Town of Arlington, Massachusetts

Department of Planning & Community Development

730 Massachusetts Avenue, Arlington, Massachusetts 02476

Public Hearing Memorandum

The purpose of this memorandum is to provide the Arlington Redevelopment Board and public with technical information and a planning analysis to assist with the regulatory decision-making process.

To: Arlington Redevelopment Board

From: Jennifer Raitt, Secretary Ex Officio

Subject: Environmental Design Review, 455-457 Massachusetts Avenue, Arlington, MA, Docket #3673

Date: September 27, 2021

I. Docket Summary

This is an application by 2-14 Medford Street, LLC, 455 Massachusetts Avenue, Suite 1, Arlington, MA, to open Special Permit Docket #3673 for the construction of a mixed-use building containing existing retail, restaurants, and adding 13 residential units, including two affordable rental units, at 455-457 Massachusetts Avenue and 2-14 Medford Street in the B3 Village Business District. The opening of the hearing is to allow the Board to review and approve the development under Section 3.4, Environmental Design Review Special Permit of the Arlington Zoning Bylaw.

The Applicant proposes to convert a portion of existing ground floor retail and second floor office spaces to residential units and to add a second floor to a one-story brick commercial structure, consolidating two buildings into one mixed use building. The proposed building is a two-story mixed-use structure. The 13 residential units are comprised of one studio and 12 one-bedroom apartments. Two affordable units, or 15% of the total units, are provided. Ten of the 11 existing commercial spaces would remain, resulting in a total commercial area of 7,802 square feet. Parking is provided onsite in a garage with 14 parking spaces.

Materials submitted for consideration of this application:

- Application for EDR Special Permit, including an Environmental Impact Statement;

- Site Development Plan Set, prepared by Allen & Major Associates, Inc. dated August 20, 2021;
- Architectural Drawing Set, including floor plans, elevations, and renderings, prepared by Market Square Architects, dated July 27, 2021;
- Description of project construction process by project estimated, no date;
- Mixed-Use Redevelopment Drainage Summary prepared by Allen & Major Associates, dated August 20, 2021; and
- LEED Checklist.

II. Application of Special Permit Criteria (Arlington Zoning Bylaw, Section 3.3)

1. Section 3.3.3.A.

The use requested is listed as a Special Permit in the use regulations for the applicable district or is so designated elsewhere in this Bylaw.

Mixed-use is allowed by Special Permit in the B3 Village Business District. The Zoning Bylaw, in Section 5.5.1.D, indicates that the district's predominant uses include retail, service, and office establishments catering to both convenience and comparison-good shoppers and oriented to pedestrian traffic. Mixed-use buildings are allowed and encouraged, including in the principal business area at Medford Street and Massachusetts Avenue. Mixed-use is a combination of two or more distinct land uses, such as those proposed by this applicant, and the definition encourages such uses to be in a single, multi-story structure, such as that proposed by the applicant.

The Arlington Center area, which radiates outward from the intersection of Massachusetts Avenue and Mystic and Pleasant Streets, is a major shopping district in the town. It is comprised of a blend of zoning districts from R1 through R7 and B1 through the town's only B5 districts. Arlington Center includes several B3 districts; the district in which this parcel sits stretches from the southeast edge of Whittemore Park (Old Mystic Street) and Massachusetts Avenue to just beyond Franklin Street. To the southwest across Massachusetts Avenue is the B5 district, there are predominately single-story and two-story commercial buildings. To the northwest within the B3 district are additional two-story commercial storefronts along Massachusetts Avenue, there is a two-and-a-half story apartment building facing the Russell Common Parking Lot; to the southeast across Medford Street is another single-story and two-story commercial block, which includes the Regent Theater. To the northeast is the three-story Arlington Catholic High School and Saint Agnes Parish, and the Russell Common Parking Lot, all within the R1 district; directly east is the R2 zoning district with a predominantly two-family residential streetscape of Arlington Center is dominant.

The Board can find that this condition is met.

2. **Section 3.3.3.B.**
The requested use is essential or desirable to the public convenience or welfare.

The requested use is essential and desirable. The second key finding in the Master Plan notes that "Massachusetts Avenue has the capacity for growth. It can support mixed-use development commensurate with its function as Arlington's primary commercial corridor. Massachusetts Avenue is accessible to neighborhoods throughout the town; it has frequent bus service, bicycle routes, and good walkability. Increased density through greater building heights and massing would benefit the corridor from an urban design perspective and benefit the town from a fiscal perspective"(p.8).

This proposal will bring one new studio and 12 one-bedroom residential apartment units, of which two will be affordable to households earning at or below 70% of the area median income. The Town has clearly established affordable housing priorities described in its Housing Production Plan (adopted by the Select Board and Redevelopment Board and approved by the State in 2016). New housing opportunities, including market-rate and affordable homes, are needed in the community; this project helps address that demand.

The ground floor commercial spaces along Medford Street and Massachusetts Avenue will largely remain, although several will be reduced in area as part of the renovation, and one will be converted to a lobby. Ten commercial spaces (noted as commercial tenants on the architectural plans) would remain following the redevelopment of the site, as would venting for the existing restaurants. The office spaces on the second floor would be eliminated. Overall, there will be net loss of approximately 6,900 square feet of commercial space. The loss is due to the need to provide an entry and circulation for the second-floor housing units, the elimination of office spaces on the second floor, and the need to also provide parking on the site.

The Board can find that this condition is met.

3. **Section 3.3.3.C.**
The requested use will not create undue traffic congestion or unduly impair pedestrian safety.

The proposed project includes 16 parking spaces for cars, comprised of two surface parking spaces, and 13 garage parking spaces, and one ADA accessible parking space. Regarding bicycle parking, the project includes eight short-term outdoor parking spaces and 26 long-term indoor spaces for building tenants and visitors. It is not expected that the proposed project will unduly impair pedestrian safety. The Board can find that this condition is met.

4. **Section 3.3.3.D.**
The requested use will not overload any public water, drainage or sewer system or any other municipal system to such an extent that the requested use or any

developed use in the immediate area or in any other area of the Town will be unduly subjected to hazards affecting health, safety, or the general welfare.

A Drainage Summary letter indicates that standards have been met with the proposed stormwater design, which includes the installation of pervious paver systems and an underground filtration system. In addition, a landscaped buffer will be introduced the site. Overall the proposal will result in a reduction of impervious area and quantity of stormwater flowing from the site. The proposed project will improve, not overload, public utilities. The Board can find that this condition is met.

5. **Section 3.3.3.E.**
Any special regulations for the use as may be provided in the Bylaw are fulfilled.

As a condition of any decision for the proposed mixed-use building, the Applicant will need to fulfill the requirements of Section 8.2 which outline the affordable housing requirements. A building with 13 units requires two affordable units that are representative of the mix of units in the building available to eligible households making up to 70% of the area median income. There are no other special regulations for the use that must be fulfilled. The Board can find that this condition is met.

6. **Section 3.3.3.F.**
The requested use will not impair the integrity or character of the district or adjoining districts, nor be detrimental to the health or welfare.

The proposed building largely maintains the existing first floor façade, with the additional improvement of restoration of decorative cement work at 455 Massachusetts Avenue, which is currently obscured by an awning. The façade of the commercial storefronts at 2-14 Medford Street is proposed to be retained, preserving the historic aesthetic of the structure consistent with other buildings in the business district.

The redevelopment of the second story and conversion into housing units will not impair the integrity or character of the district or the adjoining districts and it will not be detrimental to health or welfare. The proposed structure is generally consistent with the Design Standards for the Town of Arlington.

The upper floor façade is comprised of white fiber cement panels along Massachusetts Avenue, and light green fiber cement panels along Medford Street. The building also includes differentiation of the upper story and variation in the façade with a shared roof deck at the intersection of Massachusetts Avenue and Medford Street, which is encouraged in the Arlington Design Standards. Along Medford Street, the design of the second story is compatible the Regent Theater and its adjacent properties directly across the street. Additionally, the applicant has agreed to make the Park Terrace façade available for public art or mural installations to improve the relationship with the streetscape. The Applicant has also proposed installation of a more permanent

outdoor seating area with a canopy for more comfortable and year-round outdoor seating for the community.

While both 455-457 Massachusetts Avenue and 4-14 Medford Street are in the Arlington Center Historic District, only 4-14 Medford Street is a contributing historic structure. Both structures are under the jurisdiction of the Arlington Historical Commission, who will need to review the building design.

Long-term indoor bicycle parking is accessed through either the lobby or behind the building, short-term outside bicycle parking is available along Park Terrace; structured and surface vehicular parking is located on the ground floor and accessed via Park Terrace.

The Applicant is proposing a floor area ratio (FAR) of 1.5. The existing building's FAR is 0.98. The Zoning Bylaw allows a maximum FAR of 1.5 for a mixed-use building on a lot less than 20,000 square feet in this zoning district. The maximum FAR of 1.5 is at odds with the maximum story and height allowed in the Zoning Bylaw of up to 5 stories and 60 feet respectively.

The proposed mixed-use building is in keeping with adjacent land uses, both Massachusetts Avenue and Medford Street include residential uses, including The Legacy across Massachusetts Avenue to the east and multifamily buildings along Medford Street. While it is desired to maintain or increase the amount of commercial space, new residential units will not impair the integrity or character of the district, or the adjoining districts and it will not be detrimental to health or welfare.

7. **Section 3.3.3.G.**
   The requested use will not, by its addition to a neighborhood, cause an excess of the use that could be detrimental to the character of said neighborhood.

   The use will not be in excess or detrimental to the character of the neighborhood. The Board can find this condition is met.

III. Environmental Design Review Standards (Arlington Zoning Bylaw, Section 3.4)

1. **EDR-1 Preservation of Landscape**
   The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soil removal, and any grade changes shall be in keeping with the general appearance of neighboring developed areas.

   The existing property is entirely impervious and there is no natural landscape to preserve with the building fully saturating the building lot. As part of the project, two areas of approximately 2,457 square feet of impervious material will be replaced with a landscaped buffer of perennials, flowering trees, and arborvitae and pervious walkways along the side property line and a landscaped walkway to the lobby. The new

landscaping will introduce a buffer from the rear parking lot of the property at 473-475 Massachusetts Ave. The Board can find that this condition is met.

2. **EDR-2 Relation of the Building to the Environment**

Proposed development shall be related harmoniously to the terrain and to the use, scale, and architecture of the existing buildings in the vicinity that have functional or visible relationship to the proposed buildings. The Arlington Redevelopment Board may require a modification in massing so as to reduce the effect of shadows on the abutting property in an R0, R1 or R2 district or on public open space.

There are a range of architectural styles and zoning districts in the vicinity. Building heights in the vicinity range from single-story to 11-stories. The ground floor storefronts will largely be preserved, however the transparency of the lobby for the apartment units will be reduced as the existing glass storefront will be reconstructed with three smaller windows. The applicant proposes to remove the awning and restore the concrete detailing above the façade at 455 Massachusetts Avenue storefront; the existing benches along Massachusetts Avenue will be maintained, and flower boxes and awnings will be added along the façade. The second floor façade maintains a commercial mixed-use appearance and roofline consistent with adjacent structures in the district.

The applicant seeks relief from required setbacks. The structure is on a corner lot and subject to Section 5.3.8.A, which states that the setback should be the same as an adjacent lot. On the Medford Street, the adjoining property is the Arlington Catholic High School in the R1 Zoning District, which has a significantly larger setback than the existing structure at 2-14 Medford St. The Board can adjust this requirement per Section 5.3.16. The Board can find that this condition is met.

3. **EDR-3 Open Space**

All open space (landscaped and usable) shall be so designed as to add to the visual amenities of the vicinity by maximizing its visibility for persons passing by the site or overlooking it from nearby properties. The location and configuration of usable open space shall be so designed as to encourage social interaction, maximize its utility and facilitate maintenance.

As noted above, the proposed project will add areas of landscaping to an existing impervious site. The proposal includes approximately 2,457 square feet of landscaped open space along the rear of the building, which also provides a buffer with the adjacent building at 473-475 Massachusetts Avenue. This provides about half of the 10% landscaped open space requirement. The usable open space is located on the roof deck and is approximately 2,140 square feet. This is only 9% of the usable open space requirement and does not meet all the requirements for usable open space.

Lastly, the applicant seeks relief from the required 15-foot buffer in Section 5.3.21, as a landscaped buffer is precluded by the applicant's need to provide parking on-site. The Board may determine that a waiver is required as the adjacent R1 site is occupied by the Arlington Catholic High School, which is not a "buildable residential lot."

4. **EDR-4 Circulation**

With respect to vehicular and pedestrian and bicycle circulation, including entrances, ramps, walkways, drives, and parking, special attention shall be given to location and number of access points to the public streets (especially in relation to existing traffic controls and mass transit facilities), width of interior drives and access points, general interior circulation, separation of pedestrian and vehicular traffic, access to community facilities, and arrangement of vehicle parking and bicycle parking areas, including bicycle parking spaces required by Section 6.1.12 that are safe and convenient and, insofar as practicable, do not detract from the use and enjoyment of proposed buildings and structures and the neighboring properties.

The proposed project includes a total of 16 vehicle and 34 bicycle parking spaces (see Site Development Plan Set, Sheet C-102). The ground-level garage will provide 14 spaces for vehicles, including one van-accessible HP vehicle space. Two surface parking spaces are located adjacent to the garage. Parking access is provided via a drive aisle from Park Terrace. The proposed number of vehicle parking spaces is an increase over the existing conditions; at present the site provides 14 parking spaces, eight of which are tandem spaces blocked by the other six spaces and none of which are HP spaces.

The parking requirement is for mixed-use which calculates the parking required for each individual use; the parking required for the residential use totals 15 parking spaces, and while the commercial, business, and retail space would typically require 27 parking spaces, the first 3,000 square feet of non-residential space in mixed-use buildings is exempt from the parking requirements per Section 6.1.10.C. The applicant is requesting a reduction in the number of parking spaces provided to 16 spaces per Section 6.1.5 of the Zoning Bylaw. As such, the Applicant should submit a Transportation Demand Management Plan.

Pedestrian circulation behind the building would be improved, as two pervious walkways connecting the rear of each storefront and the lobby to Park Terrace, as well as the trash and recycling area, are proposed. The sidewalk on Park Terrace should be reconstructed. Any potential improvements in the public right-of-way will require additional review and approval by the Engineering Division. Additionally, benches along Massachusetts Avenue, often used by individuals waiting at the adjacent bus stop, will remain. Planters along the Massachusetts Avenue façade and landscaping at the rear of the building will improve the human scale elements of the ground floor space.

Regarding bicycle parking, the applicant proposes both short-term and long-term bicycle parking exceeding the required minimum. Eight short-term spaces are provided off Park Terrace, one more than the minimum required. Indoor long-term bicycle parking is provided behind the lobby and accessible through the Massachusetts Avenue

entry or via a walkway behind the storefronts at 2-14 Medford Street; 26 spaces are proposed, five more than the minimum required. Bike rack specifications are needed to determine compliance with Section 6.1.12.E.

Vehicle Parking Requirements*			
Number of Bedrooms/ Apartment Use	**Number of Units**	**Zoning Requirement**	**Total Parking Required**
1-bedroom	12	1.15	14
Studio	1	1	1
Commercial	Square feet	Zoning Requirement	Total Parking Required
Service	5,377	1 per 300sf	18
Business	1,255	1 per 500sf	2.5
Retail	1,951	1 per 300sf	6.5
Total Required Vehicle Parking			**42**
Total Proposed Vehicle Parking after Section 6.1.5 Reduction			**32**
* First 3,000sf of non-residential space in mixed-use buildings is exempt.			

Bicycle Parking Requirements		
Use	**Short-Term Parking**	**Long-Term Parking**
Residential	1.3 spaces	19.5 spaces
Retail	5 spaces	1.1 spaces
Total Required Bicycle Parking	**7**	**21**
Total Proposed Bicycle Parking	8	**26**

The proposed project is highly accessible by transit, bike, and walking, and since there is a reduction in commercial space, it is likely that the aggregate number of trips to this location will be reduced. The provided parking is intended for residential tenants and not for patrons of the commercial space, with commercial tenants and visitors relying on on-street parking or the Russell Common Parking Lot. As such, the actual impact of the current trips is dispersed across Massachusetts Avenue, Medford Street, Broadway Plaza, and the Russell Common Parking Lot.

The applicant is seeking relief from the drive aisle dimensions described in Section 6.1.11.C(3). The parking garage provides a 20-foot drive aisle, less than the required 24-foot aisle necessary for two-way traffic. A formalized concrete drive apron is proposed to improve access to parking. Due to the existing street network and one-way condition on Park Terrace, parking would be accessed through the Russell Common Parking Lot, and vehicles would exit the site from Park Terrace onto Medford Street. It may be appropriate for the ARB to request a trip distribution analysis to assess how people will access this site. The ARB may also wish to request additional details on how service vehicles and delivery trucks would access the site.

5. **EDR-5 Surface Water Drainage**

Special attention shall be given to proper site surface drainage so that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Available Best Management Practices for the site should be employed, and include site planning to minimize impervious surface and reduce clearing and re-grading. Best Management Practices may include erosion control and stormwater treatment by means of swales, filters, plantings, roof gardens, native vegetation, and leaching catch basins. Stormwater should be treated at least minimally on the development site; that which cannot be handled on site shall be removed from all roofs, canopies, paved and pooling areas and carried away in an underground drainage system. Surface water in all paved areas shall be collected in intervals so that it will not obstruct the flow of vehicular or pedestrian traffic and will not create puddles in the paved areas. In accordance with Section 3.3.4., the Board may require from any Applicant, after consultation with the Director of Public Works, security satisfactory to the Board to ensure the maintenance of all stormwater facilities such as catch basins, leaching catch basins, detention basins, swales, etc. within the site. The Board may use funds provided by such security to conduct maintenance that the Applicant fails to do. The Board may adjust in its sole discretion the amount and type of financial security such that it is satisfied that the amount is sufficient to provide for any future maintenance needs.

The application materials, drainage summary letter, and site development plan show that surface water drainage will be improved through the installation of pervious pavers and an underground stormwater infiltration system that will receive reduce stormwater runoff from the site. In addition, approximately 1,008 square feet of presently impervious pavement will be replaced with landscaped areas. This is an improvement over the existing conditions. The proposed design complies with the Town's current stormwater bylaw. Final design materials must be submitted for review and approval by the Town Engineer.

6. **EDR-6 Utilities Service**

Electric, telephone, cable TV, and other such lines of equipment shall be underground. The proposed method of sanitary sewage disposal and solid waste disposal from all buildings shall be indicated.

All utility service will be provided through connections to existing utility lines adjacent to the site. The Board can find that this condition is met.

7. **EDR-7 Advertising Features**

The size, location, design, color, texture, lighting and materials of all permanent signs and outdoor advertising structures or features shall not detract from the use and enjoyment of proposed buildings and structures and the surrounding properties.

The application materials show a representative sign on one of the commercial storefronts. Any future signage would be subject to review by the Department of

Planning and Community Development, and possibly the Redevelopment Board, prior to the issuance of a sign permit. Additionally, lighting and any other potential outdoor features relative to the building should be provided.

8. **EDR-8 Special Features**

Exposed storage areas, exposed machinery installations, service areas, truck loading areas, utility buildings and structures, and similar accessory areas and structures shall be subject to such setbacks, screen plantings or other screening methods as shall reasonably be required to prevent their being incongruous with the existing or contemplated environment and the surrounding properties.

The roofing plan provided indicates that roof structures are appropriately set back and that a parapet and additional screening will provide screening of said structures. The site plan shows an enclosed dumpster and recycling area located adjacent to the surface parking. The existing businesses currently utilize Park Terrace for truck loading and unloading and for service deliveries. The Board can find that this condition is met.

9. **EDR-9 Safety**

With respect to personal safety, all open and enclosed spaces shall be designed to facilitate building evacuation and maximize accessibility by fire, police and other emergency personnel and equipment. Insofar as practicable, all exterior spaces and interior public and semi-public spaces shall be so designed to minimize the fear and probability of personal harm or injury by increasing the potential surveillance by neighboring residents and passersby of any accident or attempted criminal act.

The proposed building has been designed to meet all relevant health and safety codes. A lighting plan was not provided as part of the plan set. These details are needed to assess safety criteria and compliance.

10. **EDR-10 Heritage**

With respect to Arlington's heritage, removal or disruption of historic, traditional or significant uses, structures or architectural elements shall be minimized insofar as practical whether these exist on the site or on adjacent properties.

While both structures are part of the Arlington Center Historic District area, only 4-14 Medford Street is a contributing historic structure as identified on the *Inventory of Historically or Architecturally Significant Properties in the Town of Arlington*. Both structures are under the jurisdiction of the Arlington Historical Commission, which will need to review the building design.

11. **EDR-11 Microclimate**

With respect to the localized climatic characteristics of a given area, any development which proposes new structures, new hard surface, ground coverage or the installation of machinery which emits heat, vapor or fumes shall endeavor to

minimize insofar as practicable, any adverse impacts on light, air and water resources or on noise and temperature levels of the immediate environment.

Based upon materials provided in the application, there will be no adverse impacts on air and water resources or on temperature levels of the immediate environment. While the applicant states that they intend to minimize any adverse impact, additional plan details are needed regarding lighting and emissions from machinery located on the roof to determine any impacts on the immediate environment.

12. EDR-12 Sustainable Building and Site Design

Projects are encouraged to incorporate best practices related to sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. Applicants must submit a current Green Building Council Leadership in Energy and Environmental Design (LEED) checklist, appropriate to the type of development, annotated with narrative description that indicates how the LEED performance objectives will be incorporated into the project.

The proposed building generates a LEED score that demonstrates the building could qualify for LEED platinum certification. The Board can find that this condition is met.

IV. Findings

The following findings are for the Board's consideration:

1. The ARB finds that the project is consistent with Environmental Design Review per Section 3.4 of the Zoning Bylaw.
2. The ARB finds that the setbacks on Lake Street and Chandler Street are appropriate per Section 5.3.16.
3. The ARB finds that the two-story building will not adversely affect the adjacent R1 zoning districts per Section 5.3.19.
4. The ARB finds that the vehicle and bicycle parking improvements justify the parking reduction per Section 6.1.5.

V. Conditions

A. General

1. The final design, sign, exterior material, landscaping, and lighting plans shall be subject to the approval of the Arlington Redevelopment Board or administratively approved by the Department of Planning and Community Development. Any substantial or material deviation during construction from the approved plans and specifications is subject to the written approval of the Arlington Redevelopment Board.

2. Any substantial or material deviation during construction from the approved plans and specifications is subject to the written approval of the Arlington Redevelopment Board.

3. The Board maintains continuing jurisdiction over this permit and may, after a duly advertised public hearing, attach other conditions or modify these conditions as it deems appropriate in order to protect the public interest and welfare.

4. Snow removal from all parts of the site, as well as from any abutting public sidewalks, shall be the responsibility of the owner and shall be accomplished in accordance with Town Bylaws.

5. Trash shall be picked up only on Monday through Friday between the hours of 7:00 am and 6:00 pm. All exterior trash and storage areas on the property, if any, shall be properly screened and maintained in accordance with Article 30 of Town Bylaws.

6. The Applicant shall provide a statement from the Town Engineer that all proposed utility services have adequate capacity to serve the development. The applicant shall provide evidence that a final plan for drainage and surface water removal has been reviewed and approved by the Town Engineer.

7. Upon installation of landscaping materials and other site improvements, the Applicant shall remain responsible for such materials and improvement and shall replace and repair as necessary to remain in compliance with the approved site plan.

8. All utilities serving or traversing the site (including electric, telephone, cable, and other such lines and equipment) shall be underground.

9. Upon the issuance of the building permit the Applicant shall file with the Building Inspector and the Department of Community Safety the names and telephone numbers of contact personnel who may be reached 24 hours each day during the construction period.

10. Building signage will be filed with and reviewed and approved by the Department of Planning and Community Development and Inspectional Services.

B. Special Conditions

1. The owner will work with the Department of Planning and Community Development to comply with all requirements of Section 8.2, Affordable Housing Requirements.

2. The affordable units must be equitably dispersed throughout the building and shall be comparable to market-rate units in terms of location, quality and character, room size, number of rooms, number of bedrooms, and external appearance.

3. An Affordable Housing Deed Restriction shall be executed with the Town prior to issuance of an Occupancy Permit for the two affordable units.

4. No condominium conversion of said affordable rental units shall be permitted without the express permission of this Board. In the case of a proposed condominium conversion, Applicant shall work with the Department of Planning and Community Development to ensure that the units continue to meet the requirements of Section 8.2.

DUPLICATE

TOWN OF ARLINGTON

TOWN CLERK

Date August 30, 2021

Rec'd from 2-14 Medford Street, LLC

Address 455 Massachusetts Avenue, Suite 1

Arlington, MA 02474

By jaw

		AMOUNT	
	Certificate		
	Marriage Int.		
	Fin. Statement		
	Pole Location		
	Garage Renewal		
	Misc. Books		
	Sporting Licenses		
	Dup. Dog Tags		
	Dog Licenses		
	Citation #		
1	Misc. Licenses / Permits EDR	4,510.	00

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Docket 3673

TOWN OF ARLINGTON
REDEVELOPMENT BOARD

PLANNING & COMMUNITY DEVELOPMENT
2021 AUG 27 A 11:06

Application for Special Permit In Accordance with Environmental Design Review Procedures (Section 3.4 of the Zoning Bylaw)

Docket No. 3673

1. Property Address 455-457 Massachusetts Avenue & 2-14 Medford Street
Name of Record Owner(s) 2-14 Medford Street, LLC Phone 781-654-6306
Address of Owner 455 Massachusetts Avenue, Ste 1, Arlington, MA 02474
Street City, State, Zip

2. Name of Applicant(s) (if different than above) Same as above
Address _____ Phone _____
Status Relative to Property (occupant, purchaser, etc.) _____

3. Location of Property Map 45, Lots 4-5.a
Assessor's Block Plan, Block, Lot No.

4. Deed recorded in the Registry of deeds, Book _____, Page _____;
-or- registered in Land Registration Office, Cert. No. 7802C, in Book 1523, Page 99.

RECEIVED
2021 AUG 30 AM 12:55
TOWN CLERK'S OFFICE
ARLINGTON, MA 02476

5. Present Use of Property (include # of dwelling units, if any) Retail, Service, Restaurant

6. Proposed Use of Property (include # of dwelling units, if any) Mixed-Use Apartment Units & Retail, Service, Restaurant

7. Permit applied for in accordance with the following Zoning Bylaw section(s)

section(s)	title(s)
	See Exhibit "A" attached

8. Please attach a statement that describes your project and provide any additional information that may aid the ARB in understanding the permits you request. Include any reasons that you feel you should be granted the requested permission.
See attached

(In the statement below, strike out the words that do not apply)

The applicant states that 2-14 Medford Street, LLC is the owner -or- occupant -or- purchaser under agreement of the property in Arlington located at 455-457 Massachusetts Avenue & 2-14 Medford Street which is the subject of this application; and that unfavorable action -or- no unfavorable action has been taken by the Zoning Board of Appeals *on a similar application regarding this property within the last two years.* The applicant expressly agrees to comply with any and all conditions and qualifications imposed upon this permission, either by the Zoning Bylaw or by the Redevelopment Board, should the permit be granted.

Signature of Applicant(s)

1171 Massachusetts Avenue, Arlington, MA 02476 781-646-4911
Address Phone

Exhibit A to Application for Special Permit
in Accordance with Environmental Design Review
455-457 Massachusetts Avenue
Arlington, MA

7. Permit applied for in accordance with the following Zoning Bylaw section(s):

3.4	Environmental Design Review
5.5.2	Dimensional and Density Regulations
SP	(Mixed Use <=20,000 SF)
6.12.5	Parking Reduction in a Business Zone
6.1.11	Parking Standards
5.3.21	Screening and Buffer Requirements
5.3.16	Setback Requirements
5.3.19	Reduced Height Buffer Area
5.3.8	Corner Lot Requirements
5.2.4	Multiple Principal Uses

Town of Arlington Redevelopment Board
Application for Special Permit in accordance with
Environmental Design Review (Section 3.4)

Required Submittals Checklist

Two full sets of materials and one electronic copy are required. A model may be requested. Review the ARB's Rules and Regulations, which can be found at arlingtonma.gov/arb, for the full list of required submittals.

__X__ Dimensional and Parking Information Form (see attached)

__X__ Site plan of proposal

__N/A__ Model, if required

__X__ Drawing of existing conditions

__X__ Drawing of proposed structure

__X__ Proposed landscaping. May be incorporated into site plan

__X__ Photographs

__X__ Impact statement

__N/A__ Application and plans for sign permits

__X__ Stormwater management plan (for stormwater management during construction for projects with new construction

FOR OFFICE USE ONLY

_____ Special Permit Granted Date: _____

_____ Received evidence of filing with Registry of Deeds Date: _____

_____ Notified Building Inspector of Special Permit filing Date: _____

TOWN OF ARLINGTON
REDEVELOPMENT BOARD
Petition for Special Permit under Environmental Design Review (see Section 3.4 of the Arlington Zoning Bylaw for Applicability)

For projects subject to Environmental Design Review, (see Section 3.4), please submit a statement that completely describes your proposal, and addresses each of the following standards.

