EXHIBIT B

FEASIBILITY REPORT

UPPER COLLEGE ROAD
MIXED DEVELOPMENT
SITE STUDY

University of Rhode Island, Kingston Campus
South Kingstown, Rhode Island

PREPARED FOR

THE UNIVERSITY OF RHODE ISLAND

CAMPUS PLANNING & DESIGN

IN CONJUNCTION WITH

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EXECUTIVE SUMMARY

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Project Understanding

- Implementation of the Upper College Road Mixed Development would involve the design and construction of two buildings on newly subdivided parcels within the Area of Potential Development (APD; see Figure 1 and preliminary plans developed by DBVW):

  Parcel A (north) – a 4-storey, 100-guestroom inn/hotel at the corner of Bills Road and Upper College Road (approximately 2.2 acres)

  Parcel B (south) – a 4-storey, mixed use retail and apartments building with frontage along Upper College Road and Fortin Road (approximately 2.0 acres)

- Both of the above developments to include the necessary appurtenant site design elements supporting future uses, including parking, utilities, stormwater management, landscaping, safety and accessibility measures, etc.

Property / Development Lots

- The APD includes four University-owned lots (Town of South Kingstown Assessor's Plat 23-2 / Lots 20, 22, 23, and 34) and portions of land presently designated as public rights-of-way – see Figures 1 and 2A
- Current parcel and zoning data for the portion of the URI Kingston Campus surrounding the APD (obtained through request to the Town's Geographic Information System – SKGIS) are depicted on Figure 1
- University-owned lots are currently zoned by the Town of South Kingstown as *Government and Institutional – GI* (Zoning Ordinance, §101); to the immediate east of the APD are properties owned by others currently zoned as *Medium High Density Residential District - R10* (Lot 35, Catholic Center) and *Commercial Neighborhood - CN* (Lot 24, "Kingston Emporium" retail complex)
- Along with other Kingston Campus roadways, Upper College Road is designated as a private (University) right-of-way on the Town of South Kingstown's Assessor's Maps – see Figure 2A
- Town rights-of-way surrounding the APD include Bills Road to the north, Fortin Road to the south, and Chapel Way, which winds around the easterly and northerly sides of Lot 34 and continues north along a "paper street" segment to connect to Bills Road (see Figures 1 and 2A); Additionally, a narrow swath of undesignated Town right-of-way runs between Upper College Road and Lots 20/22/23, the purpose/nature of which is unknown
- To create the development parcels as envisioned, the University would seek to acquire portions of Town rights-of-way located within the APD, specifically (a) the segment of Chapel Way along the south and east sides of Lot 34 and (b) the undesignated tract along the west side of Lots 20, 22, and 23

- A Preliminary Subdivision Concept has been developed and is depicted on Figures 2A-2C; the aforementioned Town rights-of-way would need to be acquired and merged with the existing University properties (Lots 20, 22, 23, and 34), whereupon the composite area would be divided into development Parcels A and B

Site Development - Utilities

- Best available data on existing University utilities in and around the APD (i.e., water, sewer, gas, electric) were obtained through the URI Utilities Department to preliminarily assess the potential for conflicts with existing utilities (along with any necessary relocations), how new services could be provided to the hotel and mixed-use facilities, etc.
- In addition to the University's own utility infrastructure, a National Grid gas line is known to run along the northerly side of Bills Road and provide service to certain Campus buildings; Town water and sewer lines may also be present within Town rights-of-way
- Through evaluation of the preliminary data it appears that the necessary utility relocations and service connections could be made to accommodate the developments under consideration at costs consistent with the nature and scale of facilities
- Further coordination with individual utility providers (including the URI Utilities Department) would need to be undertaken as part final design process to more accurately establish the location of underground utilities

Site Development – Earthwork & Geotechnical

- Preliminary soil survey information (USDA/NRCS Rhode Island Soil Survey Program) was obtained and reviewed to determine the general feasibility of development within the APD, which is underlain by units of Canton-Urban land complex (CB) and Scio silt loam (ScA) – see Figure 3
- Both soil types are non-hydric and fairly well-drained, however the Scio unit is characterized by relatively shallow seasonal high groundwater table (approximately 2-3 feet below grade); while the relatively shallow depth of groundwater may pose certain constraints to development (e.g., basements may not be feasible or if provided, may require more extensive engineering), these soils are otherwise generally suitable for development
- A detailed, on-site subsurface exploration program (borings, test pits, etc.) would need to be undertaken for the geotechnical design of building foundations
- The prevailing grade in this upper portion of the Kingston Campus runs down to the White Horn Brook approximately ½ mile to the west; however topography within the APD itself is relatively flat – see Figure 3 for topographic contours
- Based on preliminary interpretation of existing grades, the need for earth retaining structures along the easterly property limits to accommodate either building (or outbuilding amenities such as parking lots, etc.) is not anticipated

- As the lands comprising the APD have been subject to previous uses, there exists the potential for pollutants/contaminants of concern to be present in concentrations exceeding exposure criteria established by the RI Department of Environmental Management (RIDEM); however preliminary review of data available through the RIDEM Office of Waste Management indicates that there are no identified features of concern (underground storage tanks, brownfield sites, etc.) in the immediate vicinity

<u>Site Development - Stormwater Management</u>

- Cover over the APD presently consists of approximately equal amounts of impervious and pervious surfaces (see Figure 3), and stormwater collected by the existing closed drainage systems in the area is ultimately discharged to White Horn Brook; these legacy systems are generally undersized (and susceptible to flash flooding during high-intensity storm events) and currently provide no stormwater quality treatment prior to discharge
- Stormwater management would need to be provided for both developments in accordance with the standards set forth in the *Rhode Island Stormwater Design and Installation Standards Manual*; compliance is documented through the preparation of a Stormwater Management Plan, including a Soil Erosion and Sediment Control (SESC) Plan and a Long-term Operation and Maintenance Plan (O&M Plan)
- Both developments would be considered “new development” under the Stormwater Manual and would require the design and construction of appropriate best management practices (BMPs) for stormwater quantity and quality; treatment of the full water quality volume associated with post-development impervious surfaces is also necessary for compliance with the total maximum daily load (TMDL) established by the RIDEM for the receiving watercourse (White Horn Brook) in the 2011 *Statewide Bacteria TMDL*
- Principal constraints include the relatively shallow groundwater table and limited space within the development area for the construction of BMPs; it is anticipated that a combination of vegetated treatment practices (e.g., bioretention swales integrated with site landscaping) and subsurface reservoir/detention storage would be required
- Based on preliminary rainfall-runoff calculations, relatively large (but nonetheless practicable) reservoir systems could be constructed under the future parking areas to detain peak flows and meter stormwater back into the existing campus drainage system

<u>Regulatory Approvals</u>

- In addition to local requirements, build-out of development parcels would require authorization from the RIDEM Office of Water Resources; application would be made during final design and include submission of the Stormwater Management Plan and other required documentation
- Both development parcels are greater than one (1) acre in size and therefore would require the owner/applicant to seek coverage under the RI Pollutant Discharge Elimination System (RIPDES) Construction General Permit through the preparation of and adherence to an SESC Plan

1.0 Introduction and Overview

The University of Rhode Island (URI) Office of Campus Planning and Design (CP&D) has retained the services of Durkee Brown Viveiros Werenfels Architects (DBVW) to evaluate the feasibility of potential new development at the URI Kingston Campus in the Town of South Kingstown, Rhode Island. Under consideration is the development of a new facilities along the east side of Upper College Road between Fortin Road (south) and Bills Road (north), upon which a new on-campus hotel and a separate mixed-use facility (first floor retail/commercial and upper level apartments/housing) would be built. The Area of Potential Development (APD) for these facilities in the context of existing properties and rights-of-way in the vicinity is shown Figure 1 below, and plans depicting the conceptual layout of buildings and amenities (prepared by DBVW) are provided in Appendix A of this report.

As consultants to DBVW, Gordon R. Archibald, Inc. (GRA) has been charged with providing a preliminary assessment of the municipal subdivision and land development process, site design and engineering considerations, and other related aspects of the development. Presented in the following sections of this report are discussions and analyses of the relevant topics as they pertain to the potential development of the site.

1.1 Project Understanding

The feasibility analyses and preliminary design considerations presented in this report are based on information provided to GRA outlining the scope and objectives of the development, the central components of which are summarized below.

- The development would involve the design and construction of two buildings on newly subdivided parcels within the APD (see Appendix A):

  Parcel A (north) – a 4-storey, 100-guestroom inn/hotel at the corner of Bills Road and Upper College Road;

  Parcel B (south) – a 4-storey, mixed use retail and apartments building with frontage along Upper College Road and Fortin Road.

  Both of the above developments would include the necessary appurtenant site design elements to support intended uses and for sustainability, including parking, utilities, stormwater management, landscaping, safety and accessibility measures, etc. At present, it is understood that the University would enter into a long-term ground lease for each of the parcels of land, with developers selected under through a request for proposals (RFP) process. The developers will be responsible for the construction, operation, and maintenance of improvements on the parcels.

- The development area (APD) includes four University-owned lots (Town of South Kingstown Assessor's Plat 23-2 / Lots 20, 22, 23, and 34) and portions of land presently designated as public (Town of South Kingstown) rights-of-way – see Figure 1 below. The existing lots of record and rights-of-way are discussed in Section 2.0, along with the local subdivision and land development processes that would be required to create the development parcels.

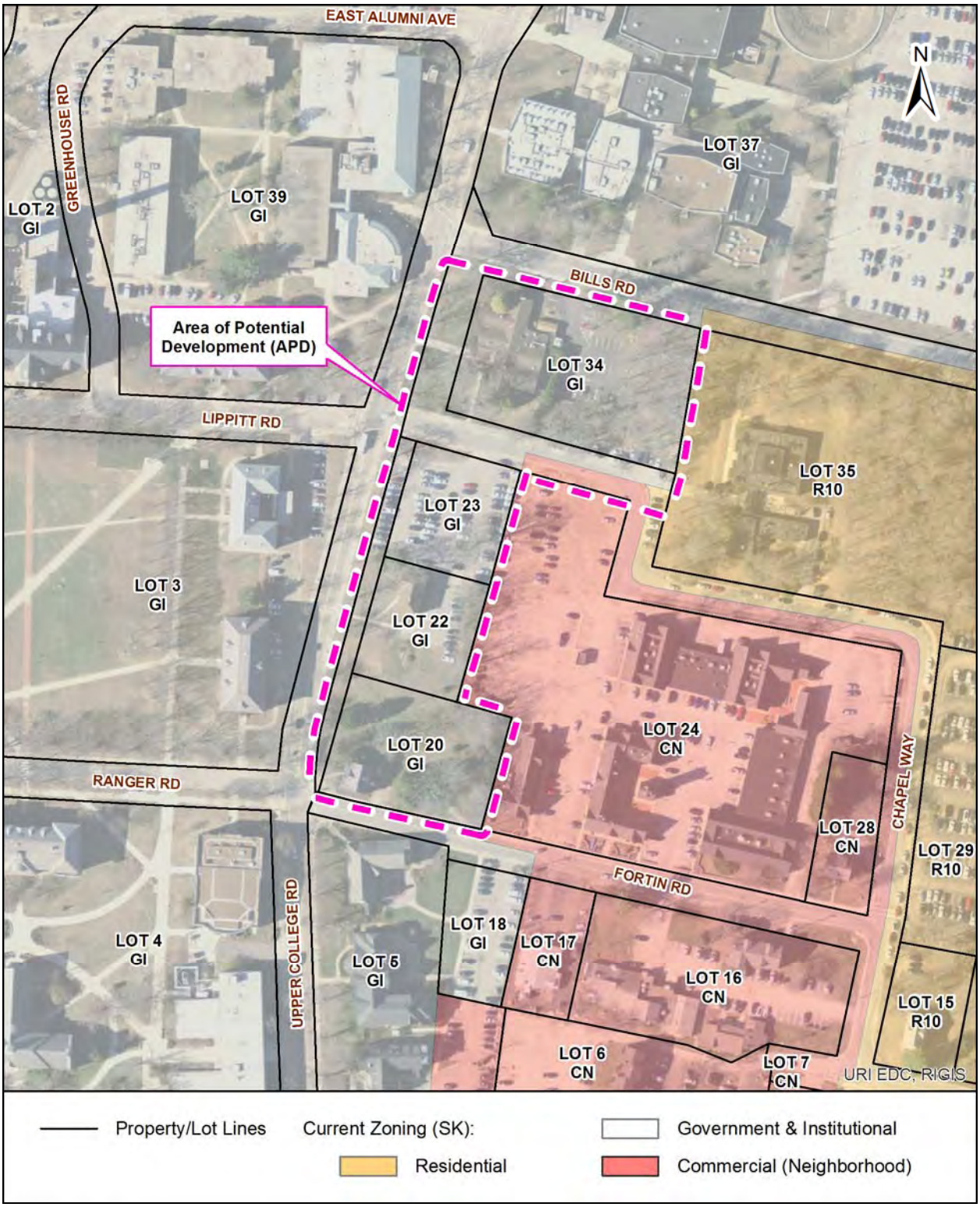


Figure 1 – Vicinity Map (Town of South Kingstown Assessor's Plat 23-2)
Approx. Scale 1" = 200' • Data Sources: Town of South Kingstown GIS, RIGIS
See narrative for description of existing lots, rights-of-way and zoning

- Existing improvements on the University-owned lots would be demolished to accommodate development, including the Adams House (Lot 20), Tucker House (Lot 22), and University Club (Lot 34) buildings as well as a faculty/staff parking lot (Lot 23). If necessary, any functions still provided by these facilities would need to be relocated elsewhere, and such relocations are beyond the scope of the study.
- The University (CP&D) will be engaging with Planning Department of the Town of South Kingstown to discuss the potential development in the context of local planning, land development and zoning regulations, including the procedures for Major Land Development Projects / Major Subdivisions set forth in the Town's *Subdivision and Land Development Regulations* [1] and the Town's *Zoning Ordinance* (Code of Ordinances, Appendix A).[2] The layout and design of facilities as presently conceived does not conform to certain Town zoning and land development regulations, including those pertaining to use, parcel and facility dimensions, and required amenities. The local subdivision and land development process is further discussed in Section 2.0 below.

