62%	
2009	29,425	0.66%	
2010	29,059	-1.24%	
2011	28,063	-3.43%	
2012	28,268	0.73%	
2013	30,186	6.79%	
2014	29,296	-2.95%	
2015	30,176	3.00%	
2016	29,913	-0.87%	
2017	31,063	3.84%	1.46%

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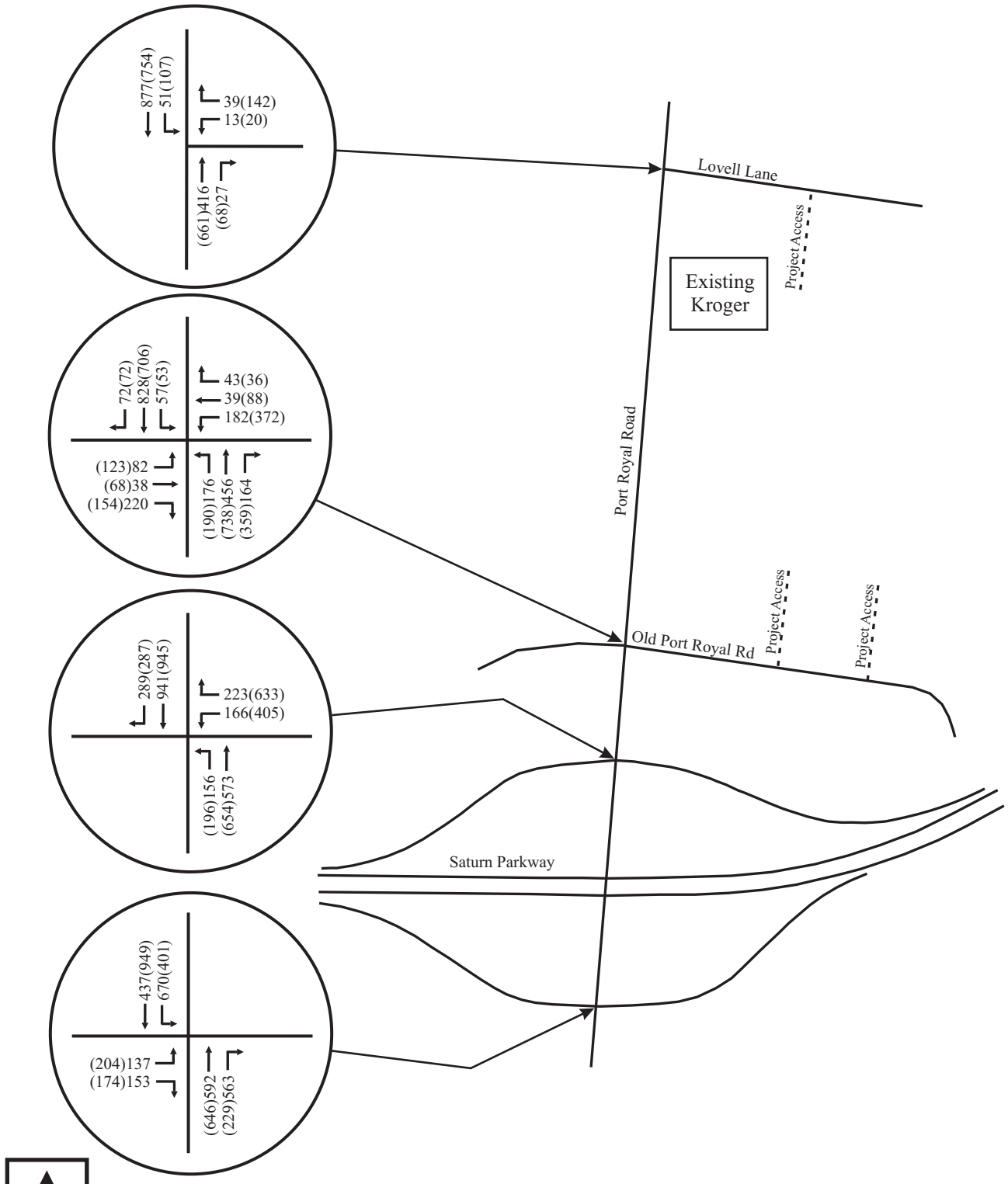

N

No Scale

XX - AM Peak Hour Volumes
(XX) - PM Peak Hour Volumes

Figure 5A.
Initial Year 2028 Background Peak Hour Traffic
(Existing Traffic Volumes Increased 16%)

It is important to note that a traffic signal is planned for construction on Port Royal Road at the main access for the existing Kroger store and adjacent commercial land uses between Lovell Lane and Old Port Royal Road. Specifically, it is likely that this traffic signal will be installed within the next two years. Therefore, it was assumed that 50% of the westbound left turns from Old Port Royal Road onto southbound Port Royal Road will instead exit the Kroger shopping center at the new traffic signal, north of Old Port Royal Road. The adjusted background traffic volumes are shown in Figure 5B.

Also, it is important to note that a new interchange will be constructed on I-65, north of the study area. Specifically, it is likely that this traffic signal will be constructed by 2028. Therefore, it was assumed that northbound and southbound traffic volumes on Port Royal Road will be reduced 20% in order to reflect how travel patterns will change when the interchange is completed. The final adjusted background traffic volumes are shown in Figure 5C.

Using the background peak hour traffic volumes, capacity analyses were conducted for the intersections within the study area. For these analyses, it was assumed that all existing infrastructure will be maintained and no improvements will be made.

The results of the capacity analyses for the background peak hour traffic volumes are shown in Table 5, and Appendix B includes the capacity analyses worksheets. These analyses indicate that:

- At the unsignalized intersection of Port Royal Road and Lovell Lane, all of the critical turning movements will operate at LOS C or better during both peak hours.

- The signalized intersection of Port Royal Road and Reserve Boulevard / Old Port Royal Road will operate at LOS D during the AM peak hour and LOS C during the PM peak hour.

- The signalized intersection of Port Royal Road and the Ramps for Westbound Saturn Parkway will operate at LOS C or better during both peak hours.

- The signalized intersection of Port Royal Road and the Ramps for Eastbound Saturn Parkway will operate at LOS C or better during both peak hours.

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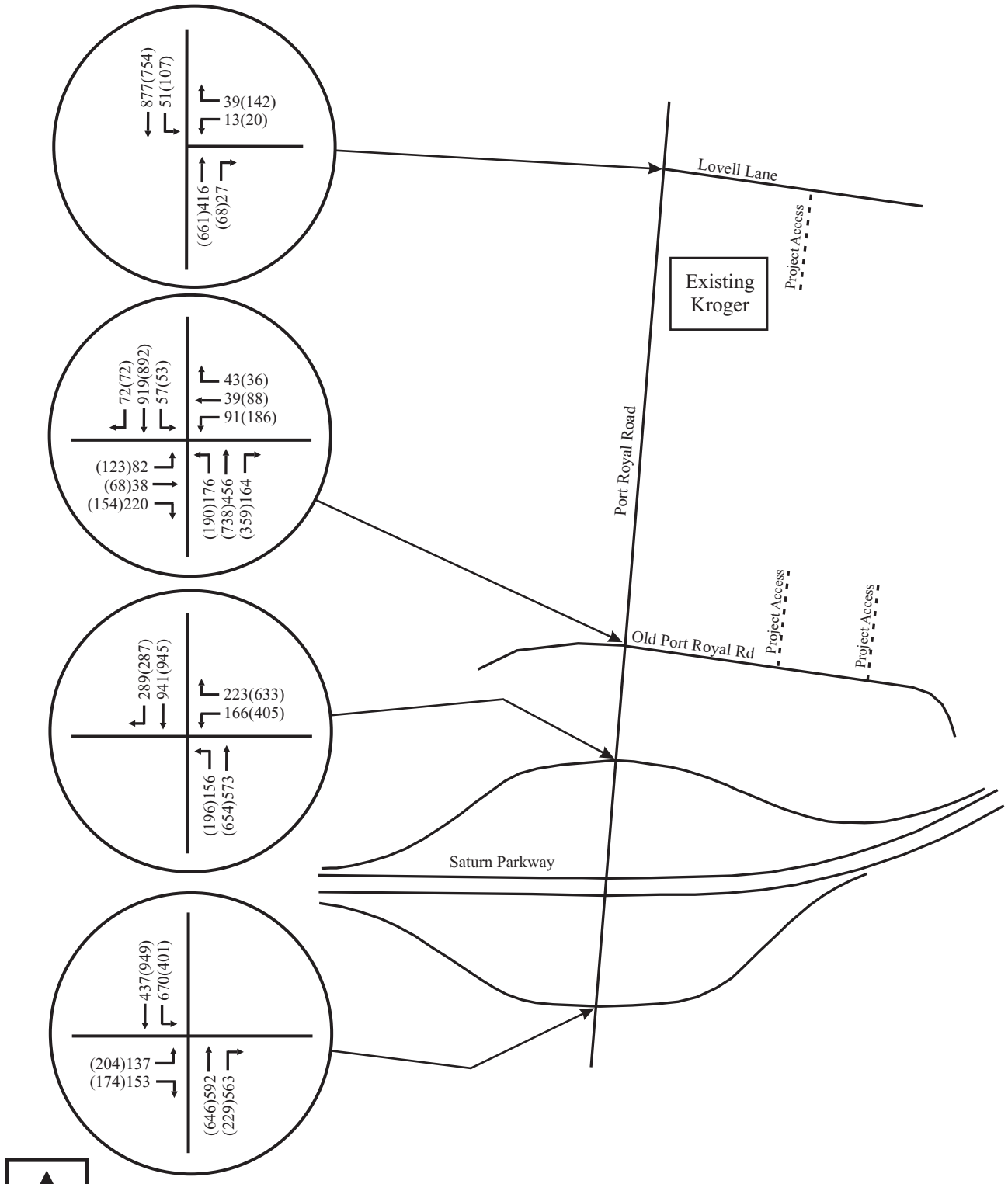

Figure 5B.
Initial Year 2028 Background Peak Hour Traffic Adjusted to Reflect New Traffic Signal at Kroger

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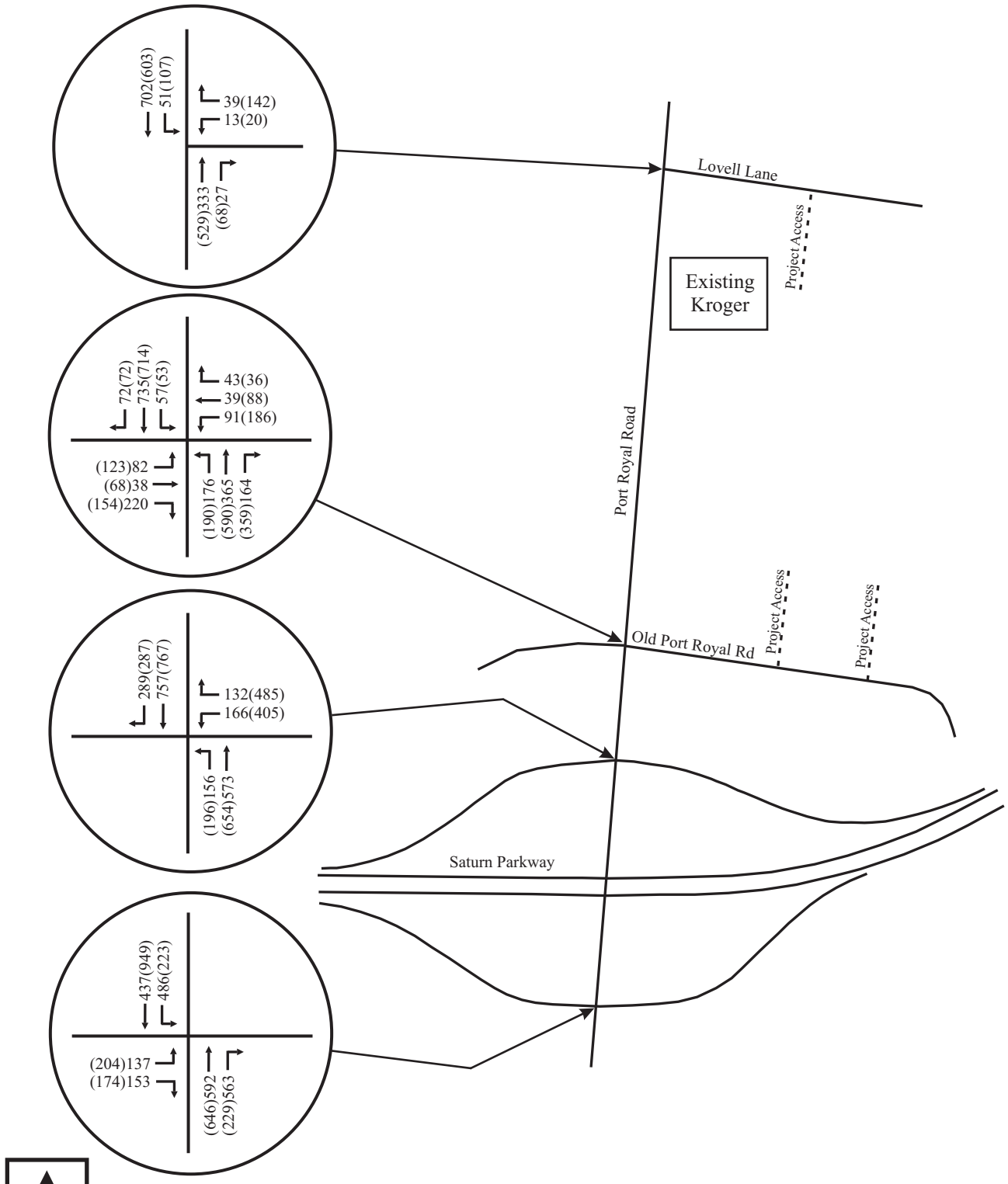

No Scale

XX - AM Peak Hour Volumes
(XX) - PM Peak Hour Volumes

Figure 5C.
Final 2028 Background Peak Hour Traffic
(Through Volumes Reduced 20% to Reflect New Interchange at Buckner Road)

TABLE 5. YEAR 2028 BACKGROUND PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LEVEL OF SERVICE	95TH %-ILE QUEUE	LEVEL OF SERVICE	95TH %-ILE QUEUE
Port Royal Road and Lovell Lane	Westbound Left / Right Turns	LOS B	1 veh (15 sec/veh)	LOS C	2 veh (21 sec/veh)
	Southbound Left Turns	LOS A	1 veh (8 sec/veh)	LOS A	1 veh (9 sec/veh)
Port Royal Road and Reserve Boulevard / Old Port Royal Road	Eastbound Left Turns	LOS C	3 veh (33 sec/veh)	LOS C	5 veh (32 sec/veh)
	Eastbound Thrus / Right Turns	LOS D	12 veh (47 sec/veh)	LOS D	10 veh (44 sec/veh)
	Westbound Left Turns	LOS C	4 veh (35 sec/veh)	LOS D	8 veh (48 sec/veh)
	Westbound Thrus	LOS D	2 veh (36 sec/veh)	LOS D	4 veh (37 sec/veh)
	Westbound Right Turns	LOS D	2 veh (36 sec/veh)	LOS D	1 veh (36 sec/veh)
	Northbound Left Turns	LOS C	5 veh (28 sec/veh)	LOS C	4 veh (22 sec/veh)
	Northbound Thrus	LOS B	8 veh (15 sec/veh)	LOS B	12 veh (17 sec/veh)
	Northbound Right Turns	LOS B	4 veh (16 sec/veh)	LOS B	8 veh (18 sec/veh)
	Southbound Left Turns	LOS B	1 veh (15 sec/veh)	LOS B	1 veh (16 sec/veh)
	Southbound Thrus	LOS D	33 veh (50 sec/veh)	LOS D	25 veh (38 sec/veh)
	Southbound Right Turns	LOS B	2 veh (18 sec/veh)	LOS B	2 veh (17 sec/veh)
	OVERALL INTERSECTION	**LOS D (35 sec/veh)**		**LOS C (29 sec/veh)**	
Port Royal Road and the Ramps for Westbound Saturn Parkway	Westbound Left Turns	LOS D	4 veh (46 sec/veh)	LOS C	7 veh (25 sec/veh)
	Westbound Right Turns	LOS D	7 veh (51 sec/veh)	LOS C	17 veh (34 sec/veh)
	Northbound Left Turns	LOS D	7 veh (47 sec/veh)	LOS D	7 veh (42 sec/veh)
	Northbound Thrus	LOS A	2 veh (2 sec/veh)	LOS A	4 veh (8 sec/veh)
	Southbound Thrus	LOS A	5 veh (8 sec/veh)	LOS C	8 veh (21 sec/veh)

	Southbound Right Turns	LOS A	1 veh (2 sec/veh)	LOS B	4 veh (14 sec/veh)
	OVERALL INTERSECTION	**LOS B (14 sec/veh)**		**LOS C (22 sec/veh)**	
Port Royal Road and the Ramps for Eastbound Saturn Parkway	Eastbound Left Turns	LOS D	7 veh (47 sec/veh)	LOS D	9 veh (44 sec/veh)
	Eastbound Thrus/Right Turns	LOS D	8 veh (51 sec/veh)	LOS D	8 veh (44 sec/veh)
	Northbound Left Turns	LOS C	17 veh (21 sec/veh)	LOS B	14 veh (15 sec/veh)
	Northbound Thrus	LOS C	18 veh (24 sec/veh)	LOS B	4 veh (10 sec/veh)
	Southbound Thrus	LOS D	10 veh (41 sec/veh)	LOS D	5 veh (42 sec/veh)
	Southbound Right Turns	LOS A	3 veh (2 sec/veh)	LOS A	2 veh (3 sec/veh)
	OVERALL INTERSECTION	**LOS C (26 sec/veh)**		**LOS B (17 sec/veh)**	

5. IMPACTS OF PROPOSED DEVELOPMENT (APARTMENTS)

5.1 TRIP GENERATION

Trip generation calculations were conducted in order to identify how much traffic will be generated by the proposed project. Trip generation data for daily and peak hour trips were identified from Trip Generation, Tenth Edition, which was published by the Institute of Transportation Engineers (ITE) in 2017. Table 6 presents the daily and peak hour trip generations for proposed project, and these calculations are included in Appendix C.

TABLE 6. TRIP GENERATION

LAND USE	SIZE	DAILY TRAFFIC	GENERATED TRAFFIC			
			AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Multi-Family Residential (LUC 220)	396 homes	2,898	42	140	140	82

5.2 TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

For the purposes of this study, it was estimated that the trips generated by the proposed development will access the project site according to the directional distribution shown in Figure 6. The development of this distribution was based on the following factors:

- existing land use characteristics,
- the directions of approach of the existing traffic,
- the access proposed for the project, and
- the locations of population centers in the area.

The peak hour trip generations and directional distribution were used to add the site-generated trips to the roadway system. Figure 7 includes the peak hour traffic volumes that are expected to be generated by the proposed project.

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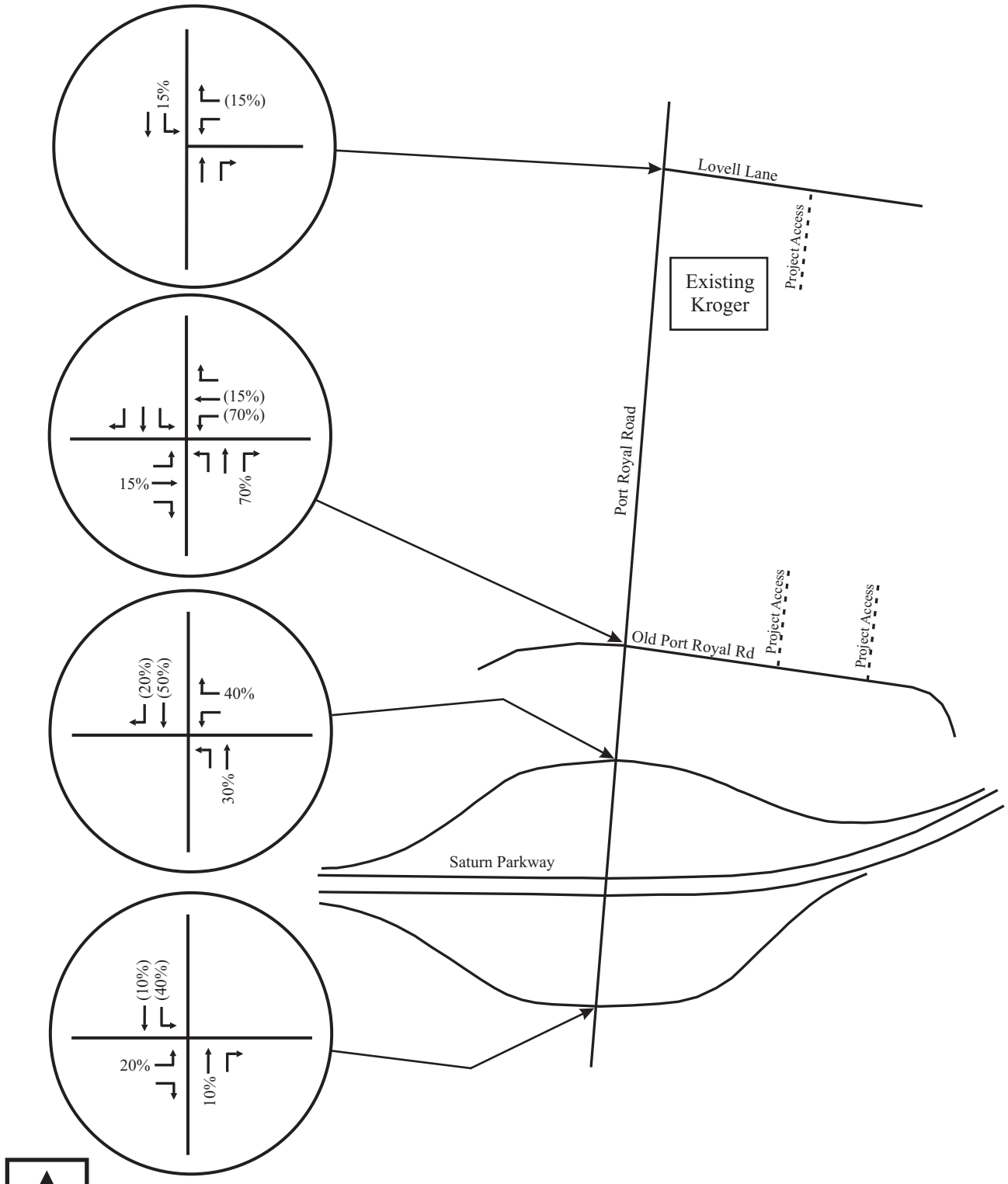

Figure 6.
Directional Distribution of Traffic Volumes Generated by the Proposed Residential Land Uses

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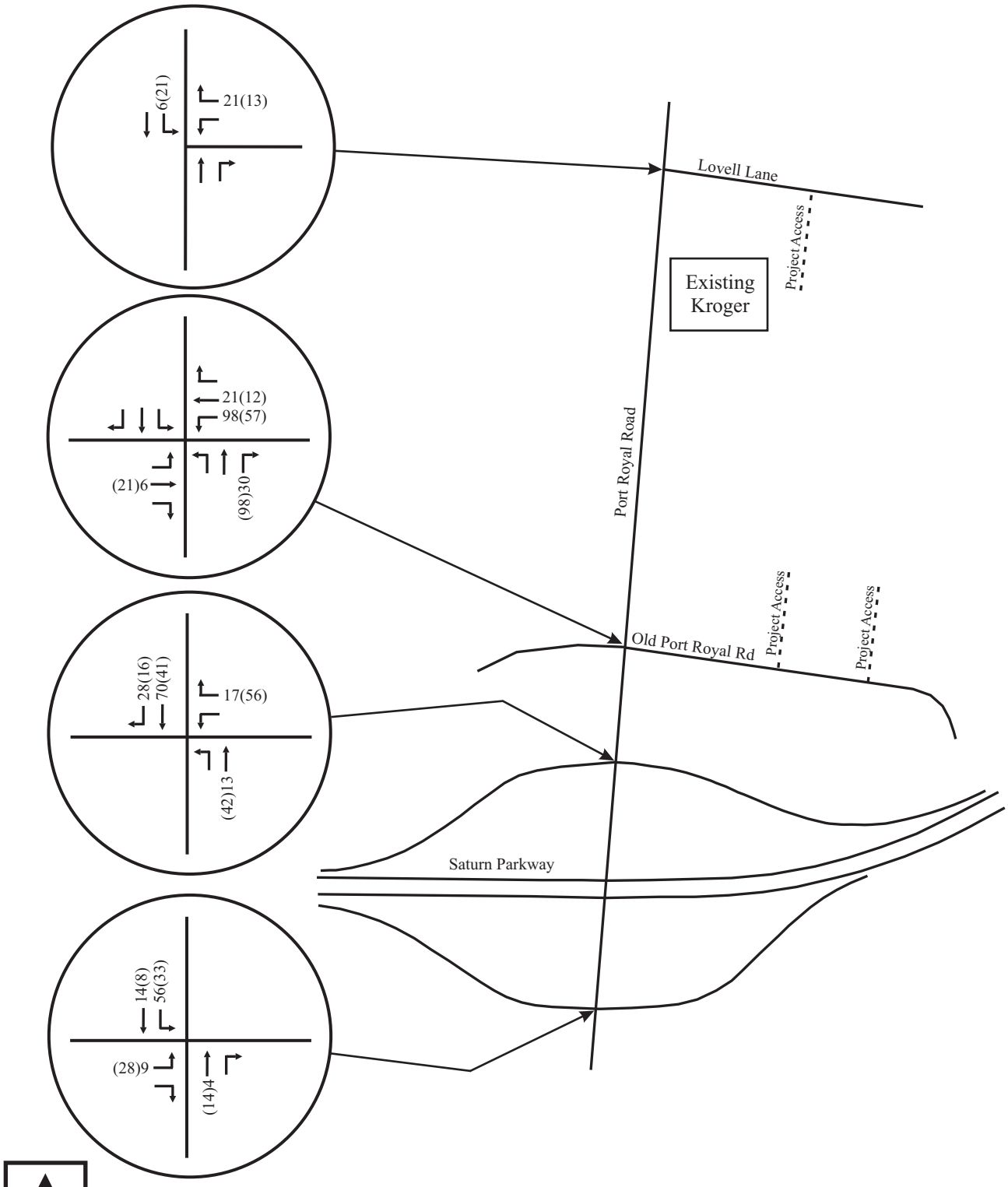

No Scale

XX - AM Peak Hour Volumes
(XX) - PM Peak Hour Volumes

Figure 7.
Peak Hour Traffic Volumes Generated by the Proposed Apartments

5.3 CAPACITY ANALYSES

In order to identify the projected peak hour traffic volumes at the completion of the proposed project, the trips generated by the proposed development were added to the background peak hour traffic volumes within the study area. The resulting peak hour volumes are shown in Figure 8.