1. Preservation of Landscape. The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soil removal, and any grade changes shall be in keeping with the general appearance of neighboring developed areas.

2. Relation of Buildings to Environment. Proposed development shall be related harmoniously to the terrain and to the use, scale, and architecture of existing buildings in the vicinity that have functional or visual relationship to the proposed buildings. The Arlington Redevelopment Board may require a modification in massing to reduce the effect of shadows on abutting property in an R0, R1 or R2 district or on public open space.

3. Open Space. All open space (landscaped and usable) shall be so designed as to add to the visual amenities of the vicinity by maximizing its visibility for persons passing the site or overlooking it from nearby properties. The location and configuration of usable open space shall be so designed as to encourage social interaction, maximize its utility, and facilitate maintenance.

4. Circulation. With respect to vehicular, pedestrian and bicycle circulation, including entrances, ramps, walkways, drives, and parking, special attention shall be given to location and number of access points to the public streets (especially in relation to existing traffic controls and mass transit facilities), width of interior drives and access points, general interior circulation, separation of pedestrian and vehicular traffic, access to community facilities, and arrangement of vehicle parking and bicycle parking areas, including bicycle parking spaces required by Section 8.13 that are safe and convenient and, insofar as practicable, do not detract from the use and enjoyment of proposed buildings and structures and the neighboring properties.

5. Surface Water Drainage. Special attention shall be given to proper site surface drainage so that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Available Best Management Practices for the site should be employed, and include site planning to minimize impervious surface and reduce clearing and re-grading. Best Management Practices may include erosion control and storm water treatment by means of swales, filters, plantings, roof gardens, native vegetation, and leaching catch basins. Storm water should be treated at least minimally on the development site; that which cannot be handled on site shall be removed from all roofs, canopies, paved and pooling areas and carried away in an underground drainage system. Surface water in all paved areas shall be collected at intervals so that it will not obstruct the flow of vehicular or pedestrian traffic, and will not create puddles in the paved areas.

   In accordance with Section 3.3.4, the Board may require from any applicant, after consultation with the Director of Public Works, security satisfactory to the Board to insure the maintenance of all storm water facilities such as catch basins, leaching catch basins, detention basins, swales, etc. within the site. The Board may use funds provided by such security to conduct maintenance that the applicant fails to do. The Board may adjust in its sole discretion the amount and type of financial security such that it is satisfied that the amount is sufficient to provide for the future maintenance needs.

6. Utility Service. Electric, telephone, cable TV and other such lines and equipment shall be underground. The proposed method of sanitary sewage disposal and solid waste disposal from all buildings shall be indicated.

7. Advertising Features. The size, location, design, color, texture, lighting and materials of all permanent signs and outdoor advertising structures or features shall not detract from the use and enjoyment of proposed buildings and structures and the surrounding properties. Advertising features are subject to the provisions of Section 6.2 of the Zoning Bylaw.

8. Special Features. Exposed storage areas, exposed machinery installations, service areas, truck loading areas, utility buildings and structures, and similar accessory areas and structures shall be subject to such setbacks, screen plantings or other screening methods as shall reasonably be required to prevent their being incongruous with the existing or contemplated environment and the surrounding properties.

9. Safety. With respect to personal safety, all open and enclosed spaces shall be designed to facilitate building evacuation and maximize accessibility by fire, police, and other emergency personnel and equipment. Insofar as practicable, all exterior spaces and interior public and semi-public spaces shall be so designed as to minimize the fear and probability of personal harm or injury by increasing the potential surveillance by neighboring residents and passersby of any accident or attempted criminal act.

10. Heritage. With respect to Arlington's heritage, removal or disruption of historic, traditional or significant uses, structures, or architectural elements shall be minimized insofar as practicable, whether these exist on the site or on adjacent properties.

11. Microclimate. With respect to the localized climatic characteristics of a given area, any development which proposes new structures, new hard-surface ground coverage, or the installation of machinery which emits heat, vapor, or fumes, shall endeavor to minimize, insofar as practicable, any adverse impact on light, air, and water resources, or on noise and temperature levels of the immediate environment.

12. Sustainable Building and Site Design. Projects are encouraged to incorporate best practices related to sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. Applicants must submit a current Green Building Council Leadership in Energy and Environmental Design (LEED) checklist, appropriate to the type of development, annotated with narrative description that indicates how the LEED performance objectives will be incorporated into the project. [LEED checklists can be found at http://www.usgbc.org/DisplayPage.aspx?CMSPageID=220b]

In addition, projects subject to Environmental Design Review must address and meet the following Special Permit Criteria (see Section 3.3.3 of the Zoning Bylaw):

1. The use requested is listed as a special permit in the use regulations for the applicable district or is so designated elsewhere in this Bylaw.

2. The requested use is essential or desirable to the public convenience or welfare.

3. The requested use will not create undue traffic congestion or unduly impair pedestrian safety.

4. The requested use will not overload any public water, drainage or sewer system or any other municipal system to such an extent that the requested use or any developed use in the immediate area or in any other area of the Town will be unduly subjected to hazards affecting health, safety or the general welfare.

5. Any special regulations for the use as may be provided in this Bylaw are fulfilled.

6. The requested use will not impair the integrity or character of the district or adjoining districts, nor be detrimental to the health, morals, or welfare.

7. The requested use will not, by its addition to a neighborhood, cause an excess of the particular use that could be detrimental to the character of said neighborhood.

TOWN OF ARLINGTON
Dimensional and Parking Information
for Application to
The Arlington Redevelopment Board

Docket No. _____

Property Location 455-457 Massachusetts Ave

Zoning District B3

Owner: 2-14 Medford Street, LLC

Address: 455 Massachusetts Ave, Arlington, MA

Present Use/Occupancy: No. of Dwelling Units:
Retail, Service, Restaurant

Uses and their gross square feet:
2-Story 18,588 GSF

Proposed Use/Occupancy: No. of Dwelling Units:
Mixed-Use, 13 Apartment Units & Retail, Service, Restaurant

Uses and their gross square feet:
2-Story Mixed-Use, 28,373 GSF

	Present Conditions	Proposed Conditions	Min. or Max. Required by Zoning for Proposed Use
Lot Size	18,929 SF	18,929 SF	min. ----
Frontage	124.8 FT	124.8 FT	min. 50 FT
Floor Area Ratio	0.98	1.5	max. 1.5
Lot Coverage (%), where applicable	N/A	N/A	max. ----
Lot Area per Dwelling Unit (square feet)	N/A	N/A	min. ----
Front Yard Depth (feet)	0 FT	0 FT	min. 0 FT
Side Yard Width (feet) right side	-----	-----	min. -----
left side	0 FT	0 FT	min. 0 FT
Rear Yard Depth (feet)	0.6 FT	0.6 FT	min. (H+L)/6
Height	----	-----	min. -----
Stories	2-STORY	2-STORY	stories 5-STORY
Feet	<35 FT	<35 FT	feet 60 FT
Open Space (% of G.F.A.)	-----	-----	min. -----
Landscaped (square feet)	0 %	24.1 %	(s.f.) 10% 1,021 SF
Usable (square feet)	0 %	0 %	(s.f.) 20% 2,042 SF
Parking Spaces (No.)	14*	16	min. 31.9
Parking Area Setbacks (feet), where applicable	N/A	N/A	min. N/A
Loading Spaces (No.)	N/A	N/A	min. N/A
Type of Construction	NEW CONSTRUCTION		
Distance to Nearest Building	0 FT	0 FT	min.

2,457 SF/10,211SF (Res. Floor Area)

10,211 SF (Res. Floor Area) X 0.10 = 1,021 SF

10,211 SF (Res. Floor Area) X 0.20 = 2,042 SF

*8 SPACES FROM THE EXSITING 14 SPACES ARE TANDOM SPACES, BLOCKED IN BY THE OTHER 6.

Updated August 28, 2018

TOWN OF ARLINGTON
REDEVELOPMENT BOARD

Petition for Special Permit under Environmental Design Review (see Section 3.4 of the Arlington Zoning Bylaw for Applicability)

For projects subject to Environmental Design Review, (see Section 3.4), please submit a statement that completely describes your proposal, and addresses each of the following standards.

1. Preservation of Landscape. The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soil removal, and any grade changes shall be in keeping with the general appearance of neighboring developed areas.

There is no existing landscaping on-site and the proposed design will introduce an arborvitae row, shrubs, and Serviceberry tree along Park Terrace, See Allen & Major Associates, Inc planting schedule – trees, shrubs, groundcovers, and perennials dated August 20, 2021, Landscape Plan No. L-101 as part of the Applicant's submission. The existing street trees along Mass Ave will be protected and maintained. Also, the proposed design has been graded to closely match the existing building.

2. Relation of Buildings to Environment. Proposed development shall be related harmoniously to the terrain and to the use, scale, and architecture of existing buildings in the vicinity that have functional or visual relationship to the proposed buildings. The Arlington Redevelopment Board may require a modification in massing to reduce the effect of shadows on abutting property in an RO, R1 or R2 district or on public open space.

The proposed construction has been developed in a manner consistent with the existing building structures at the site and to the use, scale, and architecture of existing building in the vicinity of the property that have functional or visual relationship to the proposed construction. No part of the proposed structure is higher than the existing structure. Shadows from the proposed structure will not have an adverse impact on any Residential (R) use.

3. Open Space. All open space (landscaped and usable) shall be so designed as to add to the visual amenities of the vicinity by maximizing its visibility for persons passing the site or overlooking it from nearby properties. The location and configuration of usable open space shall be so designed as to encourage social interaction, maximize its utility, and facilitate maintenance.

The existing site has no open space. The Applicant proposes to add 2,457 square feet of landscaped open space. This area includes planted areas and pervious

paver systems. This area has been calculated to 24.1% of the residential floor area.

4. Circulation. With respect to vehicular, pedestrian and bicycle circulation, including entrances, ramps, walkways, drives, and parking, special attention shall be given to location and number of access points to the public streets (especially in relation to existing traffic controls and mass transit facilities), width of interior drives and access points, general interior circulation, separation of pedestrian and vehicular traffic, access to community facilities, and arrangement of vehicle parking and bicycle parking areas, including bicycle parking spaces required by Section 8.13 that are safe and convenient and, insofar as practicable, do not detract from the use and enjoyment of proposed buildings and structures and the neighboring properties.

The existing parking situation is not functional. 8 spaces from the existing 14 spaces are tandem spaces blocked in by other 6 spaces. The proposed layout provides a functional 16 spaces.

5. Surface Water Drainage. Special attention shall be given to proper site surface drainage so that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Available Best Management Practices for the site should be employed and include site planning to minimize impervious surface and reduce clearing and re-grading. Best Management Practices may include erosion control and storm water treatment by means of swales, filters, plantings, roof gardens, native vegetation, and leaching catch basins. Storm water should be treated at least minimally on the development site; that which cannot be handled on site shall be removed from all roofs, canopies, paved and pooling areas and carried away in an underground drainage system. Surface water in all paved areas shall be collected at intervals so that it will not obstruct the flow of vehicular or pedestrian traffic and will not create puddles in the paved areas.

Surface water drainage at the site will be improved with the installation of pervious paver systems and an underground infiltration system. These systems will receive clean roof runoff for storm water recharge and greatly reduce the quantity of stormwater runoff from the parcel.

The proposed work will also result in approximately 1,008 square feet of impervious material being replaced with landscaped areas. See Allen & Major Associates, Inc. letter to the Director of Planning & Community Development dated August 20, 2021.

In accordance with Section 3.3.4, the Board may require from any applicant, after consultation with the Director of Public Works, security satisfactory to the Board to insure the maintenance of all storm water facilities such as catch basins, leaching catch basins, detention basins, swales, etc. within the site. The Board may use funds provided by such security to conduct maintenance that the applicant fails to do. The Board may

adjust in its sole discretion the amount and type of financial security such that it is satisfied that the amount is sufficient to provide for the future maintenance needs.

6. Utility Service. Electric, telephone, cable TV and other such lines and equipment shall be underground. The proposed method of sanitary sewage disposal and solid waste disposal from all buildings shall be indicated.

Utility service would be through a tie into existing utility lines at the site.

7. Advertising Features. The size, location, design, color, texture, lighting and materials of all permanent signs and outdoor advertising structures or features shall not detract from the use and enjoyment of proposed buildings and structure and the surrounding properties. Advertising features are subject to the provisions of Section 6.2 of the Zoning Bylaw.

Any proposed relief with respect to advertising signage will be initially through the Planning Department for the purpose of determining whether any signage issues can be handled administratively or whether those issues need to go before the ARB.

8. Special Features. Exposed storage areas, exposed machinery installations, service areas, truck loading areas, utility buildings and structures, and similar accessory areas and structures shall be subject to such setbacks, screen plantings or other screening methods as shall reasonably be required to prevent their being incongruous with the existing or contemplated environment and the surrounding properties.

9. Safety. With respect to personal safety, all open and enclosed spaces shall be designed to facilitate building evacuation and maximize accessibility by fire, police, and other emergency personnel and equipment. Insofar as practicable, all exterior spaces and interior public and semi-public spaces shall be so designed as to minimize the fear and probability of personal harm or injury by increasing the potential surveillance by neighboring residents and passersby of any accident or attempted criminal act.

With respect to personal safety all open and enclosed spaces have been designed to facilitate building evacuation and maximize accessibility by fire, police, and other emergency personnel and equipment. All spaces have been designed to comply with applicable codes and ordinances.

10. Heritage. With respect to Arlington's heritage, removal, or disruption of historic, traditional, or significant uses, structures, or architectural elements shall be minimized insofar as practicable, whether these exist on the site or on adjacent properties.

The Applicant understands that it will need to appear before the Arlington Historical Commission with respect to its plans as both structures i.e., the Massachusetts Avenue structure and the 4-14 Medford Street structure are part of

the Arlington Center Historic District, although only the 4-14 Medford Street structure is a contributing historic structure.

11. Microclimate. With respect to the localized climatic characteristics of a given area, any development which proposes new structures, new hard-surface ground coverage, or the installation of machinery which emits heat, vapor, or fumes, shall endeavor to minimize, insofar as practicable, any adverse impact on light, air, and water resources, or on noise and temperature levels of the immediate environment.

Adequate provision has been made for any emission of heat vapor fumes from the property so as to endeavor to minimize, insofar as practicable, any adverse impact on light, air and water resources, or noise and temperature levels of the immediate environment.

12. Sustainable Building and Site Design. Projects are encouraged to incorporate best practices related to sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. Applicants must submit a current Green Building Council Leadership in Energy and Environmental Design (LEED) checklist, appropriate to the type of development, annotated with narrative description that indicates how the LEED performance objectives will be incorporated into the project. [LEED checklists can be found at http://www.usgbc.org/DisplayPage.aspx?CMSPageID=220b]

See LEED submission for the project dated August 11, 2021, as part of the Applicant's submission.

In addition, projects subject to Environmental Design Review must address and meet the following Special Permit Criteria (see Section 3.3.3 of the Zoning Bylaw):

1. The use requested is listed as a special permit in the use regulations for the applicable district or is so designated elsewhere in this Bylaw.

The use requested is listed as a Special Permit in the use regulations for the applicable district. See Section 5.5.2 (a) Districts and Uses contained within the Zoning Bylaw.

2. The requested use is essential or desirable to the public convenience or welfare.

The requested use is essential or desirable to the public convenience or welfare because a portion of the property has been vacant for a substantial period of time within Arlington Center and the proposal seeks to add a restaurant use as well as residential use to the site on mixed-use basis which comports with the provisions of the Master Plan.

3. The requested use will not create undue traffic congestion or unduly impair pedestrian safety.

The requested use will not create undue traffic congestion or unduly impair pedestrian safety as indicated within the substance of the Applicant's plans.

4. The requested use will not overload any public water, drainage or sewer system or any other municipal system to such an extent that the requested use or any developed use in the immediate area or in any other area of the Town will be unduly subjected to hazards affecting health, safety, or the general welfare.

The requested use will not overload any public water, drainage or sewer system or any municipal system.

5. Any special regulations for the use as may be provided in this Bylaw are fulfilled.

Any special regulations for the use as may be provided for in the Bylaw are fulfilled.

6. The requested use will not impair the integrity or character of the district or adjoining districts, nor be detrimental to the health, morals, or welfare.

The requested use will not impair the integrity or character of the district or adjoining districts, nor be detrimental to the health, morals, or welfare, but rather it will enhance the integrity and character of the district and adjoining districts because of the addition of a restaurant use as well as more residential use which again comports with the substance Master Plan and the design of the changes to

the existing building do not result in massing issues but rather is compatible with the physical characteristics of other buildings in the neighborhood of the property.

7. The requested use will not, by its addition to a neighborhood, cause an excess of the particular use that could be detrimental to the character of said neighborhood.

The requested use will not, by its addition to a neighborhood, cause an excess of that use which could be detrimental to the character of said neighborhood because the requested use will enhance the character of the neighborhood because of the nature and type of the construction which will fit in nicely with adjoining structures in the district.

455-457 Massachusetts Avenue

Arlington, MA

Environmental Impact Statement

The Petitioner is requesting a Special Permit for a mixed-use development project at 455-457 Massachusetts Avenue and 4-14 Medford Street.

The site is located on the corner of Medford Street and Massachusetts Avenue in a B3 zone and there is an existing curb cut to the parcel located off of Park Terrace to the rear of the parcel.

The lot size is 18,929 square feet and the property has frontage of 124.8 feet on both Massachusetts Avenue and Medford Street while zoning requires 50 feet.

The changes to the building will result in a mixed-use building containing thirteen (13) apartment units with a retail, service and restaurant component with the gross square feet of the mixed-use building containing 28,373 square feet.

The floor area ration is presently 0.98 and the proposed FAR is 1.5 and the requirement for zoning is 1.5.

There is a zero-foot front yard setback and there is zero right and left side setback.

The rear yard depth is 0.6 feet, and the proposed rear yard depth will also be 0.6 feet.

The current height of the building is a two-story building, and the proposed height would also be a two-story building while zoning in the B3 zone would allow a five-story height.

The height in feet of the existing building is 35 feet and the proposed height would also be 35 feet while zoning would allow 60 feet.

There is presently no open space at the site and the Petitioner's plans propose to add 2,457 square feet of landscaped open space including planted areas and pervious paver systems which would result in the landscaped open space having a percentage of 24.1% of the residential floor area.

There is no existing usable open space and there is no ability to create usable open space and it would be the Petitioner's position that the existing building is non-conforming with respect to the usable open space requirement contained in the zoning

bylaw and the proposed changes to the building do not increase the non-conformity to the extent that the non-conformity with respect to usable open space is extinguished.

There are presently fourteen (14) parking spaces at the site and sixteen (16) are proposed while zoning requires 30.19 parking spaces. Petitioner will be seeking zoning relief with respect to Section 6.1.5 (c) of the zoning bylaw with regard to a reduction in the parking requirement in accordance with the transportation demand management provisions of the zoning bylaw.

Waivers are being requested with respect Section 6.1.11 – Parking Standards - Petitioner is requesting that the drive aisle width requirement be reduced from 24 feet to 20 feet as well as a reduction in the amount of parking spaces required and the manner of which parking will occur on the site.

A waiver is also being requested in connection with 5.3.21 – the screening and buffering requirements contained in the bylaw as the Petitioner's proposed plans do not allow for the required buffer along the rear of the lot abutting the R1 zone.

A waiver is also being requested in connection with Section 5.3.16 – Setback Requirements – which section gives the ARB the authority to grant a special permit to adjust the required setbacks contained in the bylaw to account for specific conditions unique to the proposal.

It is Petitioner's position that the existing configuration of the lot and the plans to not change the character of the site significantly would represent conditions unique to the proposal allowing the ARB to grant relief with respect to this section of the bylaw.

Relief is also sought from the provisions of Section 5.3.19, i.e., reduced height buffer. It is the Petitioner's position that if this waiver is required, it may already be complying with its provisions as its plans will have no adverse effect on abutting uses (school, church) in the R1 district.

Relief is also sought from Section 3.3.8, the corner lot requirement contained in the bylaw.

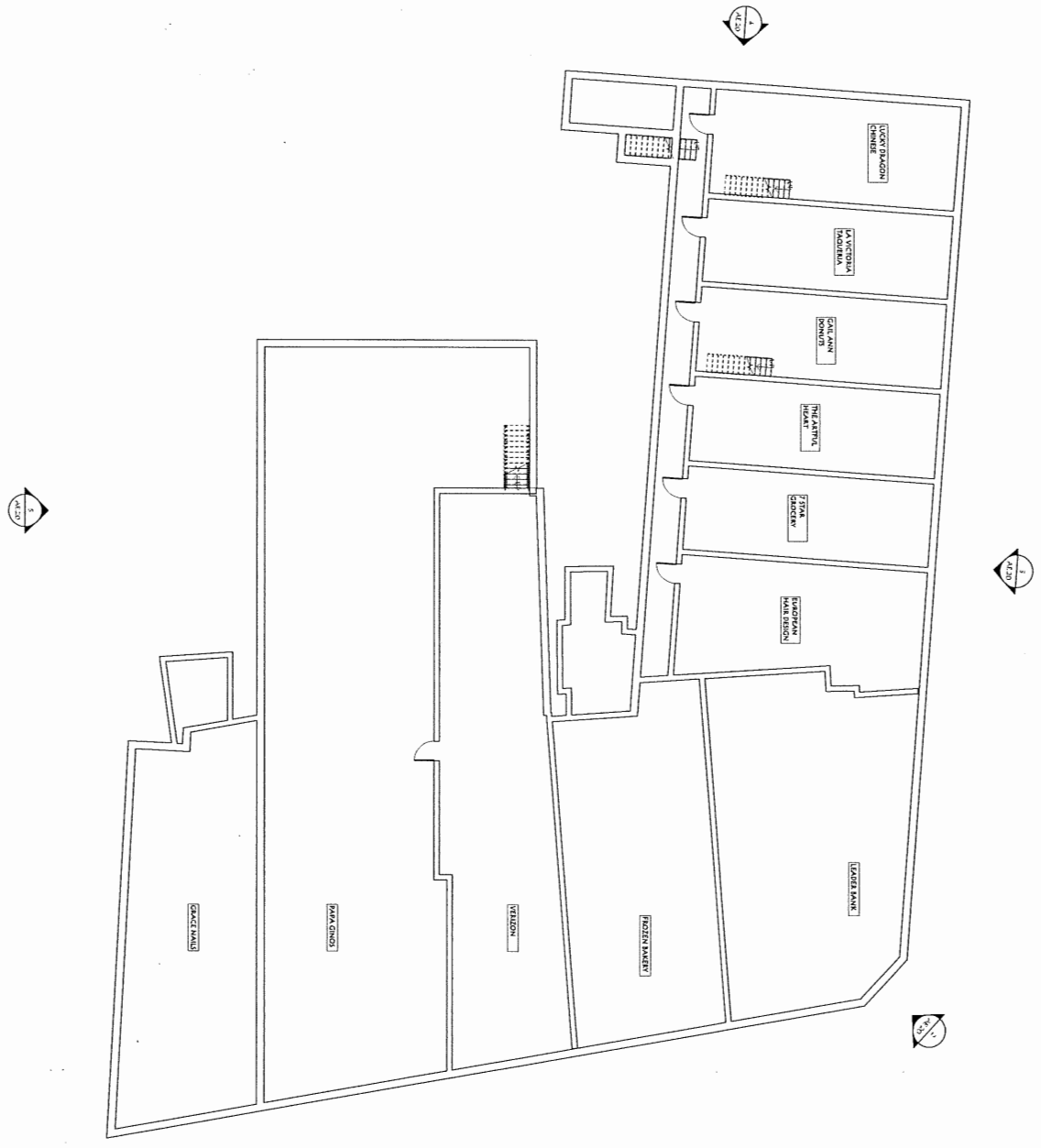
Relief would also be sought, if necessary, from the provisions of Section 5.2.4, the multiple principal use section of the zoning bylaw as there will be two uses with respect to the property, i.e., a commercial use as well as a residential use.

Petitioner is providing covered bicycle parking and storage and is prepared to provide bicycle sharing on site and would be open to other means acceptable to the ARB with respect to satisfying the provisions of the transportation demand management provisions of the zoning bylaw.

It is the Petitioner's position that its proposal if approved by the ARB will result in a welcome addition to the heart of Arlington Center, large portions of which have fallen into disuse over many years as the design will add thirteen (13) residential apartments which could be a step toward enlivening retail activity in Arlington Center, an element which has been sorely missed for many years.

It is also the Petitioner's position that its planned design will have no adverse environmental impact upon the neighborhood in which the property is located but rather will result in an improvement to the neighborhood by adding a mix of residential and commercial uses at the site comporting with objectives set forth within the substance of Master Plan.