2.0 Property and Subdivision Assessment

Depicted on Figure 1 above, current parcel and zoning data for the portion of the Kingston Campus surrounding the APD were obtained through a request to the Town's Geographic Information System Division of the Planning Department (SKGIS). The lot boundaries and zoning information shown are consistent with the official Plat and Zoning maps maintained by the Town and are of suitable accuracy for preliminary planning / conceptual design purposes. Should the University proceed in the local development plan review process, actual boundaries and dimensions will need to be established through a property survey conducted by Professional Land Surveyor registered in the State of Rhode Island.

2.1 Existing Properties, Rights-of-Way, and Zoning

As previously noted, the APD includes four lots currently owned by the University (Rhode Island Board of Governors for Higher Education), all of which are zoned by the Town of South Kingstown as *Government and Institutional - GI*. Described in Section 101 of the Zoning Ordinance, "[t]he purpose of this district is to recognize the extent of public and semi-public land holdings and to provide guidance to utilization of these lands should they be sold or otherwise transferred to private ownership. Any significant use of land in the areas shown within this district for proprietary purposes or uses by nongovernmental entities, other than health care institutions, shall require rezoning to an appropriate zoning district." Other University-owned properties to the north, south, and west also lie within a GI district covering most all of the Kingston Campus.

To the immediate east of the APD are properties owned by others currently zoned as *Medium High Density Residential District - R10* (Lot 35, Catholic Center) and *Commercial Neighborhood*

[1] See http://www.southkingstownri.com/town-government/municipal-departments/planning/subdivision-and-land-development-regulations
[2] See https://www.municode.com/library/ri/south_kingstown/codes/code_of_ordinances

- *CN* (Lot 24, "Kingston Emporium" retail complex). Although not held by the University, both of these properties are host to uses which complement campus life and provide amenity for students, faculty, staff, and visitors. The Kingston Emporium commercial parcel contains a five-building retail complex and parking throughout, including a large, partially paved parking area in its northwest quadrant (immediately east of Lots 22 and 23) which is signed/designated as non-university permit parking only.

Along with other Kingston Campus roadways to the west, Upper College Road is designated as a private (i.e., University owned and maintained) right-of-way on the Town of South Kingstown's Assessor's Maps. Town rights-of-way surrounding the APD include Bills Road to the north, Fortin Road to the South, and Chapel Way, which winds around the easterly and northerly sides of Lot 34 and continues north (along an approximately 50'-wide paper street segment between Upper College Road and Lot 34) to connect to Bills Road. In addition to the above, a narrow (20'±) swath of undesignated Town right-of-way runs between Upper College Road and Lots 20/22/23. While the purpose (if any) of this right-of way is not known, the nature of the tract would need be clarified through coordination with the Town Planning staff and land evidence research.

2.2 Processes and General Requirements

To realize the development as presently envisioned, the University would seek to acquire portions of Town rights-of-way located within the APD, specifically (a) the segment of Chapel Way along the south and east sides of Lot 34 and (b) the undesignated tract along the west side of Lots 20, 22, and 23. While the exact subdivision mechanisms (abandonment, merging of lots, etc.) and sequencing thereof would need to be established through pre-application coordination with the Town, a Preliminary Subdivision Concept has been developed, the phases of which are depicted on Figures 2A-2C below. Fundamentally, the aforementioned rights-of-way would need to be acquired and merged with the existing University properties (Lots 20, 22, 23, and 34), whereupon the composite area would be divided into development Parcels A and B.

Development of mixed-use facilities along Upper College Road would likely be considered a Major Subdivision / Major Land Development Project as defined in the Town's *Subdivision and Land Development Regulations*, and as such would require full development plan review (DPR) by Town of South Kingstown Planning Board. This consists of a comprehensive review of plans for all aspects of the development, including the proposed subdivision and creation of new lots of record, the intended uses of the developed parcels, and conformance of various elements of proposed design with applicable land development and zoning requirements.

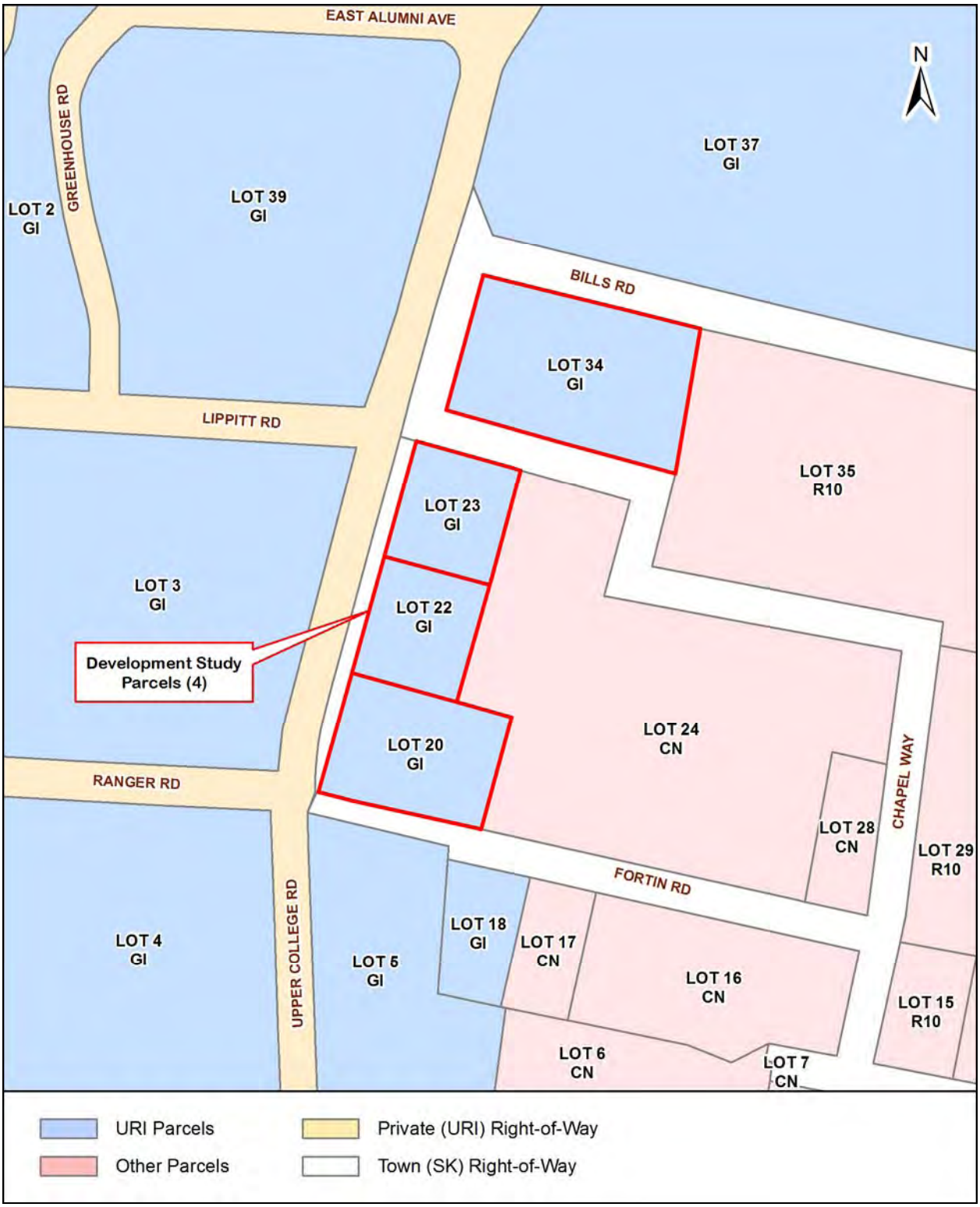


Figure 2A – Preliminary Subdivision Concept – Existing Lots and Rights-of-Way
Approx. Scale 1" = 200' • Data Sources: Town of South Kingstown GIS, RIGIS

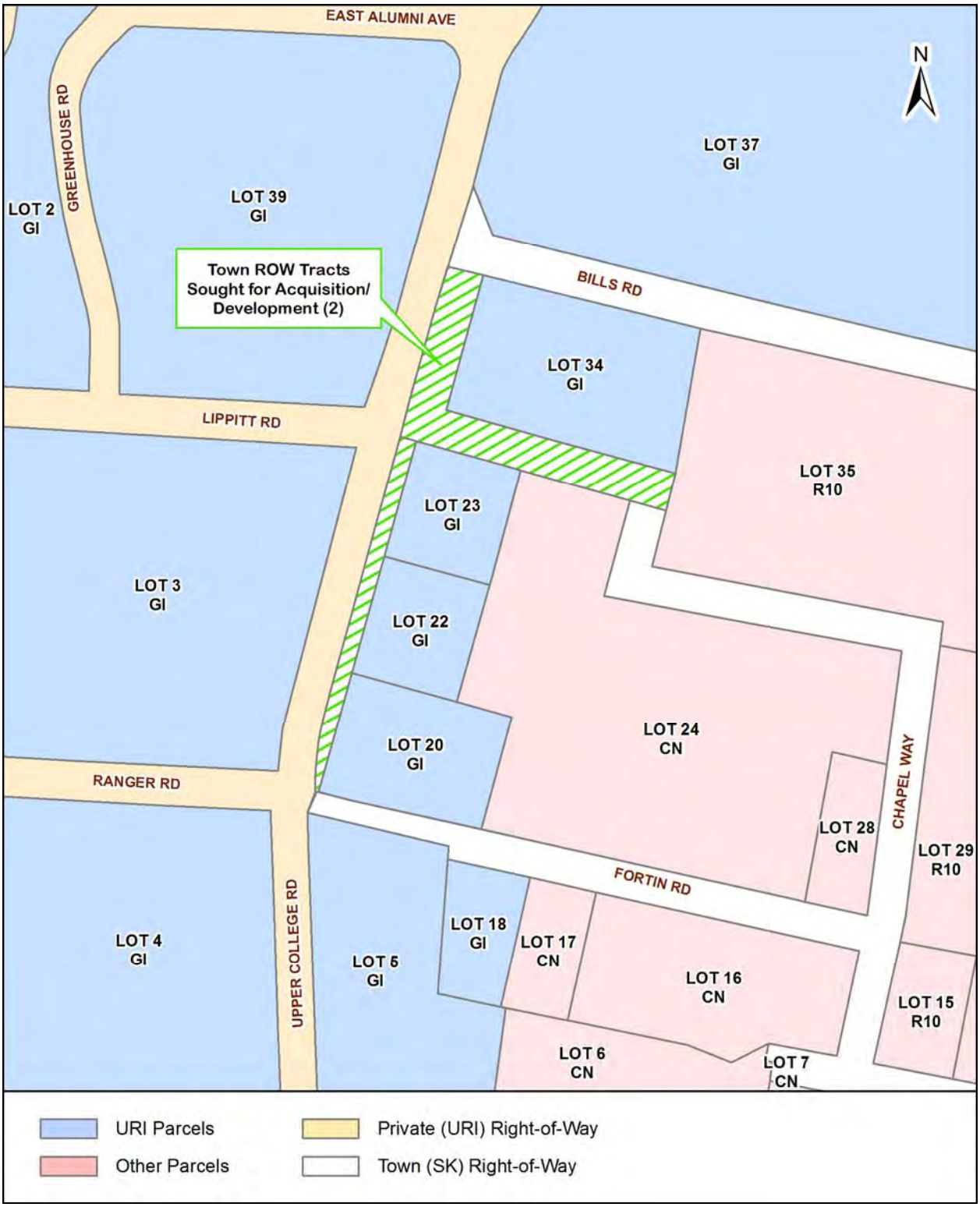


Figure 2B – Preliminary Subdivision Concept – Right-of-Way Acquisitions for Development
Approx. Scale 1" = 200' • Data Sources: Town of South Kingstown GIS, RIGIS