Using the total projected peak hour traffic volumes, capacity analyses were conducted in order to determine the impact of the proposed project on the roadway system. Specifically, these capacity analyses were used to evaluate the need for roadway and traffic control improvements within the study area. For the purposes of these analyses, it was assumed that all existing laneage and traffic control will be maintained, and no improvements will be provided.

The results of the capacity analyses for the total projected peak hour traffic volumes are shown in Table 7, and Appendix B includes the capacity analyses worksheets. These analyses indicate that:

- At the unsignalized intersection of Port Royal Road and Lovell Lane, all of the critical turning movements will operate at LOS C or better during both peak hours.

- The signalized intersection of Port Royal Road and Reserve Boulevard / Old Port Royal Road will operate at LOS D during both peak hours.

- The signalized intersection of Port Royal Road and the Ramps for Westbound Saturn Parkway will operate at LOS C or better during both peak hours.

- The signalized intersection of Port Royal Road and the Ramps for Eastbound Saturn Parkway will operate at LOS C during both peak hours.

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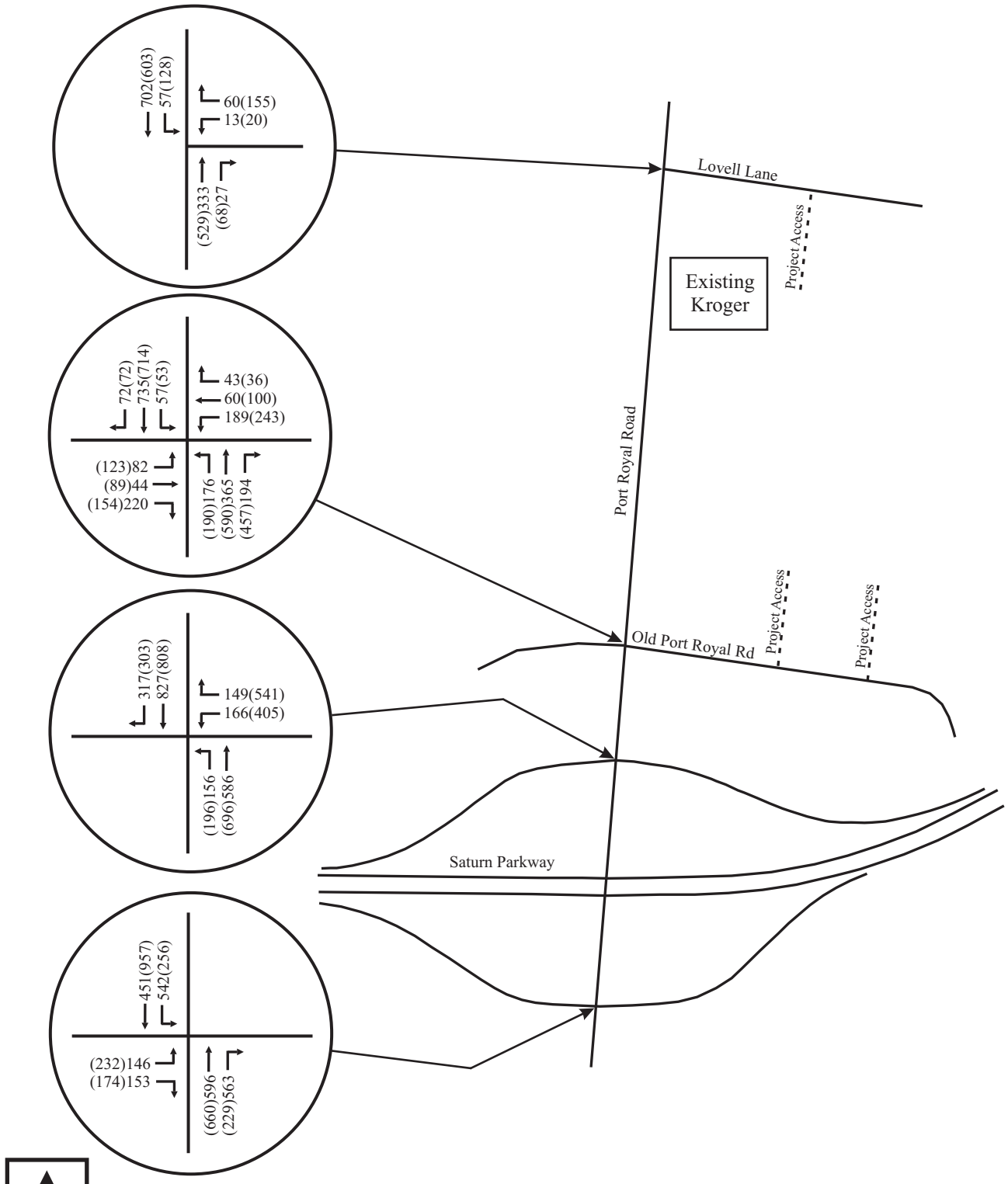

No Scale

XX - AM Peak Hour Volumes
(XX) - PM Peak Hour Volumes

Figure 8.
Total Projected Peak Hour Traffic Volumes with the Completion of the Proposed Apartments

TABLE 7. TOTAL PROJECTED PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LEVEL OF SERVICE	95TH %-ILE QUEUE	LEVEL OF SERVICE	95TH %-ILE QUEUE
Port Royal Road and Lovell Lane	Westbound Left / Right Turns	LOS B	1 veh (14 sec/veh)	LOS C	2 veh (22 sec/veh)
	Southbound Left Turns	LOS A	1 veh (8 sec/veh)	LOS A	1 veh (9 sec/veh)
Port Royal Road and Reserve Boulevard / Old Port Royal Road	Eastbound Left Turns	LOS D	4 veh (36 sec/veh)	LOS C	5 veh (32 sec/veh)
	Eastbound Thrus / Right Turns	LOS D	14 veh (51 sec/veh)	LOS E	13 veh (67 sec/veh)
	Westbound Left Turns	LOS E	10 veh (56 sec/veh)	LOS E	12 veh (65 sec/veh)
	Westbound Thrus	LOS D	3 veh (37 sec/veh)	LOS C	4 veh (35 sec/veh)
	Westbound Right Turns	LOS D	2 veh (36 sec/veh)	LOS C	1 veh (33 sec/veh)
	Northbound Left Turns	LOS D	10 veh (40 sec/veh)	LOS C	4 veh (24 sec/veh)
	Northbound Thrus	LOS B	9 veh (15 sec/veh)	LOS C	14 veh (22 sec/veh)
	Northbound Right Turns	LOS B	5 veh (17 sec/veh)	LOS B	7 veh (20 sec/veh)
	Southbound Left Turns	LOS B	2 veh (18 sec/veh)	LOS B	1 veh (18 sec/veh)
	Southbound Thrus	LOS F	40 veh (72 sec/veh)	LOS D	28 veh (49 sec/veh)
	Southbound Right Turns	LOS C	3 veh (22 sec/veh)	LOS B	2 veh (19 sec/veh)
	OVERALL INTERSECTION	**LOS D (45 sec/veh)**		**LOS D (37 sec/veh)**	
Port Royal Road and the Ramps for Westbound Saturn Parkway	Westbound Left Turns	LOS D	5 veh (49 sec/veh)	LOS C	6 veh (22 sec/veh)
	Westbound Right Turns	LOS E	9 veh (55 sec/veh)	LOS C	18 veh (33 sec/veh)
	Northbound Left Turns	LOS D	8 veh (51 sec/veh)	LOS D	7 veh (41 sec/veh)
	Northbound Thrus	LOS A	4 veh (5 sec/veh)	LOS B	6 veh (11 sec/veh)
	Southbound Thrus	LOS A	6 veh (9 sec/veh)	LOS C	8 veh (23 sec/veh)

	Southbound Right Turns	LOS A	2 veh (2 sec/veh)	LOS B	4 veh (14 sec/veh)
	OVERALL INTERSECTION	**LOS B (16 sec/veh)**		**LOS C (22 sec/veh)**	
Port Royal Road and the Ramps for Eastbound Saturn Parkway	Eastbound Left Turns	LOS D	8 veh (52 sec/veh)	LOS D	10 veh (44 sec/veh)
	Eastbound Thrus/Right Turns	LOS E	9 veh (55 sec/veh)	LOS D	8 veh (42 sec/veh)
	Northbound Left Turns	LOS C	19 veh (23 sec/veh)	LOS B	15 veh (17 sec/veh)
	Northbound Thrus	LOS C	19 veh (26 sec/veh)	LOS B	5 veh (12 sec/veh)
	Southbound Thrus	LOS D	13 veh (45 sec/veh)	LOS D	5 veh (39 sec/veh)
	Southbound Right Turns	LOS A	1 veh (1 sec/veh)	LOS A	4 veh (4 sec/veh)
	OVERALL INTERSECTION	**LOS C (28 sec/veh)**		**LOS B (18 sec/veh)**	

6. IMPACTS OF PROPOSED DEVELOPMENT (FUTURE)

6.1 TRIP GENERATION

Trip generation calculations were conducted in order to identify how much traffic will be generated by possible commercial development that could be constructed adjacent to the proposed apartments. Trip generation data for daily and peak hour trips were identified from Trip Generation, Tenth Edition, which was published by the Institute of Transportation Engineers (ITE) in 2017. Table 8 presents the daily and peak hour trip generations for proposed project, and these calculations are included in Appendix C.

TABLE 8. TRIP GENERATION

LAND USE	SIZE	DAILY TRAFFIC	GENERATED TRAFFIC			
			AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Supermarket (LUC 850)	49,000 sq.ft.	5,232	112	75	231	222
Shopping Center (LUC 820)	9,600 sq.ft.	362	6	3	18	19
General Office (LUC 710)	24,000 sq.ft.	266	42	7	5	25
TOTAL	**82,600 sq.ft.**	**5,860**	**160**	**85**	**253**	**266**

6.2 TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

For the purposes of this study, it was estimated that the trips generated by the possible commercial development that could be constructed adjacent to the proposed apartments development will access the project site according to the directional distribution shown in Figure 9. The development of this distribution was based on the following factors:

- existing land use characteristics,
- the directions of approach of the existing traffic,
- the access proposed for the project, and
- the locations of population centers in the area.

The peak hour trip generations and directional distribution were used to add the site-generated trips to the roadway system. Figure 10 includes the peak hour traffic volumes that are expected to be generated by the possible commercial development that could be constructed adjacent to the proposed apartments.

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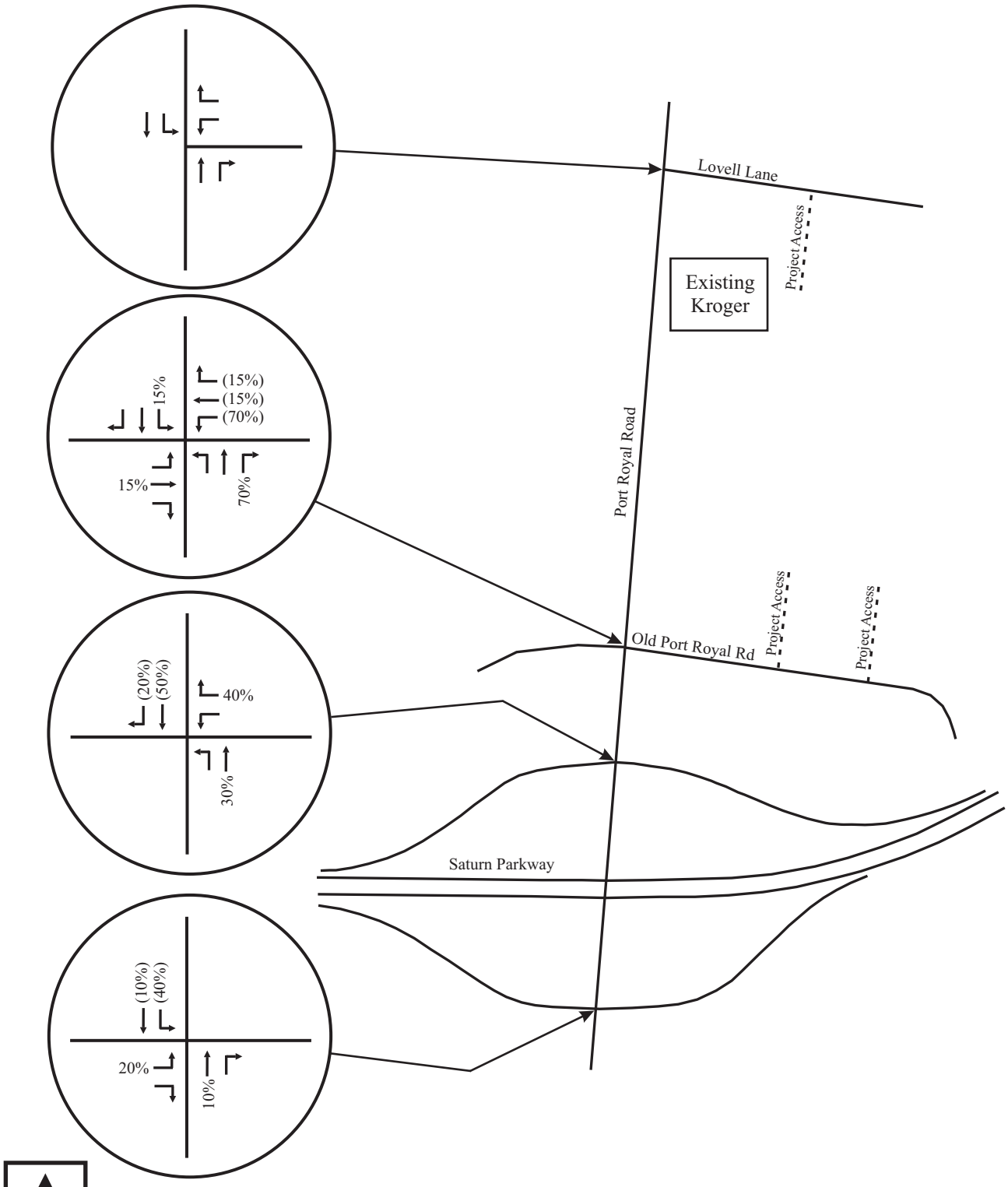

N

No Scale

XX - Entering Volumes
(XX) - Exiting Volumes

Figure 9.
Directional Distribution of Traffic Volumes Generated by the Future Commercial Land Uses

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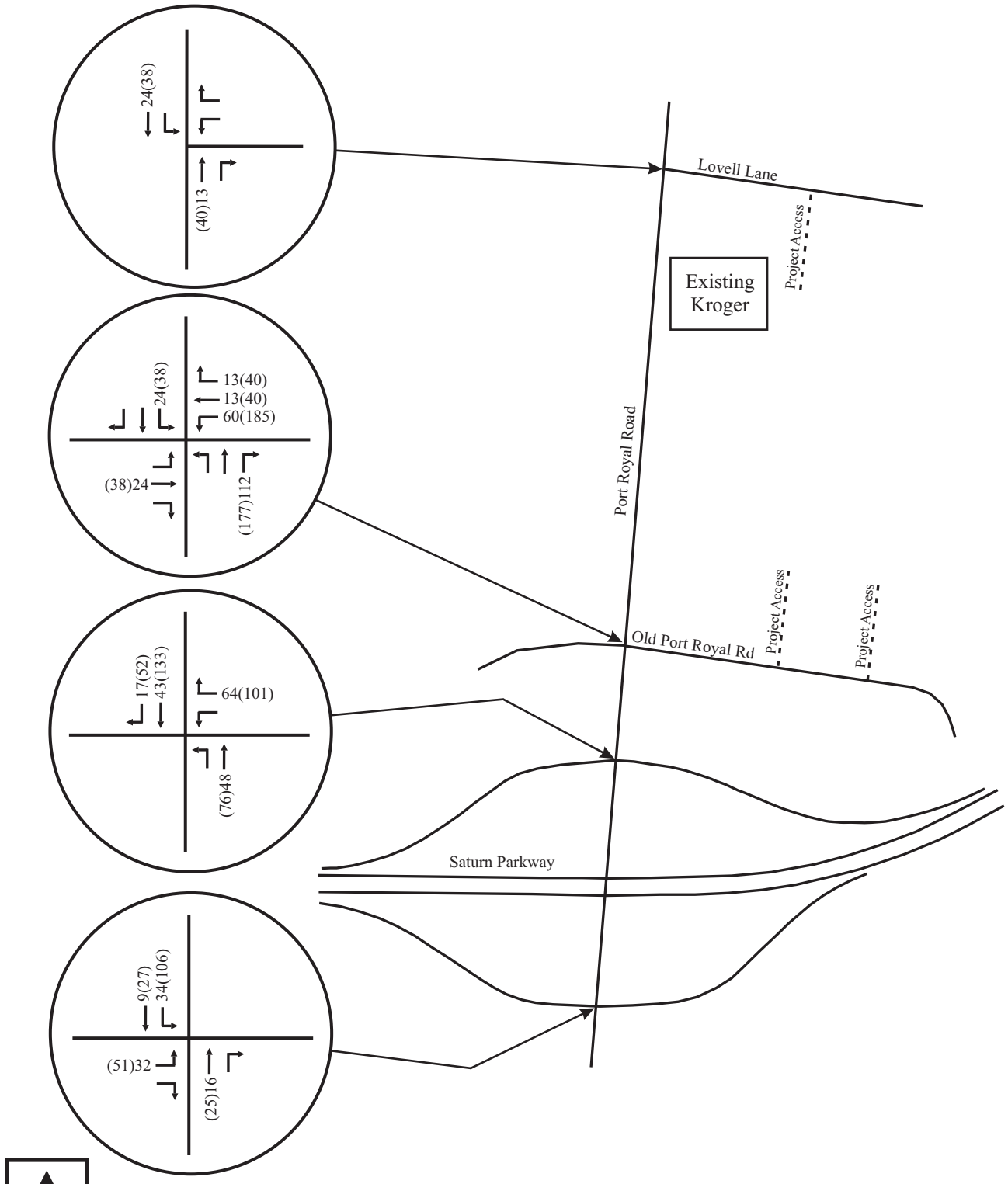

No Scale

XX - AM Peak Hour Volumes
(XX) - PM Peak Hour Volumes

Figure 10.
Peak Hour Traffic Volumes Generated by Possible Future Commercial Land Uses

6.3 CAPACITY ANALYSES

In order to identify the projected peak hour traffic volumes at the completion of the possible commercial development that could be constructed adjacent to the proposed apartments, the trips generated by the future development were added to the total projected peak hour traffic volumes at the completion of the proposed apartments. The resulting peak hour volumes are shown in Figure 11.

Using the total projected peak hour traffic volumes, capacity analyses were conducted in order to determine the impact of the possible commercial development on the roadway system. Specifically, these capacity analyses were used to evaluate the need for roadway and traffic control improvements within the study area. For the purposes of these analyses, it was assumed that all existing laneage and traffic control will be maintained, and no improvements will be provided.

The results of the capacity analyses for the total projected peak hour traffic volumes are shown in Table 9, and Appendix B includes the capacity analyses worksheets. These analyses indicate that:

- At the unsignalized intersection of Port Royal Road and Lovell Lane, all of the critical turning movements will operate at LOS C or better during both peak hours.

- The signalized intersection of Port Royal Road and Reserve Boulevard / Old Port Royal Road will operate at LOS E during both peak hours.

- The signalized intersection of Port Royal Road and the Ramps for Westbound Saturn Parkway will operate at LOS C or better during both peak hours.

- The signalized intersection of Port Royal Road and the Ramps for Eastbound Saturn Parkway will operate at LOS C during both peak hours.