1 BASEMENT FLOOR PLAN
1/8" = 1'-0"



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	Drawn By:	VLA, WCB	
	Checked By:	Checker	
AE.00	Project No.:	202034	
	Date:	07/27/20	

455 MASSACHUSETTS AVENUE

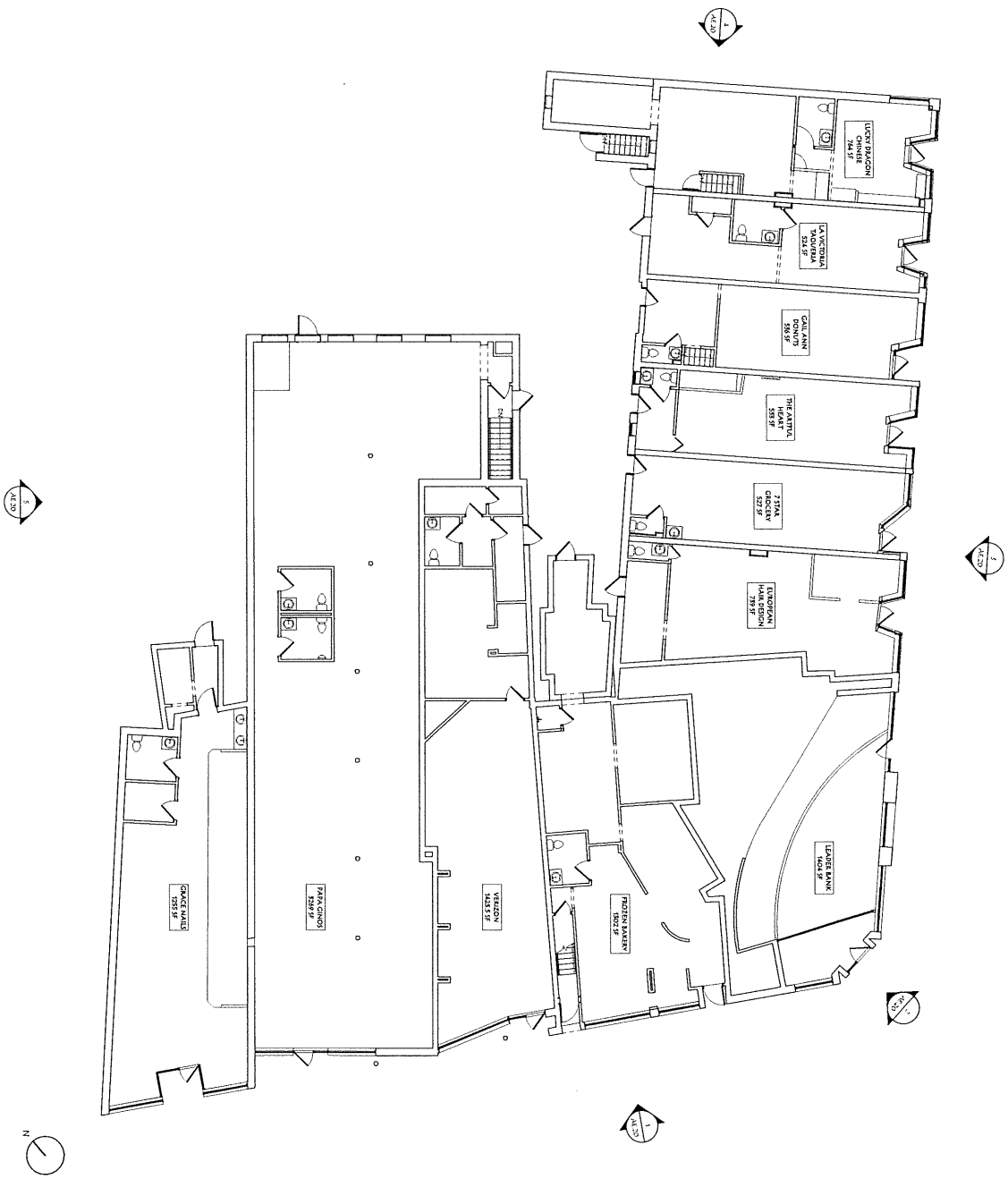
455 MASSACHUSETTS AVENUE
ARLINGTON, MA

NOT FOR CONSTRUCTION

MARKET SQUARE ARCHITECTS
104 Congress St., STE 201
Portsmouth, NH 03801
TEL: 603.501.0202

 8/19/2021 9:51:07 PM

1 EXISTING FIRST FLOOR PLAN
1/8" = 1'-0"



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	Drawn By:	VLA, WCB	
	Checked By:	Checker	
AE.01	Project No.:	202034	
	Date:	07/27/20	

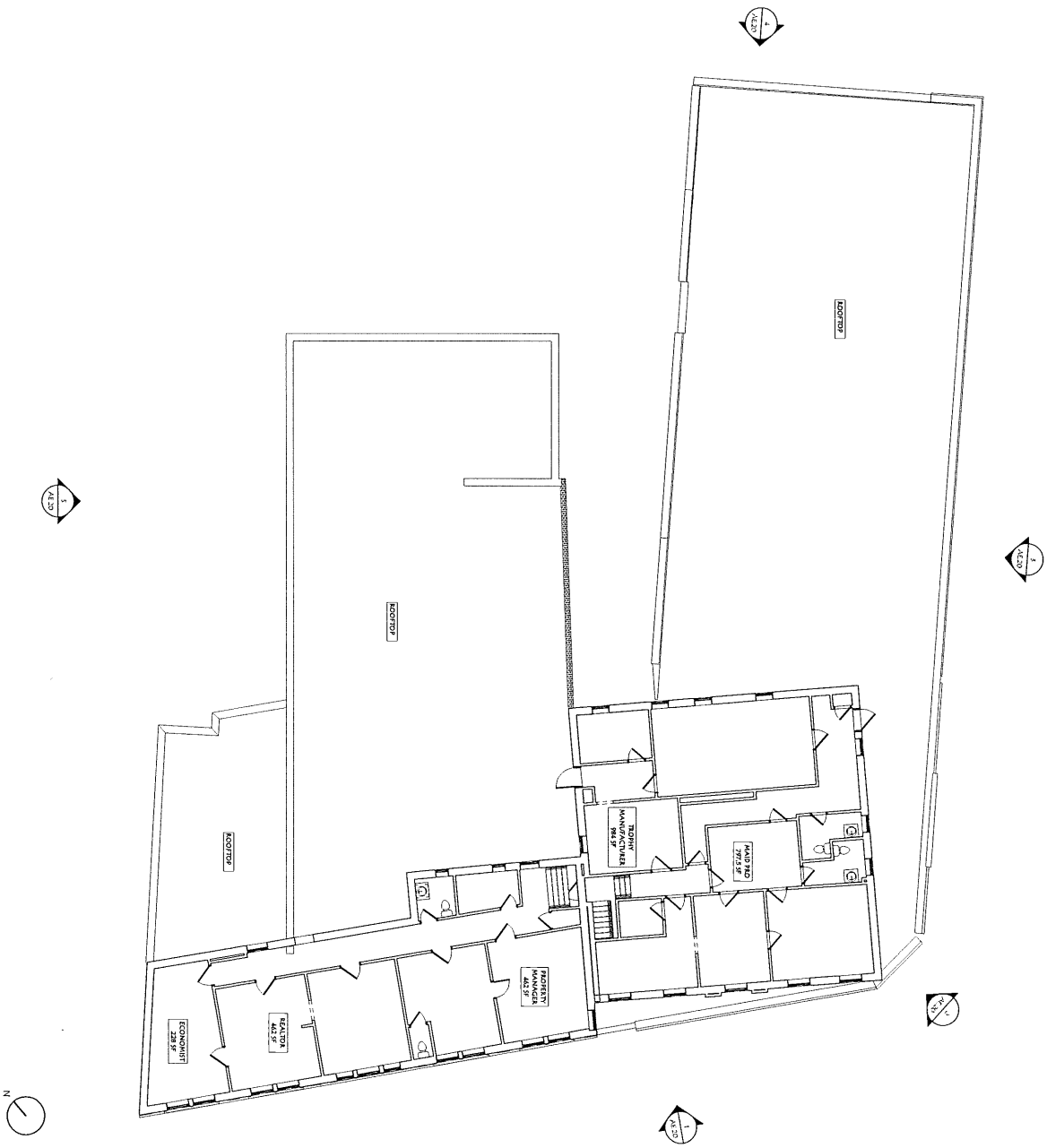
455 MASSACHUSETTS AVENUE

455 MASSACHUSETTS AVENUE
ARLINGTON, MA

NOT FOR CONSTRUCTION

MARKET SQUARE ARCHITECTS
104 Congress St., STE 205
Portsmouth, NH 03801
PH. 603.969.0202

1 EXISTING SECOND FLOOR PLAN



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AE.02	Drawn By: VLA, WCB		455 MASSACHUSETTS AVENUE ARLINGTON, MA
	Checked By: Checker		NOT FOR CONSTRUCTION
	Project No.: 202034		MARKET SQUARE ARCHITECTS 104 Congress St., STE 204 Portsmouth, NH 03801 PH. 603 501 0202
	Date: 07/27/20		

 8/15/2021 8:51:07 PM

1 BASEMENT
SCALE: 3/32" = 1'-0"

Title: OVERALL FOUNDATION FLOOR PLAN

A1.00

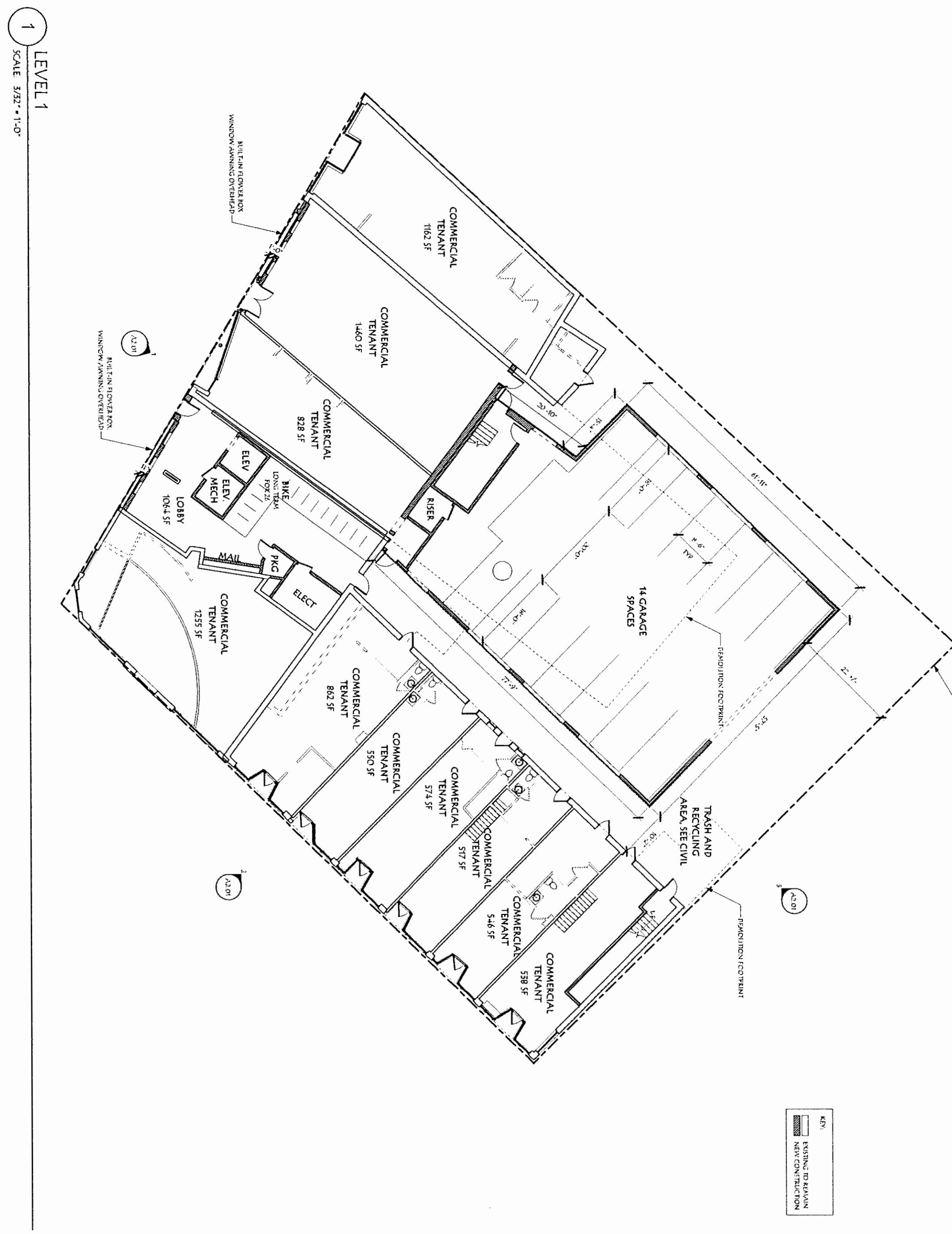
Scale:	As indicated
Drawn by:	PPS
Checked by:	ALW
Project No.:	2020051
	SCHEMATIC DESIGN
Date	08/20/21

Revisions
No. Description Date

NOT FOR CONSTRUCTION

ARLINGTON MIXED USE
455 MASS AVE
ARLINGTON, MA

ARCHITECTS
104 Congress St, STE 205
Portsmouth, NH 03801
PH: 603.501.0202



Title: OVERALL FIRST FLOOR PLAN	Scale: As indicated	Revisions: Description Date	NOT FOR CONSTRUCTION	ARLINGTON MIXED USE
	Drawn By: PPS			
	Checked By: ALW			455 MASS AVE
A1.01	Project No.: 2020034			ARLINGTON, MA
	SCHEMATIC DESIGN			
	Date: 08/20/21			

MARKET SQUARE ARCHITECTS
104 Congress St., STE 203
Portsmouth, NH 03801
PH: 603 501 0202

UNIT MATRIX:

		#	%
TOTAL:			
	STUDIO	1 UNIT	8%
	1 BED	12 UNITS	92%
	TOTAL	13 UNITS	

NOTE:
PRELIMINARY INTERNAL UNIT LAYOUT SHOWN. FINAL LAYOUT MAY VARY

1 LEVEL 2
SCALE: 3/32" = 1'-0"

ARLINGTON MIXED USE

455 MASS AVE
ARLINGTON, MA

NOT FOR CONSTRUCTION

MARKET SQUARE ARCHITECTS

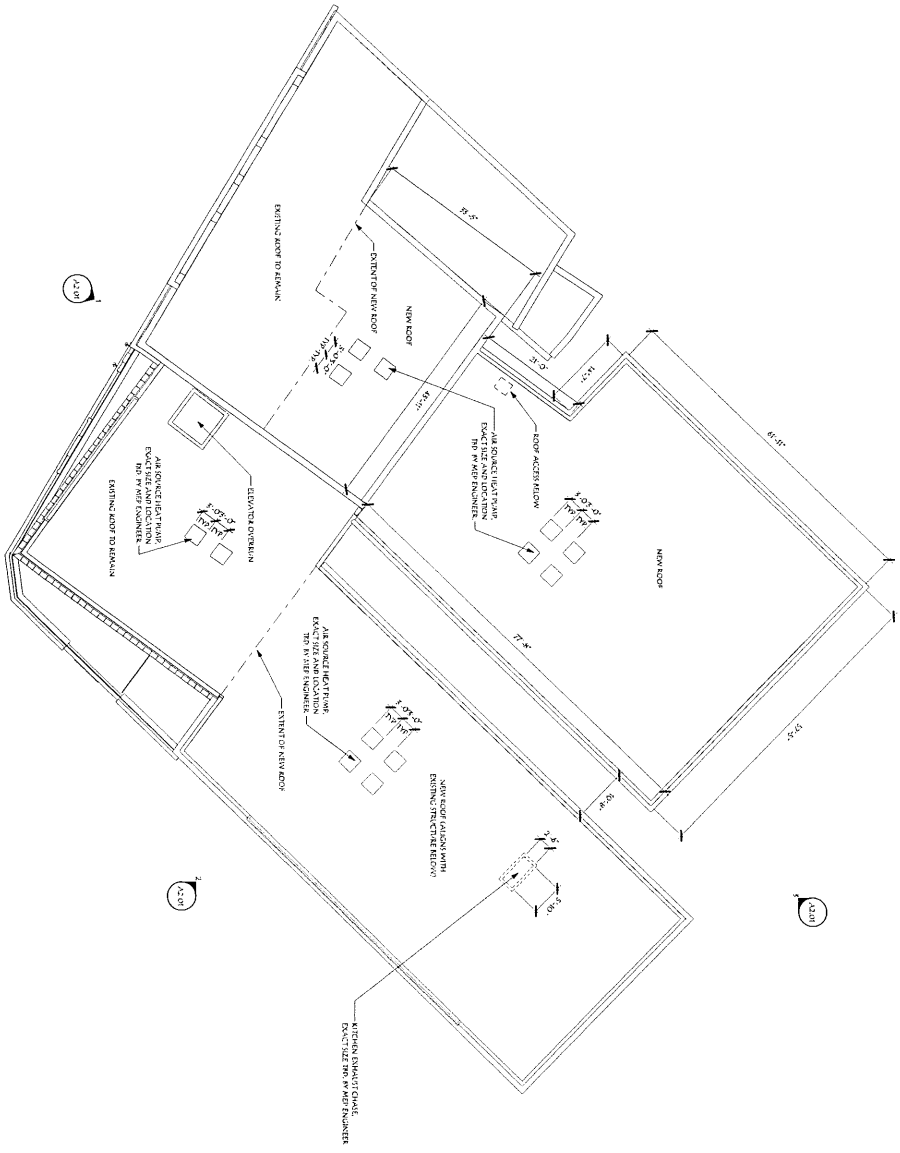
Revisions:
Description
Date

Title:
OVERALL SECOND FLOOR PLAN

Scale:	As indicated
Drawn By:	PPS
Checked By:	ALW
Project No.:	2020034
SCHEMATIC DESIGN	
Date:	08/20/21

A1.02

1 ROOF
SCALE: 3/32" = 1'-0"



Title: ROOF PLAN	Scale: 3/32" = 1'-0"	Revisions:	NOT FOR CONSTRUCTION	ARLINGTON MIXED USE	AR ARCHITECTS
	Drawn By: PPS	Description Date			104 Congress St., STE 203
	Checked By: ALW			455 MASS AVE	Portsmouth, NH 03801
A1.03	Project No.: 2020034			ARLINGTON, MA	PH: 603 501 0202
	SCHEMATIC DESIGN				
	Date: 08/20/21				

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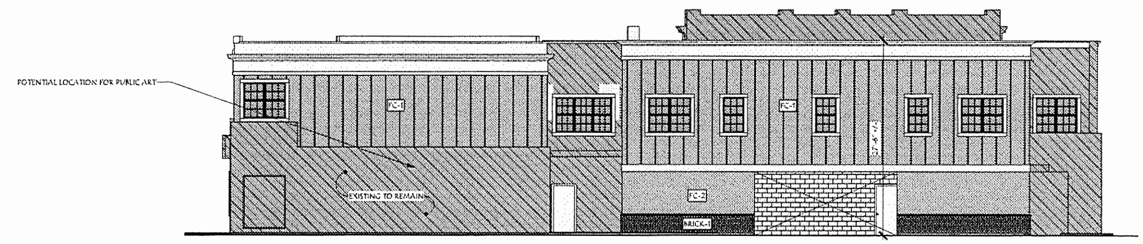
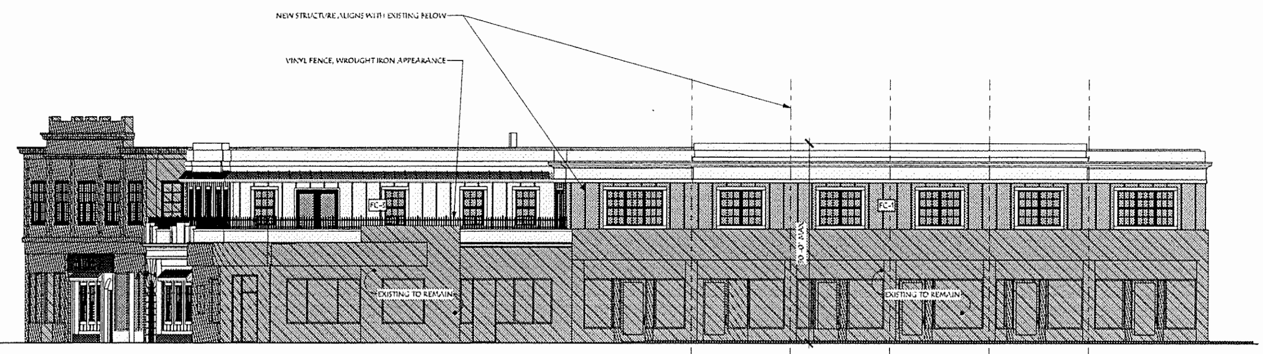
FINISH KEY:

FC-1	BOARD AND BATTEN FIBER CEMENT (LT GREEN)
FC-2	CLAPBOARD FIBER CEMENT (LT GREEN)
FC-3	BOARD AND BATTEN FIBER CEMENT (WHITE)
BRICK-1	BRICK FINISH



3 EXTERIOR ELEVATION – REAR
SCALE: 1/8" = 1'-0"



2 EXTERIOR ELEVATION – MEDFORD ST
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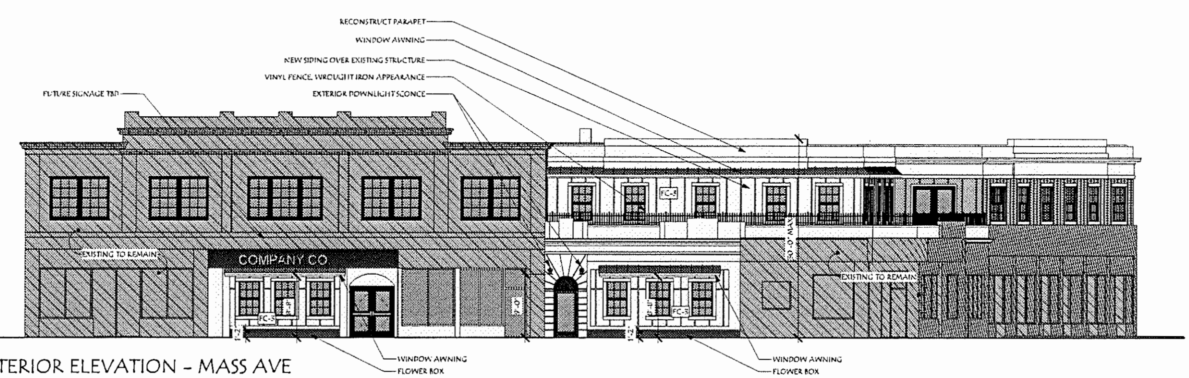


1 EXTERIOR ELEVATION – MASS AVE
SCALE: 1/8" = 1'-0"

MARKET SQUARE ARCHITECTS
104 Congress St, STE 203
Portsmouth, NH 03801
PH: 603 501 0202

ARLINGTON MIXED USE
455 MASS AVE
ARLINGTON, MA

NOT FOR CONSTRUCTION

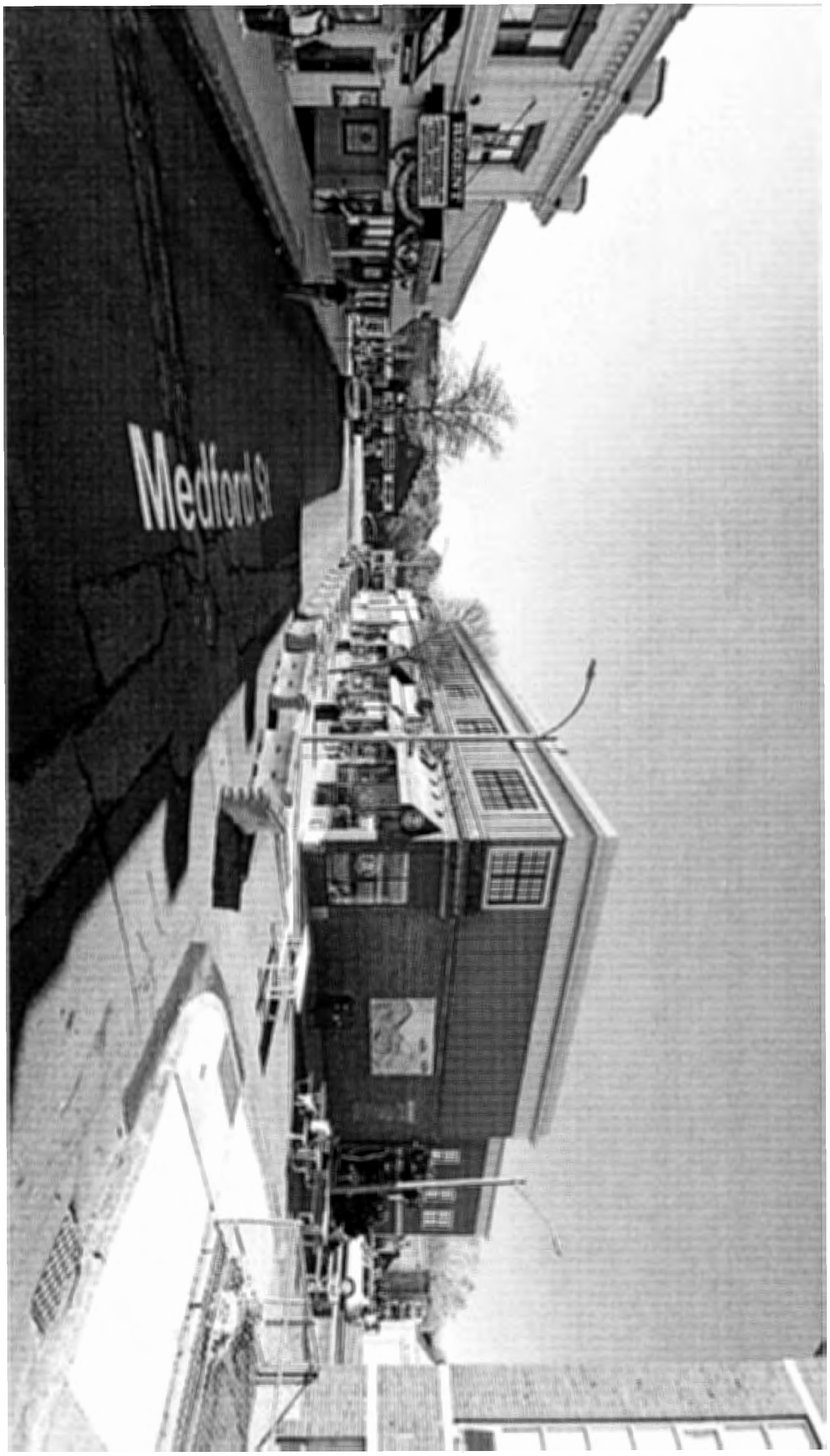
Revisions: Description Date

Scale:	1/8" = 1'-0"
Drawn By:	PPS
Checked By:	ALW
Project No.:	2020034
SCHEMATIC DESIGN	
Date:	08/20/21

Title: EXTERIOR ELEVATIONS

A2.01

Title: CORNER RENDER	Scale:	Revisions:	NOT FOR CONSTRUCTION	ARLINGTON MIXED USE	MARKET SQUARE ARCHITECTS
A9.01	Drawn By: PPS Checked By: ALW Project No.: 2020034 SCHEMATIC DESIGN Date: 08/20/21	# Description Date		455 MASS AVE ARLINGTON, MA	104 Congress St., Ste 203 Portsmouth, NH 03801 PH: 603.501.0202



Title: MEDFORD ST RENDER	Scale:	Revisions: Description / Date	NOT FOR CONSTRUCTION	ARLINGTON MIXED USE
	Drawn By: PPS			455 MASS AVE
	Checked By: ALW			ARLINGTON, MA
	Project No.: 2020034			
A9.02	SCHEMATIC DESIGN			
	Date: 08/20/21			

MARKET SQUARE ARCHITECTS
104 Congress St., STE 205
Portsmouth, NH 03801
PH: 603 501 0202

LEED v4 for Building Design and Construction: Homes and Multifamily Lowrise

Project Checklist

Project Name: 455 Massachusetts Ave, Arlington, MA 02476
Date: 8/11/2021

Y	?	N			
Y			Credit	Integrative Process	2

Y	?	N			
14	1	0	**Location and Transportation**		15
Y			Prereq	Floodplain Avoidance	Required
			PERFORMANCE PATH		
			Credit	LEED for Neighborhood Development Location	15
			PRESCRIPTIVE PATH		
8			Credit	Site Selection	8
2	1		Credit	Compact Development	3
2			Credit	Community Resources	2
2			Credit	Access to Transit	2
4	0	3	**Sustainable Sites**		7
Y			Prereq	Construction Activity Pollution Prevention	Required
Y			Prereq	No Invasive Plants	Required
2			Credit	Heat Island Reduction	2
		3	Credit	Rainwater Management	3
2			Credit	Non-Toxic Pest Control	2
4	0	6	**Water Efficiency**		12
Y			Prereq	Water Metering	Required
			PERFORMANCE PATH		
			Credit	Total Water Use	12
			PRESCRIPTIVE PATH		
4		2	Credit	Indoor Water Use	6
		4	Credit	Outdoor Water Use	4
12	19	6	**Energy and Atmosphere**		38
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Energy Metering	Required
Y			Prereq	Education of the Homeowner, Tenant or Building Manager	Required
			PERFORMANCE PATH		
			Credit	Annual Energy Use	29
			BOTH PATHS		
2	3		Credit	Efficient Hot Water Distribution System	5
	1	1	Credit	Advanced Utility Tracking	2
1			Credit	Active Solar Ready Design	1
	1		Credit	HVAC Start-Up Credentialing	1
			PRESCRIPTIVE PATH		
Y			Prereq	Home Size	Required
		3	Credit	Building Orientation for Passive Solar	3
2			Credit	Air Infiltration	2
		2	Credit	Envelope Insulation	2
3			Credit	Windows	3
	4		Credit	Space Heating & Cooling Equipment	4
			EA PRESCRIPTIVE PATH (continued)		
	3		Credit	Heating & Cooling Distribution Systems	3
	3		Credit	Efficient Domestic Hot Water Equipment	3
2			Credit	Lighting	2
2			Credit	High Efficiency Appliances	2
	4		Credit	Renewable Energy	4
3	5	2	**Materials and Resources**		10
Y			Prereq	Certified Tropical Wood	Required
Y			Prereq	Durability Management	Required
	1		Credit	Durability Management Verification	1
	4		Credit	Environmentally Preferable Products	4
3			Credit	Construction Waste Management	3
		2	Credit	Material Efficient Framing	2
8	6	2	**Indoor Environmental Quality**		16
Y			Prereq	Ventilation	Required
Y			Prereq	Combustion Venting	Required
Y			Prereq	Garage Pollutant Protection	Required
Y			Prereq	Radon-Resistant Construction	Required
Y			Prereq	Air FIltering	Required
Y			Prereq	Environmental Tobacco Smoke	Required
Y			Prereq	Compartmentalization	Required
1	2		Credit	Enhanced Ventilation	3
2			Credit	Contaminant Control	2
	3		Credit	Balancing of Heating and Cooling Distribution Systems	3
	1		Credit	Enhanced Compartmentalization	1
2			Credit	Enhanced Combustion Venting	2
		2	Credit	Enhanced Garage Pollutant Protection	2
3			Credit	Low Emitting Products	3
0	2	4	**Innovation**		6
Y			Prereq	Preliminary Rating	Required
	1	4	Credit	Innovation	5
	1		Credit	LEED AP Homes	1
0	4	0	**Regional Priority**		4
	1		Credit	Regional Priority: Specific Credit	1
	1		Credit	Regional Priority: Specific Credit	1
	1		Credit	Regional Priority: Specific Credit	1
	1		Credit	Regional Priority: Specific Credit	1