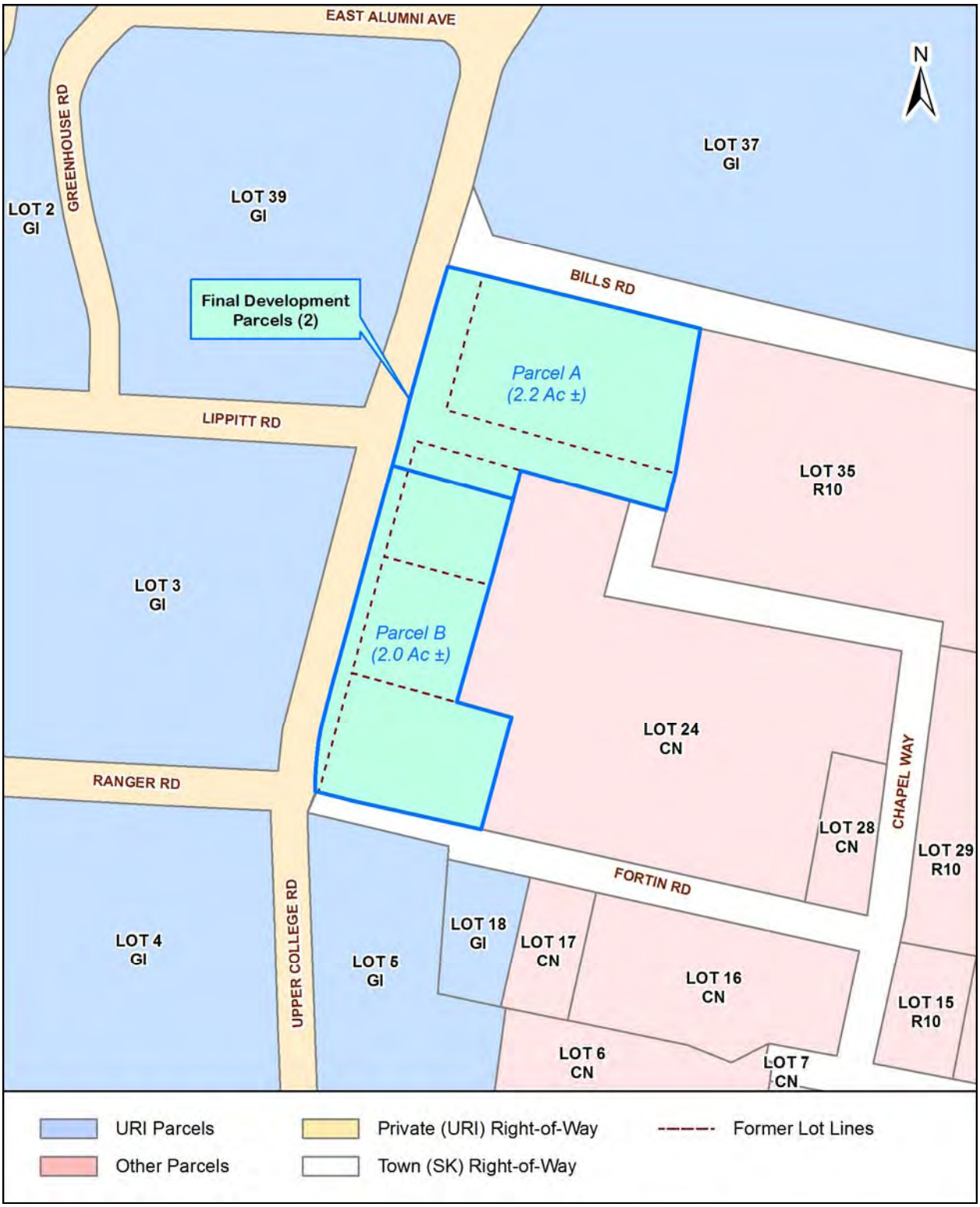


Figure 2C – Preliminary Subdivision Concept – Final Lots and Rights-of-Way
Approx. Scale 1" = 200' • Data Sources: Town of South Kingstown GIS, RIGIS

Given that the final parcels are to be developed for uses not permitted under the current *GI* zoning district (see below), these parcels would likely need to be re-zoned, and the applicant would need to demonstrate compliance with all applicable zoning requirements set forth in the Town's *Zoning Ordinance* (and requesting variances where certain standards cannot be met). Outlined in Article V of the *Subdivision and Land Development Regulations*, the DPR process begins with Pre-application and Conceptual Master Plan submission phases and continues through final Planning and Zoning Board approval. Checklists of the documentation required for submission under each review phase are provided in Article XV of the regulations, and copies of the checklists for Pre-application Concept Review and Conceptual Master Plan submissions are provided herewith in Appendix B.

The development of a hotel/inn would fall under Use Code 40.2 (Motel or Hotel, over 20 rooms) of the *Zoning Ordinance*. Per Article 3, this use is permitted only in *Commercial Highway - CI* zoned districts, although a special use permit may be granted for such a development in districts zoned *Commercial Downtown - CD*, *Residential Multi-Household - RM* or *Mixed Use - MU* Kingstown Road Special Management District (described in Section 101 of the Zoning Ordinance).

The development of a mixed-use retail/apartment building on Parcel B would most likely fall under Use Code 12.6 (Mixed-Use Detached Structure) of the *Zoning Ordinance*. Per Article 3, this use is permitted only in *Commercial Downtown - CD* zoned districts and is prohibited in all other districts.

Given the desired land uses within the development parcels, this area of Plat 23-2 would likely need to be re-zoned, however it is not immediately apparent which zoning district designation(s) should be sought through the DPR process, particularly in the context of existing surrounding uses (university, religious, neighborhood retail). This aspect of the potential development should be a principal topic of discussion in the University's preliminary engagement with Town Planning staff.

The developments would need to conform to the dimensional regulations (lot size, frontage, building coverage/height, yard setbacks, etc.) set forth by zoning district under Article 4 of the *Zoning Ordinance*. This also should be addressed through preliminary meetings with Town Planning staff, as (a) the final zoning sought for the development has yet to be identified and (b) it is likely that certain variances would need to be requested as part of the proposed subdivision and land development project. In addition to these dimensional regulations by zoning district, supplementary dimensional regulations pertaining specifically to hotel and motel uses are set forth in Article 5 (Section 501.9) of the *Zoning Ordinance*. Given their applicability to a central element of the contemplated development, a copy of this section of the ordinance is provided in Appendix C. It should be noted that certain aspects of the initial layout/design concept (depicted on the plans provided in Appendix A) – including minimum lot size, building height, and yard setbacks – do not appear to meet the applicable requirements of this section.

Off-street parking requirements by use are set forth under Article 7 of the *Zoning Ordinance*. Those applicable to the planned developments are itemized below.

- Per Section 711 hotels and motels require "1 space for every unit or room, plus 2 spaces for every 12 rooms or fraction thereof." 109 off-street spaces would thus be required for the 100-guestroom inn/hotel to comply with this requirement.
- It is understood that mixed-use facilities such as that being contemplated must provide the necessary parking for both the residential and commercial uses, although there may be flexibility with the sharing of certain spaces between uses. Per Section 711 apartments require 2 spaces for each dwelling unit and retail/shopping uses require 1 space per every 350 square feet of gross leasable floor area. The 45 apartments contemplated under this development would thus require 90 spaces, with first floor commercial uses likely requiring several dozen depending on the final gross floor area of units.
- Per Section 708, off-street access ways shall be no less than 24 feet wide for 2-way traffic, and as defined under Section 711 "a parking space including aisles shall be no less than 350 square feet per vehicle." The aisles and parking depicted on the plans provided in Appendix A – 9' x 18' spaces at 90° (perpendicular to aisle) – meet this dimensional requirement. While no dimensional requirements are set forth for parallel/on-street parking, traffic engineering standards dictate that these spaces be no less than 22 feet long.

In addition to the number of spaces required under local ordinance, handicap-accessible parking spaces must also be provided in accordance with the requirements of the Americans with Disabilities Act (ADA).

3.0 Utilities Assessment

To assess the feasibility of constructing the facilities (potential conflicts with existing utility locations, provision of required services to new facilities – i.e., water, sewer, gas, electric), best available data on existing University utilities were obtained through the URI Utilities Department. A copy of the Underground Utilities Map for the study area prepared by the Utilities Department is provided herewith in Appendix C. In addition to the University's own utility infrastructure, a National Grid gas line is known to run along the northerly side of Bills Road and provide service to the Fine Arts Center (to the north) and the Kirk Center Building (west side of Upper College Road). Town (Kingston) water and sewer lines may also be present within Town rights-of-way, and their presence/absence will need to be determined as part of the final design processes.

Through evaluation of the preliminary data it is apparent that the necessary utility relocations and service connections could be made to accommodate the developments under consideration, the costs of which consistent with projects of the nature and scale contemplated. A 30-inch diameter storm sewer main currently passes through the APD and across Chapel Way along a general northwesterly alignment, which would need to be relocated to accommodate development. Preliminarily it appears that this relocation could be achieved via a new utility corridor between the two development buildings. Should design and construction of the two facilities be commissioned, further coordination with individual utility providers (including the Utilities Department and any others with potentially affected facilities in the area) will need to be undertaken, and the location of all utilities more accurately established.

4.0 Geotechnical, Grading and Other Site Engineering Considerations

Preliminary soil survey data was obtained and reviewed to determine the general feasibility of development within the APD. Depicted on Figure 3 below, this portion of the Kingston Campus is underlain by units of Canton-Urban land complex (CB) and Scio silt loam, 0 to 3 percent slopes (ScA) as mapped by the USDA Natural Resources Conservation Service, Rhode Island Soil Survey Program.[3] Although both soil types are non-hydric (Hydrologic Soil Group B), the Scio unit is characterized by relatively shallow seasonal high groundwater table (SHGT), approximately 2-3 feet below grade. Detailed information on both of these soil units has been extracted from the Soil Survey of Rhode Island database and is provided herewith in Appendix D. The relatively shallow depth of groundwater may pose certain constraints to development (e.g., basements may not be feasible or if provided, may require more extensive engineering for moisture management, etc.), however these soils are otherwise generally suitable for development at the scale under consideration. A detailed, on-site subsurface exploration program (borings, test pits, etc.) would need to be undertaken for the geotechnical design of building foundations.

Also depicted on Figure 3 are 2'-interval contours in and around the APD from 2011 Statewide LiDAR elevation data (obtained through the Rhode Island Geographic Information System – RIGIS).[4] Virtually all of the URI Kingston Campus lies within the watershed of the White Horn Brook, a first-order watercourse approximately ½ mile east of the site. The prevailing grade slopes down in this direction, although topography within the APD is relatively flat, ranging from approximately 230 feet (NAVD88) near Fortin Road to 224 feet near the intersection of Upper College Road and Bills Road. Based on preliminary interpretation of topographic contours, the need for earth retaining structures along the easterly property limits to accommodate either building (or outbuilding amenities such as parking lots, etc.) is not anticipated.

As the lands comprising the APD have been previously developed (albeit for uses understood to be low-intensity in nature), there exists the potential for pollutants/contaminants of concern to be present in the underlying soil in concentrations exceeding exposure criteria established by the Rhode Island Department of Environmental Management (RIDEM). A preliminary review of data available through the RIDEM Office of Waste Management was conducted for this feasibility study, which included review of Comprehensive Environmental Response, Compensation, and Liability Act / Information System (CERCLA/CERCLIS) and known Leaking Underground Storage Tanks (LUSTs) data sets. While a number of LUSTs and CERCLA sites exist throughout the Kingston Campus, there are no such sites or features within a 250-foot radius of the APD. Furthermore, all LUSTs identified in the greater vicinity are either inactive or have had remedial action (i.e., contaminated soil removal) completed. A more detailed evaluation of past uses in and around the APD should be undertaken (in accordance with accepted environmental screening procedures) as part of the local approval and final design processes.

