FILE COPY

STILL RIVER COMMONS

Still River Road

Bolton, MA 01740

COMPREHENSIVE PERMIT APPLICATION

(8 units of Homeownership Housing)

Submitted to:

MassHousing
AUGUST 2018

Submitted by:

Still River Road Development, LLC
and
Attorney Melissa E. Robbins
Deschenes & Farrell, PC
515 Groton Road, Ste. 204
Westford, MA 01886
(978) 496-1177

TOWN OF BOLTON
BOARD OF APPEALS

Town Hall, 663 Main Street, Bolton MA 01740
Phone 978-779-3308 Fax 978-779-5461

Filed with the Town Clerk on:

_____

_____
TOWN CLERK

APPLICATION FOR HEARING
PART I. Background Information (Provided by Applicant to the Town Clerk):

Applicant/Petitioner:	Still River Road Development, LLC and Deschenes & Farrell, PC
Address of applicant:	28 Country Club Lane Middleton, MA 01949
Applicant is:	XX-Owner ☐-Tenant ☐-Licensee ☐-Prospective Buyer Turn Left, LLC
Property address:	Land located on Still River Road, Bolton, MA.
Assessor Map/Parcel Number of property	Map 8B, Parcel 32
Deed reference(s):	Book 58346 Page 150
Owner name (if person other than applicant)	C. David Russell
Owner address:	28 Country Club Lane Middleton, MA 01949
Owner telephone number:	Attorney Melissa Robbins, 978-496-1177
Application & all other materials and fee for:	☐-ZBA Finding, $100 + $6 per abutter on certified abutters list ☐-Variance, $100 + $6 per abutter on certified abutters list ☐-Special Permit, $100 + $6 per abutter on certified abutters list ☐-Appeal of Decision, $100 XX-Comprehensive Permit Administrative Fee - $500.00 Consultant Review Fee - $5,000 plus $100/unit ☐-Amend Existing Decision ($100 + $6 per abutter for special permits and variances; $500 administrative fee for comprehensive permits if change(s) are deemed substantial. If necessary, additional consultant review fee determined by ZBA)

Description of problem for which relief is sought:	Development pursuant to M.G.L. Chapter 40B.
Applicable section(s) of Zoning Bylaws or other reference for consideration by Board of Appeals:	
Justification for request: (attach additional information if necessary)	

The undersigned certifies that he/she has read and examined this application and the Bolton Zoning Board of Appeals Rules and Regulations, and that the proposed project is accurately represented in the statements made in this application.

I hereby request a hearing before the Board of Appeals with reference to the above application.

Property Owner's Signature (REQUIRED)	6/22/18 Date
Property Owner's Signature (REQUIRED)	Date
Applicant's Signature (if different from owner)	Date

This form, completed by the applicant, must accompany the pertinent application materials (see sections 4, 5, or 6 of the Zoning Board of Appeals Rules and Regulations) to comprise a complete application.

This application will be reviewed by the Board of Appeals. An application found to be incomplete upon receipt by the Board of Appeals may be returned to the applicant for completion and re-filing. The date of any re-filing shall be the date of the application.

Index

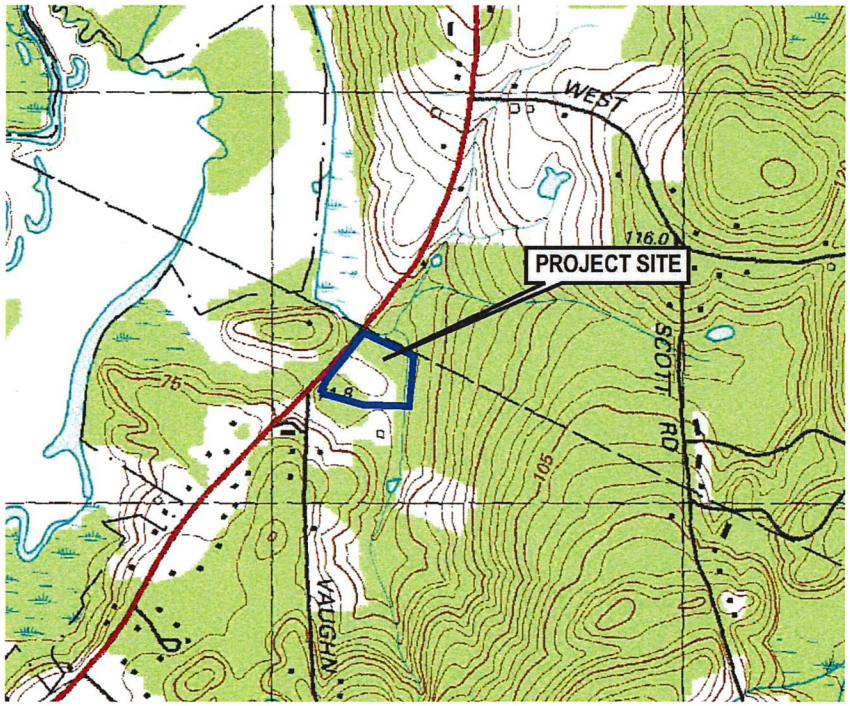
Exhibits

1. OVERVIEW

Still River Commons is a proposed residential development on approximately 6.68-acres of land located on Still River Road in Bolton. The 6.68-acre parcel is presently a vacant field with wooded areas and wetlands along the perimeter. The Development will consist of eight (8) homeownership units consisting of four (4) two-unit duplex style buildings located on two lots each lot containing two (2) duplex buildings. The units will contain two (2) or three (3) bedrooms and will total 18 bedrooms. More specifically there will be six (6) two-bedroom units and two (2) three-bedroom units (the "Development").

Massachusetts General Law Chapter 40B requires that a minimum of 25% of the units be made affordable to families whose income is at or below 80% of the median family income, adjusted for household size for the United States Department of Housing and Urban Development (HUD) Fair Market Rent (FMR) Area, as determined by the Massachusetts Department of Housing and Community Development (DHCD). In conformance with the MGL Chapter 40B the development, will contain two (2) affordable units.

Figure 1 – Locus Map



MASSHOUSING

A copy of MassHousing's corporate information is provided as Exhibit A. The Program, administered by MassHousing and funded through the New England Fund ("NEF") Program

of the Federal Home Loan Bank of Boston, is the lending program for the Development. The Program overview is included as Exhibit B.

MassHousing will serve as the Project Administrator. A copy of the Project Eligibility Application is attached as Exhibit C. MassHousing granted a Project Eligibility (Site Approval) Letter dated 6/20/2018. A copy of the Project Eligibility Letter is attached as Exhibit D.

Application of the Program requirements to the Development is proposed as follows:

A. The Applicant will offer a minimum of 25% of the units for sale to households earning no more than 80% of the area median income, adjusted for household size, as published by HUD. The most recent HUD income limits indicate that 80% of the current median family income for a 4-person household for Bolton is $71,900.00.

B. An Affordable Housing Restriction ensuring the units remain affordable to future buyers in perpetuity will govern the affordable units. See Exhibit E for the Affordable Housing Restriction.

C. The Applicant is a limited dividend organization and has agreed to limit the profit on the development in conformance with the regulations. A copy of the projected Proforma is attached hereto as Exhibit F.

D. The Applicant will comply with the Land Value Policy described in section IV (B) (1) of the Comprehensive Permit Guidelines issued by the DHCD and, if applicable, MassHousing's Acquisition Value Policy. The maximum permissible acquisition value that can be included in the Development Budget approved at Final Approval and at the time of Cost Examination/Cost Certification, for limited dividend purposes is the "As Is" value (determined by the MassHousing commissioned independent appraisal) of $205,000.00 plus reasonable and verifiable carrying costs (where permitted by the Guidelines) from the date of the Site Approval application.

E. The Applicant will enter into a Regulatory Agreement with MassHousing in the form for the applicable program, ensuring compliance with the requirements of the Comprehensive Permit Rules and the Program. The legal description of the Site attached to the Regulatory Agreement will be recordable. See Exhibit G for the Regulatory Agreement.

F. In order to satisfy the Program requirements, financing for the Development will originate from the subsidizing lender currently proposed to be Lowell Five Cent Savings

Bank, which is a member of the Federal Home Loan Bank of Boston (FHLBB). A minimum of 25% of the construction costs will be obtained from the NEF Program. Evidence of form commitment for financing for the Development will be provided during the request to MassHousing for Final Approval. The Regulatory Agreement will provide that any transfer of all or a portion of the NEF lender's interest (including participation or sale of servicing rights) during the entire term of the construction financing will be subject to the approval of the Subsidizing Agency.

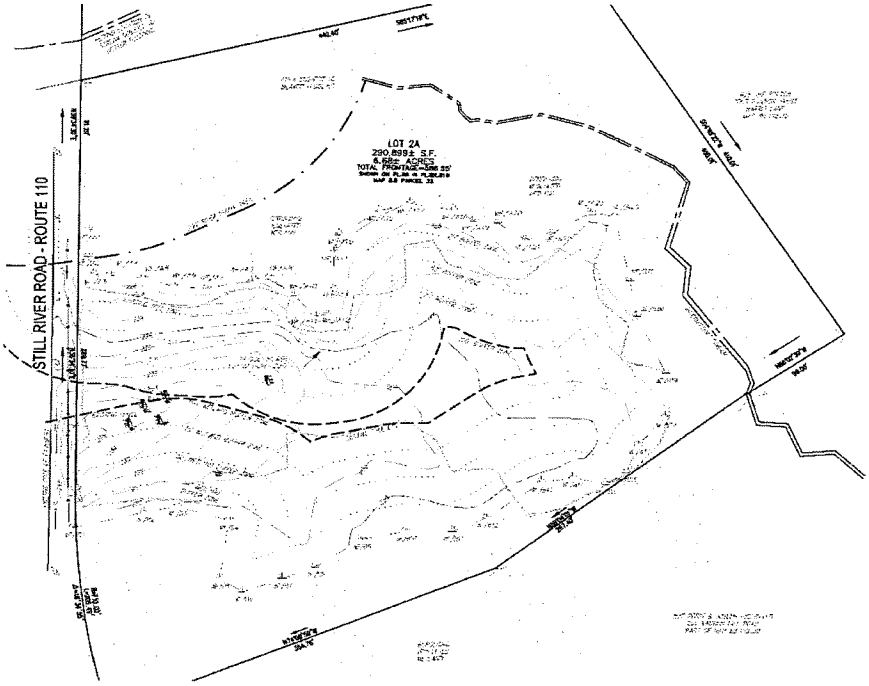
G. The Development will comply with the Commonwealth's Sustainable Development Principles embraced by DHCD.

2. THE PREMISES

Existing Conditions

The subject site is located on Still River Road, Route 110, at the cross street of Vaughn Hill Road. The parcel is mapped as Bolton Tax Map 8B, Parcel 32. The site contains 6.68 acres of land and has 586.55 feet of frontage along Still River Road. The site is surrounded by single family homes and residential zoned vacant land. The parcel directly to the south is developed with a single-family home. To the north is the Harvard Town line and vacant land. The opposite side of Still River Road is developed with single family homes. Approximately 1,400 feet to the south on Still River Road is a cul-de-sac with a development consisting of seven (7) single family homes.

Figure -2 Existing Conditions – See Plan Set Sheet C1.2



The topography of the site consists of mild slopes, generally sloping toward the large wetland system located to the north, east and south of the meadow area. Of the 6.68 acres, approximately 3.8 acres is wetlands and 2.88 acres of upland. Much of the upland area is presently a cleared meadow surrounded by a wooded area. The site has upland access to Still River Road through approximately 320-feet of the site's frontage. The highest elevation on the site exists in the northeast corner of the property is approximately 235 feet (NAVD 1988) and the lowest elevation of the upland portion of the site exists along the northerly wetland is approximately 226 feet (NAVD 1988). A Portion of the site is located in the Floodplain.

The Natural Resources Conservation Service (NRCS) Soil survey of Middlesex County, Massachusetts describes the soils in the upland portions of the site as Windsor Loamy Sand, with an associated hydrologic soil group of 'A', with Swansea Muck and Freetown Muck in the Wetland areas, with an associated hydrologic soils group of "D." Exhibit H contains a soils report generated using the NRCS website containing soil definitions for the soils within the analyzed area. Deep hole and percolation tests, along with soil testing conducted on the site for purposes of designing a subsurface sewage disposal system confirm this soil classification.

Subsurface testing was performed on the site under the supervision of the Bolton Board of Health in June 2015. The tests were performed to determine the suitability of the soil for an onsite sewage disposal system. The tests revealed that the soils consist of medium loamy sandy soils, with a maximum percolation rate of 2 minutes per inch. Groundwater was observed at 4.8 to 5.3 feet below grade in the location of the testing.

A plan showing the existing site conditions and the surrounding areas is included in the Site Plans. See Exhibit I for Site Plans.

Existing Resource Areas

As noted above, the parcel contains approximately 2.88 acres of upland area, with the rest wetland. The non-upland space consists of wetland resource areas as defined and regulated by the Wetland Protection Act (WPA) 310 CMR 10.00 and the Bolton Wetland Bylaw.

An intermittent stream is located on the eastern portion of the site and the current USGS map shows a perennial stream located to the north of the project area along the Harvard Town Line. The perennial stream appears to be subject to beaver activity and a defined bank is absent. The riverfront area has been shown based on the historical location of the stream. No alterations to the riverfront area are proposed.

A portion of the property is located in Zone AE areas determined to be within the 100-year flood plain as shown on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), Community Panels 25027C0457E and 25027C0476E, effective date July 4, 2011.

The site is also located in a Natural Heritage Endangered Species Program (NHESP) Estimated Habitat of Rare Wildlife as shown on the Natural Heritage Mapping provided by the OLIVER online mapping system. Alterations at the site were previously approved under NHESP File Number 15-34941. The current site plan has been subject to an informal review by NHESP in April of 2018 which noted that changes appear insignificant relative to the scope of the original NHESP approval. However, a formal request for change of the previous filing will be submitted to NHESP It should be noted that the project has been designed to allow approximately 84% of the site to remain in a natural state, with 42,000 sf of resource area being maintained as meadow.

The site is not located within 1,000-feet of Massachusetts Department of Environmental Protection (MassDEP) Wellhead Protection Zone II or Interim Wellhead Protection Areas.

3. THE DEVELOPMENT

The proposed Development will be accessed by the construction of a private driveway, creating a small "community" of homes. The proposed driveway will be 240 feet long ending in a cul-de-sac style turnaround providing access to the homes. The homes will be offset a minimum of 100 feet from Still River Road, providing a private setting. The homes have been clustered around the cul-de-sac turnaround which has been designed to accommodate fire and safety apparatus. The proposed Development will be clustered on approximately 1 acre, and the remaining 5.8 acres will be preserved as native meadow, woodland and wetlands.

The buildings will be 3-story townhouse style units with dormers and eaves to provide an upscale look. The proposed exterior materials and architecture are designed to fit into the nature of the surrounding architecture, with individual entrances for each unit. See Exhibit J for Architectural Plans.

The Development will provide parking for 16 cars dedicated to the individual unit owners. Each unit will have a one-car garage with the ability to park one (1) car in the driveway. This will ensure that each unit owner has parking for two vehicles.

The roadway configuration provides an emergency-response vehicle turn area at the end of the road consistent with subdivision regulations.

All units would fully comply with State Building codes, applicable State Environmental Regulations, and with all applicable local codes, ordinances and by-laws (except as waived by the Zoning Board of Appeals).

The two-bedroom units will contain approximately 1550 square feet and 1.5 bathrooms. The three-bedroom units will contain approximately 1750 square feet and will contain 1.5 bathrooms. One of the two-bedroom units will be sold to those families who qualify as affordable and one of the three-bedroom units will be sold to those families who qualify as affordable. Both units will be able to be counted on the Town of Bolton's Subsidized Housing Inventory.

Figure-3 Site Plan

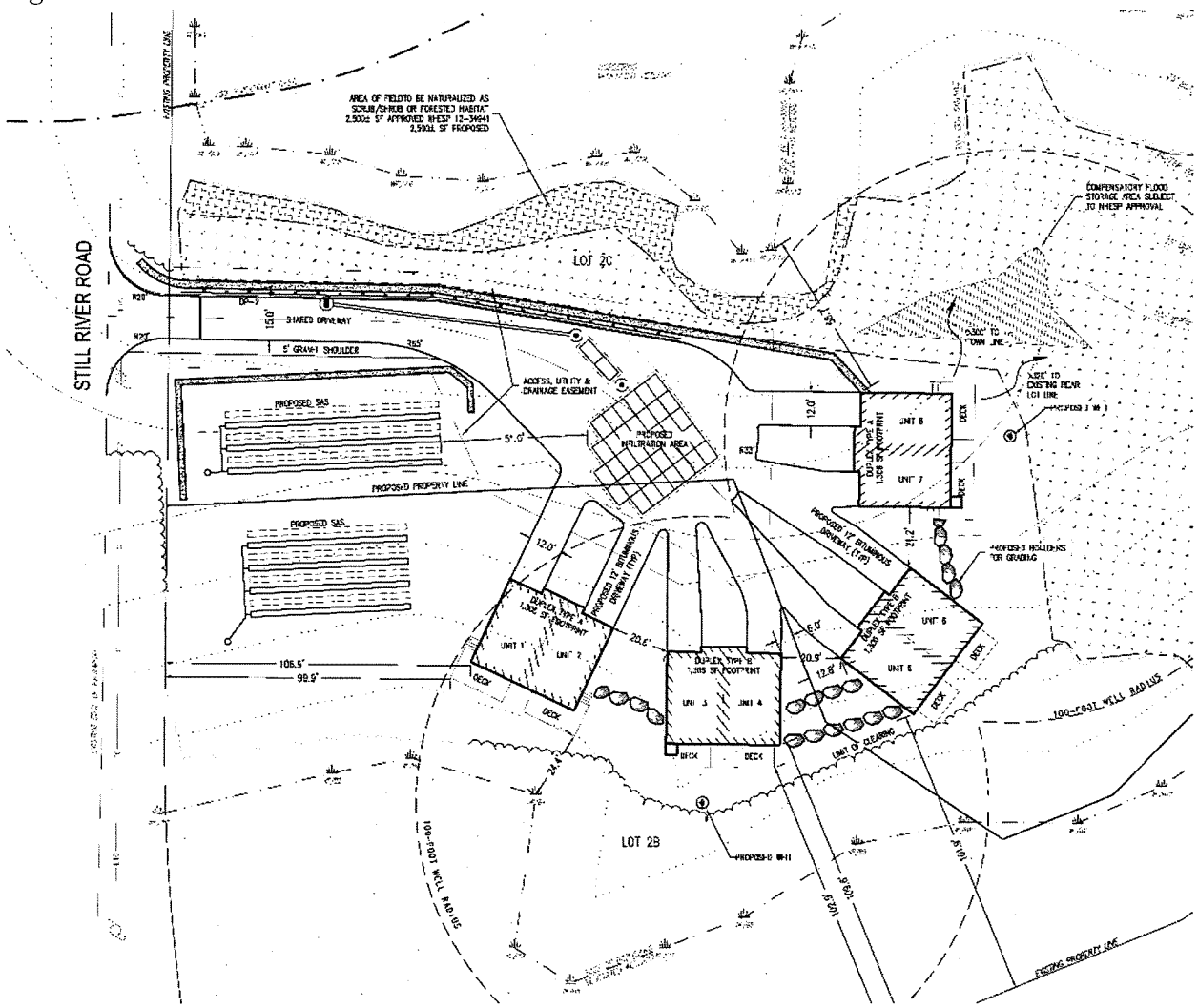
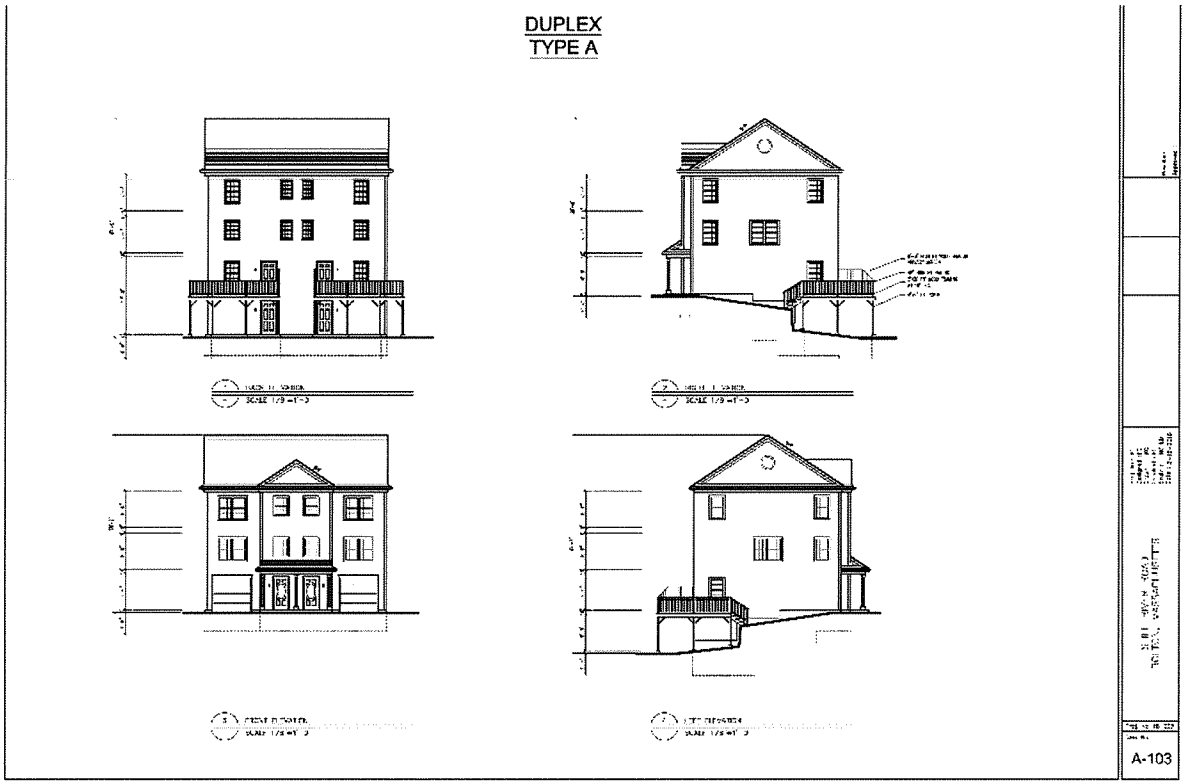


Figure-4 Building Elevations



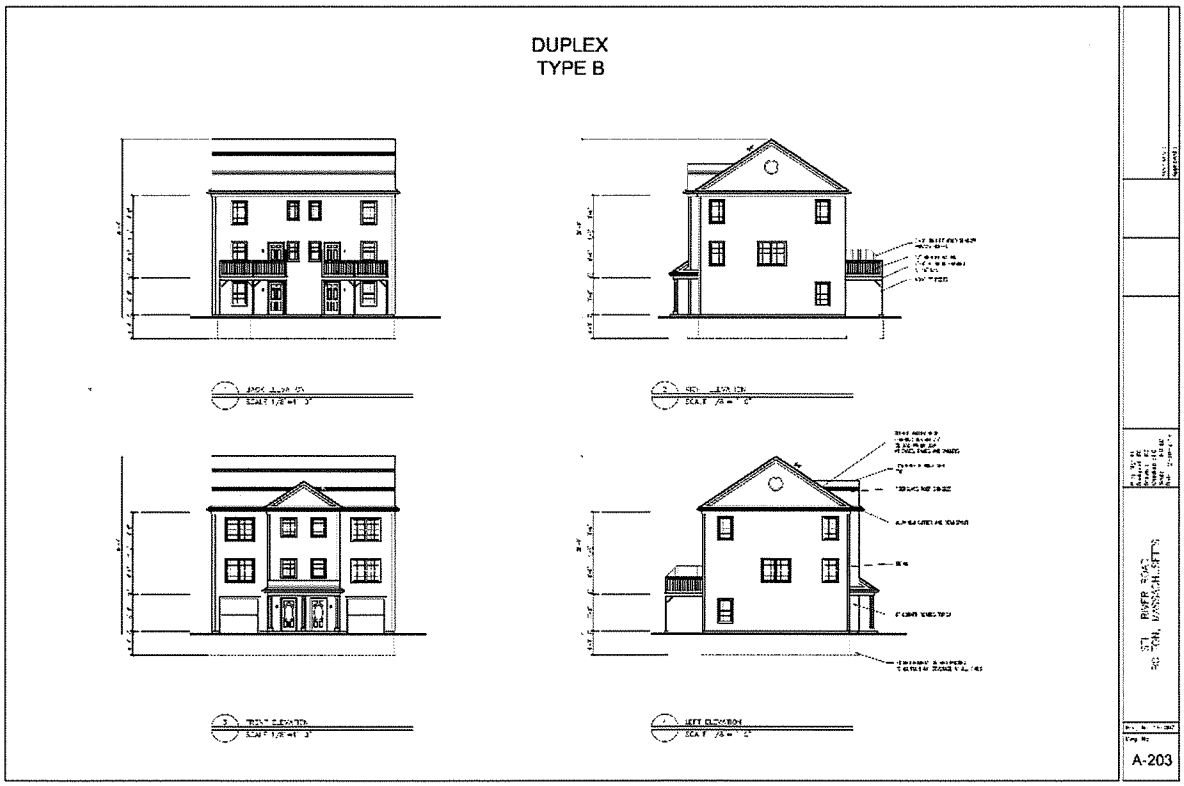


Figure-5 Open Space Summary

	PROPOSED
BUILDING AREA	6,374 SF (2.1%)
PAVEMENT AREA	11,486 SF (3.9%)
TOTAL LOT COVERAGE (BUILDING & PAVEMENT)	17,860 SF (6.0%)
OPEN SPACE	281,832 SF (94.0%)
TOTAL AREA	290,871 SF (100%)

The Development has been designed to encourage the preservation of open land and develop housing for low to median income families. With this Development, 94% of the tract would be preserved as open space and 25% of the housing would be made available for low to median income families. The Development has also been designed to be set back from Still River Road providing a buffer between the units and the road.

Figure-6 Zoning Summary

ZONING TABLE

	REQUIRED	PROVIDED LOT 2B	PROVIDED LOT 2C
MIN LOT AREA	80,000 SF	90,836 SF	200,035 SF
MIN LOT FRONTAGE	200'	281.36'	305.19'
MIN WIDTH AT 100' FROM STREET LINE	150'	248.38'	323.11'
MIN FRONT YARD	50'	99.9'	239.9'
MIN OTHER YARDS	20'	6.0'	12.8'
MIN SHAPE FACTOR	0.5	0.4	0.97

A. Utilities

Water

Water will be supplied to the Project by two (2) separate wells meeting all applicable local codes, ordinances and by-laws (except as waived by the Zoning Board of Appeals).

Electric/Telephone/Cable

Electric, telephone and cable exist on Still River Road and will be extended into the Development with no adverse impact on existing service anticipated.

Sanitary Waste

Each lot will be serviced by a subsurface sewage disposal system, which has been designed in accordance with Massachusetts 310 CMR 15.000. Each system has been designed to serve a total of nine (9) bedrooms and the individual lots have been sized to meet or exceed the nitrogen loading requirements specified in 310 CMR 15.214.

B. Construction

It is estimated that construction would commence within 90 days of the final approvals and would take 18 months to complete. The Development sequence would include building the infrastructure (pavement, utilities, drainage and grading) first and then constructing the individual units. The market rate units would be sold as they are completed, and the affordable units would be sold in accordance with the DHCD guidelines.

4. NARRATIVE STATEMENT OF DEVELOPMENT IMPACTS

General

A. Traffic/Access

The proposed Development will be accessed off a new 15-foot-wide paved driveway off Still River Road. The driveway will provide access for all of the units from Still River Road and will remain privately owned by the future Homeowner's Association. The access drive will be approximately 240 feet long and will terminate in a cul-de-sac sized to allow emergency vehicles and homeowners to turn around safely.

Visibility off of the access drive onto Still River Road is excellent and the driveway provides for 20-foot radius rounding's at the road intersection.

The net increase in traffic on Still River Road will be generated by the 8 additional homes in the development. Based on the Institute of Transportation Engineers Trip Generation 7th Edition manual, the average trips per day per dwelling unit is 5.86. Therefore, a total of 47 vehicle trips per day are expected as a result of this development. Given the

characteristics of Still River Road (Route 110), this increase in traffic is not significant and will not result in any decreased level of service.

Figure-7 Southerly Sight Distance at Still River Road Entrance

Figure-8 Northerly Sight Distance at Still River Road Entrance

B. Historical

No historic structures or resources are proposed to be impacted with the proposed Development.

C. Open Space

This Development has been designed to encourage the preservation of open land and develop housing for low to median income families. With this Development, 94% of the

tract would be open space. A portion of the open space will provide a natural buffer to the dwellings from Still River Road, as well as providing a significant addition to the natural corridor of preserved land abutting the property.

A tabulation of proposed buildings and summary of land use percentages is shown in Figures 5 and 6 above.

D. Wetlands

The project will not result in the filling of bordering vegetated wetlands. However, the Development will require the filing of a Notice of Intent with the Bolton Conservation Commission under the Massachusetts Wetland Protection Act. The project has been designed to increase the flood storage on the property and alterations are limited to the present meadow area and land immediately adjacent to.

E. Stormwater

Figure-7 Cultec Subsurface Infiltration System

Stormwater management for this Development has been designed in compliance with the Stormwater Management Standards as outlined in 310 CMR 10.05(6)(k) through (q) and defined in detail in the DEP's Stormwater Management Handbook. The system incorporates Best Management Practices (BMPs). The Development has been designed to minimize impacts on nearby resource areas from both the construction and post-construction activities of the proposed Development. See Exhibit N for Drainage Calculations.

A closed drainage system would collect stormwater runoff from the site and discharge portions of it to a subsurface infiltration system. The drainage system will provide water quality treatment, recharge, and infiltration of runoff generated from paved areas. The drainage system has been designed to treat rainfall events up to and including the 100-year storm event. The runoff from the site Development will be collected in a catch basin and manhole system, and discharged to a subsurface infiltration area located within the

paved turnaround. The system will provide pretreatment and result in no adverse impact to the resource areas. A narrative of the drainage design is attached, and full storm water drainage reports have been submitted along with this application (Exhibit K).

Municipal Services

A. Public Safety

The Development will be serviced by the Bolton Police and Fire Departments. The Development team has already met with the Fire Department to address any safety concerns that they may have. As a result of these meetings, we have provided a larger turn around area to accommodate the fire apparatus.

B. School

According to the 2003 "Housing the Commonwealth's School-Age Children" study prepared for Citizens' Housing and Planning Association (CHAPA) by Community Opportunity Groups, Inc., new multi-family developments with two-bedroom units almost always generate enough revenue to pay for services used by their residents, often generating surplus revenue. Moreover, their "case studies and federal census data indicate that in most multi-family developments, whether condominiums or apartments, a majority of the residents do not have school-age children."

Accordingly, given the very small nature of this Development and that only two of the units contain three bedrooms, it is unlikely that the Development will have any significant impact on the Town of Bolton's public-school system.

Construction Impacts

A. Noise

As designed, the proposed Development will not result in or generate any excessive amount of noise during the construction process. The Development will be regulated during construction by final permit conditions that limit hours of construction and noise pollution.

B. Dust

As designed, the proposed Development will not result in or generate any excessive amount of dust during the construction process. The Development will be regulated during construction by final permit conditions that limit construction access and dust pollution.

C. Erosion/Siltation

To help control runoff during construction, erosion and sediment control measures have been provided. Additionally, a storm water management system maintenance schedule will be provided for use during and after construction. The proposed Development has been designed in accordance with the DEP Stormwater Management Handbook. All drainage calculations and a more detailed description of the proposed stormwater management system are included in the Stormwater Management Report.

D. Potential Releases

The Developer will be required to adhere to all State and local safety standards during construction.

5. REQUESTED WAIVERS

As part of this application, the Developer is requesting exceptions from the Town of Bolton Zoning and non-Zoning Bylaws. The requested waivers are attached as Exhibit L.

6. OWNER/ APPLICANT

The Owner of the property is Turn Left, LLC, 130 Parker Street, Unit 12, Lawrence, MA 01843. A copy of the deed for the property is attached as Exhibit M.

The Applicant is Still River Road Development, LLC, C. David Russell Manager, of 28 Country Club Lane, Middleton, MA 01949. Information regarding the applicant is attached hereto as Exhibit N.

7. DEVELOPMENT FINANCING

As previously discussed, the Development will be funded through the Federal Home Loan Bank of Boston's New England Fund Program with MassHousing as Project Administrator.

8. SUMMARY

The proposed Development of Still River Commons will help to increase the Town of Bolton's affordable housing inventory and to help the town to reach their 10% goal of affordable housing. The Developer is committed to working with the Town to create a Development that is consistent with the character of the Town of Bolton.

Please see Exhibit O for Abutter's List and Exhibit P for a breakdown of filing fees.

Exhibit A

MassHousing Corporate Information

MassHousing's Mission & Vision

Mission

MassHousing will increase affordable housing options for Massachusetts residents by being the leading provider of responsible lending resources to address the underserved housing needs of low-and moderate-income residents and communities.

Vision

MassHousing will be recognized nationally for excellence in execution and advocacy of policies and programs that advance its mission and vision through collaboration and engagement with like-minded partners. MassHousing will earn this leadership distinction because of its community impact, program and product innovation, ability to deliver assistance and resources in a timely manner and demonstration of continuous operational improvement.

Consistent with MassHousing's enabling statute, the resources and talents of this high-performing organization will be directed toward making responsible and sustainable capital investments on a dependable basis that provide the greatest benefit for Massachusetts residents in need of affordable housing. MassHousing will prioritize investment in communities and neighborhoods with the greatest housing need that are underserved by conventional markets and in communities where its funding can leverage other public and private economic development opportunities. MassHousing will accomplish these important activities in a self-sustaining manner, without government appropriations.

MassHousing will be known for its willingness to tackle the most difficult housing needs, including financing for complicated large-scale developments and difficult-to-finance small-scale projects. In addition, MassHousing will work to preserve existing affordable housing, meet the financing needs of first-time homebuyers and existing homeowners, and finance housing for people with very low incomes and housing for special needs populations. MassHousing will work to further improve quality of life for residents by supporting its properties and tenants through training and other service programming. MassHousing will also be known among its peers for using its resources to create economic opportunities for minority and women-owned businesses that are focused on the affordable housing sector.

To achieve this vision, MassHousing will collaborate with a broad coalition of public, private and non-profit partners. MassHousing will facilitate these partnerships through efficient and responsive administration of public funds and programs. While continually striving to break down financing and administrative barriers that impede housing creation and preservation, MassHousing will remain committed to operating with the highest ethical standards and sound financial management principles.

MassHousing's ultimate success will rest on the skills and talents of its exceptional staff. To this end, it is committed to retaining, developing, and recruiting a talented and diverse team of employees dedicated to MassHousing's public mission.

As MassHousing pursues this vision for the future it will do so with a commitment

to transparency in all of its operations, investments and policies. This will be achieved through ongoing dialog with housing partners and stakeholders and regular public reporting of financial and program performance and progress against its strategic goals and objectives.

Equal Housing Lender

MASSHOUSING

search: Everywhere

HOME OWNERSHIP DEVELOPERS RENTAL HOUSING DIVERSITY ABOUT US PRESS ROOM

home: about masshousing : agency backgrounder

Agency Backgrounder

MassHousing is an independent public authority that provides financing for the construction and preservation of affordable rental housing, and for affordable first and second mortgages for homebuyers and homeowners.

How We Finance Affordable Housing Loans

MassHousing was created to be self-sustaining. We do not use taxpayer dollars to fund our programs, but sell bonds on Wall Street to raise capital. We then use the proceeds from the bond sales to lend to eligible borrowers at affordable rates and terms. Investors in MassHousing bonds receive a return on their investment that is supported by the monthly mortgage payments made by our borrowers.

Our Business Structure

MassHousing's organization allows the Agency to quickly respond to changes and opportunities in the marketplace and to the needs of our many customers.

Home Ownership

Our homeownership mission is twofold: to provide people with modest incomes with access to affordable mortgage loans and to make sure they can afford their loan for the long-term. MassHousing makes only 30-year, fixed rate loans, with no adjustable rates, hidden fees or other surprises. Borrowers must fully document their employment and income, must have good credit and in most cases must receive homebuyer counseling. Buyers must meet other program requirements including income limits.

MassHousing is a wholesale, not a retail lender. We do not operate branch offices nor do we employ loan officers. Instead, we contract with more than 150 local lenders across Massachusetts to "originate" our loans. These lenders work with homebuyers all the way through the mortgage origination process. Once a borrower has been approved for a MassHousing loan, MassHousing purchases the loan from the lender and borrowers make their monthly payments to MassHousing.

MassHousing also provides affordable second mortgage loans to help people remove lead paint, upgrade septic systems or make general, non-luxury improvements that will keep the home well-maintained.

We are committed to helping our borrowers stay in their homes for as long as possible. Through our in-house servicing staff, we patiently work with borrowers who may have difficulty keeping up with their monthly payments, making every effort to help these homeowners develop alternative payment plans in order to avoid missing payments or going into foreclosure. We pride ourselves on the fact that our delinquency and foreclosure rates are consistently lower than those of conventional lenders.

Learn more at www.masshousing.com/homeownership.

Rental Housing Programs

MassHousing's second core mission is to provide financing for affordable rental housing. To accomplish this, MassHousing sells bonds and lends to money to real estate developers who agree to build apartments where at least 20% of the units are affordable to lower-income residents. We also make refinancing loans to the owners of existing apartment communities who agree to keep their affordable units affordable for the long term. Thus, private developers and apartment owners have an incentive to build and maintain affordable rental housing: in exchange for keeping certain units affordable, borrowers receive below-market interest rates.

Multifamily housing developers and owners come to MassHousing for a variety of financing needs, such as construction loans, bridge loans, low-income housing tax credits and permanent financing with low interest rates and loan terms of up to 40-years. MassHousing staff has decades of experience with all kinds of state and federal subsidy programs and the regulations that govern subsidized housing. This allows us to structure loans to serve nearly every conceivable property type in every region of Massachusetts.

Our goal is to finance well-built, attractive rental housing that serves the local community. In the underwriting process, we thoroughly examine the proposed site and design of the housing, the creditworthiness and experience of the developer/borrower, and the feasibility and long-term sustainability of the project. We require developers of new housing to incorporate environmentally sound "green" technologies.

For existing rental communities with affordable units, we work with borrowers to develop creative refinancing options that preserve long-term affordability for residents and also provide funding for upgrades to the properties.

MassHousing takes a proactive approach to overseeing its rental housing portfolio, which includes more than 100,000 apartments. Our staff conducts thorough annual reviews of the physical and financial condition of each of the more than 500 MassHousing-financed rental housing developments. We also oversee millions of dollars of state and federal subsidies that support these apartments. The goal of this extensive oversight is to ensure that these properties remain viable and well-maintained for the long-term.

QUICK LINKS

Unlike other commercial lenders, we take a proactive approach to fostering strong communities among the people who live in the housing we finance. We facilitate educational programs and activities for residents. We also offer a wealth of trainings, workshops and conferences for the property managers that handle the day-to-day operations.

Learn more at www.masshousingrental.com.

Comprehensive Permit Programs/Chapter 40B

MassHousing is one of several state entities authorized to provide site approval/project eligibility, final approval and cost certification for both rental and homeownership housing proposals made under Chapter 40B, the state's affordable housing law. We work with developers, town residents and municipal officials to make certain that all opinions are heard and to encourage new housing that best serves the community. It should be noted that MassHousing does not finance every housing development for which it provides initial approval. Developers often secure financing from other sources for these projects.

Our Commitment to Minority- and Women-Owned Businesses

MassHousing is committed to increasing economic opportunities for minority- and women-owned businesses (M/WBEs) in Massachusetts. We work with housing developers, general contractors and property managers to set goals for utilizing M/WBEs at the properties we finance and oversee. We also help M/WBEs access contracts and subcontracts through an online directory of businesses and open contracts. Additionally, we sponsor trade fairs and mentoring programs, promote equal access to housing and foster our own hiring and procurement practices that facilitate opportunities for minorities and women. Learn more about the work of our Diversity & Inclusion Division.

Nondiscrimination Statement

MassHousing does not discriminate on the basis of race, color, religion, sex, national origin, ancestry, sexual orientation, gender identity, age, familial status, children, marital status, veteran status or membership in the armed services, the receiving of public assistance, or physical or mental disability in the access or admission to its programs or employment, or in its programs' activities, functions or services. The following persons are responsible for coordinating compliance with applicable nondiscrimination requirements:

- Andrea J. Laing, Director of Diversity & Inclusion
- Patricia Santos, 504/ADA Coordinator
- Deb Sullivan, Manager of Human Resources and 504/ADA Employment Coordinator
- Karen Kelleher, General Counsel

Equal Housing Lender

Exhibit B

Program Overview

MASSHOUSING

Application for Comprehensive Permit Site Approval for MassHousing and New England Fund Programs

Outline of Steps Involved in the Comprehensive Permit Process

Application and Review Process

1. Developer contacts local officials and Local Housing Partnership, if applicable, to discuss development and seek initial reaction to the plan being proposed. This is often an informal process of review and comment.

2. MassHousing receives a Site Approval Application from the developer of the project identifying the specific MassHousing and/or NEF financing program to be utilized. MassHousing staff then conducts an initial review of the application to determine whether it is complete and generally consistent with guidelines of the specific MassHousing and/or NEF program. If the application is found to be incomplete or inconsistent with the MassHousing and/or NEF program, the application is rejected and returned to the developer with a full explanation.

3. If consistent with the specific MassHousing program, comments are solicited from the local Chief Elected Official or City/Town Manager to gauge the level of support, receive feedback on the proposal, and confirm that the developer has made contact with the community prior to submitting its Site Approval Application. The community has thirty (30) days to respond in writing to MassHousing regarding the proposal. At this stage, the community often solicits comments from its planning board, local housing authority, public safety officials, local housing partnership and other relevant municipal officials. A formal public hearing is not required.

4. During this phase, MassHousing conducts its own evaluation of the development site, project and design. This includes a determination that the applicant has sufficient legal interest in the site and that the project appears financially feasible, based on the housing market in which it is proposed and the estimated financing sources, development costs and rents provided by the applicant. As part of its review, MassHousing will also conduct an on-site inspection of the site to determine whether the proposed housing design is generally appropriate for the site.

5. At the end of this period, an evaluation report is compiled and other comments collected from the various groups identified above. Based on these comments, a Site Approval Determination Letter is issued by MassHousing that approves, conditionally approves, or rejects the application. If the site application is rejected, the developer cannot proceed further with the Comprehensive Permit application with the locality.

6. If approved, or conditionally approved, the developer submits an application for a Comprehensive Permit to the local Zoning Board of Appeals (ZBA) along with other materials required by law.

7. Within the required time frame, the local ZBA schedules a public hearing (giving proper notice to area residents) and comments are solicited as to development concerns relating to the proposed development. Contact either the local ZBA, or the State Housing Appeals Committee (c/o the State's Department of Housing and Community Development) for further details of the process.

8. At the conclusion of this hearing process -- which often lasts for several meetings -- the local ZBA issues its determination as to whether the project will be granted a final Comprehensive Permit. If it is granted, the project can go forward (assuming that the developer secures appropriate financing for the project).

9. Upon receipt of a final Comprehensive Permit, the developer must submit an application for Final Approval from MassHousing (See **Site Approval and Final Approval Checklists** on MassHousing's website under the Chapter 40B Site Approval Application section). This process is required for developments approved under a MassHousing Program and/or the NEF Progam to ensure that the proposal approved under the Comprehensive Permit is consistent with the proposal approved under MassHousing's original Site Approval.

   *NOTE: In accordance with the Code of Massachusetts Regulations (760 CMR 31.00) governing the Site Approval process, **no local permits (including building permits)** can be issued for a MassHousing Site Approval development until **Final Approval** has been obtained from MassHousing.*

Appeals Process

(Note: The following summary is provided for general informational purposes only. Applicants should seek the assistance of legal counsel for review of MGL c. 40B §§20-23, 760 CMR 30.00, 760 CMR 31.00, and any determination relating to the ability to appeal a ZBA decision.)

If a Comprehensive Permit application is rejected or conditionally approved by the ZBA, the applicant may appeal to the State's Housing Appeals Committee, in accordance with 760 CMR 30.00 and 31.00, if NONE of the following conditions are currently met within the town or city:

- Subsidized low or moderate income housing ("subsidized housing") exists in the city or town that is in excess of ten percent (10%) of the housing units reported in the latest U.S. decennial census of the town or city. *See MGL c. 40B, §20 and 760 CMR 31.04.(1).*

- Subsidized housing exists in the city or town that comprises one and one-half percent (1.5%) or more of the total land area zoned for residential, commercial or industrial use in the applicable city or town. *See MGL c. 40B, §20 and 760 CMR 31.04.(2).*

- In any one calendar year, the Comprehensive Permit application before a city or town's ZBA would result in the commencement of subsidized housing on sites comprising more than three tenths of one percent (0.3%) of the community's land (excluding land owned by the federal or commonwealth governments, or any political subdivision thereof, the metropolitan district commission or any other public authority) zoned for residential commercial or industrial use, or ten (10) acres, whichever is larger. *See MGL c. 40B, §20 and 760 CMR 31.04.(3).*

- The city or town has made recent progress toward its statutory Housing Unit Minimum, per 760 CMR 31.04.(1), through the creation of subsidized housing during the twelve months prior to the Comprehensive Permit application that is equal to or greater than two percent (2%) of the city or town's total housing units. *See 760 CMR 31.07.(1).(d).*

- A project under a Comprehensive Permit application is deemed a Large Scale Project, in accordance with 760 CMR 31.07.(g), per one of the following criterion (based on housing unit counts identified in the most recent U.S. Census):

  1. **Municipalities of 7,500 or More Housing Units** – The application involves construction of more than 300 housing units or a number of housing units equal to two percent (2%) of all housing units in the municipality, whichever number is greater;

  2. **Municipalities of 5,001 up to 7,499 Housing Units** – The application involves construction of more than 250 housing units in the municipality;

  3. **Municipalities of 2,500 up to 5,000 Housing Units** – The application involves construction of more than 200 housing units; or

  4. **Municipalities of Less than 2,500 Housing Units** – The application involves construction of more than 150 housing units.

- A Comprehensive Permit application is deemed a Related Application, in accordance with 760 CMR 31.07.(h), because twelve (12) months has not elapsed between the date of the application and any one of the following:

  1. The date of filing of a prior application for a variance, special permit, subdivision or other approval related to construction on the same land if that application included no low or moderate income housing;

  2. Any date during which such an application was pending before a local permit granting authority;

  3. The disposition date of such an application; or

  4. The withdrawal date of such an application.

For further information, please contact Doug Lloyd at 617.854.1372 or dlloyd@masshousing.com

last updated November 12, 2004

Exhibit "C"

Project Eligibility Application

Exhibit C

Project Eligibility Application

STILL RIVER COMMONS

Still River Road

Bolton, MA 01740

PROJECT ELIGIBILITY/SITE APPROVAL

(8 units of Homeownership Housing)

Submitted to:

MassHousing
April 2018

Submitted by:

Still River Road Development, LLC
and
Attorney Melissa E. Robbins
Deschenes & Farrell, PC
515 Groton Road, Ste. 204
Westford, MA 01886
(978) 496-1177

Application Checklist

The documentation listed below must, where applicable, accompany each application. For detailed descriptions of these required documents, please see the relevant sections of the application form.

*** Applications missing any of the documents indicated by an asterisk will not be processed by MassHousing until MassHousing receives the missing item(s).**

- ☐ * Completed application form, and certification under pains and penalties of perjury (one (1) signed original) accompanied by one (1) electronic copy of the completed application package
- 1.1 ☑ * Location Map
- 1.2 ☑ Tax Map
- 1.3 ☑ * Directions to the proposed Site
- 2.1 ☑ * Existing Conditions Plan
- 2.2 ☑ Aerial Photographs
- 2.3 ☑ Site/Context Photographs
- 2.4 ☑ * Documentation Regarding Site Characteristics/Constraints
- 2.5 ☑ * By Right Site Plan, if applicable
- 3.1 ☑ * Preliminary Site Layout Plan(s)
- 3.2 ☑ * Graphic Representations of Project/Preliminary Architectural Plans
- 3.3 ☑ * Narrative Description of Design Approach
- 3.4 ☑ * Tabular Zoning Analysis
- 3.5 ☑ Sustainable Development Principles Evaluation Assessment Form
- 4.1 ☑ * Evidence of site control *(documents and any plans referenced therein)*
- 5.1 ☐ Land Disposition Agreement, if applicable - n/a
- 5.2 ☑ * NEF Lender Letter of Interest
- 5.3 ☑ Market Sales Comparables
- 5.4 ☐ Market Study, if required by MassHousing - n/a
- 6.1 ☑ * Development Team Qualifications
- 6.2 ☑ Applicant's Certification *(any required additional sheets)*
- 6.3 ☑ Narrative describing prior contact *(if any)* with municipal officials
- 7.1 ☑ * Evidence that a copy of the application package has been received by the Chief Elected Official in the municipality *(may follow after initial submission of application package, but site visit will not be scheduled nor request for municipal comments made until such evidence is received by MassHousing)*
- 7.2 ☑ Copy of notification letter to DHCD
- 7.3 ☑ *$2,500 Fee payable to MassHousing *(once an appraiser has been selected by MassHousing and an appraisal fee quoted, an additional non-refundable appraisal fee will be required)*
- .4 ☑ **Technical Assistance/Mediation Fee payable to Massachusetts Housing Partnership.*
- 8.1 ✓ LLC's
- 9.1 W-9

MASSHOUSING

Comprehensive Permit Site Approval Application/Homeownership

www.masshousing.com | www.masshousingrental.com

Comprehensive Permit Site Approval Application/Homeownership

Attached is the Massachusetts Housing Finance Agency ("MassHousing") application form for Project Eligibility/Site Approval ("Site Approval") under the state's comprehensive permit statute (M.G.L. c. 40B, Sections 20-23 enacted as Chapter 774 of the Acts of 1969) known as "Chapter 40B". Developers seeking a comprehensive permit to construct affordable housing under Chapter 40B and intending to use a MassHousing financing program or financing through the New England Fund ("NEF") program must receive Site Approval from MassHousing. This approval (also referred to as "project eligibility approval") is a required component of any comprehensive permit application to be submitted to the local Zoning Board of Appeals of the municipality in which the development is to be located.

As part of its review of your application, MassHousing will conduct an inspection of the site and will solicit comments from the relevant municipality. MassHousing will consider any relevant concerns that the municipality might have about the proposed project or the developer. The applicant is encouraged, therefore, to make contact with the municipality prior to submitting the Site Approval application in order to ensure that the applicant understands any concerns that the municipality may be likely to raise regarding the proposed development.

In order for a project to receive Site Approval, MassHousing must determine that (i) the applicant has sufficient legal control of the site, (ii) the applicant is a public agency, non-profit organization or limited dividend organization, and (iii) the applicant and the project are generally eligible under the requirements of the MassHousing program selected by the applicant, subject to final eligibility review and approval. Furthermore, MassHousing must determine that the site of the proposed project is generally appropriate for residential development (taking into consideration municipal actions previously taken to meet affordable housing needs) and that the conceptual project design is generally appropriate for the site. In order for MassHousing to be able to make these findings (required by 760 CMR 56.04 (4)), it is important that you answer all questions in the application and include all required attachments.

Please note that MassHousing requires that all applicants meet with a member of our 40B Department staff before submitting their application. Applications for any projects that have not been the subject of a required pre-application meeting will not be accepted or processed.

Upon completion of its analysis, MassHousing will either issue a Site Approval Letter that approves, conditionally approves or denies the application. If the application is approved, the applicant should apply to the Zoning Board of Appeals within two years from the date of the Site Approval Letter (unless MassHousing extends such term in writing).

Please note that Site Approval from MassHousing does not constitute a loan commitment by MassHousing or any other financing program. All potential MassHousing financing is subject to further review and underwriting by MassHousing's Rental Lending Department.

Please be sure you have familiarized yourself with all of the applicable requirements set forth in the Chapter 40B regulations and guidelines, which can be found at

http://www.mass.gov/hed/economic/eohed/dhcd/legal/regs/760-cmr-56.html and
www.mass.gov/hed/docs/dhcd/legal/comprehensivepermitguidelines.pdf.

Instructions for completing the Site Approval Application are included in the application form which is attached. The completed application form and all additional documentation should be sent, after your pre-application meeting has been held, to:

Gregory Watson, Manager of Comprehensive Permit Programs
MassHousing, One Beacon Street, Boston, MA 02108

We look forward to working with you on your proposed development. Please contact Gregory Watson at 617-854-1880 or gwatson@masshousing.com to discuss scheduling your pre-application meeting or if there is any assistance that we can provide in the meantime to make your application process a smooth and efficient one.

Our Commitment to You

MassHousing recognizes that applicants seek some measure of predictability regarding the timeframe for our processing of their applications. Our staff will endeavor to adhere to the following schedule for reviewing applications for site approval:

Within two (2) business days of receipt of your application (provided that you have attended a required pre-application meeting) a member of our staff will notify you of any of the items listed on the checklist at the end of the application form that were missing from your application package. Please note that our acknowledgement of receipt of an item does not indicate that any substantive review has yet taken place.

If your application package is missing any of the items indicated on the checklist by an asterisk, we will not be able to continue processing your application until such items are received.

If we have received the information which is crucial to the commencement of our review process, we will proceed to (i) give the municipality a period of thirty (30) days in which to submit comments relating to your proposal, (ii) schedule and conduct a site visit, and (iii) solicit bids for and commission and review an "as is" appraisal of your site.

If during our review of your application package we determine that additional information or clarification is needed, we will notify you as soon as possible. Depending on when we receive such additional information, this may affect the amount of time required for MassHousing to complete the site approval process.

Assuming that your application package was complete and that you respond in a timely manner to requests for additional information or clarification, we would expect to issue or deny your site approval within 60 days of our receipt of your application package.

MASSHOUSING

Application for Chapter 40B Project Eligibility/Site Approval for MassHousing-Financed and New England Fund ("NEF") Homeownership Projects

Please be sure to answer ALL questions. Indicate "N/A", "None" or "Same" when necessary.

Section 1: GENERAL INFORMATION (also see Required Attachments listed at end of Section 1)

Name of Proposed Project: Still River Commons

Municipality: Bolton

Address of Site: Still River Road

Cross Street *(if applicable)*: 295 Vaughn Hill Road

Zip Code: 01740

Tax Parcel I.D. Number(s) *(Map/Block/Lot)*: Map 8B, Parcel 30

Name of Proposed Development Entity *(typically a single purpose entity)*: Still River Road Development, LLC

Entity Type: Limited Dividend Organization ✓ Non-Profit* ___ Government Agency ___

** If the Proposed Development Entity is a Non-Profit, please contact MassHousing regarding additional documentation that must be submitted.*

Has this entity already been formed? Yes ___ No ✓

Name of Applicant *(typically the Proposed Development Entity or its controlling entity or individual)*: David Russell

Applicant's Web Address, if any: ___

Does the Applicant have an identity of interest with any other member of the development team or other party to the Proposed Project? Yes ✓ No ___ If yes, please explain: Developer

Primary Contact Information *(required)*

Name of Individual: David Russell

Relationship to Applicant: Applicant

Name of Company *(if any)*: Still River Road Development, LLC

Street Address: 28 Country Club Lane

City/Town/Zip: Middleton, MA 01949

Telephone *(office and cell)* and Email: Cell: 603-233-8444 / email: nomtg2000@yahoo.com

Secondary Contact Information *(required)*

Name of Individual: Melissa E. Robbins

Relationship to Applicant: Attorney

Name of Company *(if any)*: Deschenes & Farrell, PC

Street Address: 515 Groton Road, Ste. 204

City/Town/Zip: Westford, MA 01886

Telephone *(office and cell)* and Email: Office: 978-496-1177 / email: melissa@dfpclaw.com

Additional Contact Information *(optional)*

Name of Individual: _____

Relationship to Applicant: _____

Name of Company *(if any)*: _____

Street Address: _____

City/Town/Zip: _____

Telephone *(office and cell)* and Email: _____

Anticipated Financing: MassHousing ____ NEF Bank ✓

Name of NEF Bank: Lowell Five Savings Bank

Total Number of Units 8.00 # Affordable Units 2.00 # Market Rate Units 6.00

Age Restricted? Yes ☐ No ☒ If Yes, 55+ ☐ or 62+ ☐

Brief Project Description (150 words or less):

Four (4) duplex style units with a foot print of 20 X 35.

Required Attachments Relating to Section 1

✓ **1.1 Location Map**

Provide a USGS or other form of map clearly marked to show the site's location, and an approximate property boundary.

✓ **1.2 Tax Map**

Provide a copy of municipal tax map (assessor's plan) with subject parcels and parcel ID #'s clearly identified.

✓ **1.3 Directions**

Provide detailed written directions to the site, noting the entrance to the site, relevant boundaries and any prominent landmarks that can be used for identification purposes.

Application for Chapter 40B Project Eligibility/Site Approval for MassHousing-Financed and New England Fund ("NEF") Homeownership Projects

Section 2: EXISTING CONDITIONS / SITE INFORMATION (also see Required Attachments listed at end of Section 2)

In order to issue Site Approval, MassHousing must find (as required by 760 CMR 56.04 (4)) that the site is generally appropriate for residential development.

Name of Proposed Project: Still River Commons

Buildable Area Calculations	Sq. Feet/Acres *(enter "0" if applicable—do not leave blank)*
Total Site Area	290,899 s.f. / 6.68 acres
Wetland Area	168,948 s.f. / 3.87 acres
Flood/Hazard Area	197,369 s.f. / 4.53 acres
Endangered Species Habitat (animal and/or plant)	290,899 s.f. / 6.68 acres
Conservation/Article 97 Land	0
Protected Agricultural Land	0
Other Non-Buildable (Describe)	0
Total Non-Buildable Area	168,948 s.f. / 3.87 acres
Total Buildable Site Area	121,951 s.f. / 2.81 acres

Current use of the site and prior use if known:

The site is presently a vacant field with wooded areas and wetlands along the perimeter.

Is the site located entirely within one municipality? Yes ✓ No ___

If not, in what other municipality is the site located? ___

How much land is in each municipality? *(the Existing Conditions Plan must show the municipal boundary lines)* ___

Current zoning classification and principal permitted uses:

Residential - Agriculture, single family dwelling, mobile home, religious, library, museum.

Previous Development Efforts

Please list *(on the following page)* any previous applications pertaining to construction on or development of the site, including (i) type of application (comprehensive permit, subdivision, special permit, etc.); (ii) application filing date; (iii) date of denial, approval or withdrawal. Also indicate the current Applicant's role, if any, in the previous applications. *Note that, pursuant to 760 CMR 56.03 (1), a decision of a Zoning Board of Appeals to deny a Comprehensive Permit, or (if the Statutory Minima defined at 760 CMR 56.03 (3) (b or c) have been satisfied) grant a Comprehensive Permit with conditions, shall be upheld if a related application has previously been received, as set forth in 760 CMR 56.03 (7).*

To the best of your knowledge, has this site ever been rejected for project eligibility/site approval by another subsidizing agency or authority? No

Existing Utilities and Infrastructure	Yes/No	Description
Wastewater- private wastewater treatment	No	
Wastewater - public sewer	No	
Storm Sewer	No	
Water-public water	No	
Water-private well	No	
Natural Gas	No	
Electricity	Yes	Overhead utilities on Still River Road
Roadway Access to Site	Yes	Site has frontage on Still River Road
Sidewalk Access to Site	No	
Other		

Describe surrounding land use(s):

The site is surrounded by single family homes and residential zoned vacant land. The parcel directly to the south developed with a single family home. To the north is the Harvard Town line and vacant land. The opposite side of Still River Road is developed with single family homes. 1,400 feet to the south on Still River Road is a cul-de-sac with denser development consisting of single family homes.

Surrounding Land Use/Amenities	Distance from Site	Available by Public Transportation?
Shopping Facilities	1.5 miles	No
Schools	2.0 miles	No
Government Offices	5.0 miles	No
Multi-Family Housing	6.0 miles	No
Public Safety Facilities	5.0 miles	No
Office/Industrial Uses	1.25 miles	No
Conservation Land	0.25 miles	No
Recreational Facilities	2.0 miles	No
Houses of Worship	1.5 miles	No
Other		

List any public transportation near the Site, including type of transportation and distance from the site:
Shirley MBTA Station - 12 miles

Site Characteristics and Development Constraints

Please answer "Yes", "No" or "Unknown" to the following questions. If the answer is "Yes" please identify on Existing Conditions Plan as required for Attachment 2.1 and provide additional information and documentation as an attachment as instructed for Attachment 2.4, "Documentation Regarding Site Characteristics/Constraints."

Are there any easements, rights of way or other restrictions of record affecting the development of the site? No

Is there any evidence of hazardous, flammable, or explosive material on the site? No

Is the site, or any portion thereof, located within a designated flood hazard area? Yes, development is located outside zone AE

Does the site include areas designated by Natural Heritage as endangered species habitat? Yes

Are there documented state-designated wetlands on the site? Yes

Are there documented vernal pools on the site? No

Is the site within a local or state Historic District or listed on the National Register or Historic Places? No

Has the site or any building(s) on the site been designated as a local, state or national landmark? No

Are there existing buildings and structures on site? No

Does the site include documented archeological resources? No

Does the site include any known significant areas of ledge or steep sloes? No

Required Attachments Relating to Section 2

2.1 Existing Conditions Plan

Please provide a detailed Existing Conditions Plan showing the entire site, prepared, signed and stamped by a Registered Engineer or Land Surveyor. Plans should be prepared at a scale of 1"=100' or 1"=200' and should include the following information:

a. Reduced scale locus map
b. Surveyed property boundaries
c. Topography
d. Wetland boundaries (if applicable)
e. Existing utilities (subsurface and above ground).
f. Natural features including bodies of water, rock outcroppings
g. Existing easements and/or rights of way on the property
h. Existing buildings and structures, including walls, fences, wells
i. Existing vegetated areas
j. Existing Site entries and egresses

Please provide one (1) set of full size (30"x40") plans along with one (1) set of 11"x17" reproductions and one electronic set of plans. Please note that MassHousing cannot accept USB flash drives.

2.2 Aerial Photographs

Please provide one or more aerial photograph(s) of the Site (such as those available on-line) showing the immediate surrounding area if available. Site boundaries and existing site entrance and access points must be clearly marked.

2.3 Site/Context Photographs

Please provide photographs of the Site and surrounding physical and neighborhood context, including nearby buildings, significant natural features and land uses. Please identify the subject and location of all photographs.

2.4 Documentation Regarding Site Characteristics/Constraints

Please provide documentation of site characteristics and constraints as directed including narratives, summaries and relevant documentation including:

Flood Insurance Rate Map (FIRM) showing site boundaries
Wetlands delineation
Historic District Nomination(s)

2.5 By-Right Site Plan *(if available)*

MassHousing will commission, at your expense, an "as-is" appraisal of the site in accordance with the Guidelines, Section B (1). Therefore, if there is a conceptual development plan which would be permitted under current zoning and which you would like the appraiser to take into consideration, or if permits have been issued for alternative development proposals for the site, please provide two (2) copies of a "by-right" site plan showing the highest and best use of the ite under current zoning, and copies of any existing permits. These will assist the appraiser in determining the "as is" value of the Site without any consideration being given to its potential for development under Chapter 40B.

Application for Chapter 40B Project Eligibility/Site Approval for MassHousing-Financed and New England Fund ("NEF") Homeownership Projects

Section 3: PROJECT INFORMATION (also see Required Attachments listed at end of Section 3)

In order to issue Site Approval, MassHousing must find (as required by 760 CMR 56.04 (4)) that the proposed project appears generally eligible under the requirements of the housing subsidy program and that the conceptual project design is generally appropriate for the site.

Name of Proposed Project: Still River Commons

Project Type *(mark both if applicable)*: New Construction ✓ Rehabilitation _____ Both _____

Total Number of Dwelling Units: 8.00

Total Number of Affordable Units: 2.00

Number of 50% AMI Affordable Units: _____

Number of 80% AMI Affordable Units: 2.00

Unit Mix: Affordable Units

Unit Type	Studio	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom
Number of Units			1.00	1.00	
Number of Bathrooms			1.50	1.50	
Square Feet/Unit			1,550.00	1,750.00	

Unit Mix: Market Rate

Unit Type	Studio	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom
Number of Units			5.00	1.00	
Number of Bathrooms			1.50	1.50	
Square Feet/Unit			1,550.00	1,750.00	

Percentage of Units with 3 or More Bedrooms*: 25.00

* *Note that the January 17, 2014 Interagency Agreement Regarding Housing Opportunities for Families with Children requires that at least 10% of the units in the project must have three (3) or more bedrooms. Evidence of compliance with this requirement must be provided at Final Approval.*

Number of Handicapped Accessible Units: 0.00 Market Rate: 0.00 Affordable: 0.00

Gross Density (units per acre): 0.84

Net Density (units per buildable acre): 0.35

Residential Building Information

Building Type and Style *(single family detached, townhouse, multi-family)*	Construction or Rehabilitation	Number of Stories	Height	GFA	Number Bldgs. of this type
Townhouse Style Duplex	Construction	3.50	30 ft		4.00

Non-Residential Building Information

Building Type and Style	Construction or Rehabilitation	Number of Stories	Height	GFA	Number Bldgs. of this type
N/A					

Will all features and amenities available to market unit residents also be available to affordable unit residents? If not, explain the differences.

Yes.

Parking

Total Parking Spaces Provided: 24.00

Ratio of Parking Spaces to Housing Units: 3 to 1

Lot Coverage *(Estimate the percentage of the site used for the following)*

Buildings: 2%

Parking and Paved Areas: 4%

Usable Open Space: 10%

Unusable Open Space: 84%

Lot Coverage: 6%

Does project fit definition of "Large Project" (as defined in 760 CMR 56.03 (6))? Yes/No No

Required Attachments Relating to Section 3

3.1 Preliminary Site Layout Plan(s)

Please provide preliminary site layout plans of the entire Site prepared, signed and stamped by a registered architect or engineer. Plans should be prepared at a scale of 1"=100' or 1" =200', and should show:

- Proposed site grading
- Existing lot lines
- Easements (existing and proposed)
- Access to a public way must be identified
- Required setbacks
- Proposed site circulation (entrances/egresses, roadways, driveways, parking areas, walk ways, paths, trails)
- Building and structure footprints (label)
- Utilities (existing and proposed)
- Open space areas
- Schematic landscaping and screening
- Wetland and other restricted area boundaries and buffer zones

Please provide one (1) set of full size (30"x40") plans along with one (1) set of 11"x17" reproductions and one (1) electronic set of plans. Please note that MassHousing cannot accept USB flash drives.

3.2 Graphic Representations of Project/Preliminary Architectural Plans

- Typical floor plans
- Unit plans showing dimensions, bedrooms, bathrooms and overall unit layout
- Exterior elevations, sections, perspectives and illustrative rendering.

3.3 Narrative Description of Design Approach

Provide a narrative description of the approach to building massing, style, and exterior materials; site layout, and the relationship of the project to adjacent properties, rights of way and existing development patterns. The handbook called Approach to Chapter 40B Design Reviews prepared by the Cecil Group in January 2011 may be helpful in demonstrating the nature of the discussion that MassHousing seeks in this narrative.

3.4 Tabular Zoning Analysis

Zoning analysis in tabular form comparing existing zoning requirements to the waivers that you will request from the Zoning Board of Appeals for the proposed project, showing required and proposed dimensional requirements including lot area, frontage, front, side and rear setbacks, maximum building coverage, maximum lot coverage, height, number of stories, maximum gross floor area ratio, units per acre, units per buildable acre; number of parking spaces per unit/square foot and total number of parking spaces (proposed and required).

3.5 Completed Sustainable Development Principles Evaluation Assessment Form *(see attached form)*

Application for Chapter 40B Project Eligibility/Site Approval for MassHousing-Financed and New England Fund ("NEF") Homeownership Projects

Section 4: SITE CONTROL (also see Required Attachments listed at end of Section 4)

In order to issue Site Approval, MassHousing must find (as required by 760 CRM 56.04 (4)) that the Applicant controls the site.

Name of Proposed Project: Still River Commons

Describe current ownership status of the entire site as shown on the site layout plans (attach additional sheets as necessary if the site is comprised of multiple parcels governed by multiple deeds or agreements):

Owned (or ground leased) by Development Entity or Applicant ✓
Under Purchase and Sale Agreement _____
Under Option Agreement _____

Note: The Grantee/Buyer on each document must be either the Applicant or the Proposed Development Entity, or you must attach an explanation showing direct control of the Grantee/Buyer by the Applicant or the Proposed Development Entity.

Grantor/Seller: David Elkinson, Trustee of EB Realty Trust, u/d/t dated November 11, 2014
Grantee/Buyer: Turn Left, LLC, David Russell, Manager of LLC

Grantee/Buyer is (check one):
Applicant ✓ Development Entity _____ Managing General Partner of Development Entity _____
General Partner of Development Entity _____ Other *(explain)* _____

Are the Parties Related? _____

For Deeds or Ground Leases
Date(s) of Deed(s) or Ground Lease(s): Dated January 22, 2018, Book 58346, Page 149
Purchase Price: $172,000.00

For Purchase and Sale Agreements or Option Agreements
Date of Agreement: n/a
Expiration Date: _____
If an extension has been granted, date of extension: _____
If an extension has been granted, new expiration date: _____
Purchase Price: _____

Will any easements or rights of way over other properties be required in order to develop the site as proposed?
Yes _____ No _____

If Yes, please describe current status of easement:
Owned (or ground leased) by Development Entity or Applicant _____
Under Purchase and Sale Agreement _____
Under Option Agreement _____

Note: The Grantee/Buyer on each document must be either the Applicant or the Proposed Development Entity, or you must attach an explanation showing direct control of the Grantee/Buyer by the Applicant or the Proposed Development Entity.

Grantor/Seller: _____

Grantee/Buyer: _____

Are the Parties Related? _____

For Easements

Date(s) of Easement(s): n/a

Purchase Price: _____

For Easement Purchase and Sale Agreements or Easement Option Agreements

Date of Agreement: n/a

Expiration Date: _____

If an extension has been granted, date of extension: _____

If an extension has been granted, new expiration date: _____

Purchase Price: _____

Required Attachments Relating to Section 4

4.1 Evidence of Site Control *(required)*

Copies of all applicable, fully executed documents (deed, ground lease, purchase and sale agreement, option agreement, land disposition agreement) showing evidence of site control, including any required easements, along with copies of all amendments and extensions. Copies of all plans referenced in documents must be included.

Application for Chapter 40B Project Eligibility/Site Approval for MassHousing-Financed and New England Fund ("NEF") Homeownership Projects

Section 5: FINANCIAL INFORMATION – Site Approval Application Homeownership 40B

In order to issue Site Approval, MassHousing must find (as required by 760 CMR 56.04 (4)) that an initial pro forma has been reviewed and that the Proposed Project appears financially feasible and consistent with the Chapter 40B Guidelines, and that the Proposed Project is fundable under the applicable program.