45	37	23	**TOTALS**	Possible Points: 110

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

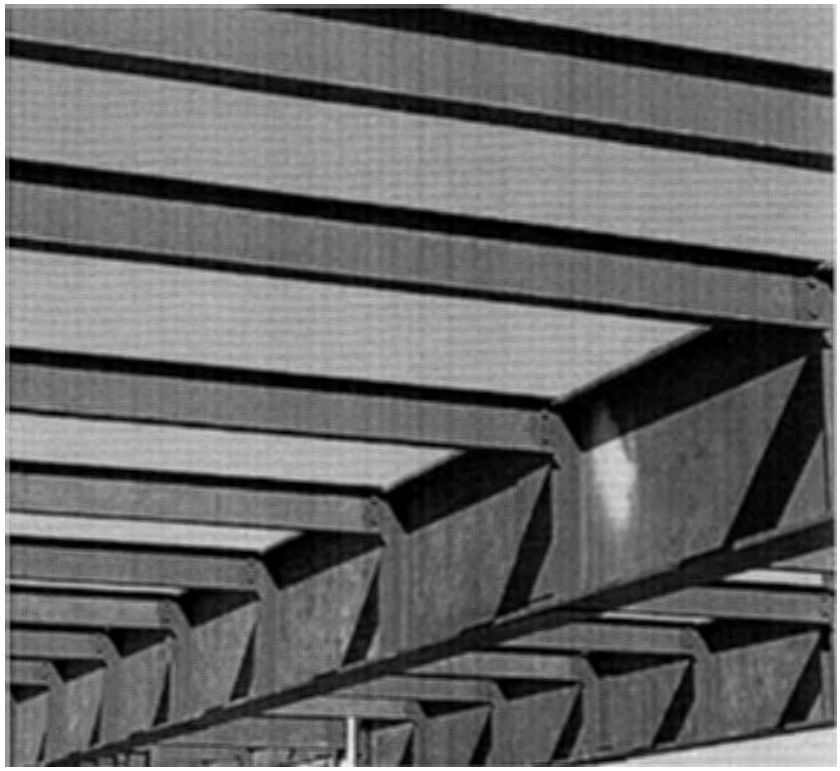
John --

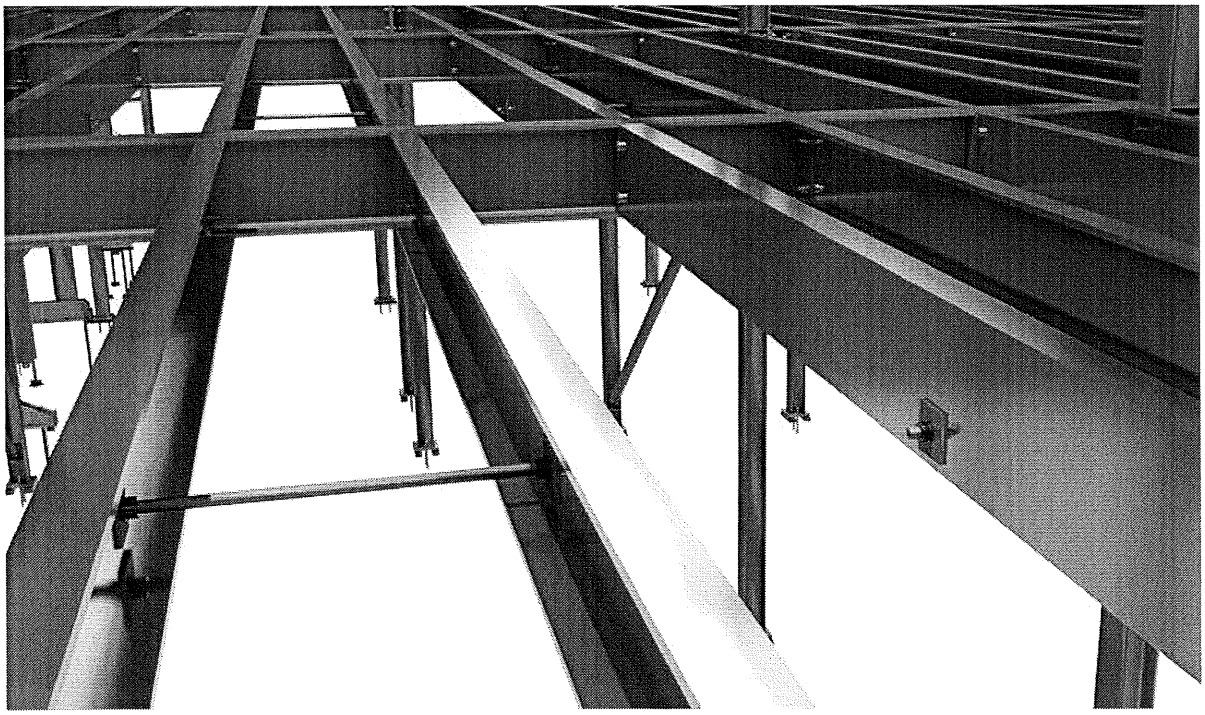
With the 455 Mass Ave. project the process here to develop the upper level residential…

- Prep existing masonry structure to receive new structural supports / beams that we would call "fly over" construction, these beams would run over the existing roof structure allowing a small interstitial space to run MEP mains, branch lines, water & sewer.
- The fly over beams ideally would have intermediate structural steel beams, smaller in size to space from one fly over beam to the next, thereby creating a grid size roughly 8 ft x 8 ft, we would install 4-inch-thick metal decking, we would install t-studs and pour a light-weight concrete slab.
- We would use the new upper-level slab as our starting point to frame in either wood or light gauge metal framing (LGMF) all new walls and roof system for the new upper residential units.
- We would extend all MEP items that run through the roof and continue these through the upper floor and through the new roof, some may be consolidated if possible.
- We would construct the new addition on a standard spread footing below frost extending up above grade with a new 12" thick foundation, this foundation will support the upper level, through a formed concrete or "cast in place" structural wall and in combination support structural steel beams to support the new second floor system, this will match the height of the new fly-over steel/concrete slab so all upper levels are on the same level.
- And same method used for the fly-over slab we would frame in either wood or light gauge metal framing (LGMF) all new walls and roof system for the new upper residential units.
- The new stair tower and the renovated lobby we are recommending to be built out of a masonry CMU (Masonry Block) walls, with proper fire ratings, assume a steel diamond plate stair system with standard railings to the new 2nd floor.
- We need to allow for demolition of the existing 2nd floor building and framing, this would all need to be removed and we can install a temporary rubber roof system installed over the existing wood framed floor system, this system is similar to the existing roof framing that would remain on the first section.
- Provisions need to be made to enhance the existing brick bearing walls to accommodate the new structural flyover construction, this will mean that on selective evenings we will need to enter the retail spaces below to reinforce the masonry wall to accept new beams

above, this can be done relatively quickly and most of the work would be prefabricated 4-inch tube steel columns installed directly to the walls and bolted or welded to the structure, drilling through the wall from the outside and running galvanized threaded rod through the masonry wall and attached to the new steel columns.

I hope this helps explain the process to build this exciting project.





ALLEN & MAJOR
ASSOCIATES, INC.

Issued: August 20, 2021

Jennifer Raitt
Director of Planning & Community
Development
730 Massachusetts Ave
Arlington, MA 02476

RE: Mixed-Use Redevelopment
Drainage Summary Letter
455-457 Massachusetts Ave
Arlington, MA 02476

Dear Ms. Raitt,

On behalf of our Client, 2-4 Medford Street, LLC, Allen & Major Associates (A&M) is pleased to provide this letter in support of the Special Permit application for the Mixed-Use Redevelopment project at 455-457 Massachusetts Ave. This letter will summarize the changes to the stormwater management system which are proposed as part of the redevelopment efforts.

Existing Conditions

The site is located on the corner of Medford Street and Massachusetts Avenue. There is an existing curb cut to the parcel located off Park Terrace to the rear of the parcel. The existing lot is entirely impervious with exiting building and pavement. Elevations onsite range from elevation 38 along Mass Ave to elevation 36 at the rear along Park Terrace. The majority of the stormwater on-site flows via sheet flow off-site to Park Terrace. A review of the NRCS soil report for Middlesex County indicates that the soil onsite is considered Merrimac-Urban Land which has a Hydrologic Soil Group rating of an "A". A copy of the Existing Watershed Plan is included herewith.

Proposed Conditions

The project, proposes to demolish a portion of the existing structure and construct and addition in a similar location. The project proposes to maintain existing retail, restaurant and service uses on the ground floor, and construct new apartments on the second floor. There are 16 parking stalls proposed on the first level. The stormwater management system will be greatly improved with the installation of pervious paver systems and underground infiltration system. These systems will receive clean roof runoff for stormwater recharge. These systems will greatly reduce the quantity of stormwater runoff from the parcel. The proposed work will also result in approximately 1,008 square feet of impervious material being replaced with landscaped areas.

Runoff flows were estimated for both pre and post development conditions using HydroCAD 10.00 software, at a specific "Study Point" (SP-1). Study Point 1 is the flows that will flow via sheet flow onto Park Terrace. The table below shows that the project causes a reduction in the peak rate of runoff and volume of stormwater leaving the site at the Study Point. Copies of the HydroCAD worksheets and Watershed Plans are included herewith.

STUDY POINT #1 (flow to municipal system)			
	2-Year	10-Year	100-Year
Existing Flow (CFS)	1.41	2.16	3.93
Proposed Flow (CFS)	0.08	0.13	0.50
Decrease (CFS)	**1.33**	**2.03**	**3.43**
Existing Volume (CF)	4,728	7,356	13,644
Proposed Volume (CF)	235	400	975
Decrease (CF)	**4,493**	**6,956**	**12,669**

The surface water drainage requirements of the Town of Arlington Zoning Bylaw Environmental Design Review Standards have been reviewed and met with the proposed design. The proposed project will introduce stormwater infiltration systems and landscaped areas to the site to reduce the impervious area. The Town of Arlington, Article 15 Stormwater Mitigation, shall not apply as the proposed development will introduce a reduction in impervious area. However, with the proposed infiltration systems the project will reduce the runoff rates for all design storms, and comply with this bylaw.

Summary

As shown in the table above, the proposed development will have a positive impact on the stormwater management system by reducing the rate and volume of stormwater runoff from the site.

Very truly yours,

ALLEN & MAJOR ASSOCIATES, INC.

Aaron Mackey, PE
Project Engineer

Attachments:

1. Existing Watershed Plan
2. Proposed Watershed Plan
3. Pre development HydroCAD Calculations
4. Post development HydroCAD Calculations
5. Extreme Precipitation Tables
6. NRCS Soil Report

PROGRESS PRINT
ISSUED FOR REVIEW
AUGUST 11, 2021

REV	DATE	DESCRIPTION

APPLICANT\OWNER:

2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVE, STE 1
ARLINGTON, MA 02474

PROJECT:

455-457
MASSACHUSETTS AVE
ARLINGTON, MA 02476

PROJECT NO.	2729-03	DATE:	8/11/2021
SCALE:	1" = 10'	DWG. NAME:	C2729-03
DESIGNED BY:	JG/ARM	CHECKED BY:	ARM/BDJ

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering • land surveying
environmental consulting • landscape architecture
www.allenmajor.com
100 COMMERCE WAY, SUITE 5
WOBURN, MA 01801
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA • LAKEVILLE, MA • MANCHESTER, NH

DRAWING TITLE:	SHEET No.
EXISTING WATERSHED PLAN	EWP

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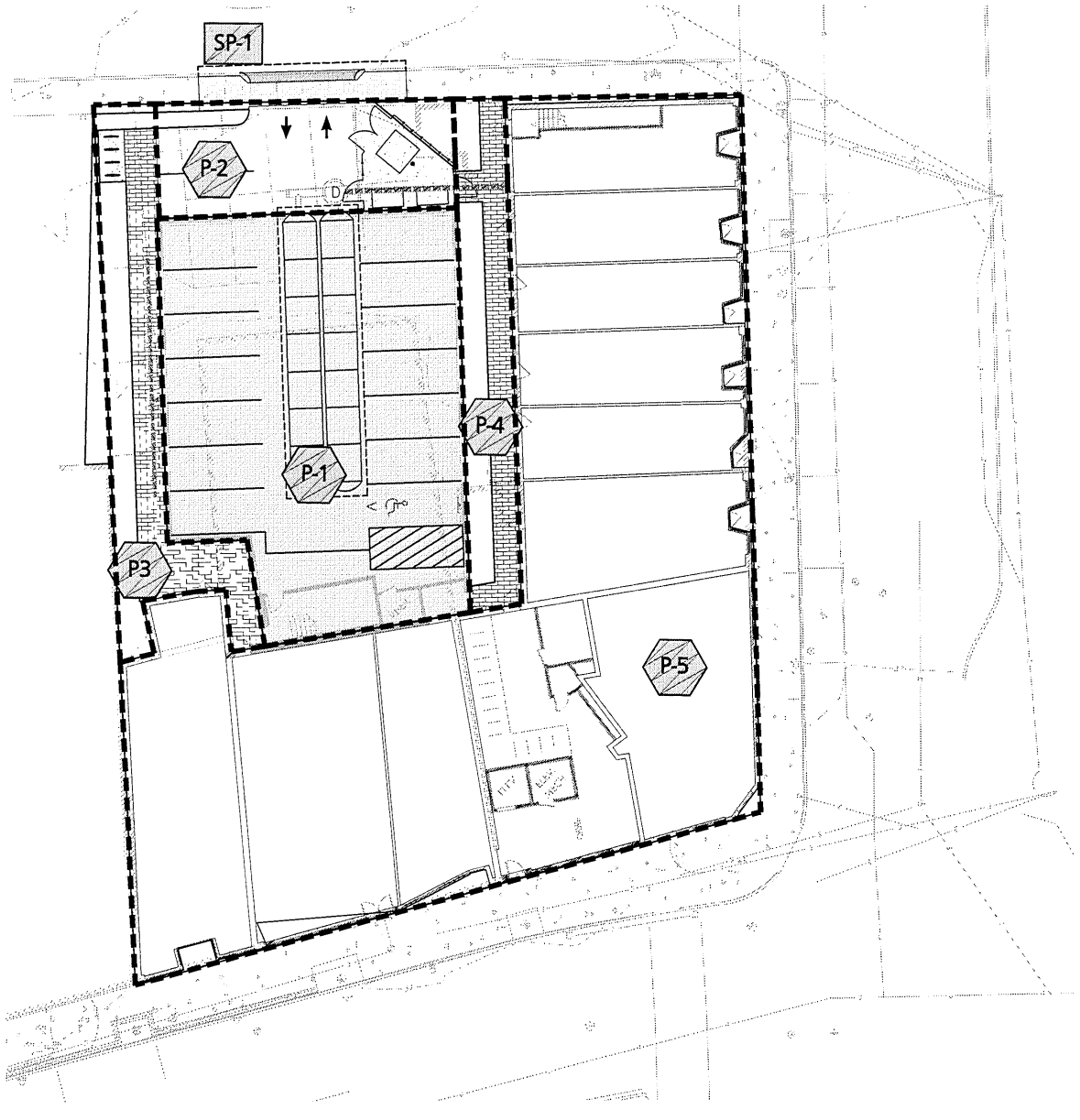

LEGEND

EXISTING WATERSHED

PROPOSED WATERSHED

SUBCATCHMENT LABEL

SUBCATCHMENT BOUNDARY

GRAPHIC SCALE

(IN FEET)
1 inch = 10 ft.

PROGRESS PRINT
ISSUED FOR REVIEW
AUGUST 11, 2021

REV	DATE	DESCRIPTION

APPLICANT\OWNER:
2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVE, STE 1
ARLINGTON, MA 02474

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DRAWING TITLE:	SHEET No.
PROPOSED WATERSHED PLAN	PWP

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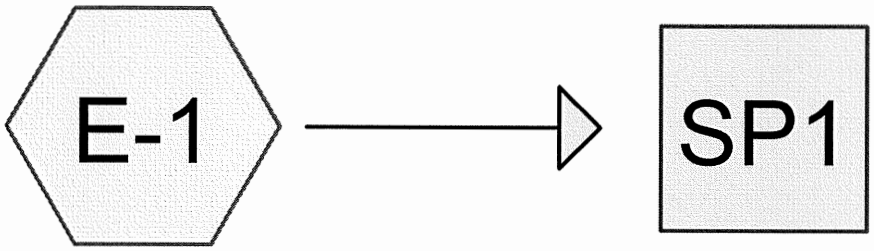


Subcat E-1 Study Point 1

Subcat Reach Pond Link

Routing Diagram for 2729-03_Existing-Conditions
Prepared by Allen & Major Associates Inc. , Printed 8/11/2021

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
18,929	98	Paved parking, HSG A (E-1)
18,929	**98**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
18,929	HSG A	E-1
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
18,929		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
18,929	0	0	0	0	18,929	Paved parking	E-1
18,929	**0**	**0**	**0**	**0**	**18,929**	**TOTAL AREA**	

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentE-1: Subcat E-1 Runoff Area=18,929 sf 100.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=1.41 cfs 4,728 cf

Reach SP1: Study Point 1 Inflow=1.41 cfs 4,728 cf
Outflow=1.41 cfs 4,728 cf

Total Runoff Area = 18,929 sf Runoff Volume = 4,728 cf Average Runoff Depth = 3.00"
0.00% Pervious = 0 sf 100.00% Impervious = 18,929 sf

Summary for Subcatchment E-1: Subcat E-1

Runoff = 1.41 cfs @ 12.07 hrs, Volume= 4,728 cf, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.23"

Area (sf)	CN	Description
18,929	98	Paved parking, HSG A
18,929		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Assumed**

Summary for Reach SP1: Study Point 1

Inflow Area = 18,929 sf,100.00% Impervious, Inflow Depth = 3.00" for 2-Year event
Inflow = 1.41 cfs @ 12.07 hrs, Volume= 4,728 cf
Outflow = 1.41 cfs @ 12.07 hrs, Volume= 4,728 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentE-1: Subcat E-1 Runoff Area=18,929 sf 100.00% Impervious Runoff Depth=4.66"
Tc=5.0 min CN=98 Runoff=2.16 cfs 7,356 cf

Reach SP1: Study Point 1 Inflow=2.16 cfs 7,356 cf
Outflow=2.16 cfs 7,356 cf

Total Runoff Area = 18,929 sf Runoff Volume = 7,356 cf Average Runoff Depth = 4.66"
0.00% Pervious = 0 sf 100.00% Impervious = 18,929 sf

Summary for Subcatchment E-1: Subcat E-1

Runoff = 2.16 cfs @ 12.07 hrs, Volume= 7,356 cf, Depth= 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
18,929	98	Paved parking, HSG A
18,929		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Assumed**

Summary for Reach SP1: Study Point 1

Inflow Area = 18,929 sf, 100.00% Impervious, Inflow Depth = 4.66" for 10-Year event
Inflow = 2.16 cfs @ 12.07 hrs, Volume= 7,356 cf
Outflow = 2.16 cfs @ 12.07 hrs, Volume= 7,356 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentE-1: Subcat E-1 Runoff Area=18,929 sf 100.00% Impervious Runoff Depth=8.65"
Tc=5.0 min CN=98 Runoff=3.93 cfs 13,644 cf

Reach SP1: Study Point 1 Inflow=3.93 cfs 13,644 cf
Outflow=3.93 cfs 13,644 cf

Total Runoff Area = 18,929 sf Runoff Volume = 13,644 cf Average Runoff Depth = 8.65"
0.00% Pervious = 0 sf 100.00% Impervious = 18,929 sf

Summary for Subcatchment E-1: Subcat E-1

Runoff = 3.93 cfs @ 12.07 hrs, Volume= 13,644 cf, Depth= 8.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.89"

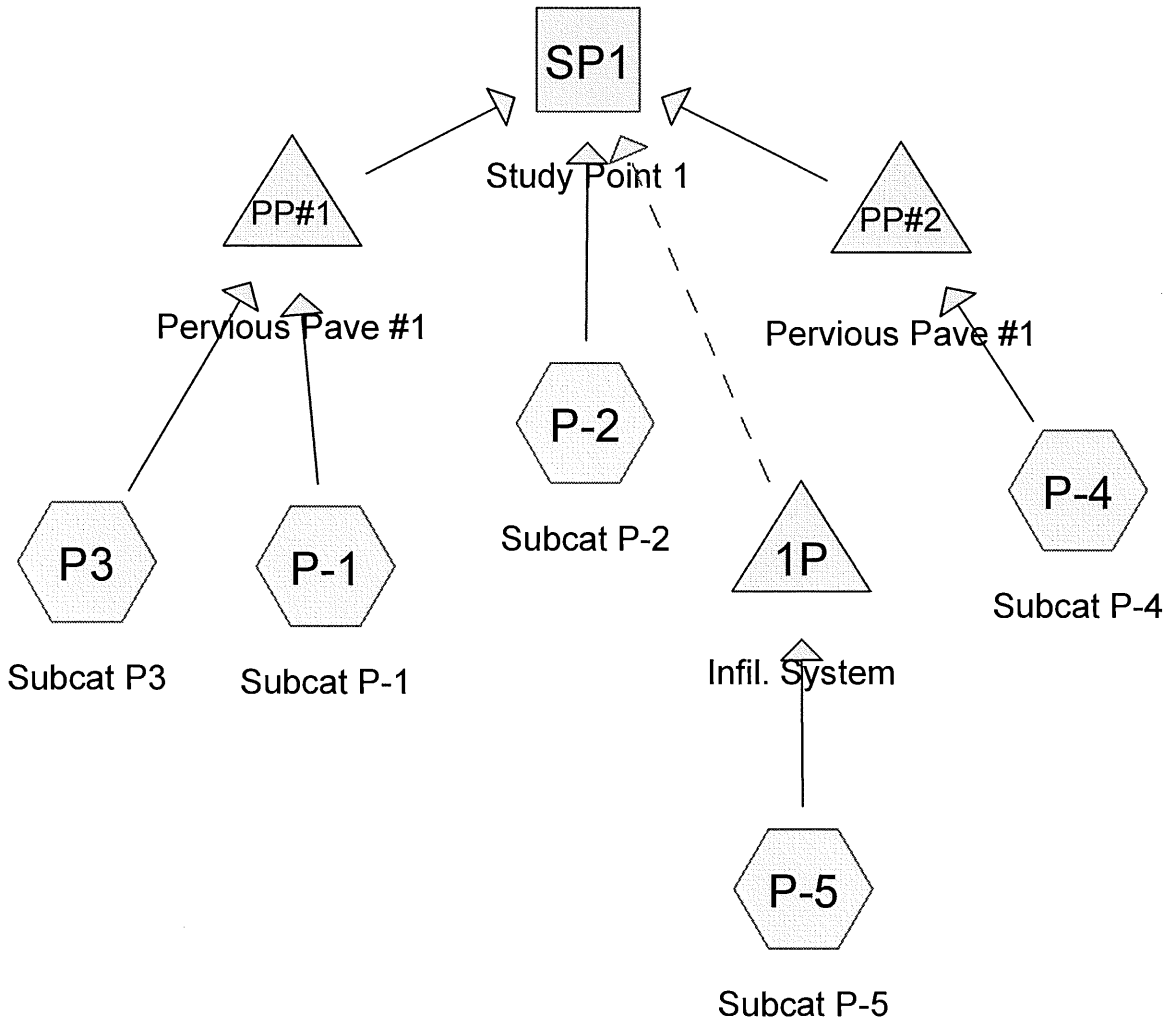
Area (sf)	CN	Description
18,929	98	Paved parking, HSG A
18,929		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Assumed**

Summary for Reach SP1: Study Point 1

Inflow Area = 18,929 sf,100.00% Impervious, Inflow Depth = 8.65" for 100-Year event
Inflow = 3.93 cfs @ 12.07 hrs, Volume= 13,644 cf
Outflow = 3.93 cfs @ 12.07 hrs, Volume= 13,644 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3



Subcat Reach Pond Link

Routing Diagram for 2729-03_Proposed-Conditions
Prepared by Allen & Major Associates Inc. , Printed 8/11/2021
HydroCAD® 10.00-24 s/n 02881 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
1,082	39	>75% Grass cover, Good, HSG A (P-1, P-2, P-4, P3)
2,803	98	Paved parking, HSG A (P-1, P-2, P-4, P-5, P3)
15,043	98	Roofs, HSG A (P-1, P-5)
18,929	**95**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
18,929	HSG A	P-1, P-2, P-4, P-5, P3
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
18,929		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
1,082	0	0	0	0	1,082	>75% Grass cover, Good	P-1, P-2, P-4, P3
2,803	0	0	0	0	2,803	Paved parking	P-1, P-2, P-4, P-5, P3
15,043	0	0	0	0	15,043	Roofs	P-1, P-5
18,929	**0**	**0**	**0**	**0**	**18,929**	**TOTAL AREA**	

Notes Listing (all nodes)

Line#	Node Number	Notes
1	1P	Exfiltration Rate = 7.0 in./hr. (Merrimac-Urban Land = 100 micrometer per second = 14.17 in./hr. / 2 = 7.0 in/hr
2	PP#1	Exfiltration Rate = 7.0 in./hr. (Merrimac-Urban Land = 100 micrometer per second = 14.17 in./hr. / 2 = 7.0 in/hr
3	PP#2	Exfiltration Rate = 7.0 in./hr. (Merrimac-Urban Land = 100 micrometer per second = 14.17 in./hr. / 2 = 7.0 in/hr

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentP-1: Subcat P-1 Runoff Area=4,358 sf 99.99% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,089 cf

SubcatchmentP-2: Subcat P-2 Runoff Area=1,234 sf 87.57% Impervious Runoff Depth=2.29"
Tc=5.0 min CN=91 Runoff=0.08 cfs 235 cf

SubcatchmentP-4: Subcat P-4 Runoff Area=972 sf 55.84% Impervious Runoff Depth=0.95"
Tc=0.0 min CN=72 Runoff=0.03 cfs 77 cf

SubcatchmentP-5: Subcat P-5 Runoff Area=11,040 sf 100.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=98 Runoff=0.82 cfs 2,758 cf

SubcatchmentP3: Subcat P3 Runoff Area=1,324 sf 62.26% Impervious Runoff Depth=1.17"
Tc=5.0 min CN=76 Runoff=0.04 cfs 129 cf

Reach SP1: Study Point 1 Inflow=0.08 cfs 235 cf
Outflow=0.08 cfs 235 cf

Pond 1P: Infil. System Peak Elev=30.70' Storage=674 cf Inflow=0.82 cfs 2,758 cf
Discarded=0.14 cfs 2,759 cf Secondary=0.00 cfs 0 cf Outflow=0.14 cfs 2,759 cf

Pond PP#1: Pervious Pave #1 Peak Elev=34.30' Storage=149 cf Inflow=0.37 cfs 1,218 cf
Discarded=0.13 cfs 1,219 cf Primary=0.00 cfs 0 cf Outflow=0.13 cfs 1,219 cf

Pond PP#2: Pervious Pave #1 Peak Elev=35.30' Storage=0 cf Inflow=0.03 cfs 77 cf
Discarded=0.03 cfs 77 cf Primary=0.00 cfs 0 cf Outflow=0.03 cfs 77 cf

Total Runoff Area = 18,929 sf Runoff Volume = 4,288 cf Average Runoff Depth = 2.72"
5.72% Pervious = 1,082 sf 94.28% Impervious = 17,846 sf

Summary for Subcatchment P-1: Subcat P-1

Runoff = 0.33 cfs @ 12.07 hrs, Volume= 1,089 cf, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.23"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	39	>75% Grass cover, Good, HSG A
4,358	98	Roofs, HSG A
4,358	98	Weighted Average
0		0.01% Pervious Area
4,358		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Assumed**

Summary for Subcatchment P-2: Subcat P-2

Runoff = 0.08 cfs @ 12.07 hrs, Volume= 235 cf, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.23"

Area (sf)	CN	Description
1,081	98	Paved parking, HSG A
153	39	>75% Grass cover, Good, HSG A
1,234	91	Weighted Average
153		12.43% Pervious Area
1,081		87.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min tc**

Summary for Subcatchment P-4: Subcat P-4

Runoff = 0.03 cfs @ 12.00 hrs, Volume= 77 cf, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.23"

Area (sf)	CN	Description
543	98	Paved parking, HSG A
429	39	>75% Grass cover, Good, HSG A
972	72	Weighted Average
429		44.16% Pervious Area
543		55.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, min tc**

Summary for Subcatchment P-5: Subcat P-5

Runoff = 0.82 cfs @ 12.07 hrs, Volume= 2,758 cf, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.23"

Area (sf)	CN	Description
10,685	98	Roofs, HSG A
355	98	Paved parking, HSG A
11,040	98	Weighted Average
11,040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, min tc**

Summary for Subcatchment P3: Subcat P3

Runoff = 0.04 cfs @ 12.08 hrs, Volume= 129 cf, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.23"

Area (sf)	CN	Description
500	39	>75% Grass cover, Good, HSG A
825	98	Paved parking, HSG A
1,324	76	Weighted Average
500		37.74% Pervious Area
825		62.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, min tc**

Summary for Reach SP1: Study Point 1

Inflow Area = 7,889 sf, 86.28% Impervious, Inflow Depth = 0.36" for 2-Year event
Inflow = 0.08 cfs @ 12.07 hrs, Volume= 235 cf
Outflow = 0.08 cfs @ 12.07 hrs, Volume= 235 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1P: Infil. System

Inflow Area = 11,040 sf,100.00% Impervious, Inflow Depth = 3.00" for 2-Year event
Inflow = 0.82 cfs @ 12.07 hrs, Volume= 2,758 cf
Outflow = 0.14 cfs @ 11.80 hrs, Volume= 2,759 cf, Atten= 83%, Lag= 0.0 min
Discarded = 0.14 cfs @ 11.80 hrs, Volume= 2,759 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 30.70' @ 12.51 hrs Surf.Area= 885 sf Storage= 674 cf
Flood Elev= 37.00' Surf.Area= 885 sf Storage= 3,172 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 24.0 min (779.3 - 755.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	29.00'	1,573 cf	**15.83'W x 55.89'L x 6.25'H Field A** 5,531 cf Overall - 1,599 cf Embedded = 3,932 cf x 40.0% Voids
#2A	30.50'	1,599 cf	**ADS_StormTech MC-3500 d +Cap** x 14 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 14 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
		3,172 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	29.00'	**7.000 in/hr Exfiltration over Surface area**
#2	Secondary	36.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.14 cfs @ 11.80 hrs HW=29.09' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=29.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond PP#1: Pervious Pave #1