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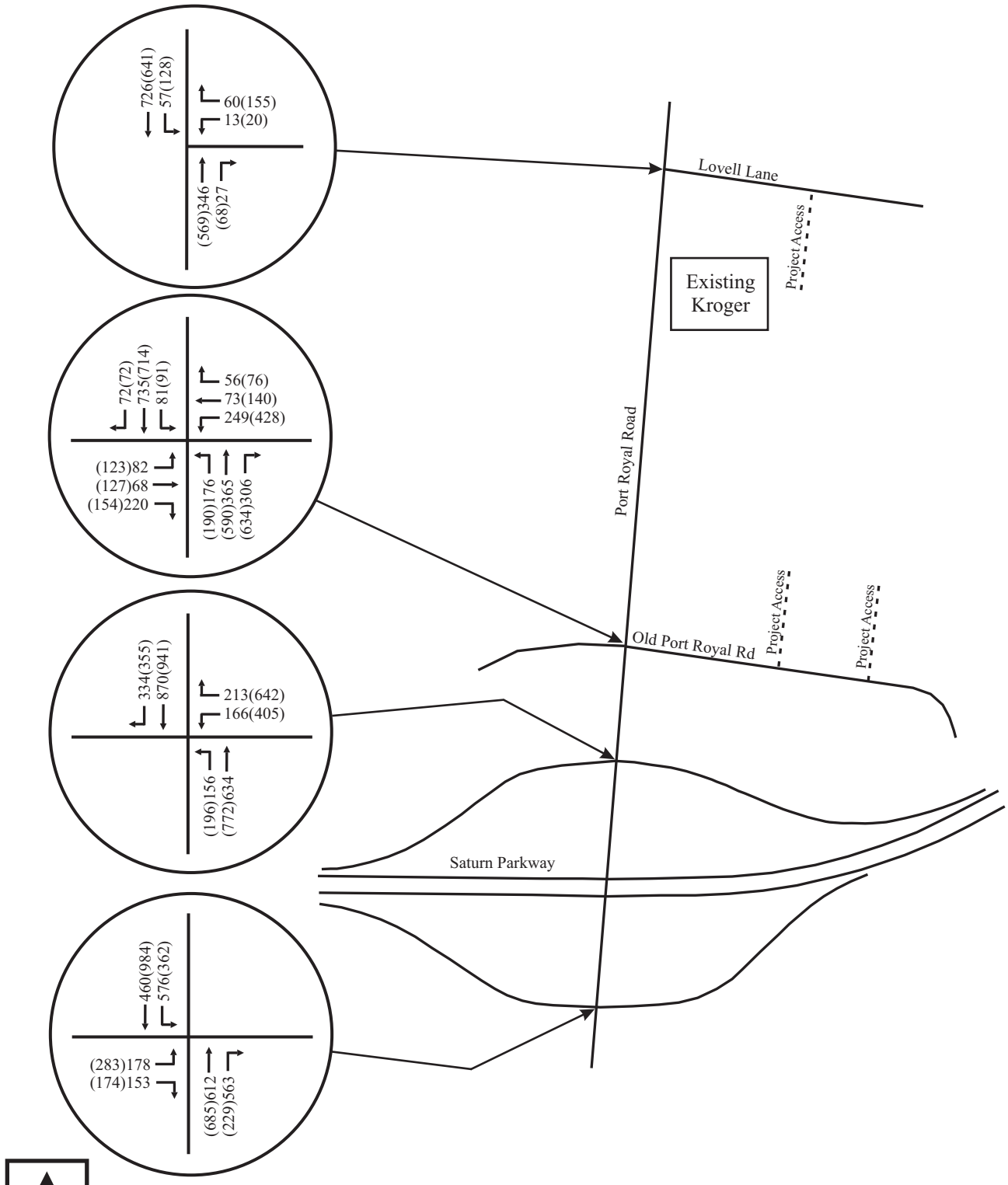


No Scale

XX - AM Peak Hour Volumes
(XX) - PM Peak Hour Volumes

Figure 11.
Total Projected Peak Hour Traffic Volumes with Possible Future Commercial Land Uses

TABLE 9. TOTAL PROJECTED PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LEVEL OF SERVICE	95TH %-ILE QUEUE	LEVEL OF SERVICE	95TH %-ILE QUEUE
Port Royal Road and Lovell Lane	Westbound Left / Right Turns	LOS B	1 veh (14 sec/veh)	LOS C	3 veh (25 sec/veh)
	Southbound Left Turns	LOS A	1 veh (8 sec/veh)	LOS A	1 veh (10 sec/veh)
Port Royal Road and Reserve Boulevard / Old Port Royal Road	Eastbound Left Turns	LOS C	4 veh (34 sec/veh)	LOS D	6 veh (39 sec/veh)
	Eastbound Thrus / Right Turns	LOS D	15 veh (50 sec/veh)	LOS E	17 veh (74 sec/veh)
	Westbound Left Turns	LOS F	15 veh (83 sec/veh)	LOS F	25 veh (90 sec/veh)
	Westbound Thrus	LOS C	3 veh (34 sec/veh)	LOS C	6 veh (34 sec/veh)
	Westbound Right Turns	LOS C	3 veh (34 sec/veh)	LOS C	3 veh (33 sec/veh)
	Northbound Left Turns	LOS D	7 veh (37 sec/veh)	LOS D	7 veh (38 sec/veh)
	Northbound Thrus	LOS B	9 veh (18 sec/veh)	LOS D	23 veh (40 sec/veh)
	Northbound Right Turns	LOS C	11 veh (27 sec/veh)	LOS F	28 veh (68 sec/veh)
	Southbound Left Turns	LOS C	3 veh (21 sec/veh)	LOS C	3 veh (30 sec/veh)
	Southbound Thrus	LOS F	47 veh (101 sec/veh)	LOS F	47 veh (114 sec/veh)
	Southbound Right Turns	LOS C	3 veh (24 sec/veh)	LOS C	3 veh (30 sec/veh)
	OVERALL INTERSECTION	**LOS E (57 sec/veh)**		**LOS E (69 sec/veh)**	
Port Royal Road and the Ramps for Westbound Saturn Parkway	Westbound Left Turns	LOS D	4 veh (44 sec/veh)	LOS C	8 veh (25 sec/veh)
	Westbound Right Turns	LOS D	11 veh (53 sec/veh)	LOS E	32 veh (60 sec/veh)
	Northbound Left Turns	LOS D	8 veh (51 sec/veh)	LOS E	11 veh (75 sec/veh)
	Northbound Thrus	LOS A	3 veh (3 sec/veh)	LOS B	7 veh (12 sec/veh)
	Southbound Thrus	LOS B	6 veh (10 sec/veh)	LOS C	13 veh (34 sec/veh)

	Southbound Right Turns	LOS A	3 veh (7 sec/veh)	LOS B	5 veh (19 sec/veh)
	OVERALL INTERSECTION	**LOS B (17 sec/veh)**		**LOS C (34 sec/veh)**	
Port Royal Road and the Ramps for Eastbound Saturn Parkway	Eastbound Left Turns	LOS D	10 veh (54 sec/veh)	LOS E	15 veh (56 sec/veh)
	Eastbound Thrus/Right Turns	LOS D	9 veh (54 sec/veh)	LOS D	9 veh (50 sec/veh)
	Northbound Left Turns	LOS C	20 veh (24 sec/veh)	LOS C	21 veh (23 sec/veh)
	Northbound Thrus	LOS C	20 veh (27 sec/veh)	LOS B	7 veh (15 sec/veh)
	Southbound Thrus	LOS D	12 veh (41 sec/veh)	LOS D	8 veh (47 sec/veh)
	Southbound Right Turns	LOS A	2 veh (2 sec/veh)	LOS A	5 veh (4 sec/veh)
	OVERALL INTERSECTION	**LOS C (29 sec/veh)**		**LOS C (24 sec/veh)**	

7. CONCLUSIONS AND RECOMMENDATIONS

The analyses conducted for the purposes of this study indicate that the following considerations should be made in order to accommodate the traffic volumes that will be generated by the proposed project.

Intersection of Port Royal Road and Lovell Lane
The analyses conducted for the purposes of this study indicate that this intersection operates acceptably during both peak hours and will continue to do so under background and total projected conditions. Therefore, no laneage or traffic control modifications to this intersection are recommended in conjunction with the proposed project.

Intersection of Port Royal Road and Reserve Boulevard / Old Port Royal Road
The analyses conducted for the purposes of this study indicate that this intersection operates acceptably during both peak hours and will continue to do so under background and total projected conditions with the apartments. However, the analyses conducted for the purposes of this study indicate that the eastbound left turns and through movements will experience significant queues under total projected conditions with the future commercial development.

In conjunction with the proposed apartment complex, which would occur during the initial phase of development on the project site, the existing traffic signal at the intersection of Port Royal Road and Reserve Boulevard / Old Port Royal Road should be modified to include right turn overlap signal phases for the northbound, southbound, and westbound approaches. This modification will help to reduce the vehicle delays and queues for these turning movements.

Intersection of Port Royal Road and the Ramps for Westbound Saturn Parkway
The analyses conducted for the purposes of this study indicate that this intersection operates acceptably during both peak hours and will continue to do so under background and total projected conditions. Therefore, no laneage or traffic control modifications to this intersection are recommended in conjunction with the proposed project.

Intersection of Port Royal Road and the Ramps for Eastbound Saturn Parkway
The analyses conducted for the purposes of this study indicate that this intersection operates acceptably during both peak hours and will continue to do so under background and total projected conditions. Therefore, no laneage or traffic control modifications to this intersection are recommended in conjunction with the proposed project.

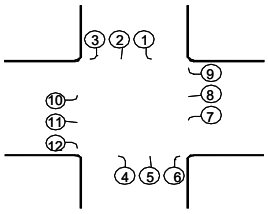
Old Port Royal Road
Old Port Royal Road should be improved to the standards established by the City of Spring Hill from approximately 350 feet east of Port Royal Road to the eastern boundary of the project site.

In particular, the cross-section should include a left turn lane for turning movements into the proposed project site.

Future Commercial Development

For the purposes of this study, a land use scenario was established for the future commercial development that could occur between the proposed apartment complex and Old Port Royal Road. When specific land uses and tenants are planned, an updated Traffic Impact Study should be prepared in order to identify the specific impacts of such development. In particular, consideration should be given to the need for connectivity to the existing commercial development west of the project site and the need for any additional traffic signal control on Port Royal Road at the existing commercial development north of Old Port Royal Road.

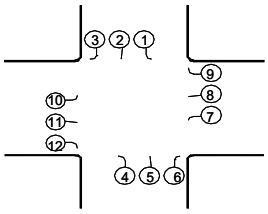
APPENDIX A
EXISTING TRAFFIC COUNTS



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: Port Royal Road and Lovell Lane
DATE: 13-Oct-20 Tue
RECORDER: Burns
NOTES: signalized

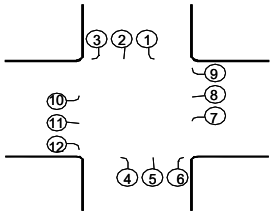
LOCATION	S/B Port Royal Road			N/B Port Royal Road			W/B Lovell Lane			E/B				
TIME	1	2	3	4	5	6	7	8	9	10	11	12		
6:00-6:15	10	103			25		4		2				772	144
6:15-6:30	6	100			37	6			3				911	152
6:30-6:45	8	154			43	5	1		5				1,070	216
6:45-7:00	10	182			62	2			4				1,168	260
7:00-7:15	13	174			86	5	1		4				1,226	283
7:15-7:30	**11**	**213**			**77**	**4**			**6**				**1,227**	311
7:30-7:45	**10**	**209**			**71**	**9**	**4**		**11**				1,155	314
7:45-8:00	**13**	**194**			**97**	**6**	**2**		**6**				1,111	**318**
8:00-8:15	**10**	**140**			**114**	**4**	**5**		**11**				1,113	284
8:15-8:30	11	131			86	5	1		5					239
8:30-8:45	20	145			85	5	3		12					270
8:45-9:00	24	165			98	9	6		18					320
4:00-4:15	23	126			152	18	3		33				1,471	355
4:15-4:30	**20**	**166**			**146**	**20**	**2**		**37**				**1,510**	391
4:30-4:45	**25**	**164**			**136**	**10**	**9**		**26**				1,462	370
4:45-5:00	**20**	**135**			**144**	**20**	**3**		**33**				1,446	355
5:00-5:15	**27**	**185**			**144**	**9**	**3**		**26**				1,398	**394**
5:15-5:30	24	132			134	14	2		37				1,344	343
5:30-5:45	24	159			128	4	1		38				1,345	354
5:45-6:00	23	142			93	2			47				1,303	307
6:00-6:15	19	146			132	5	4		34				1,274	340
6:15-6:30	24	116			158	9	2		35					344
6:30-6:45	17	91			147	19	7		31					312
6:45-7:00	9	90			132	20	9		18					278
TOTAL	**401**	**3,562**			**2,527**	**210**	**72**		**482**					
AM PK HR	44	756			359	23	11		34				**7:15-8:15**	**0.96**
PM PK HR	92	650			570	59	17		122				**4:15-5:15**	**0.96**



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: Port Royal Road and Reserve Blvd/N. Old Port Royal Rd
DATE: 13-Oct-20 Tue
RECORDER: Burns
NOTES: signalized

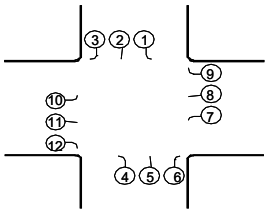
LOCATION	S/B Port Royal Road			N/B Port Royal Road			W/B N. Old Port Royal Rd			E/B Reserve Blvd				
TIME	1	2	3	4	5	6	7	8	9	10	11	12		
6:00-6:15	3	94	13	12	34	7	11	2	3	5	2	17	1,079	203
6:15-6:30	9	88	14	9	45	12	18	3	1	6	2	25	1,241	232
6:30-6:45	7	155	13	14	45	18	19	3	4	5	2	25	1,400	310
6:45-7:00	8	149	9	16	67	20	21		5	4	6	29	1,538	334
7:00-7:15	7	163	12	31	66	24	20	4	1	9	5	23	1,703	365
7:15-7:30	13	163	16	27	55	23	29	4	8	11	9	33	1,789	391
7:30-7:45	**9**	**171**	**13**	**28**	**78**	**35**	**29**	**8**	**6**	**16**	**11**	**44**	**1,796**	448
7:45-8:00	**13**	**163**	**7**	**49**	**99**	**37**	**32**	**14**	**11**	**16**	**5**	**53**	1,739	**499**
8:00-8:15	**10**	**120**	**20**	**45**	**114**	**33**	**40**	**5**	**10**	**22**	**5**	**27**	1,649	451
8:15-8:30	**17**	**124**	**22**	**22**	**82**	**29**	**26**	**7**	**10**	**17**	**12**	**30**		398
8:30-8:45	24	122	12	25	67	35	29	13	12	19	6	27		391
8:45-9:00	20	111	18	34	92	27	36	7	7	19	11	27		409
4:00-4:15													1,059	
4:15-4:30													1,586	
4:30-4:45	**11**	**140**	**20**	**27**	**102**	**57**	**72**	**20**	**14**	**26**	**14**	**36**	**2,091**	**539**
4:45-5:00	**13**	**143**	**10**	**27**	**116**	**48**	**70**	**21**	**6**	**25**	**17**	**24**	2,039	520
5:00-5:15	**5**	**143**	**16**	**26**	**119**	**45**	**77**	**20**	**2**	**30**	**12**	**32**	2,054	527
5:15-5:30	**17**	**123**	**16**	**31**	**94**	**60**	**71**	**15**	**9**	**25**	**16**	**28**	2,038	505
5:30-5:45	22	152	11	30	80	44	65	17	10	19	15	22	2,048	487
5:45-6:00	14	154	17	29	91	51	81	30	10	30	7	21	2,043	535
6:00-6:15	9	117	17	39	118	58	66	23	12	25	10	17	1,887	511
6:15-6:30	11	132	26	24	99	68	64	21	3	28	10	29		515
6:30-6:45	13	136	13	20	94	41	72	18	18	31	5	21		482
6:45-7:00	15	85	12	18	81	39	62	19	10	17	9	12		379
TOTAL	**270**	**2,948**	**327**	**583**	**1,838**	**811**	**1,010**	**274**	**172**	**405**	**191**	**602**		
AM PK HR	49	578	62	144	373	134	127	34	37	71	33	154	**7:30-8:30**	**0.90**
PM PK HR	46	549	62	111	431	210	290	76	31	106	59	120	**4:30-5:30**	**0.97**



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: Port Royal Road and the Ramps for WB Saturn Parkway
DATE: 14-Oct-20 Wed
RECORDER: Burns
NOTES: signalized

LOCATION	S/B Port Royal Road			N/B Port Royal Road			W/B Saturn Parkway Ramps			E/B				
TIME	1	2	3	4	5	6	7	8	9	10	11	12		
6:00-6:15		117	12	10	26		15		24				1,203	204
6:15-6:30		113	25	11	44		26		47				1,451	266
6:30-6:45		162	27	21	68		20		42				1,638	340
6:45-7:00		172	44	20	85		33		39				1,774	393
7:00-7:15		**191**	**67**	**26**	**99**		**24**		**45**				**1,900**	452
7:15-7:30		**189**	**64**	**26**	**90**		**35**		**49**				1,894	453
7:30-7:45		**203**	**53**	**27**	**106**		**39**		**48**				1,867	476
7:45-8:00		**196**	**65**	**37**	**132**		**39**		**50**				1,772	**519**
8:00-8:15		156	34	30	144		34		48				1,669	446
8:15-8:30		160	53	23	92		36		62					426
8:30-8:45		157	44	14	89		35		42					381
8:45-9:00		153	50	23	113		28		49					416
4:00-4:15		194	61	32	116		54		109				2,459	566
4:15-4:30		155	48	40	131		83		141				2,582	598
4:30-4:45		193	66	36	119		72		129				2,630	615
4:45-5:00		226	64	46	121		97		126				2,681	680
5:00-5:15		**220**	**81**	**48**	**137**		**81**		**122**				**2,691**	689
5:15-5:30		**217**	**59**	**37**	**135**		**75**		**123**				2,550	646
5:30-5:45		**174**	**59**	**41**	**149**		**95**		**148**				2,464	666
5:45-6:00		**204**	**49**	**43**	**143**		**98**		**153**				2,347	**690**
6:00-6:15		187	67	36	119		32		107				2,152	548
6:15-6:30		162	73	22	133		53		117					560
6:30-6:45		183	71	30	119		52		94					549
6:45-7:00		163	62	19	81		60		110					495
TOTAL		**4,247**	**1,298**	**698**	**2,591**		**1,216**		**2,024**					
AM PK HR		779	249	116	427		137		192				**7:00-8:00**	**0.92**
PM PK HR		815	248	169	564		349		546				**5:00-6:00**	**0.98**



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: Port Royal Road and the Ramps for EB Saturn Parkway
DATE: 15-Oct-20 Thu
RECORDER: Burns
NOTES: signalized

LOCATION	S/B Port Royal Road			N/B Port Royal Road			W/B			E/B Saturn Parkway Ramps				
TIME	1	2	3	4	5	6	7	8	9	10	11	12		
6:00-6:15	111	33			30	78				13		6	1,419	271
6:15-6:30	105	52			61	75				9		9	1,597	311
6:30-6:45	142	42			58	105				18		19	1,799	384
6:45-7:00	145	70			88	99				30		21	1,976	453
7:00-7:15	130	54			94	125				18		28	2,118	449
7:15-7:30	**157**	**74**			**96**	**139**				**24**		**23**	**2,200**	513
7:30-7:45	**146**	**82**			**123**	**142**				**29**		**39**	2,093	561
7:45-8:00	**146**	**124**			**150**	**102**				**29**		**44**	1,931	**595**
8:00-8:15	**129**	**97**			**141**	**102**				**36**		**26**	1,747	531
8:15-8:30	118	77			94	73				30		14		406
8:30-8:45	109	88			90	71				26		15		399
8:45-9:00	112	86			90	64				37		22		411
4:00-4:15	95	182			122	49				47		32	2,027	527
4:15-4:30	86	194			103	45				43		40	2,027	511
4:30-4:45	75	158			110	44				37		54	2,027	478
4:45-5:00	73	178			147	48				33		32	2,086	511
5:00-5:15	**94**	**174**			**136**	**53**				**36**		**34**	**2,098**	527
5:15-5:30	**74**	**183**			**125**	**43**				**56**		**30**	2,083	511
5:30-5:45	**81**	**190**			**129**	**55**				**34**		**48**	2,037	**537**
5:45-6:00	**67**	**199**			**134**	**46**				**39**		**38**	1,908	523
6:00-6:15	69	172			141	52				36		42	1,785	512
6:15-6:30	64	169			117	46				37		32		465
6:30-6:45	69	156			96	27				30		30		408
6:45-7:00	61	134			105	25				42		33		400
TOTAL	**2,458**	**2,968**			**2,580**	**1,708**				**769**		**711**		
AM PK HR	578	377			510	485				118		132	**7:15-8:15**	**0.92**
PM PK HR	316	746			524	197				165		150	**5:00-6:00**	**0.98**

APPENDIX B
CAPACITY ANALYSES

EXISTING CONDITIONS

HCS7 Two-Way Stop-Control Report

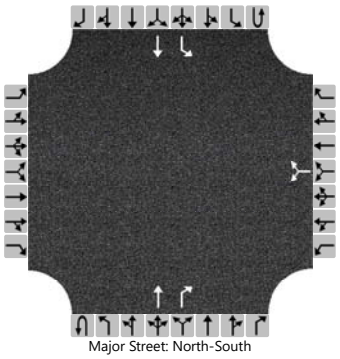
General Information

Analyst	FTG
Agency/Co.	FTG
Date Performed	Jan 2021
Analysis Year	2020
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	11106 (Existing)

Site Information

Intersection	Port Royal/Lovell
Jurisdiction	Spring Hill, TN
East/West Street	Lovell Lane
North/South Street	Port Royal Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						11		34			359	23		44	756	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							47							46		
Capacity, c (veh/h)							409							1172		
v/c Ratio							0.11							0.04		
95% Queue Length, Q_{95} (veh)							0.4							0.1		
Control Delay (s/veh)							14.9							8.2		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						14.9								0.5		
Approach LOS						B										

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HCS7 Two-Way Stop-Control Report

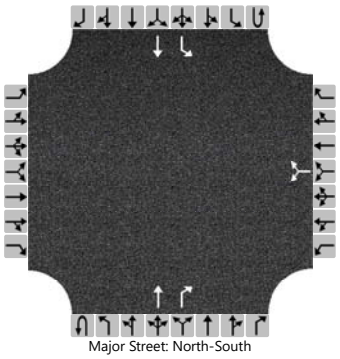
General Information

Analyst	FTG
Agency/Co.	FTG
Date Performed	Jan 2021
Analysis Year	2020
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	11106 (Existing)

Site Information

Intersection	Port Royal/Lovell
Jurisdiction	Spring Hill, TN
East/West Street	Lovell Lane
North/South Street	Port Royal Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						17		122			570	59		92	650	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							145							96		
Capacity, c (veh/h)							374							942		
v/c Ratio							0.39							0.10		
95% Queue Length, Q_{95} (veh)							1.8							0.3		
Control Delay (s/veh)							20.6							9.3		
Level of Service (LOS)							C							A		
Approach Delay (s/veh)						20.6								1.1		
Approach LOS						C										

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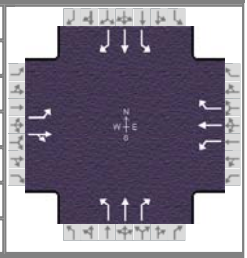
HCS7 Signalized Intersection Results Summary

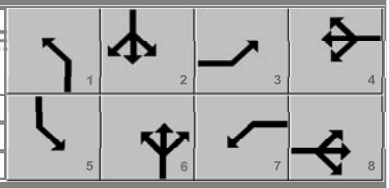
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.90
Urban Street	Port Royal Road	Analysis Year	2020 (Existing)	Analysis Period	1> 7:00
Intersection	Reserve Blvd/Old Port R…	File Name	123_exam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	71	33	190	157	34	37	152	393	141	49	714	62

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.7	2.3	45.8	5.3	0.7	17.2	
Yellow	4.0	0.0	4.0	4.0	0.0	4.0	
Red	2.0	0.0	2.0	2.0	0.0	2.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	11.3	23.2	12.0	23.9	13.0	54.1	10.7	51.8
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	3.3	3.1	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s	5.5	16.7	8.0	4.2	6.7		3.5	
Green Extension Time (g_e), s	0.0	0.6	0.0	0.7	0.3	0.0	0.1	0.0
Phase Call Probability	0.89	1.00	0.99	1.00	0.99		0.78	
Max Out Probability	0.14	0.00	1.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	79	248		174	38	41	165	427	153	54	793	69
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1647		1810	1900	1610	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	3.5	14.7		6.0	1.7	2.2	4.7	11.9	5.7	1.5	38.9	2.4
Cycle Queue Clearance Time (g_c), s	3.5	14.7		6.0	1.7	2.2	4.7	11.9	5.7	1.5	38.9	2.4
Green Ratio (*g/C*)	0.23	0.17		0.23	0.18	0.18	0.53	0.48	0.48	0.50	0.46	0.46
Capacity (*c*), veh/h	367	284		210	340	289	246	913	774	490	870	737
Volume-to-Capacity Ratio (*X*)	0.215	0.872		0.829	0.111	0.142	0.672	0.468	0.198	0.111	0.912	0.093
Back of Queue (*Q*), ft/ln (95 th percentile)	68.6	252.2		116.1	34.4	37.6	85.9	201.6	96.1	27	683.7	41
Back of Queue (*Q*), veh/ln (95 th percentile)	2.7	10.1		4.6	1.4	1.5	3.4	8.1	3.8	1.1	27.3	1.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	31.4	40.3		37.2	34.4	34.6	21.9	11.9	15.6	13.4	25.2	15.4
Incremental Delay (d_2), s/veh	0.1	3.3		22.1	0.1	0.1	1.2	1.7	0.6	0.0	15.4	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	31.5	43.6		59.2	34.4	34.7	23.1	13.6	16.2	13.4	40.6	15.6
Level of Service (LOS)	C	D		E	C	C	C	B	B	B	D	B
Approach Delay, s/veh / LOS	40.7	D		51.5	D		16.2	B		37.1	D	
Intersection Delay, s/veh / LOS	32.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	2.09	B	1.91	B
Bicycle LOS Score / LOS	1.03	A	0.91	A	1.75	B	2.00	B

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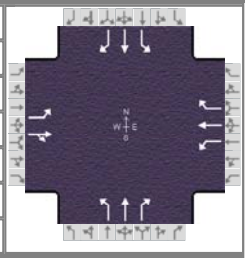
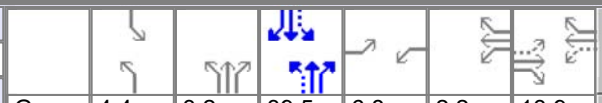
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.97
Urban Street	Port Royal Road	Analysis Year	2020 (Existing)	Analysis Period	1> 7:00
Intersection	Reserve Blvd/Old Port R…	File Name	123_expm.xus		
Project Description	11106				

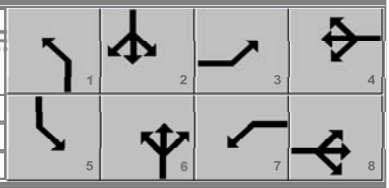


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	106	59	133	321	76	31	164	636	310	46	609	62