Name of Proposed Project: Still River Commons

Initial Capital Budget *(please enter "0" when no such sales/revenue or cost is anticipated)*

Sales / Revenue

Market	2,100,000.00
Affordable	360,000.00
Related Party	
Other Income	
Total Sales/Revenue	2,460,000.00

Pre-Permit Land Value, Reasonable Carrying Costs

Item	Budgeted
Site Acquisition: pre-permit land value *(to be determined by MassHousing commissioned appraisal)* plus reasonable carrying costs.	$173,000.00 plus $50,000.00 permitting

Costs

Item	Budgeted
Acquisition Cost	
Site Acquisition: pre-permit land value (to be determined by MassHousing Commissioned Appraisal) plus reasonable carrying costs	173,000.00
Subtotal Acquisition Costs	173,000.00
Construction Costs-Residential Construction (Hard Costs)	
Building Structure Costs	1,200,000.00
Hard Cost Contingency	60,000.00
Subtotal – Residential Construction (Hard Costs)	1,260,000.00

Costs

Item	Budgeted
Construction Costs-Site Work (Hard Costs)	
Earth Work	250,000.00
Utilities: On Site	20,000.00
Utilities: Off-Site	
Roads and Walks	
Site Improvement	50,000.00
Lawns and Planting	15,000.00
Geotechnical Condition	
Environmental Remediation	
Demolition	
Unusual Site Conditions/Other Site Work	
Subtotal –Site Work (Hard Costs)	335,000.00
Construction Costs-General Conditions, Builders Overhead and Profit (Hard Costs)	
General Conditions	50,000.00
Builder's Overhead	50,000.00
Builder's Profit	
Subtotal – General Conditions Builder's Overhead and Profit (Hard Costs)	100,000.00
General Development Costs (Soft Costs)	
Appraisal and Marketing Study *(not 40B "as is" appraisal)*	1,000.00
Lottery	
Commissions/Advertising-Affordable	10,000.00
Commissions/Advertising-Market	105,000.00
Model Unit	5,000.00
Closing Costs *(unit sales)*	24,000.00
Real Estate Taxes *(during construction)*	7,000.00
Utility Usage *(during construction)*	2,000.00
Insurance *(during construction)*	2,000.00
Security *(during construction)*	
Inspecting Engineer	
Fees to Others	
Construction Loan Interest	12,000.00
Fees to Construction Lender	3,000.00
Architectural	2,000.00
Engineering	4,000.00
Survey, Permits, Etc.	18,000.00
Clerk of the Works	
Construction Manager	50,000.00

Item	Budgeted
General Development Costs (Soft Costs) - *Continued*	
Bond Premiums *(Payment/Performance/Lien Bond)*	
Legal	6,000.00
Title *(including title insurance)* and Recording	
Accounting and Cost Certification *(incl. 40B)*	10,000.00
Relocation	
40B Site Approval Processing Fee	5,000.00
40B Technical Assistance/Mediation Fund Fee	
40B Land Appraisal Cost *(as-is value)*	500.00
40B Final Approval Processing Fee	5,000.00
40B Subsidizing Agency Cost Certification Examination Fee	
40B Monitoring Agent Fees	3,000.00
40B Surety Fees	
Other Financing Fees	
Development Consultant	
Other Consultants *(describe)*	
Other Consultants *(describe)*	
Soft Cost Contingency	40,000.00
Other General Development (Soft) Costs	
Subtotal – General Development Costs (Soft Costs)	314,500.00
Developer Overhead	
Developer Overhead	80,000.00
Subtotal – Developer Overhead	80,000.00
Summary of Subtotals	
Sales/Revenue	2,460,000.00
Site Acquisition	173,000.00
Residential Construction	1,260,000.00
Site Work	335,000.00
Builder's Overhead, Profit and General Conditions	100,000.00
General Development Costs	314,500.00
Developer Overhead	80,000.00
Summary	
Total Sales/Revenue	2,460,000.00
Total Development Costs (TDC)	2,262,500.00
Profit (Loss) from Sales/Revenue	197,500.00
Percentage of Profit (Loss) Over the Total Development Costs	8.73%

Initial Unit/Sales Price

	Studio	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom
Affordable Units			1.00	1.00	
Number of Units			1.00	1.00	
Number of Sq. Ft			1,600.00	1,750.00	
Sales Price			179,900.00	185,000.00	
Condo / HOA Fee			180.00	180.00	

	Studio	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom
Affordable Units					
Number of Units					
Number of Sq. Ft					
Sales Price					
Condo / HOA Fee					

Describe your approach to calculating any additional fees relating to Condominium Association or a Homeowners Association.

Required Attachments Relating to Section 5

5.1 New England Fund Lender Letter of Interest

Please attach a Letter of Interest from a current Federal Home Loan Bank of Boston (FHLBB) member bank regarding financing for the proposed development. The letter of interest must include, at a minimum, the following:

- Identification of proposed borrower, and brief description of the bank's familiarity with the borrower;
- Brief description of the Proposed Project
- Confirmation that the bank is a current FHLBB member bank and that the bank will specifically use NEF funds for the proposed development.

NOTE: Binding Financing Commitments (or evidence of closed loans) will be required at the time you apply for Final Approval from MassHousing.

5.2 Market Sale Comparables *(required)*

Please provide a listing of market sales being achieved in properties comparable to the proposed project.

5.3 Market Study *(if requested)*

MassHousing may require a market study for projects located in areas where the need or demand for the type of housing being proposed cannot be clearly demonstrated.

Application for Chapter 40B Project Eligibility/Site Approval for MassHousing-Financed and New England Fund ("NEF") Homeownership Projects

Section 6: APPLICANT QUALIFICATIONS, ENTITY INFORMATION, AND CERTIFICATION

In order to issue Site Approval MassHousing must find (as required by 760 CRM 56.04 (4)) that the applicant is either a non-profit public agency or would be eligible to apply as a Limited Dividend Organization and meets the general eligibility standards of the program.

Name of Proposed Project: Still River Commons

Development Team

Developer/Applicant: David Russell - Still River Road Development, LLC

Development Consultant (if any): David Russell

Attorney: Melissa E. Robbins - Deschenes & Farrell, PC, Westford, MA

Architect: Fabrizio Carusso

Contractor: David Russell

Lottery Agent: _____

Management Agent: _____

Other (specify): _____

Other (specify): _____

Role of Applicant in Current Proposal

Development Task	Developer/Applicant	Development Consultant (identify)
~~Architecture and~~ Engineering	Ducharme & Dillis Civil Design Group, Inc.	
Local Permitting	Deschenes & Farrell, P.C.	
Financing Package		
Construction Management	Developer	
Other Architect	Fabrizio Carusso/Architect	

Applicant's Ownership Entity Information

Please identify for each of (i) the Applicant and, if different (ii), the Proposed Development Entity, the following (collectively with the Applicant and the Proposed Development Entity, the "Applicant Entities"): the Managing Entities, Principals, Controlling Entities and Affiliates of each.

Note: For the purposes hereof, "Managing Entities" shall include all persons and entities (e.g. natural persons, corporations, partnerships, limited liability companies, etc., including beneficiaries of nominee trusts) who are managers of limited liability companies, general partners of limited partnerships, managing general partners of limited liability partnerships, directors and officers of corporations, trustees of trusts, and other similar persons and entities which have the power to manage and control the activities of the Applicant and/or Proposed Development Entity.

"Principal or Controlling Entities" shall include all persons and entities (e.g. natural persons, corporations, partnerships, limited liability companies, etc., including beneficiaries of nominee trusts) that shall have the right to:

(i) approve the terms and conditions of any proposed purchase, sale or mortgage;
(ii) approve the appointment of a property manager; and/or
(iii) approve managerial decisions other than a decision to liquidate, file for bankruptcy, or incur additional indebtedness.

Such rights may be exercisable either (i) directly as a result of such person's or entity's role within the Applicant or the Proposed Development Entity or the Managing Entities of either or (ii) indirectly through other entities that are included within the organizational structure of the Applicant and/or Proposed Development Entity and the Managing Entities of either.

In considering an application, MassHousing will presume that there is at least one Principal or Controlling Entity of the Applicant and of the Proposed Development Entity. Any person or persons who have purchased an interest for fair market value in the Applicant and/or Proposed Development Entity solely for investment purposes shall not be deemed a Principal or Controlling Entity.

"Affiliates" shall include all entities that are related to the subject organization by reason of common control, financial interdependence or other means.

1. Applicant

Name of Applicant: David Russell - Still River Road Development, LLC

Entity Type (limited liability company, limited partnership, limited liability partnership, corporation, trust, etc.): LLC

State in which registered/formed: Massachusetts

List all Managing Entities of Applicant *(you must list at least one)*:
See Attached (Exhibit 8)

List all Principals and Controlling Entities of Applicant and *(unless the Managing Entity is an individual)* its Managing Entities *(use additional pages as necessary)*:
See Attached

List all Affiliates of Applicant and its Managing Entities *(use additional pages as necessary)*:
See Attached

Proposed Development Entity

Name of Proposed Development Entity: Still River Commons

Entity Type *(limited liability company, limited partnership, limited liability partnership, corporation, trust, etc.)*:
Limited Liability Company

State in which registered/formed: MA

List all Managing Entities of Proposed Development Entity *(you must list at least one)*:
Still River Road Development, LLC

List all Principals and Controlling Entities of Proposed Development Entity and *(unless the Managing Entity is an individual)* its Managing Entities *(use additional pages as necessary)*:
See Attached - Exhibit 8

List all Affiliates of Proposed Development Entity and its Managing Entities *(use additional pages as necessary)*:
See Attached - Exhibit 8

Certification and Acknowledgment

I hereby certify on behalf of the Applicant, *under pains and penalties of perjury*, that the information provided above for each of the Applicant Entities is, to the best of my knowledge, true and complete; and that each of the following questions has been answered correctly to the best of my knowledge and belief:

(Please attach a written explanation for all of the following questions that are answered with a "Yes". Explanations should be attached to this Section 6.)

Is there pending litigation with respect to any of the Applicant Entities? Yes___ No ✓

Are there any outstanding liens or judgments against any properties owned by any of the Applicant Entities? Yes___ No ✓

Have any of the Applicant Entities failed to comply with provisions of Massachusetts law related to taxes, reporting of employees and contractors, or withholding of child support? Yes___ No ✓

Have any of the Applicant Entities ever been the subject of a felony indictment or conviction? Yes___ No ✓

During the last 10 years, have any of the Applicant Entities ever been a defendant in a lawsuit involving fraud, gross negligence, misrepresentation, dishonesty, breach of fiduciary responsibility or bankruptcy? Yes___ No ✓

Have any of the Applicant Entities failed to carry out obligations in connection with a Comprehensive Permit issued pursuant to M.G.L. c. 40B and any regulations or guidelines promulgated thereunder (whether or not MassHousing is or was the Subsidizing Agency/Project Administrator) including, but not limited to, completion of a cost examination and return of any excess profits or distributions? Yes___ No ✓

Have any of the Applicant Entities ever been charged with a violation of state or federal fair housing requirements? Yes___ No ✓

Are any of the Applicant Entities not current on all existing obligations to the Commonwealth of Massachusetts, and any agency, authority or instrument thereof? Yes___ No ✓

I further certify that the information set forth in this application (including attachments) is true, accurate and complete as of the date hereof to the best of my/our knowledge, information and belief. I further understand that MassHousing is relying on this information in processing the request for Site Approval in connection with the above-referenced project.

I further certify that we have met with a representative of the 40B Department at MassHousing and understand the requirements for a) completing this application and b) the procedures if and when Site Approval is granted, including the requirement for (i) the use of the standard MassHousing Regulatory Agreement, and (ii) submission to MassHousing, within one hundred eighty (180) days after substantial completion or, if later, within ninety (90) days of the date on which all units are sold, of a cost certification examined in accordance with AICPA attestation standards by an approved certified public accountant.

I hereby acknowledge our commitment and obligation to comply with requirements for cost examination and limitations on profits and distributions, all as found at 760 CMR 56.04(8) and will be more particularly set forth in the MassHousing Regulatory Agreement.

I hereby acknowledge that it will be required to provide financial surety, by means of bond, cash escrow and a surety escrow agreement or letter of credit with the agreement that it may be called upon or used in the event that the Developer fails either to (i) complete and submit the Cost Examination as required by 760 CMR 56.04(8) and the MassHousing Regulatory Agreement, or (ii) pay over to the Municipality any funds in excess of the limitations on profits and distributions as required by 760 CMR 56.04(8) and as set forth in the MassHousing Regulatory Agreement.

Signature: _____

Name: David Russell

Title: Mgr.

Date: 1/28/2018

Required Attachments Relating to Section 6

6.1 Development Team Qualifications

Please attach resumes for principal team members (Applicant, consultant, attorney, architect, general contractor, management agent, lottery agent, etc.) and list of all relevant project experience for 1) the team as a whole and 2) individual team members. Particular attention should be given to demonstrating experience with (i) projects of a similar scale and complexity of site conditions, (ii) permitting an affordable housing development, (iii) design, and (iv) financing. The development team should demonstrate the ability to perform as proposed and to complete the Project in a competent and timely manner, including the ability to pursue and carry out permitting, financing, marketing, design and construction.

(If the Applicant (or, if the Applicant is a single purpose entity, its parent developer entity) has received financing from MassHousing within the past five (5) years for a development of comparable size and complexity to the Proposed Project, no resume or list of project experience need be submitted for the Applicant or, as applicable, its parent developer entity. Information regarding the other team members still will be required.)

6.2 Applicant Entity 40B Experience

Please identify <u>every</u> Chapter 40B project in which the Applicant or any Applicant Entity has or had an interest. For each such project, state whether the construction has been completed and whether cost examination has been submitted.

6.3 Applicant's Certification

Please attach any additional sheets and any written explanations for questions answered with "yes" as required for Certification.

Application for Chapter 40B Project Eligibility/Site Approval for MassHousing-Financed and New England Fund ("NEF") Homeownership Projects

Section 7: NOTIFICATIONS AND FEES

Name of Proposed Project: Still River Commons

Notice

Date(s) of meetings, if any, with municipal officials prior to submission of application to MassHousing: Town Planner — 2/22/18

Date copy of complete application sent to chief elected office of municipality: TBD

Date notice of application sent to DHCD: TBD

Fees *(all fees should be submitted to MassHousing)*

MassHousing Application Processing Fee ($2500) Payable to MassHousing: 2500.00

Chapter 40B Technical Assistance/Mediation Fee Payable to Massachusetts Housing Partnership:

a. Base Fee: 2500.00
(Limited Dividend Sponsor $2500, Non-Profit or Public Agency Sponsor $1,000)

b. Unit Fee: 400.00
(Limited Dividend Sponsor $50 per unit, Non-Profit or Public Agency Sponsor $30 per unit)

Land Appraisal Cost

You will be required to pay for an "as-is" market value appraisal of the Site to be commissioned by MassHousing. MassHousing will contact you once a quote has been received for the cost of the appraisal.

Required Attachments Relating to Section 7

7.1 Narrative describing any prior correspondence and/or meetings with municipal officials

7.2 Evidence (such as a certified mail receipt) that a copy of the complete application package was sent to the Chief Elected Official of Municipality (may be submitted after the application is submitted to MassHousing)

7.3 Copy of notice of application sent to DHCD

7.4 Check made out to MassHousing for Processing Fee ($2500)

7.5 Check made payable to Massachusetts Housing Partnership for Technical Assistance/Mediation Fee

7.6 W-9 (Taxpayer Identification Number)

Application Checklist

The documentation listed below must, where applicable, accompany each application. For detailed descriptions of these required documents, please see the relevant sections of the application form.

*** Applications missing any of the documents indicated by an asterisk will not be processed by MassHousing until MassHousing receives the missing item(s).**

- ☐ * Completed application form, and certification under pains and penalties of perjury (one (1) signed original) accompanied by one (1) electronic copy of the completed application package
- ☐ * Location Map
- ☐ Tax Map
- ☐ * Directions to the proposed Site
- ☐ * Existing Conditions Plan
- ☐ Aerial Photographs
- ☐ Site/Context Photographs
- ☐ * Documentation Regarding Site Characteristics/Constraints
- ☐ * By Right Site Plan, if applicable
- ☐ * Preliminary Site Layout Plan(s)
- ☐ * Graphic Representations of Project/Preliminary Architectural Plans
- ☐ * Narrative Description of Design Approach
- ☐ * Tabular Zoning Analysis
- ☐ Sustainable Development Principles Evaluation Assessment Form
- ☐ * Evidence of site control *(documents and any plans referenced therein)*
- ☐ Land Disposition Agreement, if applicable
- ☐ * NEF Lender Letter of Interest
- ☐ Market Sales Comparables
- ☐ Market Study, if required by MassHousing
- ☐ * Development Team Qualifications
- ☐ Applicant's Certification *(any required additional sheets)*
- ☐ Narrative describing prior contact *(if any)* with municipal officials
- ☐ * Evidence that a copy of the application package has been received by the Chief Elected Official in the municipality *(may follow after initial submission of application package, but site visit will not be scheduled nor request for municipal comments made until such evidence is received by MassHousing)*
- ☐ Copy of notification letter to DHCD
- ☐ *$2,500 Fee payable to MassHousing *(once an appraiser has been selected by MassHousing and an appraisal fee quoted, an additional non-refundable appraisal fee will be required)*
- ☐ **Technical Assistance/Mediation Fee payable to Massachusetts Housing Partnership.*

SUSTAINABLE DEVELOPMENT CRITERIA SCORECARD

Project Name: Still River Commons
Project Number: _____
Program Name: _____
Date: _____

MassHousing encourages housing development that is consistent with sustainable development designs and green building practices. Prior to completing this form, please refer to the Commonwealth's Sustainable Development Principles (adopted May 2007) available at: Sustainable Development Principles

DEVELOPER SELF-ASSESSMENT N/A
(for consitency with the Sustainable Development Principles)

Redevelop First
Check "X" below if applicable
If Rehabilitation:
- Rehabilitation/Redevelopment/Improvements to Structure ☐
- Rehabilitation/Redevelopment/Improvements to Infrastructure ☐

If New Construction:
- Contributes to revitalization of town center or neighborhood ☐
- Walkable to: ☐
  - (a) transit ☐
  - (b) downtown or village center ☐
  - (c) school ☐
  - (d) library ☐
  - (e) retail, services or employment center ☐
- Located in municipally-approved growth center ☐

Explanation **(Required)**

Optional - Demonstration of Municipal Support: N/A

Check "X" below if applicable

- Letter of Support from the Chief Elected Official of the municipality* ☐
- Housing development involves municipal funding ☐
- Housing development involves land owned or donated by the municipality ☐

**Other acceptable evidence: Zoning variance issued by ZBA for project; Minutes from Board of Selectman meeting showing that project was discussed and approved, etc.*

Explanation **(Required)**

_____

_____

_____

<u>Method 2</u>: Development meets a minimum of **five (5)** of the Commonwealth's *Sustainable Development Principles*, as shown in the next section below.

If the development involves strong **municipal support** (evidence of such support must be submitted as an attachment), the development need only meet **four (4)** of the *Sustainable Development Principles. However,* one (1) of the Principles met must be **Protect Land and Ecosystems.**

Please explain at the end of each category how the development follows the relevant *Sustainable Development Principle(s)* and explain how the development demonstrates each of the checked "X" statements listed under the *Sustainable Development Principle(s).*

(1) Concentrate Development and Mix Uses

Support the revitalization of city and town centers and neighborhoods by promoting development that is compact, conserves land, protects historic resources, and integrates uses. Encourage remediation and reuse of existing sites, structures, and infrastructure rather than new construction in undeveloped areas. Create pedestrian friendly districts and neighborhoods that mix commercial, civic, cultural, educational, and recreational activities with open spaces and homes.

Check "X" below if applicable

- Higher density than surrounding area ☒
- Mixes uses or adds new uses to an existing neighborhood ☐
- Includes multi-family housing ☒
- Utilizes existing water/sewer infrastructure ☒
- Compact and/or clustered so as to preserve undveloped land ☒
- Reuse existing sites, structures, or infrastructure ☐
- Pedestrian friendly ☐
- Other (discuss below) ☐

Explanation **(Required)**

ATTACHED

(2) Advance Equity & Make Efficient Decisions

Promote equitable sharing of the benefits and burdens of development. Provide technical and strategic support for inclusive community planning and decision making to ensure social, economic, and environmental justice. Ensure that the interests of future generations are not compromised by today's decisions.

Promote development in accordance with smart growth and environmental stewardship.

Check "X" below if applicable

- Concerted public participation effort (beyond the minimally required public hearings) ☒
- Streamlined permitting process, such as 40B or 40R ☒
- Universal Design and/or visitability ☐
- Creates affordable housing in middle to upper income area and/or meets regional need ☒
- Creates affordable housing in high poverty area ☐
- Promotes diversity and social equity and improves the neighborhood ☐
- Includes environmental cleanup and/or neighborhood improvement in an Environmental Justice Community ☐
- Other (discuss below) ☐

Explanation **(Required)**

ATTACHED

(3) Protect Land and Ecosystems

Protect and restore environmentally sensitive lands, natural resources, agricultural lands, critical habitats, wetlands and water resources, and cultural and historic landscapes. Increase the quantity, quality and accessibility of open spaces and recreational opportunities.

Check "X" below if applicable

- Creation or preservation of open space or passive recreational facilities ☒
- Protection of sensitive land, including prime agricultural land, critical habitats, and wetlands ☒
- Environmental remediation or clean up ☐
- Responds to state or federal mandate (e.g., clean drinking water, drainage, etc.) ☐
- Eliminates or reduces neighborhood blight ☐
- Addresses public health and safety risk ☐
- Cultural or Historic landscape/existing neighborhood enhancement ☐
- Other (discuss below) ☐

Explanation **(Required)**
ATTACHED

(4) Use Natural Resources Wisely

Construct and promote developments, buildings, and infrastructure that conserve natural resources by reducing waste and pollution through efficient use of land, energy, water and materials.

Check "X" below *if applicable*
- Uses alternative technologies for water and/or wastewater treatment ☐
- Uses low impact development (LID) or other innovative techniques ☐
- Other (discuss below)

Explanation **(Required)**
ATTACHED

(5) Expand Housing Opportunities

Support the construction and rehabilitation of homes to meet the needs of people of all abilities, income levels and household types. Build homes near jobs, transit, and where services are available. Foster the development of housing, particularly multifamily and single-family homes, in a way that is compatible with a community's character and vision and with providing new housing choices for people of all means.

Check "X" below if applicable
- Includes rental units, including for low/mod households ☐
- Includes homeownership units, including for low/mod households ☒
- Includes housing options for special needs and disabled population ☐
- Expands the term of affordability ☐
- Homes are near jobs, transit and other services ☐
- Other (discuss below) ☐

Explanation **(Required)**
ATTACHED

(6) Provide Transportation Choice N/A

Maintain and expand transportation options that maximize mobility, reduce congestion, conserve fuel and improve air quality. Prioritize rail, bus, boat, rapid and surface transit, shared-vehicle and shared-ride services, bicycling and walking. Invest strategically in existing and new passenger and freight transportation infrastructure that supports sound economic development consistent with smart growth objectives.

Check "X" below if applicable

- Walkable to public transportation ☐
- Reduces dependence on private automobiles (e.g., provides previously unavailable shared transportation, such as Zip Car or shuttle buses) ☐
- Increased bike and ped access ☐
- For rural areas, located in close proximity (i.e., approximately one mile) to a transportation corridor that provides access to employment centers, retail/ commercial centers, civic or cultural destinations ☐
- Other (discuss below) ☐

Explanation **(Required)**

ATTACHED

(7) Increase Job and Business Opportunities

Attract businesses and jobs to locations near housing, infrastructure, and transportation options. Promote economic development in industry clusters. Expand access to education, training and entrepreneurial opportunities. Support growth of local businesses, including sustainable natural resource-based businesses, such as agriculture, forestry, clean energy technology and fisheries.

Check "X" below if applicable

- Permanent jobs ☒
- Permanent jobs for low- or moderate-income persons ☐
- Jobs near housing, service or transit ☐
- Housing near an employment center ☐
- Expand access to education, training or entrepreneurial opportunities ☐
- Support local businesses ☒
- Support natural resource-based businesses (i.e., farming, forestry or aquaculture ☐
- Re-uses or recycles materials from a local or regional industry's waste stream ☐
- Support manufacture of resource-efficient materials, such as recycled or low-toxicity materials ☐
- Support businesses that utilize locally produced resources such as locally harvested wood or agricultural products ☐
- Other (discuss below) ☐

Explanation **(Required)**
ATTACHED

(8) Promote Clean Energy
Maximize energy efficiency and renewable energy opportunities. Support energy conservation strategies, local clean power generation, distributed generation technologies, and innovative industries. Reduce greenhouse gas emissions and consumption of fossil fuels.

Check "X" below if applicable

- Energy Star or equivalent* ☐
- Uses renewable energy source, recycled and/or non-/low-toxic materials, exceeds the state energy code, is configured to optimize solar access, and/or otherwise results in waste reduction and conservation of resources ☐
- Other (discuss below) ☐

*All units are required by MassHousing to be Energy Star Efficient. Please include in your explanation a description of how the development will meet Energy Star criteria.

Explanation **(Required)**
ATTACHED

(9) Plan Regionally N/A
Support the development and implementation of local and regional, state and interstate plans that have broad public support and are consistent with these principles. Foster development projects, land and water conservation, transportation and housing that have a regional or multi-community benefit. Consider the long term costs and benefits to the Commonwealth.

Check "X" below if applicable

- Consistent with a municipally supported regional plan ☐
- Addresses barriers identified in a Regional Analysis of Impediments to Fair Housing ☐
- Measurable public benefit beyond the applicant community ☐
- Other (discuss below) ☐

Explanation **(Required)**

Still River Road
Sustainable Development Principles

Sustainable Development Principles

The Commonwealth of Massachusetts shall care for the built and natural environment by promoting sustainable development through integrated energy and environment, housing and economic development, transportation and other policies, programs, investments, and regulations. The Commonwealth will encourage the coordination and cooperation of all agencies, invest public funds wisely in smart growth and equitable development, give priority to investments that will deliver good jobs and good wages, transit access, housing, and open space, in accordance with the following sustainable development principles.

1. Concentrate Development

Support the revitalization of city and town centers and neighborhoods by promoting development that is compact, conserves land, protects historic resources, and integrates uses. Encourage remediation and reuse of existing sites, structures, and infrastructure rather than new construction in undeveloped areas. Create pedestrian friendly districts and neighborhoods that mix commercial, civic, cultural, education, and recreational activities with open spaces and homes.

The proposed development is at higher density than some of the surrounding area, and is based on the "village" concept. The development will be laid out with a compact design which will promote the conservation of the remainder of the development site.

2. Advance Equity

Promote equitable sharing of the benefits and burdens of development. Provide technical and strategic support for inclusive community planning and decision making to ensure social, economic, and environmental justice. Ensure that the interests of future generations are not compromised by today's decisions.

The Project creates affordable housing in a community whose residents are predominantly middle to upper income. The Project also expands the tax base.

3. Make Efficient Decisions
Make regulatory and permitting processes for development clear, predictable, coordinated, and timely in accordance with smart growth and environmental stewardship.

The Project addresses at least one of the barriers identified as an impediment to fair housing in the Department of Housing and Community Development's 2013 publication entitled "Analysis of Impediments to Fair Housing Choice". The action step requires the promotion of fair housing by reducing regulatory barriers to, and creating incentives for, regional equity in affordable housing. Restrictive zoning requirements such as large lot requirements increase the cost of housing. The Project as proposed will help address the above referenced barrier by creating more equal and affordable housing opportunities within Massachusetts by promoting smart growth within the state. The variety of 2 and 3-bedroom units will provide a neighborhood with a range of families and empty nesters.

4. Protect Land and Ecosystems
Protect and restore environmentally sensitive lands, natural resources, agricultural lands, critical habitats, wetlands and water resources, and cultural and historic landscapes.

The proposed Project will be protective of the environmentally sensitive areas and will provide buffer areas for wildlife.

5. Use Natural Resources Wisely
Construct and promote developments, buildings, and infrastructure that conserve natural resources by reducing waste and pollution through efficient use of land, energy, water, and materials.

The proposed Project will be very energy efficient. The units will exceed the EPA Energy Star guidelines, and comply with the "stretch" energy code. Where a typical home has a home energy rating of 100 and energy star homes have a rating of 75, the Project will have ratings of 65 or less, significantly better than energy star homes.

The Project will also use recycled materials where possible in the construction such as plywood, vinyl siding and deck material, insulation, flooring and cabinets Construction waste shall be recycled as much as possible and forwarded to a recycling processing center for further breakdown and distribution.

6. Expand Housing Opportunities

Support the construction and rehabilitation of homes to meet the needs of people of all abilities, income levels, and household types. Build homes near jobs, transit, and where services are available. Foster the development of housing, particularly multifamily and smaller single-family homes, in a way that is compatible with a community's character and vision and with providing new housing choices for people of all means.

The Project is designed with smaller single units. The Project will also increase the supply of affordable units in the area, and help the Town of Bolton add units to their subsidized housing inventory.

7. Increase Job and Business Opportunities

Attract businesses and jobs to locations near housing, infrastructure, and transportation options. Expand access to education, training, and entrepreneurial opportunities. Support the growth of local businesses.

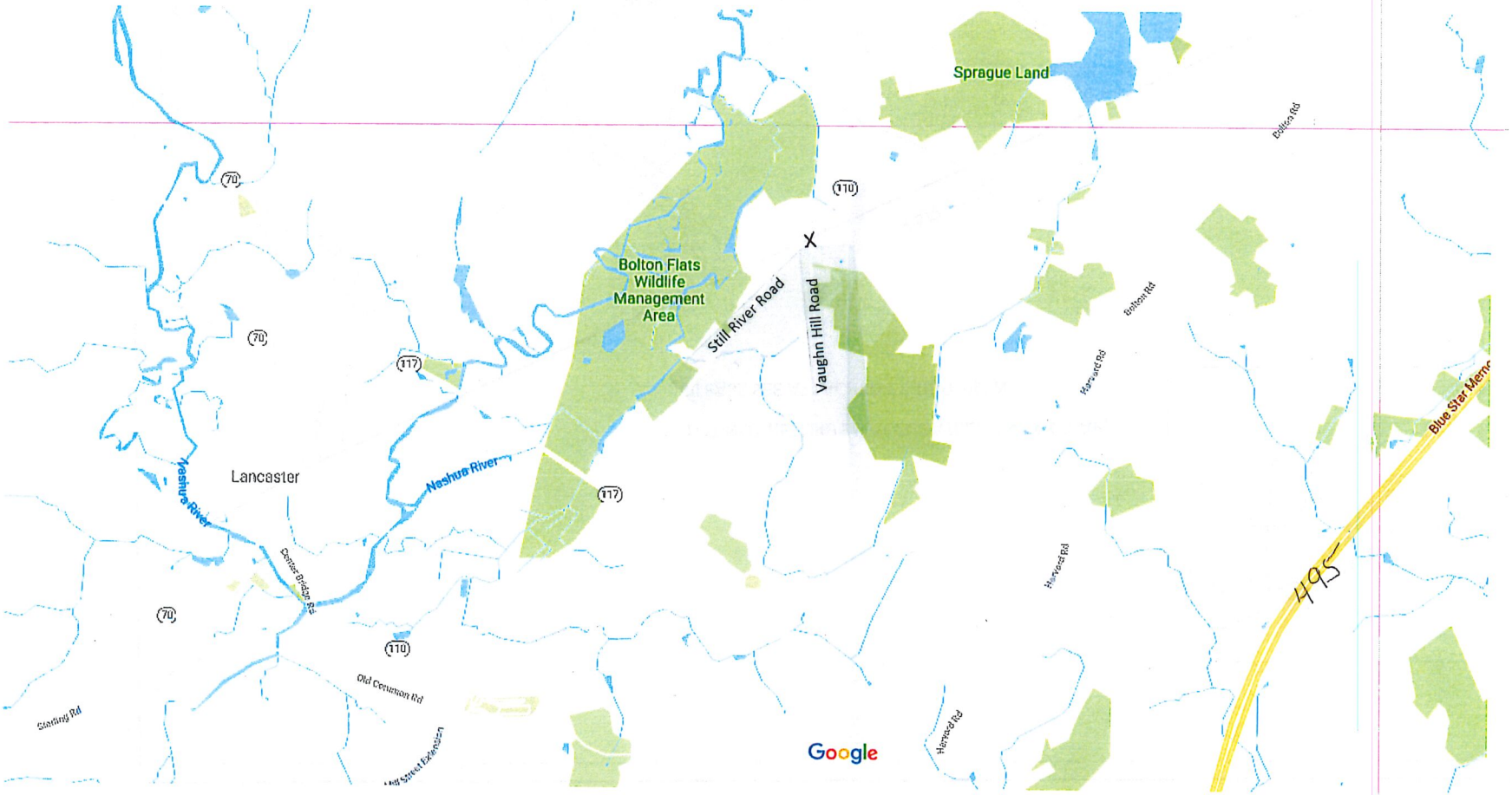
The proposed Project will require permanent maintenance and repair including snow removal, lawn care, landscape maintenance and building maintenance which will create local jobs and/or an increase need for established local businesses.

8. Promote Clean Energy

Maximize energy efficiency and renewable energy opportunities. Support energy conservation strategies, local clean power generation, distributed generation technologies, and innovative industries. Reduce greenhouse gas emissions and consumption of fossil fuels.

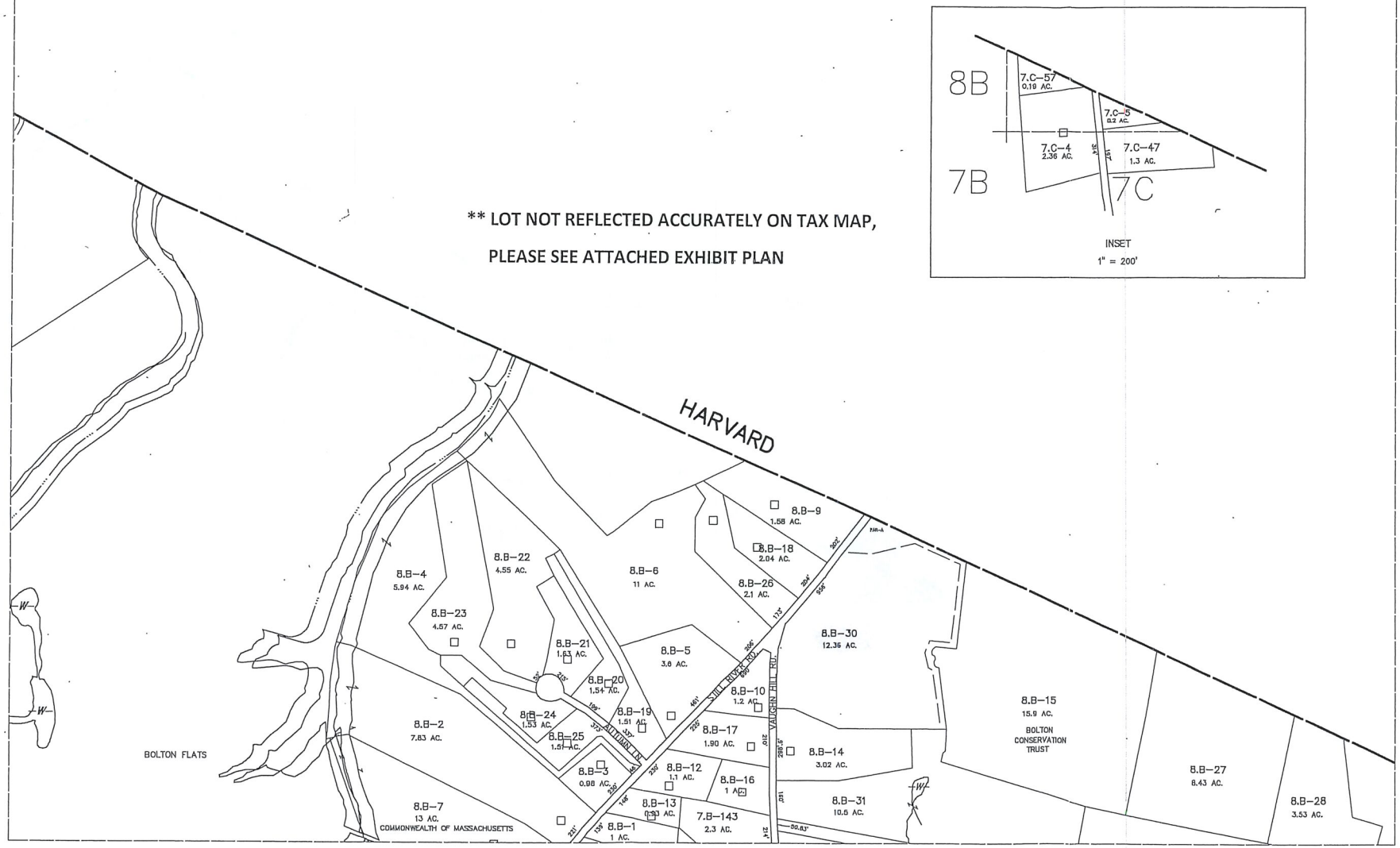
As stated above the proposed Project will be built according to the Massachusetts "Stretch" energy regulations, far exceeding the normal requirements and exceeding the energy star requirements for new homes. The Project will reduce greenhouse gas emissions through the implementation of these "stretch" building requirements.

1.1



 2000 ft

1.2



THIS MAP IS FOR ASSESSMENT PURPOSES. IT IS NOT VALID FOR LEGAL DESCRIPTION OR CONVEYANCE.
HORIZONTAL DATUM IS THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, NAD 83 METERS.
TAX MAP DATA CONVERSION OF THE TOWN OF BOLTON TAX MAPS WAS COMPLETED BY APPLIED GEOGRAPHICS, INC.

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CARTOGRAPHIC ASSOC. INC.
PROFESSIONAL GIS CONSULTANTS
MUNICIPAL MAPPING – GIS – PUBLIC WORKS INFORMATION MANAGEMENT
11 PLEASANT STREET, LITTLETON, NEW HAMPSHIRE 03561
(603)444-6768 – 1(800)232-4540 – FAX (603)444-1368 – WWW.CAI-INFO.COM

LEGEND
PARCEL AREA . . . . . AC
RECORD DIMENSION . . . . . 100'
MAP-LOT 2B-16
WATER . . . . . -W-
BUILDING . . . . . □
WAY/ACCESS . . . . . WY
OWNERSHIP . . . . . ⟨
US . . . . . US

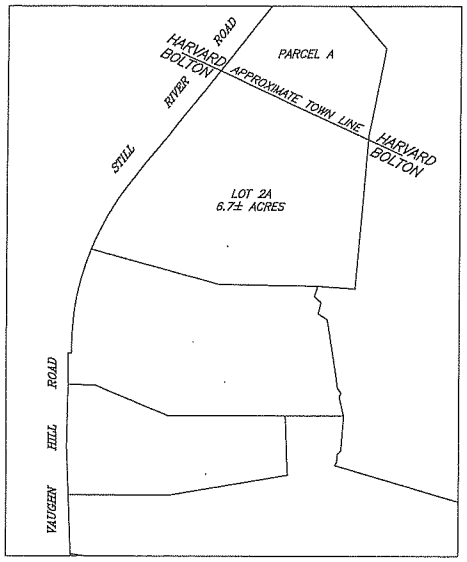
SCALE 1" = 200'
100 0 200 400 600
FEET
REVISED TO :

PROPERTY MAPS
BOLTON
MASSACHUSETTS

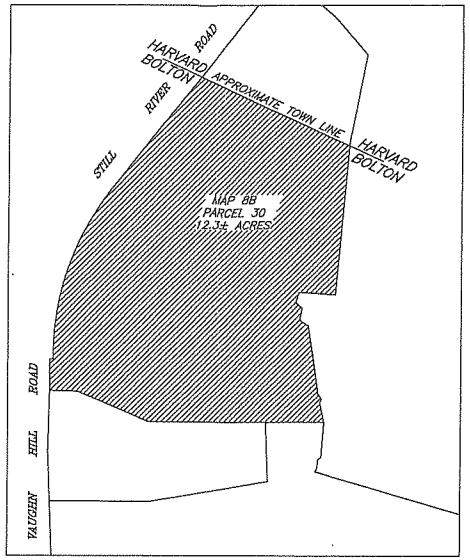
INDEX DIAGRAM
8A
7A

MAP NO.
8B

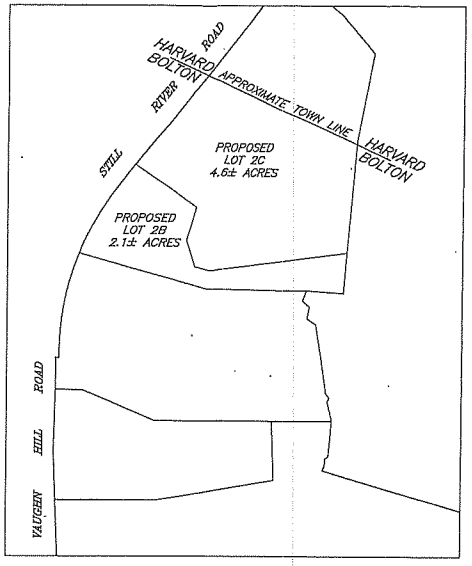
1:2



EXISTING LOT SKETCH (PLAN 86 PLAN BOOK 918)
SCALE 1"=200'



ASSESSOR SKETCH MAP 8B PARCEL 30
12.3± ACRES – DOES NOT ACCOUNT FOR ANR
PLAN (PLAN 86 PLAN BOOK 918)
SCALE 1"=200'



PROPOSED DIVISION OF LOT 2A
SCALE 1"=200'

200 0 100 200 400 800
1 in. = 200 ft.

NOTES:

RECORD OWNER:
1,000 LLC
28 COUNTRY CLUB ROAD
MIDDLETON, MA

PLAN REFERENCE:
PLAN BOOK 728 PLAN 87
PLAN BOOK 728 PLAN 63
PLAN BOOK 814 PLAN 73
PLAN BOOK 809 PLAN 96
PLAN BOOK 808 PLAN 36
PLAN BOOK 918 PLAN 86

ASSESSORS REFERENCE: MAP 8B, PARCEL 30 (BOLTON)

ZONING DISTRICT: RESIDENTIAL

LOT 2A AND PARCEL A ARE SHOWN ON PL.86 IN PL.BK.918.

EXHIBIT PLAN
STILL RIVER ROAD, BOLTON

DATE: MARCH 13, 2018	SCALE: 1 in. = 200 ft.
OWNER: 1,000 LLC MIDDLETON, MA	JOB NO. 3339 DWG. NO. 3339–EXHIBIT

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1092 MAIN STREET, P.O. BOX 426
BOLTON, MASSACHUSETTS 01740
PHONE: 978–779–5091 FAX: 978–779–0260
www.ddcdg.com

1.3

YOUR TRIP TO:

[1 - 499] Still River Rd

1 HR 5 MIN | 45.7 MI

Est. fuel cost: $3.62

Trip time based on traffic conditions as of 4:29 PM on February 1, 2018. Current Traffic: Moderate

1. Start out going **southeast** on Beacon St toward Tremont St.

2. Take the 1st **right** onto Tremont St.
King's Chapel is on the corner.

If you are on School St and reach Chapman Pl you've gone a little too far.

Then 0.71 miles — 0.71 total miles

3. Turn **right** to stay on Tremont St.
Tremont St is 0.1 miles past Seaver Pl.

If you are on Shawmut Ave and reach Marginal St you've gone a little too far.

Then 0.15 miles — 0.86 total miles

4. Turn **slight right** onto Marginal St.
Marginal St is just past Church St.

If you reach Herald St you've gone a little too far.

Then 0.06 miles — 0.92 total miles

5. Merge onto I-90 W/Massachusetts Tpke W (Portions toll).

Then 27.56 miles — 28.49 total miles

6. Merge onto I-495 N via EXIT 11A toward **NH - Maine/Marlborough**.

Then 13.24 miles — 41.73 total miles

7. Merge onto Main St/MA-117 W via EXIT 27 toward **Bolton**.

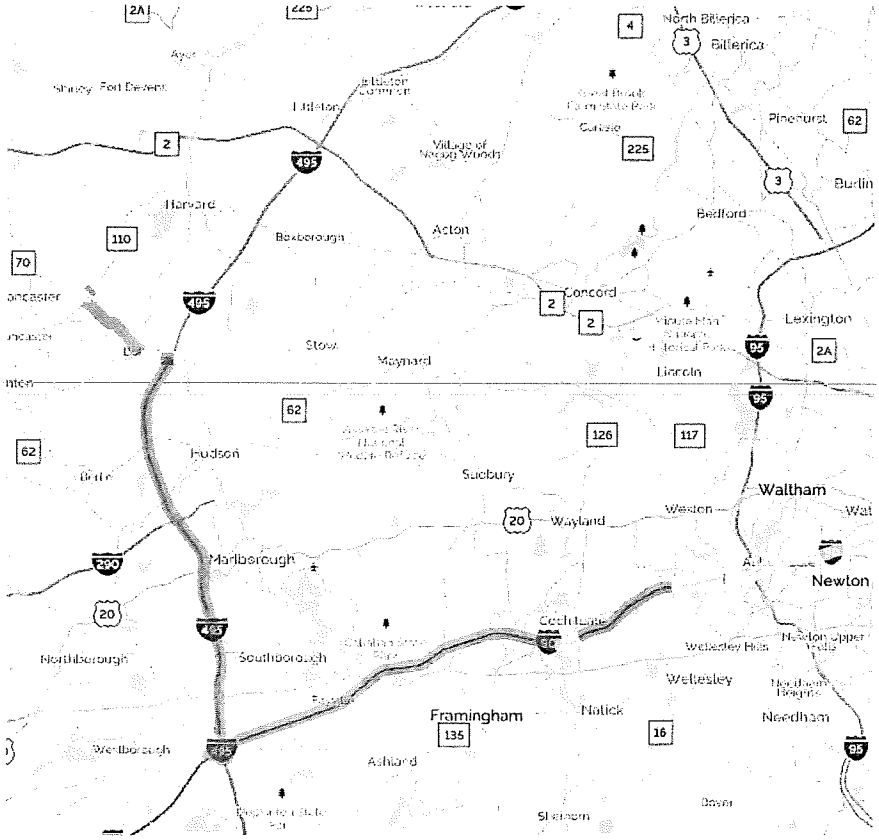
Then 3.50 miles — 45.23 total miles

8. Turn **right** onto Still River Rd/MA-110.
Still River Rd is 0.3 miles past Fox Run Rd.

Then 0.46 miles — 45.69 total miles

9. [1 - 499] Still River Rd, [1 - 499] STILL RIVER RD.
Your destination is 0.3 miles past Kettle Hole Rd.

If you reach Nashaway Rd you've gone about 0.4 miles too far.



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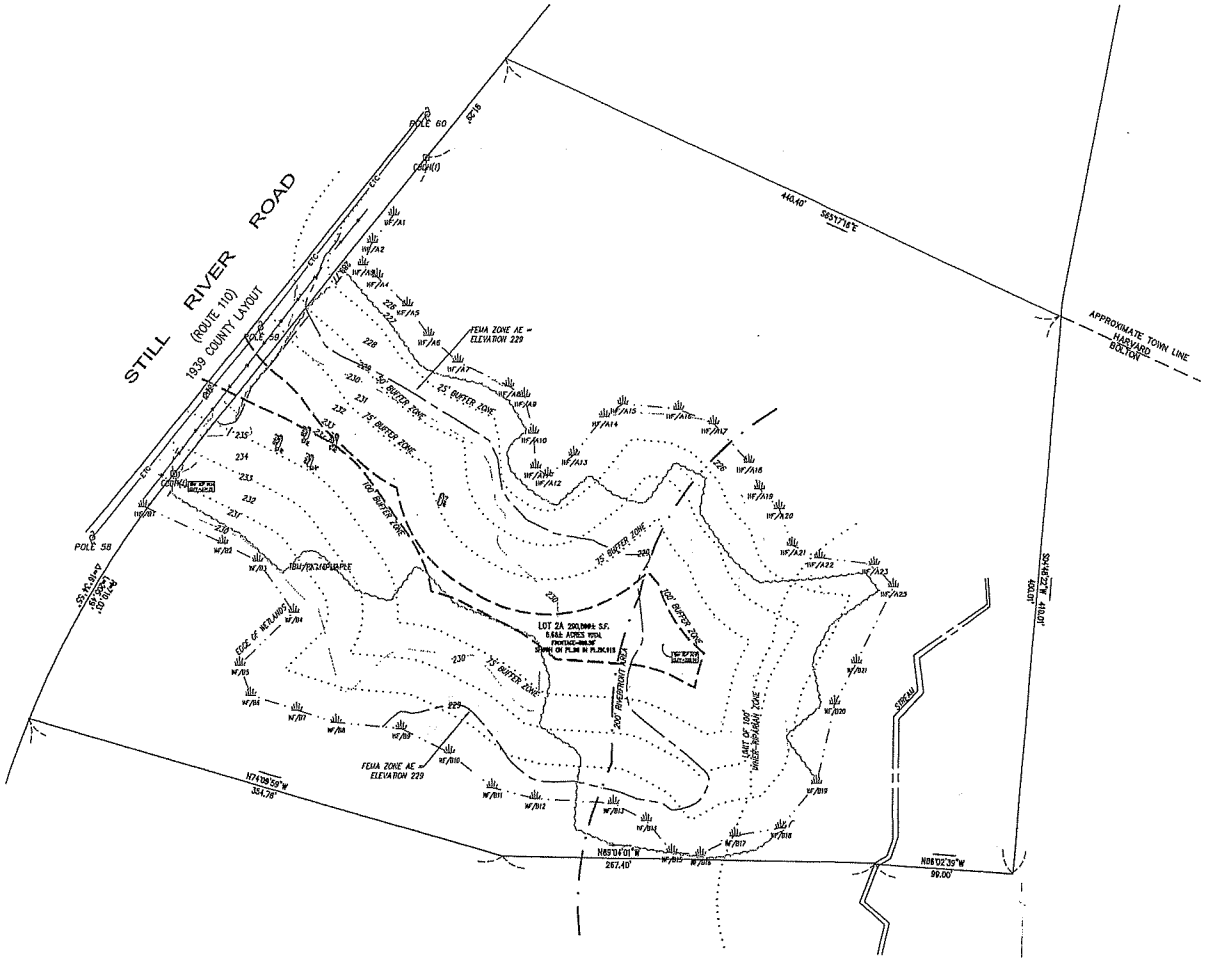

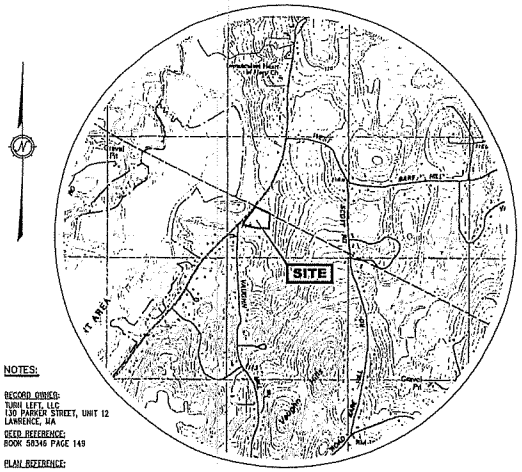

LOCUS MAP
SCALE: 1" = 1,500'

NOTES:

RECORD OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MA

DEED REFERENCE:
BOOK 58346 PAGE 149

PLAN REFERENCE:
PLAN BOOK 918 PLAN 86
PLAN BOOK 932 PLAN 91

ASSESSORS REFERENCE: MAP 8D, PARCEL 32 BOLTON

ZONING DISTRICT: RESIDENTIAL

SITE IS LOCATED WITHIN NHESP PRIORITY HABITAT OF RARE SPECIES

LEGEND

EXIST. FEATURE	DESCRIPTION	EXIST. SYM.	DESCRIPTION
	STREAMS/RIVERS		LIGHT POLE
	WETLANDS		TELEPHONE POLE
	LIMIT OF BUFFER ZONE		GUY WIRE
	LEDGE		HYDRANT
160' 140' 120'	WELL RADIUS		SEWER MANHOLE
	PROPERTY LINE		STORM WATER MANHOLE
	EASEMENT LINE		WELL
	BARB FENCE		MISCELLANEOUS MANHOLE
	WOOD FENCE		WETLAND FLAG
	GUARD RAIL		CATCH BASIN
	CHAIN LINK FENCE		WATER GATE VALVE
CONC WALL	CONCRETE RETAINING WALL		GAS GATE VALVE
STONE WALL	STONE RETAINING WALL		ELECTRICAL METER
	STONE WALL		GAS METER
W	WATER LINE		TRAFFIC SIGNAL SWITCH
G	GAS LINE		SIGN
E	ELECTRICAL LINE		PERC TEST
S	SANITARY SEWER		TEST PIT
D	STORM DRAIN		ELECTRICAL TRANSFORMER
T	TELEPHONE LINE		TELEPHONE BOX
CATV	CABLE LINE		CABLE BOX
OHW	EXISTING OVER-HEAD WIRES		FLAG POLE
180	EXISTING CONTOUR (INDEX)		WATER SHUT OFF
179	EXISTING CONTOUR (INTERMEDIATE)		SHRUB
	EXISTING SPOT ELEVATION		CLEANOUT
	EXISTING BUILDING/HOUSE		FIRE ALARM
TREE LINE	TREE LINE		VENT PIPE

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www.DucharmeandDillis.com

OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 2
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER DEVELOPMENT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

SCALE:
40 0 20 40 80 160
1 in. = 40 ft.

MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER
STANTLEY R. DILLIS
No. 30929
CIVIL
1/26/18

DATE: 1/26/18
DESIGN BY:
DRAWN BY: SD
CHECKED BY: SRD

EXISTING CONDITIONS
STILL RIVER ROAD – MAP 8D PARCEL 32
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339
DRAWING NO. 3339-EC
SHEET NO. 1 OF 1

2.2

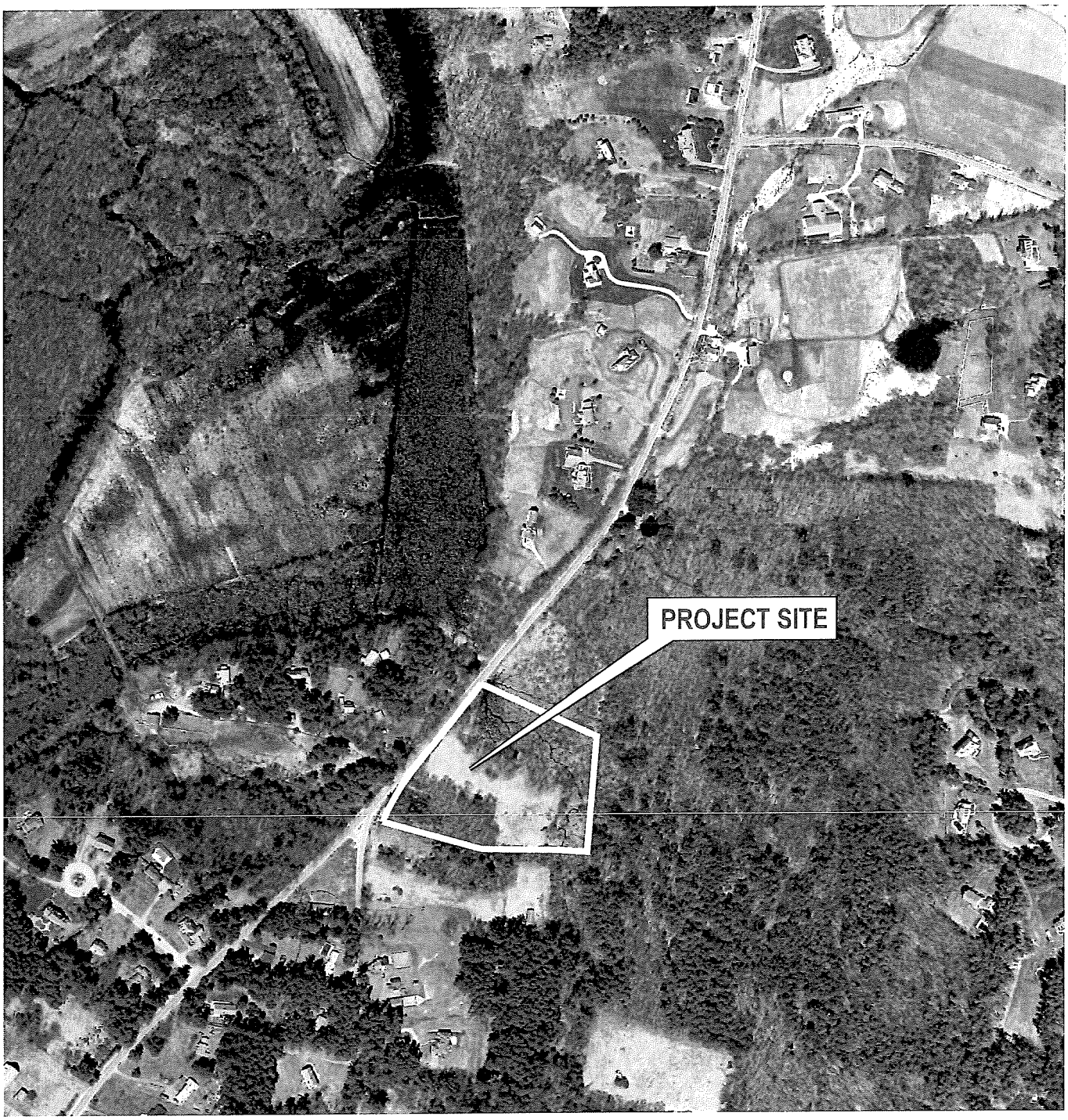


FIGURE 3 - AERIAL PHOTOGRAPH

1"=500'

Prepared By: Ducharme & Dillis Civil Design Goup, Inc.
1092 Main Street, P.O. Box 428
Bolton, Massachusetts

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS• LAND SURVEYORS• WETLAND CONSULTANTS

References: FIRM - Flood Insurance Rate Map
Community-Panel Numbers: 25027C0457E & 25027C476F

Prepared For: Turn Left, LLC
130 Parker Street, Unit 12
Lawrence, Massachusetts

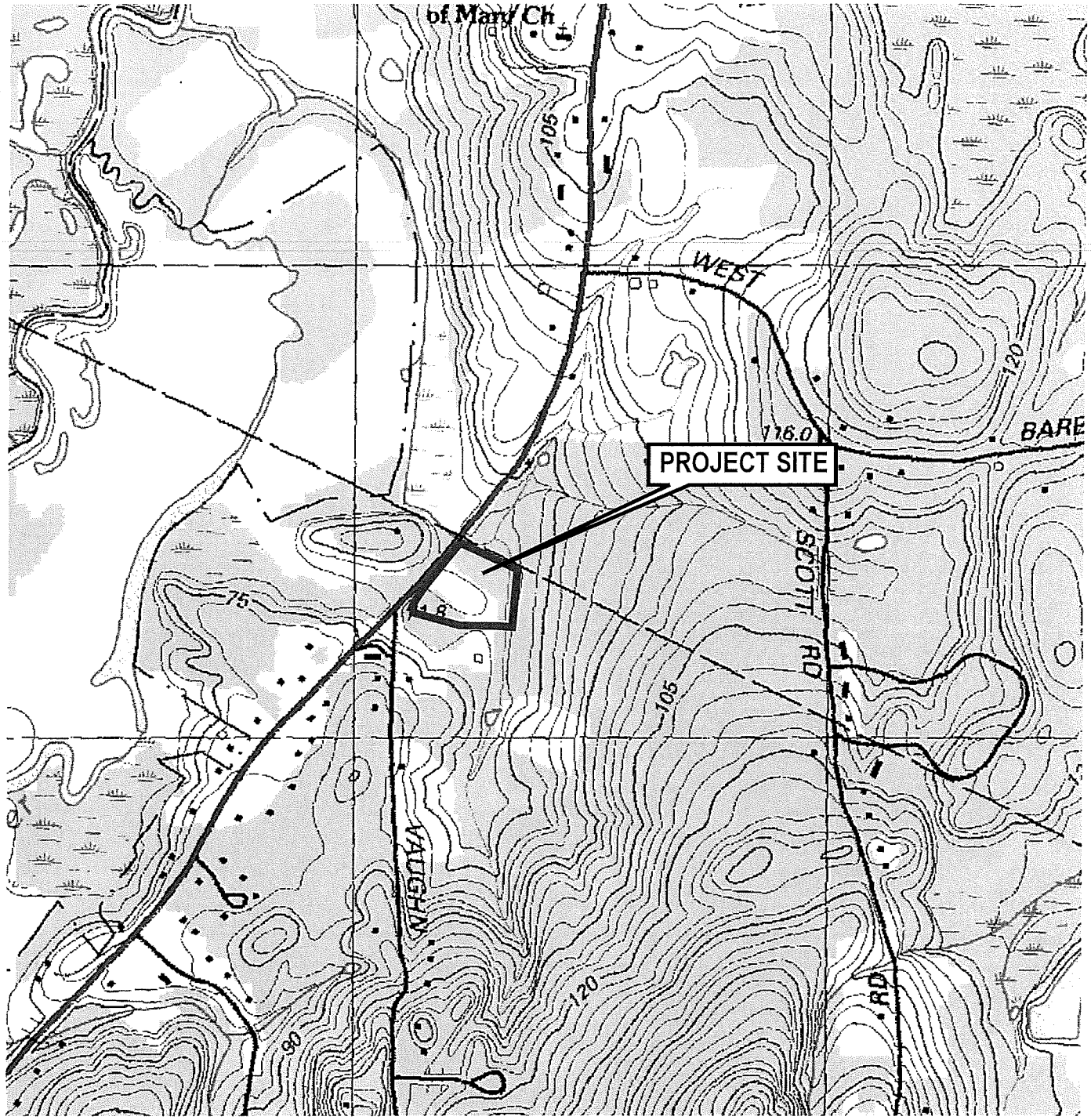


FIGURE 1 - LOCUS MAP

1"=1,000'

Prepared By: Ducharme & Dillis Civil Design Goup, Inc.
1092 Main Street, P.O. Box 428
Bolton, Massachusetts

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS• LAND SURVEYORS• WETLAND CONSULTANTS

References: 1988 USGS Hudson Massachusetts Topographic Map

Prepared For: Turn Left, LLC
130 Parker Street, Unit 2
Lawrence, Massachusetts

2.3

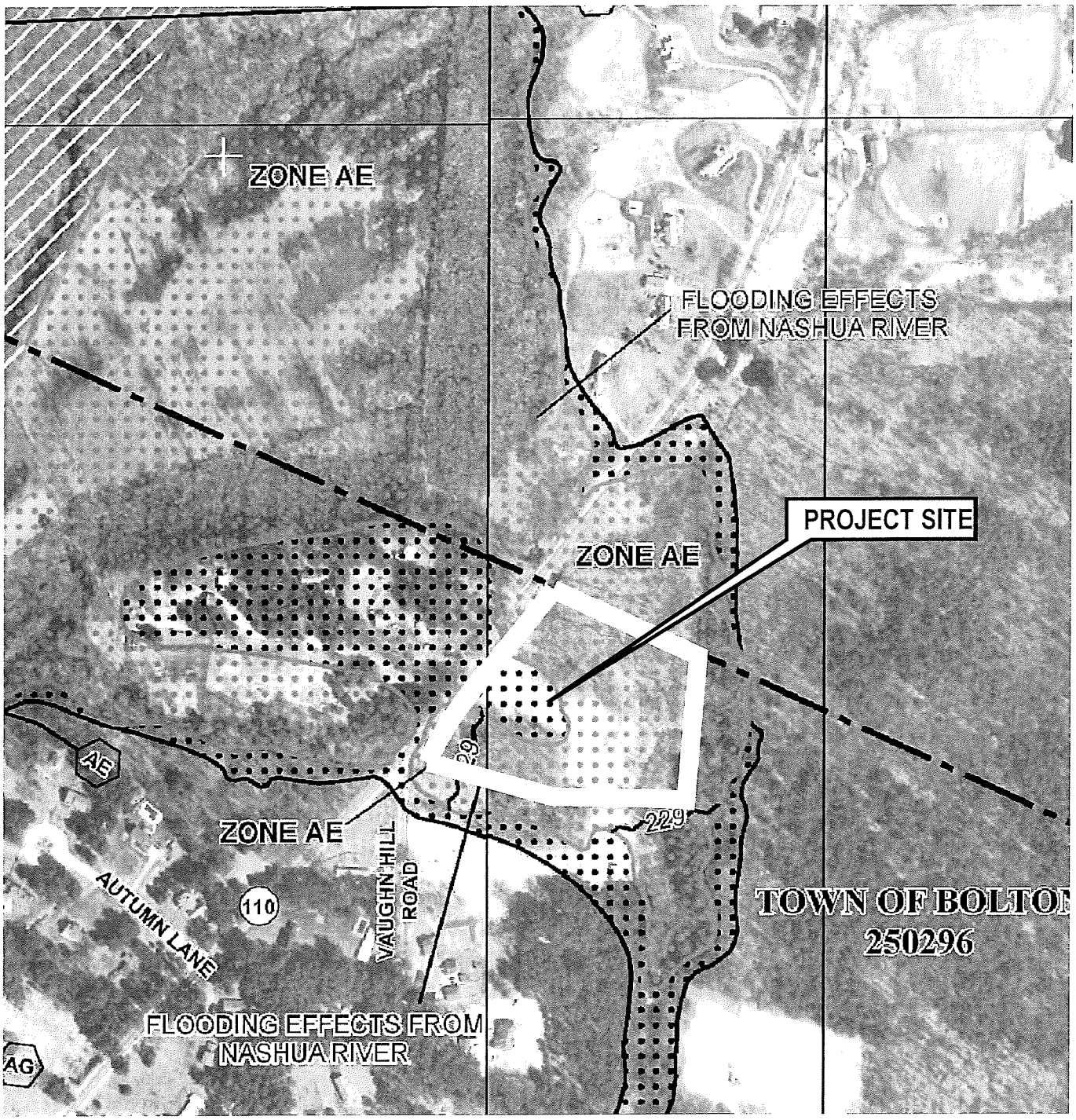


FIGURE 2 - FLOOD MAP

1"=400'

Prepared By: Ducharme & Dillis Civil Design Goup, Inc.
1092 Main Street, P.O. Box 428
Bolton, Massachusetts

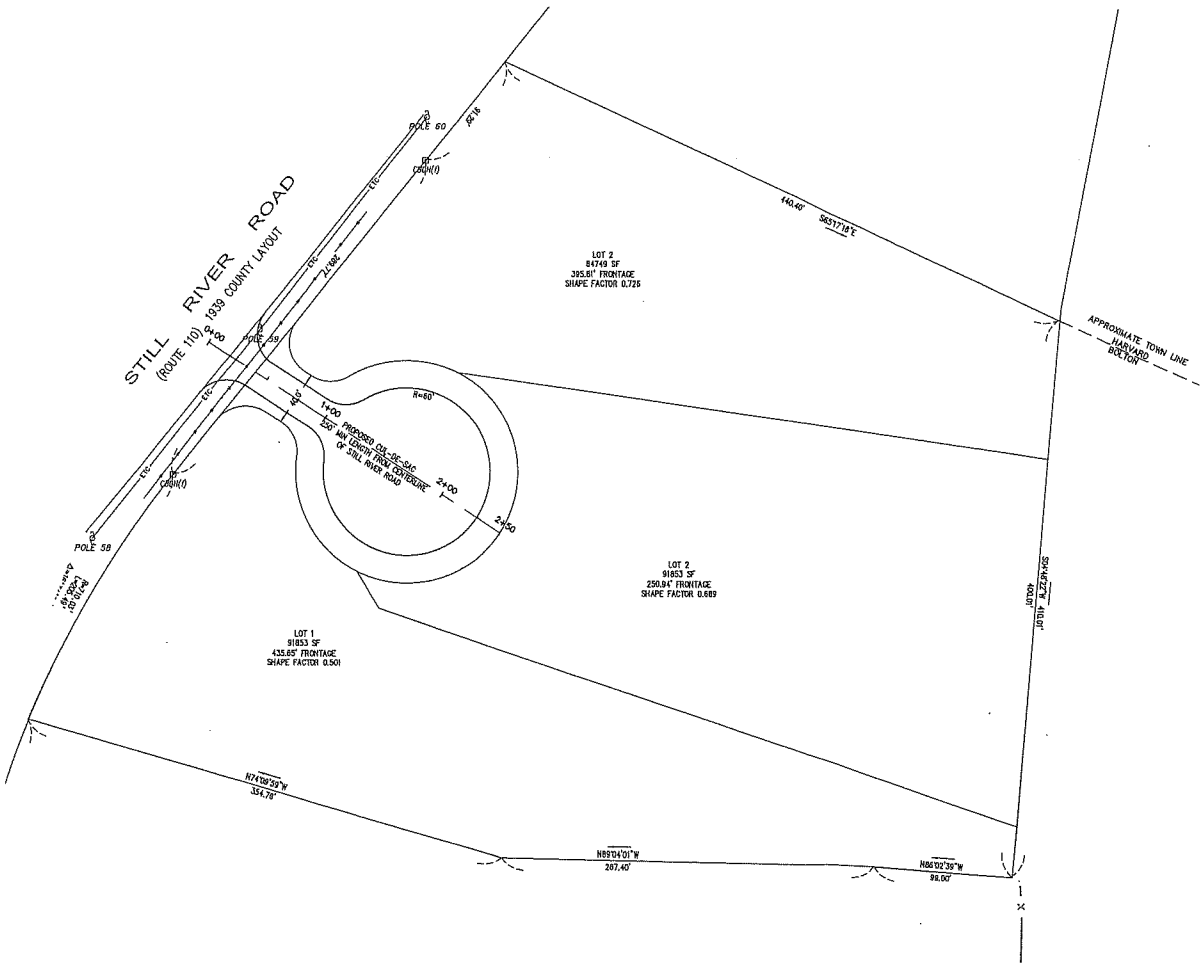
DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS• LAND SURVEYORS• WETLAND CONSULTANTS

References: FIRM - Flood Insurance Rate Map
Community-Panel Numbers: 25027C0457E & 25027C476F

Prepared For: Turn Left, LLC
130 Parker Street, Unit 12
Lawrence, Massachusetts

2.4 Documentation Regarding Site Characteristics/Constraints

2.5



NOTES:

RECORD OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MA

DEED REFERENCE:
BOOK 58346 PAGE 149

PLAN REFERENCE:
PLAN BOOK 918 PLAN 86
PLAN BOOK 932 PLAN 91

ASSESSORS REFERENCE: MAP 8D, PARCEL 32 BOLTON

ZONING DISTRICT: RESIDENTIAL

ZONING INFORMATION

ZONING DISTRICT: RESIDENTIAL		
DESCRIPTION	RESIDENTIAL	BACKLAND
MIN. LOT AREA	80,000 SF	4.5 ACRES
MIN. FRONTAGE	200 FT	50 FT
MIN. WIDTH AT 100'	150 FT	NA
MIN. FRONT YARD	50 FT	50 FT
MIN. SIDE YARD	20 FT	50 FT
MIN. REAR YARD	20 FT	50 FT
MIN SHAPE FACTOR	0.5	NA

GENERAL NOTES:

1. THIS PLAN HAS BEEN PREPARED TO DEMONSTRATE THE CONCEPTUAL HORIZONTAL ALIGNMENT OF A CUL-DE-SAC MEETING THE MINIMUM LENGTH AND WIDTH REQUIREMENTS OF THE TOWN OF BOLTON SUBDIVISION RULES AND REGULATIONS.
2. WETLAND RESOURCE AREAS AND IMPACTS TO WETLAND RESOURCE AREAS HAVE NOT BEEN SHOWN.
3. VALIDITY OF LOTS SUBJECT TO SUCCESSFUL SOIL TESTING.
4. SITE IS LOCATED WITHIN PRIORITY HABITAT OF RARE SPECIES.
5. THIS PLAN HAS BEEN PREPARED FOR CONCEPTUAL PLANNING PURPOSES ONLY. IT SHOULD NOT BE USED FOR ANY OTHER PURPOSE.