Inflow Area = 5,683 sf, 91.20% Impervious, Inflow Depth = 2.57" for 2-Year event
Inflow = 0.37 cfs @ 12.07 hrs, Volume= 1,218 cf
Outflow = 0.13 cfs @ 12.32 hrs, Volume= 1,219 cf, Atten= 65%, Lag= 14.9 min
Discarded = 0.13 cfs @ 12.32 hrs, Volume= 1,219 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 34.30' @ 12.32 hrs Surf.Area= 753 sf Storage= 149 cf
Flood Elev= 37.00' Surf.Area= 753 sf Storage= 904 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.6 min (770.4 - 765.8)

Volume	Invert	Avail.Storage	Storage Description
#1	33.80'	904 cf	**Subbase (Conic)**Listed below (Recalc)
			2,259 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
33.80	753	0	0	753
36.80	753	2,259	2,259	1,045

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.80'	**7.000 in/hr Exfiltration over Wetted area**
#2	Primary	36.80'	**4.5' long x 3.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50
			Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.13 cfs @ 12.32 hrs HW=34.30' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.80' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond PP#2: Pervious Pave #1

Inflow Area = 972 sf, 55.84% Impervious, Inflow Depth = 0.95" for 2-Year event
Inflow = 0.03 cfs @ 12.00 hrs, Volume= 77 cf
Outflow = 0.03 cfs @ 12.00 hrs, Volume= 77 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.03 cfs @ 12.00 hrs, Volume= 77 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 35.30' @ 0.00 hrs Surf.Area= 546 sf Storage= 0 cf
Flood Elev= 37.00' Surf.Area= 546 sf Storage= 328 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (862.6 - 862.6)

Volume	Invert	Avail.Storage	Storage Description
#1	35.30'	328 cf	**Subbase (Conic)**Listed below (Recalc) 819 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.30	546	0	0	546
36.80	546	819	819	670

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.30'	**7.000 in/hr Exfiltration over Wetted area**
#2	Primary	36.80'	**4.5' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.00 cfs @ 12.00 hrs HW=35.30' (Free Discharge)
↑**1=Exfiltration** (Passes 0.00 cfs of 0.09 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.30' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentP-1: Subcat P-1 Runoff Area=4,358 sf 99.99% Impervious Runoff Depth=4.66"
Tc=5.0 min CN=98 Runoff=0.50 cfs 1,694 cf

SubcatchmentP-2: Subcat P-2 Runoff Area=1,234 sf 87.57% Impervious Runoff Depth=3.89"
Tc=5.0 min CN=91 Runoff=0.13 cfs 400 cf

SubcatchmentP-4: Subcat P-4 Runoff Area=972 sf 55.84% Impervious Runoff Depth=2.12"
Tc=0.0 min CN=72 Runoff=0.07 cfs 172 cf

SubcatchmentP-5: Subcat P-5 Runoff Area=11,040 sf 100.00% Impervious Runoff Depth=4.66"
Tc=5.0 min CN=98 Runoff=1.26 cfs 4,290 cf

SubcatchmentP3: Subcat P3 Runoff Area=1,324 sf 62.26% Impervious Runoff Depth=2.45"
Tc=5.0 min CN=76 Runoff=0.09 cfs 271 cf

Reach SP1: Study Point 1 Inflow=0.13 cfs 400 cf
Outflow=0.13 cfs 400 cf

Pond 1P: Infil. System Peak Elev=31.58' Storage=1,292 cf Inflow=1.26 cfs 4,290 cf
Discarded=0.14 cfs 4,291 cf Secondary=0.00 cfs 0 cf Outflow=0.14 cfs 4,291 cf

Pond PP#1: Pervious Pave #1 Peak Elev=35.10' Storage=391 cf Inflow=0.59 cfs 1,964 cf
Discarded=0.14 cfs 1,966 cf Primary=0.00 cfs 0 cf Outflow=0.14 cfs 1,966 cf

Pond PP#2: Pervious Pave #1 Peak Elev=35.30' Storage=0 cf Inflow=0.07 cfs 172 cf
Discarded=0.07 cfs 172 cf Primary=0.00 cfs 0 cf Outflow=0.07 cfs 172 cf

Total Runoff Area = 18,929 sf Runoff Volume = 6,826 cf Average Runoff Depth = 4.33"
5.72% Pervious = 1,082 sf 94.28% Impervious = 17,846 sf

Summary for Subcatchment P-1: Subcat P-1

Runoff = 0.50 cfs @ 12.07 hrs, Volume= 1,694 cf, Depth= 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	39	>75% Grass cover, Good, HSG A
4,358	98	Roofs, HSG A
4,358	98	Weighted Average
0		0.01% Pervious Area
4,358		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Assumed**

Summary for Subcatchment P-2: Subcat P-2

Runoff = 0.13 cfs @ 12.07 hrs, Volume= 400 cf, Depth= 3.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
1,081	98	Paved parking, HSG A
153	39	>75% Grass cover, Good, HSG A
1,234	91	Weighted Average
153		12.43% Pervious Area
1,081		87.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min tc**

Summary for Subcatchment P-4: Subcat P-4

Runoff = 0.07 cfs @ 12.00 hrs, Volume= 172 cf, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
543	98	Paved parking, HSG A
429	39	>75% Grass cover, Good, HSG A
972	72	Weighted Average
429		44.16% Pervious Area
543		55.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, min tc**

Summary for Subcatchment P-5: Subcat P-5

Runoff = 1.26 cfs @ 12.07 hrs, Volume= 4,290 cf, Depth= 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
10,685	98	Roofs, HSG A
355	98	Paved parking, HSG A
11,040	98	Weighted Average
11,040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, min tc**

Summary for Subcatchment P3: Subcat P3

Runoff = 0.09 cfs @ 12.08 hrs, Volume= 271 cf, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
500	39	>75% Grass cover, Good, HSG A
825	98	Paved parking, HSG A
1,324	76	Weighted Average
500		37.74% Pervious Area
825		62.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, min tc**

Summary for Reach SP1: Study Point 1

Inflow Area = 7,889 sf, 86.28% Impervious, Inflow Depth = 0.61" for 10-Year event
Inflow = 0.13 cfs @ 12.07 hrs, Volume= 400 cf
Outflow = 0.13 cfs @ 12.07 hrs, Volume= 400 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1P: Infil. System

Inflow Area = 11,040 sf,100.00% Impervious, Inflow Depth = 4.66" for 10-Year event
Inflow = 1.26 cfs @ 12.07 hrs, Volume= 4,290 cf
Outflow = 0.14 cfs @ 11.69 hrs, Volume= 4,291 cf, Atten= 89%, Lag= 0.0 min
Discarded = 0.14 cfs @ 11.69 hrs, Volume= 4,291 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 31.58' @ 12.64 hrs Surf.Area= 885 sf Storage= 1,292 cf
Flood Elev= 37.00' Surf.Area= 885 sf Storage= 3,172 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 54.6 min (802.0 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	29.00'	1,573 cf	**15.83'W x 55.89'L x 6.25'H Field A** 5,531 cf Overall - 1,599 cf Embedded = 3,932 cf x 40.0% Voids
#2A	30.50'	1,599 cf	**ADS_StormTech MC-3500 d +Cap** x 14 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 14 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
		3,172 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	29.00'	**7.000 in/hr Exfiltration over Surface area**
#2	Secondary	36.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.14 cfs @ 11.69 hrs HW=29.08' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=29.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond PP#1: Pervious Pave #1

Inflow Area = 5,683 sf, 91.20% Impervious, Inflow Depth = 4.15" for 10-Year event
Inflow = 0.59 cfs @ 12.07 hrs, Volume= 1,964 cf
Outflow = 0.14 cfs @ 12.44 hrs, Volume= 1,966 cf, Atten= 76%, Lag= 22.3 min
Discarded = 0.14 cfs @ 12.44 hrs, Volume= 1,966 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 35.10' @ 12.44 hrs Surf.Area= 753 sf Storage= 391 cf
Flood Elev= 37.00' Surf.Area= 753 sf Storage= 904 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 13.3 min (772.4 - 759.1)

Volume	Invert	Avail.Storage	Storage Description
#1	33.80'	904 cf	**Subbase (Conic)**Listed below (Recalc)
			2,259 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
33.80	753	0	0	753
36.80	753	2,259	2,259	1,045

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.80'	**7.000 in/hr Exfiltration over Wetted area**
#2	Primary	36.80'	**4.5' long x 3.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50
			Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.14 cfs @ 12.44 hrs HW=35.10' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.80' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond PP#2: Pervious Pave #1

Inflow Area = 972 sf, 55.84% Impervious, Inflow Depth = 2.12" for 10-Year event
Inflow = 0.07 cfs @ 12.00 hrs, Volume= 172 cf
Outflow = 0.07 cfs @ 12.00 hrs, Volume= 172 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.07 cfs @ 12.00 hrs, Volume= 172 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 35.30' @ 12.00 hrs Surf.Area= 546 sf Storage= 0 cf
Flood Elev= 37.00' Surf.Area= 546 sf Storage= 328 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (838.0 - 838.0)

Volume	Invert	Avail.Storage	Storage Description
#1	35.30'	328 cf	**Subbase (Conic)**Listed below (Recalc) 819 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.30	546	0	0	546
36.80	546	819	819	670

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.30'	**7.000 in/hr Exfiltration over Wetted area**
#2	Primary	36.80'	**4.5' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.09 cfs @ 12.00 hrs HW=35.30' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.30' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentP-1: Subcat P-1 Runoff Area=4,358 sf 99.99% Impervious Runoff Depth=8.65"
Tc=5.0 min CN=98 Runoff=0.91 cfs 3,142 cf

SubcatchmentP-2: Subcat P-2 Runoff Area=1,234 sf 87.57% Impervious Runoff Depth=7.80"
Tc=5.0 min CN=91 Runoff=0.25 cfs 803 cf

SubcatchmentP-4: Subcat P-4 Runoff Area=972 sf 55.84% Impervious Runoff Depth=5.48"
Tc=0.0 min CN=72 Runoff=0.18 cfs 444 cf

SubcatchmentP-5: Subcat P-5 Runoff Area=11,040 sf 100.00% Impervious Runoff Depth=8.65"
Tc=5.0 min CN=98 Runoff=2.29 cfs 7,958 cf

SubcatchmentP3: Subcat P3 Runoff Area=1,324 sf 62.26% Impervious Runoff Depth=5.97"
Tc=5.0 min CN=76 Runoff=0.22 cfs 659 cf

Reach SP1: Study Point 1 Inflow=0.50 cfs 975 cf
Outflow=0.50 cfs 975 cf

Pond 1P: Infil. System Peak Elev=34.98' Storage=3,078 cf Inflow=2.29 cfs 7,958 cf
Discarded=0.14 cfs 7,958 cf Secondary=0.00 cfs 0 cf Outflow=0.14 cfs 7,958 cf

Pond PP#1: Pervious Pave #1 Peak Elev=36.91' Storage=904 cf Inflow=1.12 cfs 3,801 cf
Discarded=0.17 cfs 3,629 cf Primary=0.40 cfs 172 cf Outflow=0.57 cfs 3,801 cf

Pond PP#2: Pervious Pave #1 Peak Elev=35.42' Storage=26 cf Inflow=0.18 cfs 444 cf
Discarded=0.09 cfs 444 cf Primary=0.00 cfs 0 cf Outflow=0.09 cfs 444 cf

Total Runoff Area = 18,929 sf Runoff Volume = 13,005 cf Average Runoff Depth = 8.24"
5.72% Pervious = 1,082 sf 94.28% Impervious = 17,846 sf

Summary for Subcatchment P-1: Subcat P-1

Runoff = 0.91 cfs @ 12.07 hrs, Volume= 3,142 cf, Depth= 8.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.89"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	39	>75% Grass cover, Good, HSG A
4,358	98	Roofs, HSG A
4,358	98	Weighted Average
0		0.01% Pervious Area
4,358		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Assumed**

Summary for Subcatchment P-2: Subcat P-2

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 803 cf, Depth= 7.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.89"

Area (sf)	CN	Description
1,081	98	Paved parking, HSG A
153	39	>75% Grass cover, Good, HSG A
1,234	91	Weighted Average
153		12.43% Pervious Area
1,081		87.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Min tc**

Summary for Subcatchment P-4: Subcat P-4

Runoff = 0.18 cfs @ 12.00 hrs, Volume= 444 cf, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.89"

Area (sf)	CN	Description
543	98	Paved parking, HSG A
429	39	>75% Grass cover, Good, HSG A
972	72	Weighted Average
429		44.16% Pervious Area
543		55.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry, min tc**

Summary for Subcatchment P-5: Subcat P-5

Runoff = 2.29 cfs @ 12.07 hrs, Volume= 7,958 cf, Depth= 8.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.89"

Area (sf)	CN	Description
10,685	98	Roofs, HSG A
355	98	Paved parking, HSG A
11,040	98	Weighted Average
11,040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, min tc**

Summary for Subcatchment P3: Subcat P3

Runoff = 0.22 cfs @ 12.07 hrs, Volume= 659 cf, Depth= 5.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.89"

Area (sf)	CN	Description
500	39	>75% Grass cover, Good, HSG A
825	98	Paved parking, HSG A
1,324	76	Weighted Average
500		37.74% Pervious Area
825		62.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, min tc**

Summary for Reach SP1: Study Point 1

Inflow Area = 7,889 sf, 86.28% Impervious, Inflow Depth = 1.48" for 100-Year event
Inflow = 0.50 cfs @ 12.24 hrs, Volume= 975 cf
Outflow = 0.50 cfs @ 12.24 hrs, Volume= 975 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1P: Infil. System

Inflow Area = 11,040 sf,100.00% Impervious, Inflow Depth = 8.65" for 100-Year event
Inflow = 2.29 cfs @ 12.07 hrs, Volume= 7,958 cf
Outflow = 0.14 cfs @ 11.19 hrs, Volume= 7,958 cf, Atten= 94%, Lag= 0.0 min
Discarded = 0.14 cfs @ 11.19 hrs, Volume= 7,958 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 34.98' @ 13.49 hrs Surf.Area= 885 sf Storage= 3,078 cf
Flood Elev= 37.00' Surf.Area= 885 sf Storage= 3,172 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 159.1 min (898.1 - 739.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	29.00'	1,573 cf	**15.83'W x 55.89'L x 6.25'H Field A** 5,531 cf Overall - 1,599 cf Embedded = 3,932 cf x 40.0% Voids
#2A	30.50'	1,599 cf	**ADS_StormTech MC-3500 d +Cap** x 14 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 14 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
		3,172 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	29.00'	**7.000 in/hr Exfiltration over Surface area**
#2	Secondary	36.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.14 cfs @ 11.19 hrs HW=29.08' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=29.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond PP#1: Pervious Pave #1

Inflow Area = 5,683 sf, 91.20% Impervious, Inflow Depth = 8.03" for 100-Year event
Inflow = 1.12 cfs @ 12.07 hrs, Volume= 3,801 cf
Outflow = 0.57 cfs @ 12.24 hrs, Volume= 3,801 cf, Atten= 50%, Lag= 10.3 min
Discarded = 0.17 cfs @ 12.24 hrs, Volume= 3,629 cf
Primary = 0.40 cfs @ 12.24 hrs, Volume= 172 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 36.91' @ 12.24 hrs Surf.Area= 753 sf Storage= 904 cf
Flood Elev= 37.00' Surf.Area= 753 sf Storage= 904 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 30.9 min (781.7 - 750.8)

Volume	Invert	Avail.Storage	Storage Description
#1	33.80'	904 cf	**Subbase (Conic)**Listed below (Recalc)
			2,259 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
33.80	753	0	0	753
36.80	753	2,259	2,259	1,045

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.80'	**7.000 in/hr Exfiltration over Wetted area**
#2	Primary	36.80'	**4.5' long x 3.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50
			Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.17 cfs @ 12.24 hrs HW=36.91' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.35 cfs @ 12.24 hrs HW=36.90' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir**(Weir Controls 0.35 cfs @ 0.77 fps)

Summary for Pond PP#2: Pervious Pave #1

Inflow Area = 972 sf, 55.84% Impervious, Inflow Depth = 5.48" for 100-Year event
Inflow = 0.18 cfs @ 12.00 hrs, Volume= 444 cf
Outflow = 0.09 cfs @ 12.09 hrs, Volume= 444 cf, Atten= 49%, Lag= 5.1 min
Discarded = 0.09 cfs @ 12.09 hrs, Volume= 444 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 35.42' @ 12.09 hrs Surf.Area= 546 sf Storage= 26 cf
Flood Elev= 37.00' Surf.Area= 546 sf Storage= 328 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (811.4 - 810.6)

Volume	Invert	Avail.Storage	Storage Description
#1	35.30'	328 cf	**Subbase (Conic)**Listed below (Recalc) 819 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.30	546	0	0	546
36.80	546	819	819	670

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.30'	**7.000 in/hr Exfiltration over Wetted area**
#2	Primary	36.80'	**4.5' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.09 cfs @ 12.09 hrs HW=35.42' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.30' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	Massachusetts
Location	
Longitude	71.142 degrees West
Latitude	42.405 degrees North
Elevation	0 feet
Date/Time	Fri, 28 Aug 2020 14:10:00 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.70	0.87	1.10	**1yr**	0.75	1.04	1.28	1.63	2.09	2.69	2.94	**1yr**	2.38	2.83	3.29	3.98	4.65	**1yr**
2yr	0.35	0.54	0.67	0.88	1.11	1.40	**2yr**	0.96	1.28	1.62	2.04	2.57	3.23	3.59	**2yr**	2.86	3.45	3.95	4.70	5.35	**2yr**
5yr	0.42	0.65	0.81	1.09	1.39	1.77	**5yr**	1.20	1.61	2.06	2.60	3.26	4.09	4.56	**5yr**	3.62	4.38	5.00	5.97	6.69	**5yr**
10yr	0.47	0.74	0.93	1.27	1.65	2.12	**10yr**	1.42	1.91	2.47	3.12	3.92	4.90	5.47	**10yr**	4.33	5.26	5.99	7.15	7.92	**10yr**
25yr	0.56	0.89	1.13	1.56	2.06	2.67	**25yr**	1.78	2.40	3.13	3.96	4.98	6.20	6.96	**25yr**	5.49	6.69	7.59	9.10	9.91	**25yr**
50yr	0.63	1.01	1.30	1.82	2.45	3.21	**50yr**	2.12	2.86	3.77	4.78	5.98	7.43	8.36	**50yr**	6.57	8.03	9.08	10.92	11.75	**50yr**
100yr	0.73	1.18	1.52	2.14	2.92	3.84	**100yr**	2.52	3.40	4.52	5.73	7.17	8.89	10.04	**100yr**	7.87	9.65	10.88	13.10	13.94	**100yr**
200yr	0.83	1.36	1.76	2.52	3.47	4.60	**200yr**	2.99	4.05	5.43	6.89	8.61	10.65	12.07	**200yr**	9.43	11.60	13.03	15.73	16.54	**200yr**
500yr	1.01	1.65	2.16	3.13	4.37	5.83	**500yr**	3.77	5.11	6.90	8.77	10.97	13.54	15.40	**500yr**	11.98	14.81	16.55	20.05	20.75	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.25	0.38	0.46	0.62	0.76	0.85	1yr	0.66	0.83	1.15	1.44	1.78	2.44	2.50	1yr	2.16	2.41	2.93	3.53	4.05	1yr
2yr	0.33	0.51	0.63	0.85	1.05	1.26	2yr	0.91	1.23	1.45	1.91	2.48	3.13	3.47	2yr	2.77	3.33	3.82	4.53	5.18	2yr
5yr	0.39	0.60	0.75	1.02	1.30	1.51	5yr	1.12	1.47	1.73	2.24	2.89	3.77	4.18	5yr	3.34	4.02	4.59	5.47	6.17	5yr
10yr	0.44	0.67	0.83	1.16	1.50	1.73	10yr	1.29	1.69	1.95	2.53	3.24	4.35	4.83	10yr	3.85	4.65	5.27	6.29	7.01	10yr

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
25yr	0.50	0.77	0.95	1.36	1.79	2.05	25yr	1.54	2.00	2.31	2.96	3.78	5.23	5.82	25yr	4.63	5.60	6.31	7.52	8.29	25yr
50yr	0.56	0.85	1.06	1.52	2.05	2.35	50yr	1.77	2.30	2.61	3.34	4.24	5.99	6.70	50yr	5.30	6.44	7.22	8.60	9.39	50yr
100yr	0.63	0.95	1.18	1.71	2.35	2.68	100yr	2.03	2.62	2.96	3.62	4.77	6.89	7.70	100yr	6.10	7.41	8.27	9.79	10.65	100yr
200yr	0.70	1.06	1.34	1.94	2.71	3.06	200yr	2.34	2.99	3.36	4.05	5.37	7.91	8.86	200yr	7.00	8.52	9.46	11.12	12.03	200yr
500yr	0.82	1.23	1.58	2.29	3.26	3.65	500yr	2.81	3.57	3.97	4.70	6.29	9.50	10.64	500yr	8.41	10.23	11.30	13.12	14.12	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.48	0.58	0.79	0.97	1.13	1yr	0.83	1.11	1.32	1.77	2.25	2.86	3.17	1yr	2.53	3.05	3.51	4.29	5.03	1yr
2yr	0.36	0.56	0.69	0.94	1.15	1.36	2yr	1.00	1.33	1.57	2.08	2.68	3.35	3.74	2yr	2.97	3.59	4.11	4.89	5.55	2yr
5yr	0.45	0.70	0.86	1.19	1.51	1.79	5yr	1.30	1.75	2.05	2.66	3.39	4.44	5.00	5yr	3.93	4.81	5.43	6.48	7.21	5yr
10yr	0.55	0.84	1.05	1.46	1.89	2.20	10yr	1.63	2.15	2.55	3.22	4.07	5.51	6.25	10yr	4.88	6.01	6.72	8.04	8.83	10yr
25yr	0.71	1.08	1.35	1.92	2.53	2.90	25yr	2.19	2.83	3.39	4.16	5.17	7.32	8.42	25yr	6.48	8.09	8.92	10.74	11.56	25yr
50yr	0.86	1.31	1.64	2.35	3.17	3.59	50yr	2.73	3.51	4.21	5.05	6.22	9.08	10.54	50yr	8.04	10.14	11.04	13.40	14.18	50yr
100yr	1.06	1.60	2.00	2.89	3.96	4.42	100yr	3.42	4.32	5.22	6.37	7.47	11.28	13.22	100yr	9.98	12.71	13.68	16.75	17.43	100yr
200yr	1.29	1.94	2.45	3.55	4.95	5.46	200yr	4.27	5.34	6.49	7.78	8.96	14.02	16.60	200yr	12.41	15.96	16.97	20.95	21.46	200yr
500yr	1.68	2.50	3.21	4.67	6.63	7.20	500yr	5.72	7.04	8.66	10.14	11.41	18.71	22.44	500yr	16.56	21.58	22.57	28.20	28.29	500yr

Powered by ACIS
Northeast Regional Climate Center

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Middlesex County, Massachusetts

June 29, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 20, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 13, 2020—Sep 15, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
253D	Hinckley loamy sand, 15 to 25 percent slopes	0.1	0.0%
420B	Canton fine sandy loam, 3 to 8 percent slopes	2.8	1.4%
602	Urban land	97.4	48.4%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	80.9	40.2%
631C	Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky	14.2	7.0%
654	Udorthents, loamy	4.7	2.3%
655	Udorthents, wet substratum	1.4	0.7%
Totals for Area of Interest		**201.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Middlesex County, Massachusetts

253D—Hinckley loamy sand, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2svmc
Elevation: 0 to 1,460 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash terraces, outwash deltas, kame terraces, kames, outwash plains, eskers, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Linear, concave, convex
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A

Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 8 percent
Landform: Kames, outwash terraces, eskers, moraines, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, crest, head slope, nose slope, riser
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Windsor

Percent of map unit: 5 percent
Landform: Outwash deltas, eskers, moraines, kame terraces, kames, outwash plains, outwash terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, crest, head slope, nose slope, riser
Down-slope shape: Convex, concave, linear
Across-slope shape: Concave, linear, convex
Hydric soil rating: No

Sudbury

Percent of map unit: 2 percent
Landform: Outwash plains, moraines, outwash deltas, kame terraces, eskers, outwash terraces
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave, linear, convex
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

420B—Canton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w81b
Elevation: 0 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Canton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Ridges, moraines, hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: gravelly fine sandy loam
2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Scituate

Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Footslope, backslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Montauk

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines, moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Charlton

Percent of map unit: 4 percent
Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 1 percent
Landform: Kettles, swamps, bogs, depressions, marshes
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

602—Urban land

Map Unit Setting

National map unit symbol: 9950
Elevation: 0 to 3,000 feet
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Excavated and filled land

Minor Components

Rock outcrop

Percent of map unit: 5 percent
Landform: Ledges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave

Udorthents, wet substratum
Percent of map unit: 5 percent
Hydric soil rating: No

Udorthents, loamy
Percent of map unit: 5 percent
Hydric soil rating: No

626B—Merrimac-Urban land complex, 0 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2tyr9
Elevation: 0 to 820 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition
Merrimac and similar soils: 45 percent
Urban land: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting
Landform: Eskers, moraines, outwash terraces, outwash plains, kames
Landform position (two-dimensional): Backslope, footslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile
Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities
Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water capacity: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Windsor

Percent of map unit: 5 percent
Landform: Dunes, outwash terraces, deltas, outwash plains
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Eskers, kames, deltas, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise

Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

631C—Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: vr1g
Elevation: 0 to 1,000 feet
Mean annual precipitation: 32 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 110 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Charlton and similar soils: 45 percent
Urban land: 35 percent
Hollis and similar soils: 10 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Drumlins, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Friable loamy eolian deposits over friable loamy basal till derived from granite and gneiss

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 22 inches: sandy loam
H3 - 22 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Excavated and filled land

Description of Hollis

Setting

Landform: Ridges, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Friable, shallow loamy basal till over granite and gneiss

Typical profile

H1 - 0 to 2 inches: fine sandy loam
H2 - 2 to 14 inches: fine sandy loam
H3 - 14 to 18 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Minor Components

Canton

Percent of map unit: 4 percent
Landform: Hills
Landform position (two-dimensional): Backslope, toeslope
Landform position (three-dimensional): Side slope, base slope

Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Udorthents, loamy
Percent of map unit: 2 percent
Hydric soil rating: No

Rock outcrop
Percent of map unit: 2 percent
Landform: Ledges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave

Scituate
Percent of map unit: 1 percent
Landform: Depressions, hillslopes
Landform position (two-dimensional): Toeslope, summit
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Montauk
Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Nose slope, head slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

654—Udorthents, loamy

Map Unit Setting
National map unit symbol: vr1l
Elevation: 0 to 3,000 feet
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Udorthents, loamy, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Loamy

Setting

Parent material: Loamy alluvium and/or sandy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy marine deposits and/or loamy basal till and/or loamy lodgment till

Properties and qualities

Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Minor Components

Udorthents, sandy

Percent of map unit: 10 percent
Hydric soil rating: No

Udorthents, wet substratum

Percent of map unit: 5 percent
Hydric soil rating: Yes

Urban land

Percent of map unit: 5 percent
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

655—Udorthents, wet substratum

Map Unit Setting

National map unit symbol: vr1n
Elevation: 0 to 3,000 feet
Mean annual precipitation: 32 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 110 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, wet substratum, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Wet Substratum

Setting

Parent material: Loamy alluvium and/or sandy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy marine deposits and/or loamy basal till and/or loamy lodgment till

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Minor Components

Urban land

Percent of map unit: 8 percent
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Freetown

Percent of map unit: 4 percent
Landform: Depressions, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 3 percent
Landform: Bogs, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