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	4.4	3.2	39.5	6.8	2.2	13.9
Yellow	4.0	0.0	4.0	4.0	4.0	4.0
Red	2.0	0.0	2.0	2.0	2.0	2.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.8	19.9	21.0	28.1	13.6	48.7	10.4	45.5
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	3.2	3.1	3.2	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s	7.1	13.4	17.0	5.3	7.4		3.5	
Green Extension Time (g_e), s	0.0	0.5	0.0	0.6	0.3	0.0	0.0	0.0
Phase Call Probability	0.95	1.00	1.00	1.00	0.99		0.73	
Max Out Probability	1.00	0.00	1.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	109	198		331	78	32	167	649	316	47	628	64
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1689		1810	1900	1610	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	5.1	11.4		15.0	3.3	1.6	5.4	27.2	12.3	1.5	29.9	2.5
Cycle Queue Clearance Time (g_c), s	5.1	11.4		15.0	3.3	1.6	5.4	27.2	12.3	1.5	29.9	2.5
Green Ratio (*g/C*)	0.21	0.14		0.31	0.22	0.22	0.47	0.43	0.43	0.44	0.39	0.39
Capacity (*c*), veh/h	382	235		373	420	356	288	811	688	259	750	635
Volume-to-Capacity Ratio (*X*)	0.286	0.842		0.886	0.186	0.090	0.582	0.800	0.460	0.183	0.838	0.101
Back of Queue (*Q*), ft/ln (95 th percentile)	99.5	212.2		337.6	68.5	27.3	96.4	411.8	151	27.7	536.8	43.5
Back of Queue (*Q*), veh/ln (95 th percentile)	4.0	8.5		13.5	2.7	1.1	3.9	16.5	6.0	1.1	21.5	1.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	33.5	42.0		30.7	31.6	30.9	20.7	18.5	16.5	19.8	27.4	19.1
Incremental Delay (d_2), s/veh	0.2	3.1		21.1	0.1	0.0	0.6	7.5	2.0	0.1	10.8	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	33.6	45.1		51.8	31.7	31.0	21.3	26.0	18.5	19.9	38.2	19.4
Level of Service (LOS)	C	D		D	C	C	C	C	B	B	D	B
Approach Delay, s/veh / LOS	41.0	D		46.7	D		23.2	C		35.4	D	
Intersection Delay, s/veh / LOS	32.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	2.10	B	1.91	B
Bicycle LOS Score / LOS	0.99	A	1.22	A	2.38	B	1.71	B

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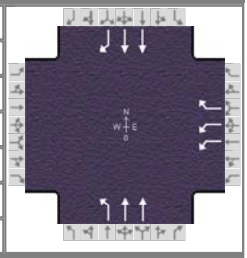
HCS7 Signalized Intersection Results Summary

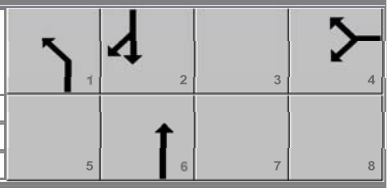
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.92
Urban Street	Port Royal Road	Analysis Year	2020 (Existing)	Analysis Period	1> 7:00
Intersection	WB Ramps for Saturn P…	File Name	123_exam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				143		192	134	494			812	249

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	38	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.8	56.7	15.4	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4	1	6		2
Case Number				9.0	2.0	4.0		7.3
Phase Duration, s				21.4	15.8	78.6		62.7
Change Period, ($Y+R_c$), s				6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s				3.3	3.1	0.0		0.0
Queue Clearance Time (g_s), s				14.6	9.7			
Green Extension Time (g_e), s				0.8	0.3	0.0		0.0
Phase Call Probability				1.00	0.98			
Max Out Probability				0.00	0.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14	1	6			2	12
Adjusted Flow Rate (*v*), veh/h				155		209	146	537			902	277
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1757		1610	1810	1809			1809	1610
Queue Service Time (g_s), s				3.9		12.6	7.7	2.5			12.1	4.8
Cycle Queue Clearance Time (g_c), s				3.9		12.6	7.7	2.5			12.1	4.8
Green Ratio (*g/C*)				0.15		0.15	0.10	0.73			0.57	0.57
Capacity (*c*), veh/h				542		248	178	2625			2053	914
Volume-to-Capacity Ratio (*X*)				0.287		0.840	0.819	0.205			0.439	0.303
Back of Queue (*Q*), ft/ln (95 th percentile)				74.9		219.7	147.1	31.9			149.3	62.4
Back of Queue (*Q*), veh/ln (95 th percentile)				3.0		8.8	5.9	1.3			6.0	2.5
Queue Storage Ratio (*RQ*) (95 th percentile)				0.00		0.00	0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh				37.4		41.1	40.1	2.1			9.6	5.1
Incremental Delay (d_2), s/veh				0.1		2.9	2.8	0.1			0.2	0.3
Initial Queue Delay (d_3), s/veh				0.0		0.0	0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh				37.5		44.0	42.9	2.2			9.8	5.4
Level of Service (LOS)				D		D	D	A			A	A
Approach Delay, s/veh / LOS	0.0			41.3		D	10.9		B	8.8		A
Intersection Delay, s/veh / LOS	14.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	1.85	B	1.37	A
Bicycle LOS Score / LOS				F	1.05	A	1.44	A

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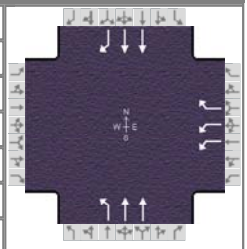
HCS7 Signalized Intersection Results Summary

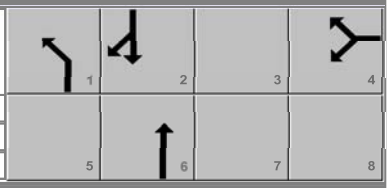
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.98
Urban Street	Port Royal Road	Analysis Year	2020 (Existing)	Analysis Period	1> 7:00
Intersection	WB Ramps for Saturn P…	File Name	123_expm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				349		546	169	564			815	248

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	16	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	11.4	33.2	37.5	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4	1	6		2
Case Number				9.0	2.0	4.0		7.3
Phase Duration, s				43.5	17.4	56.5		39.2
Change Period, ($Y+R_c$), s				6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s				3.3	3.1	0.0		0.0
Queue Clearance Time (g_s), s				35.1	11.2			
Green Extension Time (g_e), s				2.4	0.3	0.0		0.0
Phase Call Probability				1.00	0.99			
Max Out Probability				0.00	0.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14	1	6			2	12
Adjusted Flow Rate (*v*), veh/h				356		557	172	576			840	256
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1757		1610	1810	1809			1809	1610
Queue Service Time (g_s), s				7.1		33.1	9.2	6.1			18.5	7.8
Cycle Queue Clearance Time (g_c), s				7.1		33.1	9.2	6.1			18.5	7.8
Green Ratio (*g/C*)				0.37		0.37	0.11	0.51			0.33	0.33
Capacity (*c*), veh/h				1316		603	206	1828			1199	534
Volume-to-Capacity Ratio (*X*)				0.271		0.924	0.837	0.315			0.700	0.479
Back of Queue (*Q*), ft/ln (95 th percentile)				127.4		460.5	168.6	95.9			240.6	98.5
Back of Queue (*Q*), veh/ln (95 th percentile)				5.1		18.4	6.7	3.8			9.6	3.9
Queue Storage Ratio (*RQ*) (95 th percentile)				0.00		0.00	0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh				21.8		29.9	39.8	8.3			23.1	12.5
Incremental Delay (d_2), s/veh				0.0		2.7	2.7	0.4			1.4	1.3
Initial Queue Delay (d_3), s/veh				0.0		0.0	0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh				21.8		32.6	42.5	8.7			24.5	13.8
Level of Service (LOS)				C		C	D	A			C	B
Approach Delay, s/veh / LOS	0.0			28.4		C	16.4		B	22.0		C
Intersection Delay, s/veh / LOS	22.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	1.90	B	1.41	A
Bicycle LOS Score / LOS				F	1.10	A	1.38	A

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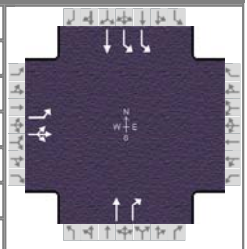
HCS7 Signalized Intersection Results Summary

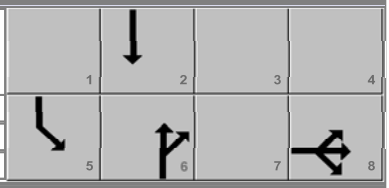
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.92
Urban Street	Port Royal Road	Analysis Year	2020 (Existing)	Analysis Period	1> 7:00
Intersection	EB Ramps for Saturn Pk…	File Name	123_exam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	118	0	132					510	485	578	377	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	84	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	20.8	50.0	11.2	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8				6	5	2
Case Number		10.0				7.3	2.0	4.0
Phase Duration, s		17.2				56.0	26.8	82.8
Change Period, (*Y+R c*), s		6.0				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.3				0.0	3.1	0.0
Queue Clearance Time (*g s*), s		10.7					19.2	
Green Extension Time (*g e*), s		0.5				0.0	1.6	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18					6	16	5	2	
Adjusted Flow Rate (*v*), veh/h	128	143						554	527	640	418	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610						1900	1610	1757	1900	
Queue Service Time (*g s*), s	6.8	8.7						20.6	24.3	17.2	1.8	
Cycle Queue Clearance Time (*g c*), s	6.8	8.7						20.6	24.3	17.2	1.8	
Green Ratio (*g/C*)	0.11	0.11						0.50	0.50	0.21	0.77	
Capacity (*c*), veh/h	203	181						950	805	730	1459	
Volume-to-Capacity Ratio (*X*)	0.632	0.794						0.583	0.655	0.877	0.286	
Back of Queue (*Q*), ft/ln (95 th percentile)	137	159.4						351.6	359.4	256	25.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	5.5	6.4						14.1	14.4	10.2	1.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00						0.00	0.00	0.00	0.00	
Uniform Delay (*d 1*), s/veh	42.4	43.3						17.6	18.6	32.4	0.7	
Incremental Delay (*d 2*), s/veh	1.2	3.0						2.6	4.1	1.3	0.5	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0						0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	43.6	46.3						20.3	22.7	33.7	1.2	
Level of Service (LOS)	D	D						C	C	C	A	
Approach Delay, s/veh / LOS	45.0	D		0.0			21.5	C		20.8	C	
Intersection Delay, s/veh / LOS	23.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.96	B	2.15	B	1.67	B	1.61	B
Bicycle LOS Score / LOS	0.94	A			2.27	B	2.20	B

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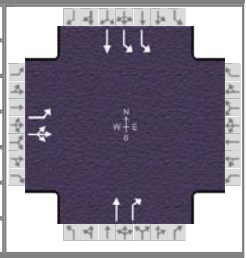
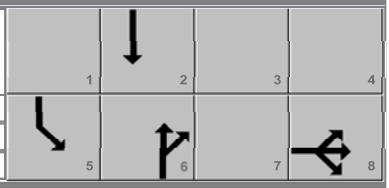
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.98
Urban Street	Port Royal Road	Analysis Year	2020 (Existing)	Analysis Period	1> 7:00
Intersection	EB Ramps for Saturn Pk…	File Name	123_expm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	176	0	150					557	197	346	818	

Signal Information										
Cycle, s	100.0	Reference Phase	2							
Offset, s	82	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	12.3	57.4	12.3	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
				Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8				6	5	2
Case Number		10.0				7.3	2.0	4.0
Phase Duration, s		18.3				63.4	18.3	81.7
Change Period, ($Y+R_c$), s		6.0				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.2				0.0	3.1	0.0
Queue Clearance Time (g_s), s		11.7					11.4	
Green Extension Time (g_e), s		0.7				0.0	0.9	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18					6	16	5	2	
Adjusted Flow Rate (*v*), veh/h	180	153						568	201	356	841	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610						1900	1610	1757	1900	
Queue Service Time (g_s), s	9.7	9.2						18.2	6.1	9.4	3.9	
Cycle Queue Clearance Time (g_c), s	9.7	9.2						18.2	6.1	9.4	3.9	
Green Ratio (*g/C*)	0.12	0.12						0.57	0.57	0.12	0.76	
Capacity (*c*), veh/h	223	199						1091	924	431	1438	
Volume-to-Capacity Ratio (*X*)	0.805	0.771						0.521	0.218	0.824	0.585	
Back of Queue (*Q*), ft/ln (95 th percentile)	195.9	167.6						304	96.5	151.1	48.2	
Back of Queue (*Q*), veh/ln (95 th percentile)	7.8	6.7						12.2	3.9	6.0	1.9	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00						0.00	0.00	0.00	0.00	
Uniform Delay (d_1), s/veh	42.7	42.5						12.9	10.4	34.1	0.5	
Incremental Delay (d_2), s/veh	2.6	2.4						1.8	0.5	1.2	1.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0						0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	45.3	44.9						14.7	10.9	35.3	1.9	
Level of Service (LOS)	D	D						B	B	D	A	
Approach Delay, s/veh / LOS	45.1	D		0.0			13.7	B		11.8	B	
Intersection Delay, s/veh / LOS	17.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.96	B	2.15	B	1.66	B	1.62	B
Bicycle LOS Score / LOS	1.04	A			1.76	B	2.45	B

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BACKGROUND CONDITIONS

HCS7 Two-Way Stop-Control Report

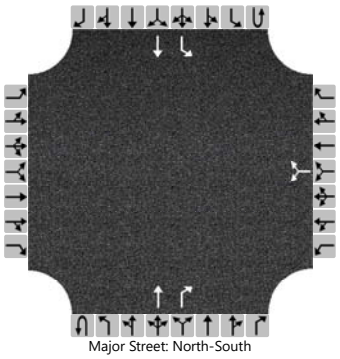
General Information

Analyst	FTG
Agency/Co.	FTG
Date Performed	Jan 2021
Analysis Year	2028
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	11106 (Back)

Site Information

Intersection	Port Royal/Lovell
Jurisdiction	Spring Hill, TN
East/West Street	Lovell Lane
North/South Street	Port Royal Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						13		39			333	27		51	702	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							54							53		
Capacity, c (veh/h)							433							1195		
v/c Ratio							0.13							0.04		
95% Queue Length, Q_{95} (veh)							0.4							0.1		
Control Delay (s/veh)							14.5							8.2		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						14.5								0.6		
Approach LOS						B										

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HCS7 Two-Way Stop-Control Report

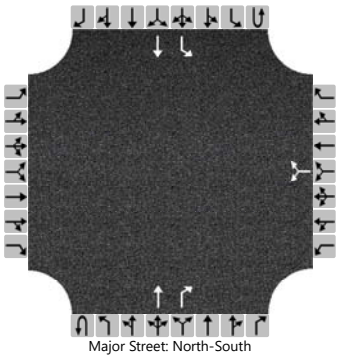
General Information

Analyst	FTG
Agency/Co.	FTG
Date Performed	Jan 2021
Analysis Year	2028
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	11106 (Back)

Site Information

Intersection	Port Royal/Lovell
Jurisdiction	Spring Hill, TN
East/West Street	Lovell Lane
North/South Street	Port Royal Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						20		142			529	68		107	603	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							169							111		
Capacity, c (veh/h)							396							969		
v/c Ratio							0.43							0.12		
95% Queue Length, Q_{95} (veh)							2.1							0.4		
Control Delay (s/veh)							20.7							9.2		
Level of Service (LOS)							C							A		
Approach Delay (s/veh)						20.7								1.4		
Approach LOS						C										

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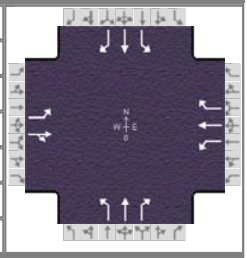
HCS7 Signalized Intersection Results Summary

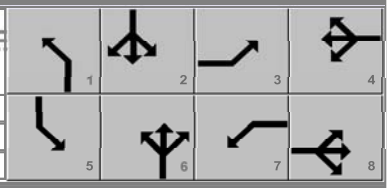
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.90
Urban Street	Port Royal Road	Analysis Year	2028 (Back)	Analysis Period	1> 7:00
Intersection	Reserve Blvd/Old Port R…	File Name	123_bgam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	82	38	220	91	39	43	176	365	164	57	735	72

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.1	3.3	49.6	6.0	0.5	21.4	
Yellow	4.0	0.0	4.0	4.0	0.0	4.0	
Red	2.0	0.0	2.0	2.0	0.0	2.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.0	27.4	12.5	28.0	14.4	58.9	11.1	55.6
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	3.3	3.1	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s	6.4	20.7	6.9	4.7	8.1		4.0	
Green Extension Time (g_e), s	0.0	0.8	0.0	0.8	0.3	0.0	0.1	0.0
Phase Call Probability	0.94	1.00	0.95	1.00	1.00		0.86	
Max Out Probability	1.00	0.00	1.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	91	287		101	43	48	191	397	178	63	817	80
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1647		1810	1900	1610	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	4.4	18.7		4.9	2.1	2.7	6.1	11.9	6.6	2.0	45.5	3.2
Cycle Queue Clearance Time (g_c), s	4.4	18.7		4.9	2.1	2.7	6.1	11.9	6.6	2.0	45.5	3.2
Green Ratio (*g/C*)	0.25	0.19		0.25	0.20	0.20	0.53	0.48	0.48	0.50	0.45	0.45
Capacity (*c*), veh/h	390	321		201	380	322	229	913	774	505	857	726
Volume-to-Capacity Ratio (*X*)	0.234	0.893		0.503	0.114	0.149	0.837	0.434	0.230	0.125	0.953	0.110
Back of Queue (*Q*), ft/ln (95 th percentile)	85.9	308.6		96.4	42.8	47.6	120.6	206.5	110.8	36.2	818.8	54.4
Back of Queue (*Q*), veh/ln (95 th percentile)	3.4	12.3		3.9	1.7	1.9	4.8	8.3	4.4	1.4	32.8	2.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	32.7	43.2		34.1	36.0	36.3	25.3	13.0	15.3	14.9	29.1	17.4
Incremental Delay (d_2), s/veh	0.1	3.5		0.7	0.0	0.1	3.1	1.5	0.7	0.0	21.3	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	32.8	46.7		34.9	36.1	36.4	28.4	14.5	16.0	15.0	50.3	17.8
Level of Service (LOS)	C	D		C	D	D	C	B	B	B	D	B
Approach Delay, s/veh / LOS	43.3	D		35.5	D		18.3	B		45.3	D	
Intersection Delay, s/veh / LOS	35.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	2.10	B	1.91	B
Bicycle LOS Score / LOS	1.11	A	0.80	A	1.78	B	2.07	B

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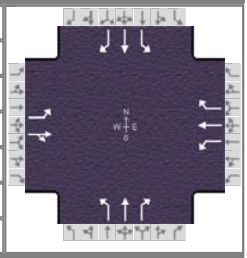
HCS7 Signalized Intersection Results Summary

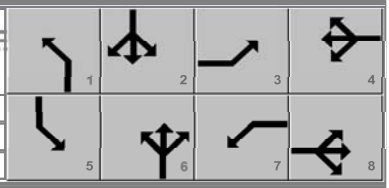
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.97
Urban Street	Port Royal Road	Analysis Year	2028 (Back)	Analysis Period	1> 7:00
Intersection	Reserve Blvd/Old Port R…	File Name	123_bgpm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	123	68	154	186	88	36	190	590	359	53	714	72

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.7	3.3	44.2	7.6	0.4	15.8	
Yellow	4.0	0.0	4.0	4.0	0.0	4.0	
Red	2.0	0.0	2.0	2.0	0.0	2.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	13.6	21.8	14.0	22.2	14.0	53.5	10.7	50.2
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	3.2	3.1	3.2	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s	7.8	15.2	10.0	6.2	7.7		3.6	
Green Extension Time (g_e), s	0.1	0.6	0.0	0.7	0.4	0.0	0.1	0.0
Phase Call Probability	0.97	1.00	1.00	1.00	1.00		0.78	
Max Out Probability	0.88	0.00	1.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	127	229		192	91	37	194	602	366	55	736	74
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1689		1810	1900	1610	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	5.8	13.2		8.0	4.2	2.0	5.7	20.2	14.3	1.6	35.3	2.7
Cycle Queue Clearance Time (g_c), s	5.8	13.2		8.0	4.2	2.0	5.7	20.2	14.3	1.6	35.3	2.7
Green Ratio (*g/C*)	0.23	0.16		0.24	0.16	0.16	0.52	0.47	0.47	0.49	0.44	0.44
Capacity (*c*), veh/h	342	267		248	308	261	282	902	765	367	839	711
Volume-to-Capacity Ratio (*X*)	0.370	0.856		0.775	0.294	0.142	0.688	0.667	0.479	0.149	0.877	0.104
Back of Queue (*Q*), ft/ln (95 th percentile)	112.3	236.8		208	87.2	34.7	104.2	288.7	194.5	28.4	618.7	46
Back of Queue (*Q*), veh/ln (95 th percentile)	4.5	9.5		8.3	3.5	1.4	4.2	11.5	7.8	1.1	24.7	1.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	31.7	41.0		34.8	36.9	35.9	21.4	13.4	15.7	15.4	25.5	16.3
Incremental Delay (d_2), s/veh	0.2	3.1		13.0	0.2	0.1	1.0	3.6	2.0	0.1	12.5	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	32.0	44.1		47.8	37.0	36.0	22.4	17.0	17.7	15.5	38.0	16.6
Level of Service (LOS)	C	D		D	D	D	C	B	B	B	D	B
Approach Delay, s/veh / LOS	39.7	D		43.4	D		18.2	B		34.7	C	
Intersection Delay, s/veh / LOS	29.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	2.09	B	1.91	B
Bicycle LOS Score / LOS	1.07	A	1.01	A	2.43	B	1.91	B

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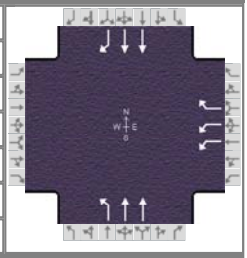
HCS7 Signalized Intersection Results Summary

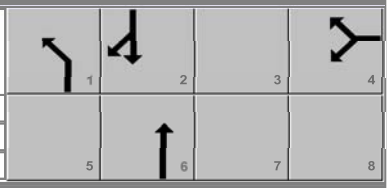
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.92
Urban Street	Port Royal Road	Analysis Year	2028 (Back)	Analysis Period	1> 7:00
Intersection	WB Ramps for Saturn P…	File Name	123_bgam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				166		132	156	573			757	289

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	33	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	12.2	67.5	12.3	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4	1	6		2
Case Number				9.0	2.0	4.0		7.3
Phase Duration, s				18.3	18.2	91.7		73.5
Change Period, ($Y+R_c$), s				6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s				3.2	3.1	0.0		0.0
Queue Clearance Time (g_s), s				11.6	12.0			
Green Extension Time (g_e), s				0.7	0.3	0.0		0.0
Phase Call Probability				1.00	0.99			
Max Out Probability				0.00	0.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14	1	6			2	12
Adjusted Flow Rate (*v*), veh/h				180		143	170	623			841	321
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1757		1610	1810	1809			1809	1610
Queue Service Time (g_s), s				5.3		9.6	10.0	3.3			10.1	2.4
Cycle Queue Clearance Time (g_c), s				5.3		9.6	10.0	3.3			10.1	2.4
Green Ratio (*g/C*)				0.11		0.11	0.11	0.78			0.61	0.61
Capacity (*c*), veh/h				393		180	201	2818			2220	988
Volume-to-Capacity Ratio (*X*)				0.459		0.797	0.845	0.221			0.379	0.325
Back of Queue (*Q*), ft/ln (95 th percentile)				103.6		177.2	178.2	38.7			125.2	29.8
Back of Queue (*Q*), veh/ln (95 th percentile)				4.1		7.1	7.1	1.5			5.0	1.2
Queue Storage Ratio (*RQ*) (95 th percentile)				0.00		0.00	0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh				45.7		47.6	43.9	1.9			7.6	1.8
Incremental Delay (d_2), s/veh				0.3		3.0	2.8	0.1			0.2	0.3
Initial Queue Delay (d_3), s/veh				0.0		0.0	0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh				46.0		50.7	46.7	2.1			7.7	2.0
Level of Service (LOS)				D		D	D	A			A	A
Approach Delay, s/veh / LOS	0.0			48.1		D	11.6		B	6.1		A
Intersection Delay, s/veh / LOS	14.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	1.84	B	1.37	A
Bicycle LOS Score / LOS				F	1.14	A	1.43	A

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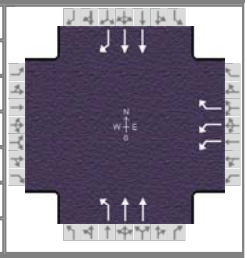
HCS7 Signalized Intersection Results Summary

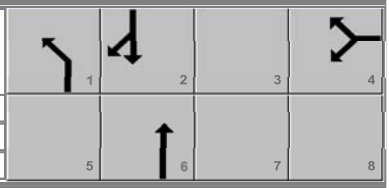
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.98
Urban Street	Port Royal Road	Analysis Year	2028 (Back)	Analysis Period	1> 7:00
Intersection	WB Ramps for Saturn P…	File Name	123_bgpm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				405		485	196	654			767	287