ROAD REQUIREMENTS

DEAD END STREETS (CUL-DE-SAC)
BOLTON SUBDIVISION RULES & REGULATIONS
SECTION 5220.5.

DESCRIPTION	REQUIREMENT
GRADE	10% MAX (LANE)
DEAD END STREET LENGTH	250' MIN 500' MAX
RIGHT OF WAY WIDTH	40 FT (LANE)
PAVEMENT WIDTH	24 FT (LANE)
CENTERLINE RADIUS	100 FT MIN (LANE)

PLAN SHOWS CONCEPTUAL LANE LAYOUT.
INSTRUMENT SURVEY REQUIRED TO DETERMINE IF ROAD CAN MEET GRADE REQUIREMENTS

PREPARED BY:
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Civil Design Group, Inc.
CIVIL ENGINEERS • LAND SURVEYORS • WETLAND CONSULTANTS
1092 MAIN STREET, P.O.
BOLTON, MASSACHUSETT
PHONE: (978) 779-6091 FAX: (978) 779-0280
www.DucharmeandDillis.com

OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 2
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER DEVELOPMENT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

SCALE:
40 0 20 40 80 160
1 in. = 40 ft.

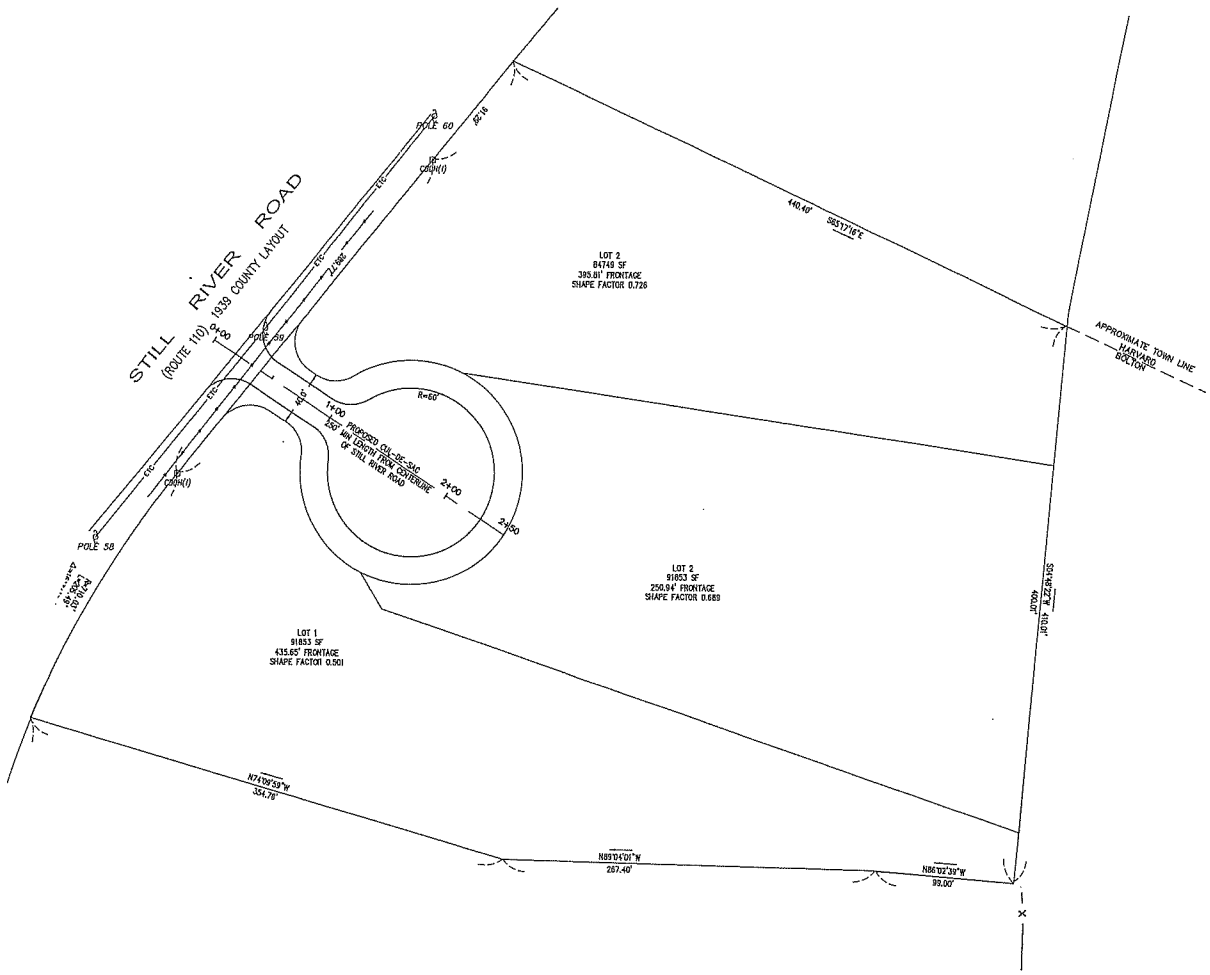
DATE: 1/26/18
DESIGN BY:
DRAWN BY: SD
CHECKED BY: SRD

CONCEPTUAL PLAN - BY RIGHT DEVELOPMENT
STILL RIVER ROAD – MAP 8D PARCEL 32
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339
DRAWING NO. 3339-EC
SHEET NO. 1 OF 1

2.5



NOTES:

RECORD OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MA

DEED REFERENCE:
BOOK 36346 PAGE 149

PLAN REFERENCE:
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PLAN BOOK 832 PLAN 91

ASSESSORS REFERENCE: MAP 8D, PARCEL 32 BOLTON

ZONING DISTRICT: RESIDENTIAL

ZONING INFORMATION

ZONING DISTRICT: RESIDENTIAL		
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MIN. LOT AREA	80,000 SF	4.5 ACRES
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MIN. FRONT YARD	50 FT	50 FT
MIN. SIDE YARD	20 FT	50 FT
MIN. REAR YARD	20 FT	50 FT
MIN SHAPE FACTOR	0.5	NA

GENERAL NOTES:

1. THIS PLAN HAS BEEN PREPARED TO DEMONSTRATE THE CONCEPTUAL HORIZONTAL ALIGNMENT OF A CUL-DE-SAC MEETING THE MINIMUM LENGTH AND WIDTH REQUIREMENTS OF THE TOWN OF BOLTON SUBDIVISION RULES AND REGULATIONS.
2. WETLAND RESOURCE AREAS AND IMPACTS TO WETLAND RESOURCE AREAS HAVE NOT BEEN SHOWN.
3. VALIDITY OF LOTS SUBJECT TO SUCCESSFUL SOIL TESTING.
4. SITE IS LOCATED WITHIN PRIORITY HABITAT OF RARE SPECIES.
5. THIS PLAN HAS BEEN PREPARED FOR CONCEPTUAL PLANNING PURPOSES ONLY. IT SHOULD NOT BE USED FOR ANY OTHER PURPOSE.

ROAD REQUIREMENTS

DEAD END STREETS (CUL-DE-SAC) BOLTON SUBDIVISION RULES & REGULATIONS SECTION 5220.5.	
DESCRIPTION	REQUIREMENT
GRADE	10% MAX (LANE)
DEAD END STREET LENGTH	250' MIN 500' MAX
RIGHT OF WAY WIDTH	40 FT (LANE)
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CENTERLINE RADIUS	100 FT MIN (LANE)

PLAN SHOWS CONCEPTUAL LANE LAYOUT.
INSTRUMENT SURVEY REQUIRED TO DETERMINE IF ROAD CAN MEET GRADE REQUIREMENTS

PREPARED BY:
DUCHARME & DILLIS
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1092 MAIN STREET, P.O. BOX 428
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PHONE: (978) 779-5091 FAX: (978) 779-0260
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OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 2
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER DEVELOPMENT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

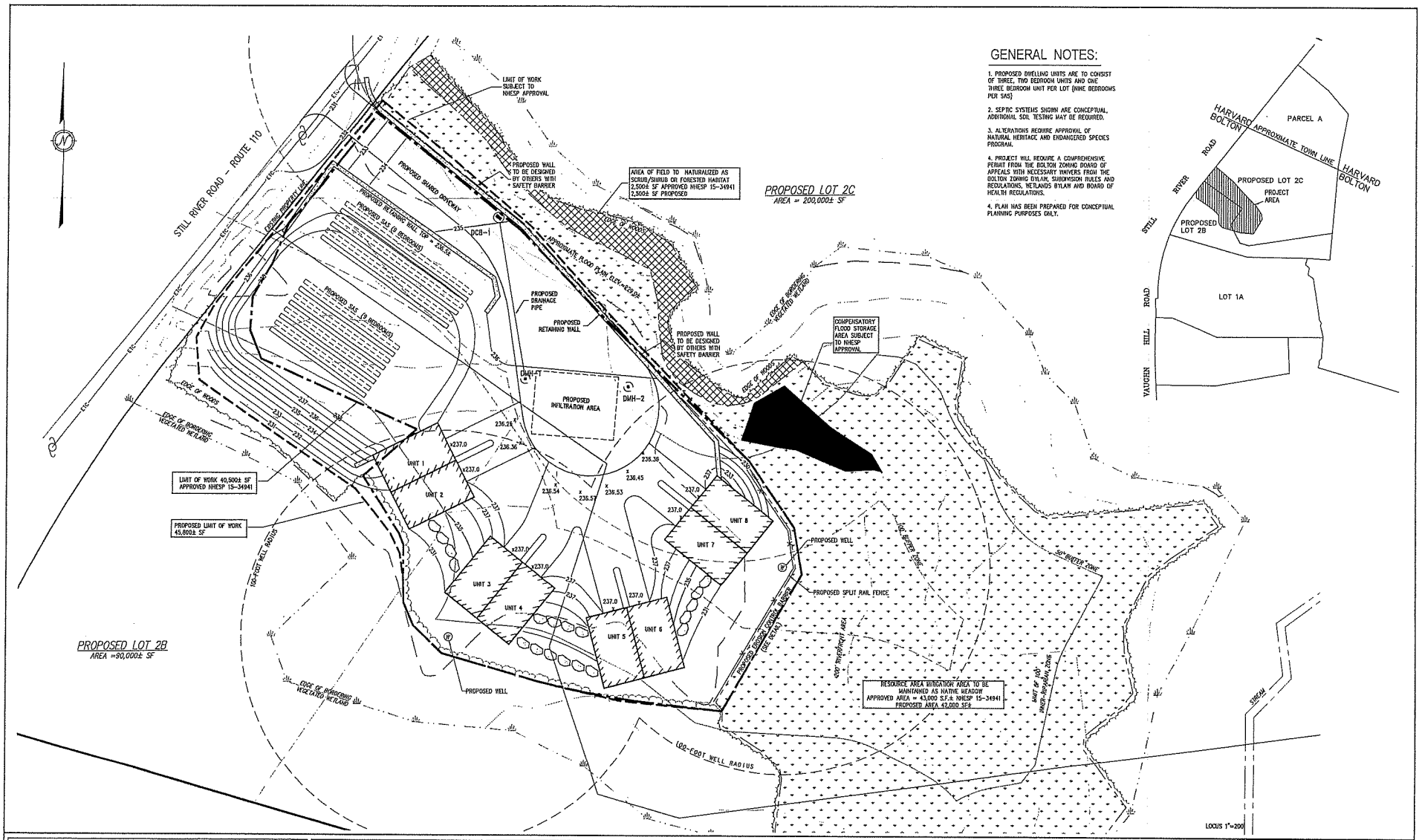
SCALE:
40 0 20 40 80 160
1 in. = 40 ft.

DATE: 1/26/18
DESIGN BY:
DRAWN BY: SD
CHECKED BY: SRD

CONCEPTUAL PLAN - BY RIGHT DEVELOPMENT
STILL RIVER ROAD – MAP 8D PARCEL 32
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339
DRAWING NO. 3339-EC
SHEET NO. 1 OF 1



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BOLTON, MASSACHUSETTS 01740
PHONE: (978) 779-6091 FAX: (978) 779-0260
www.DucharmeandDillis.com

OWNER: 1,000 LLC
28 COUNTRY CLUB LANE
MIDDLETON, MA

APPLICANT:

SCALE: 20 0 10 20 40 80
1 in. = 20 ft.

DATE: 3/13/18

EXHIBIT PLAN - NHESP WORK AREA
STILL RIVER ROAD
BOLTON, MA

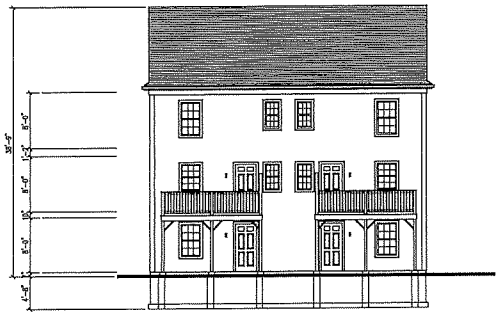
NO.	DATE	DESCRIPTION	BY

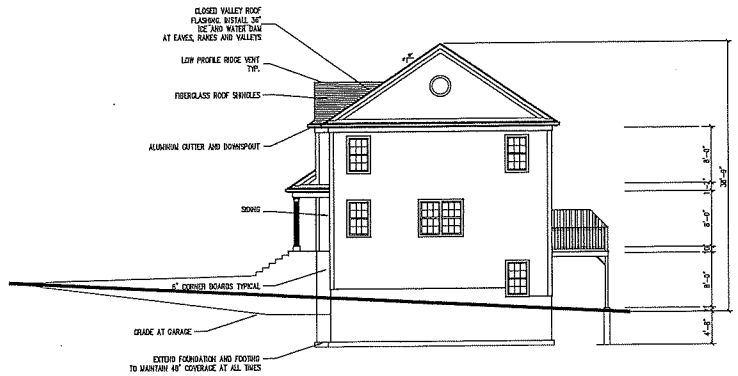
JOB NO. 3339
DRAWING NO. 3339 NHESP
SHEET NO. 1 OF 1

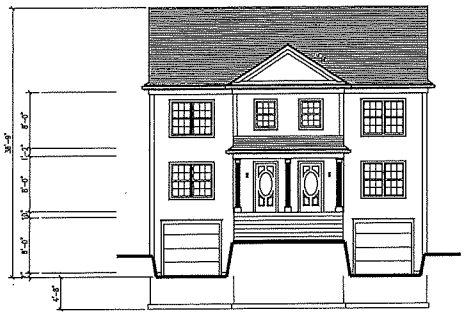
3

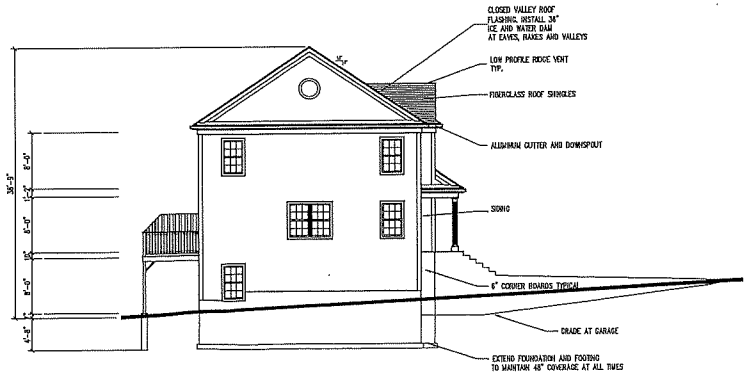
3.2

DUPLEX

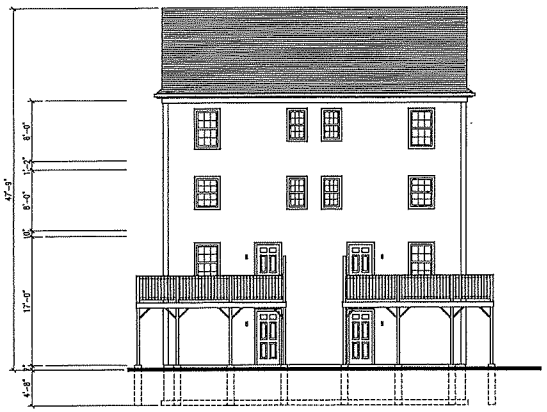



CLOSED VALLEY ROOF FLASHING, INSTALL 36" ICE AND WATER DAM AT EAVES, RAKES AND VALLEYS
LOW PROFILE RIDGE VENT TYP.
FIBERGLASS ROOF SHINGLES
ALUMINUM GUTTER AND DOWNSPOUT
SIDING
6" CORNER BOARDS TYPICAL
GRADE AT GARAGE
EXTEND FOUNDATION AND FOOTING TO MAINTAIN 48" COVERAGE AT ALL TIMES

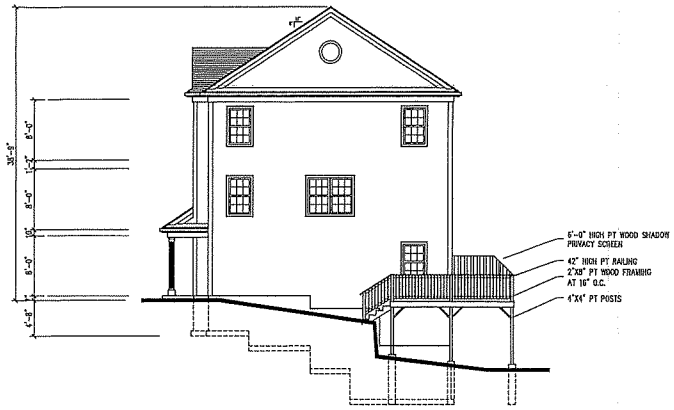



CLOSED VALLEY ROOF FLASHING, INSTALL 36" ICE AND WATER DAM AT EAVES, RAKES AND VALLEYS
LOW PROFILE RIDGE VENT TYP.
FIBERGLASS ROOF SHINGLES
ALUMINUM GUTTER AND DOWNSPOUT
SIDING
6" CORNER BOARDS TYPICAL
GRADE AT GARAGE
EXTEND FOUNDATION AND FOOTING TO MAINTAIN 48" COVERAGE AT ALL TIMES

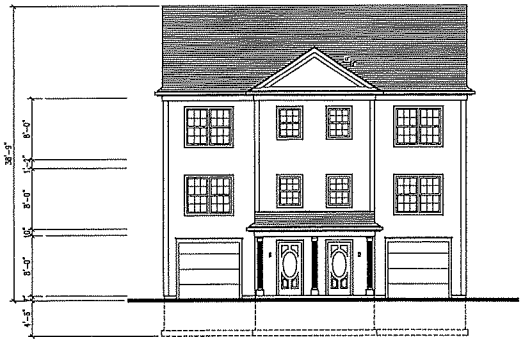
DUPLEX



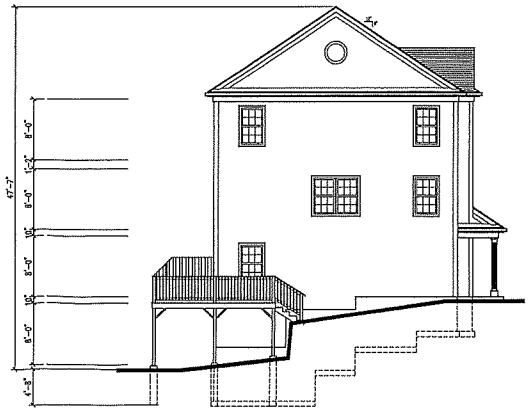
1 BACK ELEVATION
– SCALE 1/8"=1'-0"



2 RIGHT ELEVATION
– SCALE 1/8"=1'-0"



3 FRONT ELEVATION
– SCALE 1/8"=1'-0"



4 LEFT ELEVATION
– SCALE 1/8"=1'-0"

Revisions :

Approved :

Proj. Mgr.:FC
Designed :FC
Drawn : FC
Checked : FC
Scale : NOTED
Date : 2-16-2018

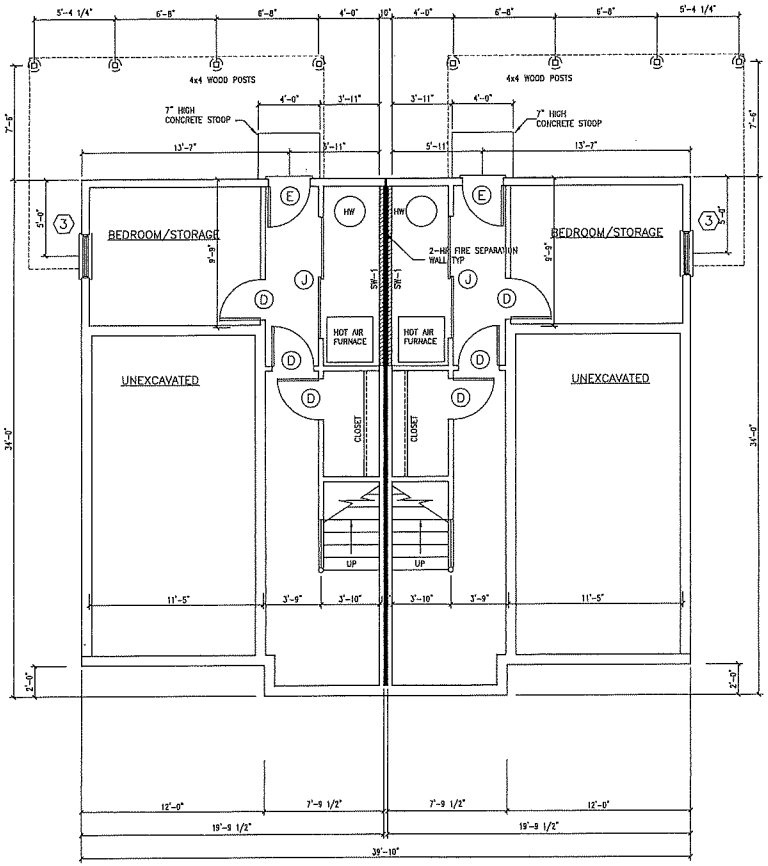
STILL RIVER ROAD
BOLTON, MASSACHUSETTS

Proj. No. 18-007

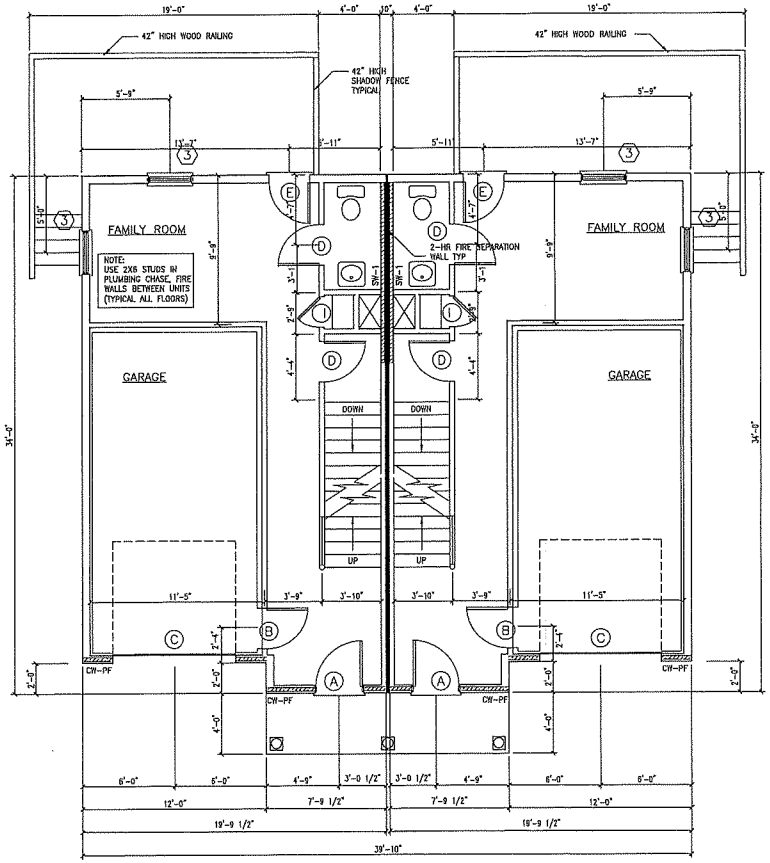
Dwg. No.

A-103

DUPLEX



1 BASEMENT PLAN
SCALE 1/4"=1'-0"



2 GROUND FLOOR PLAN
SCALE 1/4"=1'-0"

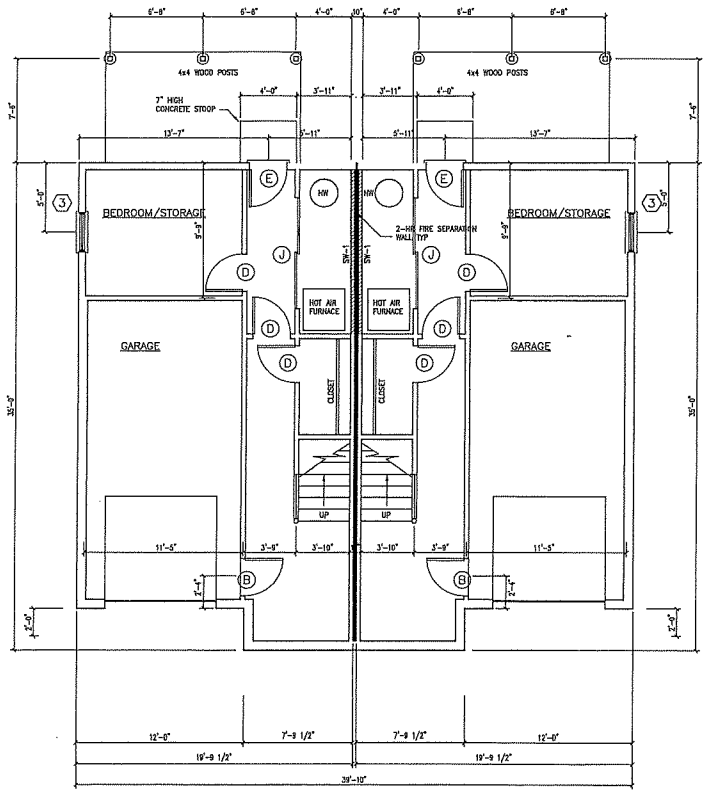
Revisions :
Approved :

Proj. Mgr.:FC
Designed : FC
Drawn : KC
Checked : FC
Scale : NOTED
Date : 2-18-2018

STILL RIVER ROAD
BOLTON, MASSACHUSETTS

Proj. No. 18-007
Dwg. No.
A-100

DUPLEX alt


4x4 WOOD POSTS
4x4 WOOD POSTS
7" HIGH CONCRETE STOOP
BEDROOM/STORAGE
BEDROOM/STORAGE
HW
HW
2-HR FIRE SEPARATION WALL TYP
HOT AIR FURNACE
HOT AIR FURNACE
GARAGE
GARAGE
CLOSET
CLOSET
UP
UP
39'-10"

The development consists of four duplex units circularly arrayed about a main shared cul-de-sac. Each unit has a very compact floor plan with three stories, partial walk out basement and gabled roof. The architectural style of the units is in keeping with the local and New England vernacular. The exterior enclosure complies with the Massachusetts energy code and consists of 2x6 wood framing, synthetic wood clapboard siding, double hung window with insulated glass and architectural roofing shingles.

The units comply with the current state building code and local ordinances.

The ground floor (648 square feet) consists of the main entrance, single car garage, a family room and a half bath. The rear of the facility access a raised pressure treated deck that serves as a secondary means of egress.

The first floor (648 square feet) is an open floor plan consisting of the kitchen, dining area and living room, a half bathroom is located adjacent to the kitchen. Large windows flood the interior with natural light and a zero clearance gas fireplace provides a focal point as well as supplemental heating.

The second floor (648 square feet) houses a master bedroom, an additional bedroom and a full bathroom. The master bedroom has an oversized walk in closet and a raised tray ceiling

Due to the site restrictions and grades the units have a partial daylight basement (378 square feet) to the rear of the facility and storage/bedroom and a utility room. The basement does not extend under the garage.

Still River Commons
Preliminary Waivers from Town of Bolton Zoning Bylaw

Zoning District: Residential

	Required	Provided (Lot 2B/Lot 2C)*	Waiver Required
Min Frontage	200'	281'/305'	No
Min Lot Area	80,000 SF	85,000 SF / 205,400 SF	No
Min lot width at 100' from street line	150'	231'/331'	No
Max Lot Coverage	N/A	N/A	No
Min Front Yard	50'	100'/200'	No
Min Other Yards	20'	5'/12'	Yes
*all dimensions are approximate			
Min required parking	N/A	2 spaces per unit	No
max height	32'	32'	No

Additional waivers

Waiver required from 250-13 C. to allow more than one building per lot

Waivers to be requested from Bolton Board of Health Regulations to allow only requirements of Title 5 (310 CMR 15) to apply.

Waivers to be requested from thetown of Bolton Wetlands Bylaw to allow only the setback requirements of the Wetlands Protection Act (310 CMR 10) to apply.

Waiver required from Common Driveway regulations to allow a common driveway to serve more than 5 single family dwellings.

Waiver required from Common Driveway regulations to allow driveway to be greater than 4% within 40-feet of right of way.

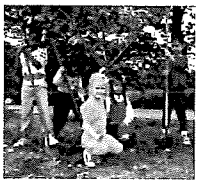
Sustainable Development Principles

The Commonwealth of Massachusetts shall care for the built and natural environment by promoting sustainable development through integrated energy and environment, housing and economic development, transportation and other policies, programs, investments, and regulations. The Commonwealth will encourage the coordination and cooperation of all agencies, invest public funds wisely in smart growth and equitable development, give priority to investments that will deliver good jobs and good wages, transit access, housing, and open space, in accordance with the following sustainable development principles. Furthermore, the Commonwealth shall seek to advance these principles in partnership with regional and municipal governments, non-profit organizations, business, and other stakeholders.

1. Concentrate Development and Mix Uses

Support the revitalization of city and town centers and neighborhoods by promoting development that is compact, conserves land, protects historic resources, and integrates uses. Encourage remediation and reuse of existing sites, structures, and infrastructure rather than new construction in undeveloped areas. Create pedestrian friendly districts and neighborhoods that mix commercial, civic, cultural, educational, and recreational activities with open spaces and homes.

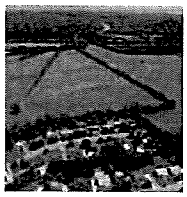
2. Advance Equity



Promote equitable sharing of the benefits and burdens of development. Provide technical and strategic support for inclusive community planning and decision making to ensure social, economic, and environmental justice. Ensure that the interests of future generations are not compromised by today's decisions.

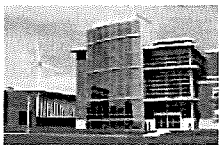
3. Make Efficient Decisions

Make regulatory and permitting processes for development clear, predictable, coordinated, and timely in accordance with smart growth and environmental stewardship.



4. Protect Land and Ecosystems

Protect and restore environmentally sensitive lands, natural resources, agricultural lands, critical habitats, wetlands and water resources, and cultural and historic landscapes. Increase the quantity, quality and accessibility of open spaces and recreational opportunities.



5. Use Natural Resources Wisely

Construct and promote developments, buildings, and infrastructure that conserve natural resources by reducing waste and pollution through efficient use of land, energy, water, and materials.

6. Expand Housing Opportunities

Support the construction and rehabilitation of homes to meet the needs of people of all abilities, income levels, and household types. Build homes near jobs, transit, and where services are available. Foster the development of housing, particularly multifamily and smaller single-family homes, in a way that is compatible with a community's character and vision and with providing new housing choices for people of all means.

7. Provide Transportation Choice

Maintain and expand transportation options that maximize mobility, reduce congestion, conserve fuel and improve air quality. Prioritize rail, bus, boat, rapid and surface transit, shared-vehicle and shared-ride services, bicycling, and walking. Invest strategically in existing and new passenger and freight transportation infrastructure that supports sound economic development consistent with smart growth objectives.

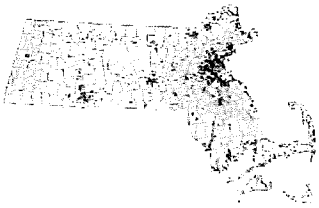
8. Increase Job and Business Opportunities

Attract businesses and jobs to locations near housing, infrastructure, and transportation options. Promote economic development in industry clusters. Expand access to education, training, and entrepreneurial opportunities. Support the growth of local businesses, including sustainable natural resource-based businesses, such as agriculture, forestry, clean energy technology, and fisheries.

9. Promote Clean Energy

Maximize energy efficiency and renewable energy opportunities. Support energy conservation strategies, local clean power generation, distributed generation technologies, and innovative industries. Reduce greenhouse gas emissions and consumption of fossil fuels.

10. Plan Regionally



Support the development and implementation of local and regional, state and interstate plans that have broad public support and are consistent with these principles. Foster development projects, land and water conservation, transportation and housing that have a regional or multi-community benefit. Consider the long-term costs and benefits to the Commonwealth.

4.1

Worcester South District Registry of Deeds
Electronically Recorded Document

This is the first page of the document – Do not remove

Recording Information

Document Number	: 6786
Document Type	: DEED
Recorded Date	: January 22, 2018
Recorded Time	: 02:27:05 PM
Recorded Book and Page	: 58346 / 149
Number of Pages(including cover sheet)	: 3
Receipt Number	: 1053653
Recording Fee (including excise)	: $909.32

****
MASSACHUSETTS EXCISE TAX
Worcester District ROD #20 001
Date: 01/22/2018 02:27 PM
Ctrl# 178443 27445 Doc# 00006786
Fee: $784.32 Cons: $172,000.00
****

Worcester South District Registry of Deeds
Anthony J. Vigliotti, Register
90 Front St
Worcester, MA 01608
(508) 798-7717

Property Address: Lot 2A, off Still River Road, Bolton, MA

QUITCLAIM DEED

I, David Elkinson, Trustee of EB Realty Trust, u/d/t dated November 11, 2014, an unrecorded Trust, with a notice address of 10 Schipper Farm Lane, Southborough, MA

in consideration of **ONE HUNDRED SEVENTY TWO THOUSAND AND NO/100 ($172,000.00) DOLLARS**

grant to **TURN LEFT, LLC,** a Massachusetts limited liability company with a notice address of 130 Parker Street, Unit 12, Lawrence, MA 01843,

with **Quitclaim covenants**

A vacant parcel of land in Bolton, Worcester County, Massachusetts containing 6.68 acres of land, more or less, being shown as Lot 2A on a plan entitled "Plan of Land in Bolton & Harvard, Massachusetts" prepared for: EB Realty Trust dated January 16, 2018; Scale: 1" = 80', prepared by Ducharme & Dillis Civil Design Group, Inc., 1092 Main Street, P.O. Box 428, Bolton, MA 01740.

Said plan is recorded at the Worcester District Registry of Deeds in Plan Book 932, Plan 91.

Lot 2A contains 290,899 square feet (6.68 acres) more or less, according to said plan.

Parcel A, containing 2.52 acres and located in Harvard, is not included in this deed.

This is not homestead property.

Being a portion of the same premises as conveyed by deed to Grantor herein dated February 5, 2015 and recorded at Worcester District Registry of Deeds in Book 53350, Page 329.

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

Executed as a sealed instrument this 16 day of JANUARY, 2018.

TRUSTEE

DAVID ELKINSON, TRUSTEE OF
EB REALTY TRUST

COMMONWEALTH OF MASSACHUSETTS
County of Worcester

On this 16 day of JANUARY, 2018, before me, the undersigned notary public, personally appeared DAVID ELKINSON, TRUSTEE OF EB REALTY TRUST, proved to me through satisfactory evidence of identification, which was a driver's license, to be the person described in and who executed the foregoing instrument, and acknowledged that he executed the same as his free act and deed and who swore or affirmed to me that the contents of the documents are truthful and accurate to the best of his knowledge and belief and on behalf of the Trust.

JACLYN STRAND
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
December 25, 2020

Notary Public Jaclyn Strand
My Commission Expires: December 25, 2020

Worcester District Registry of Deeds - 20/20 Perfect Vision i2 Document Detail Report

Current datetime: 1/22/2018 5:40:58 PM

Doc#	Document Type	Town	Book/Page	File Date	Consideration
6786	DEED		58346/149	01/22/2018	172000.00

Property-Street Address and/or Description

STILL RIVER RD

Grantors

ELKINSON DAVID TR, EB REALTY TRUST

Grantees

TURN LEFT LLC

References-Book/Pg Description Recorded Year

Registered Land Certificate(s)-Cert# Book/Pg

5.2

LowellFive

January 25, 2018

Mass Housing
One Beacon St.
Boston, MA 02108

RE: Still River Rd., Bolton, MA

Dear Mass Housing Representative:

On behalf of The Lowell Five, I am pleased to inform you that the bank is very interested in providing financing on the proposed 40B project to be located at the above referenced property. We have a long-standing relationship with Mr. Russell and look forward to participating in the development of this project.

Please note that this letter is for discussion purposes only and does not constitute an approval, commitment or offer to lend. Final approval of the loan is subject to receipt of a completed loan application, credit underwriting, property due-diligence and committee approval.

In the meantime, should you have any questions, or if I may be of further assistance, please do not hesitate to call me at (978) 441-6499.

Sincerely,

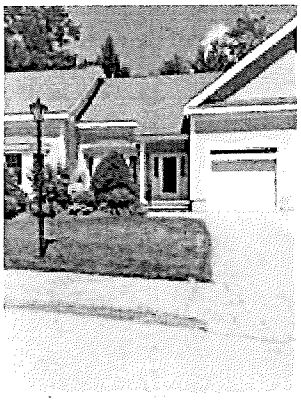
Thomas N. Boucher
Senior Vice President

5.3 - 1

Subject: 2 Charles Ridge Rd, Littleton, MA - **Unit D**

MLS # 72199443 - Sold

Condo - Townhouse, Rowhouse, Attached, Other (See Remarks)



Exterior - Front

2 Charles Ridge Rd - Unit D
Littleton, MA 01460-6234
Middlesex County

List Price: **$420,000**

Sale Price: **$420,000**

Unit Placement: **Street, Middle, Front**

Total Rooms: **5**

Unit Level: **1**

Bedrooms: **2**

Grade School:

Bathrooms: **2f 1h**

Middle School:

Master Bath: **Yes**

High School:

Fireplaces: **1**

Outdoor Space Available: **Yes - Private**

Handicap Access/Features: **Unknown**

Directions: **Use google maps/navigation. Easy access to 495 and commuter train.**

Remarks

..EW PICS - LOOK AT THIS LARGE, bright open concept home. Gorgeous wood floors with high ceilings, leads you into yc n granite kitchen, fully applianced with a breakfast bar and 1/2 bath for easy entertaining. Next to your fabulous, updated kitc large dining room which can fit a table to seat 10 comfortably and hutch to match. Sliders off your kitchen and dining room (your first floor, with views of the lush, green conservation land that boarders this beautiful home. You have a contemporary that wraps around the interior and brings you to the second floor. A large welcoming landing houses your washer and dryer closed doors.The first of two bedrooms has a large walk in closet and full bathroom outside the bedroom door. The master b has a walk in closet large enough to put in a single bed. The master bedroom suite is very generous, with a bathroom to mat finishes the second floor. Large walkout basement w/sliders and patio.

Property Information

Approx. Living Area: **2,343 Sq. Ft. ($179.26/Sq. Ft.)**

Approx. Acres:

Garage Spaces: **1 Attached, Opener, Deeded, Side Entry**

Living Area Includes:

Heat Zones: **2 Forced Air, Gas**

Parking Spaces: **2 Off-Street Improved Driveway, Paved Exclusive Parking**

Living Area Source: **Owner**

Cool Zones: **2 Central Air**

Levels in Unit: **2**

Living Area Disclosures: **including downstairs space w/walkout sliders to patio-545 sq. ft. Space is unfinished w/heat & a/c.**

Disclosures:

Complex & Association Information

Complex Name: **Littleton Ridge Estates**

Units in Complex: **43** Complete: **Yes**

Units Owner Occupied: Sc

sociation: **Yes** Fee: **$388 Monthly**

Assoc. Fee Inclds:
Master Insurance, Exterior Maintenance, Road Maintenance, Landscaping, Snow Removal, Walking/Jogging Trails, Refuse R

Special Assessments:
No

om Levels, Dimensions and Features

oom	Level	Size	Features

Features

Area Amenities: **Shopping, Park, Walk/Jog Trails, Golf Course, Medical Facility, Bike Path, Conservation Area, Highway Access, House of Worship, Other (See Remarks)**

Appliances: **Range, Dishwasher, Disposal, Microwave, Refrigerator, Washer, Dryer**

Basement: **Yes Full, Partially Finished, Walk Out, Garage Access, Concrete Floor**

Beach: **No**

Docs in Hand: **Other (See Remarks)**

Electric Features: **220 Volts**

Energy Features: **Insulated Windows, Insulated Doors**

Exterior: **Vinyl**

Exterior Features: **Deck, Patio, Covered Patio/Deck, Garden Area, Gutters, Professional Landscaping, Sprinkler System, Other (See Remarks)**

Flooring: **Wood, Tile, Wall to Wall Carpet, Hardwood**

Hot Water: **Natural Gas**

sulation Features: **Full, Other (See Remarks)**

Interior Features: **Security System, Cable Available**

Management: **Professional - Off Site**

Pets Allowed: **Yes w/ Restrictions Breed Limitations (See Remarks)**

Restrictions: **RV/Boat/Trailer, Other (See Remarks)**

Sewer Utilities: **City/Town Sewer**

Water Utilities: **City/Town Water**

Utility Connections: **for Gas Range, for Electric Range, for Gas Oven, for Electric Oven, for Gas Dryer, for Electric Dryer, Washer Hookup**

Waterfront: **No**

Water View: **No**

Other Property Info

Adult Community: **No**

Elevator: **No**

Disclosure Declaration: **Yes**

Exclusions:

Green Certified: **No**

Laundry Features: **In Unit**

Lead Paint: **Unknown**

UFFI: Warranty Features:

Year Built/Converted: **2007**

Year Built Source: **Public Record**

Year Built Desc: **Actual**

Year Round: **Yes**

Short Sale w/Lndr. App. Req: **No**

Lender Owned: **No**

Tax Information

Pin #: **M:0R19 B:0001 L:202**

Assessed: **$317,800**

Tax: **$5,768** Tax Year: **2017**

Book: **51400** Page: **488**

Cert: **00110253**

Zoning Code: **0000000000**

Map: Block: Lot:

Firm Remarks

Condo documents and financial statement listed. No commercial vehicles that have signage on the side are allowed in the di Property Management of Andover Management company. Each unit is not directly attached to each other. All walls are not SHOWING REQUESTS NEED 24 HOURS.

Market Information

Listing Date: **7/17/2017**

Days on Market: Property has been on the market for a total of **86** day(s)

xpiration Date:

Original Price: **$430,000**

Listing Market Time: MLS# has been on for **86** day(s

Office Market Time: Office has listed this property f

Cash Paid for Upgrades:

Seller Concessions at Closing:

Off Market Date: **10/10/2017**

Financing: **Conv. Fixed**

Sale Date: **11/9/2017**

le Price: **$420,000**

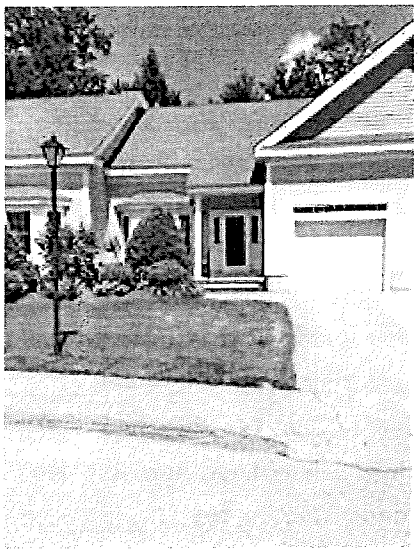
Offer Date: **9/27/2017** Days to Offer: **72**

MLS # 72199443 - Sold

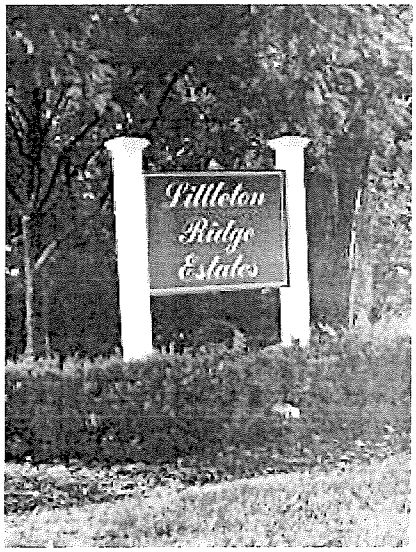
2 Charles Ridge Rd U:D, Littleton, MA 01460-6234

Condominiun

Sale Price:



Exterior - Front



Complex Name

Living Room

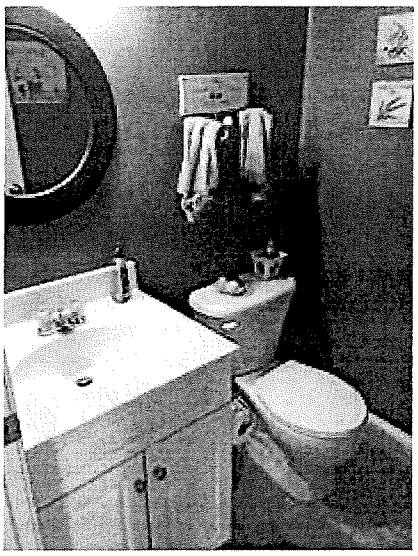
Living Room

Living Room

Front Hall

MLS # 72199443 - Sold **Condominiun**

2 Charles Ridge Rd U:D, Littleton, MA 01460-6234 **Sale Price:**



Bathroom - Half

Bathroom - Half

Dining Room

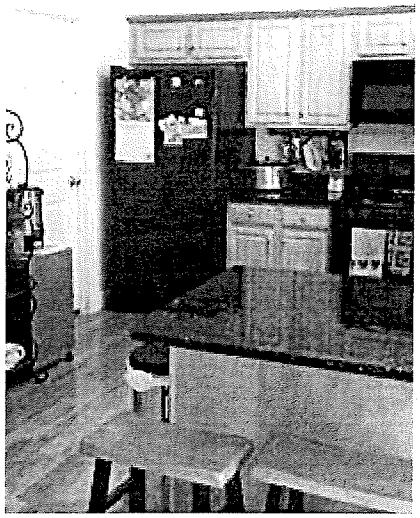
Dining Room

Dining Room

Dining Room

Kitchen/Dining Combo

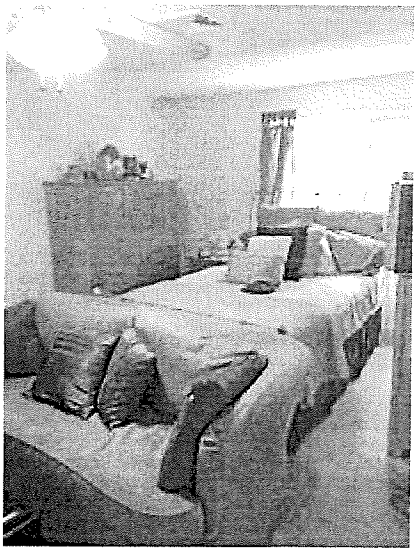
Kitchen



Kitchen

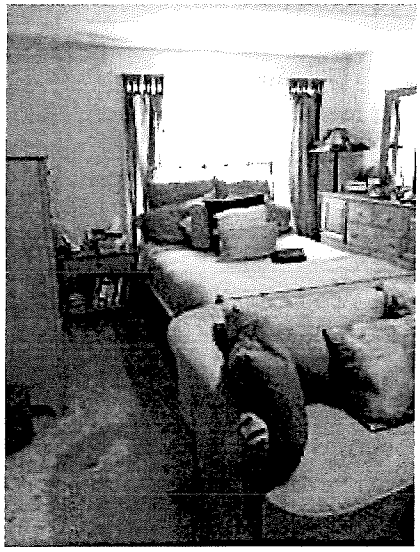
Grand Staircase

Grand Staircase



Master Bedroom

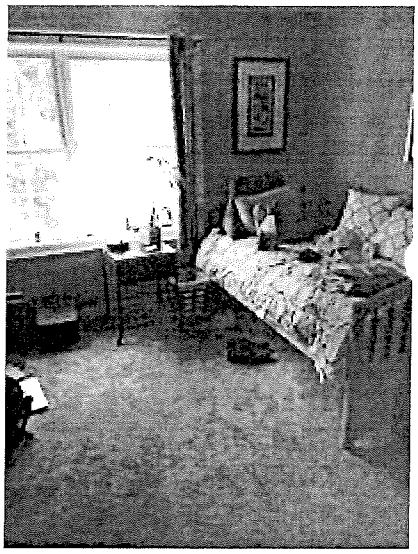
MLS # 72199443 - Sold **Condominiun**
2 Charles Ridge Rd U:D, Littleton, MA 01460-6234 **Sale Price:**



Master Bedroom

Walk-In Closet

Bathroom - Master



Bedroom 2

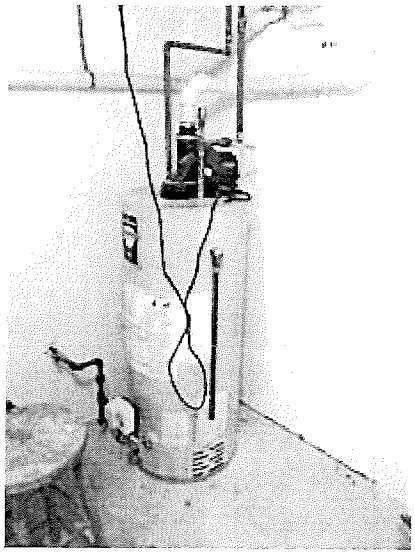
Bathroom 2

MLS # 72199443 - Sold
2 Charles Ridge Rd U:D, Littleton, MA 01460-6234

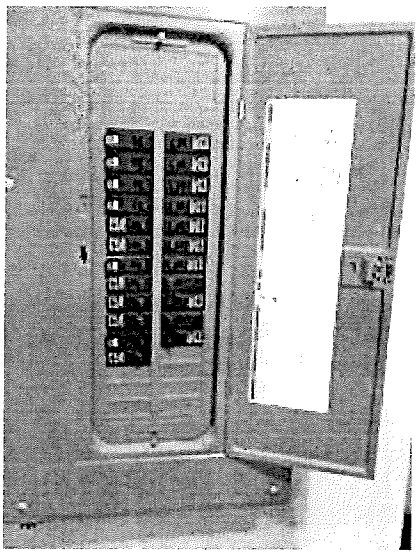
Condominiun
Sale Price:

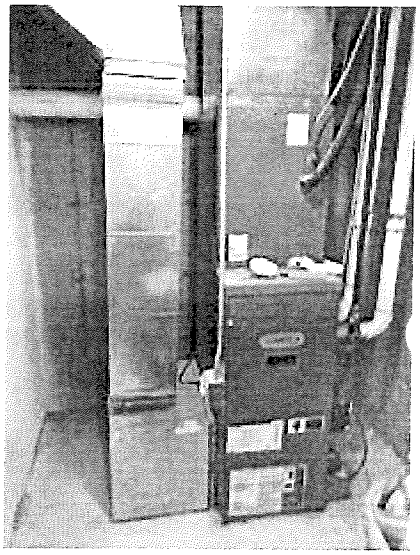
Deck

Common Area



Deck





5.3-2

Subject: 2B Trail Ridge Way, Harvard, MA - Unit B

MLS # 72175939 - Sold

Condo - Attached

2B Trail Ridge Way - Unit B
Harvard, MA 01451-1463
Worcester County

List Price: **$445,000**

Sale Price: **$453,585**

Unit Placement: **End**

Total Rooms: **6**

Unit Level: **1**

Bedrooms: **2**

Grade School: **Hildreth Elem.**

Bathrooms: **2f 1h**

Middle School:

Master Bath: **Yes**

High School: **Bromfield**

Fireplaces: **1**

Outdoor Space Available:

Handicap Access/Features:

Directions: **Littleton County Road to Trail Ridge Way**

Remarks

EW CONSTRUCTION! These homes offer all the charm of country living without sacrificing any of the conveniences. This se of Trail Ridge features tasteful finishes and upgrades, including hardwood and tile throughout the first floor and main stairw countertops, stainless steel appliances and a gas fireplace with slate hearth. The open floor plan and cathedral ceilings make feel both spacious and inviting. Light spills in from the many windows and across the gleaming hardwood floors adding to th warmth of the space. Nestled-in off a quiet country road, Trail Ridge looks out over conservation land, but is minutes from R and 2, and convenient access to the MBTA Littleton commuter rail station. A community well regarded for its exquisite lands exceptional schools, these townhomes invite you to make your home in Harvard. *Photos are updated to be actual photos o Ridge Way with buyer upgrades shown.

Property Information

Approx. Living Area: **2,154 Sq. Ft. ($210.58/Sq. Ft.)**

Approx. Acres:

Garage Spaces: **2 Attached, Opener**

Living Area Includes:

Heat Zones: **2 Forced Air, Propane**

Parking Spaces: **2 Off-Street**

Living Area Source: **Other**

Cool Zones: **2 Central Air**

Levels in Unit: **2**

Living Area Disclosures:

Disclosures: **$2,000 water and septic reserve required from buyer at closing.**

Complex & Association Information

Complex Name: **Trail Ridge at Harvard**

Units in Complex: **52** Complete: **No**

Units Owner Occupied: Sc

Association: **Yes** Fee: **$350 Monthly**

Assoc. Fee Inclds:
ater, Sewer, Master Insurance, Exterior Maintenance, Road Maintenance, Landscaping, Snow Removal

Special Assessments:
Unknown

Room Levels, Dimensions and Features

Room	Level	Size	Features
Living Room:	1	17X16	Fireplace, Ceiling - Cathedral, Flooring - Hardwood, Cable Hookup
Dining Room:	1	13X12	Flooring - Hardwood, Deck - Exterior, Exterior Access
Kitchen:	1	12X12	Flooring - Hardwood, Countertops - Stone/Granite/Solid, Main Level, Kitchen Isla
Master Bedroom:	2	16X16	Bathroom - Full, Ceiling - Cathedral, Ceiling Fan(s), Closet - Walk-in, Flooring - Wa Carpet, Cable Hookup
Bedroom 2:	2	17X14	Closet, Flooring - Wall to Wall Carpet
Bath 1:			Bathroom - Half, Closet - Linen
Bath 2:			Bathroom - Full, Bathroom - Double Vanity/Sink, Bathroom - With Tub & Shower Linen, Flooring - Stone/Ceramic Tile
Bath 3:			Bathroom - Full, Bathroom - With Tub & Shower, Closet - Linen, Flooring - Stone/
Laundry:	1		Main Level, Dryer Hookup - Electric, Washer Hookup
Loft:	2	20X11	Flooring - Wall to Wall Carpet
Entry Hall:			Closet, Flooring - Hardwood

Features

Appliances: **Range, Dishwasher, Microwave**

Association Pool: **No**

Basement: **Yes Full, Interior Access**

Beach: **No**

Construction: **Frame**

Docs in Hand: **Master Deed, Rules & Regs**

Electric Features: **200 Amps**

Energy Features: **Insulated Windows, Insulated Doors, Prog. Thermostat**

Exterior: **Vinyl**

Exterior Features: **Porch, Deck**

Flooring: **Tile, Wall to Wall Carpet, Hardwood**

Hot Water: **Propane Gas**

Insulation Features: **Full**

Management: **Developer Control**

Pets Allowed: **Yes w/ Restrictions**

Roof Material: **Asphalt/Fiberglass Shingles**

Sewer Utilities: **Private Sewerage - Title 5: Certificate of Compliance**

Water Utilities: **Community Well, Private Water**

Utility Connections: **for Gas Range, for Gas Oven, for Electric Dryer, Washer Hookup**

Waterfront: **No**

Water View: **No**

Other Property Info

Adult Community: **No**

Elevator: **No**

Disclosure Declaration: **Yes**

Exclusions:

Green Certified: **No**

Laundry Features: **In Unit**

Lead Paint: **None**

UFFI: **No** Warranty Features: **No**

Year Built/Converted: **2017**

Year Built Source: **Public Record**

Year Built Desc: **Actual**

Year Round: **Yes**

Short Sale w/Lndr. App. Req: **No**

Lender Owned: **No**

Tax Information

Pin #: **M:14 B:69 L:2B**

Assessed: **$0**

Tax: **$0** Tax Year: **2017**

Book: **26078** Page: **289**

Cert:

Zoning Code: **RES**

Map: **14** Block: **69** Lot: **2B**

Remarks

Buyer agent commission paid on base price. Buyer agent must attend all buyer meetings and site visits after Open House. and septic reserve required from buyer at closing.

Market Information

Listing Date: **6/4/2017**

Days on Market: Property has been on the market for a total of **62** day(s)

Expiration Date:

Original Price: **$445,000**

Off Market Date: **8/4/2017**

Sale Date: **12/13/2017**

Sale Price: **$453,585**

Offer Date: **7/21/2017** Days to Offer: **47**

Listing Market Time: MLS# has been on for **62** day(s

Office Market Time: Office has listed this property f

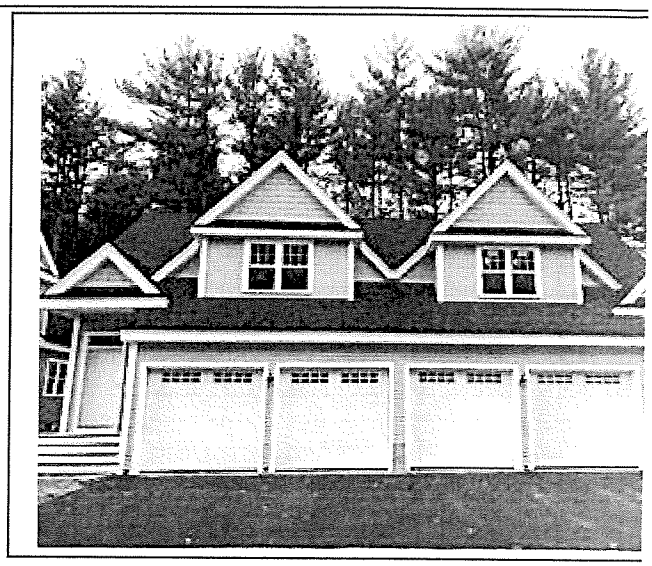
Cash Paid for Upgrades:

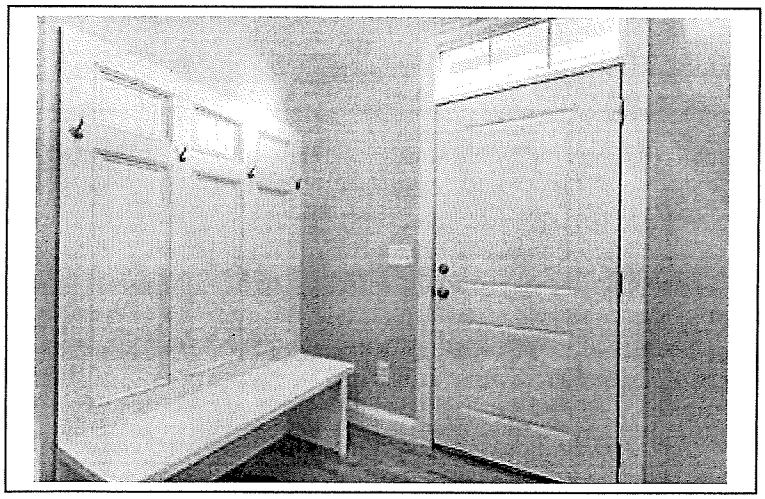
Seller Concessions at Closing:

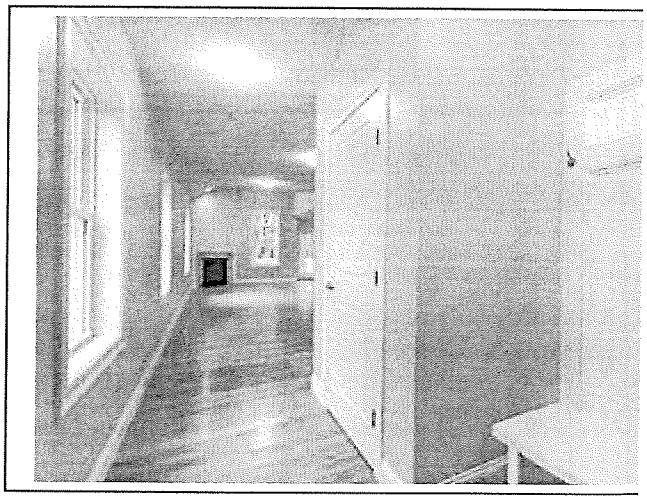
Financing: **Conv. Fixed**

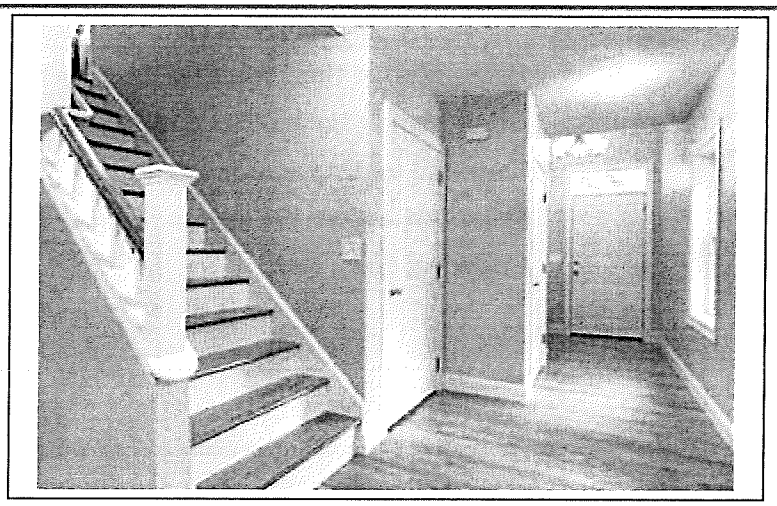
MLS # 72175939 - Sold
2B Trail Ridge Way U:B, Harvard, MA 01451-1463

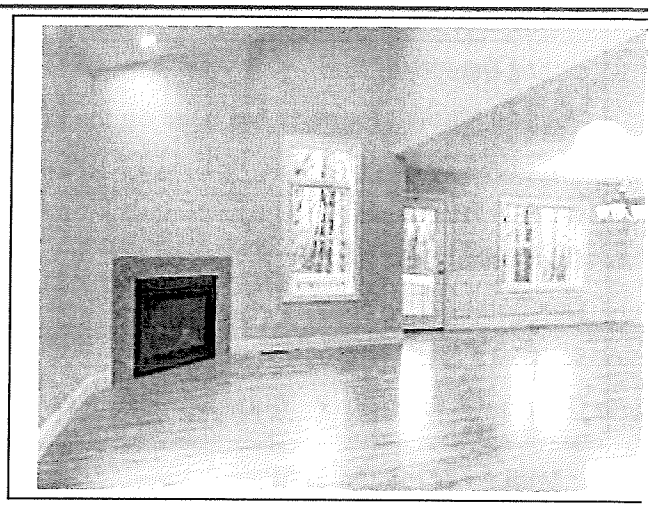
Condominiun
Sale Price:











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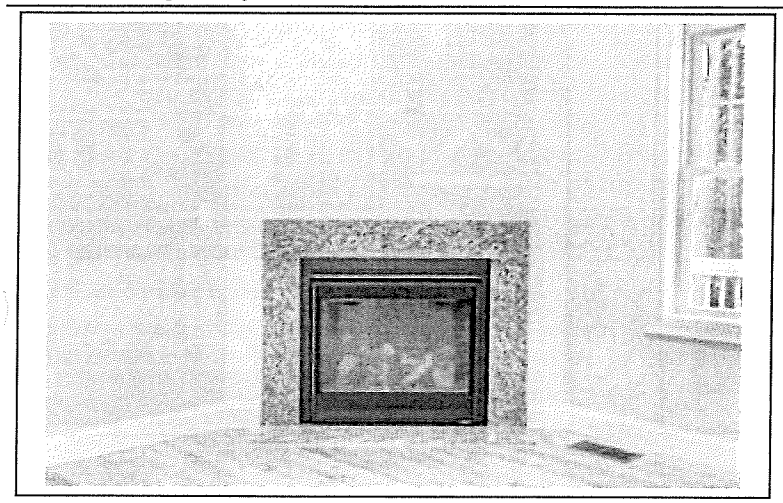

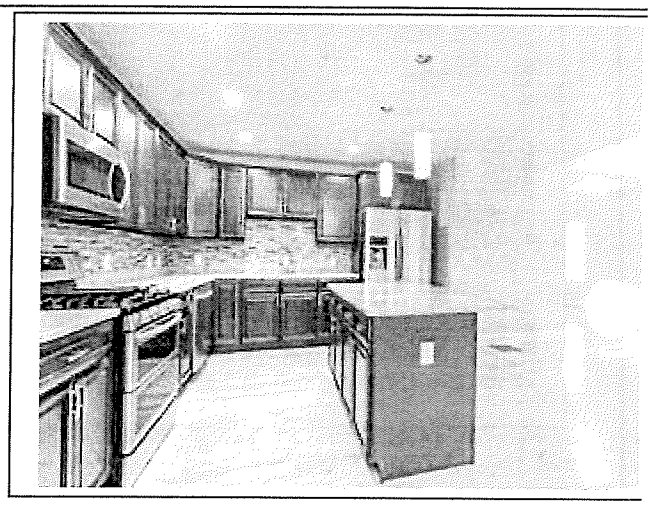

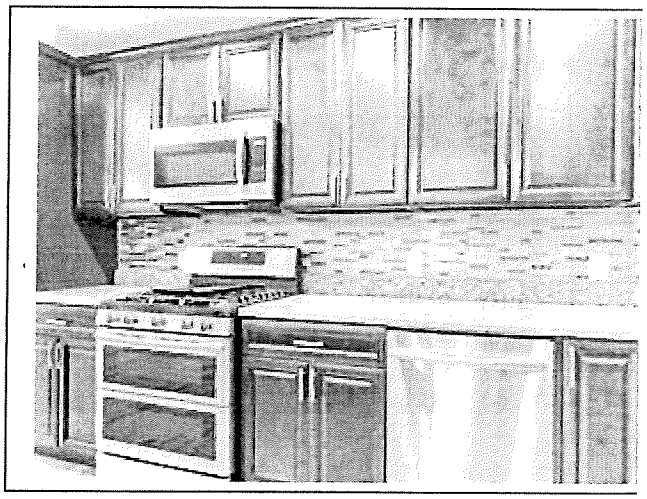

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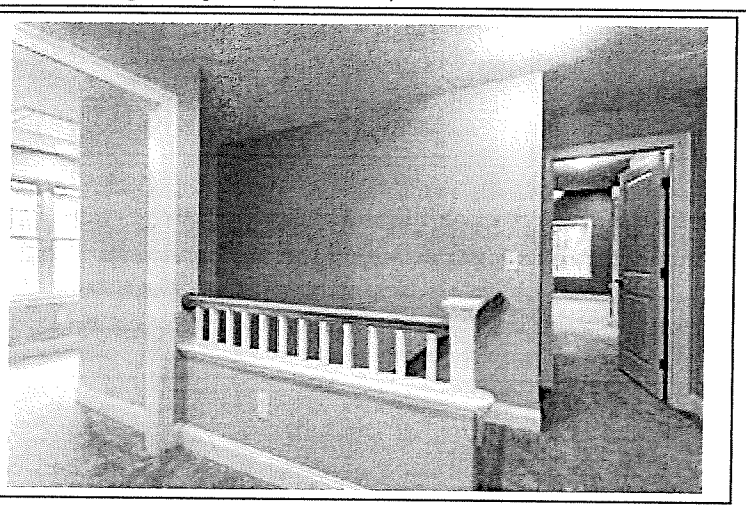