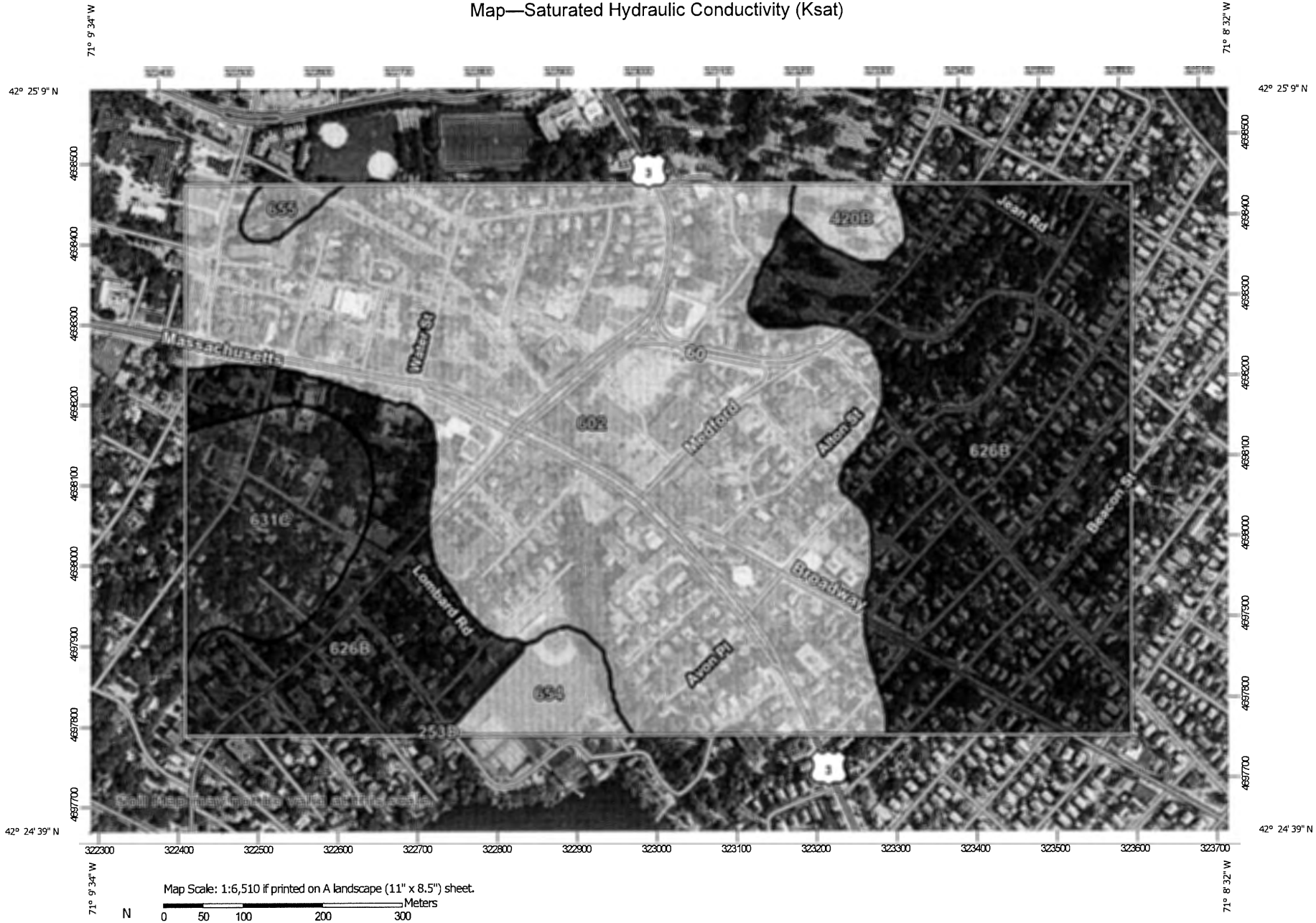
Saturated Hydraulic Conductivity (Ksat)

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Map—Saturated Hydraulic Conductivity (Ksat)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- <= 23.2900
- > 23.2900 and <= 54.0000
- > 54.0000 and <= 100.0000
- Not rated or not available

Soil Rating Lines

- <= 23.2900
- > 23.2900 and <= 54.0000
- > 54.0000 and <= 100.0000
- Not rated or not available

Soil Rating Points

- <= 23.2900
- > 23.2900 and <= 54.0000
- > 54.0000 and <= 100.0000
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 20, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 13, 2020—Sep 15, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
253D	Hinckley loamy sand, 15 to 25 percent slopes	100.0000	0.1	0.0%
420B	Canton fine sandy loam, 3 to 8 percent slopes	54.0000	2.8	1.4%
602	Urban land		97.4	48.4%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	100.0000	80.9	40.2%
631C	Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky	23.2900	14.2	7.0%
654	Udorthents, loamy		4.7	2.3%
655	Udorthents, wet substratum		1.4	0.7%
Totals for Area of Interest			**201.4**	**100.0%**

Rating Options—Saturated Hydraulic Conductivity (Ksat)

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 12

Bottom Depth: 120

Units of Measure: Inches

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

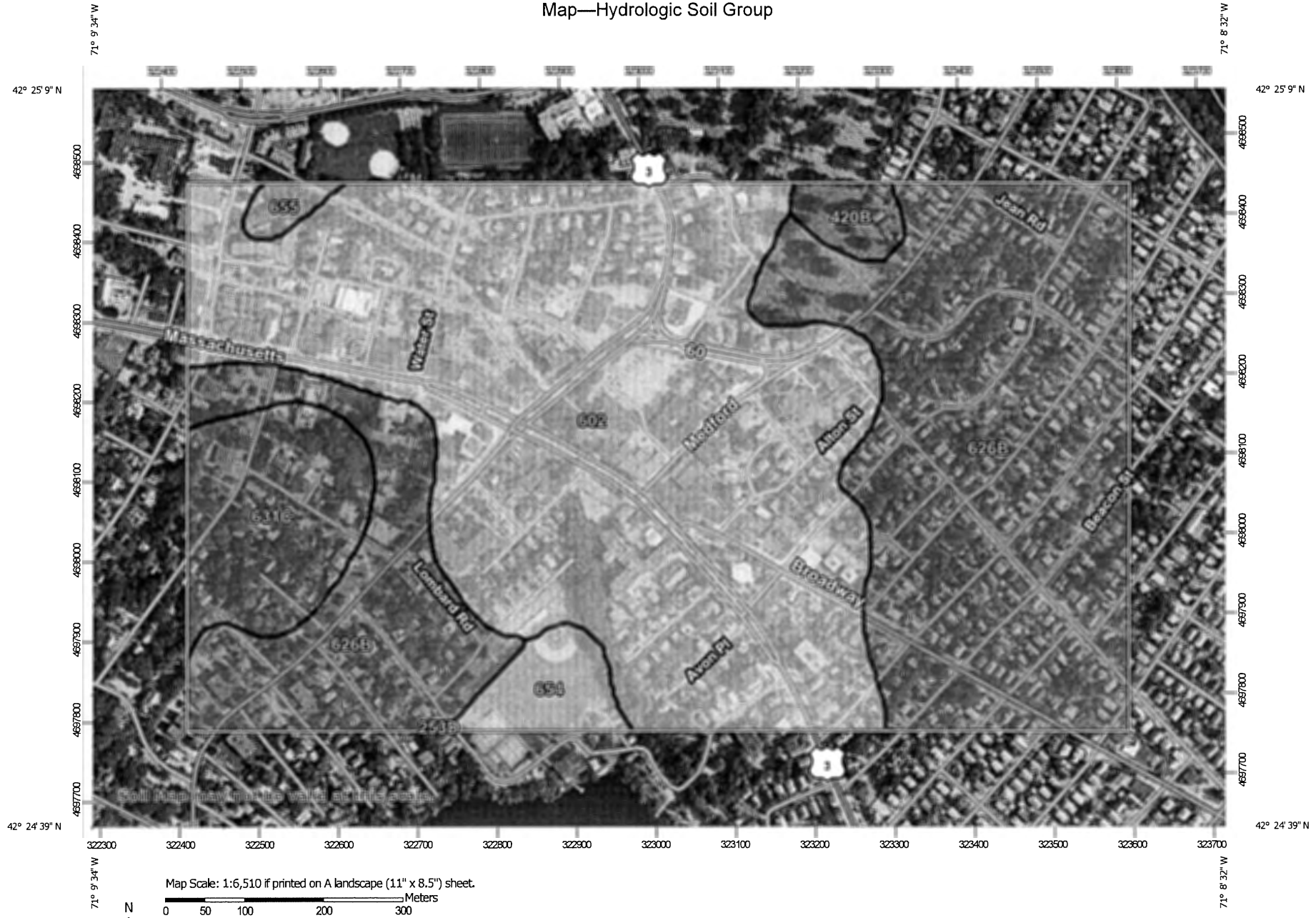
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Map—Hydrologic Soil Group



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
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- Aerial Photography

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Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 20, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 13, 2020—Sep 15, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
253D	Hinckley loamy sand, 15 to 25 percent slopes	A	0.1	0.0%
420B	Canton fine sandy loam, 3 to 8 percent slopes	B	2.8	1.4%
602	Urban land		97.4	48.4%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	80.9	40.2%
631C	Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky	A	14.2	7.0%
654	Udorthents, loamy		4.7	2.3%
655	Udorthents, wet substratum		1.4	0.7%
Totals for Area of Interest			**201.4**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

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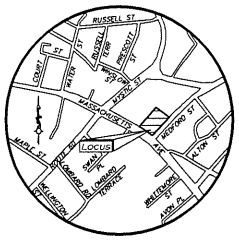


LOCUS MAP
NOT TO SCALE

SITE DEVELOPMENT PLAN SET

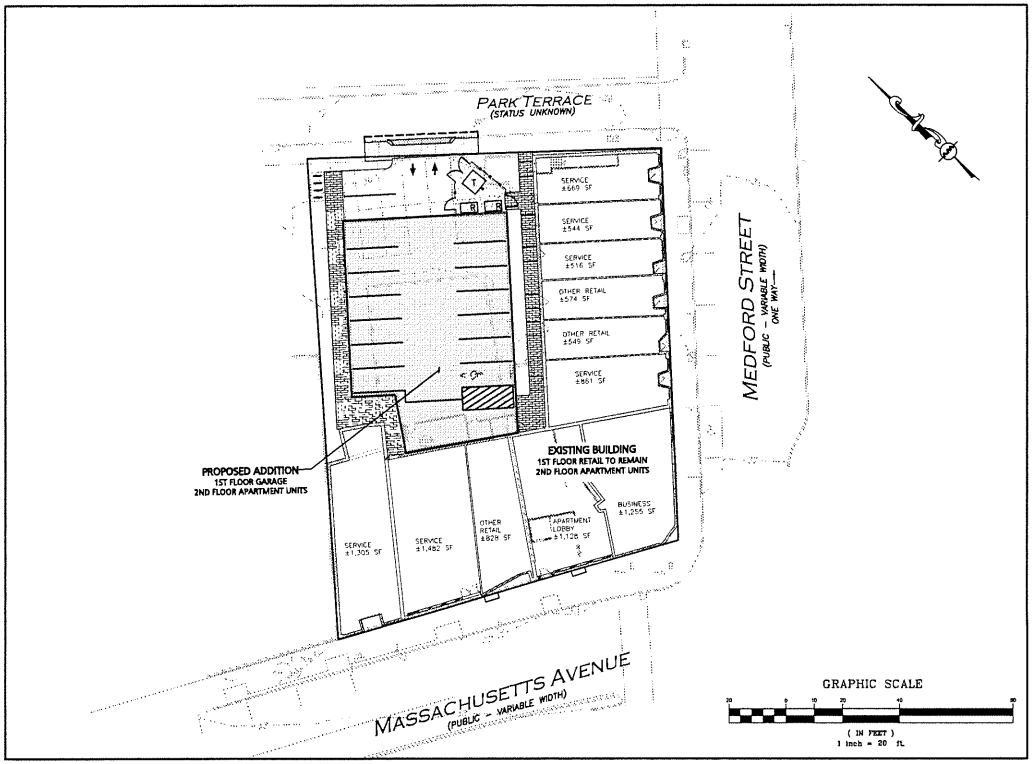
455-457 MASSACHUSETTS AVENUE

ARLINGTON, MA 02476

APPLICANT:
2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVE, STE 1
ARLINGTON, MA 02474

ARCHITECT:
MARKET SQUARE ARCHITECTS
104 CONGRESS STREET, STE 203
PORTSMOUTH, NH 03801
(603) 501-0202

CIVIL ENGINEER, LANDSCAPE ARCHITECT & LAND SURVEYOR:
ALLEN & MAJOR ASSOCIATES, INC.
100 COMMERCE WAY, SUITE 5
WOBURN, MA 01801
(781) 985-6889



LIST OF DRAWINGS

DRAWING TITLE	SHEET	ISSUED	REVISED
EXISTING CONDITIONS	1	8/19/2021	-
SITE PREPARATION PLAN	C-101	8/20/2021	-
LAYOUT & MATERIALS PLAN	C-102	8/20/2021	-
GRADING & DRAINAGE PLAN	C-103	8/20/2021	-
DETAILS	C-501	8/20/2021	-
DETAILS	C-502	8/20/2021	-
LANDSCAPE PLAN	L-101	8/20/2021	-
LANDSCAPE DETAILS	L-501	8/20/2021	-

COMMONWEALTH OF MASSACHUSETTS
BRIAN D. JONES
CIVIL
NO. 40213
REGISTERED PROFESSIONAL ENGINEER
8.20.21

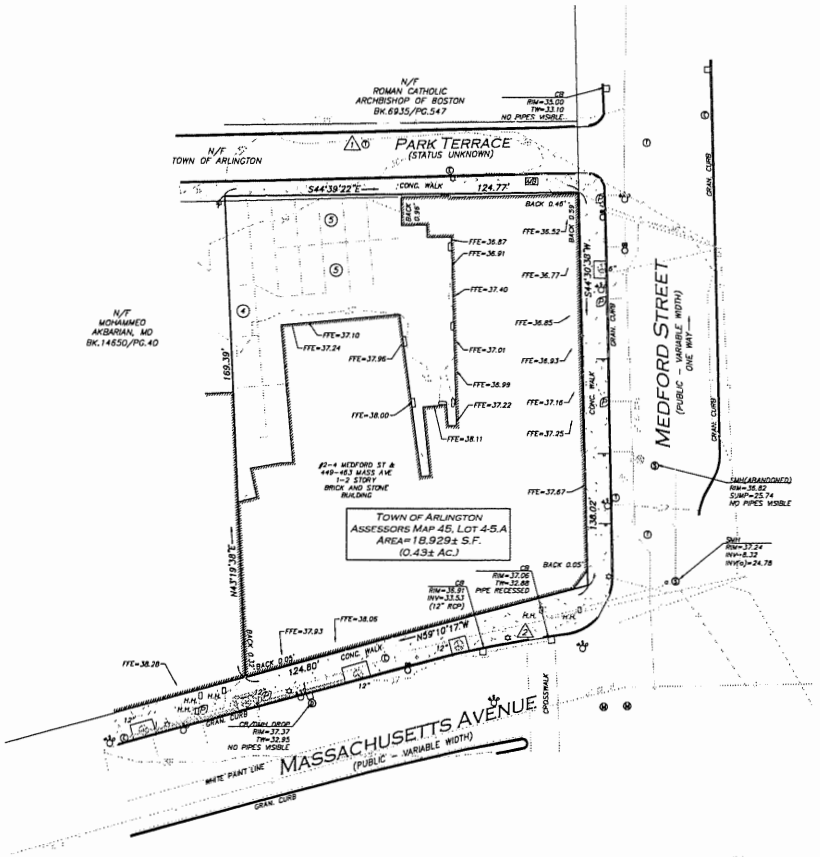
PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering • land surveying
environmental consulting • landscape architecture
www.allenmajor.com
100 COMMERCE WAY, SUITE 5
WOBURN MA 01801
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA • LAKEVILLE, MA • MANCHESTER, NH

ISSUED FOR ARB REVIEW: 8/20/2021

R:\PROJECTS\2729-03\CIVIL\DRAWINGS\CURRENT\C-2729-03_COVER.DWG

LOCUS MAP
(NOT TO SCALE)



LEGEND

DRAIN MANHOLE (DMH)	D
SEWER MANHOLE (SMH)	S
ELECTRIC MANHOLE (EMH)	E
MISC. MANHOLE (MH)	M
TELEPHONE MANHOLE (TMH)	T
CATCH BASIN (CB)	
FIRE HYDRANT	
WATER GATE	
GAS GATE	
TREE	
SIGN	
DOWNSPOUT	
PARKING METER	
HAND HOLE	HH.
LIGHT	
HANDICAPPED PARKING SPACE	
PARKING SPACE COUNT	(12)
CONCRETE	
BRICK	
1' CONTOUR	
5' CONTOUR	
PROPERTY LINE	
ABUTTERS LINE	
BUILDING	
CURB	
WATER LINE	
SEWER LINE	
DRAIN LINE	
GAS LINE	
ELECTRIC LINE	
TELEPHONE LINE	
FINISHED FLOOR ELEVATION	FFE
CONCRETE	CONC.
GRANITE	GRAN.
BOTTOM CENTER	(BC)
TOP OF WATER	TW
INVERT	INV.
NOW OR FORMERLY	N/F
BOOK	BK.
PAGE	PG.

BENCHMARK SUMMARY		
TBM #	DESCRIPTION	ELEV.
1	X-CUT ON RIM OF TELEPHONE MANHOLE	35.76
2	X-CUT ON LIGHT POLE BASE BY #449	37.58

PARKING SUMMARY	
STANDARD STALLS	14
HANDICAPPED STALLS	0
TOTAL STALLS	14

UTILITY STATEMENT

THE UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. ALLEN & MAJOR ASSOCIATES, INC. (A&M) MAKES NO GUARANTEE THAT THE UTILITIES SHOWN HEREON COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. A&M FURTHER DOES NOT WARRANT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. A&M HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

LOCUS REFERENCES

-TOWN OF ARLINGTON ASSESSORS MAP 45, LOT 4-5.A
-RECORD OWNER: 2-14 MEDFORD STREET, LLC
-REGISTERED LAND BOOK 1523, PAGE 99
-L.C.C. NO. 7802C

PLAN REFERENCE

-PLAN 563 OF 1962

NOTES

1. NORTH ARROW IS BASED ON MASSACHUSETTS GRID COORDINATE SYSTEM (MAINLAND ZONE) (NAD 83).
2. BOOK/PAGE AND PLAN REFERENCES ARE TAKEN FROM MIDDLESEX (SOUTH) REGISTRY OF DEEDS IN CAMBRIDGE, MA.
3. VERTICAL DATUM IS NAVD 88.
4. CONTOUR INTERVAL IS ONE FOOT (1').

GRAPHIC SCALE

30 0 15 30 60 90

1 inch = 30 ft

N:\PROJECTS\2729-03\SURVEY\DRAWINGS\CURRENT\S-2729-03-EC.DWG

WE HEREBY CERTIFY THAT THIS PLAN IS THE RESULT OF AN ACTUAL ON THE GROUND SURVEY PERFORMED ON OR BETWEEN NOVEMBER 16, 2020 AND NOVEMBER 18, 2020.

Aug. 19, 2021

PROFESSIONAL LAND SURVEYOR FOR
ALLEN & MAJOR ASSOCIATES, INC.

COMMONWEALTH OF MASSACHUSETTS
NORMAN I. LIPSITZ
No. 28446
REGISTERED PROFESSIONAL LAND SURVEYOR

08/19/21

REV	DATE	DESCRIPTION

APPLICANT\OWNER:
2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVENUE, SUITE 1
ARLINGTON, MA 02474

PROJECT:
455-457
MASSACHUSETTS
AVENUE
ARLINGTON, MA

PROJECT NO.	2729-03	DATE:	08/19/21
SCALE:	1" = 20'	DWG. NAME:	S-2729-03-EC
DRAFTED BY:	AJR	CHECKED BY:	NIL

PREPARED BY:

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civil engineering • land surveying
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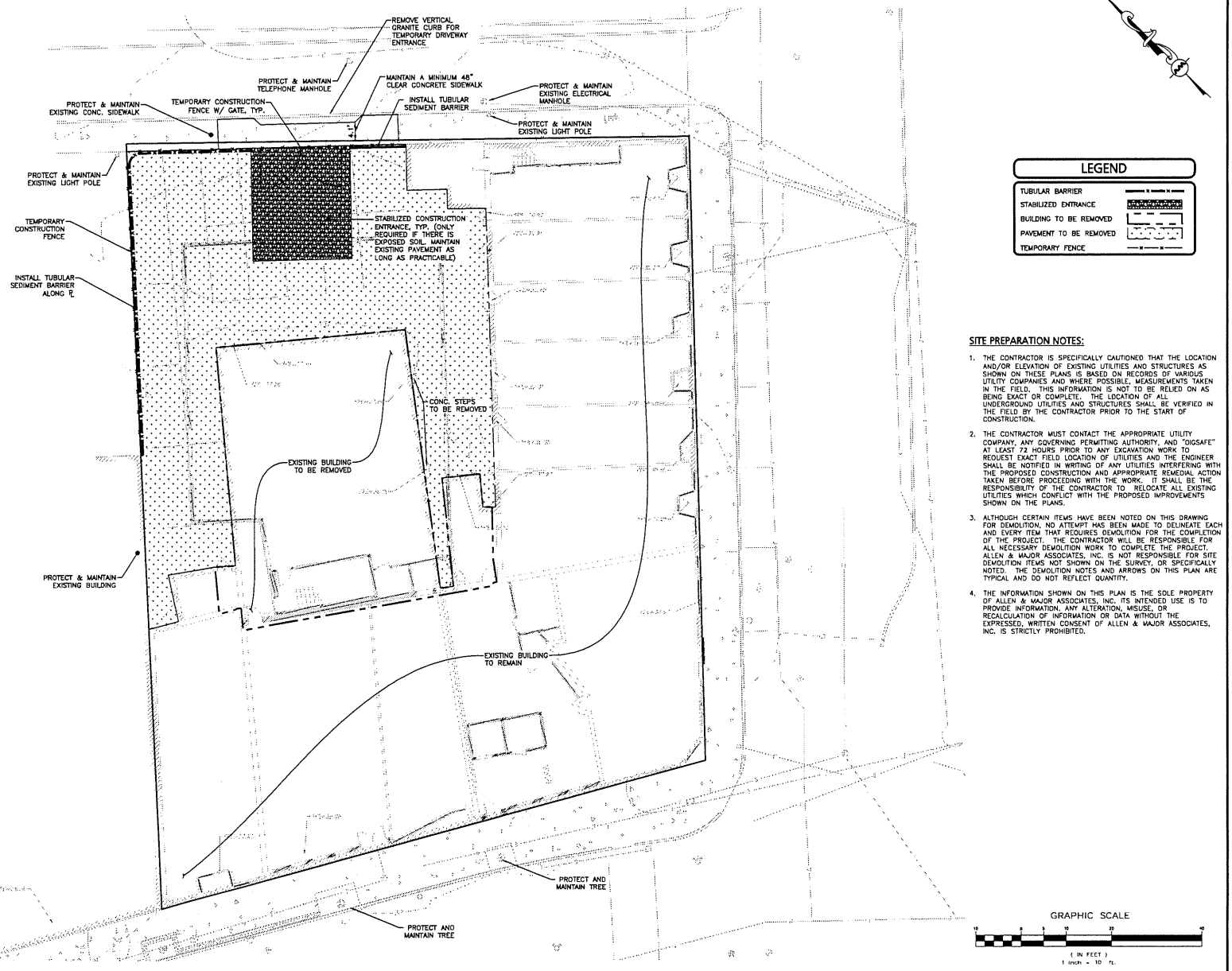
DRAWING TITLE:	SHEET No.
EXISTING CONDITIONS	1



DIG SAFE

BEFORE YOU DIG CALL 811 OR 1-888-DIG-SAFE 1-888-344-7233

LEGEND

- TUBULAR BARRIER
- STABILIZED ENTRANCE
- BUILDING TO BE REMOVED
- PAVEMENT TO BE REMOVED
- TEMPORARY FENCE

SITE PREPARATION NOTES:

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIGSAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES AND THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
3. ALTHOUGH CERTAIN ITEMS HAVE BEEN NOTED ON THIS DRAWING FOR DEMOLITION, NO ATTEMPT HAS BEEN MADE TO DELINEATE EACH AND EVERY ITEM THAT REQUIRES DEMOLITION FOR THE COMPLETION OF THE PROJECT. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL NECESSARY DEMOLITION WORK TO COMPLETE THE PROJECT. ALLEN & MAJOR ASSOCIATES, INC. IS NOT RESPONSIBLE FOR SITE DEMOLITION ITEMS NOT SHOWN ON THE SURVEY, OR SPECIFICALLY NOTED. THE DEMOLITION NOTES AND ARROWS ON THIS PLAN ARE TYPICAL AND DO NOT REFLECT QUANTITY.
4. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. ITS INTENDED USE IS TO PROVIDE INFORMATION. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

COMMONWEALTH OF MASSACHUSETTS
BRIAN D. JONES
CIVIL
No. 42212
REGISTERED PROFESSIONAL ENGINEER

8.20.21

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:
2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVE, STE 1
ARLINGTON, MA 02474

PROJECT:
455-457
MASSACHUSETTS AVE
ARLINGTON, MA 02476

PROJECT NO.	2729-03	DATE:	8/20/2021
SCALE:	1" = 10'	DWG. NAME:	C2729-03
DESIGNED BY:	JG/ARM	CHECKED BY:	ARM/BDJ

PREPARED BY:

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DRAWING TITLE:	SHEET No.
SITE PREPARATION PLAN	C-101

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SHARED PARKING SUMMARY TABLE

"MIXED-USE" SHALL BE THE SUM OF USES COMPUTED SEPARATELY	REQUIRED PARKING
*FOR MIXED-USE DEVELOPMENT, THE FIRST 3,000 SQUARE FEET OF NON-RESIDENTIAL SPACE IS EXEMPT FROM THE PARKING REQUIREMENTS OF SECTION 6.1 IN THE ARLINGTON ZONING BYLAW	–
SERVICE: 5,377 S.F. 1 PER 300 S.F. → 1 x (5,377-3,000)/300 = 7.9	7.9
BUSINESS: 1,255 S.F. 1 PER 500 S.F. → 1 x 1,255/500 = 2.5	2.5
OTHER RETAIL: 1,951 S.F. 1 PER 300 S.F. → 1 x 1,951/300 = 6.5	6.5
ONE-BEDROOM APARTMENT UNIT (APARTMENT: 13 UNITS) 1.15 PER UNIT → 1.15 x 13 = 15.0	15.0
TOTAL REQUIRED PARKING BASED ON INDIVIDUAL USES:	31.9
TOTAL PARKING PROVIDED:	16*

ADA SPACES REQUIRED:
(1-25) TOTAL PARKING SPACES PROVIDED, 1 SHALL BE THE MINIMUM ADA PARKING PROVIDED, 1 SPACES BEING VAN ACCESSIBLE.

PROVIDED 1 SPACES, 1 BEING VAN ACCESSIBLE.

PARKING TABLE NOTES:
1. SECTION 6.1.10. C. FOR A MIXED-USE DEVELOPMENT THE FIRST 3,000 SF OF NON-RESIDENTIAL SPACE IS EXEMPT FROM THE PARKING REQUIREMENTS OF THIS SECTION 6.1.
2. SECTION 6.1.11, STANDARD PARKING STALLS SHALL BE 8.5'X18', AND DRIVE AISLE WIDTH SHALL BE 24' FOR TWO-WAY TRAFFIC.

* RELIEF REQUESTED FROM THE ARB FOR THE REQUIRED NUMBER OF PARKING STALLS AND THE DRIVE AISLE REDUCED FROM 24' TO 20'.

BICYCLE PARKING SUMMARY TABLE

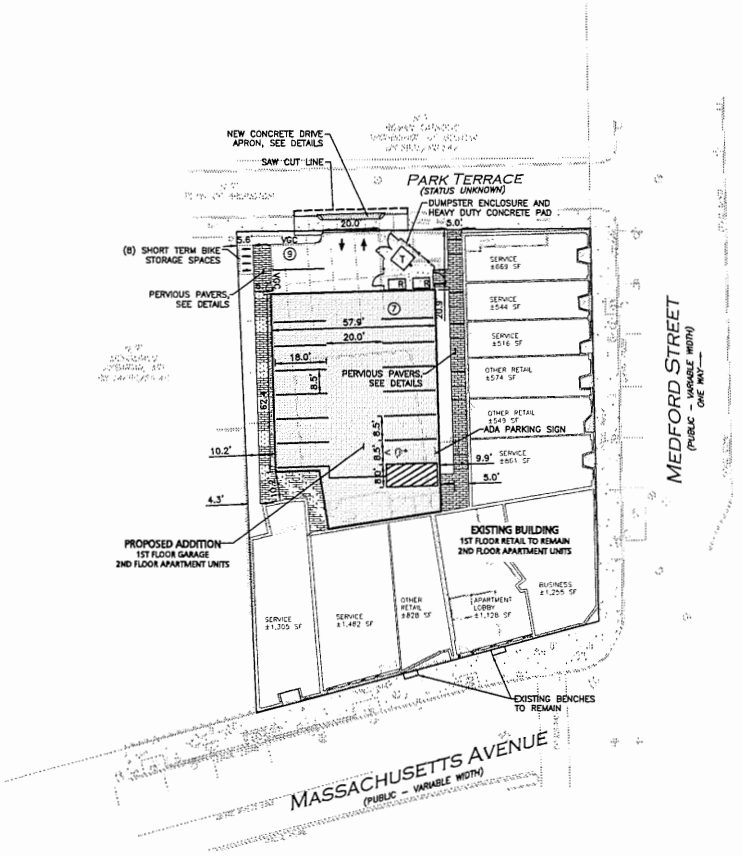
SHORT TERM BICYCLE PARKING (EXTERIOR)

USE	CALCULATION	MIN. REQUIRED	TOTAL PROPOSED
APARTMENT BUILDING	0.1 PER UNIT 13 X 0.1 = 1.3 REQUIRED	1.3	2
OTHER RETAIL OR SERVICE	0.6 PER 1,000 SF (7,828) X 0.6 = 4.4 REQUIRED	4.4	5
BUSINESS	0.5 PER 1,000 SF (1,255) X 0.5 = 0.6 REQUIRED	0.6	1
	TOTAL	6.3	8

LONG TERM BICYCLE PARKING (INTERIOR)

USE	CALCULATION	MIN. REQUIRED	TOTAL PROPOSED
APARTMENT BUILDING	1.5 PER UNIT 13 X 1.5 = 19.5 REQUIRED	19.5	20
OTHER RETAIL OR SERVICE	0.1 PER 1,000 SF (7,828) X 0.1 = 0.7 REQUIRED	0.7	3
BUSINESS	0.3 PER 1,000 SF (1,255) X 0.3 = 0.4 REQUIRED	0.4	3
	TOTAL	20.6	26

BICYCLE PARKING TABLE NOTES:
1. REQUIRED NUMBER OF SPACES ARE FROM BICYCLE PARKING GUIDELINES, APPENDIX A BIKE PARKING BY-LAW.