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	18	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	13.0	35.3	33.7	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4	1	6		2
Case Number				9.0	2.0	4.0		7.3
Phase Duration, s				39.7	19.0	60.3		41.3
Change Period, (*Y+R c*), s				6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s				3.3	3.1	0.0		0.0
Queue Clearance Time (*g s*), s				31.4	12.7			
Green Extension Time (*g e*), s				2.3	0.4	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				0.00	0.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14	1	6			2	12
Adjusted Flow Rate (*v*), veh/h				413		495	200	667			791	296
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1757		1610	1810	1809			1809	1610
Queue Service Time (*g s*), s				8.8		29.4	10.7	6.8			16.0	9.4
Cycle Queue Clearance Time (*g c*), s				8.8		29.4	10.7	6.8			16.0	9.4
Green Ratio (*g/C*)				0.34		0.34	0.13	0.54			0.35	0.35
Capacity (*c*), veh/h				1185		543	235	1963			1277	568
Volume-to-Capacity Ratio (*X*)				0.349		0.911	0.852	0.340			0.619	0.520
Back of Queue (*Q*), ft/ln (95 th percentile)				161.7		420.8	186.2	102.5			205.1	110.2
Back of Queue (*Q*), veh/ln (95 th percentile)				6.5		16.8	7.4	4.1			8.2	4.4
Queue Storage Ratio (*RQ*) (95 th percentile)				0.00		0.00	0.00	0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh				24.9		31.7	39.2	7.3			20.5	12.3
Incremental Delay (*d 2*), s/veh				0.1		2.6	2.5	0.3			0.9	1.4
Initial Queue Delay (*d 3*), s/veh				0.0		0.0	0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh				25.0		34.3	41.7	7.6			21.4	13.7
Level of Service (LOS)				C		C	D	A			C	B
Approach Delay, s/veh / LOS	0.0			30.0		C	15.5		B	19.3		B
Intersection Delay, s/veh / LOS	21.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	1.89	B	1.40	A
Bicycle LOS Score / LOS				F	1.20	A	1.37	A

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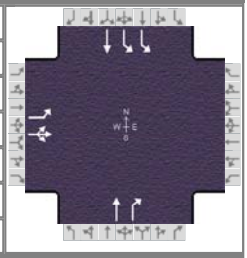
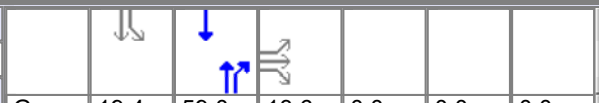
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.92
Urban Street	Port Royal Road	Analysis Year	2028 (Back)	Analysis Period	1> 7:00
Intersection	EB Ramps for Saturn Pk…	File Name	123_bgam.xus		
Project Description	11106				

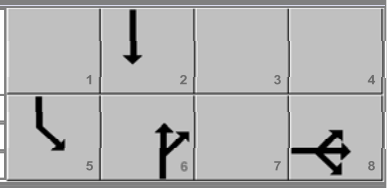


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	137	0	153					592	563	486	437	

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	83	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	19.4	59.0	13.6	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8				6	5	2
Case Number		10.0				7.3	2.0	4.0
Phase Duration, s		19.6				65.0	25.4	90.4
Change Period, (*Y+R c*), s		6.0				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.3				0.0	3.1	0.0
Queue Clearance Time (*g s*), s		13.1					18.1	
Green Extension Time (*g e*), s		0.5				0.0	1.3	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18					6	16	5	2	
Adjusted Flow Rate (*v*), veh/h	149	166						643	612	538	484	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610						1900	1610	1757	1900	
Queue Service Time (*g s*), s	8.6	11.1						26.1	31.3	16.1	4.8	
Cycle Queue Clearance Time (*g c*), s	8.6	11.1						26.1	31.3	16.1	4.8	
Green Ratio (*g/C*)	0.12	0.12						0.54	0.54	0.18	0.77	
Capacity (*c*), veh/h	224	200						1019	863	619	1457	
Volume-to-Capacity Ratio (*X*)	0.663	0.833						0.632	0.709	0.869	0.332	
Back of Queue (*Q*), ft/ln (95 th percentile)	176.3	202.2						430.3	445.2	261.1	62.6	
Back of Queue (*Q*), veh/ln (95 th percentile)	7.1	8.1						17.2	17.8	10.4	2.5	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00						0.00	0.00	0.00	0.00	
Uniform Delay (*d 1*), s/veh	46.0	47.1						17.9	19.1	39.8	1.8	
Incremental Delay (*d 2*), s/veh	1.3	3.4						3.0	4.9	1.4	0.6	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0						0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	47.2	50.5						20.9	24.0	41.2	2.4	
Level of Service (LOS)	D	D						C	C	D	A	
Approach Delay, s/veh / LOS	49.0	D		0.0			22.4	C		22.8	C	
Intersection Delay, s/veh / LOS	25.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.96	B	2.15	B	1.67	B	1.62	B
Bicycle LOS Score / LOS	1.01	A			2.56	C	2.14	B

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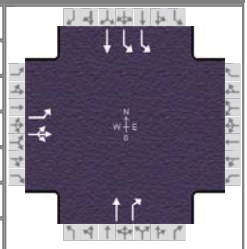
HCS7 Signalized Intersection Results Summary

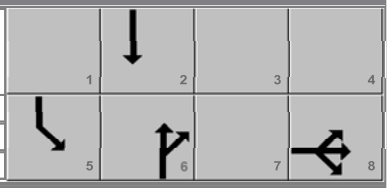
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.98
Urban Street	Port Royal Road	Analysis Year	2028 (Back)	Analysis Period	1> 7:00
Intersection	EB Ramps for Saturn Pk…	File Name	123_bgpm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	204	0	174					646	229	223	949	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	77	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	8.7	59.3	14.0	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8				6	5	2
Case Number		10.0				7.3	2.0	4.0
Phase Duration, s		20.0				65.3	14.7	80.0
Change Period, (*Y+R c*), s		6.0				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.2				0.0	3.1	0.0
Queue Clearance Time (*g s*), s		13.2					8.2	
Green Extension Time (*g e*), s		0.8				0.0	0.5	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18					6	16	5	2	
Adjusted Flow Rate (*v*), veh/h	208	178						659	234	229	975	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610						1900	1610	1757	1900	
Queue Service Time (*g s*), s	11.2	10.7						21.6	6.9	6.2	3.5	
Cycle Queue Clearance Time (*g c*), s	11.2	10.7						21.6	6.9	6.2	3.5	
Green Ratio (*g/C*)	0.14	0.14						0.59	0.59	0.09	0.74	
Capacity (*c*), veh/h	253	225						1127	955	307	1407	
Volume-to-Capacity Ratio (*X*)	0.824	0.789						0.585	0.245	0.747	0.693	
Back of Queue (*Q*), ft/ln (95 th percentile)	219.2	192.3						346.6	108	113.4	57.5	
Back of Queue (*Q*), veh/ln (95 th percentile)	8.8	7.7						13.9	4.3	4.5	2.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00						0.00	0.00	0.00	0.00	
Uniform Delay (*d 1*), s/veh	41.8	41.6						12.7	9.7	40.6	0.3	
Incremental Delay (*d 2*), s/veh	2.6	2.3						2.2	0.6	1.2	2.4	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0						0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	44.4	43.9						14.9	10.3	41.7	2.7	
Level of Service (LOS)	D	D						B	B	D	A	
Approach Delay, s/veh / LOS	44.2	D		0.0			13.7	B		10.1	B	
Intersection Delay, s/veh / LOS	16.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.96	B	2.15	B	1.66	B	1.62	B
Bicycle LOS Score / LOS	1.12	A			1.96	B	2.46	B

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TOTAL PROJECTED CONDITIONS (APARTMENTS)

HCS7 Two-Way Stop-Control Report

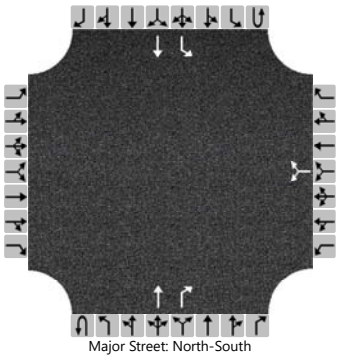
General Information

Analyst	FTG
Agency/Co.	FTG
Date Performed	Jan 2021
Analysis Year	2028
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	11106 (Total)

Site Information

Intersection	Port Royal/Lovell
Jurisdiction	Spring Hill, TN
East/West Street	Lovell Lane
North/South Street	Port Royal Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						13		60			333	27		57	702	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							76							59		
Capacity, c (veh/h)							481							1195		
v/c Ratio							0.16							0.05		
95% Queue Length, Q_{95} (veh)							0.6							0.2		
Control Delay (s/veh)							13.9							8.2		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						13.9								0.6		
Approach LOS						B										

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HCS7 Two-Way Stop-Control Report

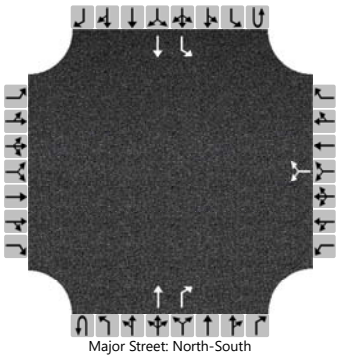
General Information

Analyst	FTG
Agency/Co.	FTG
Date Performed	Jan 2021
Analysis Year	2028
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	11106 (Total)

Site Information

Intersection	Port Royal/Lovell
Jurisdiction	Spring Hill, TN
East/West Street	Lovell Lane
North/South Street	Port Royal Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						20		155			529	68		128	603	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							182							133		
Capacity, c (veh/h)							392							969		
v/c Ratio							0.47							0.14		
95% Queue Length, Q_{95} (veh)							2.4							0.5		
Control Delay (s/veh)							21.9							9.3		
Level of Service (LOS)							C							A		
Approach Delay (s/veh)						21.9								1.6		
Approach LOS						C										

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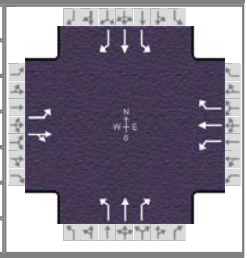
HCS7 Signalized Intersection Results Summary

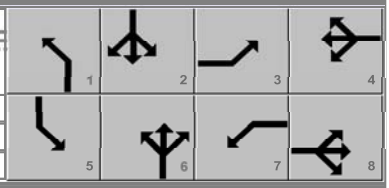
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.90
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	Reserve Blvd/Old Port R…	File Name	123_fuam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	82	44	220	189	60	43	176	365	194	57	735	72

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.3	5.6	50.5	6.5	4.5	23.6	
Yellow	4.0	0.0	4.0	4.0	0.0	4.0	
Red	2.0	0.0	2.0	2.0	0.0	2.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.5	29.6	17.0	34.1	16.9	62.1	11.3	56.5
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	3.3	3.1	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s	6.8	22.8	13.0	5.3	10.6		4.3	
Green Extension Time (g_e), s	0.1	0.8	0.0	0.9	0.3	0.0	0.1	0.0
Phase Call Probability	0.95	1.00	1.00	1.00	1.00		0.88	
Max Out Probability	0.00	0.00	1.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	91	293		210	67	48	191	397	211	63	817	80
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1652		1810	1900	1610	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	4.8	20.8		11.0	3.3	2.8	8.6	12.5	8.2	2.3	50.5	3.6
Cycle Queue Clearance Time (g_c), s	4.8	20.8		11.0	3.3	2.8	8.6	12.5	8.2	2.3	50.5	3.6
Green Ratio (*g/C*)	0.25	0.20		0.29	0.23	0.23	0.52	0.47	0.47	0.46	0.42	0.42
Capacity (*c*), veh/h	416	325		252	445	377	224	888	753	487	799	677
Volume-to-Capacity Ratio (*X*)	0.219	0.902		0.834	0.150	0.127	0.854	0.447	0.280	0.130	1.022	0.118
Back of Queue (*Q*), ft/ln (95 th percentile)	94.6	340.7		258.1	70.1	49.9	252.3	211.5	133.8	43.7	1010.8	64.3
Back of Queue (*Q*), veh/ln (95 th percentile)	3.8	13.6		10.3	2.8	2.0	10.1	8.5	5.4	1.7	40.4	2.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	35.4	47.0		36.4	36.5	36.3	36.7	13.5	15.9	18.2	34.8	21.2
Incremental Delay (d_2), s/veh	0.1	3.7		19.7	0.1	0.1	3.5	1.6	0.9	0.0	37.4	0.4
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	35.5	50.8		56.1	36.5	36.3	40.2	15.1	16.8	18.2	72.2	21.5
Level of Service (LOS)	D	D		E	D	D	D	B	B	B	F	C
Approach Delay, s/veh / LOS	47.2	D		49.2	D		21.6	C		64.4	E	
Intersection Delay, s/veh / LOS	45.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	2.10	B	1.92	B
Bicycle LOS Score / LOS	1.12	A	1.02	A	1.84	B	2.07	B

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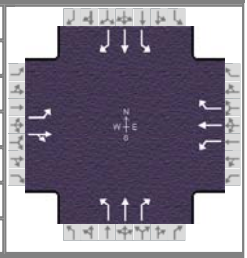
HCS7 Signalized Intersection Results Summary

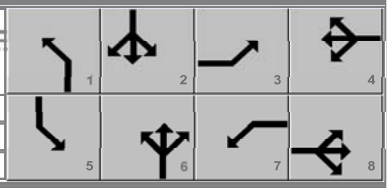
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.97
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	Reserve Blvd/Old Port R…	File Name	123_fupm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	123	89	154	243	100	36	190	590	457	53	714	72

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.7	3.7	41.2	7.0	3.0	16.5	
Yellow	4.0	0.0	4.0	4.0	0.0	4.0	
Red	2.0	0.0	2.0	2.0	0.0	2.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	13.0	22.5	16.0	25.5	14.4	50.9	10.7	47.2
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	3.2	3.1	3.2	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s	7.8	16.4	12.0	6.6	8.1		3.7	
Green Extension Time (g_e), s	0.0	0.1	0.0	0.7	0.3	0.0	0.1	0.0
Phase Call Probability	0.97	1.00	1.00	1.00	1.00		0.78	
Max Out Probability	1.00	1.00	1.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	127	251		251	103	37	194	602	466	55	736	74
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1705		1810	1900	1610	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	5.8	14.4		10.0	4.6	1.9	6.1	23.0	19.4	1.7	37.2	2.8
Cycle Queue Clearance Time (g_c), s	5.8	14.4		10.0	4.6	1.9	6.1	23.0	19.4	1.7	37.2	2.8
Green Ratio (*g/C*)	0.23	0.16		0.26	0.19	0.19	0.50	0.45	0.45	0.46	0.41	0.41
Capacity (*c*), veh/h	367	281		277	370	313	253	852	722	321	782	663
Volume-to-Capacity Ratio (*X*)	0.346	0.893		0.905	0.279	0.118	0.767	0.706	0.646	0.170	0.941	0.112
Back of Queue (*Q*), ft/ln (95 th percentile)	112.1	313.7		294.3	95.2	33.1	109.4	351.3	180.6	30.6	695.2	49.1
Back of Queue (*Q*), veh/ln (95 th percentile)	4.5	12.5		11.8	3.8	1.3	4.4	14.1	7.2	1.2	27.8	2.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	31.6	40.9		34.4	34.3	33.2	22.0	17.1	15.5	17.6	28.3	18.1
Incremental Delay (d_2), s/veh	0.2	26.0		30.1	0.2	0.1	1.7	4.4	4.0	0.1	20.7	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	31.8	66.9		64.5	34.5	33.3	23.7	21.6	19.5	17.6	48.9	18.5
Level of Service (LOS)	C	E		E	C	C	C	C	B	B	D	B
Approach Delay, s/veh / LOS	55.1	E		53.6	D		21.1	C		44.3	D	
Intersection Delay, s/veh / LOS	36.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	2.10	B	1.91	B
Bicycle LOS Score / LOS	1.11	A	1.13	A	2.59	C	1.91	B

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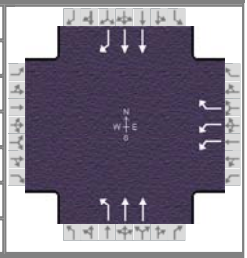
HCS7 Signalized Intersection Results Summary

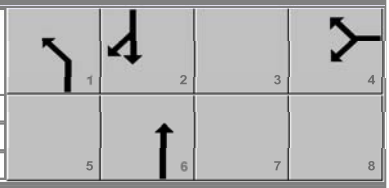
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.92
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	WB Ramps for Saturn P…	File Name	123_fuam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				166		149	156	586			827	317

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	37	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	13.1	74.3	14.5	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4	1	6		2
Case Number				9.0	2.0	4.0		7.3
Phase Duration, s				20.5	19.1	99.5		80.3
Change Period, ($Y+R_c$), s				6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s				3.2	3.1	0.0		0.0
Queue Clearance Time (g_s), s				13.8	12.9			
Green Extension Time (g_e), s				0.7	0.3	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				0.00	0.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14	1	6			2	12
Adjusted Flow Rate (*v*), veh/h				180		162	170	637			906	347
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1757		1610	1810	1809			1809	1610
Queue Service Time (g_s), s				5.7		11.8	10.9	6.7			12.4	3.4
Cycle Queue Clearance Time (g_c), s				5.7		11.8	10.9	6.7			12.4	3.4
Green Ratio (*g/C*)				0.12		0.12	0.11	0.78			0.62	0.62
Capacity (*c*), veh/h				425		195	198	2818			2241	997
Volume-to-Capacity Ratio (*X*)				0.424		0.831	0.855	0.226			0.405	0.348
Back of Queue (*Q*), ft/ln (95 th percentile)				112.8		213.4	191.5	95.4			139.9	37.1
Back of Queue (*Q*), veh/ln (95 th percentile)				4.5		8.5	7.7	3.8			5.6	1.5
Queue Storage Ratio (*RQ*) (95 th percentile)				0.00		0.00	0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh				48.9		51.5	48.0	4.4			8.6	2.2
Incremental Delay (d_2), s/veh				0.2		3.5	2.9	0.1			0.1	0.2
Initial Queue Delay (d_3), s/veh				0.0		0.0	0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh				49.1		55.0	50.9	4.5			8.7	2.3
Level of Service (LOS)				D		E	D	A			A	A
Approach Delay, s/veh / LOS	0.0			51.9		D	14.3		B	6.9		A
Intersection Delay, s/veh / LOS	15.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.33	B	1.84	B	1.37	A
Bicycle LOS Score / LOS				F	1.15	A	1.51	B

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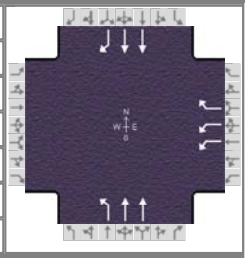
HCS7 Signalized Intersection Results Summary

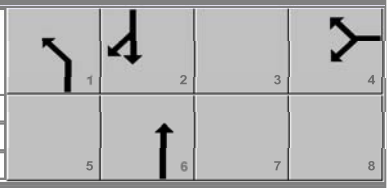
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.98
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	WB Ramps for Saturn P…	File Name	123_fupm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				405		541	196	696			808	303

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	12	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	13.0	31.8	37.2	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4	1	6		2
Case Number				9.0	2.0	4.0		7.3
Phase Duration, s				43.2	19.0	56.8		37.8
Change Period, ($Y+R_c$), s				6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s				3.3	3.1	0.0		0.0
Queue Clearance Time (g_s), s				34.7	12.7			
Green Extension Time (g_e), s				2.5	0.3	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				0.00	0.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14	1	6			2	12
Adjusted Flow Rate (*v*), veh/h				413		552	200	710			833	312
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1757		1610	1810	1809			1809	1610
Queue Service Time (g_s), s				8.4		32.7	10.7	9.6			18.2	10.8
Cycle Queue Clearance Time (g_c), s				8.4		32.7	10.7	9.6			18.2	10.8
Green Ratio (*g/C*)				0.37		0.37	0.13	0.51			0.32	0.32
Capacity (*c*), veh/h				1309		600	234	1836			1150	512
Volume-to-Capacity Ratio (*X*)				0.316		0.920	0.853	0.387			0.724	0.610
Back of Queue (*Q*), ft/ln (95 th percentile)				151.3		457.7	182.7	148.2			207.5	105.9
Back of Queue (*Q*), veh/ln (95 th percentile)				6.1		18.3	7.3	5.9			8.3	4.2
Queue Storage Ratio (*RQ*) (95 th percentile)				0.00		0.00	0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh				22.3		30.0	39.1	10.9			22.0	13.0
Incremental Delay (d_2), s/veh				0.1		2.8	2.3	0.4			1.1	1.4
Initial Queue Delay (d_3), s/veh				0.0		0.0	0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh				22.4		32.8	41.4	11.4			23.1	14.4
Level of Service (LOS)				C		C	D	B			C	B
Approach Delay, s/veh / LOS	0.0			28.3		C	18.0		B	20.7		C
Intersection Delay, s/veh / LOS	22.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	1.90	B	1.41	A
Bicycle LOS Score / LOS				F	1.24	A	1.42	A

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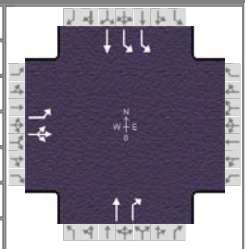
HCS7 Signalized Intersection Results Summary

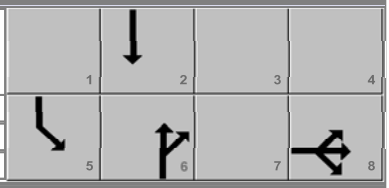
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.92
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	EB Ramps for Saturn Pk…	File Name	123_fuam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	146	0	153					596	563	542	451	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	76	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	22.9	64.3	14.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8				6	5	2
Case Number		10.0				7.3	2.0	4.0
Phase Duration, s		20.8				70.3	28.9	99.2
Change Period, (*Y+R c*), s		6.0				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.2				0.0	3.1	0.0
Queue Clearance Time (*g s*), s		14.1					21.5	
Green Extension Time (*g e*), s		0.7				0.0	1.5	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18					6	16	5	2	
Adjusted Flow Rate (*v*), veh/h	159	166						648	612	593	494	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610						1900	1610	1757	1900	
Queue Service Time (*g s*), s	10.1	12.1						28.8	34.2	19.5	1.3	
Cycle Queue Clearance Time (*g c*), s	10.1	12.1						28.8	34.2	19.5	1.3	
Green Ratio (*g/C*)	0.12	0.12						0.54	0.54	0.19	0.78	
Capacity (*c*), veh/h	223	198						1018	862	672	1476	
Volume-to-Capacity Ratio (*X*)	0.712	0.839						0.637	0.710	0.883	0.334	
Back of Queue (*Q*), ft/ln (95 th percentile)	204.4	218.2						473.6	485.1	311.7	22.6	
Back of Queue (*Q*), veh/ln (95 th percentile)	8.2	8.7						18.9	19.4	12.5	0.9	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00						0.00	0.00	0.00	0.00	
Uniform Delay (*d 1*), s/veh	50.6	51.4						19.6	20.9	43.2	0.4	
Incremental Delay (*d 2*), s/veh	1.6	3.6						3.0	4.9	1.4	0.6	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0						0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	52.2	55.1						22.7	25.8	44.7	0.9	
Level of Service (LOS)	D	E						C	C	D	A	
Approach Delay, s/veh / LOS	53.6	D		0.0			24.2	C		24.8	C	
Intersection Delay, s/veh / LOS	28.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.97	B	2.16	B	1.67	B	1.62	B
Bicycle LOS Score / LOS	1.02	A			2.57	C	2.27	B

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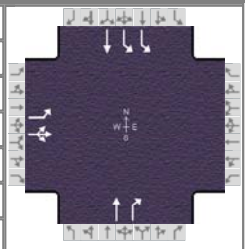
HCS7 Signalized Intersection Results Summary

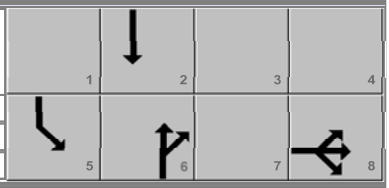
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.98
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	EB Ramps for Saturn Pk…	File Name	123_fupm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	232	0	174					660	229	256	957	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	78	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.7	56.8	15.6	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8				6	5	2
Case Number		10.0				7.3	2.0	4.0
Phase Duration, s		21.6				62.8	15.7	78.4
Change Period, ($Y+R_c$), s		6.0				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.2				0.0	3.1	0.0
Queue Clearance Time (g_s), s		14.7					9.0	
Green Extension Time (g_e), s		0.8				0.0	0.6	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18					6	16	5	2	
Adjusted Flow Rate (*v*), veh/h	237	178						673	234	263	983	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610						1900	1610	1757	1900	
Queue Service Time (g_s), s	12.7	10.5						23.7	7.3	7.0	11.4	
Cycle Queue Clearance Time (g_c), s	12.7	10.5						23.7	7.3	7.0	11.4	
Green Ratio (*g/C*)	0.16	0.16						0.57	0.57	0.10	0.72	
Capacity (*c*), veh/h	281	250						1079	915	339	1377	
Volume-to-Capacity Ratio (*X*)	0.841	0.709						0.624	0.256	0.775	0.714	
Back of Queue (*Q*), ft/ln (95 th percentile)	242	187						383.3	117.2	122.3	106.2	
Back of Queue (*Q*), veh/ln (95 th percentile)	9.7	7.5						15.3	4.7	4.9	4.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00						0.00	0.00	0.00	0.00	
Uniform Delay (d_1), s/veh	41.0	40.1						14.5	10.9	37.9	1.4	
Incremental Delay (d_2), s/veh	2.6	1.4						2.7	0.7	1.1	2.5	
Initial Queue Delay (d_3), s/veh	0.0	0.0						0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	43.6	41.5						17.2	11.6	39.1	4.0	
Level of Service (LOS)	D	D						B	B	D	A	
Approach Delay, s/veh / LOS	42.7	D		0.0			15.7	B		11.4	B	
Intersection Delay, s/veh / LOS	18.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.96	B	2.15	B	1.66	B	1.63	B
Bicycle LOS Score / LOS	1.17	A			1.98	B	2.53	C