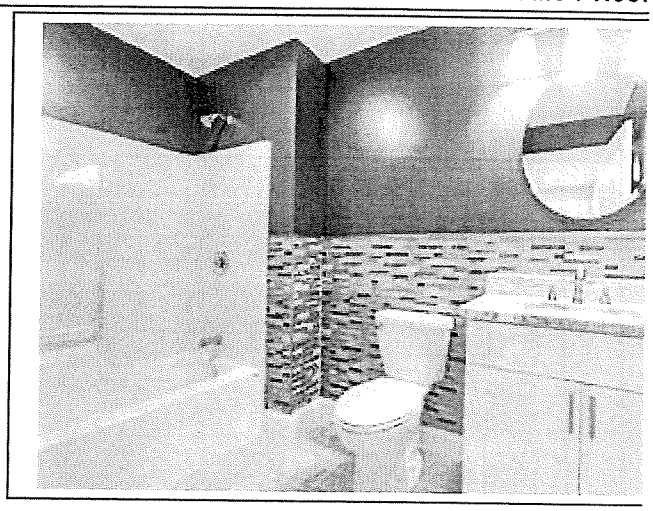

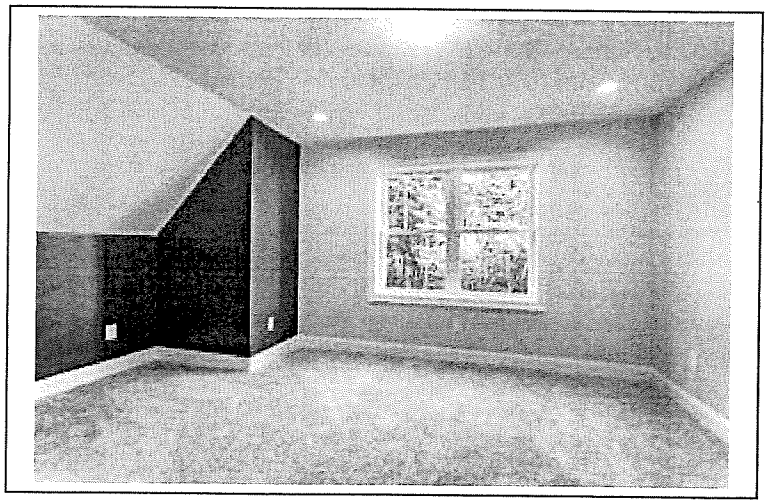

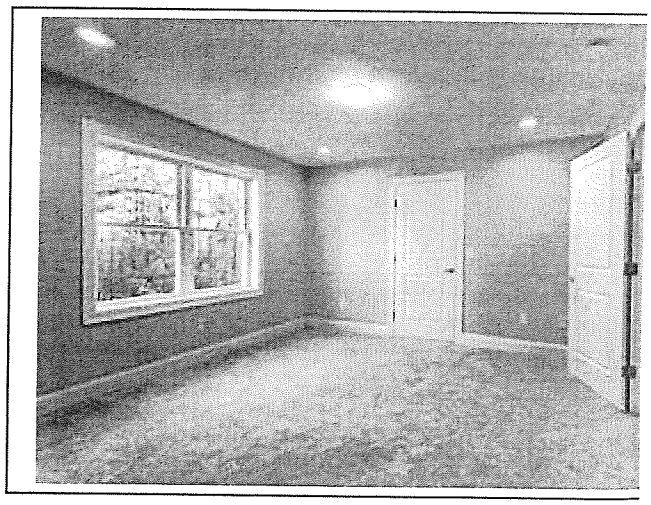

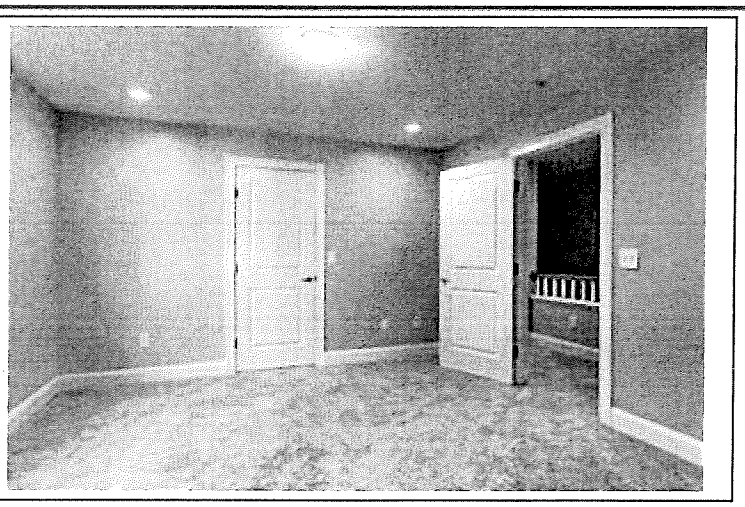

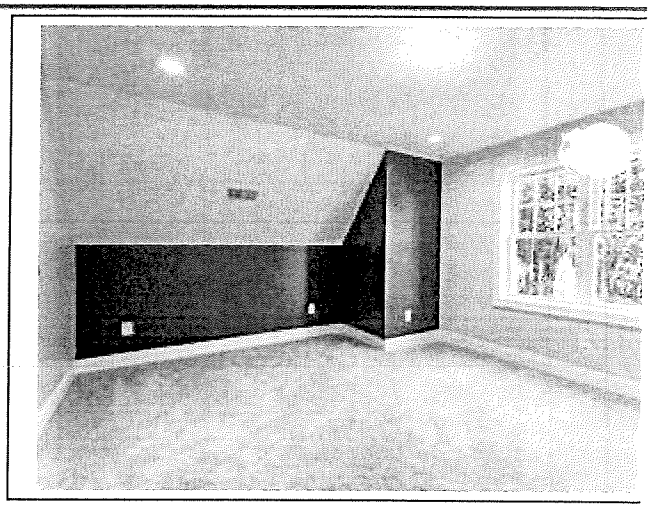

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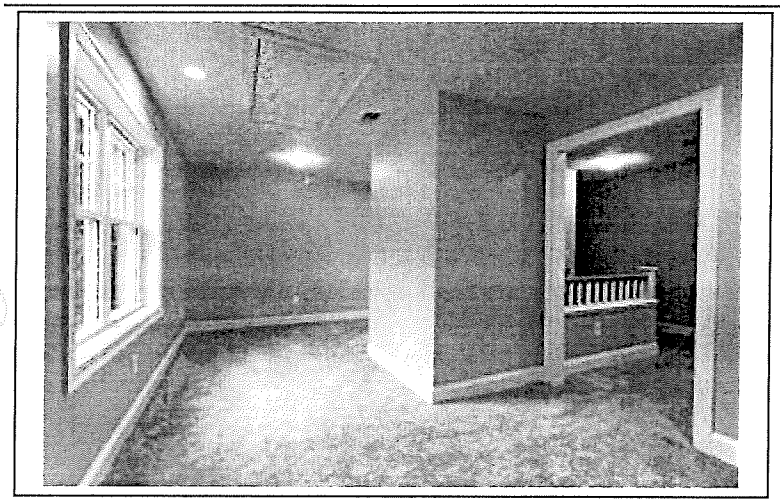

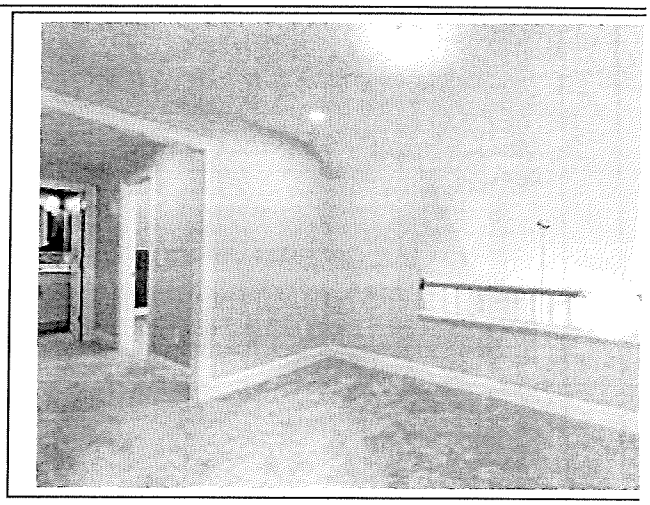

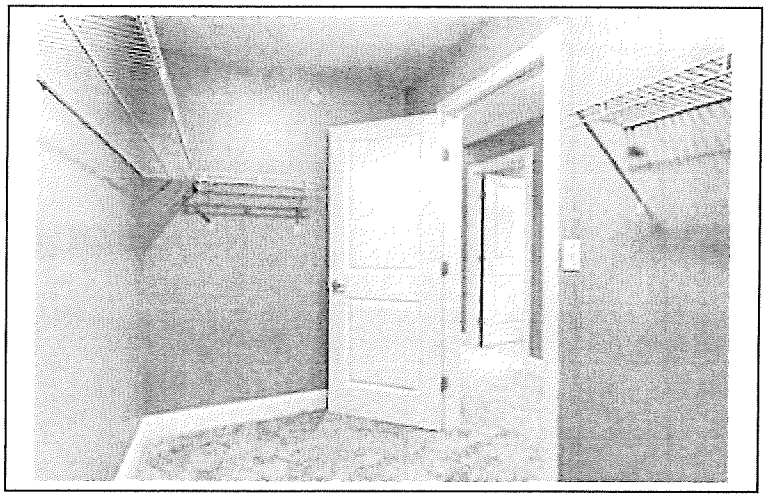

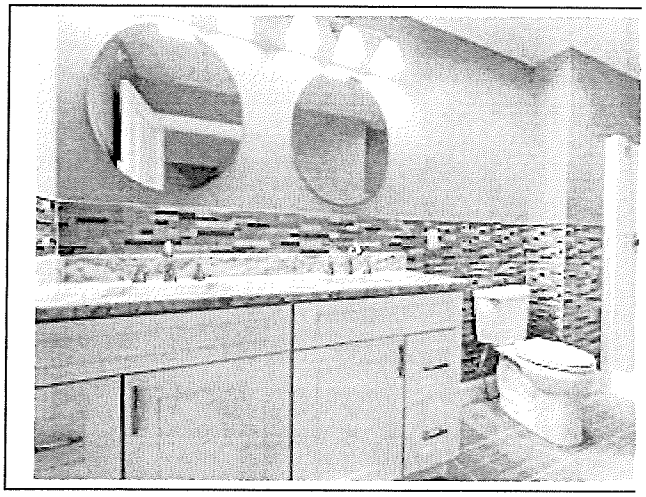

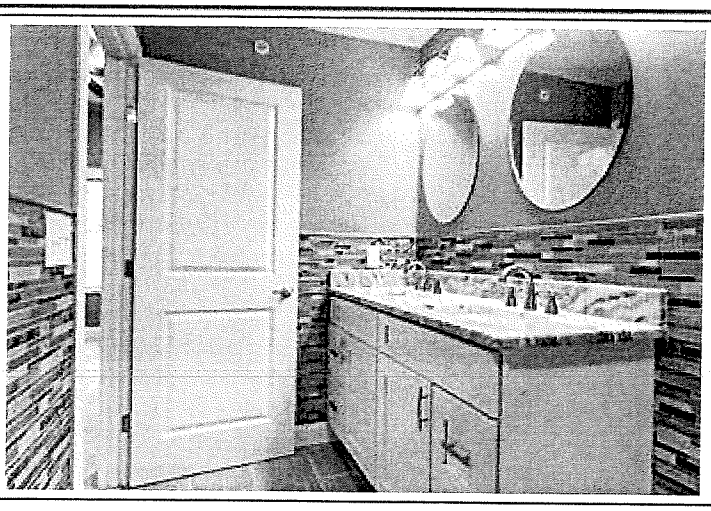

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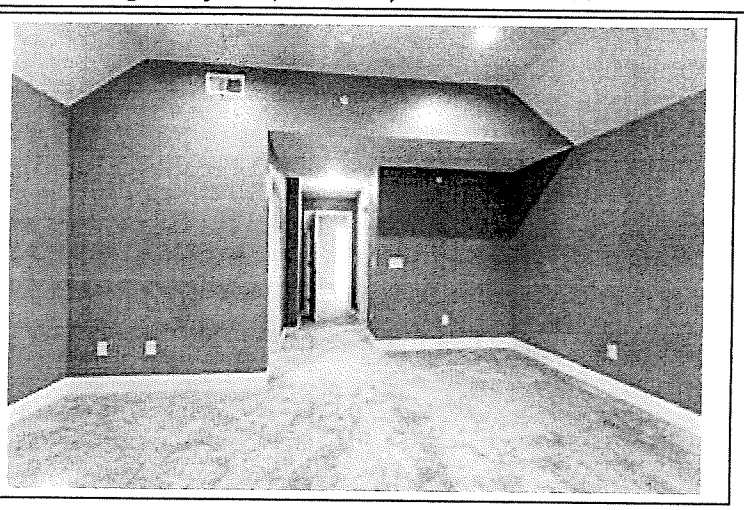
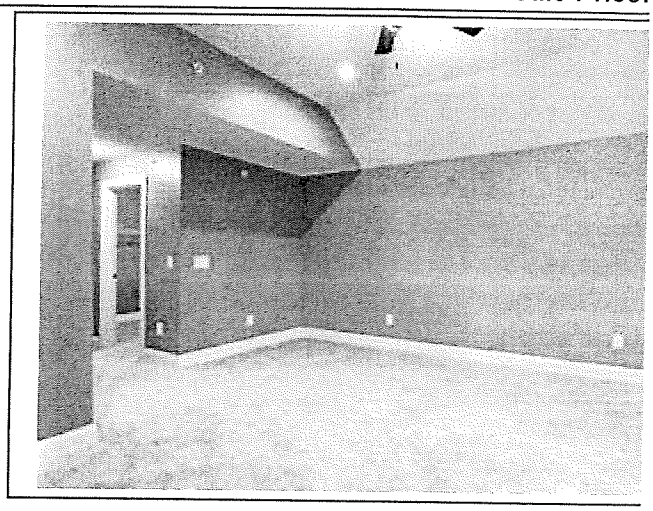
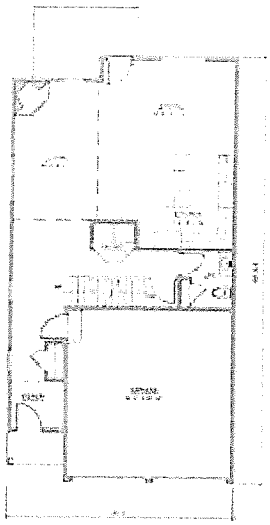
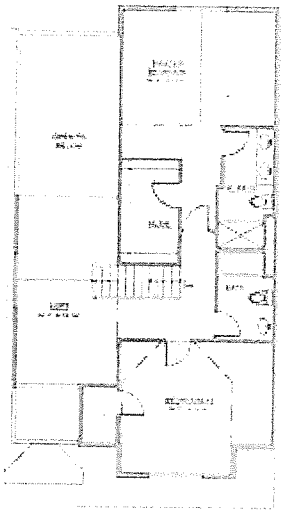








David Russell

David Russell, a member of Waterfront Capital LLC, is a businessman located in the greater Boston area. Mr. Russell graduated Magna Cum Laude from University of Massachusetts Lowell in 1984. He received a Bachelor of Science Degree in Computer Science and was chosen for a work study program at Honeywell Information Systems. After Graduating, Mr. Russell was employed by Honeywell as a senior software engineer and traveled the world consulting with Fortune 500 Companies. In 1986, Mr. Russell pursued his passion for Real Estate. Since becoming a self employed entrepreneur, Mr. Russell has had many successful ventures including; building an investment portfolio of over 200 properties, starting an entertainment company which had annual revenues in excess of $2 million, building a real estate finance company which today still holds over $3 million in real estate mortgages. In 2008, Mr. Russell in cooperation with other local businessmen founded The Nashua Bank. Mr. Russell has been instrumental in raising capital and developing strategic partnerships for Nashua Bank. Today, The Nashua Bank was in full operation for 10 years and approaching over $ 200 million in Assets when it was sold to Lake Sunapee Bank. Currently David is developing residential real estate; some of his endeavors include a 48 unit 40B project in Salisbury, MA known as Northpointe Village, 32 unit townhome community known as Sheffield Village, 6 luxury homes in Franklin Heights Saugus, MA re permitting 15 townhomes in Chelmsford, MA and many other successful developments.

6.1/6.2

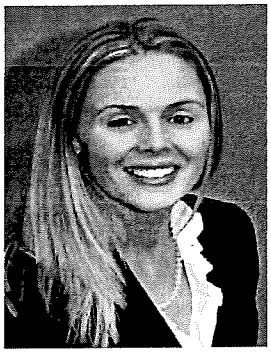
Melissa E. Robbins

Attorney

Westford, MA 01886

DFPCLAW.COM

Melissa@dfpclaw.com



References:

Douglas C. Deschenes, Esq.
Deschenes & Farrell, PC
Westford, MA

Walter Eriksen
Applewood Construction Corp.
Tyngsborough, MA

Dennis M. Page
RE/MAX Prestige
Tyngsborough, MA

EDUCATION

Juris Doctor
New England School of Law,
Boston, MA

Bachelor Degree
Clark University, Worcester, MA

EXPERIENCE:

August 2004 – Present
Deschenes & Farrell, PC
515 Groton Road
Chelmsford, MA 01886

- Actively involved with the legal aspects of the development, financing and construction of real estate and affordable housing.
- Highly involved in promoting smart growth and affordable housing for developers as well as non-profit and governmental agencies through the use of local zoning and M.G.L. Chapter 40B.
- Promoted to partner in 2010.

AFFILIATIONS

- Member Massachusetts Real Estate Bar Association
- Member New England Builders Association
- Secretary of Habitat for Humanity of Greater Lowell

DEVELOPMENTS

Tyng Village – Tyngsborough, MA
Attorney for a 28-unit for sale development of which 7 units are affordable.

Graniteville Woods – Westford, MA
Attorney for a 164-unit development which includes condominiums and single-family residences of which 41 units are affordable.

Tyngsborough Crossing – Tyngsborough, MA
Attorney for a 120-unit for sale development of which 30 units are affordable.

Common Ground Development Corp. – Acton, MA
Attorney for a 15-unit rental development of which all units are affordable.

Common Ground Development Corp.-Westford, MA
Residences at Stony Brook I and II
Attorney for a 51-unit multi-family development of which 46 units are affordable.

CHOICE – Chelmsford Housing Opportunities for Intergenerational & Community Endeavors – Harvard, MA
Attorney for a 9-unit rental development of which all units are affordable.

Cottages at River Hill, West Newbury, MA
Attorney for a 30-unit development with three affordable units.

Ducharme & Dillis Civil Design Group, Inc. (DDCDG)

DDCDG Principals

Stan Dillis offers over 30 years experience as a land surveyor, Mr. Dillis has developed a strong rapport with municipal boards and committees. He often represents many long-term clients in attaining permits and determining land use. As chief surveyor for this multi-discipline firm, Mr. Dillis offers leadership in the areas of land planning and land use.

Registrations:
Massachusetts Registered Professional Land Surveyor, 1987

Certifications:
Soil Evaluator- Massachusetts Department of Environmental Protection

Recent Project:
Mr. Dillis is oversaw the base mapping of 20,000 feet of proposed sewer extension using GPS and conventional survey methods for Beta and Town of Billerica. Also, Mr. Dillis oversaw the surveying and designing of an 11 Lot Residential Open Space Subdivision protecting over 25 acres along Squanacook River in Townsend.
He was also responsible for the base mapping of Lawrence Academy Campus in Groton.

Brandon Ducharme provides this firm with diverse experience in all components of civil engineering design and project management. He has extensive knowledge in the delineation and mapping of wetland resource areas using both the Massachusetts Department of Environmental Protection and Army Corps of Engineers methodologies. Mr. Ducharme represents a wide variety of projects reviewed by Conservation Commissions in Central Massachusetts, as well as conducting permit preparation, design and permitting of wetland mitigation and restoration areas. Additionally, Mr. Ducharme is adept in the design and permitting of residential and commercial on-site sewage disposal systems in Massachusetts.

Registrations:
Massachusetts Registered Sanitarian, 2002

Certifications:
Massachusetts DEP Title V Soil Evaluator
Massachusetts DEP Title V System Inspector
38 Hour Army Corps of Engineers Wetland Delineation & Management Training Program
36 Hour Advanced Wetland Management Training Program

Recent Project:
Mr. Ducharme is currently overseeing the replication of approximately 38,000 square feet of Bordering Vegetated Wetlands in Dracut Massachusetts. His responsibilities include direct oversight of replication activities and collaboration with the Department of Environmental Protection.

Greg Roy has extensive experience in both the public and private fields of civil engineering. His work in construction oversight and management aides his abilities in plan preparation and permitting for commercial and residential sites. Mr. Roy's skill in managing complex projects proves to be a strength in water distribution design. His specialties include site planning, focusing on the details of road and utility design. He enjoys working closely with clients through representation and presentation of projects at public hearings.

Registrations:
Registered Professional Engineer- Massachusetts- 2004
Confined Space Entry- Michigan 2004

Recent Project:
As project engineer in a 66-unit active adult community in Stow, MA, Mr. Roy was responsible for all utility, road and drainage designs. His job also included permitting coordination with the Stow Planning Board, Conservation Commission, and Executive Office of Environmental Affairs.

6.3

Certification and Acknowledgment

I hereby certify on behalf of the Applicant, *under pains and penalties of perjury*, that the information provided above for each of the Applicant Entities is, to the best of my knowledge, true and complete; and that each of the following questions has been answered correctly to the best of my knowledge and belief:

(Please attach a written explanation for all of the following questions that are answered with a "Yes". Explanations should be attached to this Section 6.)

Is there pending litigation with respect to any of the Applicant Entities? Yes___ No ✓

Are there any outstanding liens or judgments against any properties owned by any of the Applicant Entities? Yes___ No ✓

Have any of the Applicant Entities failed to comply with provisions of Massachusetts law related to taxes, reporting of employees and contractors, or withholding of child support? Yes___ No ✓

Have any of the Applicant Entities ever been the subject of a felony indictment or conviction? Yes___ No ✓

During the last 10 years, have any of the Applicant Entities ever been a defendant in a lawsuit involving fraud, gross negligence, misrepresentation, dishonesty, breach of fiduciary responsibility or bankruptcy? Yes___ No ✓

Have any of the Applicant Entities failed to carry out obligations in connection with a Comprehensive Permit issued pursuant to M.G.L. c. 40B and any regulations or guidelines promulgated thereunder (whether or not MassHousing is or was the Subsidizing Agency/Project Administrator) including, but not limited to, completion of a cost examination and return of any excess profits or distributions? Yes___ No ✓

Have any of the Applicant Entities ever been charged with a violation of state or federal fair housing requirements? Yes___ No ✓

Are any of the Applicant Entities not current on all existing obligations to the Commonwealth of Massachusetts, and any agency, authority or instrument thereof? Yes___ No ✓

I further certify that the information set forth in this application (including attachments) is true, accurate and complete as of the date hereof to the best of my/our knowledge, information and belief. I further understand that MassHousing is relying on this information in processing the request for Site Approval in connection with the above-referenced project.

I further certify that we have met with a representative of the 40B Department at MassHousing and understand the requirements for a) completing this application and b) the procedures if and when Site Approval is granted, including the requirement for (i) the use of the standard MassHousing Regulatory Agreement, and (ii) submission to MassHousing, within one hundred eighty (180) days after substantial completion or, if later, within ninety (90) days of the date on which all units are sold, of a cost certification examined in accordance with AICPA attestation standards by an approved certified public accountant.

I hereby acknowledge our commitment and obligation to comply with requirements for cost examination and limitations on profits and distributions, all as found at 760 CMR 56.04(8) and will be more particularly set forth in the MassHousing Regulatory Agreement.

I hereby acknowledge that it will be required to provide financial surety, by means of bond, cash escrow and a surety escrow agreement or letter of credit with the agreement that it may be called upon or used in the event that the Developer fails either to (i) complete and submit the Cost Examination as required by 760 CMR 56.04(8) and the MassHousing Regulatory Agreement, or (ii) pay over to the Municipality any funds in excess of the limitations on profits and distributions as required by 760 CMR 56.04(8) and as set forth in the MassHousing Regulatory Agreement.

Signature: DRussell

Name: David Russell

Title: Mgr.

Date: 1/28/2018

Describe contact with municipal officials:

February 22, 2018	Meeting with Town Planner to review application.
March 20, 2018	Meeting with the Zoning Board of Appeals to review application.

DESCHENES & FARRELL, P.C.
Attorneys at Law
515 Groton Road, Suite 204
Westford, MA 01886
Telephone: (978) 496-1177
Facsimile: (978) 577-6462

Douglas C. Deschenes
Kathryn Lorah Farrell
*Melissa E. Robbins**

**Admitted in MA and NH*

April 3, 2018

Bolton Board of Selectmen
Bolton Town Hall
663 Main Street
Bolton, MA 01740

RE: Still River Commons
Still River Road
David Russell

Dear Members of the Board:

Deschenes & Farrell, PC is representing David Russell. for the purpose of developing an 8-unit development at Still River Road in Bolton, MA. In accordance with Section 31.01(2)c of the Rules of the Housing Appeals Committee (760 CMR 31.01), this letter serves to formally notify the Town of Bolton that a request for a site approval letter has been made by David Russell under MassHousing's New England Fund Program for this development. I have enclosed for your review a copy of the same Site Eligibility Application that was submitted to MassHousing.

We look forward to discussing this project with the Town in greater detail and formally presenting this application to the Zoning Board of Appeals in the near future. We appreciate any additional comments contributed by municipal officials as we move forward in this process.

Sincerely,
Deschenes & Farrell, PC

Melissa Robbins

Melissa E. Robbins

MER/cas

DESCHENES & FARRELL, P.C.
Attorneys at Law
515 Groton Road, Suite 204
Westford, MA 01886
Telephone: (978) 496-1177
Facsimile: (978) 577-6462

Douglas C. Deschenes
Kathryn Lorah Farrell
*Melissa E. Robbins**

**Admitted in MA and NH*

April 3, 2018

Polly Donaldson, Director
Department of Housing & Community Development
1 Congress Street, 10th Floor
Boston, MA 02114

RE: **David Russell – 40B Housing Project**
Still River Commons
Still River Road, Bolton, MA

Dear Ms. Donaldson,

We represent David Russell and are providing you notice pursuant to 760 CMR 31.01(2)(c) that an application has been made with a subsidizing agency for approval of the above referenced project. More specifically, Mr. Russell has filed an application with MassHousing for funding of the project under the MassHousing Housing Starts Program.

Please contact me with any comments or questions you may have. Thank you for your time and consideration in this matter.

Sincerely,
Deschenes & Farrell, PC

Melissa Robbins

Melissa E. Robbins

Ch/Aff'd/Russell

7.3

COPY OF MASSHOUSING APPLICATION FEE

($2500 PAYABLE TO MASSHOUSING)

7.4

COPY OF 40B TECHNICAL ASSISTANCE/MEDIATION FEE PAYABLE TO MASSHOUSING PARTNERSHIP

GREEN SECURE INK CHAIN AND GREEN DIAMOND DISAPPEAR WHEN COPIED. HEAT SENSITIVE RED LOCK DISAPPEARS WHEN HEATED.

VOID VOID VOID VOID

1363

Turnkey Builders LLC
130 Parker St
Lawrence, MA 01843

Lowell
LOWELL, MASSACHUSETTS 01851
53-7133/2113

EZ Shield™ Check Fraud Protection for Business

4/2/18

VOID VOID

PAY TO THE ORDER OF MASS HOUSING PARTNERSHIP

$ 2900 **/100

TWENTY NINE HUNDRED DOLLARS DOLLARS

Security features. Details on back.

MEMO STILL RIVER SUBMITTAL

AUTHORIZED SIGNATURE

⑈001363⑈ ⑆211371337⑆ 4286660⑈

GREEN SECURE INK CHAIN AND GREEN DIAMOND DISAPPEAR WHEN COPIED. HEAT SENSITIVE RED LOCK DISAPPEARS WHEN HEATED.

VOID VOID VOID VOID

1041

Turnkey Builders LLC
130 Parker St
Lawrence, MA 01843

Lowell
LOWELL, MASSACHUSETTS 01851
53-7133/2113

EZ Shield™ Check Fraud Protection for Business

4/2/18

VOID VOID

PAY TO THE ORDER OF MASS HOUSING

$ 2500 **/100

TWENTY FIVE HUNDRED DOLLARS DOLLARS

Security features. Details on back.

MEMO STILL RIVER

AUTHORIZED SIGNATURE

⑈001041⑈ ⑆211371337⑆ 4286660⑈

8.1

DESCHENES & FARRELL, P.C.
Attorneys at Law
515 Groton Road, Suite 204
Westford, MA 01886
Telephone: (978) 496-1177
Facsimile: (978) 577-6462

Douglas C. Deschenes
Kathryn Lorah Farrell
*Melissa E. Robbins**

**Admitted in MA and NH*

April 3, 2018

Michael Busby
Comprehensive Permit Program
Massachusetts Housing Finance Agency
1 Beacon Street, 28th Floor
Boston, MA 02108

Dear Michael:

This office represents Still River Road Development, LLC (the "Applicant Entity") regarding its application for a Comprehensive Permit Site Approval Application pursuant to M.G.L. c. 40B. MassHousing has requested, as part of its application process, that the Applicant Entity provide a list of all "Affiliates of Applicant and its Managing Entities." MassHousing has suggested to us that this list should include any and all entities in which David Russell, Manager of the Applicant Entity, is involved in as a shareholder, officer, director, manager and/or member.

As a preliminary matter, we do not agree that the application request should be interpreted so broadly. Each entity included within Exhibit A attached hereto is a separate and distinct entity that is neither controlled by the Applicant Entity, nor is the Applicant Entity controlled by any of the listed entities. Furthermore, none of the entities listed are a "subsidiary, parent or sibling corporation" of the Applicant Entity. See Black's Law Dictionary 67 (9th ed. 2009). It is well established in Massachusetts that

> **A corporation** is an ideal body, subsisting only in contemplation of law, which may be composed of members constantly changing, which **is deemed, for useful purposes, to have an existence independently of that of the members of which it is composed**, to be capable of perpetual succession, and of acquiring, holding and conveying property. (Emphasis added).

Pratt v. Bacon, 27 Mass. 123 (1830). This notion has been expanded over the years such that "the corporation is treated as a person separate and apart from its stockholders, officers and directors and second, the acts of the corporation are not attributed to the officers, directors employees and/or stockholders." 13 Mass. Practice, *Business Corporations* § 28:1 (2014). Furtheremore, Massachusetts General Laws c. 156D Section 6.22(b) states that "[u]nless otherwise provided in the articles of organization, a shareholder of a corporation shall not be personally liable for the acts or debts of the corporation except that he may become personally

liable by reason of his own acts or conduct." Because each corporate entity is intended to be treated as a separate person, distinct from its shareholders, officers, directors and employees and further because shareholders, officers, directors and employees cannot, except in special circumstances, be held liable for acts or debts of a corporation, the fact that David Russell is a shareholder, officer, director, member and/or manager of numerous corporate entities does not mean that these entities are in anyway relevant to the Applicant's application for a Comprehensive Permit at Still River Road, Bolton, MA. Similarly, the actions of the listed entities may not be attributed to the Applicant Entity simply because they may share a similar officer/manager. Accordingly, while we provide the attached list per the request of MassHousing, we would at the same time suggest that the list provided should not have any relevance to the Applicant Entity's application pending before MassHousing. Thank you in advance for your time and consideration.

Sincerely,
Deschenes & Farrell, PC

Melissa Robbins

Melissa E. Robbins

MER/cas

Attachment

Cheryl/Affordable Housing/Russell/Bolton ENTITY LTR

The Commonwealth of Massachusetts
William Francis Galvin

Minimum Fee: $500.00

Secretary of the Commonwealth, Corporations Division
One Ashburton Place, 17th floor
Boston, MA 02108-1512
Telephone: (617) 727-9640

Certificate of Organization
(General Laws, Chapter)

Identification Number: 001320866

1. The exact name of the limited liability company is: STILL RIVER ROAD DEVELOPMENT LLC

2a. Location of its principal office:
No. and Street: 28 COUNTRY CLUB LANE
City or Town: MIDDLETON State: MA Zip: 01949 Country: USA

2b. Street address of the office in the Commonwealth at which the records will be maintained:

No. and Street: 28 COUNTRY CLUB LANE
City or Town: MIDDLETON State: MA Zip: 01949 Country: USA

3. The general character of business, and if the limited liability company is organized to render professional service, the service to be rendered:
TO INVEST IN REAL ESTATE; TO BUY, SELL, DEVELOP, MORTGAGE OR LEASE ANY PORTION OF REAL ESTATE WHETHER IMPROVED OR UNIMPROVED FROM OTHER INDIVIDUALS, COR PORATIONS, OR COMPANIES FOR ANY LAWFUL USE NECESSARY FOR THE PROMOTION O F ANY OF THE ABOVE OBJECTIVES; TO FORM, ENTER INTO AND PARTICIPATE IN PARTNER SHIPS AND JOINT VENTURES IN FURTHERANCE OF THE BUSINESS OF THIS COMPANY.

4. The latest date of dissolution, if specified:

5. Name and address of the Resident Agent:
Name: DAVID RUSSELL
No. and Street: 28 COUNTRY CLUB LANE
City or Town: MIDDLETON State: MA Zip: 01949 Country: USA

I, DAVID RUSSELL resident agent of the above limited liability company, consent to my appointment as the resident agent of the above limited liability company pursuant to G. L. Chapter 156C Section 12.

6. The name and business address of each manager, if any:

Title	Individual Name First, Middle, Last, Suffix	Address (no PO Box) Address, City or Town, State, Zip Code
MANAGER	CHARLES DAVID RUSSELL	28 COUNTRY CLUB LANE MIDDLETON, MA 01949 USA

7. The name and business address of the person(s) in addition to the manager(s), authorized to execute documents to be filed with the Corporations Division, and at least one person shall be named if there are no managers.

Title	Individual Name First, Middle, Last, Suffix	Address (no PO Box) Address, City or Town, State, Zip Code

8. The name and business address of the person(s) authorized to execute, acknowledge, deliver and record any recordable instrument purporting to affect an interest in real property:

Title	Individual Name First, Middle, Last, Suffix	Address (no PO Box) Address, City or Town, State, Zip Code
REAL PROPERTY	CHARLES DAVID RUSSELL	28 COUNTRY CLUB LANE MIDDLETON, MA 01949 USA

9. Additional matters:

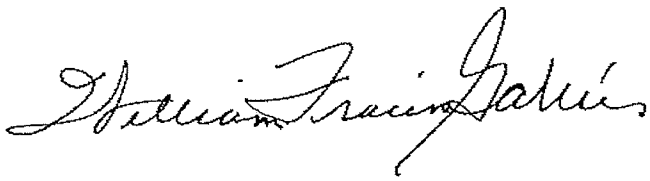
SIGNED UNDER THE PENALTIES OF PERJURY, this 3 Day of April, 2018,
CHARLES DAVID RUSSELL

(The certificate must be signed by the person forming the LLC.)

THE COMMONWEALTH OF MASSACHUSETTS

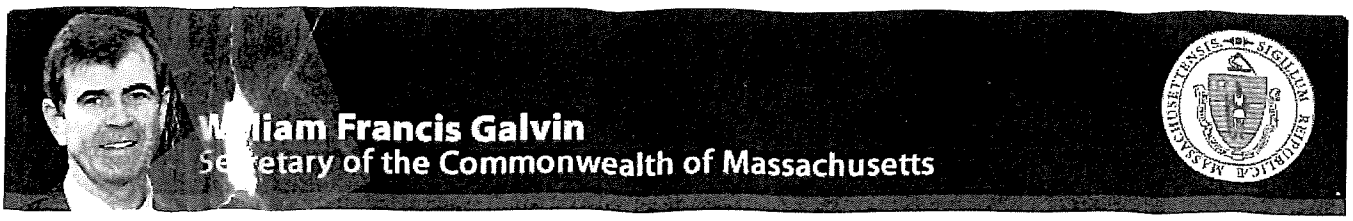
I hereby certify that, upon examination of this document, duly submitted to me, it appears that the provisions of the General Laws relative to corporations have been complied with, and I hereby approve said articles; and the filing fee having been paid, said articles are deemed to have been filed with me on:

April 03, 2018 10:48 AM



WILLIAM FRANCIS GALVIN

Secretary of the Commonwealth



Corporations Division

Business Entity results

Number of records: 129 **Number of pages: 6** Print results

Name	Position	Individual's Address	Entity Name	ID No.	Old ID No.
RUSSELL, DAVID	TREASURER	281D BOYLSTON ST., LOWELL, MA USA 281D BOYLSTON ST., LOWELL, MA USA	**COKELL, INC.**	000334910	
RUSSELL, DAVID	SECRETARY	281D BOYLSTON ST., LOWELL, MA USA 281D BOYLSTON ST., LOWELL, MA USA	**COKELL, INC.**	000334910	
RUSSELL, DAVID	PRESIDENT	281D BOYLSTON ST., LOWELL, MA USA 281D BOYLSTON ST., LOWELL, MA USA	**COKELL, INC.**	000334910	
RUSSELL, DAVID	PRESIDENT	556 MAIN STREET, STONEHAM, MA 02180 USA 556 MAIN STREET, STONEHAM, MA 02180 USA	**NEW ENGLAND INTERNATIONAL PRODUCTIONS,INC.**	000167301	000077790
RUSSELL, DAVID	PRESIDENT	281D BOYLSTON ST., LOWELL, MA USA 281D BOYLSTON ST., LOWELL, MA USA	**RULEY, INC.**	000333584	
RUSSELL, DAVID	TREASURER	281D BOYLSTON ST., LOWELL, MA USA 281D BOYLSTON ST., LOWELL, MA USA	**RULEY, INC.**	000333584	

RUSSELL, DAVID	SECRETARY	281D BOYLSTON ST., LOWELL, MA USA 281D BOYLSTON ST., LOWELL, MA USA	**RULEY, INC.**	000333584
RUSSELL , DAVID	MANAGER		**1000, LLC**	001166234
RUSSELL , DAVID	REAL PROPERTY		**1000, LLC**	001166234
RUSSELL , DAVID	REAL PROPERTY		**1000, LLC**	001166234
RUSSELL , DAVID	REAL PROPERTY		**BEACH FIVE FOUR, LLC**	001155218
RUSSELL , DAVID	MANAGER		**BEACH FIVE FOUR, LLC**	001155218
RUSSELL , DAVID	MANAGER		**BEACH FIVE FOUR, LLC**	001155218
RUSSELL , DAVID	MANAGER		**BEACH FIVE FOUR, LLC**	001155218
RUSSELL , DAVID	SOC SIGNATORY		**BEACH FIVE FOUR, LLC**	001155218
RUSSELL , DAVID	SOC SIGNATORY		**BEACH FIVE FOUR, LLC**	001155218
RUSSELL , DAVID	REAL PROPERTY		**BEACH FIVE FOUR, LLC**	001155218
RUSSELL , DAVID	MANAGER		**BEACH FIVE SIX, LLC**	001195806
RUSSELL , DAVID	MANAGER		**BEACH FIVE SIX, LLC**	001195806
RUSSELL , DAVID	SOC SIGNATORY		**BFC PEMBROKE HOLDINGS LLC**	271384438
RUSSELL , DAVID	SOC SIGNATORY		**BFC WAREHAM HOLDINGS LLC**	271384815
RUSSELL , DAVID	REAL PROPERTY		**BLACKFOOT CAPITAL II, LLC**	001094302
RUSSELL , DAVID	DIRECTOR	165 BELMONT STREET BROCKTON, MA 02301 USA	**BROCKTON INTERFAITH COMMUNITY NEHEMIAH PARTNERSHIP, INC.**	000855740
RUSSELL , DAVID	MANAGER		**CAPE COD BRACES LLC**	001141688
RUSSELL , DAVID	MANAGER		**CENTERVILLE FAMILY DENTAL CARE, LLC**	001093779

123456

Corporations Division

Business Entity results

Number of records: 129 **Number of pages: 6** Print results

Name	Position	Individual's Address	Entity Name	ID No.	Old ID No.
RUSSELL , DAVID	DIRECTOR	1601 CHESTNUT STREET, TWO LIBERTY PLACE PHILADELPHIA, PA 19192 USA	**CIGNA HEALTHCARE, INC.**	000973629	
RUSSELL , DAVID	NONE GIVEN - P		**CRESCENT D AND K FAMILY LIMITED PARTNERSHIP, THE**	000921585	
RUSSELL , DAVID	MANAGER		**DAME HOLLIS PROPERTIES, LLC**	001141463	
RUSSELL , DAVID	REAL PROPERTY		**DAME HOLLIS PROPERTIES, LLC**	001141463	
RUSSELL , DAVID	MANAGER		**DAVIS ALLIANCE, LLC**	001036599	
RUSSELL , DAVID	SOC SIGNATORY		**DAVIS ALLIANCE, LLC**	001036599	
RUSSELL , DAVID	REAL PROPERTY		**DAVIS ALLIANCE, LLC**	001036599	
RUSSELL , DAVID	MANAGER		**EAST HILL, LLC**	270672032	
RUSSELL , DAVID	TREASURER	115 WILDER ROAD BOLTON, MA 01740 USA	**EXTERRA GLOBAL TRADING, INC.**	043165715	000406625
RUSSELL , DAVID	DIRECTOR	200 RYAN ST. SO. PLAINFIELD, NJ 07080 USA	**FIRE AND EMERGENCY MANUFACTURERS AND SERVICES ASSOCIATION**	000660074	000000000
RUSSELL , DAVID	REAL PROPERTY		**GENTLE MANOR LLC**	001101763	
RUSSELL , DAVID	MANAGER		**GENTLE MANOR LLC**	001101763	
			GENTLE MANOR LLC	001101763	

RUSSELL , DAVID	SOC SIGNATORY			
RUSSELL , DAVID	REAL PROPERTY	**GQGC, LLC**	001135903	
RUSSELL , DAVID	MANAGER	**GQGC, LLC**	001135903	
RUSSELL , DAVID	SOC SIGNATORY	**GQGC, LLC**	001135903	
RUSSELL , DAVID	TREASURER	**IBS FOODS, INC.**	043496766	000842885
RUSSELL , DAVID	SECRETARY	**IBS FOODS, INC.**	043496766	000842885
RUSSELL , DAVID	MANAGER	**MARLBORO BFC, LLC**	001114525	
RUSSELL , DAVID	SOC SIGNATORY	**MARLBORO BFC, LLC**	001114525	
RUSSELL , DAVID	REAL PROPERTY	**MARLBORO BFC, LLC**	001114525	
RUSSELL , DAVID	REAL PROPERTY	**MILLPOND DENTAL ASSOCIATES, LLC**	001062608	
RUSSELL , DAVID	MANAGER	**MILLPOND DENTAL ASSOCIATES, LLC**	001062608	
RUSSELL , DAVID	SOC SIGNATORY	**MILLPOND DENTAL ASSOCIATES, LLC**	001062608	
RUSSELL , DAVID	MANAGER	**NORTHPOINTE REALTORS LLC**	001103802	

123456

New Search

Corporations Division

Business Entity results

Number of records: 129 **Number of pages: 6** Print results

Name	Position	Individual's Address	Entity Name	ID No.	Old ID No.
RUSSELL , DAVID	DIRECTOR	13100 NORTHWEST FREEWAY, SUITE 500 HOUSTON, TX 77040 USA	**PALLET COMPANIES, INC.**	000903131	
RUSSELL , DAVID	PRESIDENT	13100 NORTHWEST FREEWAY, SUITE 500 HOUSTON, TX 77040 USA	**PALLET COMPANIES, INC.**	000903131	
RUSSELL , DAVID	CLERK	131 BLAKE ST. NORTHBOROUGH, MA 01532 USA	**PET ROCK FEST, INC.**	202303812	000889269
RUSSELL , DAVID	MANAGER		**RIVERNECK ROAD DEVELOPMENT LLC**	001271865	
RUSSELL , DAVID	REAL PROPERTY		**RIVERNECK ROAD DEVELOPMENT LLC**	001271865	
RUSSELL , DAVID	REAL PROPERTY		**SALISBURY NORTHPOINTE II, LLC**	001063858	
RUSSELL , DAVID	MANAGER		**SALISBURY NORTHPOINTE II, LLC**	001063858	
RUSSELL , DAVID	MANAGER		**SALISBURY NORTHPOINTE II, LLC**	001063858	
RUSSELL , DAVID	SOC SIGNATORY		**SALISBURY NORTHPOINTE II, LLC**	001063858	
RUSSELL , DAVID	SOC SIGNATORY		**SALISBURY NORTHPOINTE II, LLC**	001063858	
				001063858	

RUSSELL , DAVID	REAL PROPERTY		**SALISBURY NORTHPOINTE II, LLC**		
RUSSELL , DAVID	MANAGER		**SANDWICH DENTAL ASSOCIATES, LLC**	001080248	
RUSSELL , DAVID	MANAGER		**TURN LEFT, LLC**	001302506	
RUSSELL , DAVID	SOC SIGNATORY		**TURN LEFT, LLC**	001302506	
RUSSELL , DAVID	MANAGER		**TWO TWO ZERO, LLC**	001149574	
RUSSELL , DAVID	SOC SIGNATORY		**TWO TWO ZERO, LLC**	001149574	
RUSSELL , DAVID	REAL PROPERTY		**TWO TWO ZERO, LLC**	001149574	
RUSSELL , DAVID	DIRECTOR	39 TESLA IRVINE, CA 92618 USA	**VIZIO, INC.**	001286607	
RUSSELL , DAVID A	MANAGER		**BACK TO NEW TILE AND HARD SURFACE CLEANING, LLC**	452498425	001042122
RUSSELL, DAVID A.	PRESIDENT	74 APPLETON ST., BOSTON, MA USA 74 APPLETON ST., BOSTON, MA USA	**RUSSELL & HARRIS MEDICAL GROUP, P.C.**	043149046	000389790
RUSSELL , DAVID A.	SOC SIGNATORY		**BACK TO NEW TILE AND HARD SURFACE CLEANING, LLC**	452498425	001042122
RUSSELL , DAVID A.	REAL PROPERTY		**BACK TO NEW TILE AND HARD SURFACE CLEANING, LLC**	452498425	001042122
RUSSELL , DAVID A.	PRESIDENT	51 POND ST. 12A WALTHAM, MA 02451 USA	**RUSSELL BUSINESS SOLUTIONS INC.**	000944968	
RUSSELL , DAVID A.	DIRECTOR	51 POND ST. 12A WALTHAM, MA 02451 USA	**RUSSELL BUSINESS SOLUTIONS INC.**	000944968	
RUSSELL , DAVID B.	MANAGER		**NAGATECH, LLC**	001208943	

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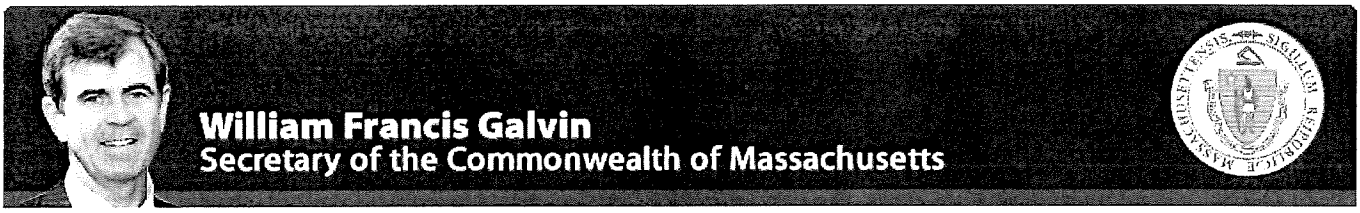
New Search



Corporations Division

Business Entity results

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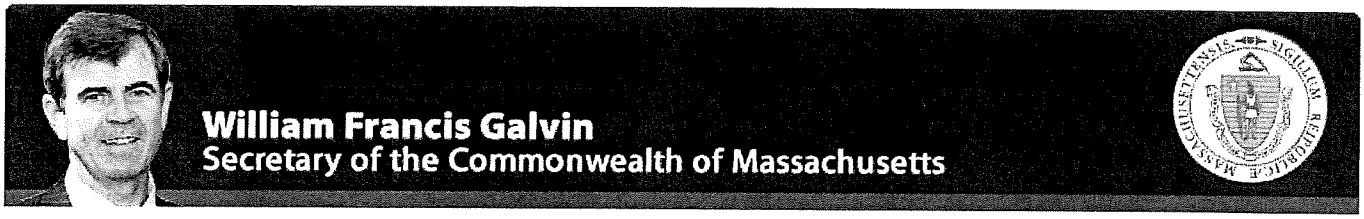
Name	Position	Individual's Address	Entity Name	ID No.	Old ID No.
RUSSELL , DAVID B.	REAL PROPERTY		**NAGATECH, LLC**	001208943	
RUSSELL , DAVID C	MANAGER		**BLACKFOOT CAPITAL, LLC**	000998607	
RUSSELL , DAVID C	REAL PROPERTY		**BLACKFOOT CAPITAL, LLC**	000998607	
RUSSELL, DAVID C.	PRESIDENT	30 D.W. HIGHWAY, MERRIMAC, N.H, 03054 30 D.W. HIGHWAY, MERRIMAC, N.H, 03054	**INTERNATIONAL CARPET GALLERIES, INC.**	000603538	000000000
RUSSELL, DAVID C.	PRESIDENT	281D BOYLSTON ST., LOWELL, MA USA 281D BOYLSTON ST., LOWELL, MA USA	**RUBAN, INC.**	042998115	000248036
RUSSELL, DAVID C.	SECRETARY	281D BOYLSTON ST., LOWELL, MA USA 281D BOYLSTON ST., LOWELL, MA USA	**RUBAN, INC.**	042998115	000248036
RUSSELL , DAVID C.	MANAGER		**BLACKFOOT CAPITAL II, LLC**	001094302	
RUSSELL , DAVID C.	REAL PROPERTY		**WATERFRONT CAPITAL, LLC**	001033363	
RUSSELL , DAVID D.	SOC SIGNATORY		**TURNING LEAF, LLC**	262813859	
RUSSELL , DAVID D.	REAL PROPERTY		**TURNING LEAF, LLC**	262813859	
	MANAGER		**TURNING LEAF, LLC**	262813859	

RUSSELL , DAVID D.					
RUSSELL, DAVID E.	PRESIDENT	15 ANDREWS RD., WAKEFIELD, MA USA 15 ANDREWS RD., WAKEFIELD, MA USA	**RUSSELL BADGE MFG CO, INC.**	042208804	
RUSSELL , DAVID E.	DIRECTOR	159 PINE LANE WESTWOOD, MA 02090 USA	**DISTINCTIVE REALTY GROUP, LTD.**	000944686	
RUSSELL , DAVID E.	PRESIDENT	159 PINE LANE WESTWOOD, MA 02090 USA	**DISTINCTIVE REALTY GROUP, LTD.**	000944686	
RUSSELL , DAVID E.	TREASURER	159 PINE LANE WESTWOOD, MA 02090 USA	**DISTINCTIVE REALTY GROUP, LTD.**	000944686	
RUSSELL ESQ., DAVID E.	MANAGER		**K&M BRISTOL HOLDINGS, LLC**	001243560	
RUSSELL ESQ., DAVID E.	SOC SIGNATORY		**K&M BRISTOL HOLDINGS, LLC**	001243560	
RUSSELL , DAVID F	VICE PRESIDENT	149 PAKACHOAG ST AUBURN, MA 01501 USA	**WORCESTER MASONIC CHARITY AND EDUCATIONAL ASSOC.**	042004834	000000424
RUSSELL JR, DAVID F	PRESIDENT	165 BELMONT STREET BROCKTON, MA 02301 USA	**DAVID F. RUSSELL FUNERAL HOME, INC.**	042463583	
RUSSELL JR, DAVID F	TREASURER	165 BELMONT STREET BROCKTON, MA 02301 USA	**DAVID F. RUSSELL FUNERAL HOME, INC.**	042463583	
RUSSELL JR, DAVID F	SECRETARY	165 BELMONT STREET BROCKTON, MA 02301 USA	**DAVID F. RUSSELL FUNERAL HOME, INC.**	042463583	
RUSSELL JR, DAVID F	DIRECTOR	314 WEST STREET BROCKTON, MA 02301 USA	**DAVID F. RUSSELL FUNERAL HOME, INC.**	042463583	
RUSSELL , DAVID F.	DIRECTOR	18 ROUTE 6A SANDWICH, MA 02563 USA	**JODAKA, INC.**	141865736	000832377
RUSSELL , DAVID F.	SECRETARY	18 ROUTE 6A SANDWICH, MA 02563 USA	**JODAKA, INC.**	141865736	000832377
RUSSELL , DAVID F.	TREASURER		**JODAKA, INC.**	141865736	000832377

18 ROUTE 6A
SANDWICH, MA
02563 USA

1 2 3 4 5 6

New Search



Corporations Division

Business Entity results

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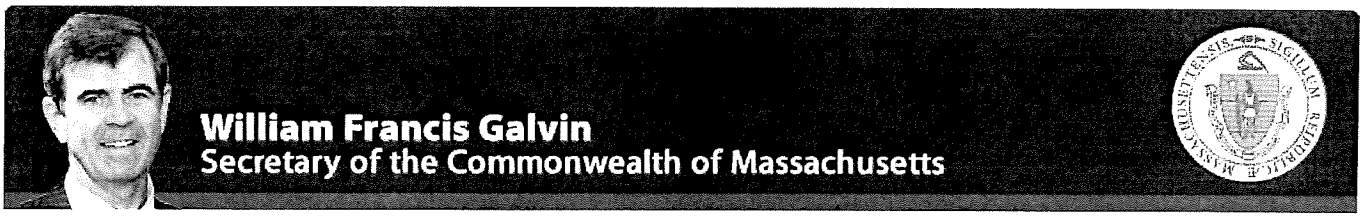
RUSSELL , DAVID F.	TREASURER	149 PAKACHOAG ST., AUBURN, MA 01501 USA	**NEW ENGLAND JOINT COMMITTEE ON LEARNING DISABILITES, INC.**	223225699	000380646
RUSSELL , DAVID F.	REAL PROPERTY		**RUSSELL CONSULTING LLC**	464250630	
RUSSELL , DAVID F.	MANAGER		**RUSSELL CONSULTING LLC**	464250630	
RUSSELL , DAVID F.	PRESIDENT	9 CONWAY ST ROSLINDALE, MA 02131 USA	**RUSSELL EDUCATIONAL SERVICES, INC.**	000994281	
RUSSELL , DAVID F.	SECRETARY	9 CONWAY ST ROSLINDALE, MA 02131 USA	**RUSSELL EDUCATIONAL SERVICES, INC.**	000994281	
RUSSELL , DAVID F.	DIRECTOR	9 CONWAY ST ROSLINDALE, MA 02131 USA	**RUSSELL EDUCATIONAL SERVICES, INC.**	000994281	
RUSSELL , DAVID F.	TREASURER	9 CONWAY ST ROSLINDALE, MA 02131 USA	**RUSSELL EDUCATIONAL SERVICES, INC.**	000994281	
RUSSELL JR., DAVID F.	PRESIDENT	314 WEST ST., BROCKTON, MA 02401 USA	**RUSSELL LIVERY SERVICE, INC.**	043276537	000499439
RUSSELL JR., DAVID F.	TREASURER	314 WEST ST., BROCKTON, MA 02401 USA	**RUSSELL LIVERY SERVICE, INC.**	043276537	000499439
RUSSELL JR., DAVID F.	SECRETARY	314 WEST ST., BROCKTON, MA 02401 USA	**RUSSELL LIVERY SERVICE, INC.**	043276537	000499439
RUSSELL , DAVID G	MANAGER		**722 PLANTATION, LLC**	204310221	000915704
RUSSELL , DAVID G	REAL PROPERTY		**722 PLANTATION, LLC**	204310221	000915704
	TREASURER			132681492	

RUSSELL, DAVID I.		240 EAST 47TH ST., NY, NY USA 240 EAST 47TH ST., NY, NY USA	**S.G. WARBURG, ROWE & PITMAN, AKROYD INC.**		
RUSSELL, DAVID I.	PRESIDENT	240 EAST 47TH ST., NY, NY USA 240 EAST 47TH ST., NY, NY USA	**S.G. WARBURG, ROWE & PITMAN, AKROYD INC.**	132681492	
RUSSELL , DAVID O.	PRESIDENT	8075 WEST 3RD STREET #310 LOS ANGELES, CA 90048 USA	**KANZEON CORP.**	001103906	
RUSSELL , DAVID OWEN	PRESIDENT	9200 W SUNSET BLVD SUITE 600 LOS ANGELES, CA 90069 USA	**KANZEON CORP.**	001179021	
RUSSELL , DAVID OWEN	TREASURER	9200 W SUNSET BLVD SUITE 600 LOS ANGELES, CA 90069 USA	**KANZEON CORP.**	001179021	
RUSSELL , DAVID OWEN	SECRETARY	9200 W SUNSET BLVD SUITE 600 LOS ANGELES, CA 90069 USA	**KANZEON CORP.**	001179021	
RUSSELL , DAVID OWEN	DIRECTOR	9200 W SUNSET BLVD SUITE 600 LOS ANGELES, CA 90069 USA	**KANZEON CORP.**	001179021	
RUSSELL , DAVID T.	MANAGER		**GLENDOVER STERLING LLC**	001096869	
RUSSELL , DAVID T.	SOC SIGNATORY		**GLENDOVER STERLING LLC**	001096869	
RUSSELL , DAVID T.	REAL PROPERTY		**GLENDOVER STERLING LLC**	001096869	
RUSSELL, DAVID W.	PRESIDENT	57 OWENS AVE.,DEFUNIAK SPRINGS, FL USA 57 OWENS AVE.,DEFUNIAK SPRINGS, FL USA	**DAVID CLARK ASSOCIATES, INC.**	043013384	000273081
RUSSELL, DAVID W.	TREASURER	57 OWENS AVE.,DEFUNIAK SPRINGS, FL USA 57 OWENS AVE.,DEFUNIAK SPRINGS, FL USA	**DAVID CLARK ASSOCIATES, INC.**	043013384	000273081
	PRESIDENT			001305491	

RUSSELL , DAVID WAYNE	12A DUNSTABLE STREET CHARLESTOWN, MA 02129 USA	**RUSSELL CONSTRUCTION SERVICES INC.**
123456		

New Search



Corporations Division

Business Entity results

Number of records: 129 **Number of pages: 6** Print results

Name	Position	Individual's Address	Entity Name	ID No.	Old ID No.
RUSSELL , DAVID WAYNE	DIRECTOR	12A DUNSTABLE STREET CHARLESTOWN, MA 02129 USA	**RUSSELL CONSTRUCTION SERVICES INC.**	001305491	
RUSSELL , DAVID WAYNE	TREASURER	12A DUNSTABLE STREET CHARLESTOWN, MA 02129 USA	**RUSSELL CONSTRUCTION SERVICES INC.**	001305491	
RUSSELL , DAVID WAYNE	SECRETARY	12A DUNSTABLE STREET CHARLESTOWN, MA 02129 USA	**RUSSELL CONSTRUCTION SERVICES INC.**	001305491	
RUSSELL JR. , DAVID F	DIRECTOR	314 WEST ST BROCKTON, MA 02301 USA	**RUSSELL LIVERY SERVICE, INC.**	043276537	000499439
123456					

New Search

9.1

W-9

Exhibit D

Project Eligibility Letter

MASSHOUSING

Massachusetts Housing Finance Agency
One Beacon Street, Boston, MA 02108

TEL: 617.854.1000
FAX: 617.854.1091 | www.masshousing.com
Videophone: 857.366.4157 or Relay: 711

June 20, 2018

Still River Road Development, LLC
c/o David Russell
28 Country Club Lane
Middleton, MA 01949

RE: Still River Commons–Bolton, MA
Project Eligibility/Site Approval
MassHousing ID No. 984

Dear Mr. Russell:

This letter is in response to your application as "Applicant" for a determination of Project Eligibility (Site Approval) pursuant to Massachusetts General Laws Chapter 40B ("Chapter 40B"), 760 CMR 56.00 (the "Regulations") and the Comprehensive Permit Guidelines issued by the Department of Housing and Community Development ("DHCD") (the "Guidelines" and, collectively with Chapter 40B and the Regulations, the "Comprehensive Permit Rules"), under the New England Fund ("NEF") Program ("the Program") of the Federal Home Loan Bank of Boston ("FHLBB").

You have proposed to build eight (8) units in four (4) duplex-style buildings including two (2) affordable units (the "Project") on approximately 6.68 acres of land located on Still River Road (the "Site") in Bolton, MA (the "Municipality").

In accordance with the Comprehensive Permit Rules, this letter is intended to be a written determination of Project Eligibility ("Site Approval") by MassHousing acting as Subsidizing Agency under the Guidelines, including Part V thereof, "Housing Programs in Which Funding Is Provided by Other Than a State Agency."

MassHousing has performed an on-site inspection of the Site, which local boards and officials were invited to attend, and has reviewed the pertinent information for the Project submitted by the Applicant, the Municipality and others in accordance with the Comprehensive Permit Rules.

Municipal Comments

Pursuant to the Regulations, the Municipality was given a thirty (30) day period in which to review the Site Approval application and submit comments and recommendations to MassHousing. The Chairman of the Planning Board, Erik Neyland, provided a response, recommending that the Applicant apply for design review through Bolton's Design Review

Board. The intention of the design review is to encourage development that aligns with Bolton's historical and rural character. The Planning Board believes that the additional design review will enhance the Project and benefit both the Applicant and the Town.

MassHousing Determination and Recommendations

MassHousing staff has determined that the Project appears generally eligible under the requirements of the Program, subject to final review of eligibility and to Final Approval. As a result of our review, we have made the findings as required for a determination of eligibility pursuant to 760 CMR 56.04(1) and (4). Each such finding, with supporting reasoning, is set forth in further detail on Attachment 1 hereto. It is important to note that Comprehensive Permit Rules limit MassHousing to these specific findings in order to determine Project Eligibility. If, as here, MassHousing issues a determination of Project Eligibility, the Applicant may apply to the Zoning Board of Appeals of the Municipality for a Comprehensive Permit. At that time local boards, officials and members of the public are provided the opportunity to further review the Project to ensure compliance with applicable state and local standards and regulations.

Based on MassHousing's consideration of comments received from the Municipality, and its site and design review, the following issues should be addressed in your application to the local Zoning Board of Appeals ("ZBA") for a Comprehensive Permit and fully explored in the public hearing process prior to submission of your application for Final Approval under the Program:

- Development of this Site will require compliance with all state and federal environmental laws, regulations and standards applicable to existing conditions and to the proposed use related to building construction, stormwater management, wastewater collection and treatment, and hazardous waste safety. The Applicant should expect that the Municipality will require evidence of such compliance prior to the issuance of a building permit for the Project.

- The Applicant should discuss design review matters with relevant local boards and officials.

MassHousing has also reviewed the application for compliance within the requirements of 760 CMR 56.04(2) relative to Application requirements, and has determined that the material provided by the Applicant is sufficient to show compliance.

This Site Approval is expressly limited to the development of no more than eight (8) homeownership units under the terms of the Program, of which not less than two (2) of such units shall be restricted as affordable for low-or moderate-income persons or families as required under the terms of the Guidelines. It is not a commitment or guarantee of financing and does not constitute a site plan or building design approval. Should you consider, prior to obtaining a Comprehensive Permit, the use of any other housing subsidy program, the construction of additional units or a reduction in the size of the Site, you may be required to submit a new Site Approval application for review by MassHousing. Should you consider a change in tenure type or a change in building type or height, you may be required to submit a new site approval application for review by MassHousing.

For guidance on the Comprehensive Permit review process, you are advised to consult the Guidelines. Further, we urge you to review carefully with legal counsel the M.G.L. c.40B Comprehensive Permit Regulations at 760 CMR 56.00.

This approval will be effective for a period of two years from the date of this letter. Should the Applicant not apply for a Comprehensive Permit within this period or should MassHousing not extend the effective period of this letter in writing, this letter shall be considered to have expired and no longer be in effect. In addition, the Applicant is required to notify MassHousing at the following times throughout this two-year period: (1) when the Applicant applies to the local ZBA for a Comprehensive Permit, (2) when the ZBA issues a decision and (3) if applicable, when any appeals are filed.

Should a Comprehensive Permit be issued, please note that prior to (i) commencement of construction of the Project or (ii) issuance of a building permit, the Applicant is required to submit to MassHousing a request for Final Approval of the Project (as it may have been amended) in accordance with the Comprehensive Permit Rules (see especially 760 CMR 56.04(07) and the Guidelines including, without limitation, Part III thereof concerning Affirmative Fair Housing Marketing and Resident Selection). Final Approval will not be issued unless MassHousing is able to make the same findings at the time of issuing Final Approval as required at Site Approval.

Please note that MassHousing may not issue Final Approval if the Comprehensive Permit contains any conditions that are inconsistent with the regulatory requirements of the New England Fund Program of the FHLBB, for which MassHousing serves as Subsidizing Agency, as reflected in the applicable regulatory documents. In the interest of providing for an efficient review process and to avoid the potential lapse of certain appeal rights, the Applicant may wish to submit a "final draft" of the Comprehensive Permit to MassHousing for review. Applicants who avail themselves of this opportunity may avoid significant procedural delays that can result from the need to seek modification of the Comprehensive Permit after its initial issuance.

If you have any questions concerning this letter, please contact Michael Busby at (617) 854-1219.

Sincerely,

Chrystal Kornegay

Chrystal Kornegay
Executive Director

cc: Janelle Chan, Undersecretary, DHCD
The Honorable Dean A. Tran
The Honorable Kate Hogan
Stan Wysocki, Chairman, Board of Selectmen
Gerard Ahearn, Chairman, Zoning Board of Appeals

Attachment 1

760 CMR 56.04 Project Eligibility: Other Responsibilities of Subsidizing Agency
Section (4) Findings and Determinations

Still River Commons, Bolton, MH ID No. 984

MassHousing hereby makes the following findings, based upon its review of the application, and in consideration of information received during the site visit and from written comments:

(a) that the proposed Project appears generally eligible under the requirements of the housing subsidy program, subject to final approval under 760 CMR 56.04(7);

The Project is eligible under the NEF housing subsidy program and at least 25% of the units will be available to households earning at or below 80% of the Area Median Income, adjusted for household size, as published by the U.S. Department of Housing and Urban Development ("HUD"). The most recent HUD income limits indicate that 80% of the current median income for a four-person household in Bolton is $71,900.

A letter of interest regarding project financing was provided by Lowell Five Bank, a member bank of the Federal Home Loan Bank of Boston.

(b) that the site of the proposed Project is generally appropriate for residential development, taking into consideration information provided by the Municipality or other parties regarding municipal actions previously taken to meet affordable housing needs, such as inclusionary zoning, multifamily districts adopted under c.40A, and overlay districts adopted under c.40R, (such finding, with supporting reasoning, to be set forth in reasonable detail);

Based on a site inspection by MassHousing staff, internal discussions, and a thorough review of the application, MassHousing finds that the Site is suitable for residential use and development and that such use would be compatible with surrounding uses and would directly address the local need for housing.

The Town of Bolton does not have a DHCD-approved Housing Production Plan. According to DHCD's Chapter 40B Subsidized Housing Inventory (SHI), updated through September 2017, Bolton has 62 Subsidized Housing Inventory (SHI) units (3.6% of its housing inventory). An additional 111 units would be required for the Town to achieve the 10% threshold of 173 units.

(c) that the conceptual project design is generally appropriate for the site on which it is located, taking into consideration factors that may include proposed use, conceptual site plan and building massing, topography, environmental resources, and integration into existing development patterns (such finding, with supporting reasoning, to be set forth in reasonable detail);

In summary, based on an evaluation of the site plan using the following criteria, MassHousing finds that the proposed conceptual Project design is generally appropriate for the Site. The

following plan review findings are made in response to the conceptual plan, submitted to MassHousing:

Relationship to Adjacent Building Typology (including building massing, site arrangement, and architectural details):
The Site is located in an area that has rural characteristics with a combination of open fields and woodlands with several large farm houses and some recently constructed contemporary homes. The proposed residential structures will reflect a New England vernacular featuring four (4), two-unit duplex-style buildings designed to complement the architectural features, size, and massing of other homes built in the area. The proposed architectural elements include roofline details, façade details and overhangs to lessen the overall perception of the building's height and impact of the project's massing.

Relationship to Adjacent Streets
The Site is located in the northwest section of Bolton on the Harvard town line, approximately two miles from the local high school and three miles from the town center. Although this is primarily an auto dependent location, the Site is 4.6 miles, or roughly eight minutes by car from the intersection of Routes 495 and 117. Once on Route 495, Routes 2, 3 and 93 are within reasonable distances of the Site. The relationship of the proposed Site access and egress to Still River Road does not present any discernable public safety impacts. There appears to be adequate lines of sight for vehicles entering and exiting the proposed Site. The site plan presents a development pattern that is similar to that found in adjacent streets.

Density
The Applicant proposes to build eight (8) units on approximately 6.68-acres, of which approximately 2.81-acres are buildable. The resulting density is 2.84 units per buildable acre, which is acceptable given the proposed housing type and similar uses found in the surrounding context.

Conceptual Site Plan
The Applicant plans to keep the existing grass and tree lines as much as possible to maintain the existing vegetated landscape. The Applicant utilizes the land efficiently by grouping the buildings in a circular pattern approximately 60 feet into the Site. The proposed roadway layout and circulation patterns appear to provide adequate access and egress to Still River Road. The Applicant intends to use Cluster Design principles to preserve undeveloped land as open space leading to an open meadow area.

Environmental Resources
The subject property is a 6.68-acre parcel with approximately 3.87-acres of the Site consisting of undisturbed wetland areas. Wetlands in the northeast portion of the Site will limit the development to upland areas identified by the Applicant. Development of the Site will require careful attention to current Best Management Practices to avoid any adverse impacts to the protected wetland resource areas. These resource areas will ultimately serve to break down the perceived massing of the Site, provide visual screening, and surround the residential portions of the Site with natural features. Wetland resources in these areas will be subject to further review by the local Conservation Commission under a Notice of Intent.

Topography
The property is relatively flat, gently sloping from east to west along Still River Road. The existing topography is not an impediment to the proposed development.

(d) that the proposed Project appears financially feasible within the housing market in which it will be situated (based on comparable rentals or sales figures);

The Project appears financially feasible based on a comparison of sales submitted by the Applicant.

(e) that an initial pro forma has been reviewed, including a land valuation determination consistent with the Department's Guidelines, and the Project appears financially feasible and consistent with the Department's Guidelines for Cost Examination and Limitations on Profits and Distributions (if applicable) on the basis of estimated development costs;

The initial pro-forma has been reviewed for the proposed residential use and the Project appears financially feasible with a projected profit margin of 7.21%. In addition, a third-party appraisal commissioned by MassHousing has determined that the "As-Is" land value for the Site of the Proposed Project is $205,000.

(f) that the Applicant is a public agency, a non-profit organization, or a Limited Dividend Organization, and it meets the general eligibility standards of the housing program; and

The Applicant must be organized as a Limited Dividend Organization prior to applying for Final Approval. MassHousing sees no reason this requirement could not be met given information reviewed to date. The Applicant meets the general eligibility standards of the NEF housing subsidy program.

(g) that the Applicant controls the site, based on evidence that the Applicant or a related entity owns the site, or holds an option or contract to acquire such interest in the site, or has such other interest in the site as is deemed by the Subsidizing Agency to be sufficient to control the site.

The Applicant controls the entire 6.68-acre Site under a deed of ownership.

Exhibit E

Affordable Housing Restriction

AFFORDABLE HOUSING RESTRICTION

For Projects in Which
Affordability Restrictions Survive Foreclosure

THIS AFFORDABLE HOUSING RESTRICTION (this "Restriction") is:
[ ] incorporated in and made part of that certain deed (the "Deed") of certain property (the "Property") from
_____
_____ ("Grantor")
to _____ ("Owner") dated
_____, 20___; or
[ ] being granted in connection with a financing or refinancing secured by a mortgage on the Property dated _____, 20__. The Property is located in the City/Town of
_____ (the "Municipality").