LEGEND

- PROP. PROPERTY LINE
- SIGN
- BOLLARD
- BUILDING
- BUILDING ARCHITECTURE
- BUILDING INTERIOR WALLS
- CURB
- PARKING STRIPING
- HEAVY DUTY CONCRETE
- SIDEWALK
- ADA ACCESSIBLE RAMP
- PERMEABLE PAVERS
- SAW-CUT LINE
- PARKING COUNT
- COMPACT PARKING STALL

ZONING SUMMARY TABLE

B3-VILLAGE BUSINESS (MIXED-USE <=20,000SF)

ITEM	REQUIRED/ ALLOWED	EXISTING	PROPOSED
MINIMUM LOT AREA	N/A	18,929± SF	18,929± SF
MINIMUM LOT AREA PER UNIT	N/A	N/A	N/A
MINIMUM FRONTAGE	50 FT	124.8± FT MASS. AVE	124.8± FT MASS. AVE
MINIMUM FRONT YARD SETBACK	0 FT	0 FT	0 FT
MINIMUM SIDE YARD SETBACK	0 FT	0 FT	0 FT
MINIMUM REAR YARD SETBACK	(H+L)/6 (1)	0.6 FT	0.6 FT
LANDSCAPED OPEN SPACE	10% (2)	0%	24.1%
USABLE OPEN SPACE	20% (2)	0%	0%
MAXIMUM HEIGHT	60 FT	<35 FT	<35 FT
MAXIMUM HEIGHT STORIES	5	2	2
FLOOR AREA RATIO	1.50	0.98	1.50(3)

ZONING TABLE NOTES:
1. THE REAR SETBACK (H+L)/6, FOR THE NEW ADDITION IS APPROXIMATELY 15.5 FT. (38+57)/6 = 15.5 FT. THE PROPOSED ADDITION HAS BEEN SITUATED OUTSIDE OF THIS SETBACK. THE EXISTING FOUNDATION IS SITUATED 0.6 FT FROM THE REAR PROPERTY LINE. THIS FOUNDATION IS TO BE MAINTAINED.
2. SECTION 5.3.21. SUPPLEMENTAL REQUIREMENTS IN THE BUSINESS AND INDUSTRIAL DISTRICTS, D. FOR MIXED USES AND ANY PERMITTED RESIDENTIAL USE NOT SPECIFICALLY IDENTIFIED IN THE TABLES IN SECTION 5.5.2, THE MINIMUM OPEN SPACE REQUIREMENTS (COMPUTED FROM THE RESIDENTIAL FLOOR AREA ONLY) SHALL BE 10% LANDSCAPED AND 20% USABLE IN THE B1, B2, B2A, B3, AND B4 DISTRICTS, AND 15 PERCENT USABLE IN THE B5 DISTRICT.
3. PROPOSED BUILDING GROSS SQUARE FEET = 28,373 GSF. THE EXISTING LOT AREA IS 18,929 SQUARE FEET. THE FAR = 28,373 GSF / 18,929 SF = 1.50

NOTES

1. WRITTEN DIMENSIONS ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS OR CONDITIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR. ALL SITE ITEMS SHALL BE LAID OUT AND AS BUILT BY A LICENSED LAND SURVEYOR.
2. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. ITS INTENDED USE IS TO PROVIDE INFORMATION. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

DIG SAFE

BEFORE YOU DIG CALL 811 OR 1-888-DIG-SAFE 1-888-344-7233

R:\PROJECTS\2729-03\CIVIL\DRAWINGS\CURRENT\C-2729-03_LAYOUT & MATERIALS.DWG

BRIANO. JONES CIVIL No. 45112 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
08.20.21

PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:
2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVE, STE 1
ARLINGTON, MA 02474

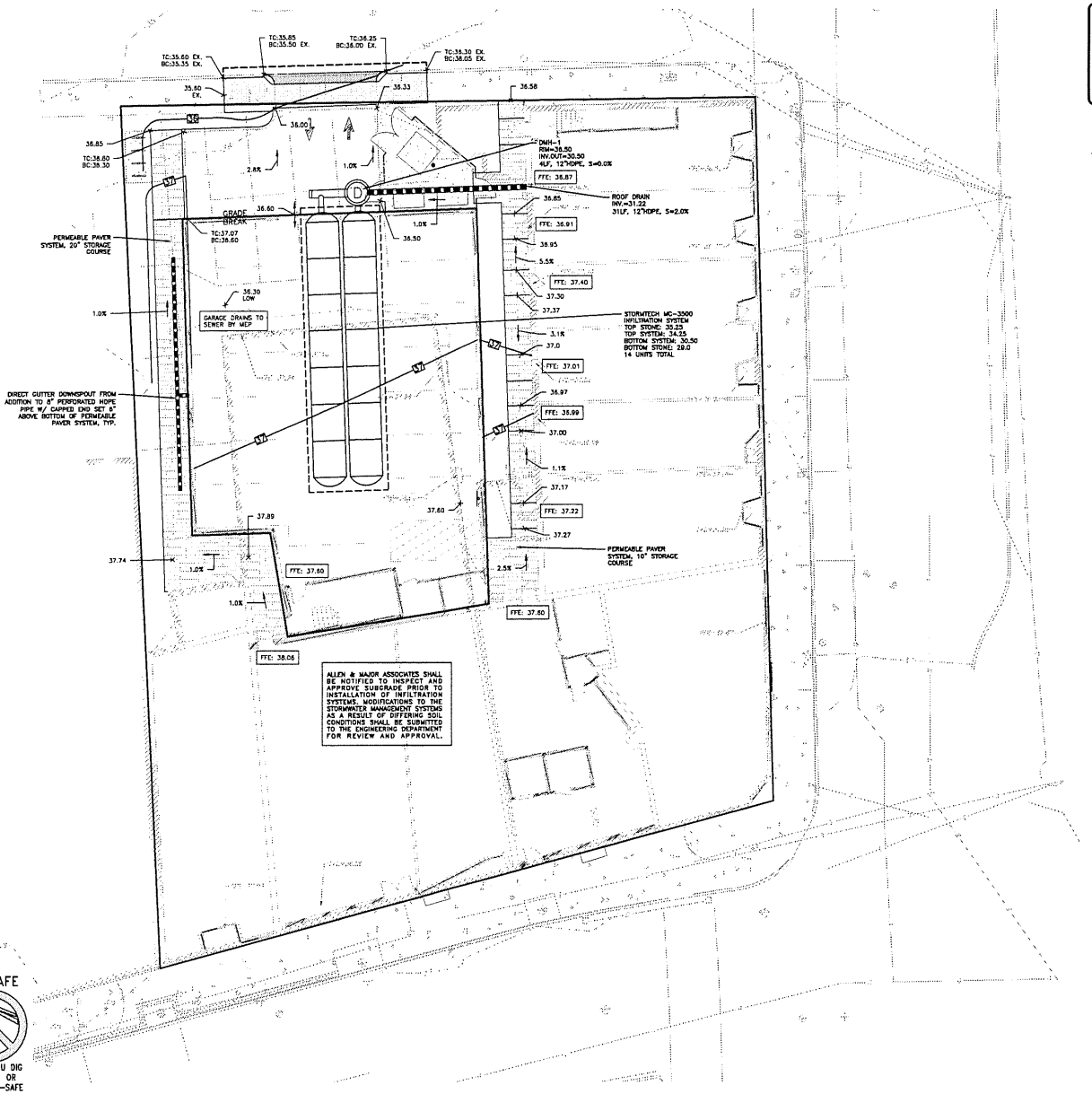
PROJECT:
455-457
MASSACHUSETTS AVE
ARLINGTON, MA 02476

PROJECT NO.	2729-03	DATE:	8/20/2021
SCALE:	1" = 20'	DWG. NAME:	C2729-03
DESIGNED BY:	JG/ARM	CHECKED BY:	ARM/BDJ

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering • land surveying
environmental consulting • landscape architecture
www.allenmajor.com
100 COMMERCE WAY, SUITE 5
WOBURN, MA 01801
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA • EASTHAM, MA • MANCHESTER, NH

DRAWING TITLE:	SHEET No.
LAYOUT & MATERIALS PLAN	C-102



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1-888-344-7233

LEGEND

- DRAIN MANHOLE
- CATCH BASIN
- DRAIN LINE
- 10' CONTOUR — 100
- 2' CONTOUR — 102
- SPOT GRADE — 78.50
- INFILTRATION SYSTEM

PLAN NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR IT'S REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF EXISTING STRUCTURES INCLUDING REMOVAL OF ANY EXISTING UTILITIES SERVING THE STRUCTURE. UTILITY CONNECTIONS SHOULD BE COORDINATED WITH THE MEP PRIOR TO CONSTRUCTION.
3. EXISTING SEWER AND WATER SERVICES SHALL BE MAINTAINED AND SERVICE TO ADDITION AND ADDITIONAL UNITS SHALL BE DETERMINED BY MEP. THE CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE LOCATION AND CAPACITY OF EXISTING SERVICE IS ADEQUATE.
4. EXISTING DRAINAGE STRUCTURES TO REMAIN ARE TO BE INSPECTED AND REPAIRED AS NEEDED, AND EXISTING PIPES TO BE CLEANED OUT TO REMOVE ALL SILT AND DEBRIS.
5. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.
6. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ENSURE A SMOOTH FIT AND CONTINUOUS GRADE.
7. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
8. THE CONTRACTOR SHALL COORDINATE WITH THE ARCHITECT FOR THE FINAL LOCATIONS OF PROPOSED ROOF DRAINS. LOCATIONS ARE SHOWN HEREON FOR COORDINATION PURPOSES ONLY.
9. WRITTEN DIMENSIONS ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS OR CONDITIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR.
10. ANY DAMAGE TO PRIVATE OR PUBLIC PROPERTIES DUE TO THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AND RESTORED BY THE CONTRACTOR AT THEIR OWN EXPENSE.
11. ALL PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERLY PROTECTED DURING CONSTRUCTION. ANY DAMAGE TO THESE ITEMS SHALL BE REPAIRED AND RESTORED BY A LAND SURVEYOR LICENSED IN THE COMMONWEALTH OF MASSACHUSETTS AT THE CONTRACTOR'S EXPENSE.
12. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ADDITIONAL BENCHMARK INFORMATION IF REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING BENCHMARKS. IF IT IS NECESSARY TO RELOCATE A BENCHMARK, IT SHALL BE RELOCATED BY A MASSACHUSETTS LAND SURVEYOR AND DONE SO AT THE CONTRACTOR'S EXPENSE.
13. ALL PERMITS AND APPROVALS NECESSARY FROM AGENCIES GOVERNING THE WORK SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORK.
14. CONSTRUCTION DURING WET WEATHER OR WINTER CONDITIONS IS TO BE ANTICIPATED AND PROVISIONS TO ADEQUATELY ADDRESS THESE CONDITIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
15. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS INCLUDING THE TOWN OF ARLINGTON, MADOT, MADEP, MWRA, MUTCD, AND AASHTO.
16. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY ALLEN & MAJOR ASSOCIATES DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK, OR THE OWNER'S EMPLOYEES, CUSTOMERS, OR THE GENERAL PUBLIC. THE SEAL OF THE ENGINEER AS INCLUDED IN THE PLAN SET DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PROVIDE THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), STATE, AND LOCAL REGULATIONS.
17. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. ITS INTENDED USE IS TO PROVIDE INFORMATION. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

COMMONWEALTH OF MASSACHUSETTS
BRIAN D. JONES
CIVIL
No. 49212
REGISTERED
PROFESSIONAL ENGINEER

8.20.21

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:

2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVE, STE 1
ARLINGTON, MA 02474

PROJECT:

455-457 MASSACHUSETTS AVE
ARLINGTON, MA 02476

PROJECT NO.	2729-03	DATE:	8/20/2021
SCALE:	1" = 10'	DWG. NAME:	C2729-03
DESIGNED BY:	JG/ARM	CHECKED BY:	ARM/BDJ

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
100 COMMERCE WAY, SUITE 5
WOBURN, MA 01801
TEL: (781) 933-0980
FAX: (781) 933-7846
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

DRAWING TITLE:	SHEET No.
GRADING & DRAINAGE PLAN	C-103

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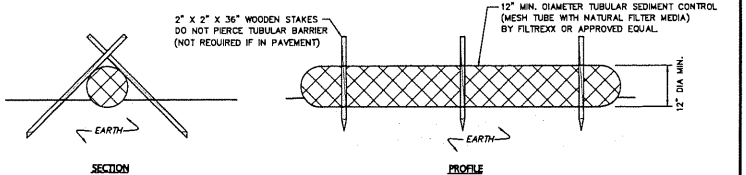
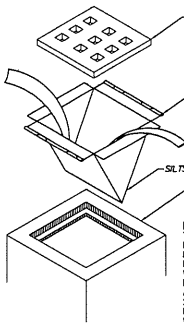


SECTION PROFILE

NOTES:

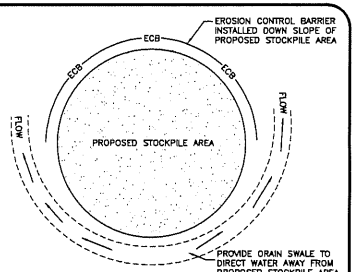
1. ALL MATERIALS TO MEET MANUFACTURERS SPECIFICATIONS.
2. INSTALL WOODEN STAKES IN A CRISS-CROSS PATTERN EVERY 8' ON CENTER.
2. OVERLAP TUBULAR BARRIER SEGMENTS A MINIMUM OF 12".
3. THE CONTRACTOR SHALL MAINTAIN THE TUBULAR BARRIERS IN A FUNCTIONAL CONDITION AT ALL TIMES. THE CONTROLS SHALL BE ROUTINELY INSPECTED BY THE CONTRACTOR.
4. WHERE THE TUBULAR BARRIERS REQUIRE REPAIR OR SEDIMENT REMOVAL, IT WILL BE COMPLETED BY THE CONTRACTOR AT NO ADDITIONAL COST.
5. AT A MINIMUM, THE CONTRACTOR SHALL REMOVE SEDIMENTS COLLECTED AT THE BASE WHEN THEY REACH 1/3 THE EXPOSED HEIGHT OF THE BARRIER.

TUBULAR SEDIMENT BARRIER (1)
NOT TO SCALE



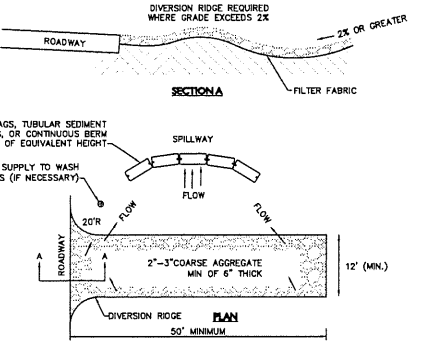
NOTE:
1. INSTALL SILTSACK PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. EMPTY OR REMOVE SEDIMENT FROM SILTSACK WHEN RESTRAINT CORD IS NO LONGER VISIBLE. CLEAN, RINSE, AND REPLACE AS NEEDED.
2. SILT SACKS TO BE INSTALLED DURING CONSTRUCTION OPERATIONS WHEN THE POTENTIAL FOR SEDIMENT TO ENTER EXISTING & PROPOSED BASINS EXISTS.

SILTSACK INLET DETAIL (2)
NOT TO SCALE



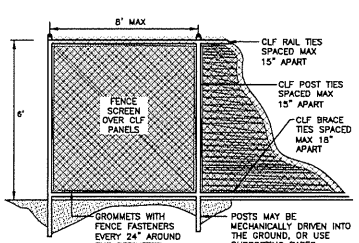
NOTES:
1. SOIL AND FILL STOCKPILES EXPECTED TO REMAIN IN PLACE FOR LESS THAN 90 DAYS SHALL BE COVERED WITH STRAW AND MULCH (AT 100LBS/1,000 SF), OR WITH AN ANCHORED TARP WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.
2. SOIL AND FILL STOCKPILES EXPECTED TO REMAIN IN PLACE FOR 90 DAYS OR MORE SHALL BE SEEDED WITH WINTER RYE (FOR FALL SEEDING AT 1LB/1,000 SF) OR OATS (FOR SUMMER SEEDING AT 2LB/1,000 SF) AND THEN COVERED WITH STRAW MULCH (AT 100LB/1,000 SF) OR AN ANCHORED TARP WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.

STOCKPILE PROTECTION DETAIL (3)
NOT TO SCALE



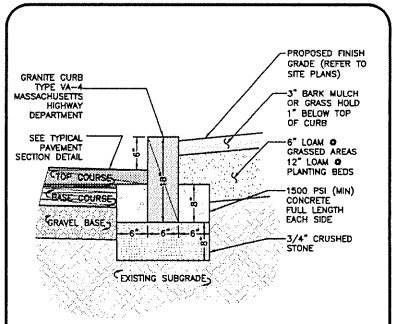
NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTERING THE PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. USE SANDBAGS, TUBULAR SEDIMENT CONTROLS, OR OTHER APPROVED METHODS TO CHANNELIZE RUNOFF TO BASIN AS REQUIRED.

TEMPORARY CONSTRUCTION ENTRANCE/EXIT (4)
NOT TO SCALE

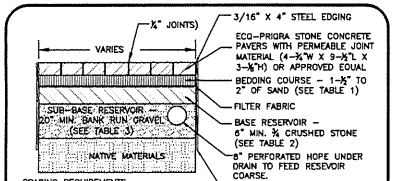


NOTES:
1. SCREEN MATERIAL SHALL BE MADE FROM KNITTED HIGH DENSITY POLYETHYLENE WITH UV ADDITIVES.
2. SCREEN FILAMENT STRENGTH SHALL BE A MINIMUM OF 50LBS/FT.
3. SCREEN MATERIAL BREAK STRENGTH SHALL BE A MINIMUM OF 500 LBS/FT.
4. SCREEN SHADE / WIND BLOCKAGE SHALL BE A MINIMUM OF 85%.
5. SCREEN COLOR SHALL BE GREEN OR BLACK.

TEMPORARY CONSTRUCTION FENCE w/ SCREEN (5)
NOT TO SCALE



VERTICAL GRANITE CURB (6)
NOT TO SCALE



GRADING REQUIREMENTS FOR ASTM NO. 8 BEDDING AND JOINT/OPENING FILLER

Table 1 - Bedding/Joint	
SIEVE SIZE	% PASSING
12.5mm(½ in)	100
9.5mm(⅜ in)	85 to 100
4.75mm(No. 4)	10 to 30
2.36mm(No. 8)	0 to 10
1.16mm(No. 16)	0 to 5

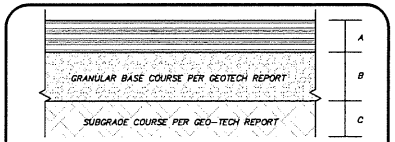
GRADING REQUIREMENTS FOR ASTM NO. 57 BASE

Table 2 - Base	
SIEVE SIZE	% PASSING
37.5mm (1½ in)	100
25mm (1 in)	95 to 100
12.5mm (½ in)	25 to 60
4.75mm (No. 4)	0 to 10
2.36mm (No. 8)	0 to 5

GRADING REQUIREMENTS FOR ASTM NO. 2 SUB-BASE

Table 3 - Sub-Base	
SIEVE SIZE	% PASSING
75mm (3 in)	100
63mm (2½ in)	90 to 100
50mm (2 in)	35 to 75
37.5mm (1½ in)	0 to 15
19mm (¾ in)	0 to 5

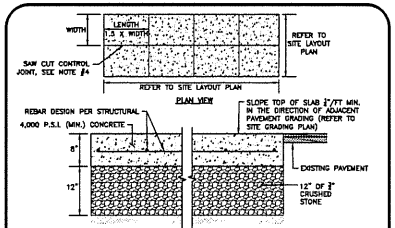
PRECAST CONCRETE PAVER (PERVIOUS) (3)
NOT TO SCALE



NOTES:
1. SURFACE COURSE, BASE, AND SUBGRADE SHALL BE PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS FOR LOCAL SOILS OR DRAINAGE CONDITIONS AND/OR METHODS.
2. THIS DETAIL IS APPLICABLE TO ON-SITE PAVING.
3. SUBGRADE SHALL BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY (AS DETERMINED BY ASTM D1557).
4. COORDINATE PAVEMENT DETAIL WITH GEOTECHNICAL ENGINEER.

STANDARD DUTY PAVING
A= 1.5" ASPHALT CONCRETE - SURFACE COURSE (M.3.11.0, TABLE A, TOP COURSE)
1.5" ASPHALT CONCRETE - BINDER COURSE (M.3.11.0, TABLE A, BINDER COURSE)
B= 4" BASE COURSE (MHD 2.01.7)
C= 12" SUBBASE COURSE (MHD 1.03.0, TYPE B)

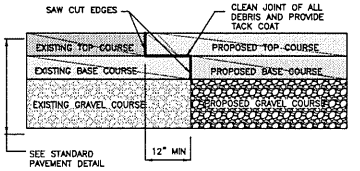
STANDARDDUTY BITUMINOUS PAVEMENT (7)
NOT TO SCALE



NOTES:
1. PROVIDE NON-SLIP BROOM FINISH TO TOP SURFACE.
2. ALL CONCRETE SHALL BE PROPORTIONED, MIXED AND PLACED CONFORMING TO CURRENT AMERICAN CONCRETE INSTITUTE (ACI) 301, 304, AND 308 STANDARDS. THE FOLLOWING MIX DESIGNS SHALL BE SUBMITTED FOR REVIEW:
EXTERIOR CONCRETE
28-DAY STRENGTH (MIN): 4,000 PSI
COARSE AGGREGATE (MAX): ¾"
WATER CEMENT RATIO (W/C): 0.45
AIR ENTRAINMENT: 5% (±1%)
SLUMP: 3.5" (±1")
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL IN ACCORDANCE WITH ASTM A615, GRADE 60. ALL DETAILS SHALL BE IN ACCORDANCE WITH ACI DETAIL STANDARD ACI 315.
4. CONTROL JOINTS SHALL BE SAW CUT TO A DEPTH OF 1.0" AT A RATIO NOT TO EXCEED 1.5:1.0 LENGTH TO WIDTH, SEE PLAN VIEW ABOVE.

HEAVY DUTY CONCRETE PAD (9)
NOT TO SCALE

NOTE:
TACK COAT - PROVIDE EMULSIFIED ASPHALT WHICH CONFORMS TO THE REQUIREMENTS OF THE STATE SPECIFICATIONS, DILUTED WITH ONE PART WATER TO ONE ONE PART ASPHALT FOLLOWING AASHTO M140/ASTM D997, OR AASHTO M208/ASTM D2397, SS-1H, CSS-1, OR CSS-1H.



PAVEMENT KEY CUT DETAIL (10)
NOT TO SCALE

BRIAN D. JONES CIVIL NO. 49212 REGISTERED PROFESSIONAL ENGINEER
8.20.21
PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:
2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVE, STE 1
ARLINGTON, MA 02474

PROJECT:
455-457
MASSACHUSETTS AVE
ARLINGTON, MA 02476

PROJECT NO.	2729-03	DATE:	8/20/2021
SCALE:	AS SHOWN	DWG. NAME:	C2729-03
DESIGNED BY:	JG/ARM	CHECKED BY:	ARM/BDJ

PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering • land surveying
environmental consulting • landscape architecture
www.allenmajor.com
100 COMMERCE WAY, SUITE 5
WOBURN, MA 01801
TEL: (781) 933-0860
FAX: (781) 933-7806
WOBURN, MA • LAKEVILLE, MA • MANCHESTER, NH

DRAWING TITLE:	SHEET No.
DETAILS	C-501

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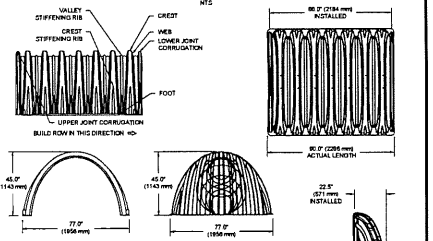
MC-3500 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS		
SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.8 CUBIC FEET	---- ----
MINIMUM INSTALLED STORAGE*	178.9 CUBIC FEET	---- ----
WEIGHT	135.0 lbs.	(61.2 kg)

NOMINAL END CAP SPECIFICATIONS		
SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 22.5"	(1956 mm X 1143 mm X 571 mm)
END CAP STORAGE	14.9 CUBIC FEET	---- ----
MINIMUM INSTALLED STORAGE*	46.0 CUBIC FEET	---- ----
WEIGHT	50.0 lbs.	(22.7 kg)

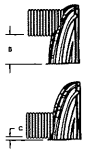
*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	B	C
MC3500EPP06T	6" (150 mm)	33.21" (844 mm)	—
MC3500EPP06B		—	0.69" (17 mm)
MC3500EPP06T	6" (200 mm)	31.16" (791 mm)	—
MC3500EPP06B		—	0.81" (21 mm)
MC3500EPP10T	10" (250 mm)	29.04" (738 mm)	—
MC3500EPP10B		—	0.93" (24 mm)
MC3500EPP12T	12" (300 mm)	26.96" (670 mm)	—
MC3500EPP12B		—	1.35" (34 mm)
MC3500EPP15T	15" (375 mm)	23.36" (594 mm)	—
MC3500EPP15B		—	1.59" (36 mm)
MC3500EPP18TC	18" (450 mm)	20.03" (509 mm)	—
MC3500EPP18BC		—	1.77" (45 mm)
MC3500EPP24TC	24" (600 mm)	14.48" (368 mm)	—
MC3500EPP24BC		—	2.06" (52 mm)
MC3500EPP30BC	30" (750 mm)	—	—

NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (305-608 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN "B" ARE THE HIGHTEST POSSIBLE FOR THE PIPE SIZE.

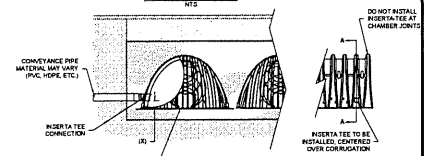


CHAMBER SYSTEM TECHNICAL SPECIFICATIONS (1)

NOT TO SCALE

INSERTA TEE DETAIL

NTS



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (R)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	6" (250 mm)

INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON

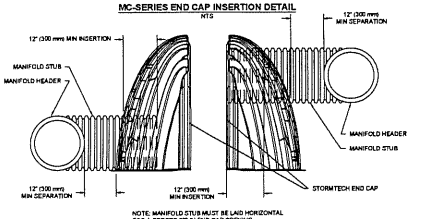
NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

INSERTA TEE CONNECTION DETAIL (4)

NOT TO SCALE

MC-SERIES END CAP INSERTION DETAIL

NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

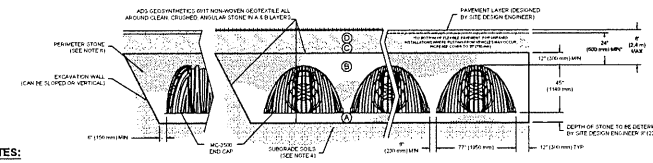
CHAMBER SYSTEM TYPICAL END CAP DETAIL (5)

NOT TO SCALE

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE (E LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER	AASHTO M145= A-1, A-2-4, A-3 OR AASHTO M43= 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL-GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A LAYER) TO THE 'C' LAYER ABOVE	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43= 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43= 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) MAX LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACE MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

1. MC-3500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS"
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS"
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS, AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
   PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS
5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

CHAMBER SYSTEM TYPICAL CROSS SECTION DETAIL (2)

NOT TO SCALE

STORMWATER CHAMBER SPECIFICATIONS

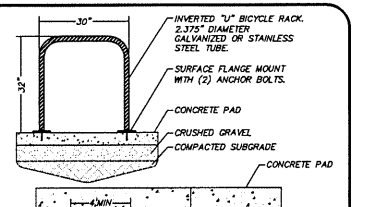
1. CHAMBERS SHALL BE STORMTECH MC-3500 OR APPROVED EQUAL.
2. CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS TESTED USING ASTM STANDARDS.
3. CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS.
5. ONLY CHAMBERS THAT ARE APPROVED BY THE ENGINEER WILL BE ALLOWED.
6. CHAMBERS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
7. ALL DESIGN SPECIFICATIONS FOR CHAMBERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LATEST DESIGN MANUAL.
8. THE INSTALLATION OF CHAMBERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LATEST INSTALLATION INSTRUCTIONS.