[3] See http://www.nrcs.usda.gov/wps/portal/nrcs/main/ri/soils/
[4] See http://www.edc.uri.edu/rigis/data/download/2011USGS/

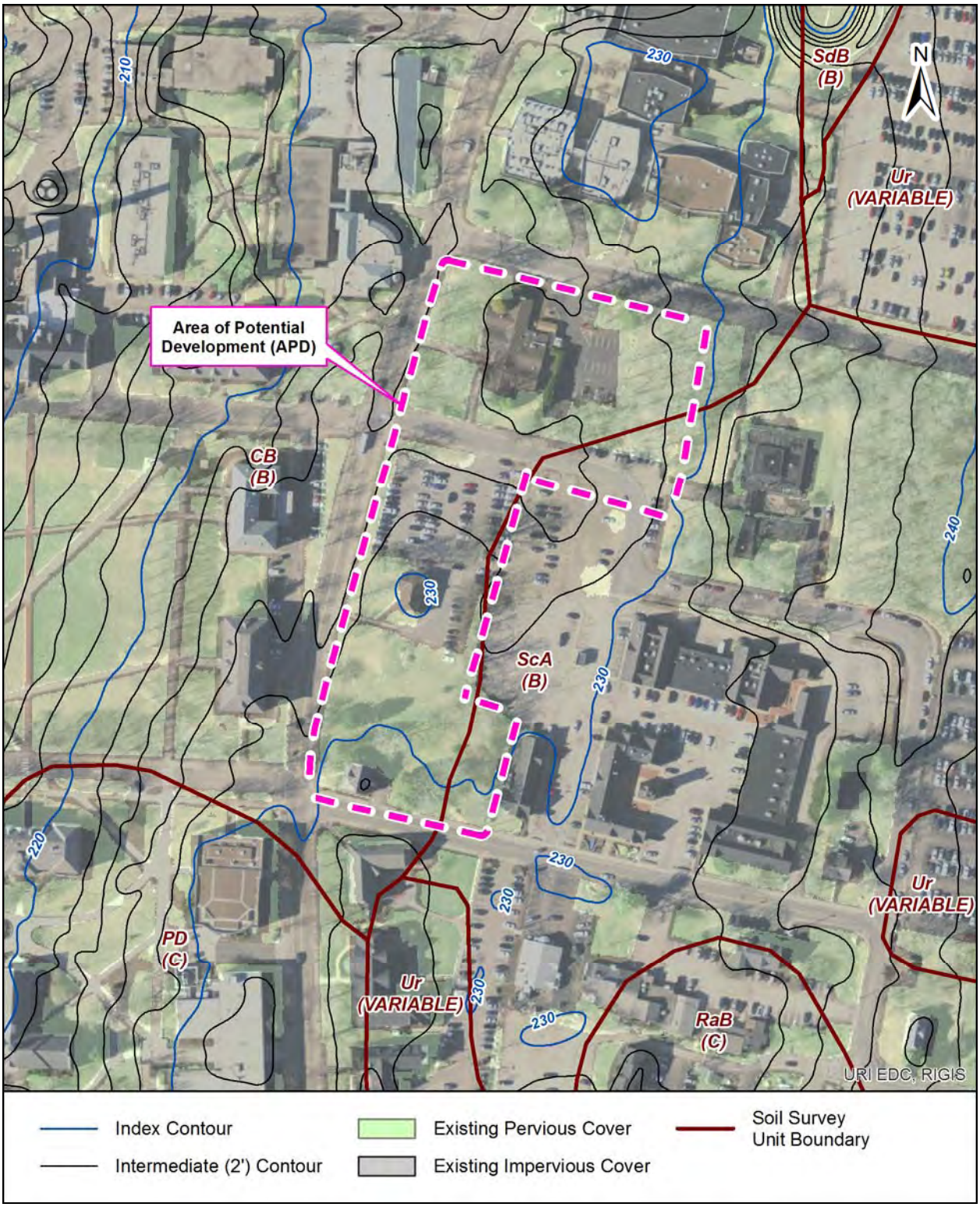


Figure 3 – Existing Soils, Topography and Ground Cover

Approx. Scale 1" = 200' • Sources: RIGIS Statewide LiDAR elevation, Impervious Surfaces, and Soil Survey Data Sets • Vertical Datum: NAVD88

5.0 Stormwater Management

The APD, as previously noted, is located upland of White Horn Brook in an area of the Kingston Campus presently served by closed drainage systems – see Appendix C for locations of existing stormwater infrastructure. Surface cover over this area presently consists of approximately equal amounts of impervious (pavement, building roofs, and gravel/dirt) and pervious (lawns and other vegetated areas) surface area (see Figure 3 above), and surface drainage patterns are generally poorly defined. While stormwater collected by the existing closed drainage systems in this area of the campus is ultimately discharged to White Horn Brook, these legacy systems are generally undersized (and susceptible to flash flooding during high-intensity storm events) and provide no stormwater quality treatment prior to discharge.

Involving well over one acre of disturbance apiece, both potential developments must include stormwater management measures in their respective designs meeting the minimum standards set forth in the *Rhode Island Stormwater Design and Installation Standards Manual* (RIDEM & CRMC, revised 2015).[5] Compliance with the Stormwater Manual is a requirement for both local planning approval and the Rhode Island Pollutant Discharge Elimination System *General Permit for Stormwater Discharge Associated with Construction Activity* (RIPDES Construction GP, see Section 6.0 below) and is documented through the preparation of a Stormwater Management Plan (SWMP), which itself is comprised of a planning and engineering design narrative, a Soil Erosion and Sediment Control (SESC) Plan, and a Long-term Operation and Maintenance Plan (O&M Plan).

Based upon GRA's experience in developing approved stormwater management designs for a number of University projects (including the pending redevelopment of the Fine Arts Parking Lot), build-out of each development parcel would be considered "new development" under the Stormwater Manual and would require the design and construction of appropriate best management practices (BMPs) for stormwater quantity and quality. Treatment of the full water quality volume associated with post-development impervious surfaces with acceptable BMPs would be required to meet Stormwater Manual requirements as well as the total maximum daily load (TMDL) established for the receiving watercourse (White Horn Brook) in the *Statewide Bacteria TMDL* (RIDEM, 2011).[6]

Principal constraints include the relatively shallow groundwater table (see Appendix D) and limited space within the development area for the construction of BMPs. Given the high-density nature of the proposed development it is anticipated that a combination of vegetated (e.g., bioretention swales integrated with site landscaping) and subsurface practices (e.g., underground reservoir storage) will be required in order to provide treatment of site runoff and meter outflow rates (discharged into existing closed drainage systems serving this area of the Kingston Campus) such that no net increase in runoff occurs under post-development conditions. Such an approach was employed in the stormwater management design for the Fine Arts Parking Lot, and sections depicting the median bioretention swales designed under this project are shown in Figure 4 below. Based on preliminary rainfall-runoff calculations,

[5] http://www.dem.ri.gov/programs/water/permits/ripdes/stormwater/coordinated-stormwater-permitting.php
[6] http://www.dem.ri.gov/programs/water/quality/restoration-studies/ri-bacteria-tmdl.php

relatively large, but nonetheless practicable, reservoir systems could be constructed under the future parking areas, consisting of series of oversized storage pipes in parallel and appropriately-sized orifice(s) to meter detained stormwater back into the existing system. Other innovative controls such as green roofs may warrant consideration provided costs of implementation and maintenance are justified by the stormwater management benefits provided.

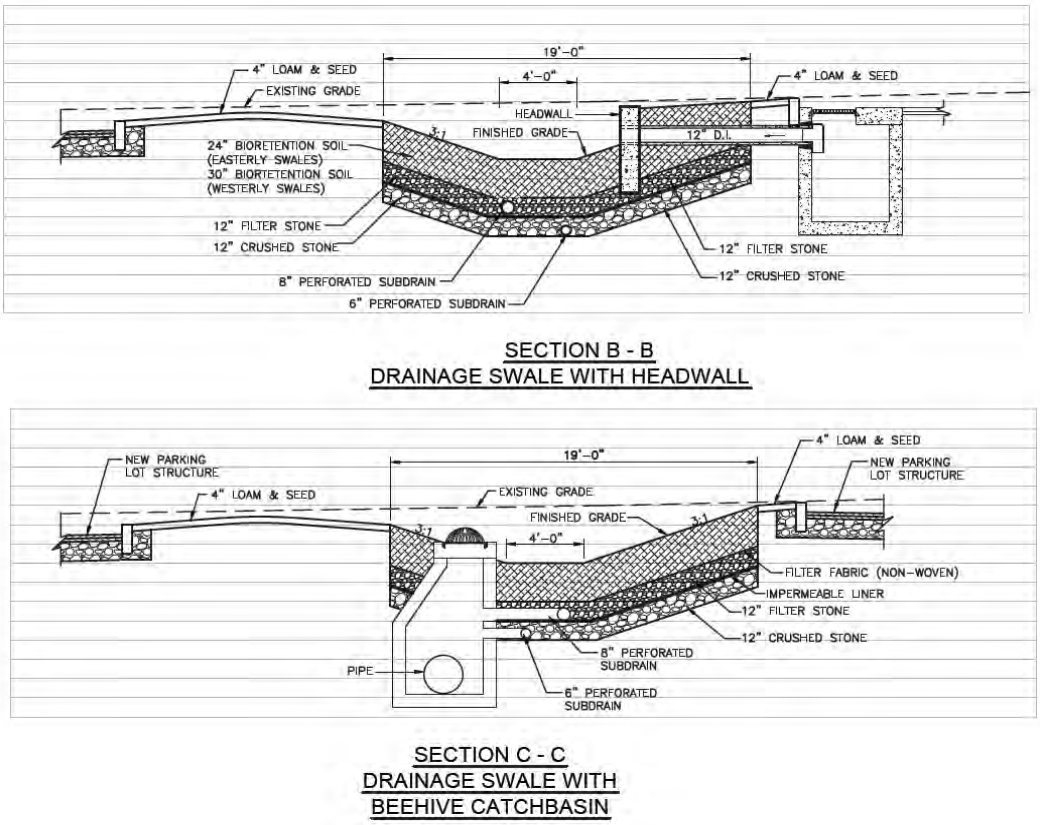


Figure 4 – Detail of Bioretention Swale System with Overflow – Fine Arts Center Parking Lot
Source: GRA • Not to scale

Low impact development (LID) techniques, described in Chapter 4 of the Stormwater Manual, may be incorporated to avoid/reduce/manage the potential impacts of development. Both the building and site/civil designs should seek to implement LID to the maximum extent practicable.

6.0 Regulatory Approvals

In addition to local planning and development approval, build-out of the development parcels will require authorization from the RIDEM Office of Water Resources. As there are no regulated wetland features in the vicinity of the APD, submission of the Stormwater Management Plan and other appropriate documentation would be made either to the Water Quality Certification or RIPDES Program.

Both development parcels are greater than one acre in size and therefore require the owner/applicant to seek coverage under the RIPDES Construction GP through the preparation of and adherence to a Soil Erosion and Sediment Control (SESC) Plan. A copy of the RIDEM Stormwater Management Plan Guidance document is provided herewith for reference as Appendix E.

7.0 Summary and Recommendations

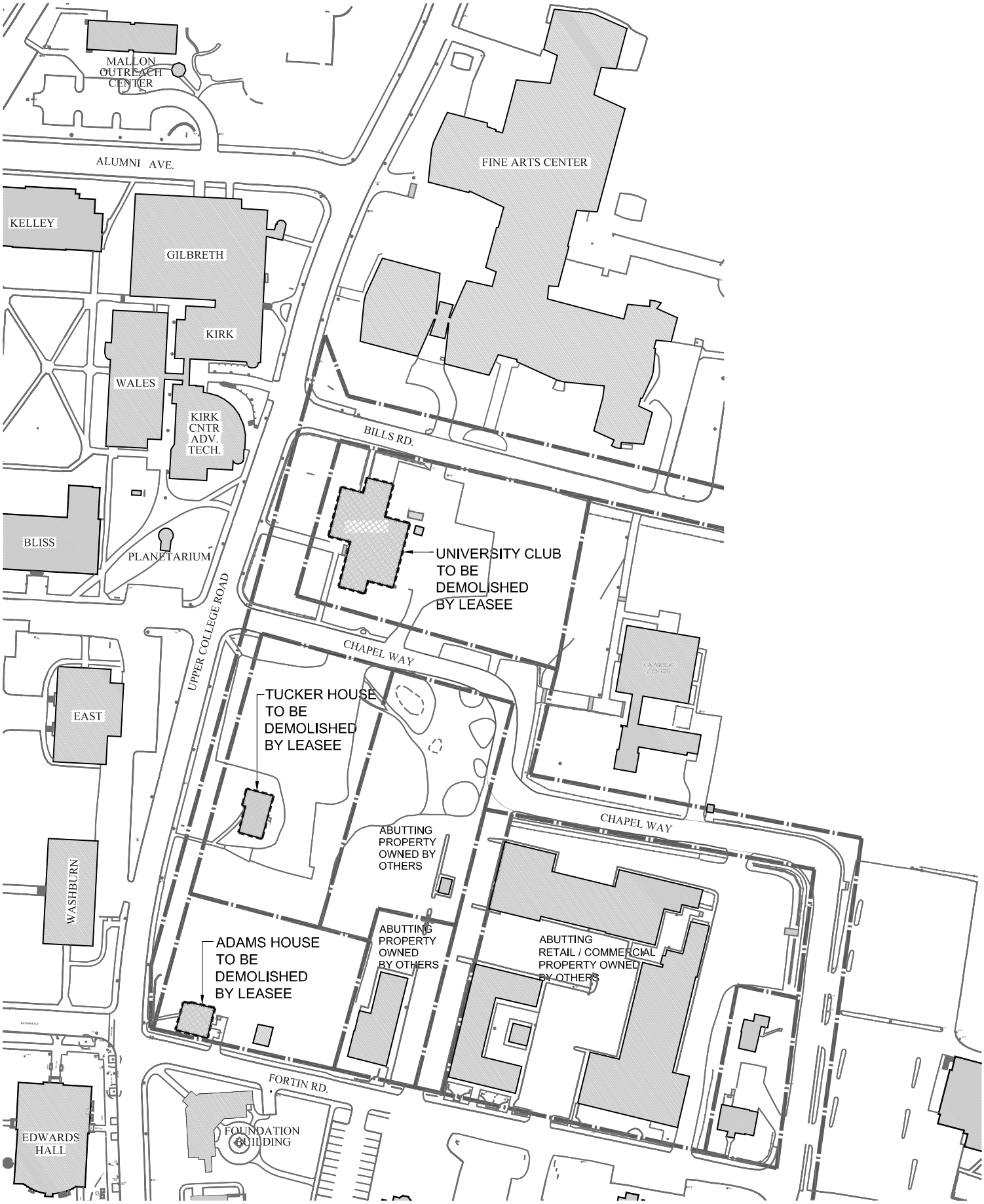
The central findings of this study are summarized in the Executive Summary (pp. ES-1 - ES-3). The information presented in this report is understood to be accurate as of the date of its issuance and suitable for preliminary planning purposes; however, all information regarding existing conditions and approvals must be verified as part of any development project. While the APD is generally suitable for the developments under consideration, the final design of buildings and amenities should be advanced in a manner that avoids/mitigates potential adverse impacts to adjacent private and institutional uses to the greatest extent possible.