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TOTAL PROJECTED CONDITIONS (FUTURE COMMERCIAL)

HCS7 Two-Way Stop-Control Report

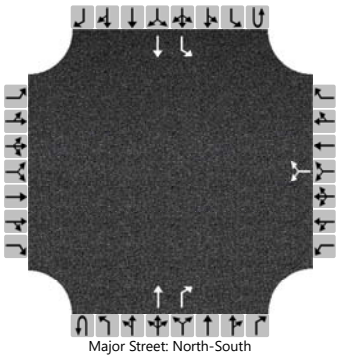
General Information

Analyst	FTG
Agency/Co.	FTG
Date Performed	Jan 2021
Analysis Year	2028
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	11106 (Total)

Site Information

Intersection	Port Royal/Lovell
Jurisdiction	Spring Hill, TN
East/West Street	Lovell Lane
North/South Street	Port Royal Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						13		60			346	27		57	726	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							76							59		
Capacity, c (veh/h)							466							1181		
v/c Ratio							0.16							0.05		
95% Queue Length, Q_{95} (veh)							0.6							0.2		
Control Delay (s/veh)							14.2							8.2		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						14.2								0.6		
Approach LOS						B										

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HCS7 Two-Way Stop-Control Report

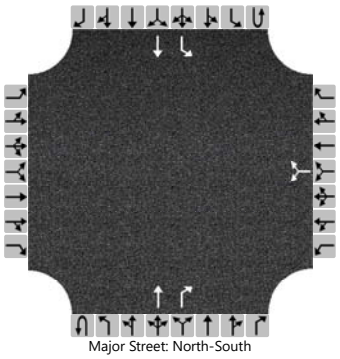
General Information

Analyst	FTG
Agency/Co.	FTG
Date Performed	Jan 2021
Analysis Year	2028
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	11106 (Total)

Site Information

Intersection	Port Royal/Lovell
Jurisdiction	Spring Hill, TN
East/West Street	Lovell Lane
North/South Street	Port Royal Road
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						20		155			569	68		128	641	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							182							133		
Capacity, c (veh/h)							363							935		
v/c Ratio							0.50							0.14		
95% Queue Length, Q_{95} (veh)							2.7							0.5		
Control Delay (s/veh)							24.6							9.5		
Level of Service (LOS)							C							A		
Approach Delay (s/veh)						24.6								1.6		
Approach LOS						C										

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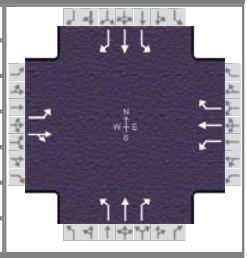
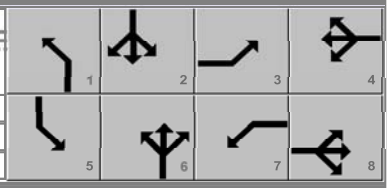
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.90
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	Reserve Blvd/Old Port R…	File Name	123_fuam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	82	68	220	249	73	56	176	365	306	81	735	72

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.7	5.1	46.8	6.4	0.6	25.4
Yellow	4.0	0.0	4.0	4.0	4.0	4.0
Red	2.0	0.0	2.0	2.0	2.0	2.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.4	31.4	19.0	37.9	16.8	57.9	11.7	52.8
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	3.3	3.1	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s	6.7	24.4	15.0	5.9	10.5		5.5	
Green Extension Time (g_e), s	0.1	1.0	0.0	1.0	0.3	0.0	0.2	0.0
Phase Call Probability	0.95	1.00	1.00	1.00	1.00		0.95	
Max Out Probability	0.00	0.00	1.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	91	320		277	81	62	191	397	333	90	817	80
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1670		1810	1900	1610	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	4.7	22.4		13.0	3.9	3.5	8.5	13.7	17.8	3.5	46.8	3.8
Cycle Queue Clearance Time (g_c), s	4.7	22.4		13.0	3.9	3.5	8.5	13.7	17.8	3.5	46.8	3.8
Green Ratio (*g/C*)	0.27	0.21		0.34	0.27	0.27	0.49	0.43	0.43	0.44	0.39	0.39
Capacity (*c*), veh/h	440	353		283	506	429	223	822	697	449	741	628
Volume-to-Capacity Ratio (*X*)	0.207	0.906		0.979	0.160	0.145	0.858	0.483	0.477	0.201	1.102	0.127
Back of Queue (*Q*), ft/ln (95 th percentile)	92.6	364.8		377.2	81.8	62.4	174.3	227.8	285.7	66.8	1172.3	68.4
Back of Queue (*Q*), veh/ln (95 th percentile)	3.7	14.6		15.1	3.3	2.5	7.0	9.1	11.4	2.7	46.9	2.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	34.1	46.1		35.8	33.7	33.6	33.6	15.7	24.6	20.5	36.6	23.5
Incremental Delay (d_2), s/veh	0.1	3.6		47.4	0.1	0.1	3.6	2.0	2.3	0.1	64.4	0.4
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	34.2	49.8		83.2	33.8	33.7	37.1	17.6	26.9	20.6	101.0	23.9
Level of Service (LOS)	C	D		F	C	C	D	B	C	C	F	C
Approach Delay, s/veh / LOS	46.3	D		66.3	E		25.0	C		87.4	F	
Intersection Delay, s/veh / LOS	57.0						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	2.11	B	1.92	B
Bicycle LOS Score / LOS	1.17	A	1.18	A	2.04	B	2.12	B

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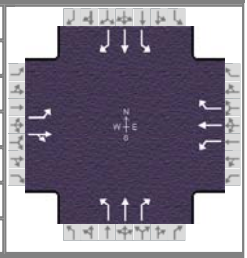
HCS7 Signalized Intersection Results Summary

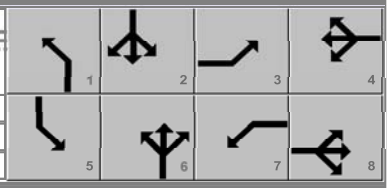
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.97
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	Reserve Blvd/Old Port R…	File Name	123_fupm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	123	127	154	428	140	76	190	590	634	91	714	72

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.2	5.8	45.1	9.3	9.7	23.9	
Yellow	4.0	0.0	4.0	4.0	4.0	4.0	
Red	2.0	0.0	2.0	2.0	2.0	2.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	15.3	29.9	31.0	45.6	18.0	56.9	12.2	51.1
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.1	3.2	3.1	3.2	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s	9.3	23.4	27.0	9.4	11.7		6.3	
Green Extension Time (g_e), s	0.1	0.5	0.0	1.0	0.3	0.0	0.1	0.0
Phase Call Probability	0.99	1.00	1.00	1.00	1.00		0.97	
Max Out Probability	0.49	0.43	1.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	127	290		441	144	78	194	602	647	94	736	74
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1729		1810	1900	1610	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	7.3	21.4		25.0	7.4	4.6	9.7	36.0	50.9	4.3	45.1	4.1
Cycle Queue Clearance Time (g_c), s	7.3	21.4		25.0	7.4	4.6	9.7	36.0	50.9	4.3	45.1	4.1
Green Ratio (*g/C*)	0.26	0.18		0.39	0.30	0.30	0.45	0.39	0.39	0.39	0.35	0.35
Capacity (*c*), veh/h	417	318		425	579	491	222	745	631	224	659	559
Volume-to-Capacity Ratio (*X*)	0.304	0.911		1.038	0.249	0.160	0.872	0.809	1.025	0.420	1.116	0.133
Back of Queue (*Q*), ft/ln (95 th percentile)	146.6	415.2		612.4	155.2	81.7	178.4	574.8	710.3	84.6	1165.7	75
Back of Queue (*Q*), veh/ln (95 th percentile)	5.9	16.6		24.5	6.2	3.3	7.1	23.0	28.4	3.4	46.6	3.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	38.8	52.0		35.8	34.0	33.0	35.5	33.0	31.8	29.6	42.4	29.1
Incremental Delay (d_2), s/veh	0.2	22.1		53.9	0.1	0.1	3.0	6.7	36.6	0.5	71.5	0.5
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	38.9	74.1		89.7	34.1	33.1	38.4	39.6	68.4	30.1	114.0	29.5
Level of Service (LOS)	D	E		F	C	C	D	D	F	C	F	C
Approach Delay, s/veh / LOS	63.4	E		70.9	E		52.4	D		98.3	F	
Intersection Delay, s/veh / LOS	69.4						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.14	B	2.13	B	2.12	B	1.93	B
Bicycle LOS Score / LOS	1.17	A	1.58	B	2.89	C	1.98	B

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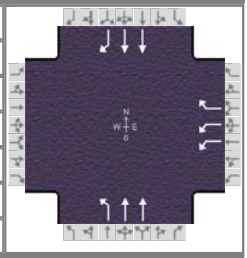
HCS7 Signalized Intersection Results Summary

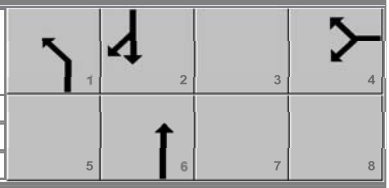
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.92
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	WB Ramps for Saturn P…	File Name	123_fuam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				166		213	156	634			870	334

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	51	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	13.1	69.1	19.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4	1	6		2
Case Number				9.0	2.0	4.0		7.3
Phase Duration, s				25.8	19.1	94.2		75.1
Change Period, ($Y+R_c$), s				6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s				3.3	3.1	0.0		0.0
Queue Clearance Time (g_s), s				18.8	12.9			
Green Extension Time (g_e), s				0.9	0.3	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				0.00	0.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14	1	6			2	12
Adjusted Flow Rate (*v*), veh/h				180		232	170	689			912	350
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1757		1610	1810	1809			1809	1610
Queue Service Time (g_s), s				5.4		16.8	10.9	5.1			13.5	8.0
Cycle Queue Clearance Time (g_c), s				5.4		16.8	10.9	5.1			13.5	8.0
Green Ratio (*g/C*)				0.16		0.16	0.11	0.74			0.58	0.58
Capacity (*c*), veh/h				578		265	198	2660			2083	927
Volume-to-Capacity Ratio (*X*)				0.312		0.874	0.855	0.259			0.438	0.378
Back of Queue (*Q*), ft/ln (95 th percentile)				106.3		281.8	187.8	69.7			140.7	74.7
Back of Queue (*Q*), veh/ln (95 th percentile)				4.3		11.3	7.5	2.8			5.6	3.0
Queue Storage Ratio (*RQ*) (95 th percentile)				0.00		0.00	0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh				44.1		48.9	48.0	3.2			10.1	6.4
Incremental Delay (d_2), s/veh				0.1		3.5	2.7	0.2			0.1	0.1
Initial Queue Delay (d_3), s/veh				0.0		0.0	0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh				44.3		52.5	50.7	3.4			10.1	6.5
Level of Service (LOS)				D		D	D	A			B	A
Approach Delay, s/veh / LOS	0.0			48.9		D	12.7		B	9.1		A
Intersection Delay, s/veh / LOS	16.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.33	B	1.86	B	1.38	A
Bicycle LOS Score / LOS				F	1.20	A	1.57	B

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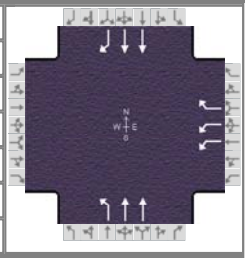
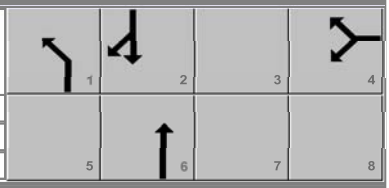
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.98
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	WB Ramps for Saturn P…	File Name	123_fupm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				405		642	196	772			941	355

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	17	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	16.0	41.0	54.9	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4	1	6		2
Case Number				9.0	2.0	4.0		7.3
Phase Duration, s				60.9	22.0	69.1		47.0
Change Period, ($Y+R_c$), s				6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s				3.3	3.1	0.0		0.0
Queue Clearance Time (g_s), s				53.5	16.0			
Green Extension Time (g_e), s				1.5	0.0	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				0.70	1.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14	1	6			2	12
Adjusted Flow Rate (*v*), veh/h				413		655	200	788			903	341
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1757		1610	1810	1809			1809	1610
Queue Service Time (g_s), s				10.0		51.5	14.0	12.2			28.0	17.0
Cycle Queue Clearance Time (g_c), s				10.0		51.5	14.0	12.2			28.0	17.0
Green Ratio (*g/C*)				0.42		0.42	0.12	0.49			0.32	0.32
Capacity (*c*), veh/h				1485		681	223	1755			1142	508
Volume-to-Capacity Ratio (*X*)				0.278		0.963	0.897	0.449			0.791	0.670
Back of Queue (*Q*), ft/ln (95 th percentile)				187.4		803.1	271.7	168.9			322.3	133.1
Back of Queue (*Q*), veh/ln (95 th percentile)				7.5		32.1	10.9	6.8			12.9	5.3
Queue Storage Ratio (*RQ*) (95 th percentile)				0.00		0.00	0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh				24.6		36.5	52.0	11.7			33.3	18.5
Incremental Delay (d_2), s/veh				0.0		23.7	23.4	0.5			0.5	0.6
Initial Queue Delay (d_3), s/veh				0.0		0.0	0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh				24.6		60.2	75.4	12.2			33.8	19.2
Level of Service (LOS)				C		E	E	B			C	B
Approach Delay, s/veh / LOS	0.0			46.4		D	25.0		C	29.8		C
Intersection Delay, s/veh / LOS	33.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.33	B	2.33	B	1.91	B	1.42	A
Bicycle LOS Score / LOS				F	1.30	A	1.58	B

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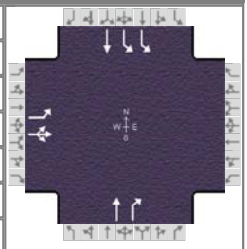
HCS7 Signalized Intersection Results Summary

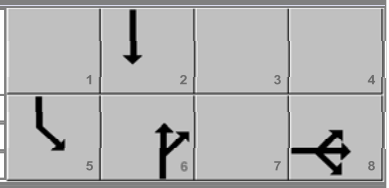
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	AM Peak Hour	PHF	0.92
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	EB Ramps for Saturn Pk…	File Name	123_fuam.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	178	0	153					612	563	576	460	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	107	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	23.3	63.4	15.3	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8				6	5	2
Case Number		10.0				7.3	2.0	4.0
Phase Duration, s		21.3				69.4	29.3	98.7
Change Period, (*Y+R c*), s		6.0				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.2				0.0	3.1	0.0
Queue Clearance Time (*g s*), s		14.5					21.8	
Green Extension Time (*g e*), s		0.7				0.0	1.5	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18					6	16	5	2	
Adjusted Flow Rate (*v*), veh/h	193	166						665	612	608	485	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610						1900	1610	1757	1900	
Queue Service Time (*g s*), s	12.5	12.1						30.5	34.7	19.8	4.4	
Cycle Queue Clearance Time (*g c*), s	12.5	12.1						30.5	34.7	19.8	4.4	
Green Ratio (*g/C*)	0.13	0.13						0.53	0.53	0.19	0.77	
Capacity (*c*), veh/h	230	205						1004	851	682	1468	
Volume-to-Capacity Ratio (*X*)	0.840	0.812						0.662	0.719	0.891	0.330	
Back of Queue (*Q*), ft/ln (95 th percentile)	244.9	216.2						499	493.4	299.3	58.8	
Back of Queue (*Q*), veh/ln (95 th percentile)	9.8	8.6						20.0	19.7	12.0	2.4	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00						0.00	0.00	0.00	0.00	
Uniform Delay (*d 1*), s/veh	51.2	51.0						20.5	21.5	39.8	1.6	
Incremental Delay (*d 2*), s/veh	3.2	2.9						3.4	5.2	1.5	0.6	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0						0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	54.3	53.9						23.9	26.7	41.4	2.1	
Level of Service (LOS)	D	D						C	C	D	A	
Approach Delay, s/veh / LOS	54.1	D		0.0			25.3	C		24.0	C	
Intersection Delay, s/veh / LOS	28.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.97	B	2.16	B	1.68	B	1.62	B
Bicycle LOS Score / LOS	1.08	A			2.59	C	2.35	B

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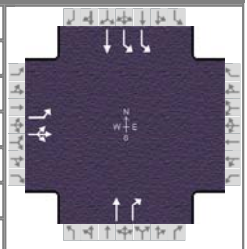
HCS7 Signalized Intersection Results Summary

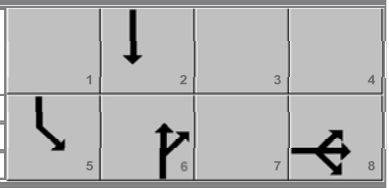
General Information				Intersection Information	
Agency	FTG			Duration, h	0.250
Analyst	FTG	Analysis Date	Oct 29, 2020	Area Type	Other
Jurisdiction	Spring Hill, TN	Time Period	PM Peak Hour	PHF	0.98
Urban Street	Port Royal Road	Analysis Year	2028 (Total)	Analysis Period	1> 7:00
Intersection	EB Ramps for Saturn Pk…	File Name	123_fupm.xus		
Project Description	11106				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	283	0	174					685	229	362	984	

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	99	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.3	73.5	23.2	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8				6	5	2
Case Number		10.0				7.3	2.0	4.0
Phase Duration, s		29.2				79.5	21.3	100.8
Change Period, (*Y+R c*), s		6.0				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.2				0.0	3.1	0.0
Queue Clearance Time (*g s*), s		22.3					14.4	
Green Extension Time (*g e*), s		1.0				0.0	0.9	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18					6	16	5	2	
Adjusted Flow Rate (*v*), veh/h	289	178						699	234	354	962	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610						1900	1610	1757	1900	
Queue Service Time (*g s*), s	20.3	13.2						32.9	9.6	12.4	13.6	
Cycle Queue Clearance Time (*g c*), s	20.3	13.2						32.9	9.6	12.4	13.6	
Green Ratio (*g/C*)	0.18	0.18						0.57	0.57	0.12	0.73	
Capacity (*c*), veh/h	323	288						1075	911	412	1385	
Volume-to-Capacity Ratio (*X*)	0.893	0.617						0.651	0.257	0.858	0.695	
Back of Queue (*Q*), ft/ln (95 th percentile)	361.8	229						528.2	162.3	189.5	128.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	14.5	9.2						21.1	6.5	7.6	5.1	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00						0.00	0.00	0.00	0.00	
Uniform Delay (*d 1*), s/veh	52.2	49.3						19.4	14.4	45.4	1.8	
Incremental Delay (*d 2*), s/veh	3.5	0.8						3.1	0.7	1.5	2.1	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0						0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	55.7	50.1						22.5	15.0	46.9	3.9	
Level of Service (LOS)	E	D						C	B	D	A	
Approach Delay, s/veh / LOS	53.5	D		0.0			20.6	C		15.5	B	
Intersection Delay, s/veh / LOS	23.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.97	B	2.16	B	1.67	B	1.63	B
Bicycle LOS Score / LOS	1.26	A			2.03	B	2.75	C

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APPENDIX C
TRIP GENERATION

TRIP GENERATION CALCULATIONS – Multi-Family

The following calculations are based on the data compiled for ITE Land Use Code 220.

Average Daily Traffic

T = 7.32 (X)
T = 7.32 (**396**)
T = 2,898 vehicles

Enter = 0.50 (2,898) = 1,449 vehicles
Exit = 0.50 (2,898) = 1,449 vehicles

AM traffic during peak hour of adjacent street

T = 0.46 (X)
T = 0.46 (**396**)
T = 182 vehicles

Enter = 0.23 (182) = 42 vehicles
Exit = 0.77 (182) = 140 vehicles

PM traffic during peak hour of adjacent street

T = 0.56 (X)
T = 0.56 (**396**)
T = 222 vehicles

Enter = 0.63 (222) = 140 vehicles
Exit = 0.37 (222) = 82 vehicles

TRIP GENERATION CALCULATIONS – Supermarket

The following calculations are based on the data compiled for ITE Land Use Code 850.

Average Daily Traffic

T = 106.78 (X)
T = 106.78 (**49.000**)
T = 5,232 vehicle-trips

Enter = 0.50 (5,232) = 2,616 vehicles
Exit = 0.50 (5,232) = 2,616 vehicles

A.M. traffic during peak hour of adjacent street

T = 3.82 (X)
T = 3.82 (**49.000**)
T = 187 vehicle-trips

Enter = 0.60 (187) = 112 vehicles
Exit = 0.40 (187) = 75 vehicles

P.M. traffic during peak hour of adjacent street

T = 9.24(X)
T = 9.24 (**49.000**)
T = 453 vehicle-trips

Enter = 0.51 (453) = 231 vehicles
Exit = 0.49 (453) = 222 vehicles

TRIP GENERATION CALCULATIONS – Shopping Center

The following calculations are based on the data compiled for ITE Land Use Code 820.

Average Daily Traffic

T = 37.75 (X)
T = 37.75 (**9.600**)
T = 362 vehicle-trips

Enter = 0.50 (362) = 181 vehicles
Exit = 0.50 (362) = 181 vehicles

A.M. traffic during peak hour of adjacent street

T = 0.94 (X)
T = 0.94 (**9.600**)
T = 9 vehicle-trips

Enter = 0.62 (9) = 6 vehicles
Exit = 0.38 (9) = 3 vehicles

P.M. traffic during peak hour of adjacent street

T = 3.81 (X)
T = 3.81 (**9.600**)
T = 37 vehicle-trips

Enter = 0.48 (37) = 18 vehicles
Exit = 0.52 (37) = 19 vehicles

TRIP GENERATION CALCULATIONS – Office

The following calculations are based on the data compiled for ITE Land Use Code 710.

Average Daily Traffic

Ln(T) = 0.97 Ln(X) + 2.50
Ln(T) = 0.97 Ln(**24.000**) + 2.50
T = 266 vehicle-trips

Enter = 0.50 (266) = 133 vehicles
Exit = 0.50 (266) = 133 vehicles

A.M. traffic during peak hour of adjacent street

T = 0.94 (X) + 26.49
T = 0.94 (**24.000**) + 26.49
T = 49 vehicle-trips

Enter = 0.86 (49) = 42 vehicles
Exit = 0.14 (49) = 7 vehicles

P.M. traffic during peak hour of adjacent street

Ln(T) = 0.95 Ln(X) + 0.36
Ln(T) = 0.95 Ln(**24.000**) + 0.36
T = 30 vehicle-trips

Enter = 0.16 (30) = 5 vehicles
Exit = 0.84 (30) = 25 vehicles

KRAFT ANALYTICS
VALUATION • FORENSICS • TRANSACTION ADVISORY

November 12, 2020

Mr. Ken Starrett
Gross Residential
14300 Ridge Rd.
North Royalton, OH 44133

RE: Economic Contribution Analysis for a planned 44-acre mixed use development located at 3788 and 3812 Old Port Royal Rd. in Spring Hill, Tennessee ("Kingsley Place")

Mr. Starrett:

I have been asked to assess the economic contribution through property tax generation and development fees for Kingsley Place. As considered in the report detail that follows, our analysis indicates that:

1- Upon opening, the present value of property taxes generated by Kingsley Place over a 30-year period is expected to be approximately **$17.9 million from property taxes**. In contrast, over the same period the current agricultural use yields a $127 thousand present value.

2- The present value of sales taxes from the retail portion of Kingsley Place over a 30-year period is expected to be approximately $54.2 million, **$22.1 million of those sales taxes are payable to Maury County.**

3- Kingsley Place will generate approximately **$2.5 million in development fees** paid by Gross Residential.

4- The undesignated parcel of 3.70 acres has been reserved for municipal use.

I am the managing member of Kraft Analytics, LLC, an affiliate of KraftCPAs in Nashville. My group performs economic and financial analysis. In addition to my work in these areas, I also have experience with residential and commercial land development due to early work in the civil engineering profession. My Curriculum Vitae is attached is **Exhibit 1**. Documentation I have considered in my analysis is summarized in **Exhibit 2**.