RECITALS

WHEREAS, the Owner is purchasing the Property, or is obtaining a loan secured by a mortgage on the Property that was originally purchased, at a consideration which is less than the fair market value of the Property; and

WHEREAS, the Property is part of a project which was: [check all that are applicable]

(i) granted a Comprehensive Permit under Massachusetts General Laws Chapter 40B, Sections 20-23, from the Board of Appeals of the Municipality or the Housing Appeals Committee and recorded/filed with the _____ County Registry of Deeds/Registry District of Land Court (the "Registry") in Book _____, Page _____/Document No._____ (the "Comprehensive Permit"); and/or

(ii) subject to a Regulatory Agreement among _____
_____ (the "Developer"), [ ] Massachusetts Housing Finance Agency ("MassHousing"), [ ] the Massachusetts Department of Housing and Community Development] ("DHCD") [ ] the Municipality; and [ ] _____
_____, dated
_____ and recorded/filed with the Registry in Book
_____, Page _____/as Document No. _____ (the "Regulatory Agreement"); and/or

(iii) subsidized by the federal or state government under _____

_____, a program to assist construction of low or moderate income housing the "Program"); and WHEREAS, pursuant to the Program, eligible purchasers such as the Owner are given the opportunity to purchase residential property at less than its fair market value if the purchaser agrees to certain use and transfer restrictions, including an agreement to occupy the property as a principal residence and to convey the property for an amount not greater than a maximum resale price, all as more fully provided herein; and

WHEREAS, _____ (singly, or if more than one entity is listed, collectively, the "Monitoring Agent") is obligated by the Program or has been retained to monitor compliance with and to enforce the terms of this Restriction, and eligible purchasers such as the Owner may be required to pay to the Monitoring Agent, or its successor, a small percentage of the resale price upon the Owner's conveyance of the Property, as set out in the Regulatory Agreement and as more fully provided herein; and

WHEREAS, the rights and restrictions granted herein to the Monitoring Agent and the Municipality serve the public's interest in the creation and retention of affordable housing for persons and households of low and moderate income and in the restricting of the resale price of property in order to assure its affordability by future low and moderate income purchasers.

NOW, THEREFORE, as further consideration for the conveyance of the Property at less than fair market value (if this Restriction is attached to the Deed), or as further consideration for the ability to enter into the financing or refinancing transaction, the Owner (and the Grantor if this Restriction is attached to the Deed), including his/her/their heirs, successors and assigns, hereby agree that the Property shall be subject to the following rights and restrictions which are imposed for the benefit of, and shall be enforceable by, the Municipality and the Monitoring Agent, and, if DHCD is a party to the Regulatory Agreement and is not the Monitoring Agent, by DHCD.

1. Definitions. In this Restriction, in addition to the terms defined above, the following words and phrases shall have the following meanings:

Affordable Housing Fund means a fund established by the Municipality for the purpose of reducing the cost of housing for Eligible Purchasers or for the purpose of encouraging, creating, or subsidizing the construction or rehabilitation of housing for Eligible Purchasers or, if no such fund exists, a fund established by the Municipality pursuant to Massachusetts General Laws Chapter 44 Section 53A, et seq.

Applicable Foreclosure Price shall have the meaning set forth in Section 7(b) hereof.

Appropriate Size Household means a household containing a number of members equal to the number of bedrooms in the Property plus one.

Approved Capital Improvements means the documented commercially reasonable cost of extraordinary capital improvements made to the Property by the Owner; provided that the Monitoring Agent shall have given written authorization for incurring such cost prior to the cost

being incurred and that the original cost of such improvements shall be discounted over the course of their useful life.

Area means the Primary Metropolitan Statistical Area or non-metropolitan area that includes the Municipality, as determined by HUD, which in this case is _____.

Area Median Income means the most recently published median income for the Area adjusted for household size as determined by HUD. If HUD discontinues publication of Area Median Income, the income statistics used by MassHousing for its low and moderate income housing programs shall apply.

Base Income Number means the Area Median Income for a four (4)-person household. **Chief Executive Officer** shall mean the Mayor in a city or the Board of Selectmen in a town unless some other municipal office is designated to be the chief executive officer under the provisions of a local charter.

Closing shall have the meaning set forth in Section 5(b) hereof.

Compliance Certificate shall have the meaning set forth in Section 6(a) hereof.

Conveyance Notice shall have the meaning set forth in Section 4(a) hereof.

Eligible Purchaser means an individual or household earning no more than eighty percent (80%) of Area Median Income (or, if checked [ ] _____ percent (_____%) of Area Median Income, as required by the Program) and owning assets not in excess of the limit set forth in the Program Guidelines. To be considered an Eligible Purchaser, the individual or household must intend to occupy and thereafter must occupy the Property as his, her or their principal residence and must provide to the Monitoring Agent such certifications as to income, assets and residency as the Monitoring Agent may require to determine eligibility as an Eligible Purchaser. An Eligible Purchaser shall be a First-Time Homebuyer if required by the Program and as specified in the Regulatory Agreement.

First-Time Homebuyer means an individual or household, of which no household member has had an ownership interest in a principal residence at any time during the three (3)-year period prior to the date of qualification as an Eligible Purchaser, except that (i) any individual who is a displaced homemaker (as may be defined by DHCD) (ii) and any individual age 55 or over (applying for age 55 or over housing) shall not be excluded from consideration as a First-Time Homebuyer under this definition on the basis that the individual, owned a home or had an ownership interest in a principal residence at any time during the three (3)-year period.

Foreclosure Notice shall have the meaning set forth in Section 7(a) hereof.

HUD means the United States Department of Housing and Urban Development.

Ineligible Purchaser means an individual or household not meeting the requirements to be eligible as an Eligible Purchaser.

Maximum Resale Price means the sum of (i) the Base Income Number (at the time of resale) multiplied by the Resale Price Multiplier, plus (ii) the Resale Fee and any necessary marketing expenses (including broker's fees) as may have been approved by the Monitoring Agent, plus (iii) Approved Capital Improvements, if any (the original cost of which shall have been discounted over time, as calculated by the Monitoring Agent); provided that in no event shall the Maximum Resale Price be greater than the purchase price for which a credit-worthy Eligible Purchaser earning seventy percent (70%) of the Area Median Income (or, if checked [ ]

_____ percent (_____%) of Area Median Income, as required by the Program) for an Appropriate Size Household could obtain mortgage financing (as such purchase price is determined by the Monitoring Agent using the same methodology then used by DHCD for its Local Initiative Program or similar comprehensive permit program); and further provided that the Maximum Resale Price shall not be less than the purchase price paid for the Property by the Owner unless the Owner agrees to accept a lesser price.

Monitoring Services Agreement means any Monitoring Services Agreement for monitoring and enforcement of this Restriction among some or all of the Developer, the Monitoring Agent, the Municipality, MassHousing and DHCD.

Mortgage Satisfaction Amount shall have the meaning set forth in Section 7(b) hereof.

Mortgagee shall have the meaning set forth in Section 7(a) hereof.

Program Guidelines means the regulations and/or guidelines issued for the applicable Program and controlling its operations, as amended from time to time.

Resale Fee means a fee of _____% [no more than two and one-half percent (2.5%)] of the Base Income Number (at the time of resale) multiplied by the Resale Price Multiplier, to be paid to the Monitoring Agent as compensation for monitoring and enforcing compliance with the terms of this Restriction, including the supervision of the resale process.

Resale Price Certificate means the certificate issued as may be specified in the Regulatory Agreement and recorded with the first deed of the Property from the Developer, or the subsequent certificate (if any) issued as may be specified in the Regulatory Agreement, which sets forth the Resale Price Multiplier to be applied on the Owner's sale of the Property, as provided herein, for so long as the restrictions set forth herein continue. In the absence of contrary specification in the Regulatory Agreement the Monitoring Agent shall issue the certificate.

Resale Price Multiplier means the number calculated by dividing the Property's initial sale price by the Base Income Number at the time of the initial sale from the Developer to the first Eligible Purchaser. The Resale Price Multiplier will be multiplied by the Base Income Number at the time of the Owner's resale of the Property to determine the Maximum Resale Price on such conveyance subject to adjustment for the Resale Fee, marketing expenses and Approved Capital Improvements. In the event that the purchase price paid for the Property by the Owner includes such an adjustment a new Resale Price Multiplier will be recalculated by the Monitoring Agent by dividing the purchase price so paid by the Base Income Number at the time of such purchase, and a new Resale Price Certificate will be issued and recorded reflecting the new Resale Price Multiplier. A Resale Price Multiplier of _____ is hereby assigned to the Property. **Term** means in perpetuity, unless earlier terminated by (i) the termination of the term of affordability set forth in the Regulatory Agreement or Comprehensive Permit, whichever is longer; or (ii) the recording of a Compliance Certificate and a new Restriction executed by the purchaser in form and substance substantially identical to this Restriction establishing a new term.

2. **Owner-Occupancy/Principal Residence.** The Property shall be occupied and used by the Owner's household exclusively as his, her or their principal residence. Any use of the Property or activity thereon which is inconsistent with such exclusive residential use is expressly prohibited.

3. **Restrictions Against Leasing, Refinancing and Junior Encumbrances.** The Property shall not be leased, rented, refinanced, encumbered (voluntarily or otherwise) or mortgaged

without the prior written consent of the Monitoring Agent; provided that this provision shall not apply to a first mortgage granted on the date of the delivery of the Deed in connection with the conveyance of the Property from Grantor to Owner securing indebtedness not greater than one hundred percent (100%) of the purchase price. Any rents, profits, or proceeds from any transaction described in the preceding sentence which transaction has not received the requisite written consent of the Monitoring Agent shall be paid upon demand by Owner to the Municipality for deposit to its Affordable Housing Fund. The Monitoring Agent or Municipality may institute proceedings to recover such rents, profits or proceeds, and costs of collection, including attorneys' fees. Upon recovery, after payment of costs, the balance shall be paid to the Municipality for deposit to its Affordable Housing Fund. In the event that the Monitoring Agent consents for good cause to any such lease, refinancing, encumbrance or mortgage, it shall be a condition to such consent that all rents, profits or proceeds from such transaction, which exceed the actual carrying costs of the Property as determined by the Monitoring Agent, shall be paid to the Municipality for deposit to its Affordable Housing Fund. **4. Options to Purchase.** (a) When the Owner or any successor in title to the Owner shall desire to sell, dispose of or otherwise convey the Property, or any portion thereof, the Owner shall notify the Monitoring Agent and the Municipality in writing of the Owner's intention to so convey the Property (the "Conveyance Notice"). Upon receipt of the Conveyance Notice, the Monitoring Agent shall (i) calculate the Maximum Resale Price which the Owner may receive on the sale of the Property based upon the Base Income Number in effect as of the date of the Conveyance Notice and the Resale Price Multiplier set forth in the most recently recorded Resale Price Certificate together with permissible adjustments for the Resale Fee, marketing expenses and Approved Capital Improvements (as discounted), and (ii) promptly begin marketing efforts. The Owner shall fully cooperate with the Monitoring Agent's efforts to locate an Eligible Purchaser and, if so requested by the Monitoring Agent, shall hire a broker selected by the Monitoring Agent to assist in locating an Eligible Purchaser ready, willing and able to purchase the Property at the Maximum Resale Price after entering a purchase and sale agreement. Pursuant to such agreement, sale to the Eligible Purchaser at the Maximum Resale Price shall occur within ninety (90) days after the Monitoring Agent receives the Conveyance Notice or such further time as reasonably requested to arrange for details of closing. If the Owner fails to cooperate in such resale efforts, including a failure to agree to reasonable terms in the purchase and sale agreement, the Monitoring Agent may extend the 90-day period for a period commensurate with the time the lack of cooperation continues, as determined by the Monitoring Agent in its reasonable discretion. In such event, the Monitoring Agent shall give Owner written notice of the lack of cooperation and the length of the extension added to the 90day period.

(b) The Monitoring Agent shall ensure that diligent marketing efforts are made to locate an Eligible Purchaser ready, willing and able to purchase the Property at the Maximum Resale Price within the time period provided in subsection (a) above and to enter the requisite purchase and sale agreement. If more than one Eligible Purchaser is located, the Monitoring Agent shall conduct a lottery or other like procedure to determine which Eligible Purchaser shall be entitled to enter a purchase and sale agreement with Owner and to purchase the Property. Preference shall be given to Appropriate Size Households. The procedure for marketing and selecting an Eligible Purchaser shall be approved as provided in the Regulatory Agreement and any applicable Program

Guidelines. If an Eligible Purchaser is located within ninety (90) days after receipt of the Conveyance Notice, but such Eligible Purchaser proves unable to secure mortgage financing so as to be able to complete the purchase of the Property pursuant to the purchase and sale agreement, following written notice to Owner within the 90-day period the Monitoring
Agent shall have an additional sixty (60) days to locate another Eligible Purchaser who will enter a purchase and sale agreement and purchase the Property by the end of such sixty (60)-day period or such further time as reasonably requested to carry out the purchase and sale agreement. (c) In lieu of sale to an Eligible Purchaser, the Monitoring Agent or the Municipality or designee shall also have the right to purchase the Property at the Maximum Resale Price, in which event the purchase and sale agreement shall be entered, and the purchase shall occur within ninety (90) days after receipt of the Conveyance Notice or, within the additional sixty (60)-day period specified in subsection (b) above, or such further time as reasonably requested to carry out the purchase and sale agreement. Any lack of cooperation by Owner in measures reasonably necessary to effect the sale shall extend the 90-day period by the length of the delay caused by such lack of cooperation. The Monitoring Agent shall promptly give Owner written notice of the lack of cooperation and the length of the extension added to the 90-day period. In the event of such a sale to the Monitoring Agent or Municipality or designee, the Property shall remain subject to this Restriction and shall thereafter be sold or rented to an Eligible Purchaser as may be more particularly set forth in the Regulatory Agreement.

(d) If an Eligible Purchaser fails to purchase the Property within the 90-day period (or such further time determined as provided herein) after receipt of the Conveyance Notice, and the Monitoring Agent or Municipality or designee does not purchase the Property during said period, then the Owner may convey the Property to an Ineligible Purchaser no earlier than thirty (30) days after the end of said period at the Maximum Resale Price, but subject to all rights and restrictions contained herein; provided that the Property shall be conveyed subject to a Restriction identical in form and substance to this Restriction which the Owner agrees to execute, to secure execution by the Ineligible Purchaser and to record with the Deed; and further provided that, if more than one Ineligible Purchaser is ready, willing and able to purchase the Property the Owner will give preference and enter a purchase and sale agreement with any individuals or households identified by the Monitoring Agent as an Appropriate Size Household earning more than eighty percent (80%) but less than one hundred twenty percent (120%) of the Area Median Income.

(e) The priority for exercising the options to purchase contained in this Section 4 shall be as follows: (i) an Eligible Purchaser located and selected by the Monitoring Agent, as provided in subsection (b) above, (ii) the Municipality or its designee, as provided in subsection (c) above, and (iii) an Ineligible Purchaser, as provided in subsection (d) above.

(f) Nothing in this Restriction or the Regulatory Agreement constitutes a promise, commitment or guarantee by DHCD, MassHousing, the Municipality or the Monitoring Agent that upon resale the Owner shall actually receive the Maximum Resale Price for the Property or any other price for the Property.

(g) The holder of a mortgage on the Property is not obligated to forbear from exercising the rights and remedies under its mortgage, at law or in equity, after delivery of the Conveyance.

Notice.

5. Delivery of Deed. (a) In connection with any conveyance pursuant to an option to purchase as set forth in Section 4 above, the Property shall be conveyed by the Owner to the selected purchaser by a good and sufficient quitclaim deed conveying a good and clear record and marketable title to the Property free from all encumbrances except (i) such taxes for the then current year as are not due and payable on the date of delivery of the deed, (ii) any lien for municipal betterments assessed after the date of the Conveyance Notice, (iii) provisions of local building and zoning laws, (iv) all easements, restrictions, covenants and agreements of record specified in the deed from the Owner to the selected purchaser, (v) such additional easements, restrictions, covenants and agreements of record as the selected purchaser consents to, such consent not to be unreasonably withheld or delayed, (vi) the Regulatory Agreement, and (vii), except as otherwise provided in the Compliance Certificate, a Restriction identical in form and substance to this Restriction which the Owner hereby agrees to execute, to secure execution by the selected purchaser, and to record with the deed. **Said deed shall clearly state that it is made subject to the Restriction which is made part of the deed.** Failure to comply with the preceding sentence shall not affect the validity of the conveyance from the Owner to the selected purchaser or the enforceability of the restrictions herein.

(b) Said deed, including the approved Restriction, shall be delivered and the purchase price paid (the "Closing") at the Registry, or at the option of the selected purchaser, exercised by written notice to the Owner at least five (5) days prior to the delivery of the deed, at such other place as the selected purchaser may designate in said notice. The Closing shall occur at such time and on such date as shall be specified in a written notice from the selected purchaser to the Owner, which date shall be at least five (5) days after the date on which such notice is given, and no later than the end of the time period specified in Section 4(a) above.

(c) To enable Owner to make conveyance as herein provided, Owner may, if Owner so desires at the time of delivery of the deed, use the purchase money or any portion thereof to clear the title of any or all encumbrances or interests, all instruments with respect thereto to be recorded simultaneously with the delivery of said deed. Nothing contained herein as to the Owner's obligation to remove defects in title or to make conveyance or to deliver possession of the Property in accordance with the terms hereof, as to use of proceeds to clear title or as to the election of the selected purchaser to take title, nor anything else in this Restriction shall be deemed to waive, impair or otherwise affect the priority of the rights herein over matters appearing of record, or occurring, at any time after the recording of this Restriction, all such matters so appearing or occurring being subject and subordinate in all events to the rights herein. (d) Water and sewer charges and taxes for the then current tax period shall be apportioned and fuel value shall be adjusted as of the date of Closing and the net amount thereof shall be added to or deducted from, as the case may be, the purchase price payable by the selected purchaser.

(e) Full possession of the Property free from all occupants is to be delivered at the time of the Closing, the Property to be then in the same condition as it is in on the date of the execution of the purchase and sale agreement, reasonable wear and tear only excepted.

(f) If Owner shall be unable to give title or to make conveyance as above required, or if any change of condition in the Property not included in the above exception shall occur, then Owner shall be given a reasonable time not to exceed thirty (30) days after the date on which the Closing

was to have occurred in which to remove any defect in title or to restore the Property to the condition herein required. The Owner shall use best efforts to remove any such defects in the title, whether voluntary or involuntary, and to restore the Property to the extent permitted by insurance proceeds or condemnation award. The Closing shall occur fifteen (15) days after notice by Owner that such defect has been cured or that the Property has been so restored. The selected purchaser shall have the election, at either the original or any extended time for performance, to accept such title as the Owner can deliver to the Property in its then condition and to pay therefor the purchase price without deduction, in which case the Owner shall convey such title, except that in the event of such conveyance in accordance with the provisions of this clause, if the Property shall have been damaged by fire or casualty insured against or if a portion of the Property shall have been taken by a public authority, then the Owner shall, unless the Owner has previously restored the Property to its former condition, either:

(A) pay over or assign to the selected purchaser, on delivery of the deed, all amounts recovered or recoverable on account of such insurance or condemnation award less any amounts reasonably expended by the Owner for any partial restoration, or

(B) if a holder of a mortgage on the Property shall not permit the insurance proceeds or the condemnation award or part thereof to be used to restore the Property to its former condition or to be so paid over or assigned, give to the selected purchaser a credit against the purchase price, on delivery of the deed, equal to said amounts so retained by the holder of the said mortgage less any amounts reasonably expended by the Owner for any partial restoration.

6. <u>Resale and Transfer Restrictions.</u> (a) Except as otherwise provided herein, the Property or any interest therein shall not at any time be sold by the Owner, or the Owner's successors and assigns, and no attempted sale shall be valid, unless the aggregate value of all consideration and payments of every kind given or paid by the selected purchaser of the Property for and in connection with the transfer of such Property, is equal to or less than the Maximum Resale Price for the Property, and unless a certificate (the "<u>Compliance Certificate</u>") is obtained and recorded, signed and acknowledged by the Monitoring Agent which Compliance Certificate refers to the Property, the Owner, the selected purchaser thereof, and the Maximum Resale Price therefor, and states that the proposed conveyance, sale or transfer of the Property to the selected purchaser is in compliance with the rights, restrictions, covenants and agreements contained in this Restriction, and unless there is also recorded a new Restriction executed by the selected purchaser, which new Restriction is identical in form and substance to this Restriction.

(b) The Owner, any good faith purchaser of the Property, any lender or other party taking a security interest in such Property and any other third party may rely upon a Compliance Certificate as conclusive evidence that the proposed conveyance, sale or transfer of the Property to the selected purchaser is in compliance with the rights, restrictions, covenants and agreements contained in this Restriction, and may record such Compliance Certificate in connection with the conveyance of the Property.

(c) Within ten (10) days of the closing of the conveyance of the Property from the Owner to the selected purchaser, the Owner shall deliver to the Monitoring Agent a copy of the Deed of the Property, including the Restriction, together with recording information. Failure of

the Owner, or Owner's successors or assigns to comply with the preceding sentence shall not affect the validity of such conveyance or the enforceability of the restrictions herein.

7. Survival of Restrictions Upon Exercise of Remedies by Mortgagees. (a) The holder of record of any mortgage on the Property (each, a "Mortgagee") shall notify the Monitoring Agent, the Municipality and any senior Mortgagee(s) in the event of any default for which the Mortgagee intends to commence foreclosure proceedings or similar remedial action pursuant to its mortgage (the "Foreclosure Notice"), which notice shall be sent to the Monitoring Agent and the Municipality as set forth in this Restriction, and to the senior Mortgagee(s) as set forth in such senior Mortgagee's mortgage, not less than one hundred twenty (120) days prior to the foreclosure sale or the acceptance of a deed in lieu of foreclosure. The Owner expressly agrees to the delivery of the Foreclosure Notice and any other communications and disclosures made by the Mortgagee pursuant to this Restriction.

(b) The Owner grants to the Municipality or its designee the right and option to purchase the Property upon receipt by the Municipality of the Foreclosure Notice. In the event that the Municipality intends to exercise its option, the Municipality or its designee shall purchase the Property within one hundred twenty (120) days of receipt of such notice, at a price equal to the greater of (i) the sum of the outstanding principal balance of the note secured by such foreclosing Mortgagee's mortgage, together with the outstanding principal balance(s) of any note(s) secured by mortgage(s) senior in priority to such mortgage (but in no event shall the aggregate amount thereof be greater than one hundred percent (100%) of the Maximum Resale Price calculated at the time of the granting of the mortgage) plus all future advances, accrued interest and all reasonable costs and expenses which the foreclosing Mortgagee and any senior Mortgagee(s) are entitled to recover pursuant to the terms of such mortgages (the "Mortgage Satisfaction Amount"), and (ii) the Maximum Resale Price (which for this purpose may be less than the purchase price paid for the Property by the Owner)(the greater of (i) and (ii) above herein referred to as the "Applicable Foreclosure Price"). The Property shall be sold and conveyed in its then-current "as is, where is" condition, without representation or warranty of any kind, direct or indirect, express or implied, and with the benefit of and subject to all rights, rights of way, restrictions, easements, covenants, liens, improvements, housing code violations, public assessments, any and all unpaid federal or state taxes (subject to any rights of redemption for unpaid federal taxes), municipal liens and any other encumbrances of record then in force and applicable to the Property having priority over such foreclosing Mortgagee's mortgage, and further subject to a Restriction identical in form and substance to this Restriction which the Owner hereby agrees to execute, to secure execution by the Municipality or its designee, and to record with the deed, except that (i) during the term of ownership of the Property by the Municipality or its designee the owner-occupancy requirements of Section 2 hereof shall not apply (unless the designee is an Eligible Purchaser), and (ii) the Maximum Resale Price shall be recalculated based on the price paid for the Property by the Municipality or its designee, but not greater than the Applicable Foreclosure Price. **Said deed shall clearly state that it is made subject to the Restriction which is made part of the deed.** Failure to comply with the preceding sentence shall not affect the validity of the conveyance from the Owner to the Municipality or its designee or the enforceability of the restrictions herein.

(c) Not earlier than one hundred twenty (120) days following the delivery of the Foreclosure Notice to the Monitoring Agent, the Municipality and any senior Mortgagee(s) pursuant to subsection (a) above, the foreclosing Mortgagee may conduct the foreclosure sale or accept a deed in lieu of foreclosure. The Property shall be sold and conveyed in its then-current "as is, where is" condition, without representation or warranty of any kind, direct or indirect, express or implied, and with the benefit of and subject to all rights, rights of way, restrictions, easements, covenants, liens, improvements, housing code violations, public assessments, any and all unpaid federal or state taxes (subject to any rights of redemption for unpaid federal taxes), municipal liens and any other encumbrances of record then in force and applicable to the Property having priority over the foreclosing Mortgagee's mortgage, and further subject to a Restriction, as set forth below.

(d) In the event that the foreclosing Mortgagee conducts a foreclosure sale or other proceeding enforcing its rights under its mortgage and the Property is sold for a price in excess of the greater of the Maximum Resale Price and the Mortgage Satisfaction Amount, such excess shall be paid to the Municipality for its Affordable Housing Fund after (i) a final judicial determination, or (ii) a written agreement of all parties who, as of such date hold (or have been duly authorized to act for other parties who hold) a record interest in the Property, that the Municipality is entitled to such excess. The legal costs of obtaining any such judicial determination or agreement shall be deducted from the excess prior to payment to the Municipality. To the extent that the Owner possesses any interest in any amount which would otherwise be payable to the Municipality under this paragraph, to the fullest extent permissible by law, the Owner hereby assigns its interest in such amount to the Mortgagee for payment to the Municipality.

(e) If any Mortgagee shall acquire the Property by reason of foreclosure or upon conveyance of the Property in lieu of foreclosure, then the rights and restrictions contained herein shall apply to such Mortgagee upon such acquisition of the Property and to any purchaser of the Property from such Mortgagee, and the Property shall be conveyed subject to a Restriction identical in form and substance to this Restriction, which the Mortgagee that has so acquired the Property agrees to annex to the deed and to record with the deed, except that (i) during the term of ownership of the Property by such Mortgagee the owner-occupancy requirements of Section 2 hereof shall not apply, and (ii) the Maximum Resale Price shall be recalculated based on the price paid for the Property by such Mortgagee at the foreclosure sale, but not greater than the Applicable Foreclosure Price. **Said deed shall clearly state that it is made subject to the Restriction which is made part of the deed.** Failure to comply with the preceding sentence shall not affect the validity of the conveyance to the Mortgagee or the enforceability of the restrictions herein.

(f) If any party other than a Mortgagee shall acquire the Property by reason of foreclosure or upon conveyance of the Property in lieu of foreclosure, the Property shall be conveyed subject to a Restriction identical in form and substance to this Restriction, which the foreclosing Mortgagee agrees to annex to the deed and to record with the deed, except that (i) if the purchaser at such foreclosure sale or assignee of a deed in lieu of foreclosure is an Ineligible Purchaser, then during the term of ownership of the Property by such Ineligible Purchaser, the owner-occupancy requirements of Section 2 hereof shall not apply, and (ii) the Maximum Resale Price shall be recalculated based on the price paid for the Property by such third party purchaser at the

foreclosure sale, but not greater than the Applicable Foreclosure Price. **Said deed shall clearly state that it is made subject to the Restriction which is made part of the deed.** Failure to comply with the preceding sentence shall not affect the validity of the conveyance to such third party purchaser or the enforceability of the restrictions herein.

(g) Upon satisfaction of the requirements contained in this Section 7, the Monitoring Agent shall issue a Compliance Certificate to the foreclosing Mortgagee which, upon recording in the Registry, may be relied upon as provided in Section 6(b) hereof as conclusive evidence that the conveyance of the Property pursuant to this Section 7 is in compliance with the rights, restrictions, covenants and agreements contained in this Restriction.

(h) The Owner understands and agrees that nothing in this Restriction or the Regulatory Agreement (i) in any way constitutes a promise or guarantee by MassHousing, DHCD, the Municipality or the Monitoring Agent that the Mortgagee shall actually receive the Mortgage Satisfaction Amount, the Maximum Resale Price for the Property or any other price for the Property, or (ii) impairs the rights and remedies of the Mortgagee in the event of a deficiency.

(i) If a Foreclosure Notice is delivered after the delivery of a Conveyance Notice as provided in Section 4(a) hereof, the procedures set forth in this Section 7 shall supersede the provisions of Section 4 hereof.

8. Covenants to Run With the Property. (a) This Restriction, including all restrictions, rights and covenants contained herein, is an affordable housing restriction as that term is defined in Section 31 of Chapter 184 of the Massachusetts General Laws, having the benefit of Section 32 of such Chapter 184, and is enforceable as such. This Restriction has been approved by the Director of DHCD.

(b) In confirmation thereof the Owner (and the Grantor if this Restriction is attached to the Deed) intend, declare and covenant (i) that this Restriction, including all restrictions, rights and covenants contained herein, shall be and are covenants running with the land, encumbering the Property for the Term, and are binding upon the Owner and the Owner's successors in title and assigns, (ii) are not merely personal covenants of the Owner, and (iii) shall enure to the benefit of and be enforceable by the Municipality, the Monitoring Agent and DHCD and their successors and assigns, for the Term. Owner hereby agrees that any and all requirements of the laws of the Commonwealth of Massachusetts have been satisfied in order for the provisions of this Restriction to constitute restrictions and covenants running with the land and that any requirements of privity of estate have been satisfied in full.

9. Notice. Any notices, demands or requests that may be given under this Restriction shall be sufficiently served if given in writing and delivered by hand or mailed by certified or registered mail, postage prepaid, return receipt requested, to the following entities and parties in interest at the addresses set forth below, or such other addresses as may be specified by any party (or its successor) by such notice.

Municipality: _____

_____

_____

_____

Grantor: (applicable only if this Restriction is attached to the Deed)

Owner:

Monitoring Agent[s]

(1)

(2)

Others:

Any such notice, demand or request shall be deemed to have been given on the day it is hand delivered or mailed.

10. **Further Assurances.** The Owner agrees from time to time, as may be reasonably required by the Monitoring Agent, to furnish the Monitoring Agent upon its request with a written statement, signed and, if requested, acknowledged, setting forth the condition and occupancy of the Property, information concerning the resale of the Property and other material information pertaining to the Property and the Owner's conformance with the requirements of the Comprehensive Permit, Program and Program Guidelines, as applicable.

11. **Enforcement.** (a) The rights hereby granted shall include the right of the Municipality and the Monitoring Agent to enforce this Restriction independently by appropriate legal proceedings and to obtain injunctive and other appropriate relief on account of any violations including without limitation relief requiring restoration of the Property to the condition, affordability or occupancy which existed prior to the violation impacting such condition, affordability or occupancy (it being agreed that there shall be no adequate remedy at law for such violation), and shall be in addition to, and not in limitation of, any other rights and remedies available to the Municipality and the Monitoring Agent.

(b) Without limitation of any other rights or remedies of the Municipality and the Monitoring Agent, or their successors and assigns, in the event of any sale, conveyance or other transfer or occupancy of the Property in violation of the provisions of this Restriction, the Municipality and Monitoring Agent shall be entitled to the following remedies, which shall be cumulative and not mutually exclusive:

(i) specific performance of the provisions of this Restriction;

(ii) money damages for charges in excess of the Maximum Resale Price, if applicable;

(iii) if the violation is a sale of the Property to an Ineligible Purchaser except as permitted herein, the Monitoring Agent and the Municipality shall have the option to locate an Eligible Purchaser to purchase or itself purchase the Property from the Ineligible Purchaser on the terms and conditions provided herein; the purchase price shall be a price which complies with the provisions of this Restriction; specific performance of the requirement that an Ineligible Purchaser shall sell, as herein provided, may be judicially ordered.

(iv) the right to void any contract for sale or any sale, conveyance or other transfer of the Property in violation of the provisions of this Restriction in the absence of a Compliance Certificate, by an action in equity to enforce this Restriction; and

(v) money damages for the cost of creating or obtaining a comparable dwelling unit for an Eligible Purchaser.

(c) In addition to the foregoing, the Owner hereby agrees and shall be obligated to pay all fees and expenses (including legal fees) of the Monitoring Agent and/or the Municipality in the event successful enforcement action is taken against the Owner or Owner's successors or assigns. The Owner hereby grants to the Monitoring Agent and the Municipality a lien on the Property,

junior to the lien of any institutional holder of a first mortgage on the Property, to secure payment of such fees and expenses in any successful enforcement action. The Monitoring Agent and the Municipality shall be entitled to seek recovery of fees and expenses incurred in a successful enforcement action of this Restriction against the Owner and to assert such a lien on the Property to secure payment by the Owner of such fees and expenses. Notwithstanding anything herein to the contrary, in the event that the Monitoring Agent and/or Municipality fails to enforce this Restriction as provided in this Section, DHCD, if it is not named as Monitoring Agent, shall have the same rights and standing to enforce this Restriction as the Municipality and Monitoring Agent.

(d) The Owner for himself, herself or themselves and his, her or their successors and assigns, hereby grants to the Monitoring Agent and the Municipality the right to take all actions with respect to the Property which the Monitoring Agent or Municipality may determine to be necessary or appropriate pursuant to applicable law, court order, or the consent of the Owner to prevent, remedy or abate any violation of this Restriction.

12. **Monitoring Agent Services; Fees.** The Monitoring Agent shall monitor compliance of the Project and enforce the requirements of this Restriction. As partial compensation for providing these services, a Resale Fee [ ] shall [ ] shall not be payable to the Monitoring Agent on the sale of the Property to an Eligible Purchaser or any other purchaser in accordance with the terms of this Restriction. This fee, if imposed, shall be paid by the Owner herein as a closing cost at the time of Closing, and payment of the fee to the Monitoring Agent shall be a condition to delivery and recording of its certificate, failing which the Monitoring Agent shall have a claim against the new purchaser, his, her or their successors or assigns, for which the Monitoring Agent may bring an action and may seek an attachment against the Property.

13. **Actions by Municipality.** Any action required or allowed to be taken by the Municipality hereunder shall be taken by the Municipality's Chief Executive Officer or designee.

14. **Severability.** If any provisions hereof or the application thereof to any person or circumstance are judicially determined, to any extent, to be invalid or unenforceable, the remainder hereof, or the application of such provision to the persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby.

15. **Independent Counsel.** THE OWNER ACKNOWLEDGES THAT HE, SHE, OR THEY HAVE READ THIS DOCUMENT IN ITS ENTIRETY AND HAS HAD THE OPPORTUNITY TO CONSULT LEGAL AND FINANCIAL ADVISORS OF HIS, HER OR THEIR CHOOSING REGARDING THE EXECUTION, DELIVERY AND PERFORMANCE OF THE OBLIGATIONS HEREUNDER.

16. **Binding Agreement.** This Restriction shall bind and inure to the benefit of the persons, entities and parties named herein and their successors or assigns as are permitted by this Restriction.

17. **Amendment.** This Restriction may not be rescinded, modified or amended, in whole or in part, without the written consent of the Monitoring Agent, the Municipality and the holder of any mortgage or other security instrument encumbering all or any portion of the Property, which written consent shall be recorded with the Registry.

Executed as a sealed instrument this _____ day of _____, 200___.

Grantor:
(applicable only if this Restriction is attached to the Deed)

Owner:

By: _____ By: _____

_____**[Space Below This Line for Acknowledgement]**_____

COMMONWEALTH OF MASSACHUSETTS

_____ County, ss.

On this ____ day of _____, 200__, before me, the undersigned notary public, personally appeared _____, the _____ of _____ in its capacity as the _____ of _____, proved to me through satisfactory evidence of identification, which was [a current driver's license] [a current U.S. passport] [my personal knowledge], to be the person whose name is signed on the preceding instrument and acknowledged the foregoing instrument to be his or her free act and deed and the free act and deed of _____ as _____ _____ of _____.

_____
Notary Public
My commission expires:

COMMONWEALTH OF MASSACHUSETTS

_____ County, ss. _____, 200__

On this ____ day of _____, 200__, before me, the undersigned notary public, personally appeared _____, the _____ of _____ in its capacity as the _____ of _____, proved to me through satisfactory evidence of identification, which was [a current driver's license] [a current U.S. passport] [my personal knowledge], to be the person whose name is signed on the preceding instrument and acknowledged the foregoing instrument to be his or her free act and deed and the free act and deed of _____ as _____ _____ of _____.

_____

Notary Public

My commission expires:

Exhibit F

ProForma

Application for Chapter 40B Project Eligibility/Site Approval for MassHousing-Financed and New England Fund ("NEF") Homeownership Projects

Section 5: FINANCIAL INFORMATION – Site Approval Application Homeownership 40B

In order to issue Site Approval, MassHousing must find (as required by 760 CMR 56.04 (4)) that an initial pro forma has been reviewed and that the Proposed Project appears financially feasible and consistent with the Chapter 40B Guidelines, and that the Proposed Project is fundable under the applicable program.

Name of Proposed Project: Still River Commons

Initial Capital Budget *(please enter "0" when no such sales/revenue or cost is anticipated)*

Sales / Revenue

Market	2,100,000.00
Affordable	360,000.00
Related Party	
Other Income	
Total Sales/Revenue	2,460,000.00

Pre-Permit Land Value, Reasonable Carrying Costs

Item	Budgeted
Site Acquisition: pre-permit land value *(to be determined by MassHousing commissioned appraisal)* plus reasonable carrying costs.	$173,000.00 plus $50,000.00 permitting

Costs

Item	Budgeted
Acquisition Cost	
Site Acquisition: pre-permit land value (to be determined by MassHousing Commissioned Appraisal) plus reasonable carrying costs	173,000.00
Subtotal Acquisition Costs	173,000.00
Construction Costs-Residential Construction (Hard Costs)	
Building Structure Costs	1,200,000.00
Hard Cost Contingency	60,000.00
Subtotal – Residential Construction (Hard Costs)	1,260,000.00

Costs

Item	Budgeted
Construction Costs–Site Work (Hard Costs)	
Earth Work	250,000.00
Utilities: On Site	20,000.00
Utilities: Off-Site	
Roads and Walks	
Site Improvement	50,000.00
Lawns and Planting	15,000.00
Geotechnical Condition	
Environmental Remediation	
Demolition	
Unusual Site Conditions/Other Site Work	
Subtotal –Site Work (Hard Costs)	335,000.00
Construction Costs–General Conditions, Builders Overhead and Profit (Hard Costs)	
General Conditions	50,000.00
Builder's Overhead	50,000.00
Builder's Profit	
Subtotal – General Conditions Builder's Overhead and Profit (Hard Costs)	100,000.00
General Development Costs (Soft Costs)	
Appraisal and Marketing Study *(not 40B "as is" appraisal)*	1,000.00
Lottery	
Commissions/Advertising-Affordable	10,000.00
Commissions/Advertising-Market	105,000.00
Model Unit	5,000.00
Closing Costs *(unit sales)*	24,000.00
Real Estate Taxes *(during construction)*	7,000.00
Utility Usage *(during construction)*	2,000.00
Insurance *(during construction)*	2,000.00
Security *(during construction)*	
Inspecting Engineer	
Fees to Others	
Construction Loan Interest	12,000.00
Fees to Construction Lender	3,000.00
Architectural	2,000.00
Engineering	4,000.00
Survey, Permits, Etc.	18,000.00
Clerk of the Works	
Construction Manager	50,000.00

Item	Budgeted
General Development Costs (Soft Costs) – *Continued*	
Bond Premiums *(Payment/Performance/Lien Bond)*	
Legal	6,000.00
Title *(including title insurance)* and Recording	
Accounting and Cost Certification *(incl. 40B)*	10,000.00
Relocation	
40B Site Approval Processing Fee	5,000.00
40B Technical Assistance/Mediation Fund Fee	
40B Land Appraisal Cost *(as-is value)*	500.00
40B Final Approval Processing Fee	5,000.00
40B Subsidizing Agency Cost Certification Examination Fee	
40B Monitoring Agent Fees	3,000.00
40B Surety Fees	
Other Financing Fees	
Development Consultant	
Other Consultants *(describe)*	
Other Consultants *(describe)*	
Soft Cost Contingency	40,000.00
Other General Development (Soft) Costs	
Subtotal – General Development Costs (Soft Costs)	314,500.00
Developer Overhead	
Developer Overhead	80,000.00
Subtotal – Developer Overhead	80,000.00
Summary of Subtotals	
Sales/Revenue	2,460,000.00
Site Acquisition	173,000.00
Residential Construction	1,260,000.00
Site Work	335,000.00
Builder's Overhead, Profit and General Conditions	100,000.00
General Development Costs	314,500.00
Developer Overhead	80,000.00
Summary	
Total Sales/Revenue	2,460,000.00
Total Development Costs (TDC)	2,262,500.00
Profit (Loss) from Sales/Revenue	197,500.00
Percentage of Profit (Loss) Over the Total Development Costs	8.73%

Exhibit G

Regulatory Agreement

REGULATORY AGREEMENT

For Comprehensive Permit Projects in Which Funding is Provided Through Other than a State Entity

This Regulatory Agreement (this "Agreement") is made as of the ___ day of _____ 20__, by and between the Massachusetts Housing Finance Agency acting as Subsidizing Agency as defined under the provisions of 760 CMR 56.02 (the "Subsidizing Agency"), and _____, a Massachusetts _____, having an address at _____, and its successors and assigns (the "Developer").

RECITALS

WHEREAS, the Developer intends to construct a housing development known as _____ consisting of _____ for-sale [*condominium units/single-family*] residences (the "Project") on a ____-acre site located at _____ in the [*City/Town*] of _____ (the "Municipality"), which property is more particularly described in Exhibit A attached hereto and made a part hereof; and

WHEREAS, the Project is being financed with a $_____ construction loan from _____ (the "NEF Lender"), a non-governmental entity; and

WHEREAS, the Massachusetts Housing Finance Agency acts as Subsidizing Agency for the Project, on behalf of DHCD, pursuant to Massachusetts General Laws Chapter 40B Sections 20-23 (the "Act"), the regulations at 760 CMR 56.00, and the Comprehensive Permit Guidelines issued pursuant thereto (collectively, the "Comprehensive Permit Rules"); and

WHEREAS, the Developer has received a comprehensive permit (as it may previously have been amended, the "Comprehensive Permit") from the Zoning Board of Appeals of the Municipality in accordance with the Act, which permit is [*recorded/filed*] at the _____ County [*Registry of Deeds/Registry District of Land Court*] ("Registry") [*in Book* _____, *Page* _____ / *as Document No.* _____*]*, as amended by the terms of this Agreement; and

WHEREAS, pursuant to the requirements of the Comprehensive Permit Rules, twenty-five percent (25%) of the units in the Project (__ units) (the "Affordable Units") will be sold at prices specified in this Agreement to Eligible Purchasers (as defined herein) and will be subject to resale restrictions as set forth herein; and

WHEREAS, the Subsidizing Agency may delegate to an affordability monitoring agent (the "Affordability Monitoring Agent") certain administration, monitoring and enforcement services regarding compliance of the Project with the Comprehensive Permit Rules during the period of affordability of the Affordable Units; and

WHEREAS, the parties recognize that Affirmative Fair Marketing (as defined herein) is an important precondition for initial sales and resales of Affordable Units and that local preference cannot be granted in a manner which results in a violation of applicable fair housing laws and regulations.

NOW, THEREFORE, in consideration of the agreements hereinafter set forth, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Subsidizing Agency and the Developer hereby agree as follows:

1. Definitions. Capitalized terms used and not defined herein shall have the same meaning as set forth in the Affordable Housing Restriction attached hereto as Exhibit B and incorporated herein by reference (the "Affordable Housing Restriction"). In addition to the defined terms in the Affordable Housing Restriction and the capitalized terms defined in the Recitals above, the following terms shall have the meanings set forth below:

Affordability Monitoring Services Agreement shall have the meaning set forth in Section 5 hereof.

Affordability Requirement shall mean the obligations of the Developer described in Section 3 hereof.

Allowable Profit shall have the meaning set forth in Section 4(a) hereof.

Cost Examination shall have the meaning set forth in Section 4(b) hereof.

DHCD shall mean the Department of Housing and Community Development.

Eligible Purchaser shall have the meaning set forth in the Affordable Housing Restriction attached hereto as Exhibit B, and, in addition, must also (i) be a First-Time Homebuyer, and (ii) own assets not in excess of the limit set forth in the Comprehensive Permit Rules.

Excess Profit shall have the meaning set forth in Section 4(e) hereof.

Event of Default shall have the meaning set forth in Section 10(a) hereof.

Limited Dividend Requirement shall mean the obligations of the Developer described in Section 4 hereof.

Limited Dividend Monitoring Services Agreement shall have the meaning set forth in Section 4 hereof.

Marketing Documentation shall have the meaning set forth in Section 3(c) hereof.

Marketing Plan shall have the meaning set forth in Section 3(c) hereof.

Maximum Initial Sale Price means the purchase price for which a credit-worthy Eligible Purchaser earning seventy percent (70%) of the Area Median Income for an Appropriate Size Household could obtain mortgage financing as determined by the Subsidizing Agency using the same methodology then used by DHCD for its Local Initiative Program or similar comprehensive permit program.

Plans and Specifications shall have the meaning set forth in Section 2 hereof.

Resale Price Certificate means the certificate in recordable form issued by the Subsidizing Agency and recorded with the first deed of each Affordable Unit from the Developer to the initial Eligible Purchaser, which certificate sets forth the Resale Price Multiplier to be applied on the resale of such Affordable Unit, according to the terms of the Affordable Housing Restriction for such unit, for so long as the restrictions set forth in the Affordable Housing Restriction continue, and any subsequent certificate issued by the Affordability Monitoring Agent in accordance with the terms of the Affordable Housing Restriction.

Substantial Completion shall have occurred for purposes of this Agreement when the construction of the Project is sufficiently complete so that all of the units may be occupied and amenities may be used for their intended purpose, except for designated punch list items and seasonal work which does not interfere with the residential use of the Project.

Term shall have the meaning set forth in Section 14(a) hereof.

Total Development Costs means the total budget for the acquisition and construction of the Project (including both hard and soft costs and such other sums as the Subsidizing Agency may determine constitute the Developer's contribution to the Project, but not including any fee paid to the Developer), as approved by Subsidizing Agency pursuant to the Comprehensive Permit Rules, this Regulatory Agreement, and the Limited Dividend Monitoring Services Agreement, using the standards of the Subsidizing Agency applicable to comprehensive permit projects, and as finally determined by the Subsidizing Agency in accordance with the Comprehensive Permit Rules.

2. Construction Obligations. (a) The Developer agrees to construct the Project in accordance with plans and specifications approved by the Subsidizing Agency and the Municipality (the "Plans and Specifications"), in accordance with all on-site and off-site construction, design and land use conditions of the Comprehensive Permit, and in accordance with the information describing the Project provided by the Developer to the

Subsidizing Agency in its Application for Final Approval. All Affordable Units to be constructed as part of the Project must be similar in exterior appearance to other units in the Project and shall be evenly dispersed throughout the Project. In addition, all Affordable Units must contain complete living facilities including but not limited to a stove, kitchen cabinets, plumbing fixtures, and washer/dryer hookup, all as more fully shown in the Plans and Specifications. Materials used for the interiors of the Affordable Units must be of good quality. The Project must fully comply with the State Building Code and with all applicable state and federal building, environmental, health, safety and other laws, rules, and regulations, including without limitation all applicable federal and state laws, rules and regulations relating to the operation of adaptable and accessible housing for the handicapped. Except to the extent that the Project is exempted from such compliance by the Comprehensive Permit, the Project must also comply with all applicable local codes, ordinances and by-laws. The Affordable Units shall be constructed on a schedule that provides substantially for the construction of one (1) Affordable Unit for every three (3) market rate units constructed. In no event shall any five (5) market rate units be constructed without completion of one Affordable Unit.

(b) The Subsidizing Agency shall monitor compliance with the construction obligations set forth in this section in such manner as the Subsidizing Agency may deem reasonably necessary. In furtherance thereof, the Developer shall provide to the Subsidizing Agency (i) evidence that the final plans and specifications for the Development comply with the requirements of the Comprehensive Permit and that the Development was built substantially in accordance with such plans and specifications; and (ii) such information as the Subsidizing Agency may reasonably require concerning the expertise, qualifications and scope of work of any construction monitor proposed by the NEF Lender, and if such information is acceptable to the Subsidizing Agency, the Developer shall provide to the Subsidizing Agency prior to commencement of construction a certification from the NEF Lender concerning construction monitoring in a form acceptable to the Subsidizing Agency. Such certification shall also include a representation that the NEF Lender will maintain certain minimum funding levels to meet the subsidy requirements of the Act.

3. Affordability Requirement. (a) The Developer shall sell the Affordable Units only to Eligible Purchasers at no greater than the Maximum Initial Sale Price. There shall be Affirmative Fair Marketing and the Developer shall comply with the lottery procedures set forth in the Comprehensive Permit Rules prior to the selection of an Eligible Purchaser. At the time of sale of each Affordable Unit by the Developer, the Developer shall execute and shall as a condition of the sale cause the purchaser of the Affordable Unit to execute an Affordable Housing Restriction in the form of Exhibit B attached hereto and incorporated herein by reference. Such Affordable Housing Restriction shall be attached to and made a part of the deed from the Developer to the initial purchaser of the Affordable Unit and each subsequent deed of such unit so that the affordability of the Affordable Unit will be preserved each time a resale of the Affordable Unit occurs.

(b) Prior to the publication of any Marketing Documentation for the Affordable Units, the Developer shall request the Subsidizing Agency to calculate the Maximum Initial Sale Price for each Affordable Unit and shall advertise the price so calculated in marketing the Affordable Units. Prior to the delivery of the first deed for each Affordable Unit, the Developer shall notify the Subsidizing Agency of the actual purchase price for each Affordable Unit (which shall in no event be greater than the Maximum Initial Sale Price calculated by the Subsidizing Agency), and the Subsidizing Agency shall issue a Resale Price Certificate to the Developer calculating the Resale Price Multiplier. The Developer shall as a condition of the sale cause the purchaser to record the Resale Price Certificate immediately after the first deed of each Affordable Unit.

(c) Prior to marketing or otherwise making available for sale any of the Units, the Developer must obtain the Subsidizing Agency's approval of a marketing plan (the "Marketing Plan") for the Affordable Units to be administered under the supervision of the Affordability Monitoring Agent. After such approval, the Marketing Plan may not be amended without the Subsidizing Agency's consent. The Marketing Plan must describe the buyer selection process for the Affordable Units, including any lottery or similar procedure for choosing among Eligible Purchasers, and must provide for Affirmative Fair Marketing of Affordable Units. If required under the Comprehensive Permit and approved by the Subsidizing Agency, the Marketing Plan may also include a preference for local residents, which in no event may exceed more than seventy percent (70%) of the Affordable Units; provided that, in the event a local resident preference is established, use of the preference shall not violate applicable fair housing laws and regulations. All costs of carrying out the Marketing Plan with respect to outreach, location and selection of the initial Eligible Purchasers shall be paid by the Developer; thereafter, such costs shall be paid from the Resale Fee (as defined in the Affordable Housing Restriction). The Developer agrees to maintain for at least five (5) years following the sale of the last Affordable Unit, a record of all newspaper ads, outreach letters, translations, leaflets, and all Affirmative Fair Marketing efforts (collectively "Marketing Documentation") as described in the Marketing Plan. The Marketing Documentation may be inspected at any time by the Affordability Monitoring Agent, the Subsidizing Agency and the Municipality. If at any time prior to or during the initial process of marketing the Affordable Units, the Subsidizing Agency determines that the Developer or the Affordability Monitoring Agent has not adequately complied with the approved Marketing Plan, the Developer or Affordability Monitoring Agent, as the case may be, shall take such additional corrective measures as shall be specified by the Subsidizing Agency.

4. Limited Dividend Requirement. (a) The Developer agrees that the aggregate profit from the Project which shall be payable to the Developer or to the partners, shareholders or other owners of Developer or the Project shall not exceed twenty percent (20%) of Total Development Costs (the "Allowable Profit"), which development costs have been approved by the Subsidizing Agency pursuant to the Comprehensive Permit Rules, this Regulatory Agreement, and the Limited Dividend Monitoring Services Agreement attached hereto as Exhibit C and incorporated herein by

reference (the "Limited Dividend Monitoring Services Agreement"). Notwithstanding the foregoing, the Subsidizing Agency shall have the sole right to approve the Cost Examination and to determine the Allowable Profit. For so long as the Developer complies with the requirements of this section, the Developer shall be deemed to be a limited dividend organization within the meaning of the Act.

(b) Within one hundred-eighty (180) days after Substantial Completion of the Project, or, if later, within ninety (90) days of the date on which all units in the Project are sold, the Developer shall deliver to the Subsidizing Agency an itemized statement of Total Development Costs together with a statement of gross income from the Project received by the Developer to date in the format provided in the Subsidizing Agency's Cost Examination Program applicable to the Project along with all other documents required by the Cost Examination Program (the "Cost Examination"). The Cost Examination must be prepared and certified by a certified public accountant (satisfactory to the Subsidizing Agency) in accordance with the attestation standards established by the American Institute of Certified Public Accountants. If all units in the Project have not been sold as of the date the Cost Examination is delivered to the Subsidizing Agency, the Developer shall at least once every ninety (90) days thereafter until such time as all of the Units are sold, deliver to the Subsidizing Agency an updated Cost Examination. If all units have not been sold within twenty-four (24) months of Substantial Completion, a sale price for the remaining unsold units shall be imputed in an amount equal to the average of the last three (3) arm's-length sales of comparable units, and a final Cost Examination shall be required within ninety (90) days thereafter. The Subsidizing Agency may allow additional time for submission of the Cost Examination if significant issues are determined to exist which prevent the timely submission of the Cost Examination, and may in certain circumstances (such as a halt in construction for a significant period of time) require submission of an interim Cost Examination within ninety (90) days of written notice to the Developer.

(c) All related party transactions resulting in Project costs or income must be disclosed in the Cost Examination, and documentation must be provided identifying, where applicable, what portion of costs were paid to non-related third parties (e.g., subcontractors) and what portion were retained by related parties. In the event that any unit sales are made to related parties, the amount of income to be included in the Cost Examination for such sales shall be the greater of (i) the actual sales price of the unit, and (ii) the average sales price of the highest three (3) arm's-length sales of comparable units.

(d) If any unit is sold prior to the date the final Cost Examination is approved by the Subsidizing Agency, the Developer shall upon the request of the Subsidizing Agency provide evidence reasonably satisfactory to the Subsidizing Agency that any profit distributed to the Developer or to the partners, shareholders or other owners of Developer or the Project on such sale, combined with reasonably projected total profits from the Project, will not exceed the Allowable Profit.

(e) All profits from the Project in excess of the Allowable Profit, as finally determined by the Subsidizing Agency (the "Excess Profit"), shall be paid by the Developer to the Municipality promptly after such determination.

5. Affordability Monitoring Agent. At the request of the Subsidizing Agency, the Developer shall retain one or more Affordability Monitoring Agents for purposes of administration, monitoring and enforcement under this Agreement pursuant to an agreement substantially in the form of the Affordability Monitoring Services Agreement attached hereto as Exhibit D and incorporated herein by reference (the "Affordability Monitoring Services Agreement"). All notices and reports required to be submitted under this Agreement shall be submitted simultaneously to the specified entity and to the Affordability Monitoring Agent. The Affordability Monitoring Services Agreement may be terminated by the Subsidizing Agency or the Affordability Monitoring Agent as provided in the Affordability Monitoring Services Agreement. In the event of such termination, a successor monitoring agent shall be selected in accordance with the provisions of the Affordability Monitoring Services Agreement, and thereafter such successor shall be the Affordability Monitoring Agent for the Project.

6. Developer's Representations, Covenants and Warranties. The Developer hereby represents, covenants and warrants as follows:

(a) The Developer (i) is a _____ duly organized under the laws of the Commonwealth of Massachusetts, and is qualified to transact business under the laws of said Commonwealth, (ii) has the power and authority to own its properties and assets and to carry on its business as now being conducted, and (iii) has the full legal right, power and authority to execute and deliver this Agreement.

(b) The execution and performance of this Agreement by the Developer (i) will not violate or, as applicable, has not violated any provision of law, rule or regulation, or any order of any court or other agency or governmental body, and (ii) will not violate or, as applicable, has not violated any provision of any indenture, agreement, mortgage, mortgage note, or other instrument to which the Developer is a party or by which it or the Project is bound, and (iii) will not result in the creation or imposition of any prohibited encumbrance of any nature.

(c) The Developer will, at the time of execution and delivery of this Agreement, have good and marketable title to the premises constituting the Project free and clear of any lien or encumbrance (subject to encumbrances created pursuant to this Agreement, and any other documents executed in connection with the loan from the NEF Lender, or other encumbrances permitted by the Subsidizing Agency).

(d) There is no action, suit or proceeding at law or in equity or by or before any governmental instrumentality or other agency now pending, or, to the knowledge of the Developer, threatened against or affecting it, or any of its properties or rights, which, if adversely determined, would materially impair its right to carry on business

substantially as now conducted (and as now contemplated by this Agreement) or would materially adversely affect its financial condition.

(e) (i) That the undersigned Trustee(s) are the sole Trustee(s) of said Trust, duly appointed in accordance with the terms of the Trust; (ii) that said Trust has not been altered, amended, revoked, or terminated, and is presently in full force and effect as recorded; (iii) that pursuant to the powers granted under said Trust, the Trustee(s) have the power and authority to execute this Agreement, transfer real estate, and to execute and deliver deeds and related closing documents of any or all trust property; (iv) that if under said Trust the consent of beneficiaries is required to authorize the Trustee(s) to execute this Agreement, that written consent of all beneficiaries has been obtained; and (v) that no beneficiary is a minor, a corporation selling all or substantially all of its assets or a personal representative of an estate subject to estate tax liens or is now deceased or under any legal disability. **[for use when Developer is nominee trust]**

7. No Discrimination. There shall be full compliance with the provisions of all state or local laws prohibiting discrimination in housing, and the Developer shall not discriminate in the selection of buyers for the units in the Project on the basis of race, color, religion, sex, national origin, genetic information, ancestry, sexual orientation, age, familial status, children, marital status, veteran status or membership in the armed services, the receiving of public assistance, or physical or mental disability; and the Developer shall not so discriminate in connection with the employment or application for employment of persons for the construction, operation or management of the Project.

8. Restrictions on Transfers and Junior Encumbrances. Except for sales of units to homebuyers as permitted by the terms of this Agreement, Developer shall not sell, convey, transfer, ground lease, lease, exchange, pledge, assign, mortgage or otherwise transfer its interest, or any portion of its interest, in the Project or any portion of the Project without the prior written consent of the Subsidizing Agency. In the event the Subsidizing Agency grants such approval, the Developer agrees, prior to any transfer of ownership of the Project or any portion thereof or interest therein, to secure from the transferee a written agreement stating that the transferee will assume in full the Developer's obligations and duties under this Agreement.

9. Casualty. Until such time as decisions regarding repair of damage due to fire or other casualty, or restoration after taking by eminent domain, shall be made by a condominium association or trust not controlled by the Developer (or if the Project consists of detached dwellings, by homebuyers), Developer agrees that if the Project, or any part thereof, shall be damaged or destroyed or shall be condemned or acquired for public use, the Developer shall use its best efforts to repair and restore the Project to substantially the same condition as existed prior to the event causing such damage or destruction, or to relieve the condemnation, and thereafter to operate the Project in accordance with the terms of this Agreement, subject to the approval of the Subsidizing Agency.

10. Defaults; Remedies. (a) Any default, violation, or breach of obligations of the Developer hereunder shall constitute an Event of Default hereunder (an "Event of Default") if such default, violation, or breach is not cured to the satisfaction of the Subsidizing Agency within thirty (30) days after the Subsidizing Agency or the Affordability Monitoring Agent gives notice to the Developer. At any time after the occurrence of an Event of Default, at the Subsidizing Agency's option, and without further notice, the Subsidizing Agency may apply to any state or federal court for specific performance of this Agreement, or the Subsidizing Agency may exercise any other remedy at law or in equity or take any other action as may be necessary or desirable to correct non-compliance with this Agreement, including without limitation drawing upon the additional security described in Section 11 below. The Affordability Monitoring Agent shall have the same rights as the Subsidizing Agency to exercise remedies hereunder.

(b) The Developer shall pay all fees and expenses (including legal fees) of the Subsidizing Agency and the Affordability Monitoring Agent incurred in connection with enforcement of the Developer's obligations hereunder. The Developer hereby grants to the Subsidizing Agency and the Affordability Monitoring Agent a lien on the Project, junior to the lien securing the loan from the NEF Lender, to secure payment of such fees and expenses. The Subsidizing Agency and the Affordability Monitoring Agent may perfect a lien on the Project by recording/filing one or more certificates setting forth the amount of the costs and expenses due and owing in the Registry. A purchaser of the Project or any portion of the Project shall be liable for the payment of any unpaid costs and expenses which were the subject of a recorded/filed certificate prior to the purchaser's acquisition of the Project or any portion thereof.

(c) The Subsidizing Agency and the Affordability Monitoring Agent shall have access during normal business hours to all books and records of the Developer and the Project in order to monitor the Developer's compliance with the terms of this Agreement.

(d) The Developer agrees to submit any information, documents or certifications requested by the Subsidizing Agency or the Affordability Monitoring Agent that either shall deem necessary or appropriate to evidence the continuing compliance of the Developer with the terms of this Agreement.

11. Additional Security. As required by 760 CMR 56.04(7)(c), the Developer shall secure to the Subsidizing Agency adequate financial surety to ensure completion of the Cost Examination and to ensure distribution of any Excess Profit. In furtherance of the Developer's obligations hereunder to construct the Project in accordance with the Plans and Specifications, to comply with the Affordability Requirement and otherwise to comply with its obligations under this Agreement, the Developer shall deliver to the Subsidizing Agency such additional security as the Subsidizing Agency may deem reasonable in form and amount ("Additional Security"). The Subsidizing Agency may waive the requirement for such Additional Security in its sole discretion.

12. Governing Law. This Agreement shall be governed by the laws of the Commonwealth of Massachusetts. Any amendments to this Agreement must be in writing and executed by all of the parties hereto. The invalidity of any clause, part, or provision of this Agreement shall not affect the validity of the remaining portions hereof.

13. Notices. (a) All notices to be given pursuant to this Agreement shall be in writing and shall be deemed given when delivered by hand or when mailed by certified or registered mail, postage prepaid, return receipt requested, to the parties hereto at the addresses set forth below, or to such other place as a party (or its successor) may from time to time designate by written notice:

The Subsidizing Agency:

Massachusetts Housing Finance Agency
One Beacon Street
Boston, MA 02108
Attention: Director of Comprehensive Permit Programs

Developer:

Affordability Monitoring Agent:

(b) The Developer shall notify the Subsidizing Agency and the Affordability Monitoring Agent promptly upon the occurrence of the following events: (i) the date of satisfaction of all conditions to funding the loan from the NEF Lender; (ii) issuance of the building permit for the Project or any portion thereof; (iii) Substantial Completion; (iv) sale of the first unit in the Project; (v) sale of the first Affordable Unit; (vi) sale of the last Affordable Unit; and (vii) sale of the last unit in the Project.

14. Term. (a) The term of this Agreement (the "Term") shall continue until the date the Affordability Monitoring Agent and the Subsidizing Agency have determined that the Developer has complied with the Affordability Requirement and the Limited Dividend Requirement, including all substantive and reporting requirements hereunder. The recording of a discharge of this Agreement executed by the Subsidizing Agency shall evidence the end of the Term.

(b) The Developer intends, declares and covenants on behalf of itself and its successors and assigns that this Agreement and the covenants, agreements and restrictions contained herein (i) shall be and are covenants running with the land, encumbering the Project for the Term, and are binding upon the Developer's successors in title, (ii) are not merely personal covenants of the Developer, and (iii) shall bind the

Developer, its successors and assigns and enure to the benefit of the Subsidizing Agency and its successors and assigns for the Term. Developer hereby agrees that any and all requirements of the laws of the Commonwealth of Massachusetts to be satisfied in order for the provisions of this Agreement to constitute restrictions and covenants running with the land shall be deemed to be satisfied in full and that any requirements of privity of estate are also deemed to be satisfied in full.

(c) This Agreement and the use and resale restrictions contained in each of the Affordable Housing Restrictions which are to encumber each of the Affordable Units at the Project pursuant to the requirements of this Agreement shall constitute an affordable housing restriction as that term is defined in Section 31 of Chapter 184 of the Massachusetts General Laws. Such restrictions shall be for the benefit of the Municipality and the Affordability Monitoring Agent, and the Municipality and the Affordability Monitoring Agent shall be deemed to be the holders of the affordable housing restriction created by the restrictions in each of the Affordable Housing Restrictions.

15. Subsidized Housing Inventory. The Affordable Units shall be included in the Subsidized Housing Inventory as that term is described in 760 CMR 56.03(2) in accordance with rules and regulations issued by DHCD, as amended from time to time.

16. Recording. Upon execution, the Developer shall immediately cause this Agreement and any amendments hereto to be recorded or filed with the Registry, and the Developer shall pay all fees and charges incurred in connection therewith. Upon recording or filing, as applicable, the Developer shall immediately transmit to the Subsidizing Agency and the Affordability Monitoring Agent evidence of such recording or filing including the date and instrument, book and page or registration number of the Agreement.

17. Intent and Effect. The terms and conditions of this Agreement have been freely accepted by the parties. The provisions and restrictions contained herein exist to further the mutual purposes and goals of DHCD, the Subsidizing Agency, the Municipality and the Developer set forth herein to create and preserve access to land and to decent and affordable homeownership opportunities for eligible families who are often denied such opportunities for lack of financial resources.

18. Miscellaneous. (a) The rights and obligations of the Subsidizing Agency under this Agreement shall continue for the Term, regardless of whether the loan from the NEF Lender is still outstanding.

(b) Neither the Subsidizing Agency nor the Affordability Monitoring Agent shall be held liable for any action taken or omitted under this Agreement so long as it shall have acted in good faith and without gross negligence.

(c) The Developer, for itself and its successors and assigns, agrees to indemnify and hold harmless the Subsidizing Agency and Affordability Monitoring

Agent against all damages, costs and liabilities, including reasonable attorney's fees, asserted against the Subsidizing Agency or the Affordability Monitoring Agent by reason of its relationship to the Project under this Agreement and not involving the Subsidizing Agency or the Affordability Monitoring Agent acting in bad faith and with gross negligence.

(d) This Agreement shall not be amended without written consent of the Developer and the Subsidizing Agency.

(e) If at any time during the Term there is no Affordability Monitoring Agent, the Subsidizing Agency shall have all the rights and obligations set forth herein as rights and obligations of the Affordability Monitoring Agent.

19. Conflict. In the event of any conflict or inconsistency (including without limitation more restrictive terms) between the terms of the Comprehensive Permit, any other document relating to the Project and the terms of this Agreement, the terms of this Agreement shall control.

[Remainder of page intentionally left blank.]

Executed as a sealed instrument as of the date first above written.

[*DEVELOPER*]

By: _____
Name:
Title:

MASSACHUSETTS HOUSING FINANCE AGENCY, as Subsidizing Agency as aforesaid

By: _____
Gina B. Dailey, Director of Comprehensive Permit Programs

Acknowledgement of Zoning Board of Appeals
Exhibit A – Legal Description
Exhibit B – Form of Affordable Housing Restriction
Exhibit C – Form of Limited Dividend Monitoring Services Agreement
Exhibit D – Form of Affordability Monitoring Services Agreement

COMMONWEALTH OF MASSACHUSETTS

_____ County, ss.

On this ____ day of _____, 20___, before me, the undersigned notary public, personally appeared _____, the _____ of _____ , proved to me through satisfactory evidence of identification, which was [a current driver's license] [a current U.S. passport] [my personal knowledge], to be the person whose name is signed on the preceding instrument and acknowledged the foregoing instrument to be their free act and deed and the free act and deed of _____.

_____
Notary Public
My commission expires:

COMMONWEALTH OF MASSACHUSETTS

_____ County, ss.

On this ____ day of _____, 20___, before me, the undersigned notary public, personally appeared Gina B. Dailey, Director of Comprehensive Permit Programs of the Massachusetts Housing Finance Agency, as Subsidizing Agency as aforesaid, proved to me through satisfactory evidence of identification, which was my personal knowledge, to be the person whose name is signed on the preceding instrument and acknowledged the foregoing instrument to be her free act and deed and the free act and deed of Massachusetts Housing Finance Agency.

_____
Notary Public
My commission expires:

ACKNOWLEDGEMENT OF ZONING BOARD OF APPEALS

The undersigned duly appointed Chairman and members of the _____ Zoning Board of Appeals hereby acknowledge that, after due consideration of the Developer's request, pursuant to the requirements of 760 CMR 56.05(11), the Board hereby agrees that the foregoing Regulatory Agreement, including the terms and conditions of the form of Affordable Housing Restriction, Affordability Monitoring Services Agreement, and Limited Dividend Monitoring Services Agreement attached thereto, satisfy the requirements of the Comprehensive Permit as defined therein. Without limiting the generality of the foregoing, the units in the Project required to be affordable under the Comprehensive Permit shall be affordable if such units are subject to an Affordable Housing Restriction in the form attached to the foregoing Regulatory Agreement; any local preference set forth in the Comprehensive Permit shall be implemented only to the extent in compliance with applicable state and federal fair housing rules; and compliance with the limited dividend requirement shall be determined solely by the Subsidizing Agency (as defined at 760 CMR 56.02) under the Regulatory Agreement using the standards of the Subsidizing Agency applicable to comprehensive permit projects in accordance with the Comprehensive Permit Guidelines. In addition, the conflict provision of the Regulatory Agreement shall control over any conflict provision of the Comprehensive Permit.

_____ ZONING BOARD OF APPEALS

_____
Chairman

_____

_____

_____

_____

COMMONWEALTH OF MASSACHUSETTS

_____ County, ss.

On this ____ day of _____, 20__, before me, the undersigned notary public, personally appeared _____, the Chairman of the _____ Zoning Board of Appeals, proved to me through satisfactory evidence of identification, which was [a current driver's license] [a current U.S. passport] [my personal knowledge], to be the person whose name is signed on the preceding instrument and acknowledged the foregoing instrument to be his or her free act and deed and the free act and deed of the _____ Zoning Board of Appeals.