The University should engage in preliminary discussions with the Town of South Kingstown Planning Department to establish the parameters of the Town review processes and to better ascertain local planning/zoning amenability to the nature, scale, and scope of the potential development.

+ + +

Appendix A

DBVW Preliminary Plans



N

0' 50' 150'

20' 100'

Site Preparation - Parcels A & B

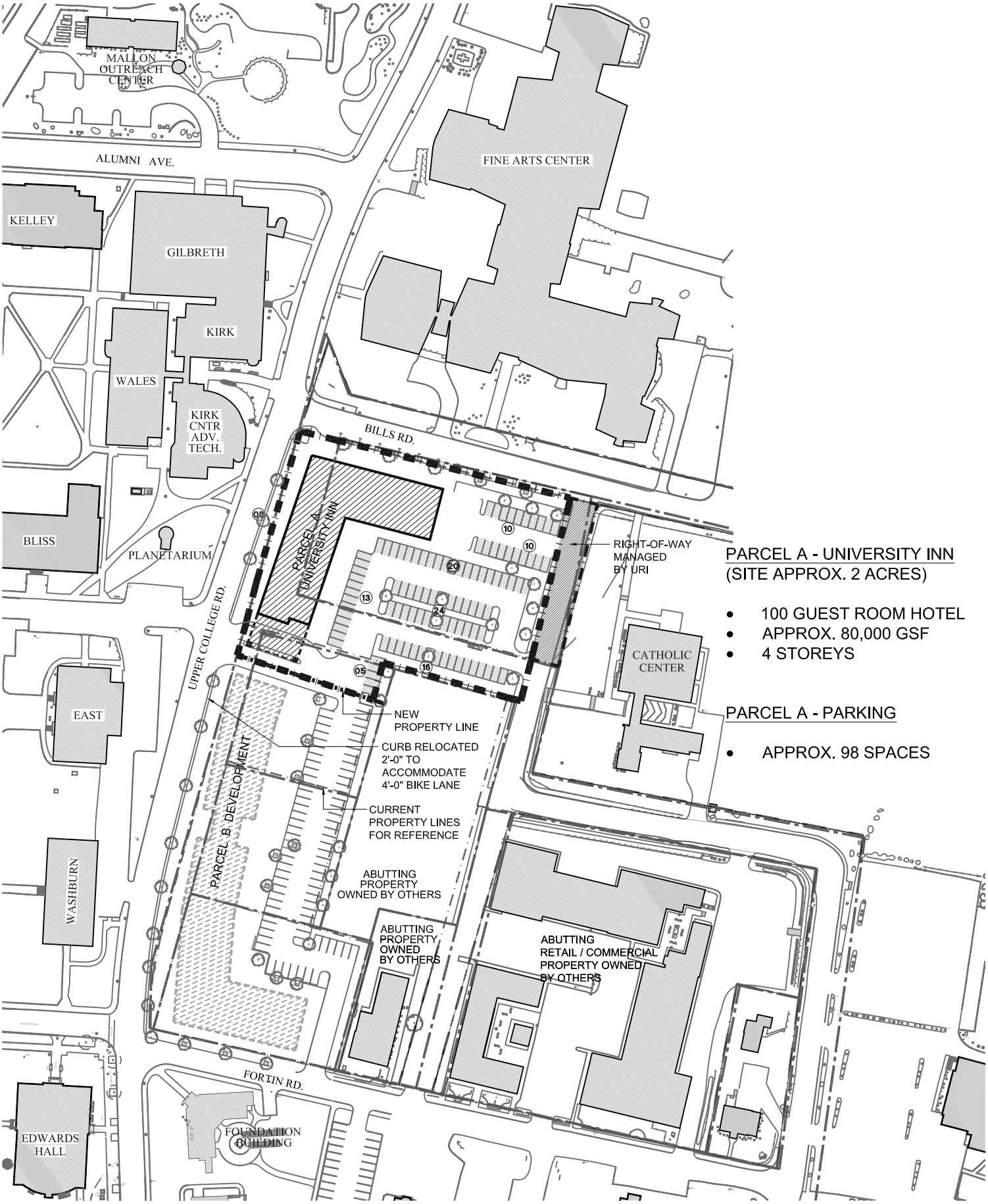
Scale - 1"=150' | 11.15.17

URI Mixed Use Redevelopment | Conceptual Site Layout Analysis

Kingston, RI 02881

THE UNIVERSITY OF RHODE ISLAND

DBVW ARCHITECTS



PARCEL A - UNIVERSITY INN
(SITE APPROX. 2 ACRES)

- 100 GUEST ROOM HOTEL
- APPROX. 80,000 GSF
- 4 STOREYS

PARCEL A - PARKING

- APPROX. 98 SPACES

Proposed Parcel A Subdivision - Bills Road

Scale - 1"=150' | 11.15.17

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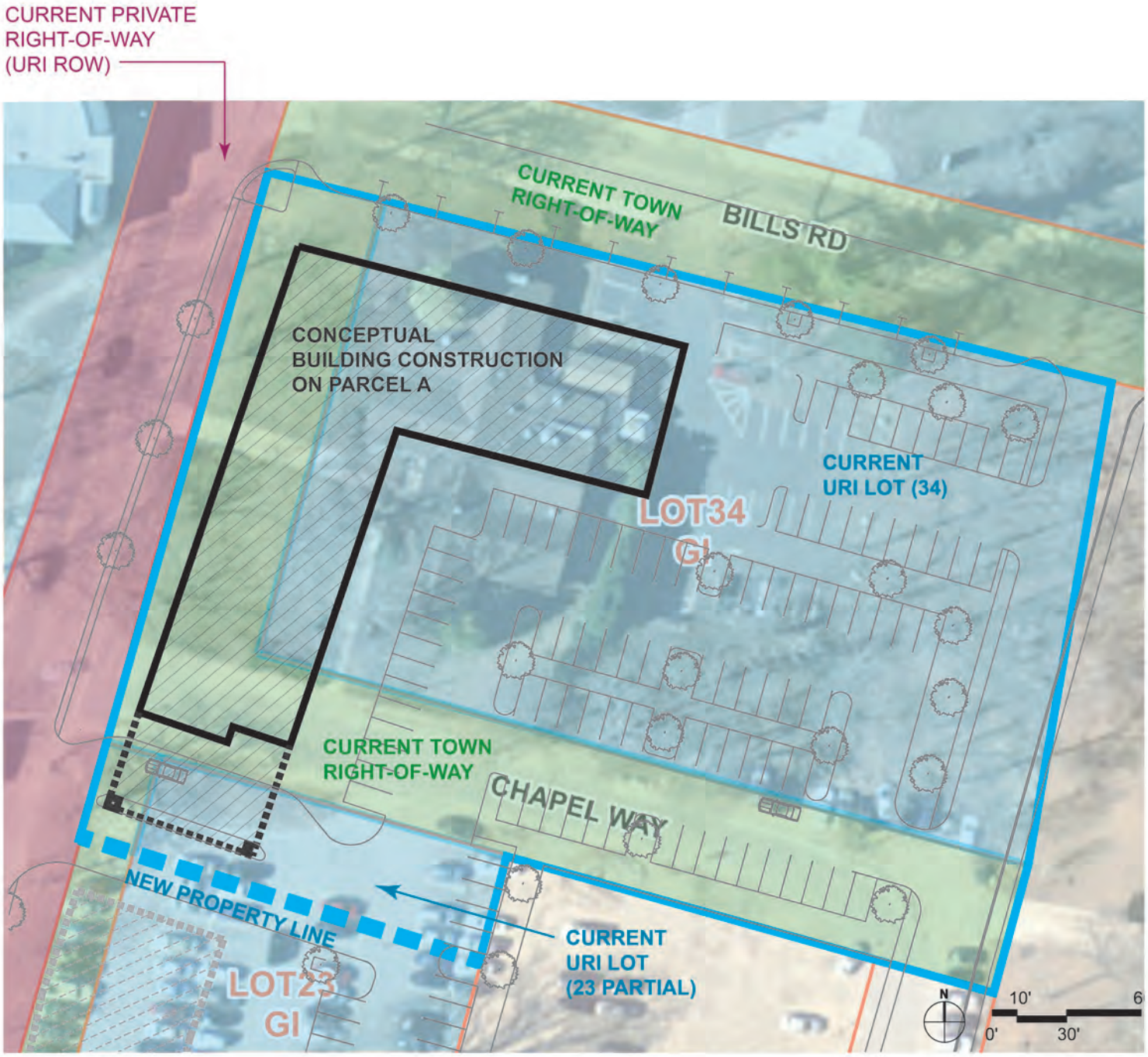
DBVW ARCHITECTS

PROPOSED PARCEL A



Parcel A - Bills Road

Scale - 1"=60' | 11.15.17

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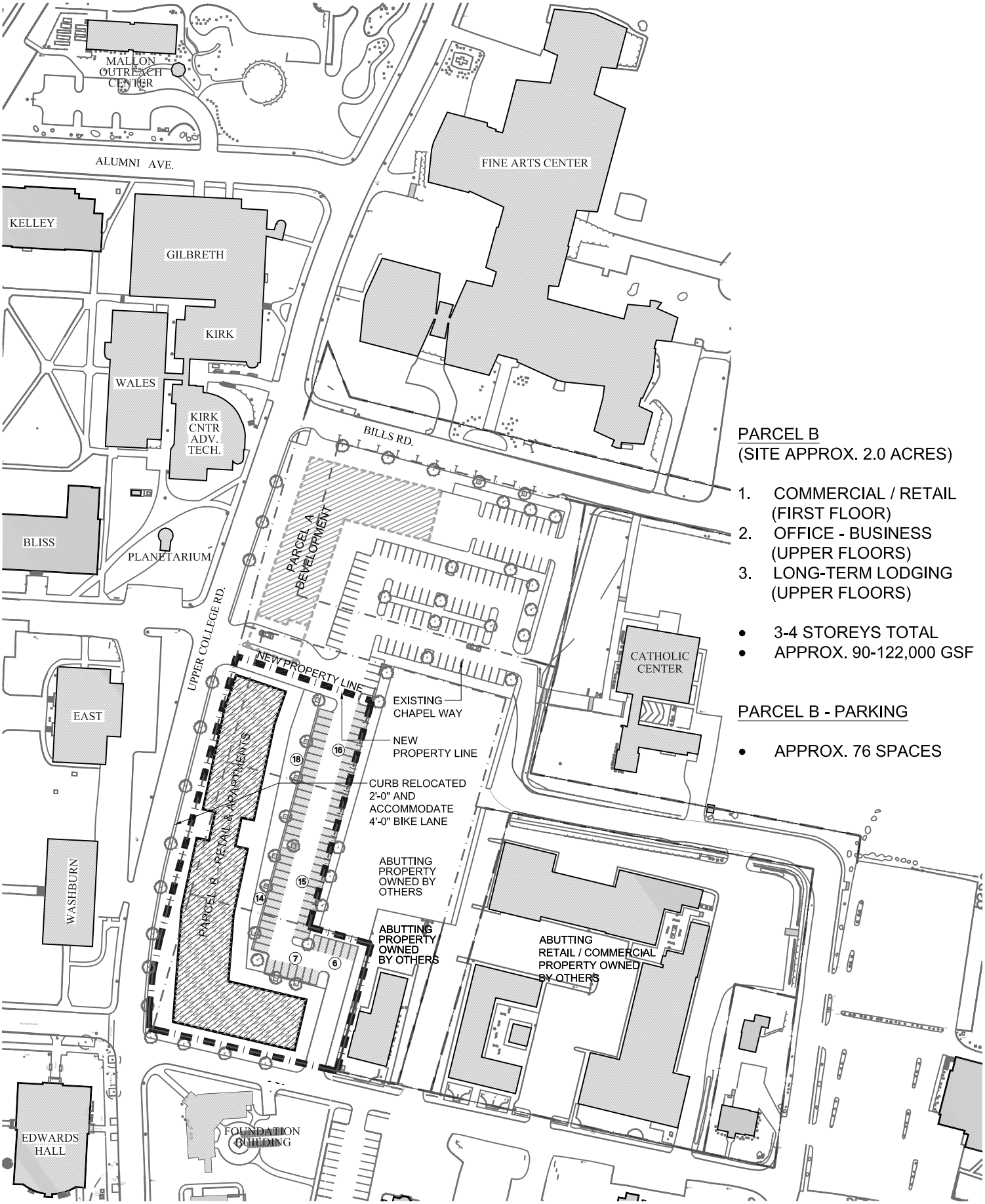
DBVW ARCHITECTS