In my analysis, I considered property taxes and other contributions that can be reasonably expected from Kingsley Place once these properties are occupied. I compared these contributions to those that could be reasonably expected from continuation of the current

agricultural use. Through this comparison, I was able to assess the relative economic benefit for the city and county associated with Kingsley Place.

Information related to the most recent property tax assessment for all existing properties cited herein, unless otherwise stated, was based on information obtained from the Maury County Tax Assessor's on-line system in 2020.

I – CURRENT USE OF THE PLANNED DEVELOPMENT SITE

The planned development site comprises 43.84 acres, of which Gross Residential has identified 42.46 acres for various specific uses as noted below. The remaining 1.38 acres is anticipated right of way for roads, sidewalks, utilities, and other municipal uses. **Figure 1** summarizes property tax information available for this site for the most recent annual period:

FIGURE 1: CURRENT SITE USE

Assessment %	25.0%	of Appraised Value = Assessed Value
Maury County Tax Rate	2.2364	per $100 of Assessed Value
Spring Hill City Rate	0.86	per $100 of Assessed Value

	3788 Old Port Royal Rd.	**3812 Old Port Royal Rd.**	**Total**
Current Class	Agricultural	Agricultural	
Acres[1]	23.34	20.60	43.94
Resident - Appraised Value	$ 316,600	$ 314,900	$ 631,500
Total Assessed Value	$ 79,150	$ 78,725	$ 157,875
County tax	$ 1,770	$ 1,761	$ 3,531
City tax	$ 681	$ 677	$ 1,358
TOTAL Property Tax	$ 2,451	$ 2,438	$ 4,888
TOTAL Property Tax per Acre	$ 105	$ 118	$ 111

1) These acreages were provided by the tax records, and differ slightly from Gross Residential's surveyed acreage.

Figure 2 summarizes the planned usage of the 43.84 acres:

FIGURE 2: Planned

Use	**Acres**
Apartments	28.89
Retail	7.14
Office	2.75
Undesignated	3.68
ROW	1.38
Total	**43.84**

II - RESIDENTIAL DEVELOPMENT CONSIDERATIONS

I understand that the intended use for 28.89 acres of Kingsley Place is for multi-family apartment buildings (the "Multi-Family Space"). **Exhibit 3** summarizes our findings related to 3 similar developments in the area. Newer developments in close proximity to Kingsley Place provide the best indication of the potential assessed value of the Multi-Family Space.

We searched for Maury County properties within 10 miles of Kingsley Place where the last structures were completed after January 1, 2015.[1] Based on averages for these 3 properties, I projected expected tax contributions for Kingsley Place based on historic tax rates. The following summarizes the selected complexes:

- Arden Village Apartments - are located 6.9 miles from Kingsley Place and the most recent improvement was completed in 2019.

- Worthington Glen (Section 3) - are located 1.9 miles from Kingsley Place and the most recent improvement was completed in 2015.

- The Villas at Spring Hill - are located 1.5 miles from Kingsley Place and the most recent improvement was completed in 2019.

Exhibit 3 indicates that, on a blended basis, the improved real property has an appraised value of $1,620,000 per acre. Using this per acre value, I calculated an implied property value based on similar developments to the Multi-Family Space of Kingsley Place in **Figure 3** below:

FIGURE 3: Residential Development Summary

Commercial Property		40.0%	of Appraised Value = Assessed Value
Maury County Tax Rate		2.2364	per $100 of Assessed Value
Spring Hill City Rate		0.86	per $100 of Assessed Value
Implied Real Property Value			
Kingsley Place Residential Component		28.89	Acres
Per Acre Comparable Value	$	1,620,000	See Exhibit 3
Multi-Family - Appraised Value	$	46,801,800	
Multi-Family - Assessed Value	$	18,720,720	40% of Appraised
Maury County Property Taxes	$	418,670	
City of Spring Hill Taxes	$	160,998	
TOTAL Property Tax	$	580,000	*Rounded to 000s*
TOTAL Property Tax per Acre	$	20,100	*Rounded to 00s*

[1] Excluding properties we understood may not be fully developed as of the writing of this report.

III – COMMERCIAL DEVELOPMENT CONSIDERATIONS

The planned commercial section consists of two parts:

1. Grocery/Retail space consisting of 7.14 acres including parking (the "Retail Space"); and

2. Flex office space consisting of 2.75 acres including parking with anticipated use as medical offices (the "Medical Office Space").

The Retail Space will include some other flex space. The types of businesses that might occupy the Retail Space include a grocery store chain, major retailers, restaurants, professional offices, and other retail establishments. Because the majority of the Retail Space is intended for a grocer/major retailer, I calculated a per acre appraisal rate from the tax records for other major retailers in Spring Hill. I applied this rate to the entire Retail Space because 1) the smaller units can be used for many different purposes and projecting the actual tenant mix is not possible, and 2) the appraised value per acre would likely be similar to these different uses.

Since the success of retail establishments of this type relies upon sufficient consumer population in close proximity, it makes sense that the addition of residential units nearby would contribute to making the Retail Space economically viable. Based on this premise, I have also considered the expected economic contribution of the Retail Space.

My analysis of property tax contributions for the Retail Space of Kingsley Place began with an assessment of appraised property values for nearby commercial retail establishments of the type that could be in Kingsley Place. **Exhibit 4** identifies the properties used in this analysis and indicates that, on a blended basis, the real property has an appraised value of $607,000 per acre of retail space while taxable personal property in these businesses have an appraised value of $69,000 per acre. Using these metrics and the estimated acreage of the Retail Space, I calculated taxes based on historical rates for the Retail Space in **Figure 4** below:

FIGURE 4: Retail Development Summary

Commercial Property	40.0%	of Appraised Value = Assessed Value		
Personal Property	30.0%	of Appraised Value = Assessed Value		
Maury County Tax Rate	2.2364	per $100 of Assessed Value		
Spring Hill City Rate	0.86	per $100 of Assessed Value		
Implied Real Property Value				
Kingsley Place Retail Component			7.14	Acres
Per Acre Commercial Comparable Value		$	607,000	See Exhibit 4
Commercial - Appraised Value		$	4,334,000	
Commercial - Assessed Value		$	1,733,600	40% of Appraised
Per Acre Personal Comparable Value		$	69,000	See Exhibit 4
Personal - Appraised Value		$	492,660	
Personal - Assessed Value		$	147,798	30% of Appraised
Total Assessed Value		$	1,881,398	
Maury County Property Taxes		$	42,076	
City of Spring Hill Taxes		$	16,180	
TOTAL Property Tax		$	58,000	*Rounded to 000s*
TOTAL Property Tax per Acre		$	8,100	*Rounded to 00s*

I also assessed the potential for sales and sales taxes generated by the Retail Space. I reviewed information from multiple sources about different grocers in the United States. Using the seven different metrics provided, **Exhibit 5** identifies the median used to estimate yearly sales for the major retailer in the Retail Space. Based on my research, the average Publix is between 40,000 to 60,000 SF.[2] The current Kroger and Publix located in Spring Hill are 66,492 SF and 61,471 SF, respectively. I understand that the remaining Retail Space may include entities that may or may not collect sales tax, depending upon the use. I understand that the total Retail Space is estimated to be 71,200 square feet. Based on an estimated 60,000 square foot major retailer, the Retail Space includes approximately 11,200 of additional square footage (approximately 15% more).[3] I estimated that half of that space would be used by sales tax paying entities. I estimated the total yearly sales taxes produced by the Retail Space in **Figure 5** below:[4]

[2] See 'https://retailwire.com/discussion/are-smaller-stores-a-big-opportunity-for-supermarkets/

[3] (71,200-60,000) / 71,200

[4] Tennessee state and local rates can be found at https://www.tn.gov/content/dam/tn/revenue/documhttps://www.tn.gov/content/dam/tn/revenue/documents/taxes/sales/taxlist.pdfents/taxes/sales/taxlist.pdf. I understand that depending on the type of item purchased, the State of Tennessee portion of the sales taxes collected by grocers are either 4.0% or 7.0%. I used 4.0% in our calculation. See https://www.tn.gov/content/dam/tn/revenue/documents/taxes/sales/Foodtax.pdf. This has no effect of the portion of sales taxes remitted to Maury County.

FIGURE 5 : Retail Sales Tax Analysis

		Median
Median Sales Per Store		$ 28,858,000
Other Retail space (7.5%)		$ 2,164,350
Total Yearly Sales		$ 31,022,350
State Sales Tax	4.00%	1,240,894
Maury County Sales Tax	2.75%	853,115
Total Yearly Sales Tax		**$ 2,094,009**

I have also considered the expected economic contribution of the Medical Office Space. My analysis of tax contributions for the Medical Office began with an assessment of appraised property values for existing medical offices in Spring Hill of the type that could locate in Kingsley Place.

Exhibit 6 identifies the properties used in this analysis and indicates that, on a blended basis, the real property has an appraised value of $1,551,000 per acre, while taxable personal property used in these businesses has an appraised value of $66,000 per acre. Using these metrics and the area of the commercial property noted on the preliminary development plan, I calculated taxes based on historical rates from the Medical Office Space in **Figure 6** below:

FIGURE 6: Medical Office Development Summary

Commercial Property	40.0%	of Appraised Value = Assessed Value	
Personal Property	30.0%	of Appraised Value = Assessed Value	
Maury County Tax Rate	2.2364	per $100 of Assessed Value	
Spring Hill City Rate	0.86	per $100 of Assessed Value	
Implied Real Property Value			
Kingsley Place Office Component		2.75	Acres
Per Acre Commercial Comparable Value	$	1,551,000	See Exhibit 6
Commercial - Appraised Value	$	4,265,250	
Commercial - Assessed Value	$	1,706,100	40% of Appraised
Per Acre Personal Comparable Value	$	66,000	See Exhibit 6
Personal - Appraised Value	$	181,500	
Personal - Assessed Value	$	54,450	30% of Appraised
Total Assessed Value	$	1,760,550	
Maury County Property Taxes	$	39,373	
City of Spring Hill Taxes	$	15,141	
TOTAL Property Tax	$	55,000	*Rounded to 000s*
TOTAL Property Tax per Acre	$	20,000	*Rounded to 00s*

IV – FINAL CALCULATIONS

To determine the value today of funds that are expected in the future, it is necessary to use an appropriate discount rate to obtain a present value (PV). In this case, I have developed a discount rate based on Maury County's implied cost of debt. The economic logic behind using this rate is based on the idea that it represents what it would cost to borrow the funds being forecasted. For city and county governments, the cost of borrowing generally represents an appropriate cost of capital when considering forecasts involving future tax collections.

The present values calculated are based on the first year in which Kingsley Place becomes substantially occupied. While many more assumptions could have been made regarding fill periods and lag periods, the objective of this analysis is to provide a basic sense of magnitude between differing alternatives. Therefore, additional assumptions that would have added more complexity without altering the basic findings were avoided.

This section presents final calculations related to Kingsley Place. **Exhibit 7** calculates the present values of projected property taxes under the current use, Kingsley Place's projected property taxes, and the sales taxes attributable to the Retail Space. **Figure 7** summarizes the present value of contributions from property tax.

FIGURE 7: Property Tax Present Value Summary

		Current Use Property Taxes	**As Planned *(1)* Property Taxes**			
			Multi-Family	*Retail*	*Office*	***Total***
Present Value	**100.00%**	**126,591**	15,019,675	1,501,968	1,424,280	**$17,945,922**
County Portion	72.23%	91,431	10,848,082	1,084,808	1,028,697	12,961,588
City Portion	27.77%	35,160	4,171,593	417,159	395,582	4,984,334

Figure 8 summarizes the present value of contributions from sales taxes.

FIGURE 8: Sales Tax Present Value Summary

Present Value	100.00%	**54,226,431**
State Portion	59.26%	32,134,181
County Portion	40.74%	22,092,250

Based on the City of Spring Hill and Maury County per unit fee estimates and City of Spring Hill one-time fees, I also calculated total development fees to be paid for the residential component of Kingsley Place in **Figure 9** below.

FIGURE 9: Estimated Development Fees (Residential Only)

		Per Unit Fees
Spring Hill Per Unit Fees		
Roadway Impact Fee		$ 2,364
Spring Hill Sewer Tap Fee (6" per Apartment)		$ 600
Spring Hill Adequate Facilities Tax		$ 625
Spring Hill Building Permits		$ 500
TOTAL Fees per Unit		$ 4,089
TOTAL Residential Units		516
TOTAL Spring Hill Per Unit Fees		$ 2,109,924
Spring Hill One-Time Fees		
8" Water System Development Fee		$ 15,907
8" Water Tap Fee		8,700
8" Water Meter Fee		7,124
2" Water System Development Fee		3,977
2" Irrigation Tap Fee		2,100
2" Irrigation Meter Fee		1,867
8" Sewer System Development Fee		21,653
TOTAL Spring Hill One Time Fees		$ 61,328
Maury County Fees		
Maury County Adequate Facilities Tax		$ 585
TOTAL Residential Units		516
TOTAL Maury County Fees		$ 301,860
TOTAL FEES (City and County)	*Rounded*	**$ 2,473,000**

Please call if you have any questions.

Best Regards,



Glenn Perdue, MBA, CVA, MAFF, CLP
Managing Member

EXHIBIT 1

Glenn Perdue, MBA, CVA, MAFF, CLP
Managing Member
gperdue@kraftcpas.com
615.782.4206

Background

Mr. Perdue leads Kraft Analytics, LLC which provides valuation, forensics, and transaction advisory services. Forensic experience includes work with attorneys related to contract disputes, valuation, economic damages (lost profits, unjust enrichment/disgorgement, reasonable royalty, loss/diminution of value, etc.) intellectual property, licensing, antitrust, insurance recovery, financial reconstruction, investigative analysis, computer forensics, and e-discovery. Valuation experience includes the valuation of businesses, equity interests, intangible assets (including intellectual property) and executive/professional compensation for transactional, managerial, compliance, accounting, tax, and litigation purposes.

Mr. Perdue began his professional career in the venture capital industry and later became the president of a technology company. He is experienced with business transactions involving equity investments, debt financing, mergers, acquisitions, divestitures, buy-outs, joint ventures, bankruptcy, financial distress, foreclosures, licensing, and asset sales. He consults with clients and counsel as a transaction advisor. Industry experience includes work in information technology (software, SaaS, hardware, data communications, Internet, and telecommunications), life sciences (pharmaceuticals, biotech, and medical device), healthcare services (hospital, ASC, dialysis, LTC/SNF, health insurance, imaging centers, healthcare IT, and PBMs), media (Internet, CATV) entertainment (music, touring, publishing, gaming), automotive, advertising, banking, financial services, construction, real estate, professional services, restaurants, transportation, manufacturing, and distribution.

Employment History

Kraft Analytics, LLC (an affiliate of KraftCPAs PLLC) – Nashville, Tennessee
- *Managing Member, August 2008 - Present*

Crowe Chizek & Company, LLC – Nashville, Tennessee
- *Executive, Technology and Intellectual Property Practice Leader, January 2006 – August 2008*
- *Executive, August 2004 to August 2008*

LECG, LLC – Nashville, Tennessee
- *Principal, January 2004 to August 2004*
- *Senior Managing Consultant, July 2002 to December 2003*

Independent Consultant – Nashville, Tennessee
- *January 1993 to June 2002*
- *Phyve Corporation, Director of Consulting Services, 2001*

Transouth Systems Group – Nashville, Tennessee
- *President/Co-Founder, October 1987 to January 1993*

Tennessee Equity Capital Corporation – Nashville, Tennessee
- *Associate, September 1986 to September 1987*

Education and Certifications

- BBA – 1987 from Middle Tennessee State University (Concentration in Finance)
- MBA – 1995 from the Owen School of Management at Vanderbilt University
- CVA (Certified Valuation Analyst) – 2004 Certification from the National Association of Certified Valuator and Analysts related to proficiency and experience in business valuation
- MAFF (Master Analyst in Financial Forensics) – 2008 Certification from the National Association of Certified Valuators and Analysts with specialty designations in Business and Intellectual Property Damages, and Financial Litigation
- CLP (Certified Licensing Professional) – 2011 Certification recognized by the Licensing Executives Society International related to proficiency and experience in the licensing and commercialization of intellectual property

Expert Testimony

Mr. Perdue has provided expert testimony in federal court, state court, depositions, arbitrations, and mediations as follows:

(65) First Wheel Management, Limited v. Inventist, Inc. and Shane Chen
Case No:17-CV-1059-VAC-MPT in the United States District Court for the District of Delaware
Deposition Testimony: August 14, 2020 in Nashville, TN

(64) Global Force Entertainment and Jeffrey Jarrett v. Anthem Wrestling Exhibitions, LLC
Case No: 3:18-cv-00749 in the United States District Court for the Middle District of Tennessee
Hearing Testimony: June 25, 2020 in Nashville, TN
Deposition Testimony: April 28, 2020 in Nashville, TN

(63) Nissan North America, Inc. v. West Covina Nissan, LLC et al
Case No: 16-0883-BC in the Chancery Court for Davidson County Tennessee
Deposition Testimony: February 21, 2020 in Nashville, TN

(62) Eugene Ferraro v. Convercent, Inc. et al
Case No: 17-cv-00781-RBJ in the United States District Court for the District of Colorado
Trial Testimony: February 13, 2020 in Denver, CO

(61) Northwest Eye Institute v. AmSurg Holdings, Inc. et al v. John S. Beretska, MD et al
Case No: 02-19-0000-0323 American Arbitration Association
Deposition Testimony: December 27, 2019 in Nashville, TN
Arbitration Testimony: January 23, 2020 in Minneapolis, MN

(60) Rachelle Davis v. Roy Davis
Case No: 13D-2078 in the Circuit Court of Davidson County, Tennessee
Deposition Testimony: November 19, 2019 in Brentwood, TN

(59) Peggy Arnold v. Jeffrey Arnold
Case No: 18-CI-01011 in the Circuit Court for Warren County Kentucky in Bowling Green
Deposition Testimony: September 6, 2019 in Bowling Green, KY
Trial Testimony: February 26, 2020 in Bowling Green, KY

(58) Hiller, LLC v. Success Group International Learning Alliance, LLC et al
Case No: 3:17-CV-743 in the United States District Court for the Middle District of Tennessee
Deposition Testimony: October 30, 2018 in Nashville, TN
Trial Testimony (Jury): March 7-8, 2019 in Nashville, TN

(57) Kimberly Donchez v. Nathaniel Donchez
Case No. 2017-271 in the Circuit Court for Williamson County, Tennessee
Deposition Testimony: May 24, 2018 in Franklin, TN

(56) FDA Properties, LLC v. David Doyle Miller
Case No. 2013-510 in the Circuit Court for Williamson County, Tennessee
Trial Testimony (Bench): March 28, 2018 in Franklin, TN

(55) Brian Moore and M&E, LLC v. Glenn Dukes
Case No. 15-1146-BC-(I)(IV) in the Chancery Court of Davidson County, Tennessee
Deposition Testimony: January 17, 2018 in Nashville, TN

(54) Ernst Hospitality Corp. v. Hardaway Construction Corp.
Arbitration Matter
Mediation Appearance: October 3, 2017 in Nashville, TN

(53) USA Fundraisers, LLC v. Great American Opportunities, Inc.
Case No. 16-957-BC in the Chancery Court of Davidson County, Tennessee
Mediation Appearance: September 26, 2017 in Nashville, TN

(52) Nissan North America, Inc. v. Tustin Import Auto Sales, LLC et al
Case No. 44679 Williamson County Chancery Court (transferred to Davidson Count Business Court)
Damages Hearing Testimony: April 27, 2017

(51) Franchise Risk Solutions, Inc. v. Conifer Holdings, Inc. et al
Case No. 16-0176-BC in the Chancery Court of Davidson County Tennessee
Deposition Testimony: January 26, 2017 in Nashville, TN
Trial Testimony (Jury): March 9-10, 2017 in Nashville, TN

(50) Carl Stubner v. Erica Stubner
Case No. 35066 in the Chancery Court of Williamson County, Tennessee
Deposition Testimony: January 20, 2017 in Franklin, TN

(49) Elizabeth Perkins v. Phil Perkins
Mediation Appearance (telephonic): December 6, 2016 in Nashville, TN

(48) Protect-A-Car Wash Systems, Inc. v. Car Wash Partners, Inc. et al
Case No. 1:16-cv-00534-JFM in the USDC for the Northern District of Maryland
Deposition Testimony: November 9, 2016 in Potomac, MD

(47) Grady Cunningham v. Bedford County, Tennessee et al
Case No. 30129 in the Chancery Court of Bedford County, Tennessee
Trial Testimony (Bench): September 1, 2016 in Shelbyville, TN

(46) American Brokerage Network et al v. American International Group et al
Case No. 01-15-0002-7786 – American Arbitration Association
Deposition Testimony: April 21, 2016 in Nashville, TN
Arbitration Testimony: May 22, 2016 in Nashville, TN

(45) Virtual Studios, Inc. v. Stanton Carpet Corp.
Case No. 4:15-cv-00070-HLM for the Northern District of Georgia in Rome
Deposition Testimony: April 19, 2016 in Chattanooga, TN

(44) International Medcom, Inc. v. S.E. International, Inc.
Case No. 1110018729 – Private Arbitration through JAMS
Arbitration Testimony: April 13, 2016 in San Jose, CA

(43) Quality Manufacturing Systems, Inc. v. R/X Automation Solutions, Inc.
Case No. 3:13-cv-00260 in the USDC for the Middle District of Tennessee in Nashville
Deposition Testimony: January 21, 2016 in Nashville, TN

(42) ACS Transport Solutions, Inc. v. Nashville Metropolitan Transit Authority
Case No. 3:13-CV-01137 in the USDC for the Middle District of Tennessee in Nashville
Deposition Testimony: January 12, 2016 in Nashville, TN

(41) Accurate Energetic Systems, LLC v. American Sporting Supplies, LLC
Case No. 01-14-0001-6388 – American Arbitration Association
Deposition Testimony: November 9, 2015 in Nashville, TN
Arbitration Testimony: December 3, 2015 in Nashville, TN

(40) Carsar, LLC and Aspen Medical Products, Inc. v. DeRoyal Industries, Inc.
Case No. 8:14-cv-01141-CJC-AN in the USDC for the Central District of California, Southern Division
Deposition Testimony: October 12, 2015 in Nashville, TN

(39) Chapter 11 Bankruptcy of WASCO, Inc. and Lovell's Masonry, Inc.
Case No. 3:15-bk-00068 in United States Bankruptcy Court for the Middle District of Tennessee
Deposition Testimony: August 6, 2015 in Nashville, TN
Confirmation Hearing Testimony on Behalf of Unsecured Creditors: August 21, 2015 in Nashville, TN

(38) Sole Supports, Inc. v. MoJo Feet, LLC et al
Case No. 13-cv-5044 in the Chancery Court for Hickman County, Tennessee at Centerville
Deposition Testimony: August 12, 2014 in Nashville, TN
Trial Testimony (Jury): April 21/22, 2015 in Centerville, TN

(37) Colorado State University Research Foundation v. XY, LLC and Inguran, LLC
Deposition Testimony: December 5, 2014 in San Antonio, TX
Arbitration Testimony: December 18, 2014 in Fort Collins, CO

(36) Pate Santa Fe, LLC v. The Estate of David Wachtel (jointly retained)
Mediation Appearance: November 10, 2014 in Nashville, TN

(35) Global Systems, LLC v. Batesville Manufacturing, Inc.
Case No. 4:12-CV-00031 in the United States District Court for the Eastern District of Tennessee
Deposition Testimony: May 27, 2014 in Nashville, TN

(34) Coupled Products, LLC v. Calsonic Kansei North America, Inc.
Case No. 50-457 T 00205 13 – International Centre for Dispute Resolution
Deposition Testimony: May 2, 2014 in Nashville, TN

(33) William F. Hunt v. Veropele Nashville I, LLC
Case No. 12-938-I in the Chancery Court for Davidson County Tennessee in Nashville
Deposition Testimony: March 19, 2014 in Nashville, TN
Trial Testimony (Bench): April 9, 2014 in Nashville, TN

(32) Middle Tennessee Lumber Company, Inc. et al v. Door Components, LLC et al
Case No. 3:12-cv-00343 in the U.S.D.C. for the Middle District of Tennessee in Nashville
Deposition Testimony: February 19, 2013 in Nashville, TN
Trial Testimony (Bench): August 28, 2013 in Nashville, TN

(31) Jerry Dunlap v. The Nexus Group, Inc. et al
Case No. 10-1951-I in the Chancery Court for Davidson County, Tennessee
Deposition Testimony: May 31, 2013 in Nashville, TN
Trial Testimony (Bench): August 20, 2013 in Nashville, TN

(30) Sabre Defence Industries, LLC v. Steyr Arms, Inc. et al
Case No. 30 Y 118 00729 12 – American Arbitration Association
Deposition Testimony: July 25, 2013 in Atlanta, GA
Arbitration Testimony (Panel): August 14, 2013 in Atlanta, GA