_____
Notary Public
My commission expires:

EXHIBIT A

Legal Description

EXHIBIT B

Affordable Housing Restriction

(see attached)

EXHIBIT C

Limited Dividend Monitoring Services Agreement

(see attached)

EXHIBIT D

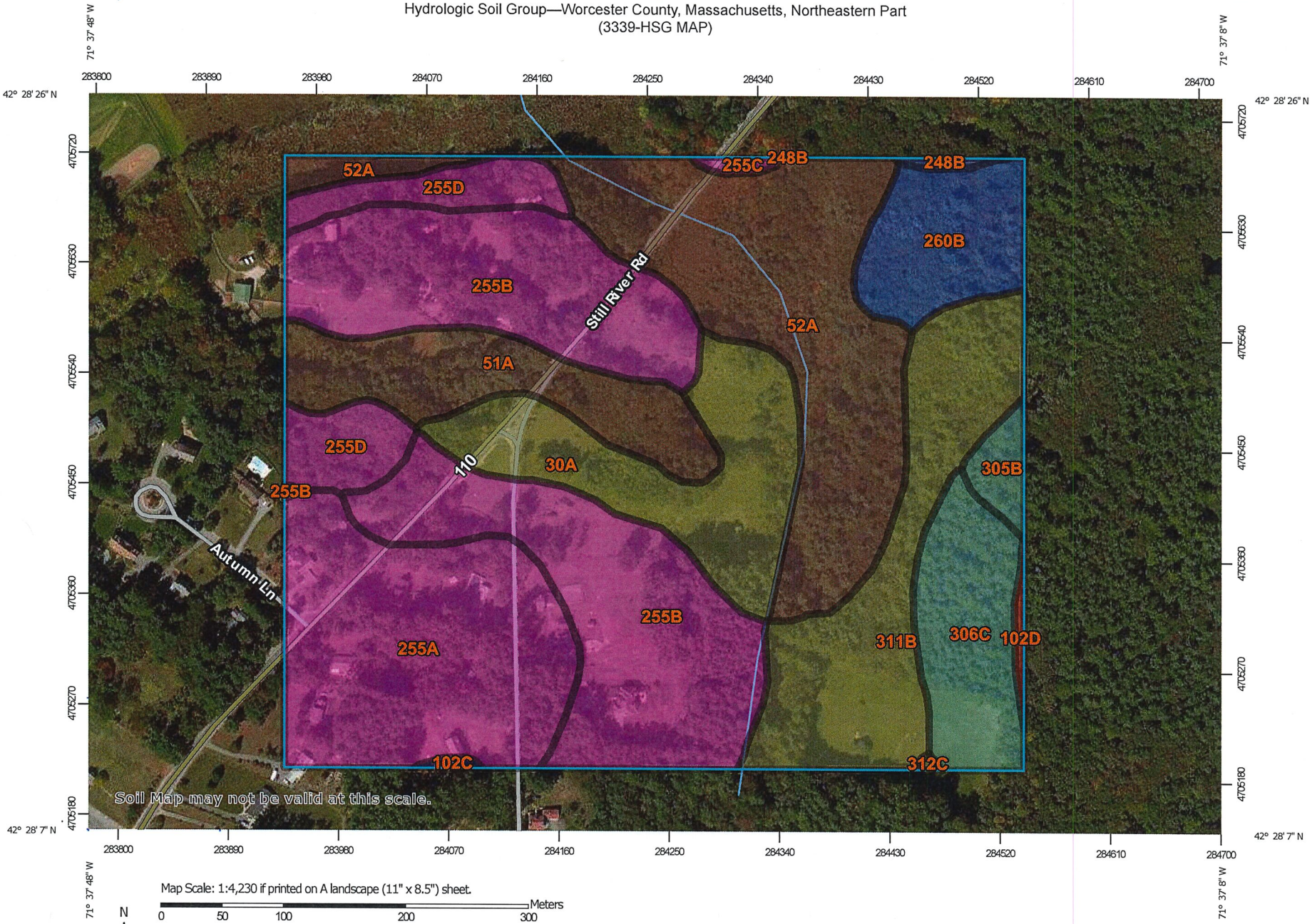
Affordability Monitoring Services Agreement

(see attached)

Exhibit H

Soil Report

Hydrologic Soil Group—Worcester County, Massachusetts, Northeastern Part
(3339-HSG MAP)



Map Scale: 1:4,230 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

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
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Worcester County, Massachusetts, Northeastern Part
Survey Area Data: Version 12, Oct 6, 2017

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

Date(s) aerial images were photographed: Sep 12, 2014—Sep 28, 2014

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
30A	Raynham silt loam, 0 to 3 percent slopes	C/D	6.8	9.2%
51A	Swansea muck, 0 to 1 percent slopes	B/D	5.2	6.9%
52A	Freetown muck, 0 to 1 percent slopes	B/D	12.9	17.3%
102C	Chatfield-Hollis-Rock outcrop complex, 0 to 15 percent slopes	B	0.1	0.1%
102D	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	D	0.2	0.3%
248B	Amostown and Belgrade soils, 3 to 8 percent slopes	B	0.1	0.2%
255A	Windsor loamy sand, 0 to 3 percent slopes	A	10.8	14.5%
255B	Windsor loamy sand, 3 to 8 percent slopes	A	18.1	24.2%
255C	Windsor loamy sand, 8 to 15 percent slopes	A	0.2	0.3%
255D	Windsor loamy sand, 15 to 25 percent slopes	A	3.4	4.5%
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	B	3.7	4.9%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	C	0.8	1.1%
306C	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	C	4.3	5.7%
311B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	C/D	8.1	10.8%
312C	Woodbridge fine sandy loam, 8 to 15 percent slopes, extremely stony	C/D	0.0	0.1%
Totals for Area of Interest			**74.7**	**100.0%**

Description

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.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

STEVE ELKINSON
Owner Name

STILL RIVER ROAD
Street Address

Map/Lot #

BOLTON
City

MA
State

01740
Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☒ Yes ☐ No If yes: NCRS (Source) 255B (Soil Map Unit)

   WINDSOR LOAMY FINE SAND (Soil Name) NONE (Soil Limitations)

3. Surficial Geological Report Available? ☐ Yes ☐ No If yes: Year Published/Source Publication Scale Map Unit

   Geologic/Parent Material KAME TERRACE (Landform)

4. Flood Rate Insurance Map

   Above the 500-year flood boundary? ☐ Yes ☒ No Within the 100-year flood boundary? ☐ Yes ☒ No

   Within the 500-year flood boundary? ☒ Yes ☐ No Within a velocity zone? ☐ Yes ☒ No

5. Wetland Area: Wetlands Conservancy Program Map Map Unit Name

6. Current Water Resource Conditions (USGS): JUNE '15 (Month/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

7. Other references reviewed:

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserved disposal area)*

Deep Observation Hole Number: 615-1/4 | 6-26-15 (Date) | 8:30 AM (Time) | CLOUDY, 70'S (Weather)

1. Location

Ground Elevation at Surface of Hole: _____ Location (identify on plan): _____

2. Land Use: OPEN FIELD (e.g., woodland, agricultural field, vacant lot, etc.) | NONE (Surface Stones) | 0-3% (Slope (%))

GRASSES (Vegetation) | KAME TERRACE (Landform) | TOP (Position on Landscape (attach sheet))

3. Distances from:

Open Water Body	100'+ feet	Drainage Way	100'+ feet	Possible Wet Area	100'+ feet
Property Line	75'+/- feet	Drinking Water Well	100'+ feet	Other	_____ feet

4. Parent Material: PROGLACIAL OUTWASH Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: SEE LOGS (Depth Weeping from Pit) | SEE LOGS (Depth Standing Water in Hole)

Estimated Depth to High Groundwater: _____ inches _____ elevation

Commonwealth of Massachusetts
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Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-1

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
58	C1	10YR 5/6	58"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
80	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, N.G.W.O.

W/ PERC-A

Commonwealth of Massachusetts
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Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-2

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
64	C1	10YR 5/6	64"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
84	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, N.G.W.O.

W/ PERC-B

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Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-3

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
24	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
60	C1	10YR 5/6	60"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
84	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, G.W.O. @ 82"

W/ PERC-C

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-4

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
12	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
60	C1	10YR 5/6	60"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
88	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, G.W.O. @ 88"

W/ PERC-D

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-5

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
52	C1	10YR 5/6	52"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
84	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, G.W.O. @ 60"

NOT WITNESSED BY BOH AGENT

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

☒ Depth observed standing water in observation hole	A. SEE LOGS inches	B. SEE LOGS inches
☒ Depth weeping from side of observation hole	A. SEE LOGS inches	B. SEE LOGS inches
☒ Depth to soil redoximorphic features (mottles)	A. SEE LOGS inches	B. SEE LOGS inches
☐ Groundwater adjustment (USGS methodology)	A. inches	B. inches

2. _____ Index Well Number _____ Reading Date _____ Index Well Level

_____ Adjustment Factor _____ Adjusted Groundwater Level

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material
   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

      ☒ Yes ☐ No

   b. If yes, at what depth was it observed? Upper boundary: 10/12" inches Lower boundary: 58/64" inches

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Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator	6/29/15 Date
WILLIAM J. "JACK" MALONEY, JR. Typed or Printed Name of Soil Evaluator / License #	7/2014 Date of Soil Evaluator Exam
BILL BROOKINGS Name of Board of Health Witness	NABOH FOR TOWN OF BOLTON Board of Health

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

Use this sheet for field diagrams:

Commonwealth of Massachusetts
City/Town of BOLTON

Percolation Test

Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A. Site Information

STEVE ELKINSON
Owner Name

STILL RIVER ROAD
Street Address or Lot #

BOLTON — City/Town
MA — State
01740 — Zip Code

STEVE ELKINSON
Contact Person (if different from Owner)

Telephone Number

B. Test Results

	6/26/15 (Date)	10:15 AM (Time)	6/26/15 (Date)	10:15 AM (Time)
Observation Hole #	PA/PB		PC/PD	
Depth of Perc	30"/45"		44"/46"	
Start Pre-Soak	10:45/10:46		10:47/10:48	
End Pre-Soak	UNABLE		UNABLE	
Time at 12"	TO		TO	
Time at 9"	SATURATE		SATURATE	
Time at 6"				
Time (9"-6")				
Rate (Min./Inch)	2 MPI		2 MPI	
	Test Passed: ☒		Test Passed: ☒	
	Test Failed: ☐		Test Failed: ☐	

WILLIAM J. "JACK" MALONEY, JR
Test Performed By:

BILL BROOKINGS, NABOH AGENT-TOWN OF BOLTON
Witnessed By:

Comments:

Exhibit I

Site Plans

COMPREHENSIVE PERMIT PLAN

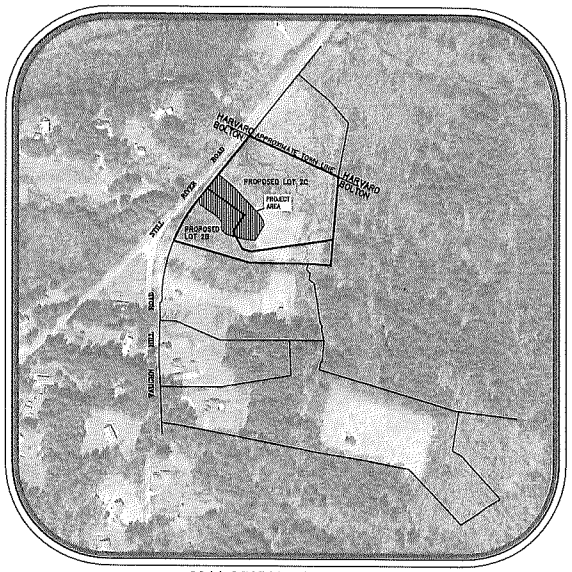
STILL RIVER ROAD, MAP 8.B PARCEL 32

BOLTON, MA

STILL RIVER COMMONS

USGS LOCUS MAP

SCALE: 1"=1,100'±



2014 ORTHOPHOTO LOCUS

SCALE: 1"=250'±

SHEET INDEX

SHEET NUMBER	SHEET TITLE
SHEET C1.0	TITLE SHEET
SHEET C1.1	GEN. NOTES, SYMBOLS & ABBREV.
SHEET C1.2	EXISTING CONDITIONS PLAN
SHEET C2.0	LOT LAYOUT PLAN
SHEET C2.1	UNIT LAYOUT PLAN
SHEET C3.0	UTILITIES PLAN
SHEET C3.1	UTILITIES DETAILS
SHEET C4.0	GRADING & DRAINAGE PLAN
SHEET C4.1	GRADING & DRAINAGE DETAILS
SHEET C5.0	EROSION & SEDIMENTATION CONTROL PLAN

RECORD INFORMATION

RECORD OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MA 01843

DEED REFERENCE:
BOOK 58346 PAGE 149

PLAN REFERENCE:
PLAN BOOK 932 PLAN 91

ASSESSORS REFERENCE:
MAP: 8B PARCEL: 32

ZONING DISTRICT:
RESIDENCE DISTRICT

ZONING TABLE

	REQUIRED	PROVIDED LOT 2B	PROVIDED LOT 2C
MIN LOT AREA	80,000 SF	90,836 SF	200,035 SF
MIN LOT FRONTAGE	200'	281.36'	305.19'
MIN WIDTH AT 100' FROM STREET LINE	150'	248.38'	323.11'
MIN FRONT YARD	50'	99.9'	239.9'
MIN OTHER YARDS	20'	6.0'	12.8'
MIN SHAPE FACTOR	0.5	0.4	0.97

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:
DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS• LAND SURVEYORS• WETLAND CONSULTANTS
1092 MAIN STREET, P.O. BOX 428
BOLTON, MASSACHUSETTS 01740
PHONE: (978) 779-6091 FAX: (978) 779-0260
www.DucharmeandDillis.com

OWNER:
TURN LEFT, LCC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:

COMMONWEALTH OF MASSACHUSETTS GREGORY S. ROY 34324 REGISTERED PROFESSIONAL ENGINEER 7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

TITLE SHEET
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-TITLE
SHEET NO. C1.0

LEGEND

EXIST. FEATURE	DESCRIPTION	EXIST. SYM.	DESCRIPTION
	STREAMS/RIVERS		LIGHT POLE
	WETLANDS		TELEPHONE POLE
	LIMIT OF RIVFER ZONE		GUY WIRE
LEDGE	LEDGE		HYDRANT
100' WELL OFFSET	WELL BUFFERS		SEWER MANHOLE
	PROPERTY LINE		STORM WATER MANHOLE
	EASEMENT LINE		WELL
X X	WIRE FENCE		MISCELLANEOUS MANHOLE
	WOOD FENCE		WETLANDS FLAG
	GUARD RAIL		CATCH BASIN
	CHAIN LINK FENCE		WATER GATE VALVE
CONC WALL	CONCRETE RETAINING WALL		GAS GATE VALVE
STONE WALL	STONE RETAINING WALL		ELECTRICAL METER
	STONE WALL		GAS METER
W	WATER LINE		TRAFFIC SIGNAL SWITCH
G	GAS LINE		SIGN
E	ELECTRICAL LINE	PF-A	PERC TEST
S	SANITARY SEWER	TP 3105-1	TEST PIT
D	STORM DRAIN		ELECTRICAL TRANSFORMER
T	TELEPHONE LINE		TELEPHONE BOX
CATV	CABLE LINE		CABLE BOX
OW	EXISTING OVER-HEAD WIRES		FLAG POLE
160	EXISTING CONTOUR (INDEX)		WATER SHUT OFF
170	EXISTING CONTOUR (INTERMEDIATE)		SHRUB
	EXISTING SPOT ELEVATION		CLEANOUT
	EXISTING BUILDING/HOUSE		FIRE ALARM
TREE LINE	TREE LINE		VENT PIPE
	REPLICATED WETLANDS		PROPOSED LIGHT POLE
	PROPERTY LINE		PROPOSED TELEPHONE POLE
	EASEMENT LINE		PROPOSED HYDRANT
	HAYBALES	SSMH-1	PROPOSED SANITARY MANHOLE
	WIRE FENCE	DMH-1	PROPOSED STORM WATER MANHOLE
	WOOD FENCE		PROPOSED TELEPHONE MANHOLE
	GUARD RAIL		PROPOSED ELECTRICAL MANHOLE
	CHAIN LINK FENCE	WSO	PROPOSED WATER SHUTOFF
RET. WALL (CONC)	POURED CONCRETE RETAINING WALL		PROPOSED POST
RET. WALL (BLOCK)	CONC. BLOCK RETAINING WALL	CB-1	PROPOSED CATCH BASIN
RET. WALL (STONE)	STONE RETAINING WALL	DCB-1	PROPOSED DOUBLE CATCH BASIN
W	PROPOSED WATER LINE		PROPOSED WATER GATE VALVE
G	PROPOSED GAS LINE		PROPOSED GAS GATE VALVE
E	PROPOSED ELECTRICAL LINE		PROPOSED ELECTRICAL TRANSFORMER
S	PROPOSED SANITARY SEWER		PROPOSED ELECTRICAL JUNCTION BOX
D	PROPOSED STORM DRAIN		PROPOSED GAS METER
RD	PROPOSED ROOF DRAIN		PROPOSED TRAFFIC SIGNAL SWITCH
UD	PROPOSED UNDER DRAIN		PROPOSED SIGN
T	PROPOSED TELEPHONE LINE	B-1	BORING
CATV	PROPOSED CABLE LINE		HANDICAPPED SPACE
BCCB	PROPOSED BACK CAPE COD BERM	FES	PROPOSED FLARED END SECTION
EOP	PROPOSED EDGE OF PAVEMENT		PROPOSED RIPRAP
	PROPOSED UNPAVED ROAD		PROPOSED STONE BOUND
160	PROPOSED CONTOUR (INDEX)		STANDARD TREE
170	PROPOSED CONTOUR (INTERMEDIATE)		PINE TREE
175x5	PROPOSED SPOT ELEVATION		SHRUB
	PROPOSED BUILDING/HOUSE		
TREE LINE	TREE LINE		

ABBREVIATIONS

ABB.	DESCRIPTION
ATM	ATMOSPHERIC TANK
UG	UNDERGROUND
FD	FOUNDATION DRAIN
F.S.	FIRE SERVICE
DOM.	DOMESTIC WATER SERVICE
B.O	WATER BELOW OFF
DMH	DRAIN MANHOLE
SMH	SEWER MANHOLE
ST	SEPTIC TANK
PC	PUMP CHAMBER
SP1	DRAIN PIPE ID
SP1	SEWER PIPE ID
DB	DISTRIBUTION BOX
SC	STORMCEPTOR CATCH BASIN
GAL	GALLON
TOF	TOP OF FOUNDATION
EL.	ELEVATION
AHC	AHEAD
WSO	WATER SHUTOFF
BCCB	BITUMINOUS CAPE COD BERM
RET.	RETAINING WALL
C.O.	CLEAN OUT
INSP.T	INSPECTION PORT
VCC	VERTICAL CONCRETE CURB
BCCB	BITUMINOUS CAPE COD BERM

GENERAL NOTES:

1. TOPOGRAPHIC INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC. BASED ON AN ON-THE-GROUND SURVEY ON A VERTICAL DATUM OF N.A.V.D 1988.
2. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC. BASED ON AN ON-THE-GROUND SURVEY AND RECORDED PLANS AND DEEDS. (SEE WORCESTER REGISTRY OF DEEDS PLAN BOOK 818, PLAN 80).
3. RESOURCE AREAS AS DEFINED BY THE MASSACHUSETTS WETLANDS PROTECTION ACT AND THE TOWN OF BOLTON WETLANDS BYLAW WERE DELINEATED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC.
4. A PORTION OF THE SITE IS LOCATED WITHIN THE 100 YEAR FLOOD ZONE AS SHOWN ON THE FLOOD INSURANCE RATE MAP 3000700017E & 3000700019E, EFFECTIVE DATE JULY 64, 2011 FOR THE TOWN OF BOLTON.
5. EXISTING UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM FIELD MEASUREMENT AND RECORD PLANS. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY AND SHOULD NOT BE ASSUMED TO BE CORRECT NOR SHOULD IT BE ASSUMED THAT THE UTILITIES SHOWN ARE THE ONLY UTILITIES LOCATED ON OR NEAR THE SITE. THE CONTRACTOR SHALL CALL DIG SAFE 1-888-DIG-SAFE PRIOR TO CONSTRUCTION IN ACCORDANCE WITH STATE LAWS.
6. THE SITE IS LOCATED WITHIN A PRIORITY HABITAT OR RARE SPECIES. ALTERATIONS ARE SUBJECT TO APPROVAL BY M.N.E.P.A. UNDER FILE NUMBER 15-34941.
7. THIS PLAN IS INTENDED FOR THE FILING OF A COMPREHENSIVE PERMIT WITH THE BOLTON ZONING BOARD OF APPEALS.

NOTES/SPECIFICATIONS:

ALL CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE COMPREHENSIVE PERMIT. IN THE EVENT OF A CONFLICT BETWEEN THE PERMIT AND THESE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR CLARIFICATION PRIOR TO CONSTRUCTION.

1.0 SITE PREPARATION

1.1 TREE CLEARING

1.1.1 ALL EROSION CONTROL SHALL BE PLACED PRIOR TO TREE REMOVAL.
1.1.2 THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR STAKING OF THE LIMITS OF TREE REMOVAL REQUIRED FOR THE CONSTRUCTION OF THE ROAD AND APPURTENANCES PRIOR TO BEGINNING WORK.
1.1.3 TREE DEBRIS SUCH AS CHIPS, TRUNKS AND STUMPS SHALL BE CHIPPED OR REMOVED FROM SITE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. WOOD WASTE SHALL NOT BE BURIED ONSITE.

1.2 EARTHWORK

1.2.1 STRIP TOPSOIL FROM ROADWAY, SEPTIC AND BUILDING AREAS AREAS.
1.2.2 STRIP SUBSOIL FROM UNDER ROADWAY WITHIN A 1 ON 1 INFLUENCE OF THE PROPOSED EDGE OF PAVEMENT.
1.2.3 CONTRACTOR TO REMOVE UNSUITABLE MATERIAL, IF ENCOUNTERED, FROM THE SITE.
1.2.4 SUB-SOIL MAY BE USED FOR NON-STRUCTURAL FILL ON SITE.
1.2.5 STOCKPILE TOPSOIL FOR REUSE ON SITE.
1.2.6 CONTRACTOR TO FILL AREAS UNDER THE PROPOSED ROADWAY TO SUB-GRADE AS REQUIRED.
1.2.7 REFER TO STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL REQUIREMENTS PERTAINING TO STOCKPILING FOR LONG PERIODS OF TIME.

1.3 COORDINATION WITH OTHER CONSTRUCTION ACTIVITIES

1.3.1 CONTRACTOR TO REFER TO THE APPROVED SDS PLANS FOR DETAILS PERTAINING TO THE CONSTRUCTION OF THE ON-SITE SEWAGE DISPOSAL SYSTEMS AND WELLS.
1.3.2 CONTRACTOR TO REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL REQUIREMENTS PERTAINING TO THE EROSION AND SEDIMENTATION CONTROL ON THE SITE DURING CONSTRUCTION ACTIVITIES.

2.0 MATERIALS

2.1 PIPE & FITTINGS

2.1.1 STORM DRAIN PIPE SHALL BE AS SHOWN ON THE PLANS. ALL DRAIN PIPE SHALL BE AS SPECIFIED ON PLANS.
2.1.2 REFER TO THE APPROVED SDS PLANS FOR SPECIFICATIONS PERTAINING TO THE PIPES AND FITTINGS FOR PROPOSED SANITARY SEWER.

2.2 STORM DRAIN STRUCTURES

2.2.1 MANHOLES SHALL BE STANDARD 4' DIAMETER STRUCTURES AS SHOWN ON THE DETAIL ON SHEET C3.1.
2.2.2 CATCH BASINS SHALL BE STANDARD 4' DIAMETER STRUCTURE WITH A 4' SUMP AND HOOD AS SHOWN OF THE DETAIL ON SHEET C3.1.
2.2.3 MANHOLE RINGS SHALL BE AS MANUFACTURED BY E.A. PRESCOTT (OR APPROVED EQUAL).
2.2.4 CATCH BASIN RINGS SHALL BE AS MANUFACTURED E.A. PRESCOTT (OR APPROVED EQUAL).

2.3 CONCRETE

2.3.1 CAST-IN PLACE CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI OR GREATER UNLESS OTHERWISE NOTED.
2.3.2 CONTRACTOR TO PROVIDE FOR ALL FORM WORK AND REMOVAL OF FORMS AS REQUIRED FOR CAST IN PLACE CONCRET STRUCTURES.

2.4 BITUMINOUS PAVEMENT

2.4.1 ASPHALT BINDER COURSE SHALL BE 3" THICK COMPACTED IN PLACE CONFORMING TO SSHB M03.11.03 TABLE A BINDER COURSE. BINDER SHALL BE PLACED IN TWO LIFTS.
2.4.2 ASPHALT WEARING COURSE SHALL BE 2" THICK COMPACTED IN PLACE CONFORMING TO SSHB M03.11.03 TABLE A TOP COURSE. TOP COURSE SHALL BE PLACED IN ONE LIFT.
2.4.3 ASPHALT FOR DRIVEWAYS SHALL BE 1 ½" WEARING COURSE CONFORMING TO SSHB M03.11.03 TABLE A TOP COURSE OVER 1 ½" BINDER COURSE CONFORMING TO SSHB M03.11.03 TYPE A BINDER COURSE.
2.4.4 NO PAVING BETWEEN NOVEMBER 15TH AND APRIL 1ST.

2.5 SOIL MATERIALS

2.5.1 ROAD GRAVEL SHALL BE PLACED IN TWO LIFTS AS SHOWN ON THE ROAD CROSS SECTIONS ON SHEET C5.3. PLACE 4" OF GRAVEL CONFORMING TO SSHB M.1.03.0 TYPE B OVER 8" OF GRAVEL CONFORMING TO SSHB M.1.03.0 TYPE B. ROAD GRAVEL SHALL BE COMPACTED TO 95% DRY DENSITY.
2.5.2 STRUCTURAL FILL SHALL CONFORM TO SSHB M1.03.0 TYPE C GRAVEL BORROW (UNLESS OTHERWISE NOTED ON PLANS).
2.5.3 COMMON FILL SHALL CONFORM TO SSHB M1.05.0 ORDINARY BORROW.
2.5.4 TOPSOIL SHALL CONFORM TO SSHB M1.07.0 TOPSOIL AND PLANTABLE SOIL BORROW.
2.5.5 CRUSHED STONE SHALL CONFORM TO SSHB M1.03.1 CRUSHED STONE.
2.5.7 CONTRACTOR IS RESPONSIBLE FOR PROVIDING SIEVE ANALYSIS, GRADATION AND COMPACTION TEST DATA OF MATERIALS AS REQUIRED BY THE TOWN'S INSPECTOR.

2.6 GUARDRAIL

2.6.1 GUARDRAIL SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPROVED MASS HIGHWAY DETAILS AND PRACTICES.
2.6.2 GUARDRAIL SHALL BE MODIFIED WITH STEEL REINFORCEMENT CONFORMING TO THE REQUIREMENTS OF MASS HIGHWAY STANDARDS.
2.6.3 CONTRACTOR TO SUBMIT DRAWINGS FOR APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION OF THE GUARDRAIL.

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:
DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS• LAND SURVEYORS• WETLAND CONSULTANTS
1092 MAIN STREET, P.O. BOX 428
BOLTON, MASSACHUSETTS 01740
PHONE: (978) 779-6091 FAX: (978) 779-0260
www.DucharmeandDillis.com

OWNER:
TURN LEFT, LCC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:

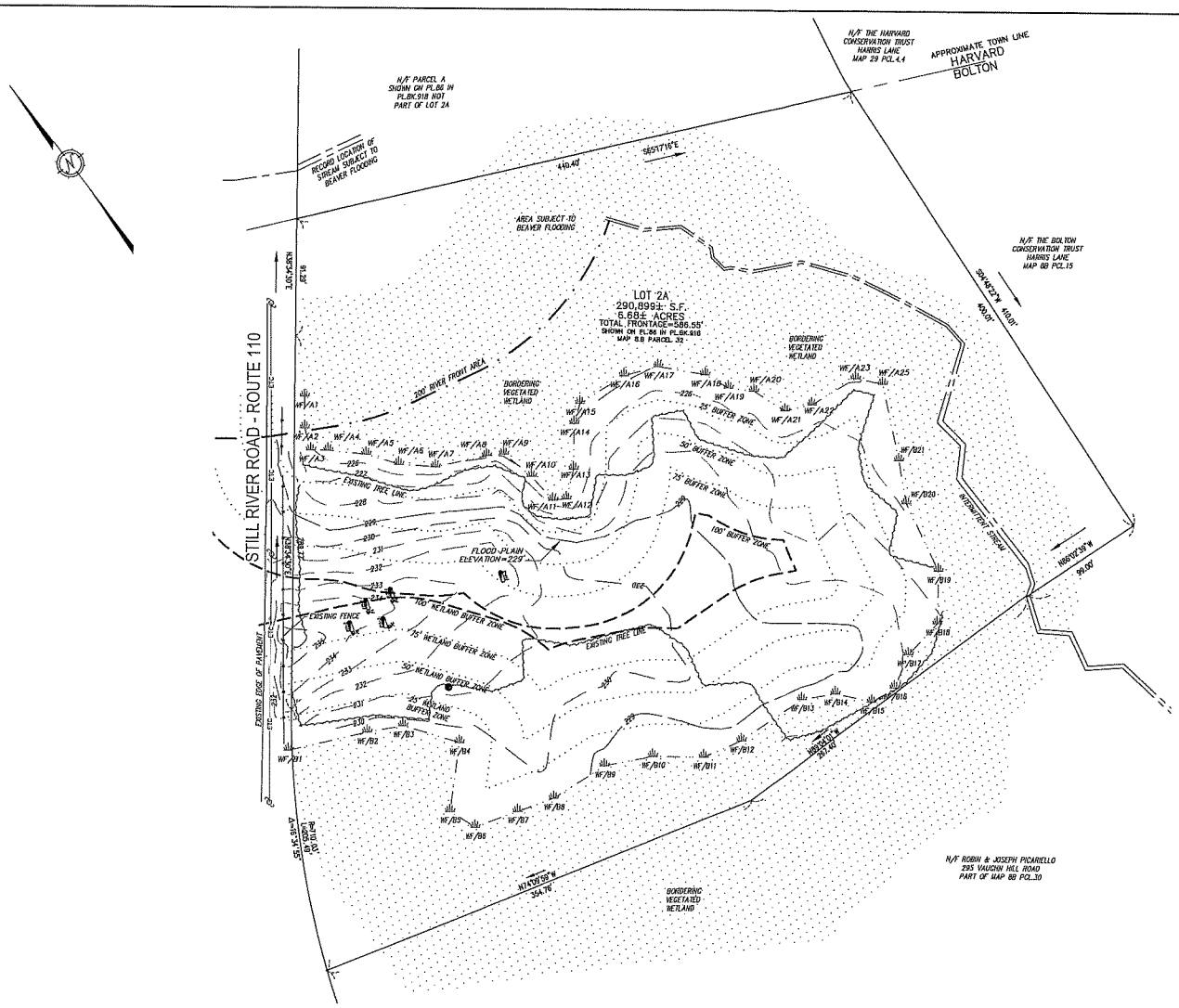
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. NOYES
No. 45824
PROFESSIONAL ENGINEER
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

NOTES, SYMBOLS AND ABBREVIATIONS
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-NOTES
SHEET NO. C1.1



GENERAL NOTES:

1. TOPOGRAPHIC INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC. BASED ON AN ON-THE-GROUND SURVEY ON A VERTICAL DATUM OF N.A.V.D 1988.
2. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC. BASED ON AN ON-THE-GROUND SURVEY AND RECORDED PLANS AND DEEDS. (SOU. WORCESTER REGISTRY OF DEEDS PLAN BOOK 918, PLAN 86).
3. RESOURCE AREAS AS DEFINED BY THE MASSACHUSETTS WETLANDS PROTECTION ACT AND THE TOWN OF BOLTON WETLANDS BYLAW WERE DELINEATED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC.
4. A PORTION OF THE SITE IS LOCATED WITHIN THE 100 YEAR FLOOD ZONE AS SHOWN ON THE FLOOD INSURANCE RATE MAP 25017C0457E & 25017C0476E, EFFECTIVE DATE JULY 04, 2011 FOR THE TOWN OF BOLTON.
5. EXISTING UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM FIELD MEASUREMENT AND RECORD PLANS. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY AND SHOULD NOT BE ASSUMED TO BE CORRECT NOR SHOULD IT BE ASSUMED THAT THE UTILITIES SHOWN ARE THE ONLY UTILITIES LOCATED ON OR NEAR THE SITE. THE CONTRACTOR SHALL CALL DIG SAFE 1-888-DIG-SAFE PRIOR TO CONSTRUCTION IN ACCORDANCE WITH STATE LAWS.
6. THE SITE IS LOCATED WITHIN A PRIORITY HABITAT OR RARE SPECIES. ALTERATIONS ARE SUBJECT TO APPROVAL BY M.E.E.P. UNDER FILE NUMBER 15-3494.
7. THIS PLAN IS INTENDED FOR THE FILING OF A COMPREHENSIVE PERMIT WITH THE BOLTON ZONING BOARD OF APPEALS.

SOIL TEST DATA

NAME OF APPROVING AUTHORITY: BOLTON BOARD OF HEALTH
BILL BROOKINGS, AGENT

NAME OF SOIL EVALUATOR: DUCHARME AND DILLIS CIVIL DESIGN GROUP
WILLIAM J. "JACK" MALONEY, JR. (SE-13704)

IN-SEASON GROUND WATER TESTING – (IF REQ'D)

TEST PIT NO.	DATE	SURFACE ELEVATION	DEPTH TO GROUND WATER	GROUND WATER ELEVATION

PERCOLATION TEST DATA

TEST PIT NO.	DATE	DEPTH OF TEST HOLE	RUN-DOWN PER INCH
P1A	6/24/15	30"	2 MIN
P1B	6/24/15	42"	2 MIN
P1C	6/24/15	42"	2 MIN
P1D	6/24/15	48"	2 MIN

SOIL CLASSIFICATION:	WINDSOR-LOAMY FINE SAND
GEOLOGICAL MATERIAL:	FLUVIOGLAC OUTWASH
LAND FORM:	KAME TERRACE

DEEP TEST PIT: 615-1	DEPTH	HOR.	TEX.	COLOR	MOTT.	C.W.	OTHER
DATE OF TEST: 6/26/15	0-10"	A	SL	10YR 3/3	NONE	NONE	GRAVEL, FRIABLE
REFUSAL AT: NONE	10-30"	Bw	L.S.	10YR 5/6	NONE	NONE	S.G.R., FRIABLE
OBSERVED	30-36"	C1	F-M S.	10YR 5/6	# 50"	NONE	WASHING, FRIABLE
SURFACE ELEV. = 224.50'	36-48"	C2	F.S.L.	10YR 5/3		NONE	WASHING, FRIABLE
ESTIMATED SEASONAL HIGH GROUND WATER				AT 50" (ELEVATION = 174.50)			

DEEP TEST PIT: 615-2	DEPTH	HOR.	TEX.	COLOR	MOTT.	C.W.	OTHER
DATE OF TEST: 6/26/15	0-10"	A	SL	10YR 3/3	NONE	NONE	GRAVEL, FRIABLE
REFUSAL AT: NONE	10-30"	Bw	L.S.	10YR 5/6	NONE	NONE	S.G.R., FRIABLE
OBSERVED	30-44"	C1	F-M S.	10YR 5/6	# 44"	NONE	WASHING, FRIABLE
SURFACE ELEV. = 224.50'	44-48"	C2	F.S.L.	10YR 5/3		NONE	WASHING, FRIABLE
ESTIMATED SEASONAL HIGH GROUND WATER				AT 44" (ELEVATION = 180.50)			

DEEP TEST PIT: 615-3	DEPTH	HOR.	TEX.	COLOR	MOTT.	C.W.	OTHER
DATE OF TEST: 6/26/15	0-10"	A	SL	10YR 3/3	NONE	NONE	GRAVEL, FRIABLE
REFUSAL AT: NONE	10-30"	Bw	L.S.	10YR 5/6	NONE	NONE	S.G.R., FRIABLE
OBSERVED	30-48"	C1	F-M S.	10YR 5/6	# 48"	NONE	WASHING, FRIABLE
SURFACE ELEV. = 223.00'	48-54"	C2	F.S.L.	10YR 5/3		# 48"	WASHING, FRIABLE
ESTIMATED SEASONAL HIGH GROUND WATER				AT 48" (ELEVATION = 175.00)			

DEEP TEST PIT: 615-4	DEPTH	HOR.	TEX.	COLOR	MOTT.	C.W.	OTHER
DATE OF TEST: 6/26/15	0-10"	A	SL	10YR 3/3	NONE	NONE	GRAVEL, FRIABLE
REFUSAL AT: NONE	10-30"	Bw	L.S.	10YR 5/6	NONE	NONE	S.G.R., FRIABLE
OBSERVED	30-44"	C1	F-M S.	10YR 5/6	# 44"	NONE	WASHING, FRIABLE
SURFACE ELEV. = 224.00'	44-48"	C2	F.S.L.	10YR 5/3		# 48"	WASHING, FRIABLE
ESTIMATED SEASONAL HIGH GROUND WATER				AT 44" (ELEVATION = 180.00)			

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

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OWNER:
TURN LEFT, LCC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
40 0 20 40 80 160
1 in. = 40 ft.

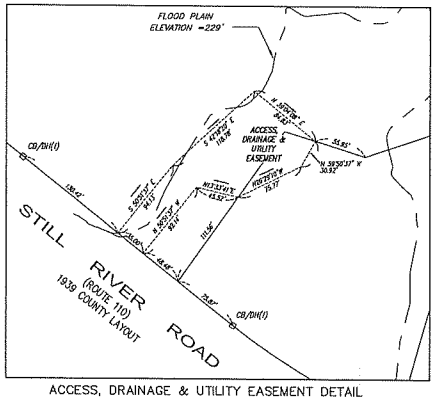
COMMONWEALTH OF MASSACHUSETTS
STANLEY G. RUSSO
No. 37227
REGISTERED PROFESSIONAL LAND SURVEYOR

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

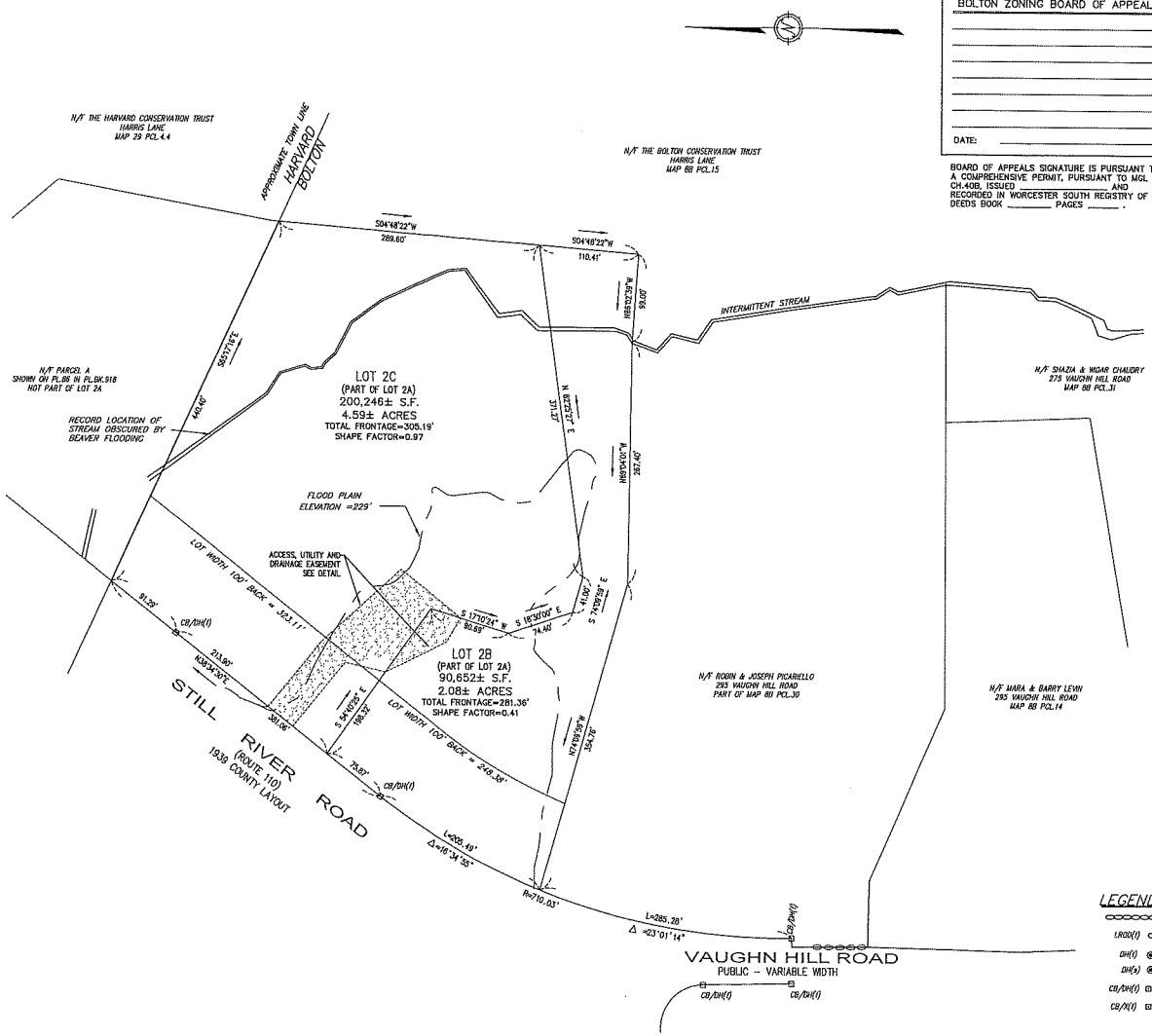
EXISTING CONDITIONS PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-EXISTING
SHEET NO. C1.2



ACCESS, DRAINAGE & UTILITY EASEMENT DETAIL
1"=60'



APPROVAL NOT REQUIRED UNDER THE SUBDIVISION CONTROL LAW
BOLTON ZONING BOARD OF APPEALS

DATE:

RESERVED FOR REGISTRY USE

BOARD OF APPEALS SIGNATURE IS PURSUANT TO A COMPREHENSIVE PERMIT, PURSUANT TO MGL CH.40B, ISSUED _____ AND RECORDED IN WORCESTER SOUTH REGISTRY OF DEEDS BOOK _____ PAGES _____.

NOTES:

RECORD OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MA

DEED REFERENCE:
BOOK 58346 PAGE 149

PLAN REFERENCE:
PLAN BOOK 728 PLAN 87
PLAN BOOK 728 PLAN 53
PLAN BOOK 814 PLAN 73
PLAN BOOK 805 PLAN 96
PLAN BOOK 808 PLAN 36
PLAN BOOK 918 PLAN 85
PLAN BOOK 932 PLAN 91

ASSESSORS REFERENCE: MAP 88, PARCEL 32

ZONING DISTRICT: RESIDENTIAL

LOTS 2B & 2C ARE A DIVISION OF LOT 2A SHOWN ON PL.86 IN PL.BK.918.

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

PROFESSIONAL LAND SURVEYOR

LEGEND

	DENOTES STONE WALL
I.ROD(I)	DENOTES IRON PIPE FOUND
DH(I)	DENOTES DRILL HOLE FOUND
DH(s)	DENOTES DRILL HOLE SET
CB/DH(I)	DENOTES CONCRETE BOUND WITH DRILL HOLE FOUND
CB/X(I)	DENOTES CONCRETE BOUND WITH X FOUND

PREPARED BY:
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OWNER:
TURN LEFT, LCC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

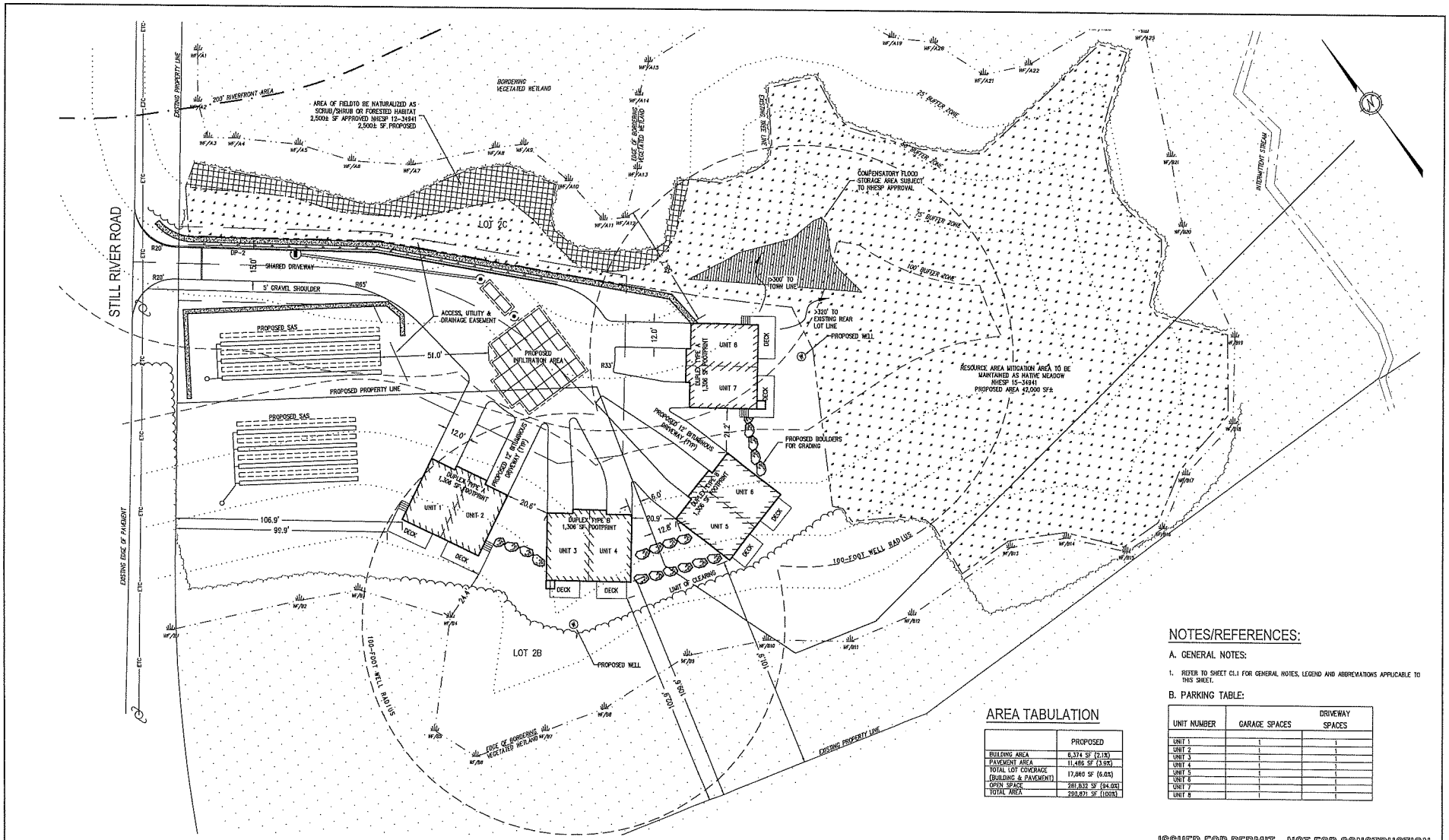
SCALE:
60 0 30 60 120 240
1 in. = 60 ft.

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: CSR

LOT LAYOUT PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-EXISTING
SHEET NO. C2.0



NOTES/REFERENCES:

A. GENERAL NOTES:

1. REFER TO SHEET C1.1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS APPLICABLE TO THIS SHEET.

B. PARKING TABLE:

UNIT NUMBER	GARAGE SPACES	DRIVEWAY SPACES
UNIT 1	1	1
UNIT 2	1	1
UNIT 3	1	1
UNIT 4	1	1
UNIT 5	1	1
UNIT 6	1	1
UNIT 7	1	1
UNIT 8	1	1

AREA TABULATION

	PROPOSED
BUILDING AREA	8,374 SF (2.1%)
PAVEMENT AREA	11,465 SF (3.9%)
TOTAL LOT COVERAGE (BUILDING & PAVEMENT)	17,860 SF (6.0%)
OPEN SPACE	261,832 SF (94.0%)
TOTAL AREA	290,871 SF (100%)

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:

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LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

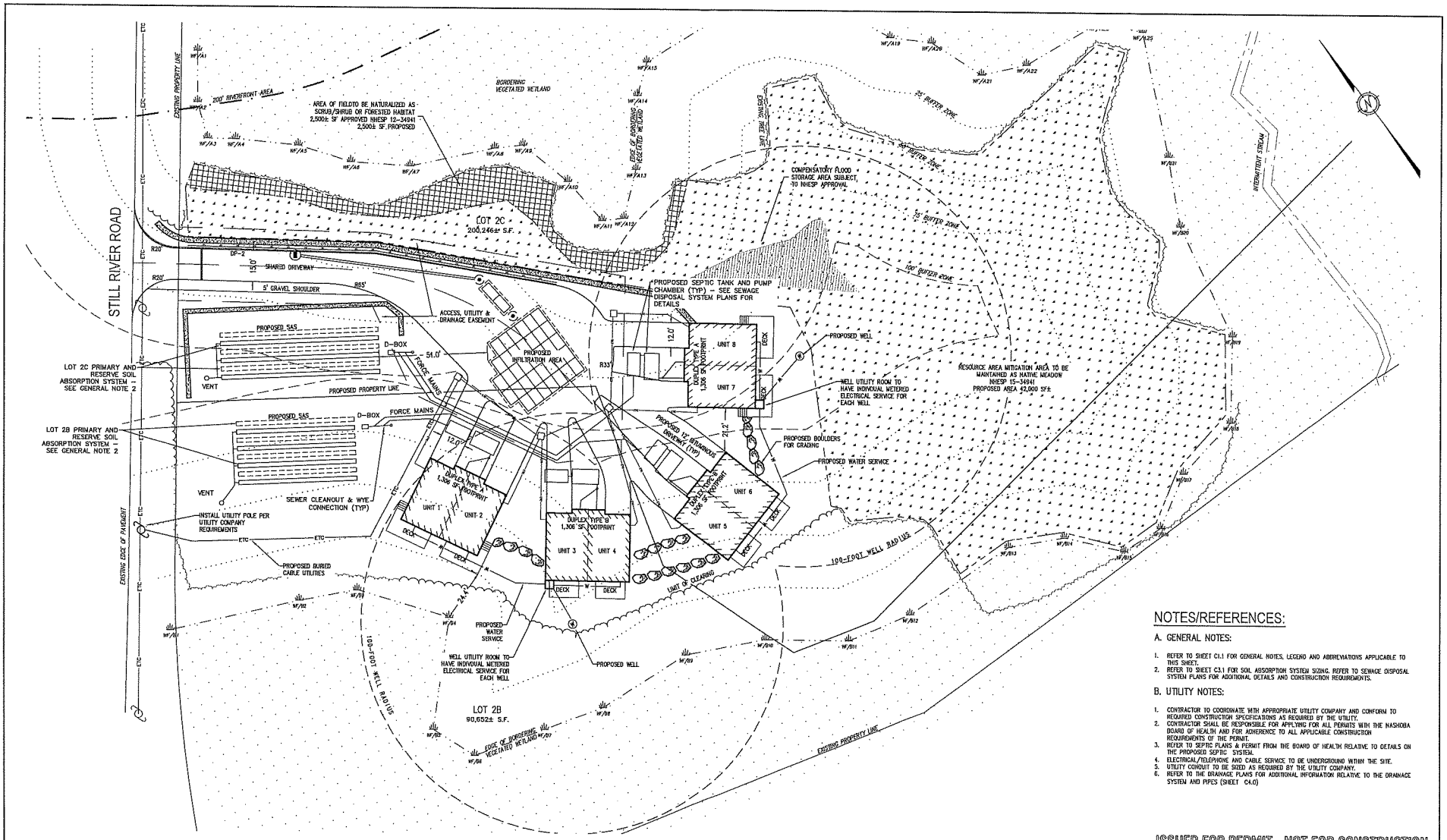
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
No. 34414
REGISTERED PROFESSIONAL ENGINEER
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

UNIT LAYOUT
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-UNIT_LAYOUT
SHEET NO. C2.1



NOTES/REFERENCES:

A. GENERAL NOTES:

1. REFER TO SHEET C1.1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS APPLICABLE TO THIS SHEET.
2. REFER TO SHEET C3.1 FOR SOIL ABSORPTION SYSTEM SIZING. REFER TO SEWAGE DISPOSAL SYSTEM PLANS FOR ADDITIONAL DETAILS AND CONSTRUCTION REQUIREMENTS.

B. UTILITY NOTES:

1. CONTRACTOR TO COORDINATE WITH APPROPRIATE UTILITY COMPANY AND CONFORM TO REQUIRED CONSTRUCTION SPECIFICATIONS AS REQUIRED BY THE UTILITY.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR APPLYING FOR ALL PERMITS WITH THE NASHOBA BOARD OF HEALTH AND FOR ADHERENCE TO ALL APPLICABLE CONSTRUCTION REQUIREMENTS OF THE PERMIT.
3. REFER TO SEPTIC PLANS & PERMIT FROM THE BOARD OF HEALTH RELATIVE TO DETAILS ON THE PROPOSED SEPTIC SYSTEM.
4. ELECTRICAL/TELEPHONE AND CABLE SERVICE TO BE UNDERGROUND WITHIN THE SITE.
5. UTILITY CONDUIT TO BE SIZED AS REQUIRED BY THE UTILITY COMPANY.
6. REFER TO THE DRAINAGE PLANS FOR ADDITIONAL INFORMATION RELATIVE TO THE DRAINAGE SYSTEM AND PIPES (SHEET C4.0)

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:
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LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

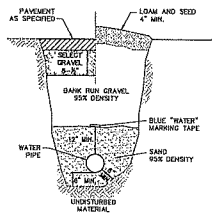
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
No. 34304
REGISTERED PROFESSIONAL ENGINEER
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

UTILITIES PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

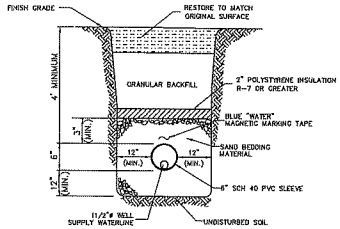
NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-UTILITY
SHEET NO. C3.0



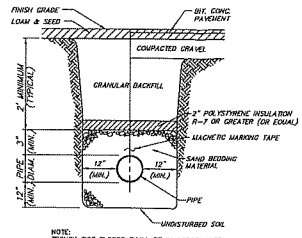
WATER MAIN IN TRENCH DETAIL

NOT TO SCALE



WATERLINE INSULATION

AT WETLAND CROSSING
NOT TO SCALE



NOTE:
TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.

FORCE MAIN INSULATION

NOT TO SCALE

SEWAGE DISPOSAL CALCULATIONS:

SEE SEWAGE DISPOSAL SYSTEM PLANS FOR DESIGN DETAILS, CONSTRUCTION DETAILS AND PUMPING SPECIFICATIONS

HYDRAULIC LOADING:
EACH SYSTEM HAS BEEN DESIGNED FOR NINE (9) BEDROOMS AT 110 GALLONS PER DAY PER BEDROOM = 990 GALLONS PER DAY.

SEPTIC TANK SIZE:
AVERAGE DAILY FLOW 3 BEDROOM UNIT = 220 G.P.D.
MINIMUM STORAGE REQUIRED 2 BEDROOM UNIT: 220 GPD X 200% = 440 GAL
AVERAGE DAILY FLOW 3 BEDROOM UNIT = 330 G.P.D.
MINIMUM STORAGE REQUIRED 3 BEDROOM UNIT: 330 GPD X 200% = 660 GAL
SEPTIC TANK PROVIDED UNITS 1 & 2 = 3,500 GALLON TWO-COMPARTMENT TANK (1120 REQUIRED)
SEPTIC TANK PROVIDED UNITS 3 & 4 = 3,500 GALLON TWO-COMPARTMENT TANK (1320 REQUIRED)
SEPTIC TANK PROVIDED UNITS 5 & 6 = 3,500 GALLON TWO-COMPARTMENT TANK (1320 REQUIRED)
SEPTIC TANK PROVIDED UNITS 7 & 8 = 3,500 GALLON TWO-COMPARTMENT TANK (1320 REQUIRED)

PRIMARY LEACHING AREA LOT 1B (UNITS 1 - 4):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (4) 56' TRENCHES, 3' WIDE X 2' DEEP (4 X 56 X 6) = 1344 S.F.
TOTAL DESIGN FLOW = 1344 S.F. X 0.74 GALLON/S.F. = 994 GALLONS.

RESERVE LEACHING AREA LOT 1B (UNITS 1 - 4):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (4) 56' TRENCHES, 3' WIDE X 2' DEEP (4 X 56 X 6) = 1344 S.F.
TOTAL DESIGN FLOW = 1344 S.F. X 0.74 GALLON/S.F. = 994 GALLONS.

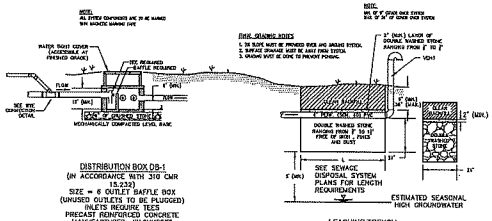
PRIMARY LEACHING AREA LOT 3C (UNITS 5-8):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1336 S.F.
TOTAL LEACHING AREA PROVIDED = (3) 75' TRENCHES, 3' WIDE X 2' DEEP (3 X 75 X 6) = 1350 S.F.
TOTAL DESIGN FLOW = 1350 S.F. X 0.74 GALLON/S.F. = 999 GALLONS.

RESERVE LEACHING AREA LOT 3C (UNITS 5-8):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (3) 75' TRENCHES, 3' WIDE X 2' DEEP (3 X 75 X 6) = 1350 S.F.
TOTAL DESIGN FLOW = 1350 S.F. X 0.74 GALLON/S.F. = 999 GALLONS.

BEDROOM LOADING:
LOT AREA / 40,000 SF X 440 GPD

LOT 1B
89,538 SF / 40,000 SF x 440 GPD = 989 GPD
OK 989 GPD > 990 GPD

LOT 3C
200,018 SF / 40,000 SF X 440 GPD = 2,200 GPD
OK 2,200 GPD > 990 GPD

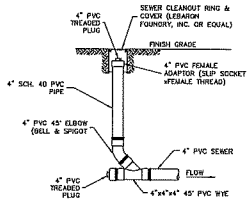


DISTRIBUTION BOX DB-1
(IN ACCORDANCE WITH 310 CMR 15.232)
SIZE = 6 OUTLET BAFFLE BOX
(UNUSED OUTLETS TO BE PLUGGED)
INLETS REQUIRE TEES
PRECAST REINFORCED CONCRETE
MANUFACTURER: WACHUSETT
PRECAST OR EQUIVALENT

LEACHING TRENCH
(IN ACCORDANCE WITH 310 CMR 15.251)
LEACHING TRENCH SHALL BE LEVEL FOR ENTIRE LENGTH
PRIMARY: 6 TRENCHES REQUIRED AT 6' O.C.
RESERVE: 6 TRENCHES REQUIRED AT 6' O.C.

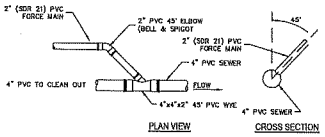
TYPICAL SAS PROFILE

NOT TO SCALE



SEWER CLEANOUT DETAIL

NOT TO SCALE



WYE CONNECTION DETAIL

NOT TO SCALE

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:
DUCHARME & DILLIS
Civil Design Group, Inc.
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OWNER:
TURN LEFT, LCC
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LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:

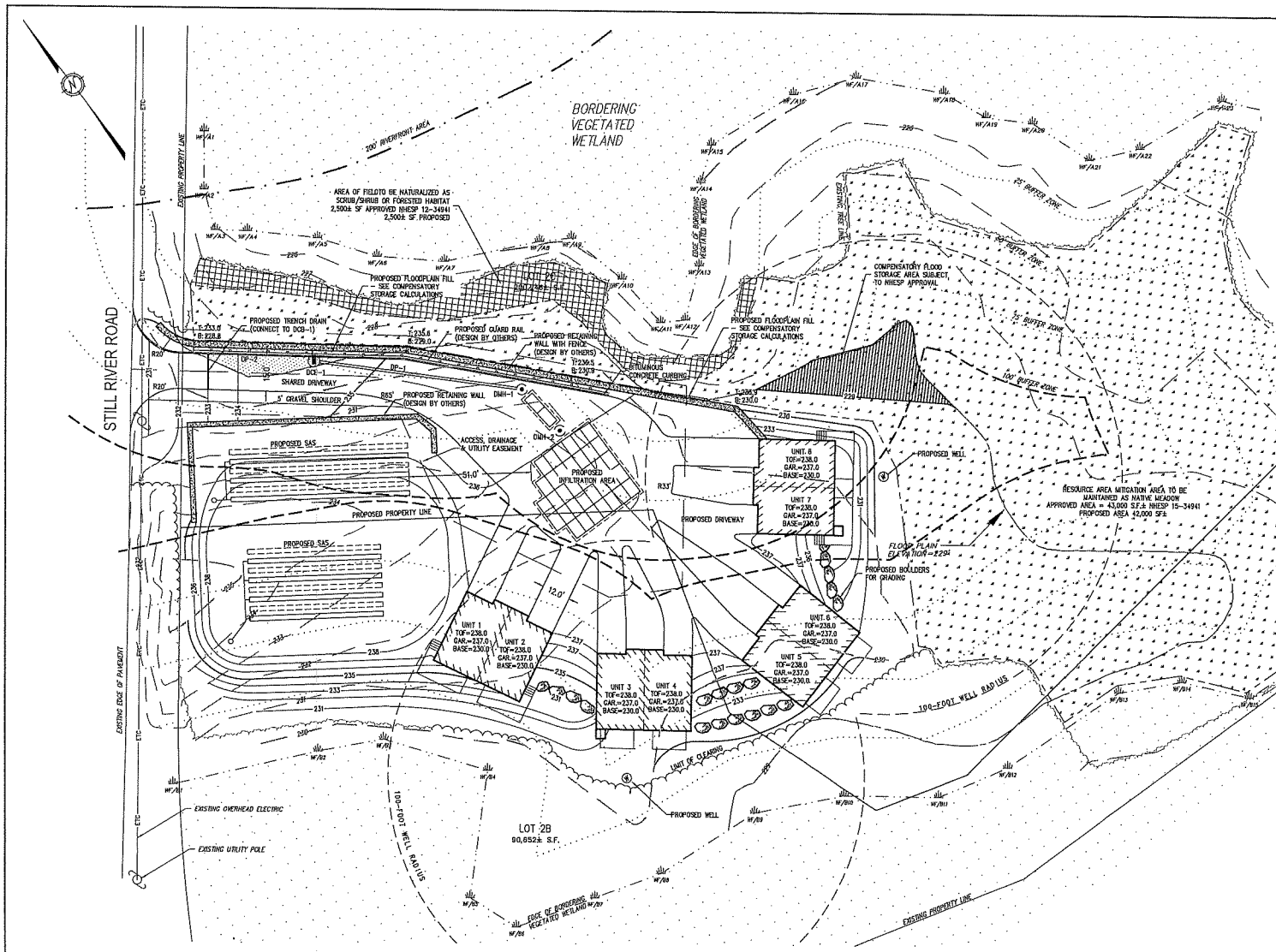
COMMONWEALTH OF MASSACHUSETTS GREGORY S. BUSH CIVIL 7/5/18

DATE:	7/5/18
DESIGN BY:	JPL
DRAWN BY:	JPL
CHECKED BY:	GSR

UTILITY DETAIL PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-UTILITY
SHEET NO. C3.1



NOTES/REFERENCES:

A. GENERAL NOTES:

1. REFER TO SHEET C1.1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS APPLICABLE TO THIS SHEET.

UTILITY/GRADING NOTES:

1. CONTRACTOR SHALL PLACE ALL EROSION CONTROL MEASURES AS SHOWN ON SHEET C4.0 PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO COORDINATE ALL UTILITY WORK WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO CONSTRUCTION.
3. FINAL LOCATION OF ELECTRICAL SERVICE TO BE DETERMINED BY POWER COMPANY.
4. ALL GRADES SHOWN ARE FINISHED GRADE. CONTRACTOR SHALL CONSTRUCT PAVEMENT BASED ON DETAILS SHOWN ON SHEET C1.01.
5. STOCKPILING OF EXCESS MATERIAL SHALL BE DONE UPGRADIENT OF EROSION CONTROL BARRIER AS SHOWN ON SHEET C6.01.
6. ALL DRAINAGE PIPE TO BE ADS N-12 OR EQUIVALENT. CONTRACTOR SHALL SUBMIT MANUFACTURES PIPE CERTIFICATIONS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
7. ALL CATCH BASINS AND LEACHING CHAMBERS TO BE PRECAST CONCRETE STRUCTURES FOR H-20 LOADING. CONTRACTOR TO SUBMIT MANUFACTURERS CUT-SHEETS FOR APPROVAL PRIOR TO CONSTRUCTION.
8. CONTRACTOR TO STRIP TOP AND SUB SOIL FROM UNDER ALL PAVEMENT AND BUILDING AREAS.
9. ALL CATCH BASIN AND LEACHING CHAMBER CASTING TO BE ADJUSTED TO FINAL GRADE PRIOR TO PLACING THE WEARING COURSE.
10. CABLE UTILITIES TO BE LOCATED WITHIN ACCESS, UTILITY & DRAINAGE EASEMENT.
11. REFER TO SUBSURFACE SEWAGE DISPOSAL SYSTEM PLAN FOR SYSTEM ELEVATIONS AND SPECIFICATIONS.
12. ALL TRUCKING TO AND FROM SITE SHALL BE BETWEEN THE HOURS OF 7 AM TO 5 PM MONDAY THROUGH FRIDAY.

FLOOD PLAIN CALCULATIONS

415 CF OF PROPOSED FLOODPLAIN ALTERATION
630 CF COMPENSATORY STORAGE PROVIDED

DRAINAGE STRUCTURE SCHEDULE:

DCB-1 5'ø
PRECAST RC
RIM =234.52
12"ø HDPE INV. OUT=231.52 (OP-1)

DIH-1 4'ø
PRECAST RC
RIM = 235.70
12"ø HDPE INV. IN=231.10 (OP-1)
12"ø HDPE INV. OUT=231.00 (INFIL. AREA)

DIH-2 4'ø
PRECAST RC
RIM = 235.90
12"ø HDPE INV. IN=231.00 (INFIL. AREA)
12"ø HDPE INV. OUT=231.00 (INFIL. AREA)

DRAINAGE PIPE SCHEDULE:

OP-1 12"ø
ADS N-12
S.OPE = 0.31%
LENGTH = 65'±
INLET INV.=231.52 (DCB-1)
OUTLET INV.=231.10 (DIH-1)

OP-2 12"ø
ADS N-12
S.OPE = 1.1%
LENGTH = 42'±
INLET INV.=232.66 (TRENCH)
OUTLET INV.=231.62 (DCB-1)

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:
DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS • LAND SURVEYORS • WETLAND CONSULTANTS
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PHONE: (978) 779-6091 FAX: (978) 779-0260
www.DucharmeandDillis.com

OWNER:
TURN LEFT, LCC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

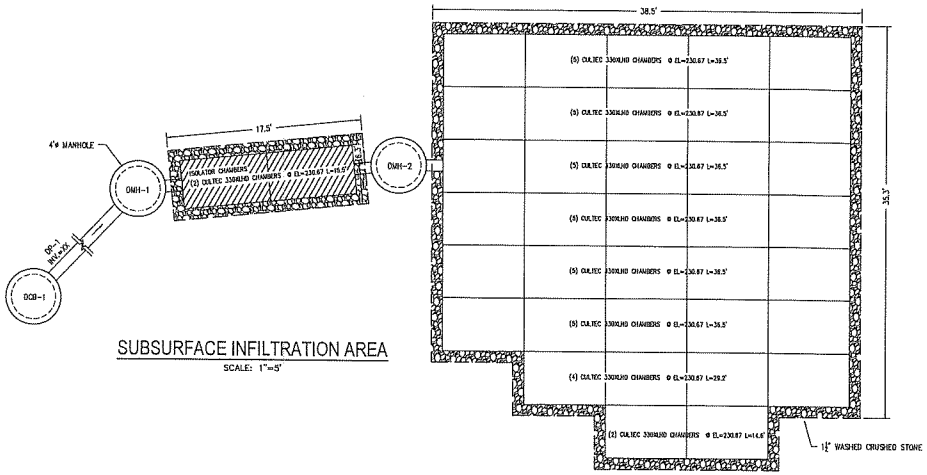
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
No. 49574
REGISTERED PROFESSIONAL ENGINEER
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

GRADING & DRAINAGE PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

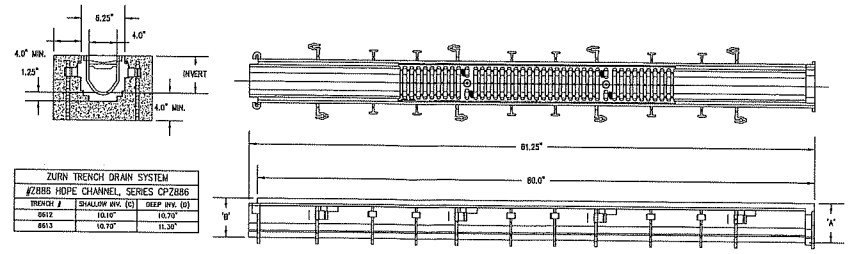
NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-GRADE
SHEET NO. C4.0



SUBSURFACE INFILTRATION AREA

SCALE: 1"=5'

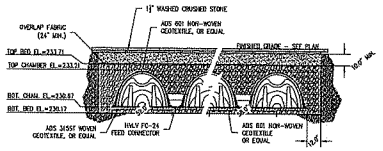


ZURN TRENCH DRAIN SYSTEM		
#Z886 HOPE CHANNEL, SERIES CPZ886		
TRENCH #	SHALLOW INV. (C)	DEEP INV. (D)
8512	10.10"	10.70"
8513	10.70"	11.30"

NOTES:
1. ACTUAL CHANNEL LENGTH IS 81.25" TO ALLOW FOR OVERLAP.
2. INSTALL Z886 E4 4" OUTLET END CAP.

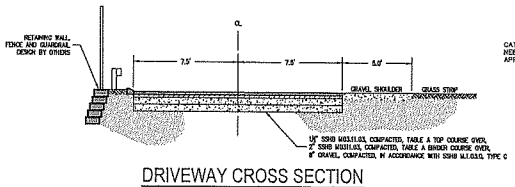
ZURN TRENCH DRAIN DETAIL

NOT TO SCALE



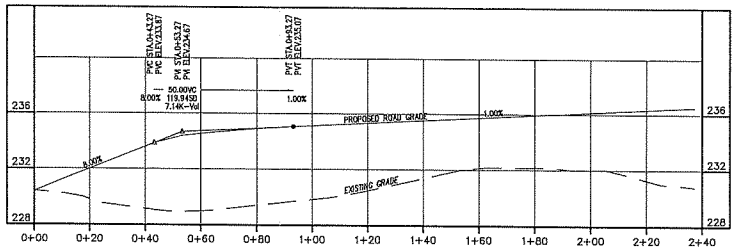
SUBSURFACE INFILTRATION AREA CROSS-SECTION

SCALE: 1"=4'



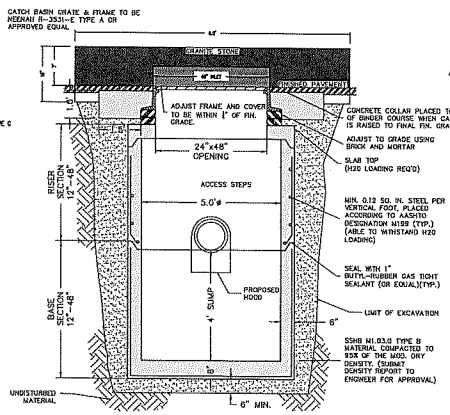
DRIVEWAY CROSS SECTION

SCALE: 1"=4'



DRIVEWAY PROFILE

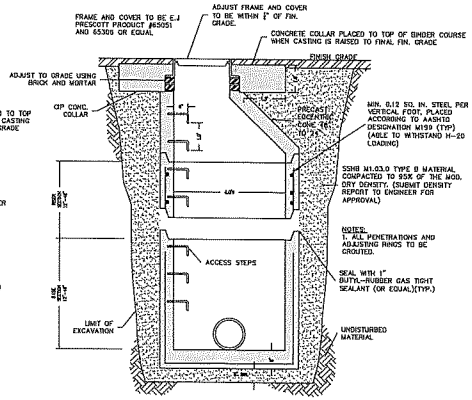
SCALE: 1" = 20' (HOR.)
1" = 4' (VERT.)