PARCEL B
(SITE APPROX. 2.0 ACRES)

1. COMMERCIAL / RETAIL (FIRST FLOOR)
2. OFFICE - BUSINESS (UPPER FLOORS)
3. LONG-TERM LODGING (UPPER FLOORS)

- 3-4 STOREYS TOTAL
- APPROX. 90-122,000 GSF

PARCEL B - PARKING

- APPROX. 76 SPACES

N

20' 100'
0' 50' 150'

Proposed Parcel B Subdivision - Fortin Road

Scale - 1"=150' | 11.15.17

URI Mixed Use Redevelopment | Conceptual Site Layout Analysis

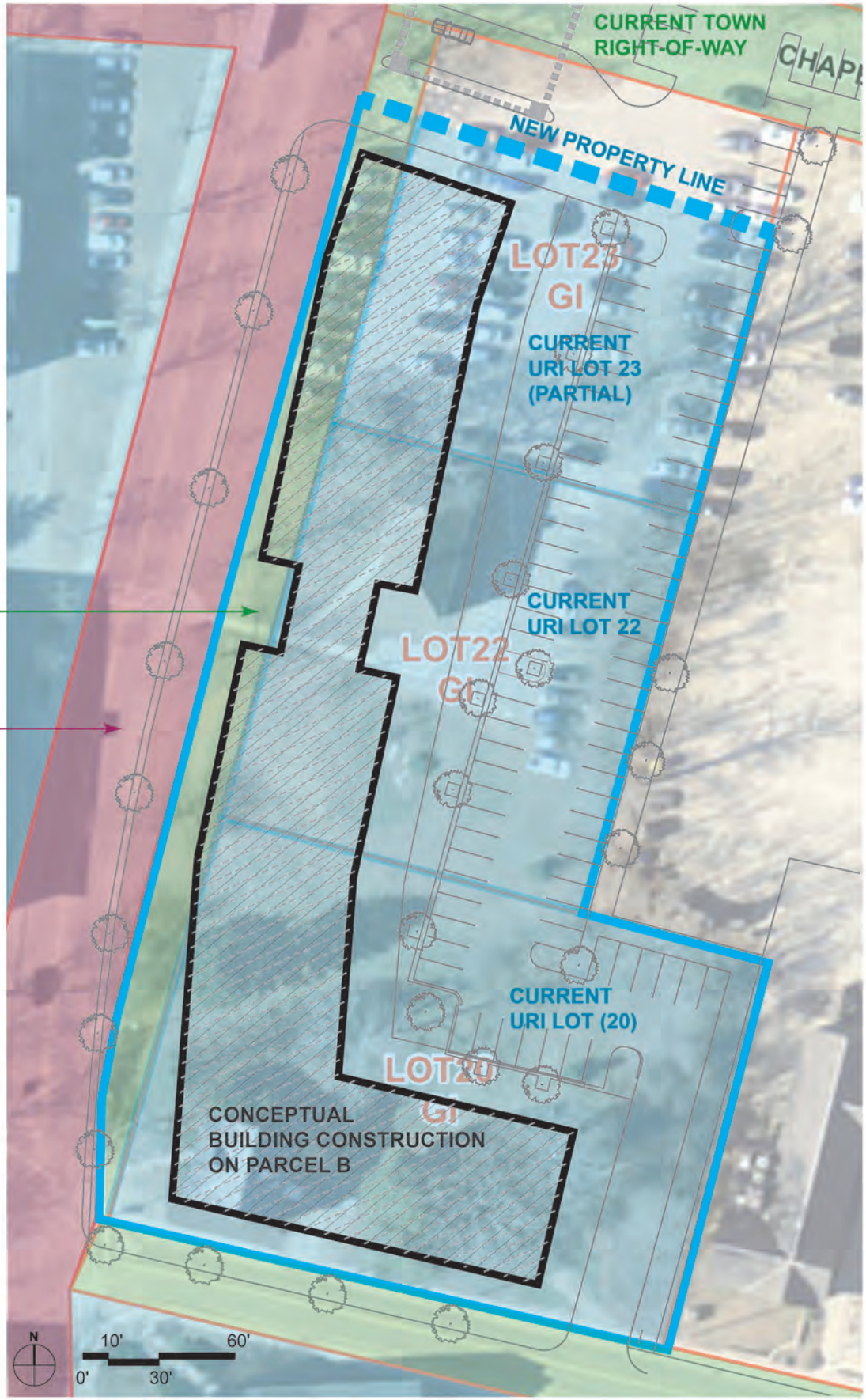
Kingston, RI 02881

Conceptual Site Layout Analysis

THE UNIVERSITY OF RHODE ISLAND

DBVW ARCHITECTS

PROPOSED
PARCEL B



CURRENT TOWN
RIGHT-OF-WAY

CURRENT PRIVATE
RIGHT-OF-WAY
(URI ROW)

Parcel B - Fortin Road

Scale - 1"= 60' | 11.15.17

URI Mixed Use Redevelopment | Conceptual Site Layout Analysis

Kingston, RI 02881

THE UNIVERSITY OF RHODE ISLAND

DBVW ARCHITECTS

Appendix B

Subdivision Review Checklists and Zoning Ordinance Requirements for Hotel/Motel Uses

CHECKLIST FOR PREAPPLICATION MEETINGS AND CONCEPT REVIEW

The applicant shall submit to the Administrative Officer at least **six (6)*** blue line or photocopies of conceptual plans. The scale of all plans shall be sufficient to clearly show all of the information required and shall be subject to the approval of the Administrative Officer. At a minimum, the following information shall be provided:

1. Concept Plans - A map or plan of the subdivision parcel showing the following information:

1. ____Name of the proposed subdivision

2. ____Name and address of property owner and applicant

3. ____Date of plan preparation, with revision date(s) (if any)

4. ____Graphic scale and true north arrow

5. ____Plat and lot number(s) of the land being subdivided

6. ____Zoning district(s) of the land being subdivided. If more than one district, zoning boundary lines must be shown

7. ____Perimeter boundary lines of the subdivision, drawn so as to distinguish them from other property lines

8. ____Area of the subdivision parcel and proposed number of buildable lots, dwellings or other proposed improvements

9. ____Location and dimensions of existing property lines within or adjacent to the subdivision parcel, easements and rights-of-way

10. ____Location, width and names of existing streets within and immediately adjacent to the subdivision parcel

11. ____Names of abutting property owners and property owners immediately across any adjacent streets

12. ____Location of wooded areas, notation of existing ground cover, and approximate location(s) of stone walls

13. ____Location of wetlands, watercourses or coastal features within and immediately adjacent to the subdivision parcel

14. ____Areas of agricultural use (if applicable)

15. ____Approximate topography with minimum contour intervals of 5 feet

16. ____Location and approximate size of existing buildings or significant above-ground structures on or immediately adjacent to the subdivision

17. ____Proposals, if any, for connection with existing water supply and sanitary sewer systems or a notation that wells and ISDS are proposed

18. ____Provisions for collecting and discharging stormwater

19. ____Location of historic cemeteries within or immediately adjacent to the subdivision (if any)

20. ____Proposed improvements including streets, lots, lot lines, with approximate lot areas and dimensions. Proposed lot lines shall be drawn so as to distinguish them from existing property lines.

21. ____Notation on plan if the subdivision parcel(s) are located within any of the following areas:

____ Natural Heritage Areas (RIDEM)
____ Narrow River Special Area Management Plan (CRMC)
____ Salt Ponds Special Area Management Plan (CRMC)
____ Groundwater Protection Overlay District (Town)

22. ____Alternate conceptual designs for land development (if applicable) showing approximate areas of alteration and identification of land areas and natural features to be preserved

2. Supporting Materials - The applicant shall submit to the Administrative Officer ten (10) copies of a narrative report providing a general description of the existing physical environment and existing use(s) of the property along with a general description of the uses and type of development proposed by the applicant. The narrative report shall include reduced copies of all plans required in No. 1 above plus the following:

1. ____An aerial photograph or a blue line copy of an existing aerial photograph of the proposed subdivision parcel and surrounding area

2. ____A copy of the soils map of the subject parcel with a general analysis of soil types and suitability for proposed development, including information on approximate water table elevations and flood potential

3. ____An estimate of the approximate population of the proposed subdivision

4. ____An estimate of the number of school-aged children to be housed in the proposed subdivision

5. ____Vicinity map to show the area within one-half mile of the proposed subdivision parcel(s). All streets, schools, parks, public facilities and zoning district boundaries shall be shown. Major watercourses, wetlands and other hydrological features including watershed boundaries shall be shown

6. ____Filing Fee - $100

7. ____Existing Resources and Site Analysis Map (for Flexible Design Residential Projects)

3. Supplementary Checklist for Special Management Districts - In addition to all applicable items required on the above checklist, an applicant for approval of development within the Route 1 Special Management District shall submit to the Administrative Officer copies of the information listed below. Information shall be conceptual in nature and provided in the form of plans, drawings or explanatory text in sufficient detail to indicate conformity with applicable provisions of zoning and the Comprehensive Plan. The Administrative Officer shall determine the actual number of copies of each document to be provided, up to a maximum of twenty (20) copies.

1.____ Location and nature of proposed buildings, including schematic illustrations of proposed exterior appearance
2.____ Proposed use and treatment of open space
3.____ Schematic signage plan
4.____ Filing Fee - $500

* Administrative note

CONCEPTUAL MASTER PLAN CHECKLIST
MAJOR LAND DEVELOPMENTS AND MAJOR SUBDIVISION

The applicant shall submit to the Administrative Officer at least **six (6)*** blue line or photocopies of master plan maps required below. The scale of all plans shall be sufficient to clearly show all of the information required and shall be subject to the approval of the Administrative Officer. Plans shall include a certification that all plans and improvements conform to all existing and amended standards of the State of Rhode Island and Providence Plantations, Board of Registration for Professional Engineers and Board of Registration of Land Surveyors.

At a minimum, the following information shall be provided:

1. Conceptual Master Plan Drawing(s) - A map or plan of the subdivision parcel showing the following information:

1.____ Name of the proposed subdivision

2.____ Name and address of property owner and applicant

3.____ Name, address and telephone number of person or firm preparing the conceptual master plan

4.____ Date of plan preparation, with revision date(s) (if any)

5.____ Graphic scale and true north arrow

6.____ Plat and lot number(s) of the land being subdivided

7.____ Zoning district(s) of the land being subdivided. If more than one district, zoning boundary lines must be shown

8.____ Perimeter boundary lines of the subdivision, drawn so as to distinguish them from other property lines

9.____ Area of the subdivision parcel and proposed number of buildable lots, dwellings or other proposed improvements

10.____Location and dimensions of existing property lines within or adjacent to the subdivision parcel, easements and rights-of-way

11.____Location, width and names of existing streets within and immediately adjacent to the subdivision parcel

12.____Names of abutting property owners and property owners immediately across any adjacent streets

13.____Location of wooded areas and notation of existing ground cover

14.____Location of wetlands, watercourses or coastal features present on or within 200 feet of the property being subdivided

15.____Areas of agricultural use

16.____Existing topography with minimum contour intervals of two feet

17.____Location and approximate size of existing buildings or significant above-ground structures on or immediately adjacent to the subdivision

18.____Proposals, if any, for connection with existing water supply and sanitary sewer systems or a notation that wells and ISDS are proposed

19.____Provisions for collecting and discharging stormwater

20.____Location of historic cemeteries on or immediately adjacent to the subdivision (if any)

21.____Location of any unique natural and/or historic features, including stone walls

22.____Notation on plan if the subdivision parcel(s) are located within any of the following areas:

____ Natural Heritage Areas (RIDEM)
____ Narrow River Special Area Management Plan (CRMC)
____ Salt Ponds Special Area Management Plan (CRMC)
____ Groundwater Protection Overlay District (Town)

23.____ Proposed improvements including streets, lots, lot lines, with approximate lot areas and dimensions Proposed lot lines shall be drawn so as to distinguish them from existing property lines

24.____Base flood elevation data

25.____Open space use plan (Flexible Design Residential Projects or residential compounds)

26.____Proposed construction access road(s) or route(s)

2. Supporting Materials - The applicant shall submit to the Administrative Officer up to forty (40) copies of a narrative report (actual number of copies to be determined by the Administrative Officer) providing a general description of the existing physical environment and existing use(s) of the property along with a general description of the uses and type of development proposed by the applicant. The narrative report shall include reduced copies of all plans required in No. 1 above plus items 2-7, below:

1.____ Filing Fee: - $200 plus $20 per unit

2.____ An aerial photograph or a blue line copy of an existing aerial photograph of the proposed subdivision parcel and surrounding area

3.____ A copy of the soils map of the subdivision parcel and surrounding area, and a general analysis of soil types and suitability for the development proposed. If any prime agricultural soils and/or hydric soils are within the subdivision parcel(s) the soils map shall be marked to show the location of said prime agricultural soils and/or hydric soils

4.____ An estimate of the approximate population of the proposed subdivision

5.____ An estimate of the number of school-aged children to be housed in the proposed subdivision

6.____ Fiscal impact statement

7.____ Proposed phasing, if any

8.____ Existing Resources and Site Analysis Map

9.____ A vicinity map, drawn to a scale of 1"=400' or as necessary to show the area within one-half mile of the subdivision parcel showing the locations of all streets, existing lot lines, and zoning district boundaries. Schools, parks, fire stations and other significant public facilities shall be indicated on the locus map by shading and labelling the specific use.