(29) Big Vision Private Limited v. E.I. DuPont De Nemours and Company
Case No. 11 Civ. 8511-WHP-THK in the U.S.D.C for the Southern District of New York
Deposition Testimony: May 15, 2013 in Wilmington, DE

(28) Middle Tennessee Lumber Company, Inc. et al v. Michael Lewis et al
Private Arbitration Pursuant to the Commercial Arbitration Rules of the AAA
Deposition Testimony: March 19, 2012 in Nashville, TN
Arbitration Testimony: June 6, 2012 in Nashville, TN

(27) PPG Industries, Inc. et al v. Lee Payne et al
Case No. 3:10-CV-73 in the U.S.D.C. for the Eastern District of Tennessee in Knoxville
Deposition Testimony: April 11, 2012 in Nashville, TN

(26) Raymond Jackson, et al v. Regions Bank
Case No. 3:09-cv-00908 in the U.S.D.C. for the Middle District of Tennessee in Nashville
Deposition Testimony: January 30, 2012 in Nashville, TN

(25) BSN Medical, Inc. v. Parker Medical Associates LLC, et al
Case No. 3:09-cv-00015-RJC-DCK in the U.S.D.C. for the District of North Carolina
Deposition Testimony: May 20, 2011 in Charlotte, NC
Trial Testimony (Jury): December 15, 2011 in Charlotte, NC

(24) Alfred K. Nippert, Jr. v. James R. Jackson, Jr. et al
Case No. 3-09-1068 in the U.S.D.C. for the Middle District of Tennessee in Nashville
Trial Testimony (Bench): November 9, 2011 in Nashville, TN

(23) Wendy's of Bowling Green, Inc. v. Marsh USA, Inc.
Case No. 3:10-cv-01043 in the U.S.D.C. for the Middle District of Tennessee in Nashville
Deposition Testimony: October 26, 2011 in Nashville, TN

(22) LiveOnTheNet.com, Inc. v. Digium, Inc. et al
Case No. CV09-220 in the Circuit Court of Madison County, Alabama
Deposition Testimony: December 22, 2010 in Nashville, TN
Deposition Testimony: July 19, 2011 (telephonic)
Trial Testimony (Jury): August 19, 2011 in Huntsville, AL

(21) United States of America v. James W. Carell, et al
Case No. 3:09-0445 in the U.S.D.C. for the Middle District of Tennessee in Nashville
Deposition Testimony: July 27, 2011 in Nashville, TN

(20) Joseph D. Freedman v. Leslie E. Freedman
Case No. 10D-1017in the Circuit Court of Davidson County, Tennessee in Nashville
Mediation Appearance: June 1, 2011 in Nashville, TN

(19) King Pharmaceuticals, Inc., et al v. Actavis, Inc. et al
Case No. 07-CV-5041 (SDW) (MCA) in the U.S.D.C. for the District of New Jersey
Deposition Testimony: January 25, 2011 in New York, NY
Trial Testimony (Bench): March 8, 2011 in Trenton, NJ

(18) ADS Security, LP v. Superior Detection Systems, Inc.
Case No. 08-1543-II in the Chancery Court of Davidson County, Tennessee
Deposition Testimony: August 4, 2010 in Nashville, TN

(17) Jess Hansen (Personal Representative) v. KIA Motors Corporation et al
Case No. 16-2007-CA-10437-XXXX-A in the Circuit Court of Duval County, Florida
Deposition Testimony: July 30, 2010 in Nashville, TN

(16) Geocel Corporation et al v. One Beacon Risk Management, Inc. et al
Case No. 20C01-0802-CT-07 in the Circuit Court of Elkhart County, Indiana
Deposition Testimony: July 28, 2010 in South Bend, IN

(15) Second Growth, LLC v. Atlantic Station Wine, LLC et al
Case No. 30 114 00654 09 before the American Arbitration Association in Atlanta, GA
Deposition Testimony: March 25, 2010 (telephonic)
Arbitration Testimony: July 22, 2010 (telephonic)
(14) 1900 Telcom Holdings and BE&K, Inc. v. AFL Network Services, Inc.
Case No. 30 494 Y 00347 09 before the American Arbitration Association
Mediation Appearance: February 22, 2010 in Birmingham, AL

(13) Randall L. Woodruff as Bankruptcy Trustee for Legacy Healthcare et al v. South Central Conference of Seventh-Day Adventists
Case No. 08-1633-II Chancery Court of Davidson County Tennessee
Deposition Testimony: September 8, 2009 in Nashville, TN

(12) Kristen Alison Hall v. Jennifer Nettles & Kristian Bush
Case No. 1:08-CV-2437-TCB U.S.D.C. for the Northern District of Georgia
Deposition Testimony: July 22, 2009 in Nashville, TN

(11) Classic Pride & Associates v. BFI Waste Services, LLC
Case No: 06-2960-IV, Chancery Court for Davidson County, TN
Deposition Testimony: May 15, 2009 in Nashville, TN

(10) American Mensa, LTD. v. Inpharmatica, LTD. and BIOFOCUS DPI, LTD.
Case No: 1:07-CV-3283 U.S.D.C for the District of Maryland
Deposition Testimony: July 23, 2008 in Washington, D.C.
Trial Testimony (Jury): May 1, 2009 in Baltimore, MD

(9) Van Bloem, Inc., et al v. BDO Seidman, LLP
Case No. 03-VS044687-C, State Court of Fulton County Georgia
Deposition Testimony: September 19, 2007 in Atlanta, GA
Trial Testimony (Jury): February 17, 2009 in Atlanta, GA

(8) Division 2 Constructors v. Tishman Construction Corporation of TN
Case No: 06-1240-III Chancery Court for Davidson County, Tennessee
Deposition Testimony: November 18, 2008 in Nashville, TN

(7) Schwarz Pharma, Inc. et al v. Teva Pharmaceuticals USA, Inc.
Case No. 01-4995 (DRD) U.S.D.C. for the District of New Jersey
Deposition Testimony: January 16, 2008 in New York, NY

(6) Grover Wayne Whaley v. Lisa D. Whaley
Case No. DR02 – 1632, Circuit Court for Madison County, Alabama
Trial Testimony (Bench): September 6, 2007 in Huntsville, AL

(5) Joel Goldman v. Healthcare Management Systems et al
Case No. 1:05cv0035, USDC for the Western District of Michigan
Deposition Testimony: January 30, 2007 in Nashville, TN
Deposition Testimony: February 18, 2008 in Nashville, TN

(4) Brim Holding Company, Inc. v. Province Healthcare Company (jointly retained)
Case No. 06-1597-I, State of Tennessee Davidson County Chancery Court
Deposition Testimony: January 4, 2007 in Nashville, TN

(3) Xerox Corporation v. Larry O'Dowd and Digital Document Systems, Inc.
Case No. 3:06-0434, USDC for the Middle District of Tennessee
Hearing Testimony: October 19, 2006 in Nashville, TN

(2) Investment Scorecard, Inc. v. Black Diamond et al
Case No. 05-1136-IV, Chancery Court for Davidson County, Tennessee
Mediation Appearance: February 23, 2006 in Nashville, TN

(1) Kellwell Food Management, Inc. v. Corrections Corporation of America, Inc.
Case No. 03-536-KSF, USDC for the Eastern District of Kentucky in Lexington
Deposition Testimony: March 29, 2005 in Richmond, KY

Other Engagement Experience

In addition to engagements where Mr. Perdue was retained as an expert in both testifying and non-testifying roles, he has provided business clients with consulting services involving valuation, strategic analysis, capital formation, new market entry, business development, technology planning, and other forms of economic analysis. Mr. Perdue has also been involved in numerous other valuation, litigation, antitrust, and investigative matters in a support capacity. Mr. Perdue has worked with Fortune 500 companies, middle-market companies, venture-backed companies, and early-stage/start-up businesses.

Memberships and Affiliations

- Nashville Conflict Resolution Center – Member of the Board of Directors (current)
- BioTN Foundation, Inc. – Member of the Board of Directors and Executive Committee (current)
- Vanderbilt University Center for Technology Transfer and Commercialization – Member of the Entrepreneurship Advisory Council (current)
- Life Science Tennessee – Member of the Board of Directors and Executive Committee (current)
- Nashville Technology Council – Member of the Board of Directors and Executive Committee (prior)
- University of Tennessee Research Foundation (UTRF) - Member of the Board of Directors (prior)
- Nashville Area Red Cross – Member of the Board of Directors (prior)
- National Association of Certified Valuators and Analysts (NACVA) - Member
- Licensing Executives Society (LES) – Member
- American Bar Association – Associate Member

- Association of University Technology Managers (AUTM) – Prior Member

Publications

- *"Trademarks, Brands and Goodwill: Overlapping Sources of Economic Value"* published in the September 2018 edition of les Nouvelles pages 258-264 (Selected as the June 2020 Article of the Month).

- *"The Centerpiece Exhibit and Other Courtroom Communication Considerations"* published in the Fall 2017 Expert Witness Newsletter from the American Bar Association's Section of Litigation

- *"IRS proposal aimed at family-controlled entities would eliminate certain valuation discounts"* published in the Fall 2016 Kraft Advantage

- *"Risk and Return: Understanding the Cost of Capital for Intellectual Property"* 2-part article published in les Nouvelles Volume L No. 2 (June 2015) pages 67-80. (Part 1 selected as the October 2015 Article of the Month)

- "*Beware the Deal-Killing Valuation Gap*" published in the Summer 2014 Kraft Advantage newsletter with portions also published in the Nashville Business Journal on-line on May 14, 2014

- *"Understanding the Economic Value of Trade Secrets"* published in the Spring 2014 edition of the Intellectual Property Litigation Newsletter (published by the American Bar Association's Section of Litigation)

- "*Patent Valuation Standards in the United States: Applying Existing Standards and Terminology to a Developing Field of Practice*" published in les Nouvelles, Volume XLVII No. 2 (June 2013) pages 130-136

- *Is Profiting from the Online Use of Another's Property Unjust? The Use of Brand Names as Paid Search Keywords,* 53 IDEA 131 (2013) (with coauthors), "*judged one of the best law review articles related to intellectual property law published within the last year*" and selected for inclusion in the INTELLECTUAL PROPERTY L. REV. (West 2014) (an anthology published annually by Thomson Reuters)

- *"Identifying and Protecting Brand Value in the Digital Age"* published in the Winter 2013 edition of the Kraft Advantage newsletter

- *"The Broad Spectrum of Trade Secret Damages"* published in the Spring 2012 Edition of the Intellectual Property Litigation Newsletter (published by the American Bar Association's Section of Litigation)

- *"IP Value as a Basis of Economic Recovery"* published in the May/June 2010 edition of Landslide (published by the American Bar Association's Section of Intellectual Property Law).

- "*Determining Lost Profit Damages in Litigation*" published in the Winter 2010 edition of Kraft Advantage newsletter

- "*Software-Related IP Damages in the United States*" published in the September/October 2009 edition of World Intellectual Property Review

- "*Trademarks and Other Intellectual Property May Qualify for Tax-Free Swaps*" published in the Summer 2009 Kraft Advantage newsletter

- "*Financial Experts Have Various Roles in Litigation*" Kraft Advantage, Fall 2008 issue, co-authored with Michael Collins

- *"The Economics of Judicial Patent Reform in the United States"* published in Intellectual Asset Management Magazine ("IAM"), October/November 2007, and republished in IP in the Life Sciences Industries 2008 an annual supplement publication of IAM

- *"Preventive Medicine: Early Detection Helps Ensure Healthy Dealership Purchase Transactions"* Published in Defender: The NADC Newsletter, Co-authored with Richard Kotzen, September 2006

- *"Early Assessment of IP Damages Can Prove Beneficial",* Published in Expert Perspectives Winter 2006

- *"Is Your Claim Processor's IT House in Order?"* Published in Self-Funding Advisor, Summer 2006

- *"Payback: The Price of Trademark Infringement",* by Glenn Perdue. Published in Smart Business Chicago, October 2005 (This article is an excerpt from a more comprehensive article entitled "Determining Trademark Infringement Liability and Damages" noted below

- *"Determining Trademark Infringement Liability and Damages",* by Glenn Perdue. Published in Expert Perspectives, November 2005 (Volume 3)

- *"Using Economic Analysis to Assess Patent Challenges Based on Claims of Obviousness",* by Glenn Perdue. Published in Expert Perspectives, April 2005

- *"New Tools, New Rules, New Economy"*, by Glenn Perdue, published in Tennessee Business Journal in volume 10 No. 1 2000 (published by the Business and Economic Research Center at Middle Tennessee State University)

Presentations

Mr. Perdue has presented at conferences and seminars sponsored by CLE and CPE training companies, the Licensing Executives Society (LES), the Association of University Technology Managers (AUTM), the American Bar Association (ABA), various state and local bar associations, state CPA societies, state banking associations, and other professional associations. Presentation topics have related to business valuation, economic damage analysis, technology/IP valuation, mergers and acquisitions (M&A), and technology strategy. Mr. Perdue has also guest lectured at Middle Tennessee State University, Tennessee State University, the Owen School of Management at Vanderbilt University, the Vanderbilt School of Law and the Vanderbilt Department of Engineering (Management of Technology Program).

PERDUE EXHIBIT 2: Sources of Information

Provided to Perdue
Rendering of planned apartment building
Intended uses of development site with projected acres and square foot projections
Conceptual Site Plan Proposed Mixed Use Rendering
Discussions with Paul Varney
Discussions with Ken Starrett
Discussions with Robert McRae
Discussions with Spring Hill Chief of Police Don Bryce
Researched by Perdue
Searches performed for Maury County Properties at https://secure.tennesseetrustee.org/index.php?main=Y
Searches performed for Williamson County Properties at https://inigo.williamson-tn.org/property_search/#
https://www.tn.gov/content/dam/tn/revenue/documents/taxes/sales/taxlist.pdf.
Spring Hill comprehensive plan at https://www.springhilltn.org/DocumentCenter/View/1373/Spring-Hill-Rising-2040-Public-Presentation-Draft?bidId=
https://www.statista.com/statistics/197905/2010-sales-per-store-of-supermarkets-in-the-us/
https://www.fmi.org/our-research/supermarket-facts
https://my.ibisworld.com/download/us/en/industry/1040/1/0/pdf
https://retailwire.com/discussion/are-smaller-stores-a-big-opportunity-for-supermarkets/
Property tax rates found at https://secure.tennesseetrustee.org/index.php?entity=maury&state=TN&page=122

EXHIBIT 3: Apartment Property Comparables

Assessed Values:
Commercial Real Propert 40.0% of Appraised Value

Business	Address	Acres	Appraised Value	Land/Impr. Assessed Value
Arden Village Apartments	2477 Palmoar Cir. Spring Hill TN 37174	10.18	19,514,500	7,805,800
Worthington Glen 3	1000 Worthington Lane Spring Hill TN 37174	10.11	14,598,700	5,839,480
The Villas at Spring Hill	5050 Villa Pl Spring Hill TN 37174	12.66	19,330,600	7,732,240
	Total	32.95	**53,443,800**	**21,377,520**

Commercial Real Property - Appraised Value Per Acre **$1,620,000** *Rounded*

EXHIBIT 4: Retail Property Comparables

Assessed Values:

Personal Property	30.0% of Appraised Value
Commercial Real Property	40.0% of Appraised Value

Business	Address	Acres	Land Appraised Value	Improvements Appraised Value	Appraised Value	Land/Impr. Assessed Value	Personal Property Appraised Value	Personal Property Assessed Value	
Kroger	4900 Port Royal Road Spring Hill TN 37174	9.93	2,383,200	4,332,900	6,716,100	2,686,440	1,261,260	378,378	
Target	1003 Crossings Blvd. Spring Hill TN 37174	12.91	3,408,200	9,197,800	12,606,000	5,042,400	1,230,543	369,163	
Home Depot	5411 Main St. Spring Hill TN 37174	19.01	2,900,900	4,056,500	6,957,400	2,782,960	842,047	252,614	
Kohl's	1020 Crossing Cir. Spring Hill TN 37174	7.53	1,656,600	3,806,000	5,462,600	2,185,040	566,982	170,095	
Lowes	2000 Belshire Way Spring Hill TN 37174	19.05	4,000,500	5,965,300	9,965,800	3,986,320	1,158,590	347,577	*(1)*
Publix	4935 Main St. Spring Hill TN 37174	9.69	2,932,200	8,158,700	11,090,900	4,436,360	882,808	264,842	*(1)*
Walmart	4959 Main St. Spring Hill TN 37174	34.22	5,988,500	9,441,000	15,429,500	6,171,800	1,860,748	558,224	*(1)*
	Total	**112.34**			**68,228,300**	**27,291,320**	**7,802,978**	**2,340,893**	

Commercial Real Property - Appraised Value Per Acre **$607,000** *Rounded*

Personal Property - Appraised Value Per Acre **$69,000** *Rounded*

1) This location is in Williamson county. Real property tax infomration attained at https://inigo.williamson-tn.org/property_search/#. We applied Maury County assement percentage and rates for comparison puposes.

EXHIBIT 5: Retail Sales Tax Comps

	Statista *(1)*			FMI *(2)*	IBIS *(3)*		
	Kroger	Albertson's	Publix	All	Kroger	Albertson's	Publix
Sales / week				$ 554,958			
Weeks				52			
Total Revenue					$122.3B	$60.5B	$38.1B
Stores					2,800	2,260	1,239
Yearly Sales Per Store	$ 41,700,000	$ 26,600,000	$ 25,300,000	$ 28,857,816	$ 43,678,571	$ 26,769,912	$ 30,750,605
	Median Sales Per Store		**$ 28,858,000**	*(4)*			

Footnotes:

(1) See https://www.statista.com/statistics/197905/2010-sales-per-store-of-supermarkets-in-the-us/

(2) See the Food Industry Association's (FMI) stat sheet at https://www.fmi.org/our-research/supermarket-facts

(3) See https://my.ibisworld.com/download/us/en/industry/1040/1/0/pdf

(4) Median of the 7 calculated Yearly Sales Per Store

EXHIBIT 6: Medical Office Property Comparables

Assessed Values:

Personal Property	30.0% of Appraised Value
Commercial Real Property	40.0% of Appraised Value

Business	Address	Acres	Land Appraised Value	Improvements Appraised Value	Appraised Value	Land/Impr. Assessed Value	Personal Property Appraised Value	Personal Property Assessed Value	
Vanderbilt-Ingram Cancer Center	1003 Reserve Blvd. Spring Hill TN 37174	4.11	164400	-	164,400	65,760	-	-	
Spring Hill Equity Partners			-	5,590,600	5,590,600	2,236,240	-	-	
3M Company			-	-	-	-	508	152	
Fast Pace Medical Clinic			-	-	-	-	84,239	25,272	
Mid-TN Bone & Joint Clinic			-	-	-	-	149,391	44,817	
Spring Hill Surgery Center			-	-	-	-	1,059,447	317,834	
University Foot & Ankle Center			-	-	-	-	17,747	5,324	
Vanderbilt Maury Radiation			-	-	-	-	944,907	283,472	
Vanderbilt Spring Hill Ped			-	-	-	-	93,737	28,121	
Total			**164,400**	**5,590,600**	**5,755,000**	**2,302,000**	**2,349,976**	**704,993**	
Medical Campus at Campbell Station	3098 Campbell Station Pky Spring Hill, TN 37174	3.26	726,600	2,906,400	3,633,000	1,453,200	-	-	*(1)*
Benchmark Physical Therapy			-	-	-	-	26,711	8,013	
Middle Tennessee Oral Sug.			-	-	-	-	103,142	30,943	
Vanderbilt Health and Welness			-	-	-	-	129,109	38,733	
Vanderbilt Medical Group							123,143	36,943	
Total			**726,600**	**2,906,400**	**3,633,000**	**1,453,200**	**382,105**	**114,632**	
Spring Hill Medical Plaza	5073 Main St. Spring Hill, TN 37174	2.91	1,312,200	5,249,000	6,561,200	2,624,480	-	-	*(1)*
Tennessee Intergrative Pain			-	-	-	-	19,580	5,874	
Advanced Foot & Ankle			-	-	-	-	14,054	4,216	
Snodgrass King			-	-	-	-	315,991	94,797	
Total			**1,312,200**	**5,249,000**	**6,561,200**	**2,624,480**	**349,625**	**104,888**	
	Total	**10.28**	**2,203,200**	**13,746,000**	**15,949,200**	**6,379,680**	**679,670**	**203,901**	

Commercial Real Property - Appraised Value Per Acre **$1,551,000** *Rounded*

Personal Property - Appraised Value Per Acre **$66,000** *Rounded*

1) This location is in Williamson county. Real property tax infomration attained at https://inigo.williamson-tn.org/property_search/#. We applied Maury County assement percentage and rates for comparison puposes.

EXHIBIT 7: Development Timing Considerations for Planned 43.94 Acre Site

Maury Co.	
Year End 6/30/19 LT Debt	202,790,535
Year End 6/30/18 LT Debt	206,211,451
Average	204,500,993
Interest Paid in YE 6/30/19	6,700,764
Implied Interest Rate	3.3%

Interest Rate	3.3% (nominal)
Inflation	2.3%
Discount Rate	1.0% (real)

Property Taxes		
Maury County Tax Rate	2.2364	72.23%
Spring Hill City Rate	0.86	27.77%
Total	3.10	100.00%

Sales Taxes		
	% of Sales	% of Taxable
Tennessee	4.00%	59.26%
Maury	2.75%	40.74%
Total	6.75%	100.00%

PRESENT VALUE CALCULATIONS:

Year	PV Factor		Current Use	As Planned *(1)*					Yearly Sales Taxes
				Multi-Family	*Retail*	*Office*	***Total***		
Annual Amount			**4,888**	**580,000**	**58,000**	**55,000**	**693,000**		**2,094,009**
x 30 Years			*146,653*	*17,400,000*	*1,740,000*	*1,650,000*	*20,790,000*		*62,820,259*
1	0.9903		4,841	574,390	57,439	54,468	686,297		2,073,755
2	0.9807		4,794	568,835	56,883	53,941	679,660		2,053,698
3	0.9713		4,748	563,333	56,333	53,420	673,086		2,033,835
4	0.9619		4,702	557,885	55,788	52,903	666,576		2,014,164
5	0.9526		4,657	552,489	55,249	52,391	660,129		1,994,683
6	0.9434		4,612	547,145	54,715	51,884	653,744		1,975,390
7	0.9342		4,567	541,853	54,185	51,383	647,421		1,956,285
8	0.9252		4,523	536,612	53,661	50,886	641,159		1,937,363
9	0.9162		4,479	531,422	53,142	50,393	634,958		1,918,625
10	0.9074		4,436	526,282	52,628	49,906	628,817		1,900,068
11	0.8986		4,393	521,192	52,119	49,423	622,735		1,881,691
12	0.8899		4,350	516,151	51,615	48,945	616,712		1,863,491
13	0.8813		4,308	511,159	51,116	48,472	610,747		1,845,468
14	0.8728		4,267	506,215	50,622	48,003	604,840		1,827,619
15	0.8643		4,225	501,319	50,132	47,539	598,990		1,809,942
16	0.8560		4,184	496,470	49,647	47,079	593,196		1,792,436
17	0.8477		4,144	491,668	49,167	46,624	587,459		1,775,100
18	0.8395		4,104	486,913	48,691	46,173	581,777		1,757,931
19	0.8314		4,064	482,204	48,220	45,726	576,150		1,740,929
20	0.8233		4,025	477,540	47,754	45,284	570,578		1,724,090
21	0.8154		3,986	472,921	47,292	44,846	565,059		1,707,415
22	0.8075		3,947	468,347	46,835	44,412	559,594		1,690,901
23	0.7997		3,909	463,817	46,382	43,983	554,182		1,674,547
24	0.7920		3,871	459,331	45,933	43,557	548,822		1,658,351
25	0.7843		3,834	454,889	45,489	43,136	543,513		1,642,311
26	0.7767		3,797	450,489	45,049	42,719	538,257		1,626,427
27	0.7692		3,760	446,132	44,613	42,306	533,051		1,610,696
28	0.7618		3,724	441,817	44,182	41,896	527,895		1,595,117
29	0.7544		3,688	437,544	43,754	41,491	522,789		1,579,690
30	0.7471		3,652	433,312	43,331	41,090	517,733		1,564,411
Present Value		**100.00%**	**126,591**	15,019,675	1,501,968	1,424,280	**$ 17,945,922**	**100.00%**	**54,226,431**
State Portion		0.00%	-	-	-	-	-	59.26%	32,134,181
County Portion		72.23%	**91,431**	10,848,082	1,084,808	1,028,697	**12,961,588**	40.74%	**22,092,250**
City Portion		27.77%	**35,160**	4,171,593	417,159	395,582	**4,984,334**	0.00%	-

(1) Used the lower of taxes calculated by estimated values and implied values for each projected use.