DEEP SUMP CONC. DOUBLE CATCH BASIN

NOT TO SCALE

NOTES:
1. ALL PENETRATIONS AND ADJUSTING BRICKS TO BE GROUTED.
2. INSTALL AN ADS ENVIROHOOD (OR EQUAL) ON OUTLET



DRAIN MANHOLE DETAIL

NOT TO SCALE

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:

DUCHARME & DILLIS
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MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

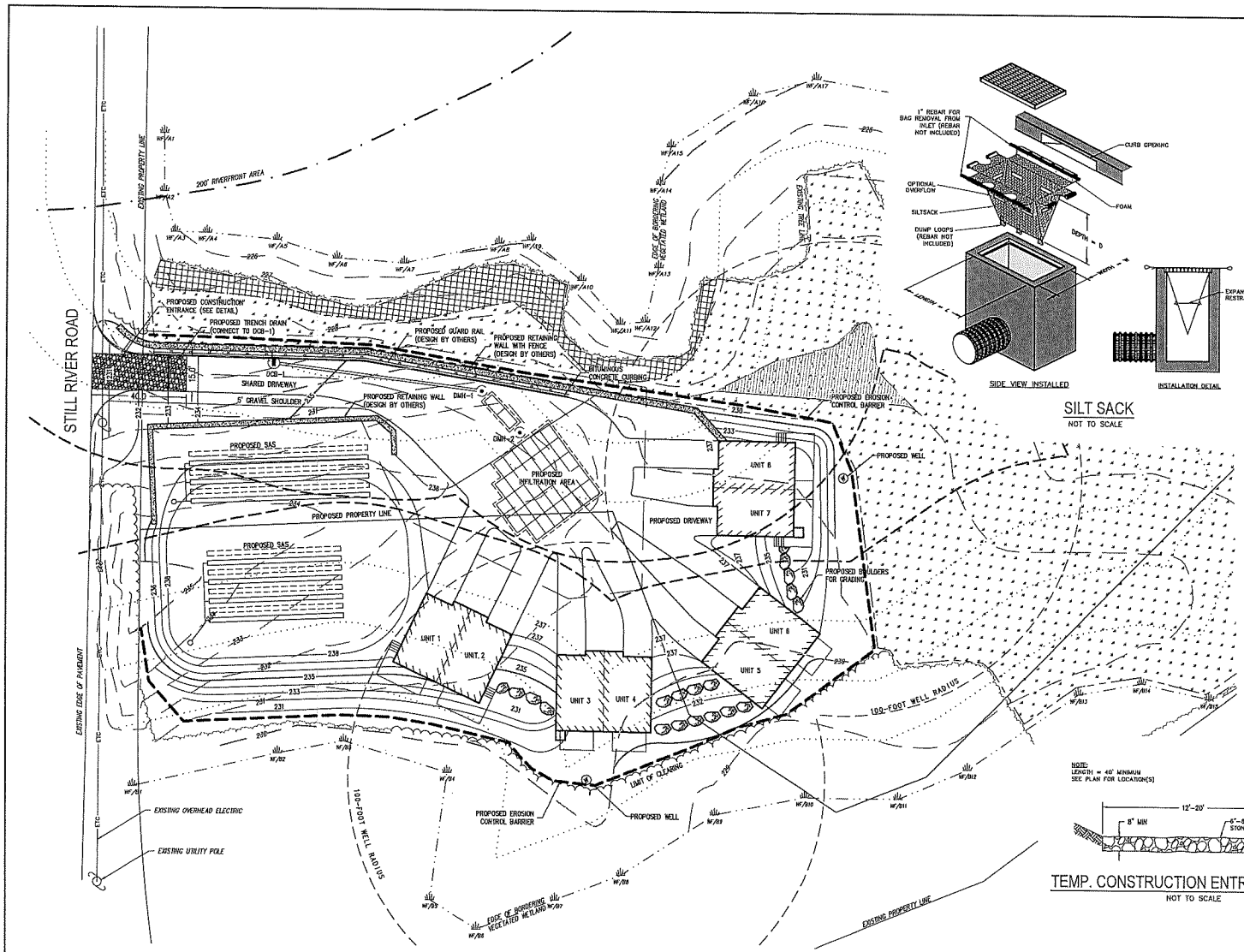
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. RUSS
No. 45904
PROFESSIONAL ENGINEER
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

GRADING & DRAINAGE DETAILS
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-GRADE
SHEET NO. C4.1



SILT SACK

NOT TO SCALE

EROSION CONTROL NOTES:

A. MANAGEMENT STRATEGIES:

1. CONSTRUCTION SHALL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
2. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY DISTURBANCE ON SITE.
3. AREAS WHICH ARE NOT TO BE DISTURBED SHALL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC. RETAIN EXISTING VEGETATION WHERE FEASIBLE.
4. THERE SHALL BE NO STORAGE OF ANY KIND OF ANY CHEMICALS, PESTICIDES, FUELS AND OTHER POTENTIALLY TOXIC OR HAZARDOUS MATERIALS ON SITE.
5. NO DEBRIS, JUNK, RUBBISH OR OTHER WASTE MATERIALS SHALL BE STORED ON THE SITE.
6. STUMPS AND OTHER WOOD DEBRIS SHALL BE DISPOSED OF IN ACCORDANCE WITH THE "POLICY ON THE DISPOSAL OF WOODWASTES" PUBLISHED BY THE DEPARTMENT OF ENVIRONMENTAL AFFAIRS, DATED AUGUST 14, 1987.
7. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.

B. MAINTENANCE/ PERFORMANCE STANDARDS:

ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH RAINFALL WITH AN ACCUMULATION OF ½" OR MORE. THE FOLLOWING ITEMS SHALL BE CHECKED IN PARTICULAR:

1. THE SILT FENCE BARRIERS SHALL BE CHECKED REGULARLY FOR TEARS, DETERIORATION, AND UNDERMINING.
2. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE RESEEDED AS NEEDED.
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO THE PUBLIC ROAD. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2 INCH STONE AS CONDITIONS DEMAND AND OR CLEANOUT/REPLACEMENT OF STONE IF CLOGGED BY SEDIMENTATION OCCURS. ALL MATERIALS SPILLED DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO THE TOWN ROAD MUST BE REMOVED DAILY BY SWEEPING OR OTHER SUITABLE MEANS.
4. ALL AREAS ON SITE SUBJECT TO EROSION/SEDIMENTATION SHALL BE INSPECTED ON A REGULAR BASIS. ALL ITEMS SPECIFIED ON THIS AND OTHER PLANS SHALL BE INSPECTED TO VERIFY THAT THEY ARE OPERATING AS DESIGNED AND INTENDED. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO MAINTAIN AND REPAIR ALL STRUCTURES.
5. THE ENTIRE DRAINAGE SYSTEM SHALL BE INSPECTED ON A REGULAR BASIS AND PRIOR TO AND IMMEDIATELY AFTER ANY RAINFALL EVENT WHILE THE SITE IS DISTURBED.
   - CATCH BASINS SHALL BE INSPECTED WEEKLY TO ENSURE THAT THEY ARE WATER TIGHT, HAVE ADEQUATE SUMP CAPACITY, THAT OIL AND GAS TRAPS ARE IN PLACE. THEY SHALL ALSO BE INSPECTED AFTER EVERY SIGNIFICANT RAINFALL EVENT (I.E. A TWO-YEAR STORM EVENT OR GREATER) DURING THE FIRST THREE (3) MONTHS OF BEING PLACED IN SERVICE TO ENSURE THAT THEY ARE FUNCTIONING IN AN ADEQUATE FASHION. THE BASINS SHALL BE CLEANED WITH A VACUUM TRUCK WHEN ½ OF THE SUMP IS FILLED WITH SEDIMENT BUT NOT LESS THAN TWO (2) TIMES PER YEAR. AFTER THE FIRST THREE (3) MONTHS OF SERVICE THE BASINS SHALL BE INSPECTED NOT LESS THAN ONE (1) TIME PER YEAR TO ENSURE ADEQUATE FUNCTIONALITY. OIL/GAS TRAPS SHALL BE CLEANED WITH A VACUUM TRUCK AND MONITORED FOR HYDROCARBON BUILD UP SEMIANNUALLY.
   - THE TRENCH DRAIN DURING CONSTRUCTION SHALL BE INSPECTED MONTHLY FOR SEDIMENT ACCUMULATION AND LEAF BUILDUP. ALL SEDIMENT SHALL BE REMOVED AND LEAF LITTER REMOVED.
   - DEWATERING OF EXCAVATIONS DURING CONSTRUCTION SHALL BE ADDRESSED ON AN INDIVIDUAL BASIS AS NEEDED. IF TEMPORARY DEWATERING IS REQUIRED ON THE SITE OR IN CLOSE PROXIMITY TO THE 100 FT BUFFER ZONE, SEDIMENT BASINS SHALL BE CONSTRUCTED OR SILT TRAPS SHALL BE UTILIZED. SILT TRAPS AND SEDIMENT BASINS SHALL BE MAINTAINED DURING THE DEWATERING OPERATION.

D. TEMPORARY MEASURES:

1. PLACE SILT FENCE AND SILT FENCE WITH STRAW BALES AS SHOWN ON THIS PLAN.
2. 6" LOAM IN PLACES OUTSIDE OF THE NORMAL GROWING SEASON SILT FENCE OR STRAW BARRIERS SHALL BE PLACED BETWEEN THE LAWN AREA AND PAVEMENT.
3. CONSTRUCT TEMPORARY STONE PAD AT EXIT TO THE SITE AS SHOWN ON THE EROSION CONTROL PLAN.
4. DURING DRY PERIODS, PROVIDE MEANS FOR MITIGATION OF DUST, SUCH AS WATERING OF EXPOSED AREAS.
5. STOCKPILE LOCATIONS SHALL BE WITHIN THE PROPOSED LIMIT OF WORK. PLACE SILT FENCE AROUND ALL STOCK PILE AREAS. PILES LEFT FOR 21 DAYS OR MORE SHALL BE SEEDED OR COVER WITH PLASTIC SHEETING.
6. WASTE DISPOSAL RECEPTACLES AND DUMPSTERS WILL BE USED FOR THE DISPOSAL OF CONSTRUCTION DEBRIS, WHICH WILL BE REMOVED FROM SITE ACCORDING TO STATE, LOCAL AND FEDERAL GUIDELINES. CONSTRUCTION DEBRIS WILL INCLUDE PAVEMENT, UTILITY, EARTH AND BUILDING MATERIALS THAT CANNOT BE REUSED. THE RECEPTACLES WILL BE LOCATED ON-SITE AND COVERED.
7. PLACE CATCHBASIN INSERTS IN CATCHBASINS AFTER CONSTRUCTED.
8. IN ADDITION TO WHAT IS DEPICTED ON THE PLANS, SILT FENCE SHALL BE PLACED DOWN GRADIENT (UP-GRADIENT OF ANY STORM WATER APPURTENANCES, WETLAND BUFFER ZONES AND AREAS TO BE LEFT UNDISTURBED) TO EACH STRUCTURE DURING THE CONSTRUCTION PROCESS UNTIL THE DISTURBED AREA IS RESTORED.

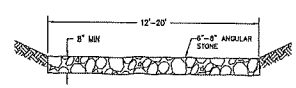
E. PERMANENT STABILIZATION:

2. SLOPES IN EXCESS OF 3 TO 1 SHALL BE HYDRO-MULCHED. LOAMED (6" MIN.) AND SEEDED SLOPES WILL BE PROTECTED FROM WASHOUT BY MULCHING OR OTHER ACCEPTABLE SLOPE PROTECTION UNTIL VEGETATION IS ESTABLISHED.
3. UNLESS OTHERWISE INDICATED HEREIN ALL DISTURBED AREAS SHALL BE LOAMED (6" MIN.) AND SEEDED WITH AN APPROPRIATE MIXTURE OF GRASSES SUITABLE FOR THE AREA. AREAS NOT STABILIZED BEFORE THE END OF THE FALL PLANTING SEASON SHALL BE HYDRO-MULCHED AND SEEDED IN THE SPRING.
4. SLOPES STEEPER THAN 3 TO 1 SHALL BE RESTORED WITH 6" OF LOAM (MIN.), SEED, FERTILIZER AND STAKED DOWN EROSION CONTROL BLANKET SIMILAR TO NORTH AMERICAN GREEN SC 150 OR. INSTALL IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
5. THE TEMPORARY MEASURES WILL NOT BE REMOVED UNTIL PERMANENT STABILIZATION HAS OCCURRED.
6. PROPOSED GARDEN AREA SHALL HAVE 12" ORGANIC MATERIAL CONFORMING TO SSHB MODEL.

F. CONSTRUCTION SEQUENCE:

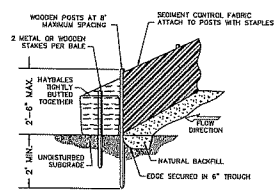
DURING THIS SEQUENCE ALL EROSION CONTROLS SHALL BE INSPECTED AND MAINTAINED. ALL DISTURBED AREAS SHALL BE STABILIZED BY SEEDING OR SODDING AS SOON AS POSSIBLE AFTER GRADING IS COMPLETE. EROSION BARRIERS SHALL BE REMOVED AFTER SLOPE STABILIZATION IS COMPLETE.

2. INSTALL EROSION AND SEDIMENT CONTROL MEASURES.
3. EXCAVATE TO SUBGRADE IN CUT SECTIONS. DRAW FILL SECTIONS TO SUBGRADE USING EXCAVATED SOIL.
4. INSTALL BUILDING PAD AND UTILITIES INCLUDING DRAINAGE SYSTEM, WATER, GAS AND ELECTRICAL UTILITIES.
5. PLACE COMPACTED BASE GRAVEL FOR THE PAVED AREAS; ROUGH GRADE AREAS TO BE LOAMED AND SEEDED.
6. INSTALL PAVEMENT.
7. FINALIZE GRADING, LOAM, SEED AND MULCH DISTURBED AREAS.



TEMP. CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



SILTATION BARRIER

NOT TO SCALE

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:
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LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

COMMONWEALTH OF MASSACHUSETTS GREGORY S. ROY No. 35777 REGISTERED PROFESSIONAL ENGINEER
7/5/18

DATE:	7/5/18
DESIGN BY:	JPL
DRAWN BY:	JPL
CHECKED BY:	GSR

EROSION & SEDIMENTATION CONTROL PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

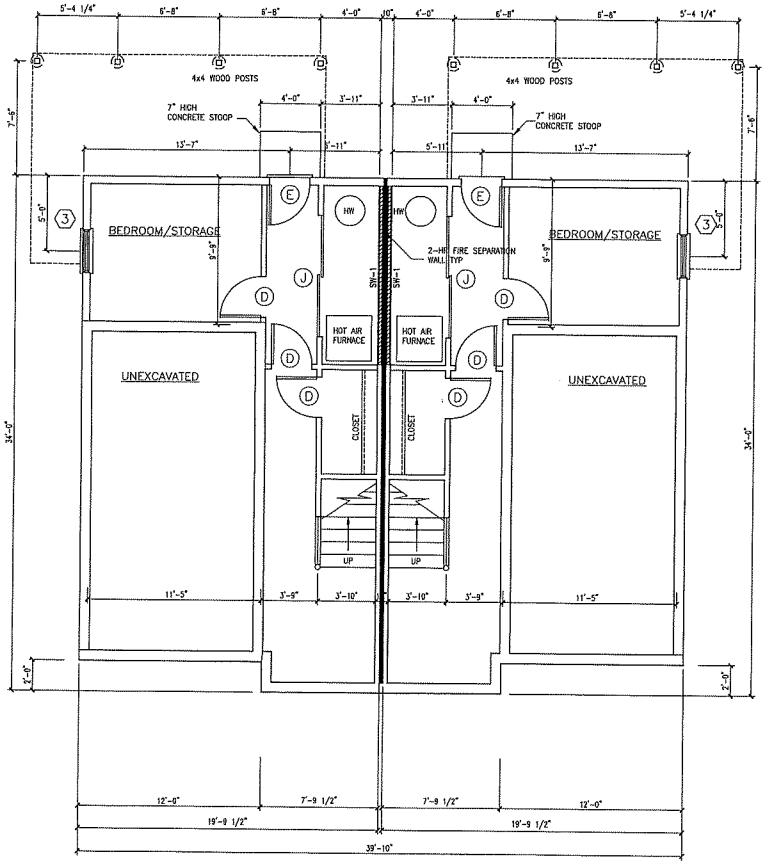
NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-EROSION
SHEET NO. C5.0

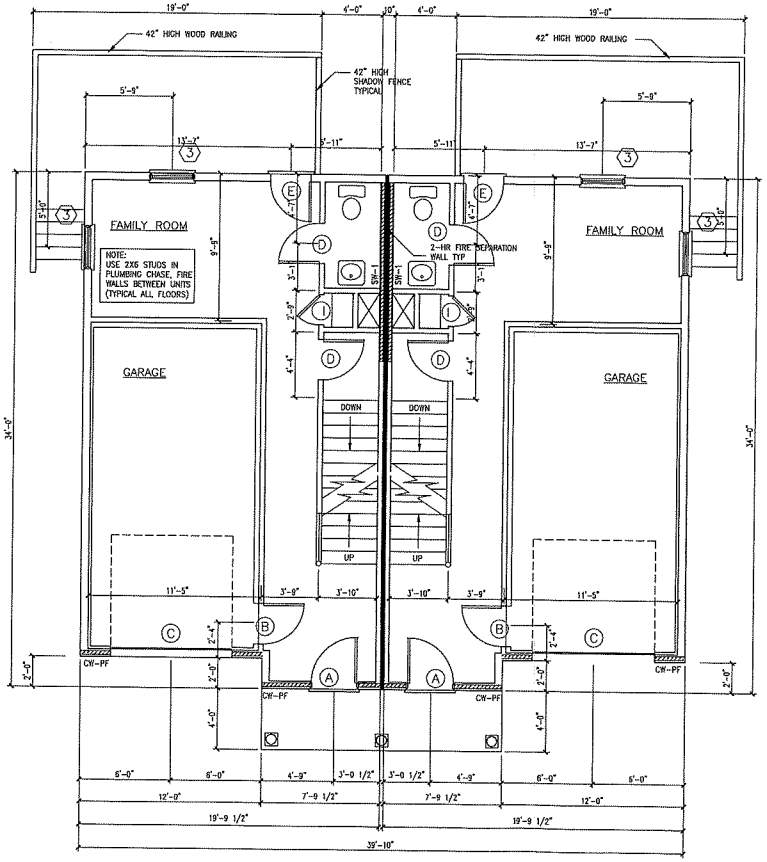
Exhibit J

Architectural Drawings

DUPLEX
TYPE A



1 BASEMENT PLAN
SCALE 1/4"=1'-0"



2 GROUND FLOOR PLAN
SCALE 1/4"=1'-0"

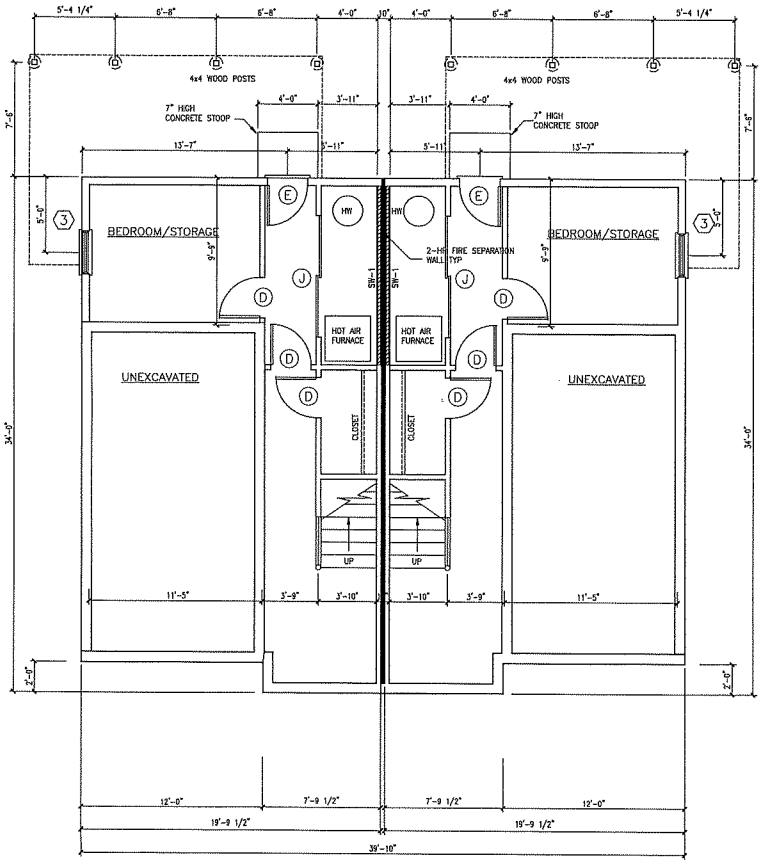
Revisions :
Approved :

Proj. Mgr.:FC
Designed :FC
Drawn : KC
Checked : FC
Scale : NOTED
Date : 2-18-2018

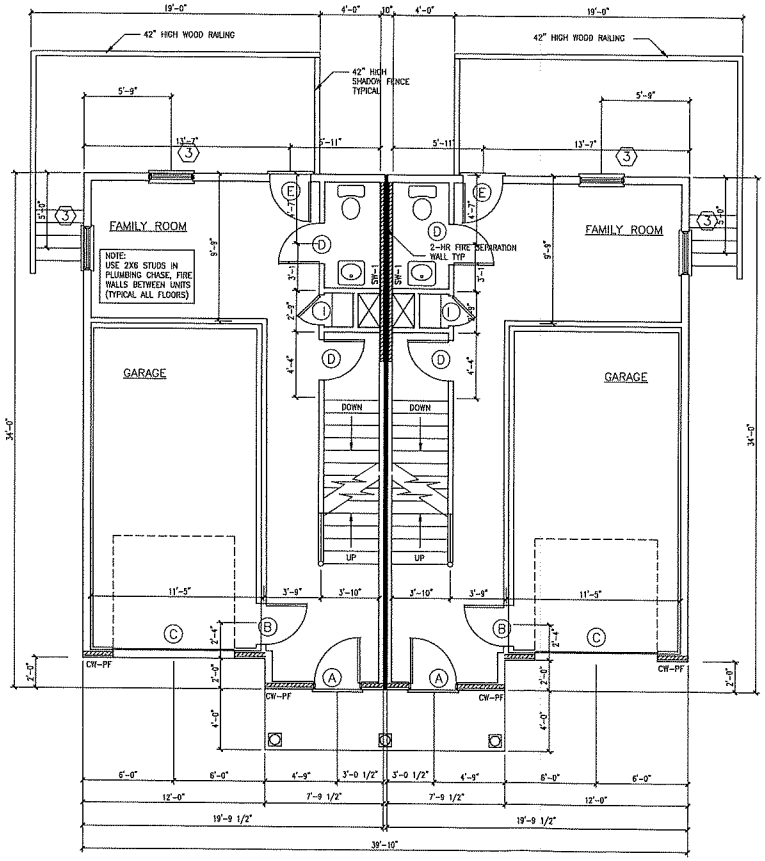
STILL RIVER ROAD
BOLTON, MASSACHUSETTS

Proj. No. 18-007
Dwg. No.
A-100

DUPLEX
TYPE A



1 BASEMENT PLAN
SCALE 1/4"=1'-0"



2 GROUND FLOOR PLAN
SCALE 1/4"=1'-0"

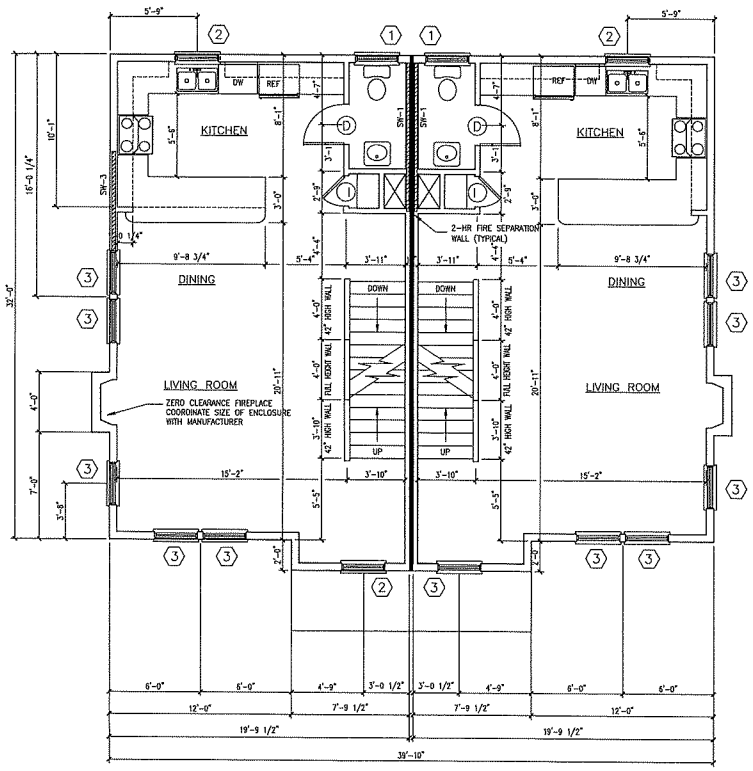
Revisions :
Approved :

Proj. Mgr.:FC
Designed :FC
Drawn : RC
Checked : FC
Scale : NOTED
Date : 2-16-2018

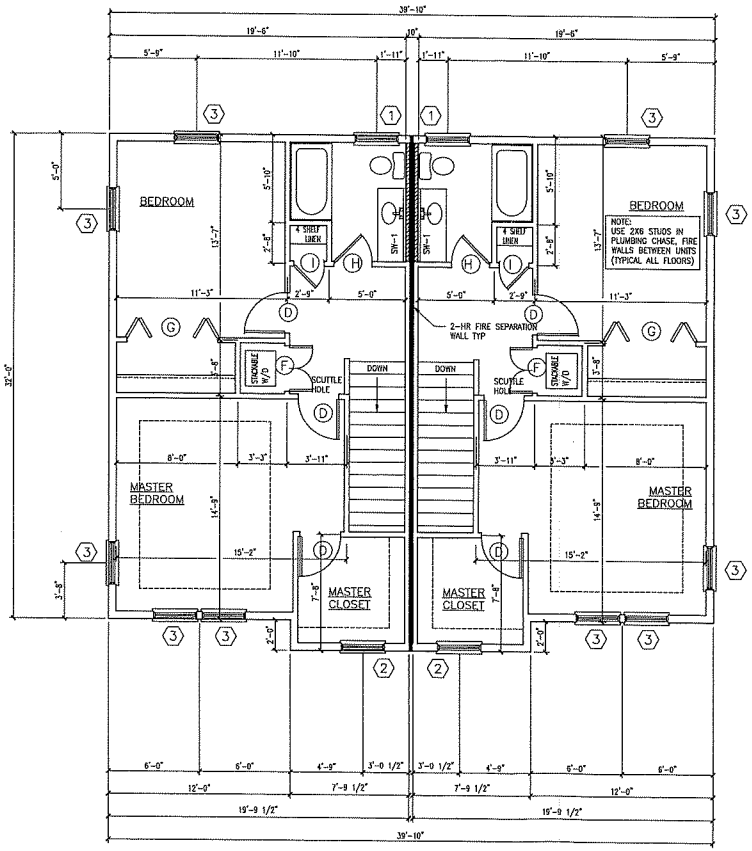
STILL RIVER ROAD
BOLTON, MASSACHUSETTS

Proj. No. 18-007
Dwg. No.
A-100

DUPLEX
TYPE A



1 FIRST FLOOR PLAN
SCALE 1/4"=1'-0"



2 SECOND FLOOR PLAN
SCALE 1/4"=1'-0"

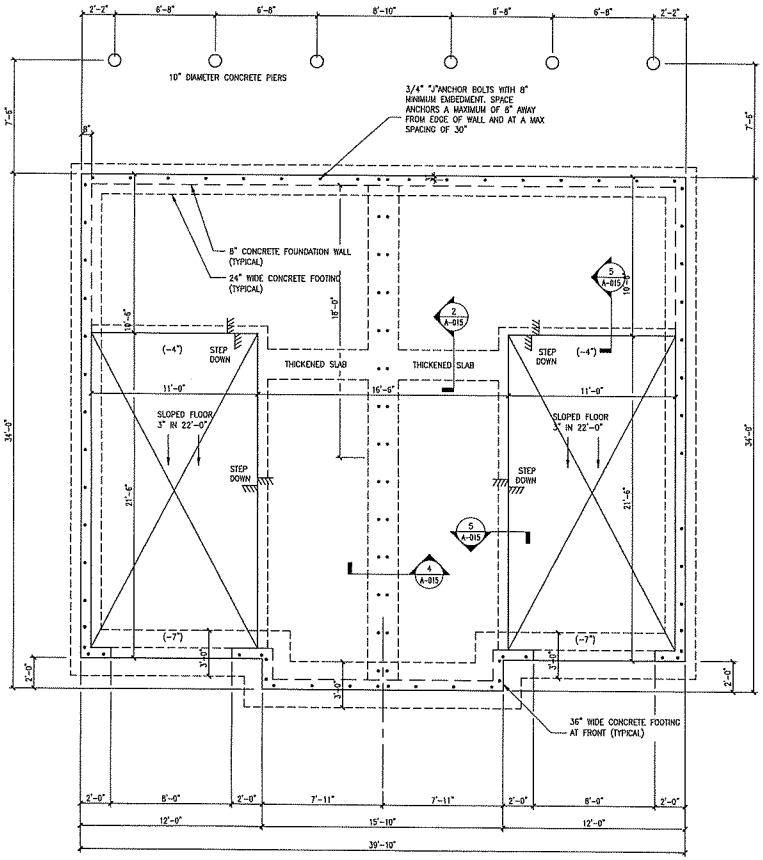
Revisions :
Approved :

Proj. Mgr.:FC
Designed :FC
Drawn : KC
Checked : FC
Scale : NOTED
Date : 2-18-2018

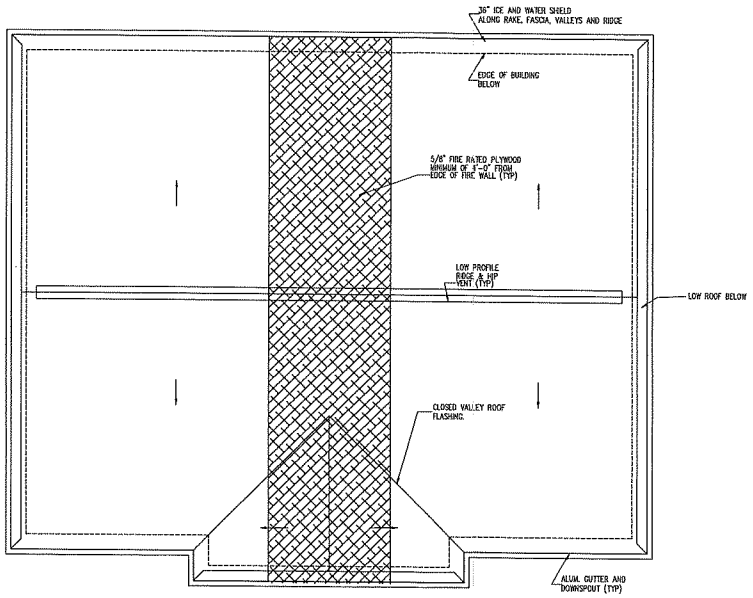
STILL RIVER ROAD
BOLTON, MASSACHUSETTS

Proj. No. 18-007
Dwg. No.
A-101

DUPLEX
TYPE A



1 FOUNDATION PLAN
SCALE 1/4"=1'-0"



2 ROOF PLAN
SCALE 1/4"=1'-0"

Revisions :
Approved :

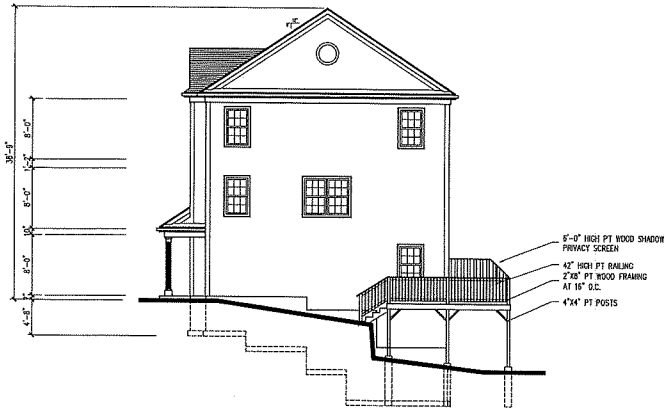
Proj. Mgr.:FC
Designed :FC
Drawn : RC
Checked : FC
Scale : NOTED
Date : 2-18-2018

STILL RIVER ROAD
BOLTON, MASSACHUSETTS

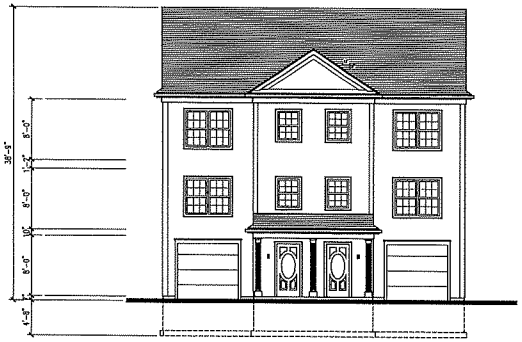
Proj. No. 18-007
Dwg. No.
A-102

DUPLEX
TYPE A

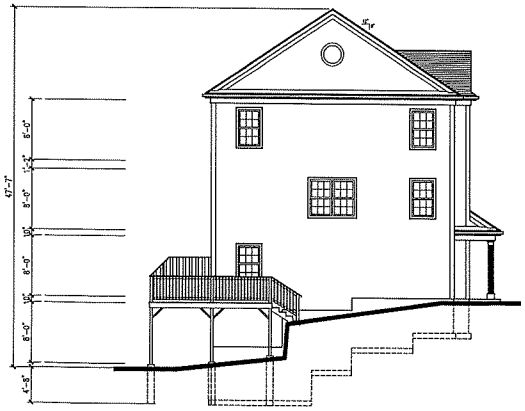
1 BACK ELEVATION
– SCALE 1/8"=1'-0"



2 RIGHT ELEVATION
– SCALE 1/8"=1'-0"



3 FRONT ELEVATION
– SCALE 1/8"=1'-0"



4 LEFT ELEVATION
– SCALE 1/8"=1'-0"

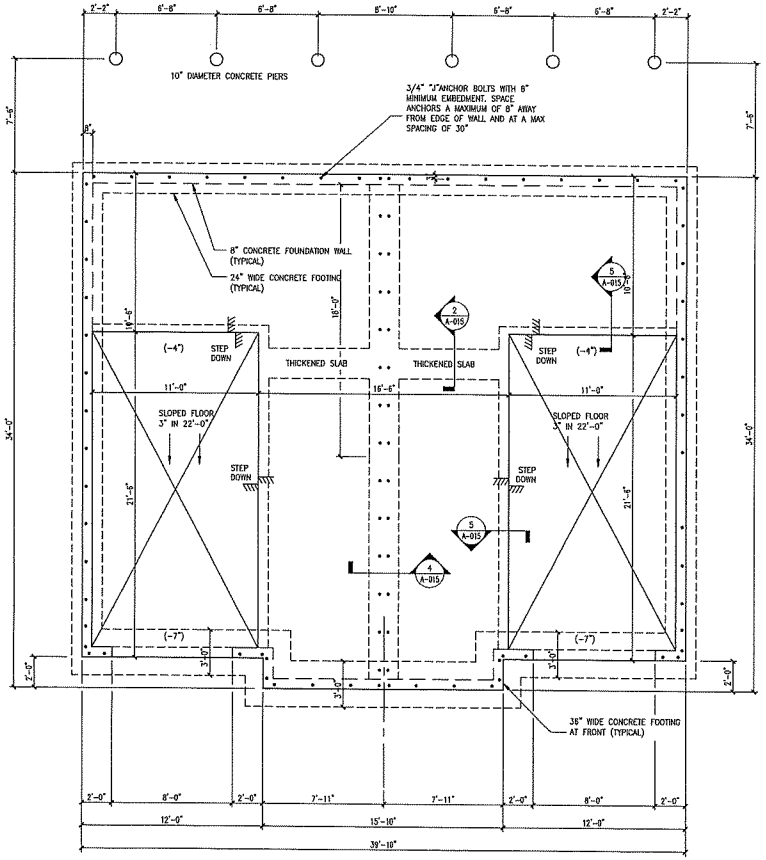
Revisions :
Approved :

Proj. Mgr.:FC
Designed :FC
Drawn : KC
Checked : FC
Scale : NOTED
Date : 2-18-2018

STILL RIVER ROAD
BOLTON, MASSACHUSETTS

Proj. No. 18-007
Dwg. No.
A-103

DUPLEX
TYPE B



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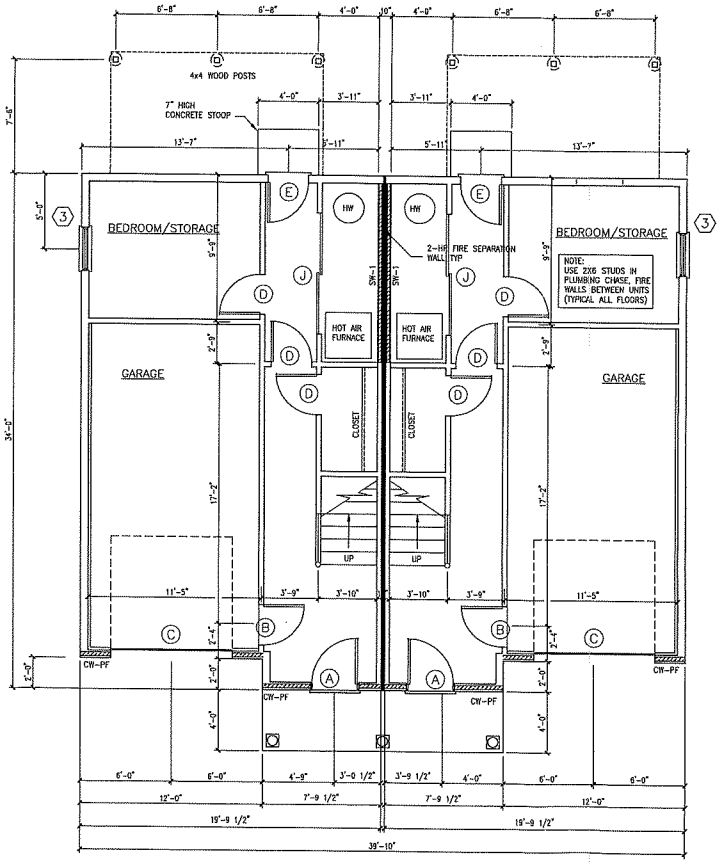


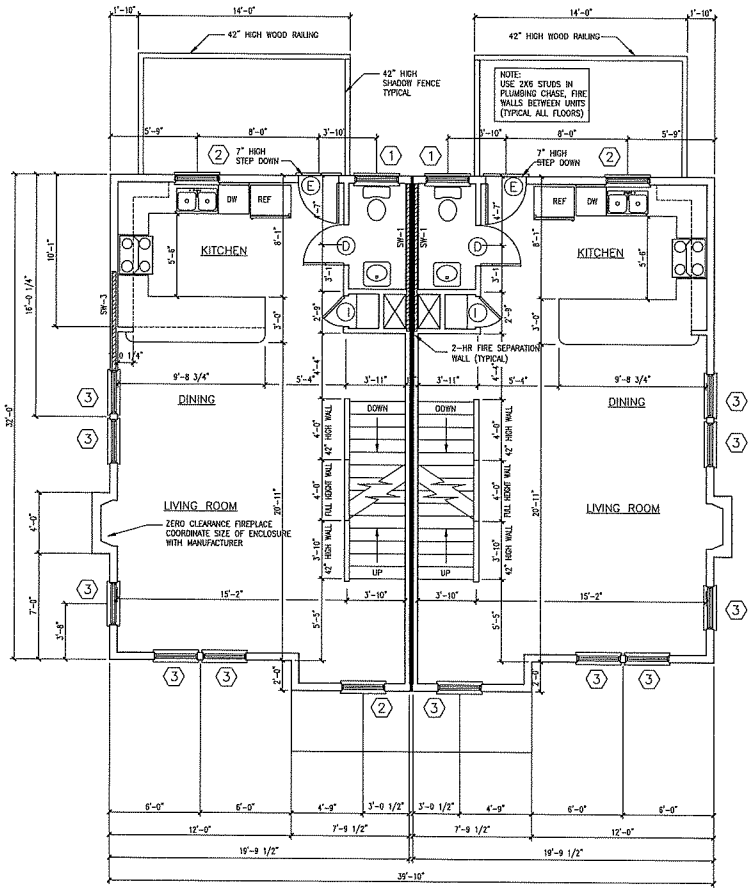
2 GROUND FLOOR PLAN
SCALE 1/4"=1'-0"

Revisions :
Approved :

Proj. Mgr.:FC
Designed :FC
Drawn : KC
Checked : FC
Scale : NOTED
Date : 2-16-2018

STILL RIVER ROAD
BOLTON, MASSACHUSETTS

Proj. No. 18-007
Dwg. No.
A-200



1 FIRST FLOOR PLAN
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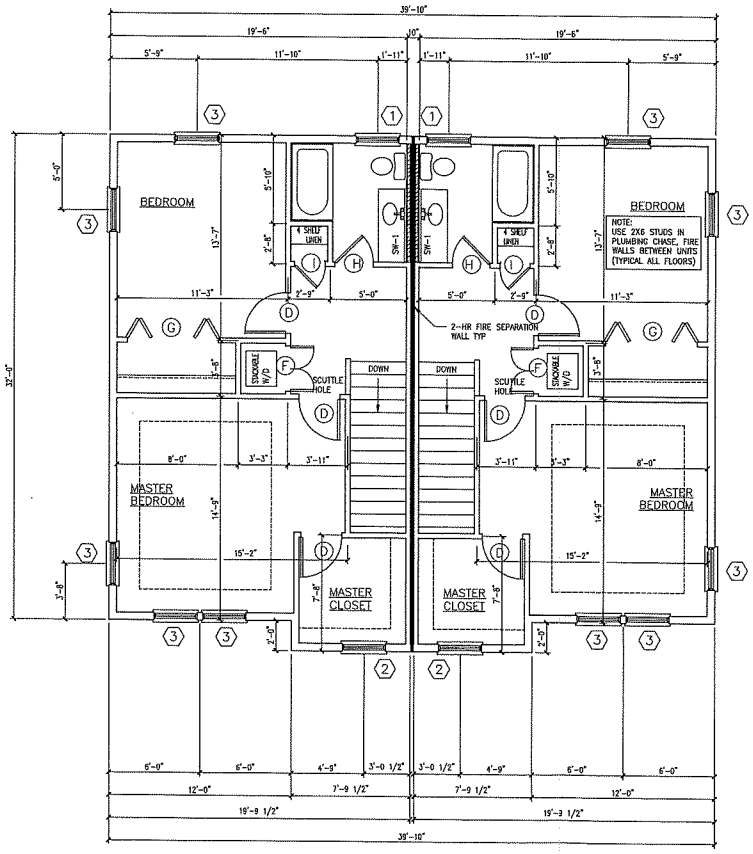


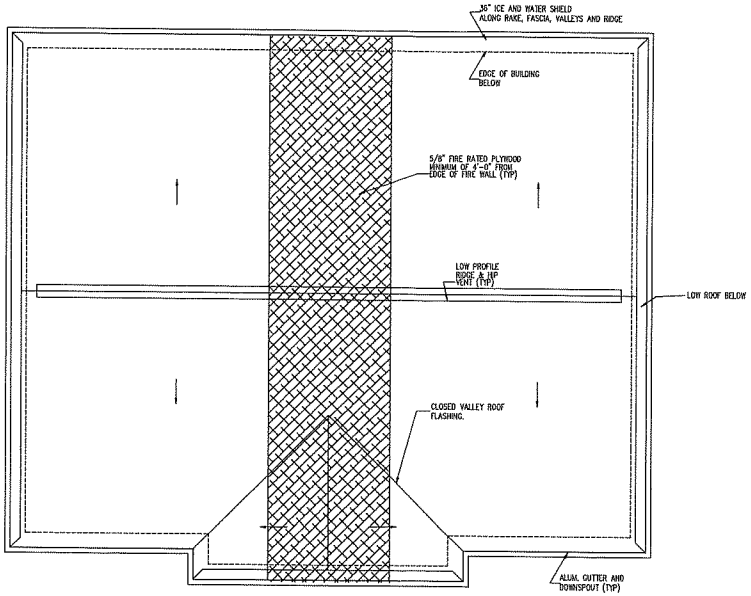
2 SECOND FLOOR PLAN
SCALE 1/4"=1'-0"

Revisions :
Approved :

Proj. Mgr.: FC
Designed : FC
Drawn : FC
Checked : FC
Scale : NOTED
Date : 2-18-2018

STILL RIVER ROAD
BOLTON, MASSACHUSETTS

Proj. No. 18-007
Dwg. No.
A-201



2 ROOF PLAN
– SCALE 1/4"=1'-0"

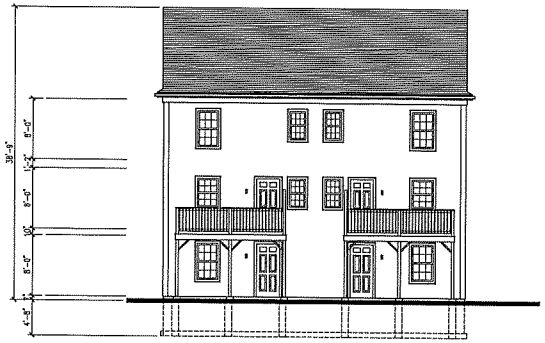
Revisions :
Approved :

Proj. Mgr.:FC
Designed : FC
Drawn : KC
Checked : FC
Scale : NOTED
Date : 2-18-2016

STILL RIVER ROAD
BOLTON, MASSACHUSETTS

Proj. No. 18-007
Dwg. No.
A-202

DUPLEX
TYPE B



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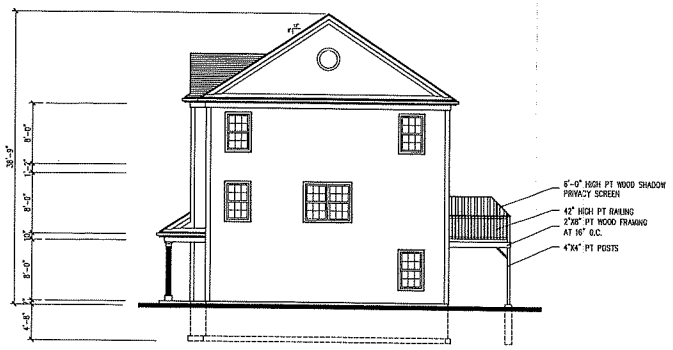

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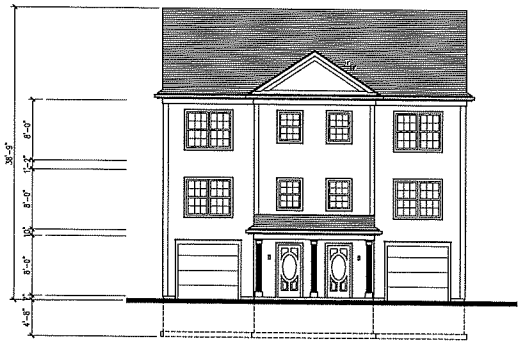

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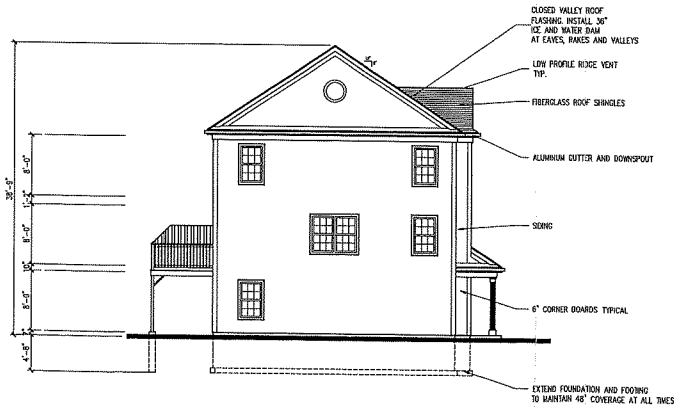


4 LEFT ELEVATION
– SCALE 1/8"=1'-0"

Revisions :
Approved :

Proj. Mgr.:FC
Designed : FC
Drawn : KC
Checked : FC
Scale : NOTED
Date : 2-18-2016

STILL RIVER ROAD
BOLTON, MASSACHUSETTS

Proj. No. 18-007
Dwg. No.
A-203

Exhibit K

Drainage Calculations

STORMWATER REPORT

FOR

STILL RIVER COMMONS

STILL RIVER ROAD, MAP 8B PARCEL 32

IN

BOLTON,
MASSACHUSETTS

PREPARED BY: DUCHARME & DILLIS
CIVIL DESIGN GROUP, INC.
P.O. Box 428
Bolton, MA 01740

PREPARED FOR: STILL RIVER ROAD DEVELOPMENT, LLC
28 Country Club Lane
Middleton, MA 01949

JUNE 27TH, 2018

CDG PROJECT # 3339-P

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS • LAND SURVEYORS • WETLAND CONSULTANTS

TABLE OF CONTENTS:

1.0 Project Narrative

1.1 Project Type

The proposed project includes the development of the 6.7-acre site located off Still River Road in the town of Bolton. The site will consist of eight (8) units in four (4) duplex-style buildings with a shared driveway and a stormwater drainage system.

1.2 Purpose and Scope

This report has been prepared to comply with the requirements of the Stormwater Management Standards incorporated in the Massachusetts Wetlands Protection Act Regulations, 310 CMR 10.00. These standards are intended to promote increased groundwater recharge and prevent stormwater discharges from causing or contributing to the pollution of surface waters and ground waters of the Commonwealth. The standards aim to accomplish these goals by encouraging the greater use of low impact development techniques and improving the operation and maintenance of stormwater best management practices.

This report addresses compliance of the proposed development with each of the ten stormwater standards, it provides calculations to support the compliance information, and it provides an Operation and Maintenance Plan and Long-Term Pollution Prevention Plan for the stormwater management system.

1.3 Proposed Development

As mentioned, the proposed project is the development of four (4) duplex-style buildings with a shared driveway. The project is being proposed pursuant to the Massachusetts General Laws Chapter 40B.

The driveway will have access off Still River Road approximately 310 feet north of the intersection of Vaughn Hill Road and Still River Road. The proposed development will include private wells and on-site septic systems.

1.4 LID Measures

Care has been taken to lay out the proposed site in a manner that works with existing topography. BMPs such as subsurface infiltration chambers are used to manage the stormwater runoff. Stormwater from the impervious areas are routed via curb and gutter systems and storm drains to subsurface infiltration chambers which contain a sediment forebay for pretreatment. This system will be used to promote groundwater recharge and limit the runoff.

1.5 Site Description

The current property is vacant consisting of a grass/brush area and a wooded area. The site is located on Still River Road approximately 310 feet north of the intersection of Vaughn Hill Road and Still River Road. The abutting properties consist of residential homes and undeveloped woods and wetlands.

A large Bordering Vegetated Wetland exists on the property as depicted on the plans. The wetland wraps around the north, east and southern sides of the property. The middle portion of the property consists of an unmaintained meadow. The site generally has mild slopes with a ridge that runs down the center of the meadow area. The grades drain to the north, south and east towards the wetland.

The Natural Resource Conservation Service (NRCS) soil survey information indicates that the site is underlain by soils classified as belonging to Hydrologic Soil Groups A and C.

1.6 Proposed Stormwater Management System

Runoff from the proposed impervious areas will be conveyed and treated through a combination of BMP's and infiltrated to the groundwater. The infiltration will help to recharge the groundwater and ensure that the proposed development will not cause any off-site flooding. The following is a brief discussion of each conveyance and treatment BMP proposed.

Deep Sump Hooded Catch Basin
A deep sump hooded catch basin is proposed to convey the runoff from the proposed paved areas and roofs to the subsurface infiltration chambers. The catch basin will discharge to manholes and conventional storm drains.

Subsurface Infiltration Chambers
A subsurface infiltration system is included on site. Cultec pre-fabricated chambers, model 330XLHD, will be installed to collect the run off from the roofs and pavement after pretreatment in the deep sump hooded catch basin. The runoff will first be directed into a small group of chambers. These chambers will be wrapped in a geotextile fabric and will act as a sediment forebay for additional pre-treatment. The runoff will then be directed towards the larger infiltration area. The chambers have been designed to accommodate the runoff associated with the 100-year storm event and have enough volume to accommodate the required recharge and water quality volumes.

Trench Drain
A trench drain will be installed across the shared driveway near the entrance. This drain is designed to capture additional runoff that would otherwise flow onto Still River Road. The runoff collected from the trench drain will be directed into the

deep sump hooded catch basin where it will begin treatment before infiltration.

1.7 Methods of Analysis

United States Department of Agriculture Natural Resources Conservation Service (NRCS) soil cover complex methods (TR-20) were employed to compute runoff quantities for the subject property and, where appropriate, adjacent property that drains toward a common discharge point with runoff from the subject site. HydroCAD 10.0 computer software was employed in this hydrologic analysis. A comparison of pre- and post-development runoff quantities at two different analysis points was performed in order to design a stormwater management system that will limit peak rates of runoff from the development to predevelopment levels for 24-hour rainfall events of 2-, 10-, and 100-year return frequencies. Watershed boundaries for existing conditions are depicted on the attached Predevelopment Watershed Plan. Post-Developed watershed boundaries are indicated on the Post-development Watershed Plan.

2.0 Stormwater Standards Compliance

2.1 Standard 1 – Untreated Discharges

The stormwater management system for the proposed development will not result in any new discharges of untreated stormwater to wetland resource areas. Stormwater management structures have been designed such that there is no erosion or scour to wetland resource areas or waters of the Commonwealth.

2.2 Standard 2 – Peak Rate Attenuation

Hydrologic calculations for existing and proposed site conditions are included in Appendices D and E respectively. Calculations for 24-hour rainfall events of 2-, 10- and 100-year return frequencies are provided. The following table provides a summary of peak rates of runoff related to each of these storms for a design point at the wetland boundary through which all runoff from the subject property must flow. For all rainfall events considered, the proposed stormwater management system will control runoff from the development such that corresponding peak flows at the design point will match pre-developed rates to the maximum extent practical.
As seen in the table below, the post-development rate for the 2-yr, 24-hr storm event is 0.06 cfs greater than the pre-development rate. This flow is negligible when spread out across the entire 2.9 acres modeled.

	2 YR, 24 HR		10 YR, 24 HR		100 YR, 24 HR	
	PRE	POST	PRE	POST	PRE	POST
DP-A	0.93	0.99	2.18	2.17	4.80	4.76

2.3 Standard 3 – Recharge

As discussed in the Introduction, Natural Resource Conservation Service data indicates that the areas within the proposed development consist of soils from Hydrologic Groups A and C. On site soil testing was also performed and the logs can be found in Appendix C.

A subsurface infiltration chamber area has been designed to provide infiltration of the required recharge and water quality volumes. Recharge calculations can be found in Appendix F. Mounding Calculations can also be found in Appendix F.

2.4 Standard 4 – Water Quality

A total of 85% TSS removal was achieved using BMPs. As part of the proposed project, infiltration requires a minimum of 44% TSS removal provided prior to discharge. Two TSS calculation sheets have been provided. The sheet with a deep sump catch basin into a sediment forebay shows proper pre-treatment before entering the subsurface infiltration chambers and infiltration basin. The sheet with deep sump catch basin into an infiltration basin shows there is enough TSS removal within the whole system. See Appendix F for detailed calculations.

2.5 Standard 5 – Land Uses with Higher Pollutant Loads

The current and proposed uses of the subject site do not constitute land use with higher potential pollutant load, thus Standard 5 does not apply to the proposed project.

2.6 Standard 6 – Critical Areas

The proposed project does not involve a stormwater discharge within or near to any of the areas defined as "Critical Areas" at 314 CMR 9.02 and 310 CMR 10.04.

2.7 Standard 7 – Redevelopment

The project does not qualify for redevelopment provisions.

2.8 Standard 8 – Construction Period Pollution Prevention and Erosion and Sediment Control

Because the project is subject to the filing of an Environmental Protection Agency Notice of Intent (EPA NOI), the Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction. This document will be prepared to satisfy the requirements of the EPA NOI and the Standard 8 Construction Period Pollution prevention and Erosion and Sedimentation Control Plan.

2.9 Standard 9 – Operation and Maintenance Plan

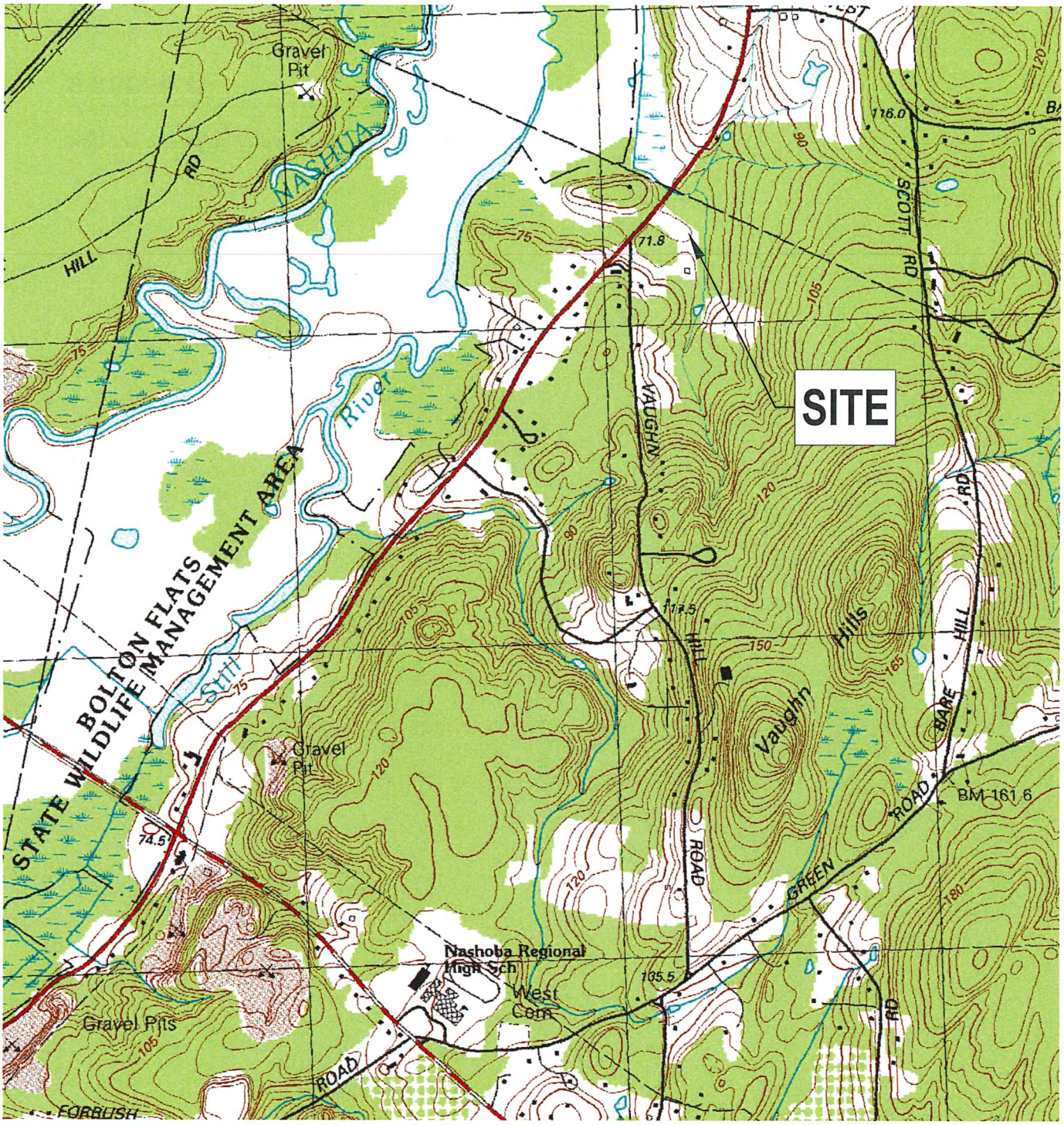
Refer to Appendix G for a complete copy of the Stormwater Operation and Maintenance Plan.

2.10 Standard 10 – Prohibition of Illicit Discharges

An illicit discharge statement will be prepared after approvals are received and prior to construction.

APPENDIX A

Locus Map



LOCUS MAP

Prepared By: Ducharme & Dillis, Civil Design Group, Inc.
1092 Main Street
P.O. Box 428
Bolton, Massachusetts

DATE: JUNE 2018

Prepared For: Still River Road Development, LLC
28 Country Club Lane
Middleton, Massachusetts

SCALE: 1" = 800'

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS• LAND SURVEYORS• WETLAND CONSULTANTS

APPENDIX B

Checklist for Stormwater Report Checklist

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
NO. 46070
REGISTERED PROFESSIONAL ENGINEER

6/27/18

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

- [x] New development
- [ ] Redevelopment (Although the project is considered redevelopment, it meets all of the Standards below)
- [ ] Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- [x] No disturbance to any Wetland Resource Areas
- [ ] Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- [ ] Reduced Impervious Area (Redevelopment Only)
- [ ] Minimizing disturbance to existing trees and shrubs
- [ ] LID Site Design Credit Requested:
  - [ ] Credit 1
  - [ ] Credit 2
  - [ ] Credit 3
- [ ] Use of "country drainage" versus curb and gutter conveyance and pipe
- [ ] Bioretention Cells (includes Rain Gardens)
- [ ] Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- [ ] Treebox Filter
- [ ] Water Quality Swale
- [ ] Grass Channel
- [ ] Green Roof
- [x] Other (describe): Subsurface Infiltration

Standard 1: No New Untreated Discharges

- [x] No new untreated discharges
- [x] Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- [x] Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☑ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☑ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☑ Soil Analysis provided.

☑ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☑ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☑ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☑ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☑ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☑ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☑ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☑ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☑ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☑ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☑ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☑ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☑ The BMP is sized (and calculations provided) based on:

- ☑ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☑ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☑ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☑ Name of the stormwater management system owners;
- ☑ Party responsible for operation and maintenance;
- ☑ Schedule for implementation of routine and non-routine maintenance tasks;
- ☑ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☑ Description and delineation of public safety features;
- ☑ Estimated operation and maintenance budget; and
- ☑ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

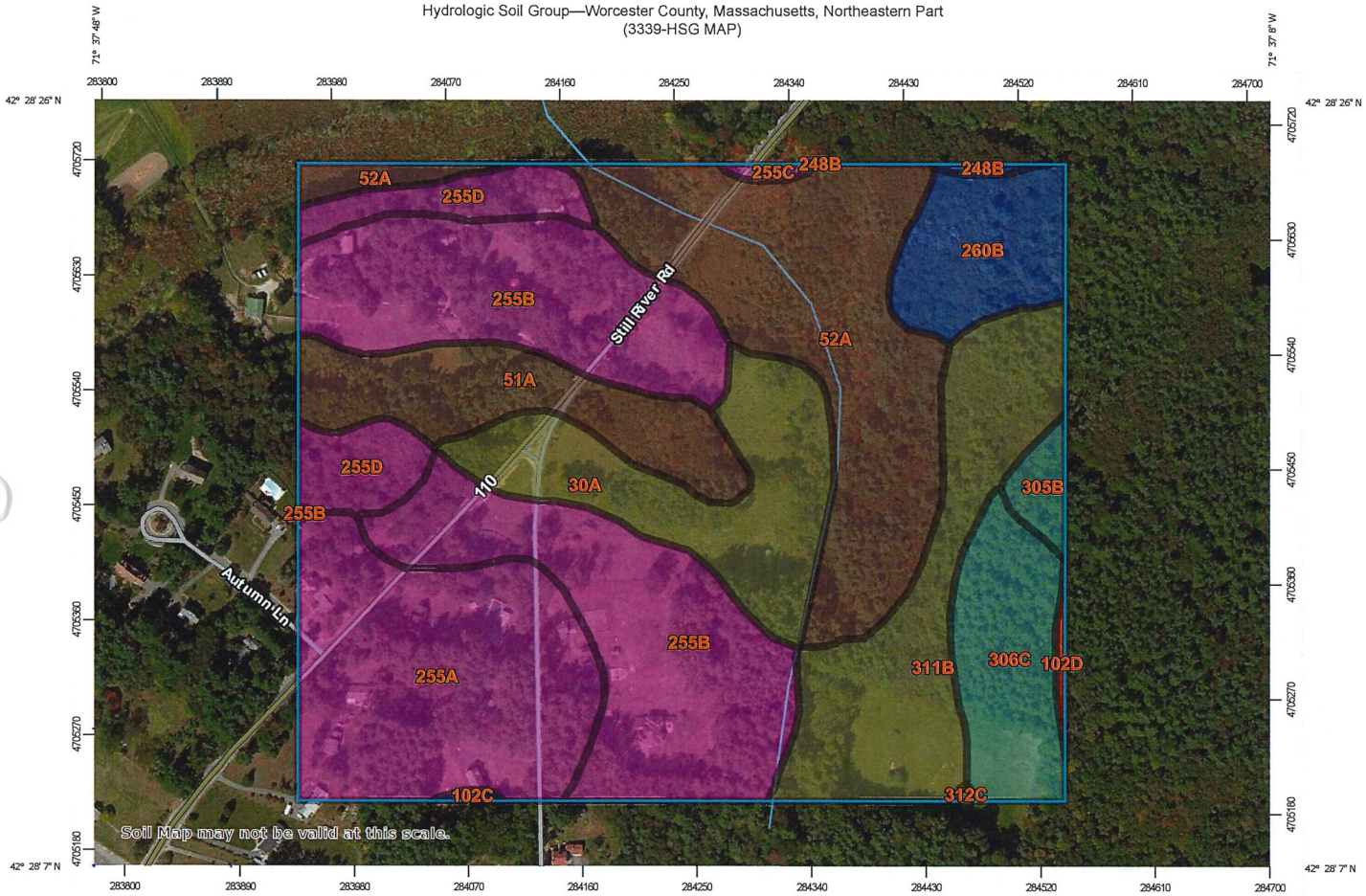
☐ An Illicit Discharge Compliance Statement is attached;

☑ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

APPENDIX C

NRCS Soils Data

Hydrologic Soil Group—Worcester County, Massachusetts, Northeastern Part
(3339-HSG MAP)



Map Scale: 1:4,230 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

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
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Worcester County, Massachusetts, Northeastern Part
Survey Area Data: Version 12, Oct 6, 2017

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

Date(s) aerial images were photographed: Sep 12, 2014—Sep 28, 2014

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
30A	Raynham silt loam, 0 to 3 percent slopes	C/D	6.8	9.2%
51A	Swansea muck, 0 to 1 percent slopes	B/D	5.2	6.9%
52A	Freetown muck, 0 to 1 percent slopes	B/D	12.9	17.3%
102C	Chatfield-Hollis-Rock outcrop complex, 0 to 15 percent slopes	B	0.1	0.1%
102D	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	D	0.2	0.3%
248B	Amostown and Belgrade soils, 3 to 8 percent slopes	B	0.1	0.2%
255A	Windsor loamy sand, 0 to 3 percent slopes	A	10.8	14.5%
255B	Windsor loamy sand, 3 to 8 percent slopes	A	18.1	24.2%
255C	Windsor loamy sand, 8 to 15 percent slopes	A	0.2	0.3%
255D	Windsor loamy sand, 15 to 25 percent slopes	A	3.4	4.5%
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	B	3.7	4.9%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	C	0.8	1.1%
306C	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	C	4.3	5.7%
311B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	C/D	8.1	10.8%
312C	Woodbridge fine sandy loam, 8 to 15 percent slopes, extremely stony	C/D	0.0	0.1%
Totals for Area of Interest			**74.7**	**100.0%**

Description

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.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

STEVE ELKINSON
Owner Name

STILL RIVER ROAD
Street Address

Map/Lot #

BOLTON
City

MA
State

01740
Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☒ Yes ☐ No If yes: NCRS (Source) 255B (Soil Map Unit)

   WINDSOR LOAMY FINE SAND
   Soil Name

   NONE
   Soil Limitations

3. Surficial Geological Report Available? ☐ Yes ☐ No If yes: Year Published/Source ____ Publication Scale ____ Map Unit ____

   Geologic/Parent Material

   KAME TERRACE
   Landform

4. Flood Rate Insurance Map

   Above the 500-year flood boundary? ☐ Yes ☒ No Within the 100-year flood boundary? ☐ Yes ☒ No

   Within the 500-year flood boundary? ☒ Yes ☐ No Within a velocity zone? ☐ Yes ☒ No

5. Wetland Area: Wetlands Conservancy Program Map Map Unit ____ Name ____

6. Current Water Resource Conditions (USGS): JUNE '15 (Month/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

7. Other references reviewed: ____

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserved disposal area)*

Deep Observation Hole Number: 615-1/4 | 6-26-15 (Date) | 8:30 AM (Time) | CLOUDY, 70'S (Weather)

1. Location

Ground Elevation at Surface of Hole: _____ Location (identify on plan): _____

2. Land Use: OPEN FIELD (e.g., woodland, agricultural field, vacant lot, etc.) | NONE (Surface Stones) | 0-3% (Slope (%))

GRASSES (Vegetation) | KAME TERRACE (Landform) | TOP (Position on Landscape (attach sheet))

3. Distances from:

Open Water Body	100'+ feet	Drainage Way	100'+ feet	Possible Wet Area	100'+ feet
Property Line	75'+/- feet	Drinking Water Well	100'+ feet	Other	_____ feet

4. Parent Material: PROGLACIAL OUTWASH Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: SEE LOGS (Depth Weeping from Pit) | SEE LOGS (Depth Standing Water in Hole)

Estimated Depth to High Groundwater: _____ inches _____ elevation

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-1

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
58	C1	10YR 5/6	58"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
80	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, N.G.W.O.