DESC.	SIGN	SIZE	MOUNTING HEIGHT	DESCRIPTION	REFLECTORIZED
R7-8M (MODIFIED)		12" x 26"	7' - 0"	WHITE TEXT ON BLUE FIELD WITH WHITE BORDER	YES

1. TRAFFIC AND SAFETY SIGNAGE SHALL COMPLY WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) STANDARDS.
2. MOUNTING HEIGHT IS DEFINED AS THE DISTANCE FROM THE BOTTOM OF THE SIGN TO THE NEAR EDGE OF THE PAVEMENT.

SIGN TABLE (3)

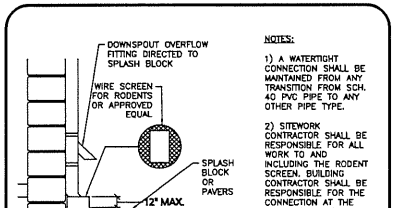
NOT TO SCALE



NOTE: BIKE RACKS TO BE FROM PARK A BIKE: MODEL 200 SERIES-INVERTED U BIKE RACKS HR202 30"X2.38"X32" SURFACE MOUNTED. SURFACE MOUNT PER MANUFACTURER'S RECOMMENDATIONS. FINISH SELECTED BY OWNER. PROVIDE SHOP DRAWINGS FOR APPROVAL PRIOR TO ORDERING.

BICYCLE RACK DETAIL (6)

NOT TO SCALE



NOTES:

1) A WATERTIGHT CONNECTION SHALL BE MAINTAINED FROM ANY TRANSITION FROM SCH. 40 PVC PIPE TO ANY OTHER PIPE TYPE.

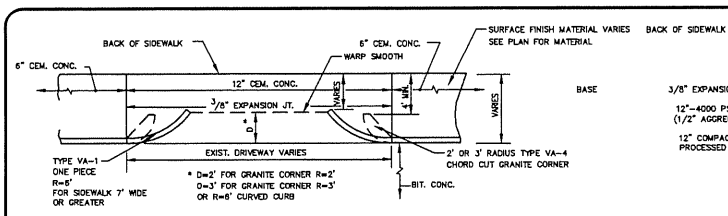
2) SITEWORK CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK TO AND INCLUDING THE RODENT SCREEN. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONNECTION AT THE POINT OF THE RODENT SCREEN.

3) DOWNSPOUTS SHALL BE CONNECTED IN THE MANNER SHOWN AND CONVEYED TO THE NEAREST STORM DRAIN.

4) SUBMIT SHOP DRAWINGS FOR DOWNSPOUT OVERFLOW, SPLASH BACK, RODENT SCREEN, FITTINGS AND PIPE.

DOWNSPOUT (7)

NOT TO SCALE



TYPICAL COMMERCIAL DRIVEWAY APRON (8)

NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
BRIAN D. JONES
CIVIL
No. 42212
REGISTERED PROFESSIONAL ENGINEER
8.20.21

PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:
2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVE, STE 1
ARLINGTON, MA 02474

PROJECT:
455-457
MASSACHUSETTS AVE
ARLINGTON, MA 02476

PROJECT NO.	2729-03	DATE:	8/20/2021
SCALE:	AS SHOWN	DWG. NAME:	C2729-03
DESIGNED BY:	JG/ARM	CHECKED BY:	ARM/BDJ

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering • land surveying
environmental consulting • landscape architecture
www.allenmajor.com
100 COMMERCE WAY, SUITE 5
WOBURN, MA 01801
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA • LAKEVILLE, MA • MANCHESTER, NH

DRAWING TITLE:	SHEET No.
DETAILS	C-502

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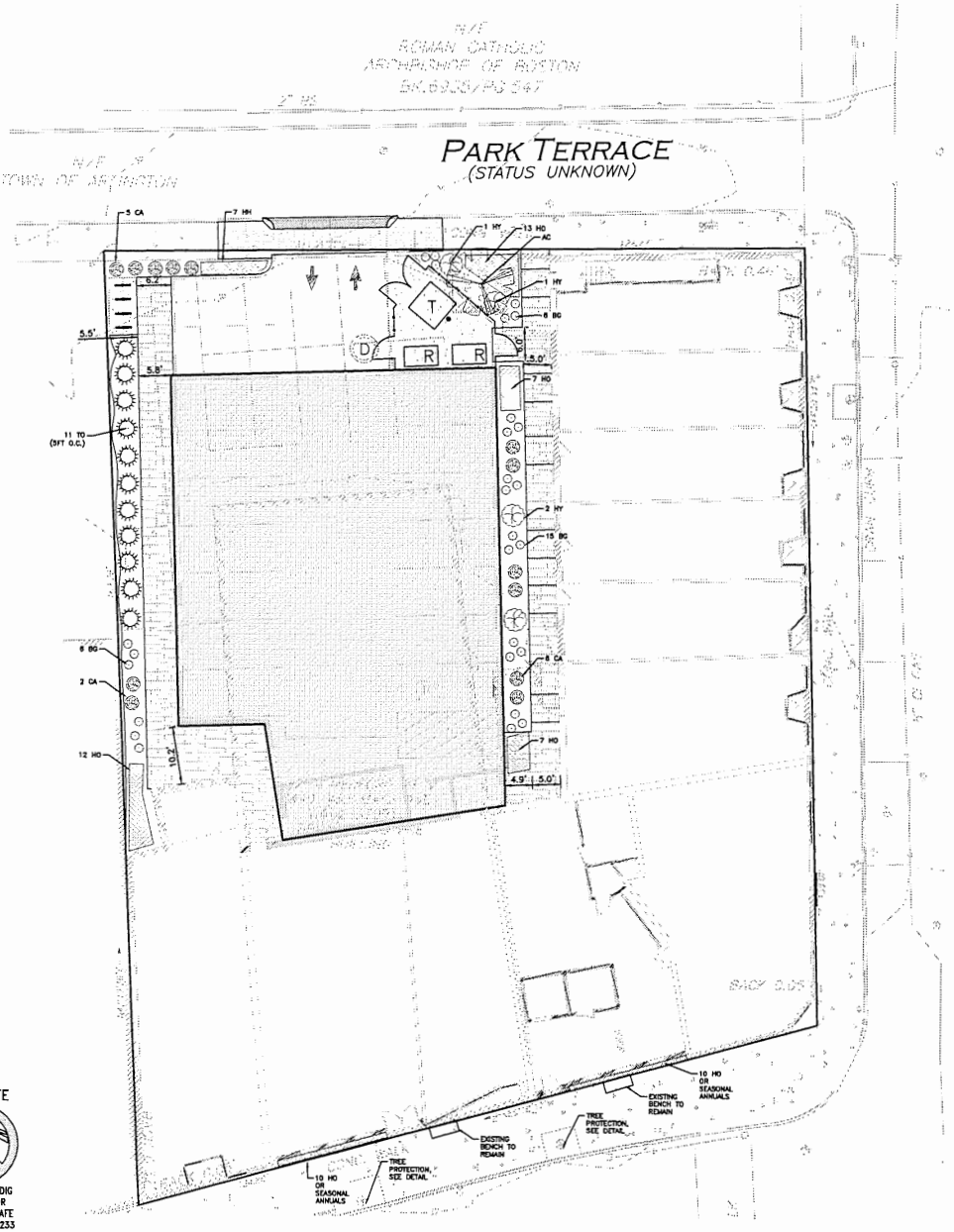

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LEGEND

- DECIDUOUS TREE
- EVERGREEN TREE
- FLOWERING TREE
- SHRUBS
- MULCH BED
- PERENNIALS/GROUNOCOVER

PLANTING SCHEDULE-TREES, SHRUBS, GROUNDCOVERS & PERENNIALS

KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	MIN. SIZE	SPACING	COMMENTS
EVERGREEN TREES						
TO	11	THUJA O. 'WINTERGREEN'	WINTERGREEN ARBORVITAE	6–7' HT	AS SHOWN	B&B
FLOWERING TREES						
AC	1	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	2.5–3" CAL.	AS SHOWN	B&B
SHRUBS/PERENNIALS						
CA	13	CORNUS ALBA 'IVORY HALO'	IVORY HALO DOGWOOD	#3	AS SHOWN	POT
BG	27	BUXUS 'GREEN MOUNTAIN'	GREEN MOUNTAIN BOXWOOD	#2	AS SHOWN	POT
HY	4	HYDRANGEA ARBORESCENS INCREDIBALL	INCREDIBALL HYDRANGEA	#5	AS SHOWN	POT
HO	46	HOSTA 'JUNE'	JUNE HOSTA	#1	24" O.C	STAGGERED
HH	7	HEMEROCALLIS 'BIG TIME HAPPY'	BIG TIME HAPPY DAYLILLY	#1	24" O.C	STAGGERED

NOTES:

1. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. IT'S INTENDED USE IS TO PROVIDE INFORMATION. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.
2. ALL LANDSCAPED AREAS WITH SHRUBS, TREES, AND PERENNIALS TO HAVE 18" MINIMUM DEPTH OF TOPSOIL. EIGHTEEN INCHES OF TOPSOIL AROUND TREES AND SHRUBS DOES NOT INCLUDE AMENDED PLANTING SOIL WITHIN TREE / SHRUB PIT FOR FULL DEPTH OF ROOTBALLS. SEE PLANTING DETAILS FOR PLANTING DEPTH AT SHRUBS AND TREES. ALL AREAS OF LOAM AND SEED OR LOAM & SOD TO HAVE 6" MINIMUM DEPTH OF TOPSOIL. TOPSOIL TO BE TESTED BY CONTRACTOR, AND APPROVED BY A&M PRIOR TO PURCHASE AND OR PLACEMENT. GENERAL CONTRACTOR, DEMOLITION CONTRACTOR, AND LANDSCAPE CONTRACTOR TO COORDINATE PROPER DEPTH OF EXISTING MATERIAL REMOVAL ACROSS SITE SO THAT 18" MINIMUM AND 6" MINIMUM DEPTHS OF PROPOSED TOPSOIL NOTED ABOVE ARE MET AT NO ADDITIONAL COST TO OWNER. SEE TOPSOIL DETAIL.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

REGISTERED LANDSCAPE ARCHITECT FOR ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:
2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVE, STE 1
ARLINGTON, MA 02474

PROJECT:
455-457
MASSACHUSETTS AVE
ARLINGTON, MA 02476

PROJECT NO.	2729-03	DATE:	8/20/2021
SCALE:	1" = 10'	DWG. NAME:	C2729-03
DESIGNED BY:	JG, BCD	CHECKED BY:	ARM/BDJ

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering • land surveying
environmental consulting • landscape architecture
www.allenmajor.com
100 COMMERCE WAY, SUITE 5
WOBURN, MA 01801
TEL: (781) 935-6889
FAX: (781) 935-2896
WOBURN, MA • EASTVILLE, MA • MANCHESTER, NH

DRAWING TITLE:	SHEET No.
LANDSCAPE PLAN	L-101

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LANDSCAPE NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE TOWN OF ARLINGTON, MA.
2. PLANTING PLAN IS DIAGRAMMATIC IN NATURE. FINAL PLACEMENT OF PLANTS TO BE APPROVED BY THE LANDSCAPE ARCHITECT IN THE FIELD.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES, ANY PERMITTING AGENCIES, AND "DIG-SAFE" (1-888-344-7233) AT LEAST 72 HOURS IN ADVANCE OF ANY WORK THAT WILL REQUIRE EXCAVATION. CONTRACTOR SHALL NOTIFY THE OWNERS REPRESENTATIVE OF NAY CONFLICTS IN WRITING.
4. NO PLANT MATERIAL SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA, ANY TREES NOTED AS "SEAL OR SELECTED SPECIMEN" SHALL BE TAGGED AND SEALED BY THE LANDSCAPE ARCHITECT.
5. ALL TREES SHALL BE BALLED AND BURLAPPED (B&B) UNLESS OTHERWISE NOTED OR APPROVED BY THE OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT.
6. CONTRACTOR SHALL VERIFY QUANTITIES SHOWN ON PLANT LIST. QUANTITIES SHOWN ON PLANS SHALL GOVERN OVER PLANT LIST.
7. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE APPROVED IN WRITING BY OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT.
8. ALL PLANT MATERIALS INSTALLED SHALL MEET THE GUIDELINES ESTABLISHED BY THE STANDARDS FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
9. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF ACCEPTANCE.
10. ALL DISTURBED AREAS NOT OTHERWISE NOTED SHALL RECEIVE 6" OF SUITABLE LOAM & SEED LAWNS WITH 3:1 OR GREATER SLOPES SHALL BE PROTECTED WITH AN EROSION CONTROL BLANKET.
11. ANY FALL TRANSPLANTING HAZARD PLANTS SHALL BE DUG IN THE SPRING AND STORED FOR FALL PLANTING.
12. TREES SHALL HAVE A MINIMUM CALIPER AS INDICATED ON THE PLANTING SCHEDULE TAKEN ONE FOOT ABOVE THE ROOT CROWN.
13. ALL PLANT BEDS AND TREE SAUCERS TO RECEIVE 3" OF PINE BARK MULCH. GROUND COVER AREAS SHALL RECEIVE 1" OF PINE BARK MULCH
14. ALL DECIDUOUS TREES ADJACENT TO WALKWAYS AND ROADWAYS SHALL HAVE A BRANCHING PATTERN TO ALLOW FOR A MINIMUM OF 7' OF CLEARANCE BETWEEN THE GROUND AND THE LOWEST BRANCH.
15. ALL TREE STAKES SHALL BE STAINED DARK BROWN.
16. CONTRACTOR RESPONSIBLE FOR WATERING, AND RESEEDING OF BARE SPOTS UNTIL A UNIFORM STAND OF VEGETATION IS ESTABLISHED AND ACCEPTED.
17. ALL PARKING ISLANDS PLANTED WITH SHRUBS SHALL HAVE 24" OF TOP SOIL. FINISH GRADE SHALL BE EQUAL TO THE TOP OF CURB.
18. SOIL SAMPLES, TESTS, AND SHOP DRAWINGS SHALL BE PROVIDED TO THE LANDSCAPE ARCHITECT OR THE OWNER FOR APPROVAL PRIOR TO CONSTRUCTION.
19. AN MINIMUM 18" WIDE BARRIER OF 1" GRAY OR TAN PEASTONE SHALL BE INSTALLED IN ALL PLANT BEDS WHICH ABUT THE BUILDINGS WITH FLAMMABLE EXTERIOR MATERIAL. NO MULCH IS ALLOWED WITHIN 18" OF THIS BUILDING MATERIAL PER THE LATEST EXECUTIVE OFFICE OF PUBLIC SAFETY AND SECURITY DEPARTMENT OF FIRE SERVICES REGULATION (527 CMR 17.00). INSTALL 6" DEEP OF PEASTONE WITH MIRAFI WEED FABRIC BENEATH AND STEEL EDGING BETWEEN THE PEASTONE AND ADJACENT MULCH BED.
20. ALL PROPOSED LANDSCAPE AREAS INCLUDING MOWED LAWNS, TREES, SHRUB BEDS, AND PERENNIALS SHALL BE PROVIDED WITH WATER EFFICIENT UNDERGROUND IRRIGATION. DESIGN AND INSTALLATION OF IRRIGATION SYSTEM TO BE PERFORMED BY AN APPROVED IRRIGATION DESIGN BUILD CONTRACTOR OR BY AN APPROVED EQUAL, TO BE DETERMINED BY THE OWNERS REPRESENTATIVE AND LANDSCAPE ARCHITECT. IRRIGATION SYSTEM IS TO BE DESIGNED FOR EFFICIENT WATER USAGE INCLUDING: USE OF DRIP IRRIGATION FOR SHRUBS AND PERENNIALS, IRRIGATION SYSTEM WITH HEAD-TO-HEAD COVERAGE, A CENTRAL SHUT-OFF VALVE, AND A RAIN SENSOR TO SHUT OFF IRRIGATION DURING RAIN EVENTS.

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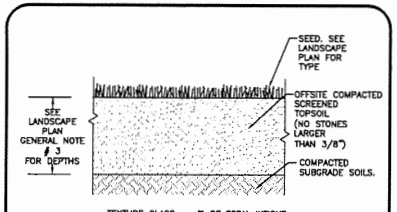
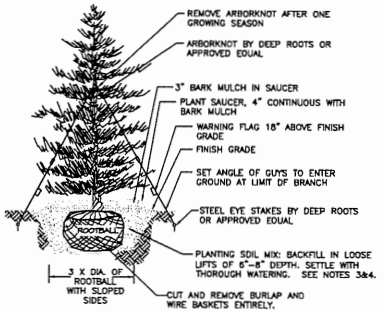


TEXTURE CLASS	% OF TOTAL WEIGHT
SAND	45% – 65%
SILT	15% – 35%
CLAY	5% – 20%

SIEVE	% PASSING
3/8"	100
NO. 4	85–100
NO. 40	60–85
NO. 100	38–60
NO. 200	10–35
20 um	LESS THAN 5%

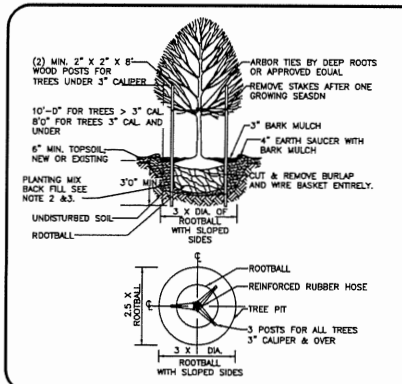
NOTES:
1. TOP OF LOAM (TOPSOIL) IS FINISH GRADE.
2. ALL TOPSOIL (BOTH ONSITE AND OFFSITE SOURCES) SHALL BE COMPOSED OF A NATURAL, FERTILE, FRIABLE SOIL TYPICAL OF CULTIVATED TOPSOILS OF THE LOCALITY. OFFSITE SOIL SHALL BE SUITABLE FOR THE GERMINATION OF SEEDS AND SUPPORT OF VEGETATIVE GROWTH, WITH ADDITIVES, IF REQUIRED, TO ACHIEVE PARTICLE DISTRIBUTION AND ORGANIC CONTENT BELOW. TOPSOIL SHALL BE TAKEN FROM A WELL-DRAINED, ARIABLE SITE, FREE OF SUBSOIL, LARGE STONES, EARTH CLODS, STICKS, STUMPS, CLAY LUMPS, ROOTS, OTHER OBJECTIONABLE, EXTRANEOUS MATTER OR DEBRIS NOR CONTAIN TOXIC SUBSTANCES.
3. THE CONTRACTOR SHALL PROVIDE THE OWNER / LANDSCAPE ARCHITECT WITH TOPSOIL TEST RESULTS (RECOMMEND UMASS AMHERST SOIL TESTING LAB) FOR APPROVAL PRIOR TO OBTAINING AND PLACING THE SOIL. IF ANY TOPSOIL IS PURCHASED OR PLACED PRIOR TO APPROVAL BY OWNER / LANDSCAPE ARCHITECT, IT IS AT CONTRACTORS RISK, AND IT CAN BE REMOVED AT NO ADDITIONAL COST TO THE OWNER. IF THE PLANTING SOIL (BOTH ONSITE AND OFFSITE SOURCES) DOES NOT FALL WITHIN THE REQUIRED SIEVE ANALYSIS, TEXTURAL CLASS, ORGANIC CONTENT, OR PH RANGE, IT SHALL BE ADJUSTED TO MEET THE SPECIFICATIONS THROUGH THE ADDITION OF SAND, COMPOST, LIMESTONE, OR ALUMINUM SULFATE TO BRING IT WITHIN THE SPECIFIED LIMITS AT NO ADDITIONAL COST TO THE OWNER.
4. TOPSOIL SHALL HAVE A PH VALUE BETWEEN 5.5 AND 6.5. TOPSOIL SHALL CONTAIN BETWEEN 4% AND 8% ORGANIC MATTER OF TOTAL DRY WEIGHT AND SHALL CONFORM TO THE FOLLOWING GRADATION AND TEXTURE CLASS ABOVE.

TOPSOIL FOR LAWN, TREES, SHRUBS, & PERENNIALS (2)
NOT TO SCALE



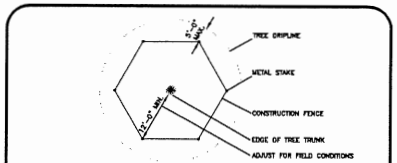
NOTES
1. TREES SHALL BEAR SAME RELATIONSHIP TO FINISH GRADE AS IT BORE TO NURSERY OR FIELD GRADE. ROOT FLARE SHALL BE 2" ABOVE FINISH GRADE. REMOVE SOIL FROM TRUNK FLARE OF TREE TO DETERMINE ACTUAL TOP OF ROOTBALL AREA.
2. INSTALL THREE GUYS PER TREE; EQUALLY SPACED AROUND BALL.
3. ATTACH GUYS AT 2/3 HEIGHT OF TREE.
4. BACKFILL WITH PLANTING MIX. PLANT MIX TO BE: 50% NATIVE TOPSOIL, 20% COMPOST (LEAVES & ORGANIC MATERIAL, NO ASH) 20% PEAT MOSS, 10% SAND.
5. ADD MYCORRHIZA SOIL ADDITIVES AND SLOW RELEASE FERTILIZER WHEN PLANT HOLES ARE 50% FILLED AND WATER THOROUGHLY AT COMPLETION.

EVERGREEN TREE DETAIL (1)
NOT TO SCALE

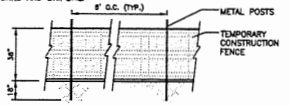


NOTES:
1. ALL TREES SHALL HAVE THE SAME RELATIONSHIP TO FINISH GRADE AFTER PLANTING AS THEY HAD AT THE ORIGINAL NURSERY SETTING. ROOT FLARE SHALL BE 2" ABOVE FINISH GRADE. REMOVE SOIL FROM TRUNK FLARE OF TREE TO DETERMINE ACTUAL ROOTBALL AREA.
2. BACKFILL WITH PLANTING MIX. PLANT MIX TO BE: 50% NATIVE TOPSOIL, 20% COMPOST (LEAVES & ORGANIC MATERIAL, NO ASH) 20% PEAT MOSS, 10% SAND.
3. ADD MYCORRHIZA SOIL ADDITIVES AND SLOW RELEASE FERTILIZER WHEN PLANT HOLES ARE 50% FILLED AND WATER THOROUGHLY AT COMPLETION.

DECIDUOUS TREE PLANTING DETAIL (3)
NOT TO SCALE

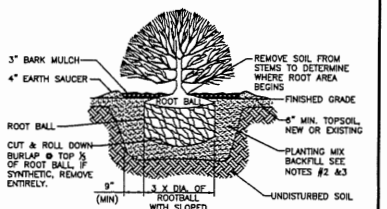


NOTE:
1. CONSTRUCTION FENCE TO BE "VISUAL BARRIER FENCE" AS MANUFACTURED BY EXXON CHEMICAL COMPANY ATLANTA, GA; "KONTROL SAFETY FENCE" AS MANUFACTURED BY MIRAFI, CHARLOTTE, N.C. OR APPROVED EQUAL.
2. IF GROUPS OF TREES ARE TO BE PROTECTED, EXTEND FENCE AROUND PERIMETER TO CONFORM TO MINIMUM DIMENSIONS FOR TREE TRUNKS AND DRIPLINE.



TEMP. CONST. FENCE / TREE PROTECTION (4)
NOT TO SCALE

NOTES:
1. ALL SHRUBS SHALL HAVE THE SAME RELATIONSHIP TO FINISH GRADE AFTER PLANTING AS THEY HAD AT THE ORIGINAL NURSERY SETTING. SET SHRUB 1"-2" ABOVE FINISH GRADE.
2. BACKFILL WITH PLANTING MIX. PLANT MIX TO BE: 50% NATIVE TOPSOIL, 20% COMPOST (LEAVES & ORGANIC MATERIAL, NO ASH) 20% PEAT MOSS, 10% SAND.
3. ADD MYCORRHIZA SOIL ADDITIVES AND SLOW RELEASE FERTILIZER WHEN PLANT HOLES ARE 50% FILLED AND WATER THOROUGHLY AT COMPLETION.
4. SHRUB BEDS TO HAVE 24" MIN. OF CONTINUOUS PLANTING SOIL.



SHRUB PLANTING DETAIL (5)
NOT TO SCALE

REGISTERED LANDSCAPE ARCHITECT FOR ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:
2-14 MEDFORD STREET, LLC
455 MASSACHUSETTS AVE, STE 1
ARLINGTON, MA 02474

PROJECT:
455-457
MASSACHUSETTS AVE
ARLINGTON, MA 02476

PROJECT NO.	2729-03	DATE:	8/20/2021
SCALE:	NTS	DWG. NAME:	C2729-03
DESIGNED BY:	JG, BCD	CHECKED BY:	ARM/BDJ

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering • land surveying
environmental consulting • landscape architecture
www.allenmajor.com
100 COMMERCE WAY, SUITE 5
WOBURN MA 01801
TEL: (781) 935-6469
FAX: (781) 935-2896
WORCESTER, MA • LAKEVILLE, MA • MANCHESTER, NH

DRAWING TITLE: LANDSCAPE DETAILS
SHEET No. L-501

R:\PROJECTS\2729-03\CIVIL\DRAWINGS\CURRENT\C-2729-03_LANDSCAPING.DWG

Robert Annese

From: John H. Murphy III <john@summit-res.net>
Sent: Monday, August 30, 2021 11:03 AM
To: Robert Annese
Subject: Fwd: 455 FAR

John Murphy

Vice President
SUMMIT Real Estate Strategies LLC
60 Summer Street. Manchester. MA 01944
PH: 978.704.9022
FX: 978.704.9728
Cell: 207.776.1751

Begin forwarded message:

> **From:** Peter Slowik <pslowik@marketsquarearchitects.com>
> **Date:** August 30, 2021 at 11:00:02 AM EDT
> **To:** John Murphy <john@summit-res.net>
> **Subject: Re: 455 FAR**
>
> In regards to the previous email-
>
> basement = 10873 sf
> first floor = 15012 sf
> second floor = 13567 sf
> total = 39452 sf
>
> minus basement and 206 sf of riser, electrical, elevator mech. = 28,373 gsf
>
> divide this by site area (18,929) = 1.5 FAR
>
> **Peter Slowik**
> **Market Square Architects, PLLC**
> Project Coordinator
> P: (603) 501-0202
> www.MarketSquareArchitects.com
>
> > On Aug 30, 2021, at 8:49 AM, Peter Slowik <pslowik@marketsquarearchitects.com> wrote:
> >
> > John,
> >
> > We digitally measured Gross Floor Area (GFA) in accordance with the Arlington Bylaws. Total area was measured along the exterior surface of the exterior walls of each floor.

From this we subtracted the areas which are allowed to be excluded, in this case mechanical spaces and service basements. This GFA was then divided by total site area provided by Civil.

Best,

Peter Slowik
Market Square Architects, PLLC
Project Coordinator
P: (603) 501-0202
www.MarketSquareArchitects.com

Robert Annese

From: John H. Murphy III <john@summit-res.net>
Sent: Monday, August 30, 2021 9:54 AM
To: Robert Annese
Subject: Fwd: 455 FAR

John Murphy

Vice President
SUMMIT Real Estate Strategies LLC
60 Summer Street. Manchester. MA 01944
PH: 978.704.9022
FX: 978.704.9728
Cell: 207.776.1751

Begin forwarded message:

> **From:** Peter Slowik <pslowik@marketsquarearchitects.com>
> **Date:** August 30, 2021 at 9:50:00 AM EDT
> **To:** John Murphy <john@summit-res.net>
> **Subject: 455 FAR**
>
> John,
>
> We digitally measured Gross Floor Area (GFA) in accordance with the Arlington Bylaws. Total area was measured along the exterior surface of the exterior walls of each floor. From this we subtracted the areas which are allowed to be excluded, in this case mechanical spaces and service basements. This GFA was then divided by total site area provided by Civil.
>
> Best,
>
> **Peter Slowik**
> **Market Square Architects, PLLC**
> Project Coordinator
> P: (603) 501-0202
> www.MarketSquareArchitects.com