10.____ Initial written comments on the Conceptual Master Plan from the following agencies:

(Provided by the Administrative Officer)

Local Agencies

A.	_____Planning Department	Date:_____
B.	_____Town Manager	Date:_____
C.	_____Public Services Department	Date:_____
D.	_____Zoning Enforcement Officer	Date:_____
E.	_____Fire Alarm	Date:_____
F.	_____Solicitor	Date:_____
G.	_____Conservation Commission	Date:_____
H.	_____Recreation Commission	Date:_____
I.	_____Police Dept.	Date:_____
J.	_____Fire District	Date:_____
K.	_____School Dept.	Date:_____
L.	Other (specify)_____	Date:_____

Adjacent communities (specify)

A. _____	Date:_____
B. _____	Date:_____
C. _____	Date:_____
D. _____	Date:_____
E. _____	Date:_____

State agencies

A. ____ Environmental Management Date:_____
B. ____ Transportation Date:_____
C. ____ Coastal Resources Date:_____
D. ____ Other (specify)_____ Date:_____

_____

Federal agencies

A. _____ U.S. Army Corps Engineers Date:_____
B. _____ FEMA Date:_____

11.___ Written confirmation that the appropriate water company or district has reviewed the plan(s) and has determined it can/cannot provide water service

Water Company or District _____
Date of Letter _____

12.___ The names and addresses of all property owners, agencies, or communities requiring notification as required by these Regulations

13.___ Owner Authorization Form (See attached)

14.___ Subdivision Notification Form (See attached)

In addition to all applicable items required on the above checklists, an applicant for approval of development within the Route 1 Special Management District shall submit to the Administrative Officer copies of the information listed below. Information shall be conceptual in nature and provided in the form of plans, drawings or explanatory text in sufficient detail to indicate conformity with applicable provisions of zoning and the Comprehensive Plan. The Administrative Officer shall determine the actual number of copies of each document to be provided, up to a maximum of forty (40) copies.

1.____Description of existing uses, indicating proposed change of use, enlargement or modification, if any

2.____Description of proposed new uses, indicating size and extent of proposed buildings or other use areas

3.____Proposed vehicular access, indicating on and off-site streets, driveways, service roads, etc.

4.____Proposed parking plan, indicating number of spaces, landscaping and relation to proposed uses, including proposals for shared or on-street parking. For parking or access drives visible from US Route 1 or Kelley Way, plans or drawings must indicate view by motorists on such roads.

5.____Open space use plan indicating location, area and nature of proposed open space on the parcel(s) proposed for development, and relation to existing or proposed open space on adjacent parcels or

in the entire District.

6.____Proposed buffering from US Route 1, Kelley Way and/or adjacent property, prepared by a registered Landscape Architect

7.____Proposed highway access and relation to on and off-site circulation patterns

8.____Schematic signage plan, indicating the general nature of all proposed exterior signage, with sketches and supporting explanatory information, if required by the Planning Board

9.____Schematic architectural drawings of proposed buildings, if required by the Planning Board

10.____Proposed lighting plan, including a description of proposed lighting fixtures, pole heights, type of illumination and anticipated lighting levels

11.____Pedestrian and bicycle circulation plan

12.____Location and nature of proposed outdoor refuse storage, collection and recycling areas

13.____Proposed construction schedule and proposed phasing of development

* administrative note

Article XIII of the Subdivision and Land Development Regulations.

501.8. *Transient trailer parks.*

A. *Intent.* It is the intent of this subsection to provide areas which are properly located and designed to accommodate the leisure time and vacation activities of transient residents utilizing transient trailers and similar recreational vehicles, and intended for short-term residential occupancy only. It is further intended to safeguard the health and safety of residents of trailer parks, to ensure compatibility with the natural environment and to ensure harmony with the character of the surrounding area.

B. *Approval procedure.* In order to construct, alter or extend any transient trailer park the following must be obtained:

1. Approval of a land development project from the Planning Board pursuant to the procedures and standards set forth in the Subdivision and Land Development Regulations.
2. A license from the State Health Department in accordance with Title 23, Chapter 21, Rhode Island General Laws, 1956, as amended;
3. A building permit from the Building Official; and
4. An annual license granted by the Town Council as required by the provisions of the Town of South Kingstown Tourist Accommodations Ordinance.

C. *Density requirement.* The overall density of the transient trailer park shall not exceed 20 transient trailer spaces per acre of developable land area of such park.

D. *Minimum area.* No transient trailer park shall be less than ten acres in land area.

E. *Community center and convenience store.* A community center and/or a convenience store may also be provided. The use of such community center, including the convenience store, shall be restricted to residents and guests. The floor area of such structure shall not exceed 1,500 square feet (GLFA/use) for the first 200 spaces in the park, and may be increased by not more than 500 square feet (GLFA/use) for each additional 50 spaces.

501.9. *Hotel and motel use.*

A. *Minimum lot size.* The lot shall consist of not less than 50,000 square feet of land for the first 20 rooms, and 500 square feet of land for each additional unit.

B. *Lot coverage.* The permanent structures of motels or hotels shall not occupy more than 25 percent of the total lot area. Additional lot coverage, not to exceed 25 percent of the total lot area, is authorized for recreation facilities.

C. *Unit size.* No individual motel unit or hotel room shall be erected or altered so as to have a floor area of less than 240 square feet, including bathroom and closet space.

D. *Setback regulations.* No part of a motel or hotel structure, accessory structure (except a sign) parking lot or utility area shall be within 50 feet of any lot line or closer than 100 feet

to the right-of-way of any public street. Except in CH Districts, a landscaped or natural buffer zone shall be provided within said 50-foot setback from any lot line, and within said 100-foot setback from any public street.

E. *Standards for development.* The following additional standards shall apply to all motels and hotels:

1. *Accessory use.* Accessory uses may include necessary office, recreation, parking and maintenance areas, lunchroom, restaurant, cocktail lounge or gift shop.
2. *Height.* No principal building shall exceed 35 feet in height; no accessory building or other structure shall exceed 20 feet in height.
3. *Minimum lot width.* Each lot shall have a minimum lot width of 200 feet.
4. *Rubbish disposal.* Each motel or hotel shall be provided with enclosed waste pens of sufficient size to accommodate all trash and waste stored on the premises. The waste pens and utility areas shall be properly screened and buffered from all buildings and lot lines.

501.10. *Religious housing.*

A. *Minimum lot size.* The lot shall consist of not less than 5,000 square feet of land per bedroom.

B. *Number of occupants.* Occupancy shall be limited to not more than one person per bedroom, or eight occupants, whichever is less.

C. *Utilities.* The structure shall be serviced by public water and sewer.

D. *Parking.* There shall be one off-street parking space per two bedrooms, subject to all other requirements of Article 7

E. *Signs.* There shall be no signs permitted, except for one sign indicating the name of the religious group and the address, and which shall not include any advertising. Such sign shall not exceed two square feet.

Sec. 502. - Supplementary dimensional regulations.

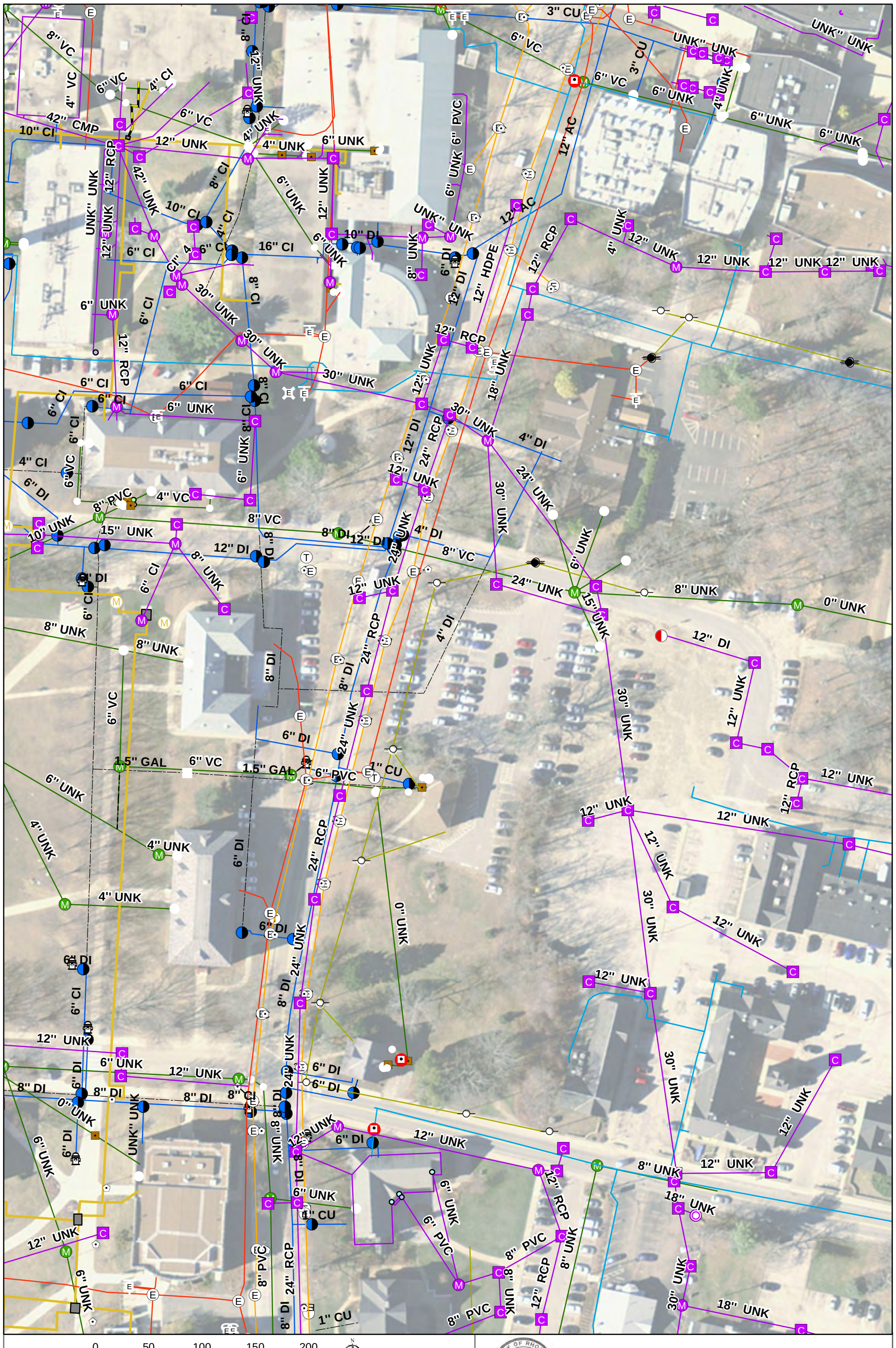
The following regulations are required in addition to the dimensional requirements in Article 4.

502.1. *Lot frontage and width, standard provisions.* No lot hereafter created shall have a lot frontage less than the minimum lot width provided in Article 4 for the zoning district in which the lot is located. The lot lines on opposite sides of that portion of a lot lying between the building line and the street line shall be no closer than the minimum lot width provided in Article 4, for the zoning district in which the lot is located. Minimum lot width shall be provided as specified in Article 4, and shall be measured at a point no closer to a street line or, if none, to a lot line than the minimum front yard dimension for the zoning district in which it is located.

502.2. *Lot frontage and width, flexible provisions.* Upon approval by

Appendix C

Existing Utilities Map
(URI Utilities Department)


0 50 100 150 200 Feet
Drain
Electric Ductbank
Electric Overhead
Electric Site Lighting
Gas
National Gird Gas Line
Sewer
Steam
Water
Abandoned
University of Rhode Island
Underground Utilities
Utilities Department | Dave Lamb - Bob Bozikowski - Andy Alcusky
Map created by Marissa Simpson on 7/30/15
Information shown is for reference and internal use only by the University of Rhode Island Utilities Department. Not for design without field verification.

Appendix D

NRCS / Soil Survey of Rhode Island Data

Map Unit Description (Brief, Generated)

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[Minor map unit components are excluded from this report]

Map unit: CB - Canton-Urban land complex

Component: Canton (40%)

The Canton component makes up 40 percent of the map unit. Slopes are 0 to 15 percent. This component is on hills on uplands. The parent material consists of coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 70 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Component: Urban land (30%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map Unit Description (Brief, Tabular)

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[Absence of an entry indicates that the feature is not a concern or that data were not estimated. Data applies to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

CB--Canton-Urban land complex

Composition

- Canton and similar soils: 40 percent of the unit
- Urban land: 30 percent of the unit
- Charlton and similar soils: 6 percent of the unit
- Gloucester and similar soils: 6 percent of the unit
- Narragansett and similar soils: 5 percent of the unit
- Paxton and similar soils: 5 percent of the unit
- Udorthents and similar soils: 5 percent of the unit
- Sutton and similar soils: 3 percent of the unit

Setting

Landform(s): hills on uplands
Elevation: 0 to 810 feet
Precipitation: 44 to 50 inches
Slope gradient: 0 to 15 percent
Air temperature: 48 to 50 ºF
Frost-free period: 120 to 160 days

Characteristics of Canton and similar soils

Average total avail. water in top five feet (in.): 5.6
Available water capacity class: Low
Parent material: coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss
Restrictive feature(s): none
Depth to Water table: none within the soil profile
Drainage class: well drained
Flooding hazard: none
Ponding hazard: none
Saturated hydraulic conductivity class: High
Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Land capability class, irrigated:
Land capability class, nonirrigated: 2e
Hydric soil: no
Hydrologic group: B
Runoff class: low
Potential frost action: low

Representative soil profile:

Horizon -- Depth (inches)	Texture	Available water capacity (inches)	pH	Salinity (mmhos/cm)	SAR
Oe -- 0 to 1	Moderately decomposed plant material	0.1 to 0.5		0.0	0
A -- 1 to 3	Gravelly fine sandy loam	0.2 to 0.3	3.5 to 6.0	0.0	0
Bw1 -- 3 to 15	Gravelly loam	1.2 to 1.8	3.5 to 6.0	0.0	0
Bw2 -- 15 to 24	Gravelly loam	0.9 to 1.4	3.5 to 6.0	0.0	0
Bw3 -- 24 to 30	Gravelly loam	0.6 to 0.9	3.5 to 6.0	0.0	0
2C -- 30 to 60	Very gravelly loamy sand	0.9 to 2.7	3.5 to 6.0	0.0	0

Ecological class(es):

Characteristics of Urban land

Average total avail. water in top five feet (in.):
Available water capacity class: NA
Parent material: human transported material
Restrictive feature(s):
Depth to Water table:
Drainage class:
Flooding hazard:
Ponding hazard:

Soil loss tolerance (T factor):
Wind erodibility group (WEG): 8
Wind erodibility index (WEI): 0
Land capability class, irrigated:
Land capability class, nonirrigated: 8s
Hydric soil: no
Hydrologic group:
Runoff class: very high
Potential frost action:

Saturated hydraulic conductivity class: Very Low

Representative soil profile:

Horizon -- Depth (inches)	Texture	Available water capacity (inches)	pH	Salinity (mmhos/cm)	SAR
R -- 0 to 6	Variable			Null	Null

Ecological class(es):

Physical Soil Properties

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[Entries under "Erosion Factors--T" apply to the entire profile. Entries under "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer. Absence of an entry indicates that data were not estimated. This report shows only the major soils in each map unit]

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
CB:														
Canton	0-1	0	0	0	0.30-0.55	42.00-141.00	0.08-0.40	0.0-20.0	45-95	---	---	3	3	86
	1-3	54-70	29-38	1-8	1.25-1.45	14.00-42.00	0.10-0.13	0.0-2.9	2.0-6.0	.05	.24			
	3-15	43-70	29-45	1-8	1.25-1.45	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.32	.55			
	15-24	43-70	29-45	1-8	1.25-1.50	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.32	.55			
	24-30	43-70	29-45	1-8	1.30-1.50	14.00-42.00	0.10-0.15	0.0-2.9	0.0-0.5	.32	.55			
	30-60	77-85	15-18	0-5	1.35-1.60	42.00-141.00	0.03-0.09	0.0-2.9	0.0-0.5	.17	.32			
Urban land	0-6	---	---	---	---	0.00-0.01	---	---	0.0	---	---	---	8	0

Engineering Properties

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[Absence of an entry indicates that the data were not estimated. This report shows only the major soils in each map unit]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 Inches	3-10 Inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
CB:												
Canton	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	100	100	---	---
	1-3	Gravelly fine sandy loam	SM	A-2	0-5	0-10	80-90	70-75	60-70	25-35	10-25	NP-5
	3-15	Fine sandy loam, gravelly loam, very fine sandy loam	ML, SM	A-2, A-4	0-5	0-10	80-90	70-80	60-70	30-50	10-25	NP-5
	15-24	Fine sandy loam, gravelly loam, very fine sandy loam	ML, SM	A-2, A-4	0-5	0-10	80-90	70-80	60-70	30-50	10-25	NP-5
	24-30	Fine sandy loam, gravelly loam, very fine sandy loam	ML, SM	A-2, A-4	0-5	0-10	80-90	70-80	60-70	30-50	10-25	NP-5
	30-60	Gravelly loamy coarse sand, gravelly loamy sand, very gravelly loamy sand, loamy fine sand	SM	A-1, A-2	0-15	0-15	60-85	45-75	30-75	10-25	0-15	NP
Urban land	0-6	Variable	---	---	---	---	---	---	---	---	---	---

Dwellings and Small Commercial Buildings

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CB:							
Canton	40	Not limited		Not limited		Somewhat limited	
						Slope	0.50
Urban land	30	Not rated		Not rated		Not rated	

Roads and Streets, Shallow Excavations, and Lawns and Landscaping

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CB:							
Canton	40	Not limited		Somewhat limited		Somewhat limited	
				Unstable excavation walls	0.01	Dusty	0.01
				Dusty	0.01	Large stones content	0.01
						Gravel content	0.01
Urban land	30	Not rated		Not rated		Not rated	

Map Unit Description (Brief, Generated)

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[Minor map unit components are excluded from this report]

Map unit: ScA - Scio silt loam, 0 to 3 percent slopes

Component: Scio (90%)

The Scio component makes up 90 percent of the map unit. Slopes are 0 to 3 percent. This component is on lakebeds on glacial lake plains, terraces on glacial lake plains. The parent material consists of coarse-silty loess over coarse-loamy lodgment till derived from granite and gneiss. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 21 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map Unit Description (Brief, Tabular)

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[Absence of an entry indicates that the feature is not a concern or that data were not estimated. Data applies to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

ScA--Scio silt loam, 0 to 3 percent slopes

Composition

- Scio and similar soils: 90 percent of the unit
- Bridgehampton and similar soils: 2 percent of the unit
- Rainbow and similar soils: 2 percent of the unit
- Raypol and similar soils: 2 percent of the unit
- Ridgebury and similar soils: 2 percent of the unit
- Tisbury and similar soils: 2 percent of the unit

Setting

Landform(s): lakebeds on lake plains, terraces on lake plains
Elevation: 98 to 810 feet
Precipitation: 44 to 50 inches
Slope gradient: 0 to 3 percent
Air temperature: 48 to 50 ºF
Frost-free period: 120 to 180 days

Characteristics of Scio and similar soils

Average total avail. water in top five feet (in.): 10.4
Available water capacity class: High
Parent material: coarse-silty loess over coarse-loamy lodgment till derived from granite and gneiss
Restrictive feature(s): none
Depth to Water table: 21 inches
Drainage class: moderately well drained
Flooding hazard: none
Ponding hazard: none
Saturated hydraulic conductivity class: Moderately High
Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Land capability class, irrigated:
Land capability class, nonirrigated: 2w
Hydric soil: no
Hydrologic group: B
Runoff class: low
Potential frost action: high

Representative soil profile:

Horizon -- Depth (inches)	Texture	Available water capacity (inches)	pH	Salinity (mmhos/cm)	SAR
Ap -- 0 to 9	Silt loam	1.6 to 1.9	4.5 to 6.0	Null	Null
Bw -- 9 to 46	Silt loam	6.3 to 7.4	4.5 to 6.0	Null	Null
2Cg -- 46 to 60	Stratified very gravelly sand to silt loam	0.3 to 2.6	5.1 to 7.8	Null	Null

Ecological class(es):

Physical Soil Properties

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[Entries under "Erosion Factors--T" apply to the entire profile. Entries under "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer. Absence of an entry indicates that data were not estimated. This report shows only the major soils in each map unit]

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
ScA:														
Scio	0-9	5-50	35-80	2-15	1.20-1.50	4.23-14.11	0.18-0.21	0.0-2.9	2.0-8.0	.49	.49	3	5	56
	9-46	5-50	35-80	2-15	1.20-1.50	4.23-14.11	0.17-0.20	0.0-2.9	0.5-2.0	.64	.64			
	46-60	45-95	5-50	0-5	1.45-1.65	14.11-141.14	0.02-0.19	0.0-2.9	0.0-0.5	.17	.32			

Engineering Properties

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[Absence of an entry indicates that the data were not estimated. This report shows only the major soils in each map unit]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 Inches	3-10 Inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
ScA:												
Scio	0-9	Silt loam	CL-ML	A-4	0	0	100	95-100	90-100	70-90	15-20	NP-4
	9-46	Silt loam, very fine sandy loam	CL-ML	A-4	0	0	100	95-100	90-100	70-90	15-20	NP-4
	46-60	Stratified very gravelly sand to silt loam	SM, SP	A-2, A-3, A-4	0	0	35-95	30-90	15-85	2-80	10-15	NP-4

Dwellings and Small Commercial Buildings

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

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Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ScA:							
Scio	90	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77

Roads and Streets, Shallow Excavations, and Lawns and Landscaping

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ScA:							
Scio	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Dusty	0.01	Dusty	0.01
				Unstable excavation walls	0.01		

Appendix E

RIDEM Stormwater Management Plan Guidance

STORMWATER MANAGEMENT PLAN GUIDANCE

The three (3) key elements to include in a Stormwater Management Plan for any project subject to the *RI Stormwater Design and Installation Standards Manual* (RISDISM)

STORMWATER MANAGEMENT PLAN

- **Stormwater Site Planning, Analysis, and Design**
- **Soil Erosion, Runoff, and Sediment Control**
- **Post Construction Operation and Maintenance**

Section One:

Stormwater Site Planning, Analysis, and Design Report

Includes:
- · Project Narrative
- · RISDISM Appendix A Checklist
- · Low Impact Development (LID) and LID Credits
- · Hydrologic and Hydraulic Analysis
- · Best Management Practices (BMPs)
- · Calculations

Addresses: RISDISM Minimum Standards:
1. LID Site Planning and Design Strategies
2. Groundwater Recharge
3. Water Quality
4. Conveyance and Natural Channel Protection
5. Overbank Flood Protection
6. Redevelopment and Infill Projects
8. LUHHPLs
9. Illicit Discharges

Guidance: RISDISM Appendices:
B. Vegetation Guidelines and Planting List
C. Retrofitting for Stormwater Management
F. BMP Construction Specifications
I. RI River and Stream Order
K. Hydrologic and Hydraulic Modeling Guidance

Section Two:

Soil Erosion and Sediment Control (SESC) Plan

(formerly known as a SWPPP-Stormwater Pollution Prevention Plan)

Includes:
- · Erosion, Runoff, and Sediment Control Practices
- · Construction Activity Pollution Prevention Practices
- · Control Practice Installation, Inspection, & Maint. Reqs
- · Site Plans

Addresses: RISDISM Minimum Standard:
10. Construction Erosion and Sedimentation Control

Guidance: Guidance Documents:
RI Soil Erosion & Sediment Control Handbook (RISESCH)
RI Model Soil Erosion and Sediment Control (SESC) Plan

Regs: Regulatory Requirements:
RIPDES Construction General Permit (CGP) (≥ 1ac)

Section Three:

Operation and Maintenance (O&M) Plan

Includes:
- · Responsible party(s) and Maintenance Agreement
- · Long term O&M for each stormwater practice/BMP
- · Post-construction Pollution Prevention
- · 8-1/2" x 11" map (to scale) showing location of BMPs
- · Budget and Funding Source(s)

Addresses: RISDISM Minimum Standards:
7. Pollution Prevention
11. Operation and Maintenance

Guidance: RISDISM Appendices:
E. Developing Operation and Maintenance Plans
G. Pollution Prevention and Source Controls

Regs: Regulatory Requirements:
RIPDES Multi-Sector General Permit (MSGP)
(for Industrial Sites as defined in RIPDES Rule 31.b.15)

ACRONYMS AND ABBREVIATIONS:

BMP - Best Management Practice
CGP - Construction General Permit (RIPDES)
LID - Low Impact Development
LUHPPLs - Land Uses with Higher Potential Pollutant Loads
MSGP - Multi-Sector General Permit (RIPDES)
O&M Plan - Operation and Maintenance Plan
RIDEM - Rhode Island Department of Environmental Management
RIPDES - Rhode Island Pollutant Discharge Elimination System
RISDISM - *Rhode Island Stormwater Design and Installation Standards Manual*
RISESCH - *Rhode Island Soil Erosion and Sediment Control Handbook*
SESC Plan - Soil Erosion and Sediment Control Plan
SMP - Stormwater Management Plan

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