W/ PERC-A

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-2

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
64	C1	10YR 5/6	64"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
84	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, N.G.W.O.

W/ PERC-B

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-3

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
24	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
60	C1	10YR 5/6	60"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
84	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, G.W.O. @ 82"

W/ PERC-C

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-4

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
12	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
60	C1	10YR 5/6	60"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
88	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, G.W.O. @ 88"

W/ PERC-D

Commonwealth of Massachusetts
City/Town of BOLTON
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-5

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
52	C1	10YR 5/6	52"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
84	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, G.W.O. @ 60"

NOT WITNESSED BY BOH AGENT

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

☒ Depth observed standing water in observation hole	A. SEE LOGS inches	B. SEE LOGS inches
☒ Depth weeping from side of observation hole	A. SEE LOGS inches	B. SEE LOGS inches
☒ Depth to soil redoximorphic features (mottles)	A. SEE LOGS inches	B. SEE LOGS inches
☐ Groundwater adjustment (USGS methodology)	A. inches	B. inches

2. Index Well Number _____ Reading Date _____ Index Well Level _____

Adjustment Factor _____ Adjusted Groundwater Level _____

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed? Upper boundary: 10/12" inches Lower boundary: 58/64" inches

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator	6/29/15 Date
WILLIAM J. "JACK" MALONEY, JR. Typed or Printed Name of Soil Evaluator / License #	7/2014 Date of Soil Evaluator Exam
BILL BROOKINGS Name of Board of Health Witness	NABOH FOR TOWN OF BOLTON Board of Health

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

Use this sheet for field diagrams:

Commonwealth of Massachusetts
City/Town of BOLTON
Percolation Test
Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A. Site Information

STEVE ELKINSON
Owner Name

STILL RIVER ROAD
Street Address or Lot #

BOLTON — City/Town
MA — State
01740 — Zip Code

STEVE ELKINSON
Contact Person (if different from Owner)

Telephone Number

B. Test Results

	6/26/15 (Date)	10:15 AM (Time)	6/26/15 (Date)	10:15 AM (Time)
Observation Hole #	PA/PB		PC/PD	
Depth of Perc	30"/45"		44"/46"	
Start Pre-Soak	10:45/10:46		10:47/10:48	
End Pre-Soak	UNABLE		UNABLE	
Time at 12"	TO		TO	
Time at 9"	SATURATE		SATURATE	
Time at 6"				
Time (9"-6")				
Rate (Min./Inch)	2 MPI		2 MPI	
	Test Passed: ☒		Test Passed: ☒	
	Test Failed: ☐		Test Failed: ☐	

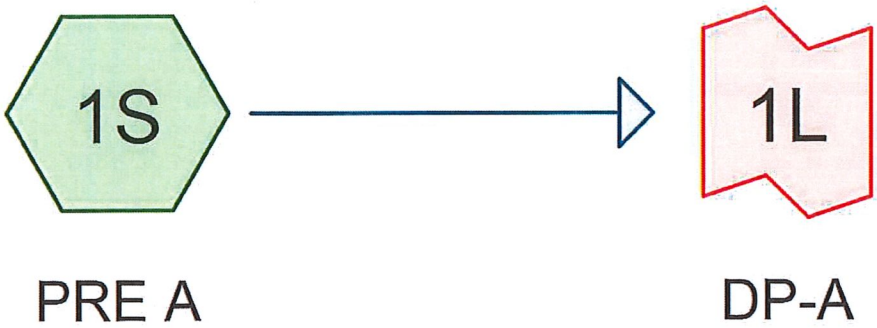
WILLIAM J. "JACK" MALONEY, JR
Test Performed By:

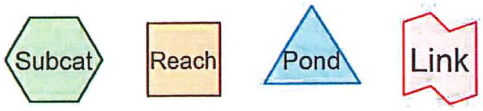
BILL BROOKINGS, NABOH AGENT-TOWN OF BOLTON
Witnessed By:

Comments:

APPENDIX D

Existing Conditions – Hydrologic Calculations





Routing Diagram for 3339-PRE
Prepared by Microsoft, Printed 7/10/2018

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE A Runoff Area=126,787 sf 0.00% Impervious Runoff Depth=0.33"
Flow Length=182' Tc=8.1 min CN=WQ Runoff=0.93 cfs 0.081 af

Link 1L: DP-A Inflow=0.93 cfs 0.081 af
Primary=0.93 cfs 0.081 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.081 af Average Runoff Depth = 0.33"
100.00% Pervious = 2.911 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: PRE A

Runoff = 0.93 cfs @ 12.13 hrs, Volume= 0.081 af, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
42,030	30	Meadow, non-grazed, HSG A
32,150	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
126,787		Weighted Average
126,787		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.0280	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	18	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	114	0.0190	0.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.1	182	Total			

Summary for Link 1L: DP-A

Inflow Area = 2.911 ac, 0.00% Impervious, Inflow Depth = 0.33" for 2-year event
Inflow = 0.93 cfs @ 12.13 hrs, Volume= 0.081 af
Primary = 0.93 cfs @ 12.13 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE A Runoff Area=126,787 sf 0.00% Impervious Runoff Depth=0.72"
Flow Length=182' Tc=8.1 min CN=WQ Runoff=2.18 cfs 0.174 af

Link 1L: DP-A Inflow=2.18 cfs 0.174 af
Primary=2.18 cfs 0.174 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.174 af Average Runoff Depth = 0.72"
100.00% Pervious = 2.911 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: PRE A

Runoff = 2.18 cfs @ 12.12 hrs, Volume= 0.174 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
42,030	30	Meadow, non-grazed, HSG A
32,150	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
126,787		Weighted Average
126,787		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.0280	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	18	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	114	0.0190	0.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.1	182	Total			

Summary for Link 1L: DP-A

Inflow Area = 2.911 ac, 0.00% Impervious, Inflow Depth = 0.72" for 10-year event
Inflow = 2.18 cfs @ 12.12 hrs, Volume= 0.174 af
Primary = 2.18 cfs @ 12.12 hrs, Volume= 0.174 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE A Runoff Area=126,787 sf 0.00% Impervious Runoff Depth=1.66"
Flow Length=182' Tc=8.1 min CN=WQ Runoff=4.80 cfs 0.402 af

Link 1L: DP-A Inflow=4.80 cfs 0.402 af
Primary=4.80 cfs 0.402 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.402 af Average Runoff Depth = 1.66"
100.00% Pervious = 2.911 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: PRE A

Runoff = 4.80 cfs @ 12.12 hrs, Volume= 0.402 af, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
42,030	30	Meadow, non-grazed, HSG A
32,150	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
126,787		Weighted Average
126,787		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.0280	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	18	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	114	0.0190	0.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.1	182	Total			

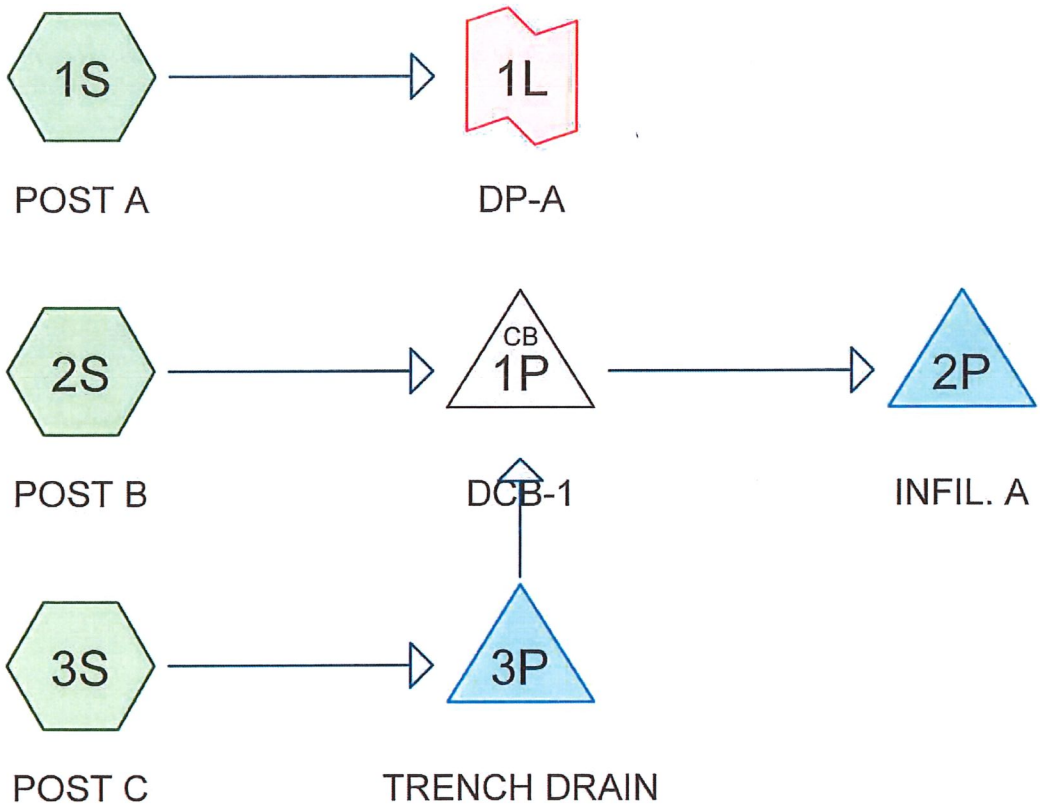
Summary for Link 1L: DP-A

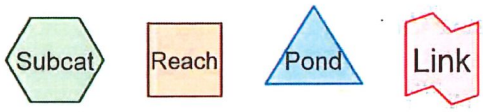
Inflow Area = 2.911 ac, 0.00% Impervious, Inflow Depth = 1.66" for 100-year event
Inflow = 4.80 cfs @ 12.12 hrs, Volume= 0.402 af
Primary = 4.80 cfs @ 12.12 hrs, Volume= 0.402 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

APPENDIX E

Proposed Conditions – Hydrologic Calculations





Routing Diagram for 3339-POST
Prepared by Microsoft, Printed 7/10/2018
HydroCAD® 10.00-17 s/n 03590 © 2016 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: POST A Runoff Area=101,027 sf 3.20% Impervious Runoff Depth=0.51"
Flow Length=60' Slope=0.0220 '/' Tc=12.3 min CN=WQ Runoff=0.99 cfs 0.099 af

Subcatchment 2S: POST B Runoff Area=20,585 sf 61.82% Impervious Runoff Depth=1.77"
Tc=6.0 min CN=WQ Runoff=0.86 cfs 0.070 af

Subcatchment 3S: POST C Runoff Area=5,198 sf 14.47% Impervious Runoff Depth=0.41"
Tc=6.0 min CN=WQ Runoff=0.05 cfs 0.004 af

Pond 1P: DCB-1 Peak Elev=232.02' Inflow=0.91 cfs 0.074 af
18.0" Round Culvert n=0.013 L=83.0' S=0.0051 '/' Outflow=0.91 cfs 0.074 af

Pond 2P: INFIL. A Peak Elev=231.33' Storage=0.024 af Inflow=0.91 cfs 0.074 af
Outflow=0.12 cfs 0.074 af

Pond 3P: TRENCH DRAIN Peak Elev=232.21' Storage=0.000 af Inflow=0.05 cfs 0.004 af
4.5" Round Culvert n=0.013 L=42.0' S=0.0105 '/' Outflow=0.05 cfs 0.004 af

Link 1L: DP-A Inflow=0.99 cfs 0.099 af
Primary=0.99 cfs 0.099 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.173 af Average Runoff Depth = 0.71"
86.82% Pervious = 2.528 ac 13.18% Impervious = 0.384 ac

Summary for Subcatchment 1S: POST A

Runoff = 0.99 cfs @ 12.19 hrs, Volume= 0.099 af, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
684	98	Paved parking, HSG A
2,550	98	Roofs, HSG A
18,011	39	>75% Grass cover, Good, HSG A
7,315	30	Meadow, non-grazed, HSG A
19,860	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
101,027		Weighted Average
97,793		96.80% Pervious Area
3,234		3.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	50	0.0220	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	10	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.3	60	Total			

Summary for Subcatchment 2S: POST B

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.070 af, Depth= 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
10,050	98	Paved parking, HSG A
2,676	98	Roofs, HSG A
7,859	39	>75% Grass cover, Good, HSG A
20,585		Weighted Average
7,859		38.18% Pervious Area
12,726		61.82% Impervious Area

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

Summary for Subcatchment 3S: POST C

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
752	98	Paved parking, HSG A
4,446	39	>75% Grass cover, Good, HSG A
5,198		Weighted Average
4,446		85.53% Pervious Area
752		14.47% Impervious Area

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

Summary for Pond 1P: DCB-1

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 1.50" for 2-year event
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 0.074 af
Outflow = 0.91 cfs @ 12.09 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 12.09 hrs, Volume= 0.074 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.02' @ 12.09 hrs
Flood Elev= 234.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	231.52'	**18.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 231.52' / 231.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.88 cfs @ 12.09 hrs HW=232.01' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.88 cfs @ 2.63 fps)

Summary for Pond 2P: INFIL. A

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 1.50" for 2-year event
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 0.074 af
Outflow = 0.12 cfs @ 12.62 hrs, Volume= 0.074 af, Atten= 87%, Lag= 31.7 min
Discarded = 0.12 cfs @ 12.62 hrs, Volume= 0.074 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 231.33' @ 12.62 hrs Surf.Area= 0.032 ac Storage= 0.024 af
Flood Elev= 234.55' Surf.Area= 0.032 ac Storage= 0.076 af

Plug-Flow detention time= 61.8 min calculated for 0.074 af (100% of inflow)

Center-of-Mass det. time= 61.8 min (818.9 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	230.17'	0.032 af	**30.50'W x 45.50'L x 3.88'H Field A** 0.123 af Overall - 0.045 af Embedded = 0.079 af x 40.0% Voids
#2A	230.67'	0.045 af	**Cultec R-330XLHD** x 36 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 6 rows
		0.076 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	230.17'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 228.17'

Discarded OutFlow Max=0.12 cfs @ 12.62 hrs HW=231.33' (Free Discharge)
└**1=Exfiltration** (Controls 0.12 cfs)

Summary for Pond 3P: TRENCH DRAIN

Inflow Area = 0.119 ac, 14.47% Impervious, Inflow Depth = 0.41" for 2-year event
Inflow = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af
Outflow = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.1 min
Primary = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.21' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 233.00' Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.9 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (757.9 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1	232.06'	0.000 af	**0.33'W x 13.33'L x 0.90'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	232.06'	**4.5" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.06' / 231.62' S= 0.0105 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.11 sf

Primary OutFlow Max=0.05 cfs @ 12.09 hrs HW=232.21' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.05 cfs @ 1.79 fps)

Summary for Link 1L: DP-A

Inflow Area =	2.319 ac,	3.20% Impervious,	Inflow Depth =	0.51"	for 2-year event
Inflow =	0.99 cfs @	12.19 hrs, Volume=	0.099 af		
Primary =	0.99 cfs @	12.19 hrs, Volume=	0.099 af,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: POST A Runoff Area=101,027 sf 3.20% Impervious Runoff Depth=1.06"
Flow Length=60' Slope=0.0220 '/' Tc=12.3 min CN=WQ Runoff=2.17 cfs 0.204 af

Subcatchment 2S: POST B Runoff Area=20,585 sf 61.82% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=WQ Runoff=1.25 cfs 0.105 af

Subcatchment 3S: POST C Runoff Area=5,198 sf 14.47% Impervious Runoff Depth=0.71"
Tc=6.0 min CN=WQ Runoff=0.07 cfs 0.007 af

Pond 1P: DCB-1 Peak Elev=232.13' Inflow=1.33 cfs 0.113 af
18.0" Round Culvert n=0.013 L=83.0' S=0.0051 '/' Outflow=1.33 cfs 0.113 af

Pond 2P: INFIL. A Peak Elev=231.95' Storage=0.040 af Inflow=1.33 cfs 0.113 af
Outflow=0.15 cfs 0.113 af

Pond 3P: TRENCH DRAIN Peak Elev=232.25' Storage=0.000 af Inflow=0.07 cfs 0.007 af
4.5" Round Culvert n=0.013 L=42.0' S=0.0105 '/' Outflow=0.07 cfs 0.007 af

Link 1L: DP-A Inflow=2.17 cfs 0.204 af
Primary=2.17 cfs 0.204 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.317 af Average Runoff Depth = 1.31"
86.82% Pervious = 2.528 ac 13.18% Impervious = 0.384 ac

Summary for Subcatchment 1S: POST A

Runoff = 2.17 cfs @ 12.18 hrs, Volume= 0.204 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
684	98	Paved parking, HSG A
2,550	98	Roofs, HSG A
18,011	39	>75% Grass cover, Good, HSG A
7,315	30	Meadow, non-grazed, HSG A
19,860	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
101,027		Weighted Average
97,793		96.80% Pervious Area
3,234		3.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	50	0.0220	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	10	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.3	60	Total			

Summary for Subcatchment 2S: POST B

Runoff = 1.25 cfs @ 12.09 hrs, Volume= 0.105 af, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
10,050	98	Paved parking, HSG A
2,676	98	Roofs, HSG A
7,859	39	>75% Grass cover, Good, HSG A
20,585		Weighted Average
7,859		38.18% Pervious Area
12,726		61.82% Impervious Area

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

Summary for Subcatchment 3S: POST C

Runoff = 0.07 cfs @ 12.09 hrs, Volume= 0.007 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
752	98	Paved parking, HSG A
4,446	39	>75% Grass cover, Good, HSG A
5,198		Weighted Average
4,446		85.53% Pervious Area
752		14.47% Impervious Area

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

Summary for Pond 1P: DCB-1

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 2.28" for 10-year event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.113 af
Outflow = 1.33 cfs @ 12.09 hrs, Volume= 0.113 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.09 hrs, Volume= 0.113 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.13' @ 12.09 hrs
Flood Elev= 234.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	231.52'	**18.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 231.52' / 231.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.29 cfs @ 12.09 hrs HW=232.12' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.29 cfs @ 2.89 fps)

Summary for Pond 2P: INFIL. A

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 2.28" for 10-year event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.113 af
Outflow = 0.15 cfs @ 12.77 hrs, Volume= 0.113 af, Atten= 89%, Lag= 40.8 min
Discarded = 0.15 cfs @ 12.77 hrs, Volume= 0.113 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 231.95' @ 12.77 hrs Surf.Area= 0.032 ac Storage= 0.040 af
Flood Elev= 234.55' Surf.Area= 0.032 ac Storage= 0.076 af

Plug-Flow detention time= 96.7 min calculated for 0.112 af (100% of inflow)

Center-of-Mass det. time= 96.6 min (853.5 - 756.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	230.17'	0.032 af	**30.50'W x 45.50'L x 3.88'H Field A** 0.123 af Overall - 0.045 af Embedded = 0.079 af x 40.0% Voids
#2A	230.67'	0.045 af	**Cultec R-330XLHD** x 36 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 6 rows
		0.076 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	230.17'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 228.17'

Discarded OutFlow Max=0.15 cfs @ 12.77 hrs HW=231.95' (Free Discharge)
└**1=Exfiltration** (Controls 0.15 cfs)

Summary for Pond 3P: TRENCH DRAIN

Inflow Area = 0.119 ac, 14.47% Impervious, Inflow Depth = 0.71" for 10-year event
Inflow = 0.07 cfs @ 12.09 hrs, Volume= 0.007 af
Outflow = 0.07 cfs @ 12.09 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.1 min
Primary = 0.07 cfs @ 12.09 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.25' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 233.00' Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.7 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (790.9 - 790.2)

Volume	Invert	Avail.Storage	Storage Description
#1	232.06'	0.000 af	**0.33'W x 13.33'L x 0.90'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	232.06'	**4.5" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.06' / 231.62' S= 0.0105 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.11 sf

Primary OutFlow Max=0.07 cfs @ 12.09 hrs HW=232.24' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.07 cfs @ 1.97 fps)

Summary for Link 1L: DP-A

Inflow Area =	2.319 ac,	3.20% Impervious,	Inflow Depth =	1.06"	for 10-year event
Inflow =	2.17 cfs @	12.18 hrs, Volume=	0.204 af		
Primary =	2.17 cfs @	12.18 hrs, Volume=	0.204 af,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: POST A Runoff Area=101,027 sf 3.20% Impervious Runoff Depth=2.34"
Flow Length=60' Slope=0.0220 '/' Tc=12.3 min CN=WQ Runoff=4.76 cfs 0.451 af

Subcatchment 2S: POST B Runoff Area=20,585 sf 61.82% Impervious Runoff Depth=4.47"
Tc=6.0 min CN=WQ Runoff=2.02 cfs 0.176 af

Subcatchment 3S: POST C Runoff Area=5,198 sf 14.47% Impervious Runoff Depth=1.64"
Tc=6.0 min CN=WQ Runoff=0.15 cfs 0.016 af

Pond 1P: DCB-1 Peak Elev=232.32' Inflow=2.17 cfs 0.192 af
18.0" Round Culvert n=0.013 L=83.0' S=0.0051 '/' Outflow=2.17 cfs 0.192 af

Pond 2P: INFIL. A Peak Elev=233.96' Storage=0.075 af Inflow=2.17 cfs 0.192 af
Outflow=0.22 cfs 0.192 af

Pond 3P: TRENCH DRAIN Peak Elev=232.34' Storage=0.000 af Inflow=0.15 cfs 0.016 af
4.5" Round Culvert n=0.013 L=42.0' S=0.0105 '/' Outflow=0.15 cfs 0.016 af

Link 1L: DP-A Inflow=4.76 cfs 0.451 af
Primary=4.76 cfs 0.451 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.644 af Average Runoff Depth = 2.65"
86.82% Pervious = 2.528 ac 13.18% Impervious = 0.384 ac

Summary for Subcatchment 1S: POST A

Runoff = 4.76 cfs @ 12.17 hrs, Volume= 0.451 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
684	98	Paved parking, HSG A
2,550	98	Roofs, HSG A
18,011	39	>75% Grass cover, Good, HSG A
7,315	30	Meadow, non-grazed, HSG A
19,860	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
101,027		Weighted Average
97,793		96.80% Pervious Area
3,234		3.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	50	0.0220	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	10	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.3	60	Total			

Summary for Subcatchment 2S: POST B

Runoff = 2.02 cfs @ 12.09 hrs, Volume= 0.176 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
10,050	98	Paved parking, HSG A
2,676	98	Roofs, HSG A
7,859	39	>75% Grass cover, Good, HSG A
20,585		Weighted Average
7,859		38.18% Pervious Area
12,726		61.82% Impervious Area

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

Summary for Subcatchment 3S: POST C

Runoff = 0.15 cfs @ 12.11 hrs, Volume= 0.016 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
752	98	Paved parking, HSG A
4,446	39	>75% Grass cover, Good, HSG A
5,198		Weighted Average
4,446		85.53% Pervious Area
752		14.47% Impervious Area

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

Summary for Pond 1P: DCB-1

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 3.90" for 100-year event
Inflow = 2.17 cfs @ 12.09 hrs, Volume= 0.192 af
Outflow = 2.17 cfs @ 12.09 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min
Primary = 2.17 cfs @ 12.09 hrs, Volume= 0.192 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.32' @ 12.09 hrs
Flood Elev= 234.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	231.52'	**18.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 231.52' / 231.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.12 cfs @ 12.09 hrs HW=232.31' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.12 cfs @ 3.25 fps)

Summary for Pond 2P: INFIL. A

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 3.90" for 100-year event
Inflow = 2.17 cfs @ 12.09 hrs, Volume= 0.192 af
Outflow = 0.22 cfs @ 12.95 hrs, Volume= 0.192 af, Atten= 90%, Lag= 51.8 min
Discarded = 0.22 cfs @ 12.95 hrs, Volume= 0.192 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 233.96' @ 12.95 hrs Surf.Area= 0.032 ac Storage= 0.075 af
Flood Elev= 234.55' Surf.Area= 0.032 ac Storage= 0.076 af

Plug-Flow detention time= 153.8 min calculated for 0.192 af (100% of inflow)

Center-of-Mass det. time= 153.7 min (914.4 - 760.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	230.17'	0.032 af	**30.50'W x 45.50'L x 3.88'H Field A** 0.123 af Overall - 0.045 af Embedded = 0.079 af x 40.0% Voids
#2A	230.67'	0.045 af	**Cultec R-330XLHD** x 36 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 6 rows
		0.076 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	230.17'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 228.17'

Discarded OutFlow Max=0.22 cfs @ 12.95 hrs HW=233.96' (Free Discharge)
└─1=**Exfiltration** (Controls 0.22 cfs)

Summary for Pond 3P: TRENCH DRAIN

Inflow Area = 0.119 ac, 14.47% Impervious, Inflow Depth = 1.64" for 100-year event
Inflow = 0.15 cfs @ 12.11 hrs, Volume= 0.016 af
Outflow = 0.15 cfs @ 12.11 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.1 min
Primary = 0.15 cfs @ 12.11 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.34' @ 12.11 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 233.00' Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.4 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (818.9 - 818.4)

Volume	Invert	Avail.Storage	Storage Description
#1	232.06'	0.000 af	**0.33'W x 13.33'L x 0.90'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	232.06'	**4.5" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.06' / 231.62' S= 0.0105 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.11 sf

Primary OutFlow Max=0.15 cfs @ 12.11 hrs HW=232.34' (Free Discharge)
└─1=**Culvert** (Barrel Controls 0.15 cfs @ 2.35 fps)

Summary for Link 1L: DP-A

Inflow Area =	2.319 ac,	3.20% Impervious,	Inflow Depth =	2.34"	for 100-year event
Inflow =	4.76 cfs @	12.17 hrs, Volume=	0.451 af		
Primary =	4.76 cfs @	12.17 hrs, Volume=	0.451 af,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

APPENDIX F

Recharge Volume / Water Quality Volume / TSS Removal / Mounding Calculations

Still River Commons
Bolton, MA

June 27, 2018
3339

Subsurface Infiltration

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.384	0.6	0.019
Total	0.384		0.019

Total Recharge Volume Required = 0.019 Ac-ft
Total Recharge Volume Required (Rv) = 836 C.ft

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.309 Ac
Required Sediment Forebay vol, Fv= 112 C.ft

Sediment Volume Provided = 115.5 **C.ft**
*Two Cultec 330 XLHD Chambers

Capture Area Adjustment, Rvadj:

$$R_v adj = \frac{A_t}{A_p} x R_v$$

[1] Imp. area captured by ponds, Ap = 0.309 Ac
[1] Total impervious area on site, AT = 0.384 Ac
Recharge volume required, Rv = 836 C.ft
Capture Rate= 80% OK
Capture Area Adjustment Factor= 1.24
Adjusted Recharge Volume Required Rvadj = 1,039 C.ft

[1] **Total Recharge Volume Provided =** 3,317.8 **C.ft**

NOTES:
Input Values
[1] = Refer to Proposed Conditions HydroCAD modeling report

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Still River Commons
Bolton, MA

June 27, 2018
3339

Subsurface Infiltration

Water Quality Calculations

CALCULATIONS

Water Quality Calculation:

$$V_{WQ} = D_{WQ}(ft) x\ A_T(ft^2)$$

Water Quality Depth =	0.5	in
Water Quality Depth , DWQ =	**0.04**	**ft.**
Total impervious area on site, AT =	0.384	Ac.
=	**16,727**	**ft^2**
Required Water Quality Volume, VWQ =	**697**	**C.ft.**
Total Treatment Volume Provided =	3,317.8	**C.ft**

REFERENCES

1 inch depth
Zone II discharges
IWPA discharges
Critical Area
Runoff from LUHPPL
Infiltration rate >2.4 inches/hour
1/2 inch depth
Discharge to other ares
8 inch
9 inch
10 inch
11 inch

Still River Commons
Bolton, MA

June 27, 2018
3339

Subsurface Infiltration

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

Drawdown Calculations:

Soil Texture: 2 Loamy Sand

[1]Bottom Surface Area (A):	1,401	SF
Rawls Rate:	2.41	in/hr
Total Adjusted Recharge Volume Required =	1,039	C.ft
Drawdown:	3.69	hr

Drawdown is less than 72 Hours as Required

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

NOTES:

Input Values

[1] = Refer to bottom surface area on the Site Plans. A non-rectangular infiltration area is proposed

Groundwater Mound Beneath Rectangular Recharge Area

by Glenn M. Duffield, President, HydroSOLVE, Inc.

Hantush (1967) presented the following equations for predicting the maximum height of the water table beneath a rectangular recharge area:

$$h_m^2 - h_i^2 = Z_m(t) = (2w/K)\nu t S^*(0.5A/(4\nu t)^{1/2}, 0.5B/(4\nu t)^{1/2}) \quad . . . . . (1)$$

$$\nu = K\bar{b}/\varepsilon \quad . . . . . (2)$$

$$\bar{b} = 0.5[h_i(0) + h(t)] \quad . . . . . (3)$$

where h_m is maximum height of mound above aquifer base (i.e., maximum saturated thickness of aquifer beneath recharge area); h_i is initial height of water table above aquifer base (i.e., initial saturated thickness of aquifer); K and ε are hydraulic conductivity and storativity (specific yield) of aquifer, respectively; w is constant rate of percolation from rectangular recharge area of length A and width B; $\bar{b}$ is a constant of linearization; and the function S* is an integral expression (see Hantush 1967). The aquifer is unconfined and assumed to have infinite extent.

If infiltration ends at time $t=t_0$, Hantush (1967) applied the principle of superposition to compute the decay of the mound as follows:

$$h_m^2 - h_i^2 = Z_m(t) - Z_m(t-t_0) \quad . . . . . (4)$$

Equation (1) is nonlinear owing to the definition of $\bar{b}$ in Equation (3); however, the solution is readily obtained by successive approximation.

Results of Groundwater Mounding Calculation

Solution by Successive Approximation

Iteration	$\bar{b}$	h_m*	% Change
1	16	16.2888968101816	1.8056050636353
2	16.144448405090	16.2889265428232	1.82533181392053E-04
3	16.144463271411	16.2889265458959	1.88636439801826E-08

K [L/T]	ε	h_i [L]	A [L]	B [L]	w [L/T]	t [T]	h_m [L]
2.00	0.25	16	45.5	30.5	0.20	72	16.2889265458959

maximum water-table rise (h_m - h_i) at time t = 72 is 0.288926545895894
decay of mound computed after time t = 25

Return to Groundwater Mounding Calculator

Click here for a benchmark for this calculator.

Hantush mounding calculations with contouring now available in AQTESOLV.

L = LENGTH = FEET
T = TIME = HOURS
★ USE RAWLS RATE OF 2.41 IN/HR (0.20 FT/HR) FOR W.
★ K = W × 10
★ REFER TO WELL WORS FOR H_i ASSUMPTION
A 0.29 FT RISE IN GW DOES NOT REACH THE CHAMBERS
TIME THAT THE POND STOPS INFILTRATING (SEE HYDROCAD)

MassDEP

Well Completion Report

WELL LOCATION

GPS North: 42.477100 GPS West: -71.621883 Assessors Map:

Address: 320 Still River Road Assessors Lot:

Sub Division: Permit Number: 5477

City/Town: HARVARD Date Issued: 01/24/2008

Board Of Health Permit Obtained: Y

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock
New Well	Domestic	Air Hammer	Air Hammer

ADDITIONAL WELL INFORMATION

Developed: Yes

Disinfected: Yes

Total Well Depth: 600.00

Fracture Enhancement: No

Well Seal Type: None

Depth to Bedrock: 16.00

ASSUME h_i = 16' FOR MOUNDING CALCS. MOST CONSERVATIVE VALUE FROM NEIGHBORING WELLS

PERMANENT PUMP (IF AVAILABLE)

Pump Description: 3WVS

Type:

Nominal Pump Capacity: 10.00

Intake Depth: 500.00

Horsepower: 1.5

Comments:

CASING

From(ft)	To(ft)	Type	Thickness	Diameter
2.00 (Above Ground)	98.00	Steel	17#	6

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface
02/08/2008	65.00

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery
02/07/2008	Variable Rate Pump	6.00	008:00	440	024:00	65

OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate
0.00	16.00	Clay			No			

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft
16	100	Shale		No						
100	200	Shale		No						
200	300	Shale		No						
300	400	Shale		No						
400	420	Shale		Yes					Addition	
420	500	Shale		No						
500	600	Shale		No						

MassDEP

Well Completion Report

WELL LOCATION

GPS North: 42.472610 GPS West: -71.628586 Assessors Map:

Address: 438 Still River Road Assessors Lot:

Sub Division: Permit Number:

City/Town: BOLTON Date Issued:

Board Of Health Permit Obtained:

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock
	Domestic	Air Rotary	Air Rotary

ADDITIONAL WELL INFORMATION

Developed: No

Disinfected: No

Total Well Depth: 460.00

Fracture Enhancement: No

Well Seal Type:

Depth to Bedrock: 105.00

PERMANENT PUMP (IF AVAILABLE)

Pump Description:

Type:

Nominal Pump Capacity:

Intake Depth:

Horsepower:

Comments: Gravel Pack Well: N

CASING

From(ft)	To(ft)	Type	Thickness	Diameter
0.00	120.00			6

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface
12/22/1987	20.00

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery
12/22/1987		4.00				

OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate
0.00	10.00			Sand				
10.00	30.00	Clay						
30.00	50.00	Clay						
50.00	70.00	Clay						
70.00	90.00	Clay						
90.00	105.00	Clay						

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft

MassDEP

Well Completion Report

WELL LOCATION

GPS North:
GPS West:
Assessors Map:
Address: 401 Still River Road
Assessors Lot:
Sub Division:
Permit Number:
City/Town: BOLTON
Date Issued:
Board Of Health Permit Obtained: NR

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock

ADDITIONAL WELL INFORMATION

Developed:
Disinfected:
Total Well Depth: 120.00
Fracture Enhancement:
Well Seal Type:
Depth to Bedrock: Assume >120

PERMANENT PUMP (IF AVAILABLE)

Pump Description:
Type:
Nominal Pump Capacity:
Intake Depth:
Horsepower:
Comments: Nashoba BOH Report Source of water: Drilled Method of drawing water: Electric

CASING

From(ft)	To(ft)	Type	Thickness	Diameter

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery

OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft

APPENDIX G

Operation and Maintenance Plan

STORMWATER OPERATION & MAINTENANCE MANUAL

FOR

STILL RIVER COMMONS
STILL RIVER ROAD, MAP 8B PARCEL 32

IN

BOLTON,
MASSACHUSETTS

PREPARED BY: DUCHARME & DILLIS
CIVIL DESIGN GROUP, INC.
P.O. Box 428
Bolton, MA 01740

PREPARED FOR: STILL RIVER ROAD DEVELOPMENT, LLC
28 Country Club Lane
Middleton, MA 01949

JUNE 27TH, 2018

CDG PROJECT # 3339-P

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS · LAND SURVEYORS · WETLAND CONSULTANTS

TABLE OF CONTENTS:

1.0 Project Narrative

1.1 Proposed Stormwater Management System

Runoff from the proposed development will be conveyed and treated through a combination of Best Management Practices (BMP's). The following is a brief discussion of each conveyance and treatment BMP proposed.

Deep Sump Hooded Catch Basin

A deep sump hooded catch basin is proposed to convey the runoff from the proposed roadway to the subsurface infiltration system. This catch basin will discharge to manholes and conventional storm drains.

Subsurface Infiltration Chambers

A subsurface infiltration system is included on site. Cultec pre-fabricated chambers, model 330XLHD, will be installed to collect the run off from the roofs and pavement after pretreatment in the deep sump hooded catch basin. The runoff will first be directed into a small group of chambers. These chambers will be wrapped in a geotextile fabric and will act as a sediment forebay for additional pre-treatment. The runoff will then be directed towards the larger infiltration area. The chambers have been designed to accommodate the runoff associated with the 100-year storm event and have enough volume to accommodate the required recharge and water quality volumes.

Trench Drain

A trench drain will be installed across the shared driveway near the entrance. This drain is designed to capture additional runoff that would otherwise flow onto Still River Road. The runoff collected from the trench drain will be directed into the deep sump hooded catch basin where it will begin treatment before infiltration.

1.2 Operation & Maintenance Tasks

The following activities should be performed routinely to allow for proper functioning of the stormwater system. The following are guidelines referring to each major component of the stormwater management system.

1.2.1 Street Sweeping

Street sweeping should be preformed at least semi annually. For most effective results, sweeping should be preformed by a vacuum style truck in the early spring before spring rain events can wash silt and sediment into the stormwater system. Silt and sediment should be disposed of in

accordance with local, state and federal guidelines for hazardous waste.

1.2.2 Drain Manholes

Manholes shall be inspected semi-annually for signs of wear, settling, cracking or other fatigue. Manhole casting should be inspected for signs of root intrusion, or significant water infiltration. Weirs shall be inspected for signs of cracking or other fatigue. Manhole sumps should be checked for silt /sediment buildup and cleaned as necessary. Cleaning should be performed by a vacuum truck. Manholes should be resealed as required and outlets should be inspected incidentally with all structure inspections.

1.2.3 Storm Drain Lines

Storm drainage inlets and outlets should be inspected incidentally with all structure inspections. Evidence of debris intrusion or excessive siltation or sedimentation could result in the need to clean a storm drain line. Flushing or jetting should be performed as required. All flushing and jetting should be performed in the direction away from any outlet devices. A vacuum truck should be used at the opposite end of the flushing or jetting to remove any silt or sediment that is cleaned from the storm drain.

1.2.4 Deep Sump Catch Basin

The deep sump catch basin shall be inspected at least semi-annually for signs of wear, settling, cracking or other fatigue. Catch basin castings should be inspected for signs of root intrusion, or significant water infiltration. Catch basin sump should be check for silt/sediment buildup and cleaned as necessary. Cleaning should be performed by a vacuum truck. Catch basins should be resealed as required and outlets should be inspected incidentally with all structure inspections.

1.2.5 Subsurface Infiltration System

The subsurface infiltration system should be monitored and maintained regularly to ensure no obstructions in the systems are present. Any depressions noticed in the areas could indicate that the system has collapsed and should be inspected immediately. The system is equipped with an inspection port to monitor the buildup of sedimentation. If the depth of sedimentation is in excess of the manufacturer's guidelines, the system will need to be cleaned out with high pressure water. The high-pressure water should be used on one end and a vacuum truck will be used on the opposite end to remove any silt or sediment that is cleaned from the chambers. Other maintenance will include checking the inlets and outlet for debris, survey the surrounding area for depressions and confirm no

unauthorized modifications have been performed to the system. See Appendix A for the Cultec Operation and Maintenance Guidelines.

1.2.6 Trench Drain

The trench drain shall be inspected semi-annually for any signs of wear or cracking. The grates and outlet pipe should be inspected for any debris that could block flow and should be removed as needed. The drain should be checked for silt/sediment buildup and cleaned as necessary.

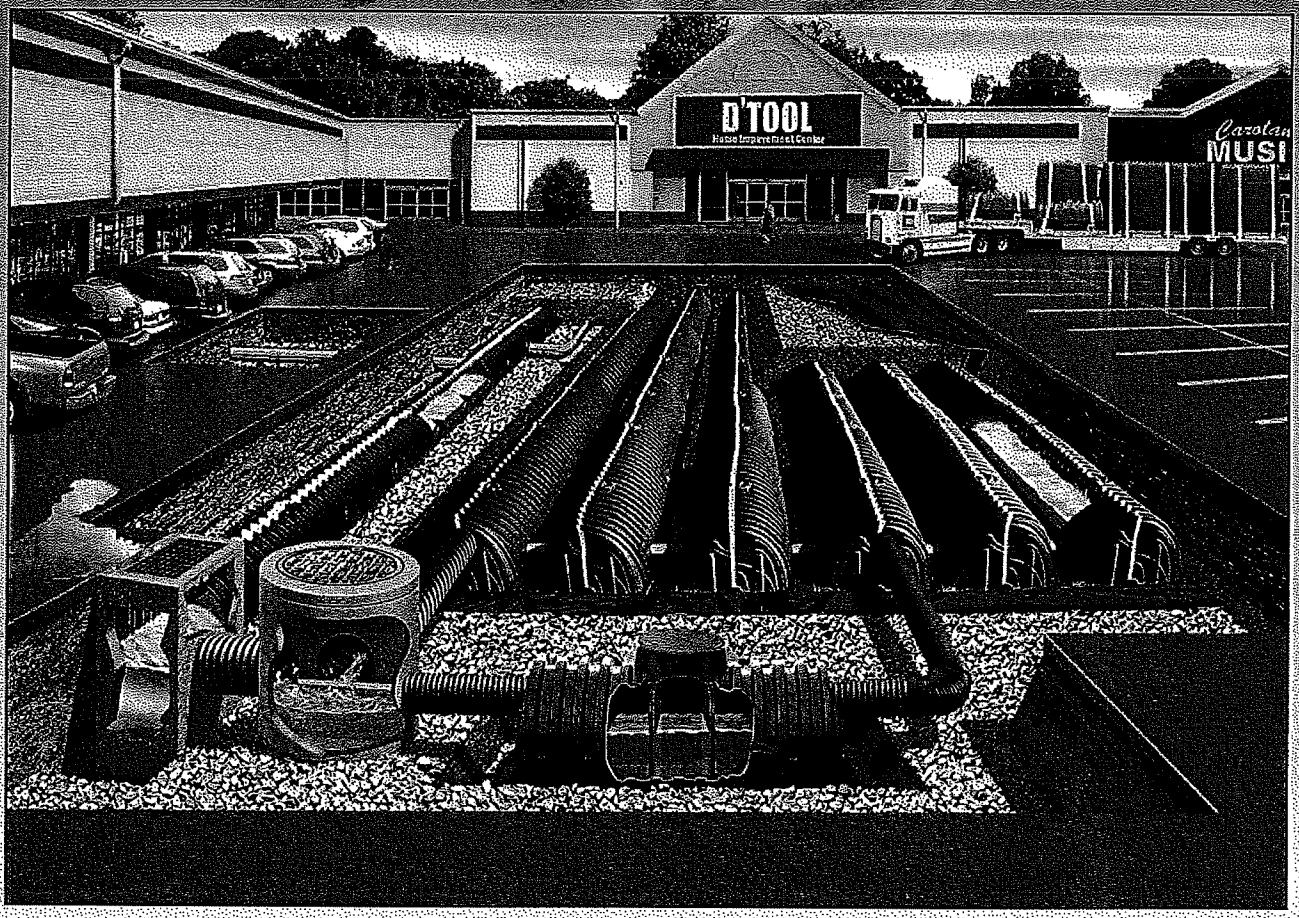
O&M Schedule

O&M Task		Monthly	Quarterly	Spring	Fall	2-years	As-required
1.	**Street Sweeping**			x	x		
2.	**Drain Manholes**						
	Inspect Rims			x	x		
	Inspect inside/inlet and outlet pipes					x	
	Remove sediment					x	x
3.	**Storm drain Lines**						
	Inspection			x			x
	Clean						x
4.	**Catch Basins**						
	Inspect Rims			x	x		
	Inspect inside/inlet and outlet pipes					x	
	Remove sediment					x	x
5.	**Underground Infiltration Area**	**(See appendix A)**					
6.	**Trench Drain**						
	Inspection						x
	Clean						x

APPENDIX A

Cultec Operation & Maintenance

Contactor® & Recharger®
Stormwater Chambers The Chamber With The Stripe®



Operation and Maintenance Guidelines

CULTEC™

Operation & Maintenance

This manual contains guidelines recommended by CULTEC, Inc. and may be used in conjunction with, but not to supersede, local regulations or regulatory authorities. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Introduction

The CULTEC Subsurface Stormwater Management System is a high-density polyethylene (HDPE) chamber system arranged in parallel rows surrounded by washed stone. The CULTEC chambers create arch-shaped voids within the washed stone to provide stormwater detention, retention, infiltration, and reclamation. Filter fabric is placed between the native soil and stone interface to prevent the intrusion of fines into the system. In order to minimize the amount of sediment which may enter the CULTEC system, a sediment collection device (stormwater pretreatment device) is recommended upstream from the CULTEC chamber system. Examples of pretreatment devices include, but are not limited to, an appropriately sized catch basin with sump, pretreatment catchment device, oil grit separator, or baffled distribution box. Manufactured pretreatment devices may also be used in accordance with CULTEC chambers. Installation, operation, and maintenance of these devices shall be in accordance with manufacturer's recommendations. Almost all of the sediment entering the stormwater management system will be collected within the pretreatment device.

Best Management Practices allow for the maintenance of the preliminary collection systems prior to feeding the CULTEC chambers. The pretreatment structures shall be inspected for any debris that will restrict inlet flow rates. Outfall structures, if any, such as outlet control must also be inspected for any obstructions that would restrict outlet flow rates. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Operation and Maintenance Requirements

I. Operation

CULTEC stormwater management systems shall be operated to receive only stormwater run-off in accordance with applicable local regulations. CULTEC subsurface stormwater management chambers operate at peak performance when installed in series with pretreatment. Pretreatment of suspended solids is superior to treatment of solids once they have been introduced into the system. The use of pretreatment is adequate as long as the structure is maintained and the site remains stable with finished impervious surfaces such as parking lots, walkways, and pervious areas are properly maintained. If there is to be an unstable condition, such as improvements to buildings or parking areas, all proper silt control measures shall be implemented according to local regulations.

II. Inspection and Maintenance Options

A. The CULTEC system may be equipped with an inspection port located on the inlet row. The inspection port is a circular cast box placed in a rectangular concrete collar. When the lid is removed, a 6-inch (150 mm) pipe with a screw-in plug will be exposed. Remove the plug. This will provide access to the CULTEC Chamber row below. From the surface, through this access, the sediment may be measured at this location. A stadia rod may be used to measure the depth of sediment if any in this row. If the depth of sediment is in excess of 3 inches (76 mm), then this row should be cleaned with high pressure water through a culvert cleaning nozzle. This would be carried out through an upstream manhole or through the CULTEC StormFilter Unit (or other pre-treatment device). CCTV inspection of this row can be deployed through this access port to determine if any sediment has accumulated in the inlet row.

B. If the CULTEC bed is not equipped with an inspection port, then access to the inlet row will be through an upstream manhole or the CULTEC StormFilter.

1. Manhole Access
This inspection should only be carried out by persons trained in confined space entry and sewer inspection services. After the manhole cover has been removed a gas detector must be lowered into the manhole to ensure that there are not high concentrations of toxic gases present. The inspector should be lowered into the manhole with the proper safety equipment as per OSHA requirements. The inspector may be able to observe sediment from this location. If this is not possible, the inspector will need to deploy a CCTV robot to permit viewing of the sediment.

2. **StormFilter Access**
Remove the manhole cover to allow access to the unit. Typically a 30-inch (750 mm) pipe is used as a riser from the StormFilter to the surface. As in the case with manhole access, this access point requires a technician trained in confined space entry with proper gas detection equipment. This individual must be equipped with the proper safety equipment for entry into the StormFilter. The technician will be lowered onto the StormFilter unit. The hatch on the unit must be removed. Inside the unit are two filters which may be removed according to StormFilter maintenance guidelines. Once these filters are removed the inspector can enter the StormFilter unit to launch the CCTV camera robot.

C. The inlet row of the CULTEC system is placed on a polyethylene liner to prevent scouring of the washed stone beneath this row. This also facilitates the flushing of this row with high pressure water through a culvert cleaning nozzle. The nozzle is deployed through a manhole or the StormFilter and extended to the end of the row. The water is turned on and the inlet row is back-flushed into the manhole or StormFilter. This water is to be removed from the manhole or StormFilter using a vacuum truck.

III. Maintenance Guidelines

The following guidelines shall be adhered to for the operation and maintenance of the CULTEC stormwater management system:

A. The owner shall keep a maintenance log which shall include details of any events which would have an effect on the system's operational capacity.

B. The operation and maintenance procedure shall be reviewed periodically and changed to meet site conditions.

C. Maintenance of the stormwater management system shall be performed by qualified workers and shall follow applicable occupational health and safety requirements.

D. Debris removed from the stormwater management system shall be disposed of in accordance with applicable laws and regulations.

IV. Suggested Maintenance Schedules

A. Minor Maintenance
The following suggested schedule shall be followed for routine maintenance during the regular operation of the stormwater system:

Frequency	Action
Monthly in first year	Check inlets and outlets for clogging and remove any debris as required.
Spring and Fall	Check inlets and outlets for clogging and remove any debris as required.
One year after commissioning and every third year following	Check inlets and outlets for clogging and remove any debris as required.

B. Major Maintenance
The following suggested maintenance schedule shall be followed to maintain the performance of the CULTEC stormwater management chambers. Additional work may be necessary due to insufficient performance and other issues that might be found during the inspection of the stormwater management chambers. (See table on next page)

Major Maintenance *(continued)*

	Frequency	Action
Inlets and Outlets	Every 3 years	• Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
	Spring and Fall	• Check inlet and outlets for clogging and remove any debris as required.
CULTEC Stormwater Chambers	2 years after commissioning	• Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
	9 years after commissioning every 9 years following	• Clean stormwater management chambers and feed connectors of any debris. • Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
	45 years after commissioning	• Clean stormwater management chambers and feed connectors of any debris. • Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. • Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique.
	45 to 50 years after commissioning	• Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. • Attain the appropriate approvals as required. • Establish a new operation and maintenance schedule.
Surrounding Site	Monthly in 1st year	• Check for depressions in areas over and surrounding the stormwater management system.
	Spring and Fall	• Check for depressions in areas over and surrounding the stormwater management system.
	Yearly	• Confirm that no unauthorized modifications have been performed to the site.

For additional information concerning the maintenance of CULTEC Subsurface Stormwater Management Chambers, please contact CULTEC, Inc. at 1-800-428-5832.

CULTEC™
Chamber of Choice™

CULTEC, Inc.
878 Federal Road • P.O. Box 280 • Brookfield, CT 06804
Phone: 203-775-4416 • Toll Free: 800-4-CULTEC • Fax: 203-775-1462
Web: www.cultec.com • E-mail: custservice@cultec.com

APPENDIX B

Stormwater Management System Owners/Operators

1.	Stormwater Management System Owners:	To be determined
2.	Current and future operators:	To be determined
3.	Emergency contact information:	To be determined
4.	Change of trustee:	To be determined
5.	Financial Responsible Party:	To be determined
6.	Routine Maintenance:	To be determined
7.	O&M activities:	To be determined
8.	Record keeping	To be determined

APPENDIX H

Long Term Pollution Prevention Plan

LONG-TERM POLLUTION PREVENTION PLAN

FOR

STILL RIVER COMMONS
STILL RIVER ROAD, MAP 8B PARCEL 32

IN

BOLTON,
MASSACHUSETTS

PREPARED BY: DUCHARME & DILLIS
CIVIL DESIGN GROUP, INC.
P.O. Box 428
Bolton, MA 01740

PREPARED FOR: STILL RIVER ROAD DEVELOPMENT, LLC
28 Country Club Lane
Middleton, MA 01949

JUNE 27TH, 2018

CDG PROJECT # 3339-P

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS • LAND SURVEYORS • WETLAND CONSULTANTS

1.0 Summary

This Long-Term Pollution Prevention Plan (LTPPP) has been prepared by Ducharme & Dillis Civil Design Group, Inc. pursuant to the Massachusetts Stormwater Regulations. The proposed project includes the development of 4 duplex-style apartments with a shared driveway. The project is being proposed pursuant to the Massachusetts General Laws Chapter 40B.

The layout of the proposed site has been carefully planned to reduce the amount of stormwater leaving the site. The stormwater management system has been designed in accordance with the Massachusetts Stormwater Regulations to provide pretreatment of the stormwater prior to discharge.

2.0 Spill Prevention Plan

No hazardous materials other than normal cleaning items are expected to be stored on site after the construction period has ended.

It is expected that normal DEP notification procedures would be triggered for major spills such as heating oil or propane and natural gas leaks.

3.0 Stormwater System O&M

A Stormwater Operation & Maintenance plan has been prepared for the proposed stormwater management system. Refer to this document for details pertaining to the required inspections, routine maintenance and operation details.

4.0 Fertilizers, herbicides and pesticides

Application of fertilizer, herbicides and pesticides shall be performed in a manner consistent with the industry standards for the application.

No application of chemicals is to be performed within the stormwater management areas on the site.

5.0 Snow/Salt Management

5.1 Snow Plowing

It is expected that the site will be plowed by a private contractor. Refer to the Erosion Control Plans for snow storage locations

5.2 Salt/Sand Usage

It is expected that sanding and salting will be performed on an infrequent basis

during times when unusually icy conditions persist for periods of time.

5.3 Street Sweeping

The Stormwater Operation & Maintenance Plan calls for the shared driveway to be swept in the spring, after the threat of winter precipitation has passed, and in the fall.

6.0 Waste Management

6.1 Solid Waste

A dumpster will be located on the site during construction. This area will be the primary area for the on-site storage of solid waste prior to pick-up by a waste management company.

Exhibit L

Requested Exceptions

List of Requested Exceptions

The Still River Commons development has applied for a Comprehensive Permit under the Rules and Regulations as set forth by the Bolton Zoning Board of Appeals and pursuant to the provisions of M.G.L. Chapter 40B. The proponent is requesting exceptions from certain zoning and other local regulations, as noted in the following list. All laws and regulations governing the project will be adhered to as required by Massachusetts' Law.

We also request that the Zoning Board of Appeals grant relief from any other zoning requirement or other applicable local rule, regulation, bylaw or policy which the Bolton Zoning Board of Appeals determines to be applicable to the Development and which is not met by the current site plan or any subsequent site plans reflecting changes resulting from the Zoning Board of Appeals review of the Development.

Non-Zoning Bylaws

§147 – Groundwater Protection

An exception is requested from this Section and all subsections, as the Development shall follow requirements of M.G.L Chapter 40B and its regulations, guidelines, and practices. This process would be redundant with the Comprehensive Permit process as established by State regulations and by the Bolton Zoning Board of Appeals. More specifically a waiver is requested from section §147-1B (3) to allow for the construction of this development, which includes multiple duplex style structures.

§233 – Wetlands

Exceptions from Chapter 233, are requested where the regulations are more stringent than the Wetlands Protection Act.

Board of Health – Requirements for the Subsurface Disposal of Sanitary Sewage

A waiver from Regulation 4 entitled "Distances" is requested. More specifically the following relief from Regulation 4 is requested:

- To allow leaching facilities to be located 10' from a property line as allowed by 310 CMR 15 (10' proposed);
- To allow leaching facility to be located within 35' of access driveway (13' provided) and to allow septic tanks and pump chambers to be located within unit driveways;
- To allow Lot 2B leaching area to be located within 100' of a bordering vegetated wetland (51' provided) as allowed by 310 CMR 15;
- To allow Lot 2C leaching area to be located within 100' of a bordering vegetated wetland (77' provided) as allowed by 310 CMR 15; and

- To allow leaching facilities servicing a separate building to be located within 30' of each other (20' provided) as allowed by 310 CMR 15

Well Regulations

A waiver from section 4.1 entitled "Well Location Requirements" is requested. More specifically, the following relief from section 4.1 is requested, to allow Lot 2B well to be located within 150' of a leaching facility in soils with percolation rates of two minutes per inch or less (122' provided).

Zoning Bylaws

§250 –12 Zoning

An exception is being requested, from section §250-12, as multiple duplex structures as proposed in the Comprehensive Permit is a permit/use that is not specifically stated as being allowed in the By-laws.

§250-13 Dimensional Regulations

An exception is being requested from this section to allow for the Development of the structures on the lot with a side yard setback (interior to the lots that are being created) of 6' on Lot 2B and 12.8' on lot 2C.

§250-13 C. One Building Per Lot

An exception is being requested, from section §250-13 (c) to allow for multiple principle structures on a lot.

§250-13 G. Lot Shape

An exception is being requested, from section §250-13(G To allow lot 2B to have a shape factor of .4 where .5 is required.

§250-17 – Driveways and parking

An exception is requested to allow a shared driveway to access eight (8) dwellings on two (2) lots.

Exhibit M

Site Control

Worcester South District Registry of Deeds
Electronically Recorded Document

This is the first page of the document – Do not remove

Recording Information

Document Number	: 6786
Document Type	: DEED
Recorded Date	: January 22, 2018
Recorded Time	: 02:27:05 PM
Recorded Book and Page	: 58346 / 149
Number of Pages(including cover sheet)	: 3
Receipt Number	: 1053653
Recording Fee (including excise)	: $909.32

****
MASSACHUSETTS EXCISE TAX
Worcester District ROD #20 001
Date: 01/22/2018 02:27 PM
Ctrl# 178443 27445 Doc# 00006786
Fee: $784.32 Cons: $172,000.00
****

Worcester South District Registry of Deeds
Anthony J. Vigliotti, Register
90 Front St
Worcester, MA 01608
(508) 798-7717

Property Address: Lot 2A, off Still River Road, Bolton, MA

QUITCLAIM DEED

I, David Elkinson, Trustee of EB Realty Trust, u/d/t dated November 11, 2014, an unrecorded Trust, with a notice address of 10 Schipper Farm Lane, Southborough, MA

in consideration of **ONE HUNDRED SEVENTY TWO THOUSAND AND NO/100 ($172,000.00) DOLLARS**

grant to **TURN LEFT, LLC,** a Massachusetts limited liability company with a notice address of 130 Parker Street, Unit 12, Lawrence, MA 01843,

with **Quitclaim covenants**

A vacant parcel of land in Bolton, Worcester County, Massachusetts containing 6.68 acres of land, more or less, being shown as Lot 2A on a plan entitled "Plan of Land in Bolton & Harvard, Massachusetts" prepared for: EB Realty Trust dated January 16, 2018; Scale: 1" = 80', prepared by Ducharme & Dillis Civil Design Group, Inc., 1092 Main Street, P.O. Box 428, Bolton, MA 01740.

Said plan is recorded at the Worcester District Registry of Deeds in Plan Book 932, Plan 91.

Lot 2A contains 290,899 square feet (6.68 acres) more or less, according to said plan.

Parcel A, containing 2.52 acres and located in Harvard, is not included in this deed.

This is not homestead property.

Being a portion of the same premises as conveyed by deed to Grantor herein dated February 5, 2015 and recorded at Worcester District Registry of Deeds in Book 53350, Page 329.

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Executed as a sealed instrument this 16 day of JANUARY, 2018.

TRUSTEE

DAVID ELKINSON, TRUSTEE OF
EB REALTY TRUST

COMMONWEALTH OF MASSACHUSETTS
County of Worcester

On this 16 day of JANUARY, 2018, before me, the undersigned notary public, personally appeared DAVID ELKINSON, TRUSTEE OF EB REALTY TRUST, proved to me through satisfactory evidence of identification, which was a driver's license, to be the person described in and who executed the foregoing instrument, and acknowledged that he executed the same as his free act and deed and who swore or affirmed to me that the contents of the documents are truthful and accurate to the best of his knowledge and belief and on behalf of the Trust.

JACLYN STRAND
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
December 25, 2020

Notary Public Jaclyn Strand
My Commission Expires:
December 25, 2020

Worcester District Registry of Deeds - 20/20 Perfect Vision i2 Document Detail Report

Current datetime: 1/22/2018 5:40:58 PM

Doc#	Document Type	Town	Book/Page	File Date	Consideration
6786	DEED		58346/149	01/22/2018	172000.00

Property-Street Address and/or Description

STILL RIVER RD

Grantors

ELKINSON DAVID TR, EB REALTY TRUST

Grantees

TURN LEFT LLC

References-Book/Pg Description Recorded Year

Registered Land Certificate(s)-Cert# Book/Pg

Exhibit N

Legal Existence

The Commonwealth of Massachusetts
Secretary of the Commonwealth
State House, Boston, Massachusetts 02133

William Francis Galvin
Secretary of the Commonwealth

June 29, 2018

TO WHOM IT MAY CONCERN:

I hereby certify that a certificate of organization of a Limited Liability Company was filed in this office by

STILL RIVER ROAD DEVELOPMENT LLC

in accordance with the provisions of Massachusetts General Laws Chapter 156C on **April 3, 2018.**

I further certify that said Limited Liability Company has filed all annual reports due and paid all fees with respect to such reports; that said Limited Liability Company has not filed a certificate of cancellation or withdrawal; and that said Limited Liability Company is in good standing with this office.

I also certify that the names of all managers listed in the most recent filing are:
CHARLES DAVID RUSSELL

I further certify, the names of all persons authorized to execute documents filed with this office and listed in the most recent filing are: **CHARLES DAVID RUSSELL**

The names of all persons authorized to act with respect to real property listed in the most recent filing are: **CHARLES DAVID RUSSELL**

In testimony of which,
I have hereunto affixed the
Great Seal of the Commonwealth
on the date first above written.

William Francis Galvin

Secretary of the Commonwealth

Processed By: IL

The Commonwealth of Massachusetts
William Francis Galvin

Minimum Fee: $500.00

Secretary of the Commonwealth, Corporations Division
One Ashburton Place, 17th floor
Boston, MA 02108-1512
Telephone: (617) 727-9640

Certificate of Organization
(General Laws, Chapter)

Identification Number: 001320866

1. The exact name of the limited liability company is: STILL RIVER ROAD DEVELOPMENT LLC

2a. Location of its principal office:
No. and Street: 28 COUNTRY CLUB LANE
City or Town: MIDDLETON State: MA Zip: 01949 Country: USA

2b. Street address of the office in the Commonwealth at which the records will be maintained:

No. and Street: 28 COUNTRY CLUB LANE
City or Town: MIDDLETON State: MA Zip: 01949 Country: USA

3. The general character of business, and if the limited liability company is organized to render professional service, the service to be rendered:
TO INVEST IN REAL ESTATE; TO BUY, SELL, DEVELOP, MORTGAGE OR LEASE ANY PORTION OF REAL ESTATE WHETHER IMPROVED OR UNIMPROVED FROM OTHER INDIVIDUALS, COR PORATIONS, OR COMPANIES FOR ANY LAWFUL USE NECESSARY FOR THE PROMOTION O F ANY OF THE ABOVE OBJECTIVES; TO FORM, ENTER INTO AND PARTICIPATE IN PARTNER SHIPS AND JOINT VENTURES IN FURTHERANCE OF THE BUSINESS OF THIS COMPANY.

4. The latest date of dissolution, if specified:

5. Name and address of the Resident Agent:
Name: DAVID RUSSELL
No. and Street: 28 COUNTRY CLUB LANE
City or Town: MIDDLETON State: MA Zip: 01949 Country: USA

I, DAVID RUSSELL resident agent of the above limited liability company, consent to my appointment as the resident agent of the above limited liability company pursuant to G. L. Chapter 156C Section 12.

6. The name and business address of each manager, if any:

Title	Individual Name First, Middle, Last, Suffix	Address (no PO Box) Address, City or Town, State, Zip Code
MANAGER	CHARLES DAVID RUSSELL	28 COUNTRY CLUB LANE MIDDLETON, MA 01949 USA

7. The name and business address of the person(s) in addition to the manager(s), authorized to execute documents to be filed with the Corporations Division, and at least one person shall be named if there are no managers.

Title	Individual Name First, Middle, Last, Suffix	Address (no PO Box) Address, City or Town, State, Zip Code

8. The name and business address of the person(s) authorized to execute, acknowledge, deliver and record any recordable instrument purporting to affect an interest in real property:

Title	Individual Name First, Middle, Last, Suffix	Address (no PO Box) Address, City or Town, State, Zip Code
REAL PROPERTY	CHARLES DAVID RUSSELL	28 COUNTRY CLUB LANE MIDDLETON, MA 01949 USA

9. Additional matters:

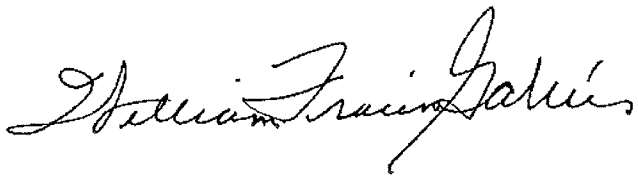
SIGNED UNDER THE PENALTIES OF PERJURY, this 3 Day of April, 2018,
CHARLES DAVID RUSSELL

(The certificate must be signed by the person forming the LLC.)

THE COMMONWEALTH OF MASSACHUSETTS

I hereby certify that, upon examination of this document, duly submitted to me, it appears that the provisions of the General Laws relative to corporations have been complied with, and I hereby approve said articles; and the filing fee having been paid, said articles are deemed to have been filed with me on:

April 03, 2018 10:48 AM



WILLIAM FRANCIS GALVIN

Secretary of the Commonwealth

Exhibit O

Abutter's List

Abutters List Report

Town of Bolton, MA
June 06, 2018

Subject Properties:

008.B-0030.0 008.B-0000-0030.0 305 VAUGHN HILL RD 1A	PICARIELLO ROBIN A & JOSEPH P O BOX 191 HARVARD, MA 01451

Parcel Number: Cama Number: Property Address:	008.B-0005.0 008.B-0000-0005.0 422 STILL RIVER RD	Mailing Address:	BROWN MARY W 422 STILL RIVER RD BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0006.0 008.B-0000-0006.0 438 STILL RIVER RD 1-C	Mailing Address:	SILVER KEITH H & MARCY 438 STILL RIVER RD BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0009.0 008.B-0000-0009.0 448 STILL RIVER RD	Mailing Address:	ANESTIS JASON T, TR THE ANESTIS FAMILY TR 448 STILL RIVER RD BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0010.0 008.B-0000-0010.0 302 VAUGHN HILL RD	Mailing Address:	MARTEL ROBERT C & MICHELLE L S 302 VAUGHN HILL RD BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0012.0 008.B-0000-0012.0 409 STILL RIVER RD	Mailing Address:	SKOREZESKI THOMAS L & MARY 409 STILL RIVER RD BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0014.0 008.B-0000-0014.0 295 VAUGHN HILL RD 2	Mailing Address:	LEVIN MARA E & BARRY 295 VAUGHN HILL RD BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0015.0 008.B-0000-0015.0 0 RTE 110 TOWN LINE PAR C	Mailing Address:	BOLTON CONSERVATION TRUST P O BOX 14 BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0016.0 008.B-0000-0016.0 286 VAUGHN HILL RD	Mailing Address:	FULLER KYLE W 286 VAUGHN HILL RD BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0017.0 008.B-0000-0017.0 294 VAUGHN HILL RD	Mailing Address:	FARINELLA MICHAEL D & SUSAN A 294 VAUGHN HILL RD BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0018.0 008.B-0000-0018.0 440 STILL RIVER RD 2A	Mailing Address:	MYLER JOSHUA & HEATHER 440 STILL RIVER RD BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0026.0 008.B-0000-0026.0 436 STILL RIVER RD 1-B	Mailing Address:	JOHNSON ERIC S & SHARON L 436 STILL RIVER RD BOLTON, MA 01740
Parcel Number: Cama Number: Property Address:	008.B-0029.0 008.B-0000-0029.0 421 STILL RIVER RD	Mailing Address:	ICKES CYNTHIA 421 STILL RIVER RD BOLTON, MA 01740

BROWN MARY W
422 STILL RIVER RD
BOLTON, MA 01740

JOHNSON ERIC S & SHARON L
436 STILL RIVER RD
BOLTON, MA 01740

SILVER KEITH H & MARCY
438 STILL RIVER RD
BOLTON, MA 01740

ICKES CYNTHIA
421 STILL RIVER RD
BOLTON, MA 01740

ANESTIS JASON T, TR
THE ANESTIS FAMILY TR
448 STILL RIVER RD
BOLTON, MA 01740

CHAUDRY SHAZIA & WIQAR CHAU
275 VAUGHN HILL RD
BOLTON, MA 01740

MARTEL ROBERT C & MICHELLE L S
302 VAUGHN HILL RD
BOLTON, MA 01740

SKOREZESKI THOMAS L & MARY
409 STILL RIVER RD
BOLTON, MA 01740

LEVIN MARA E & BARRY
295 VAUGHN HILL RD
BOLTON, MA 01740

BOLTON CONSERVATION TRUST
P O BOX 14
BOLTON, MA 01740

FULLER KYLE W
286 VAUGHN HILL RD
BOLTON, MA 01740

FARINELLA MICHAEL D & SUSAN A
294 VAUGHN HILL RD
BOLTON, MA 01740

MYLER JOSHUA & HEATHER
STILL RIVER RD
BOLTON, MA 01740

Abutters List Report
Town of Harvard, MA

Date: July 31, 2018

Parcel Number: 029-005-000-000
Property Address: Still River Rd., Harvard, MA 01451
Abutters To: 300 feet

The above Certified Abutters List is a true copy of the records in the Town of Harvard Assessor's office for the last known names and addresses of owners of land located within the above stated range of the subject property.

Signed: MS Date: 7/31/2018

Marina A. Scheid
Assistant Assessor
(978) 456-4100 x315

300 foot Abutters List Report

Harvard, MA
July 31, 2018

Subject Property:

Parcel Number:	029-005-000-000	Mailing Address:	ELKINSON, DAVID
CAMA Number:	029-005-000-000		10 SCHIPPER FARM LANE
Property Address:	STILL RIVER RD		SOUTHBOROUGH, MA 01772

Abutters:

Parcel Number:	029-003-000-000	Mailing Address:	WHELAN, JOHN K & WAGNER, DENIS N
CAMA Number:	029-003-000-000		PO BOX 52
Property Address:	389 STILL RIVER RD		STILL RIVER, MA 01467
Parcel Number:	029-004-004-000	Mailing Address:	HARVARD CONSERVATION TRUST
CAMA Number:	029-004-004-000		PO BOX 31
Property Address:	HARRIS LN		HARVARD, MA 01451
Parcel Number:	029-005-000-000	Mailing Address:	ELKINSON, DAVID
CAMA Number:	029-005-000-000		10 SCHIPPER FARM LANE
Property Address:	STILL RIVER RD		SOUTHBOROUGH, MA 01772
Parcel Number:	029-006-000-000	Mailing Address:	ANESTIS, JHN T., TRUSTEE
CAMA Number:	029-006-000-000		448 STILL RIVER RD
Property Address:	OFF STILL RIVER RD		BOLTON, MA 01740
Parcel Number:	029-008-001-000	Mailing Address:	ROUSSEL, PATRICK
CAMA Number:	029-008-001-000		340 STILL RIVER RD
Property Address:	340 STILL RIVER RD		HARVARD, MA 01451

ANESTIS, JHN T., TRUSTEE
48 STILL RIVER RD
BOLTON, MA 01740

ELKINSON, DAVID
10 SCHIPPER FARM LANE
SOUTHBOROUGH, MA 01772

HARVARD CONSERVATION TRUS
PO BOX 31
HARVARD, MA 01451

ROUSSEL, PATRICK
340 STILL RIVER RD
HARVARD, MA 01451

WHELAN, JOHN K & WAGNER,
PO BOX 52
STILL RIVER, MA 01467

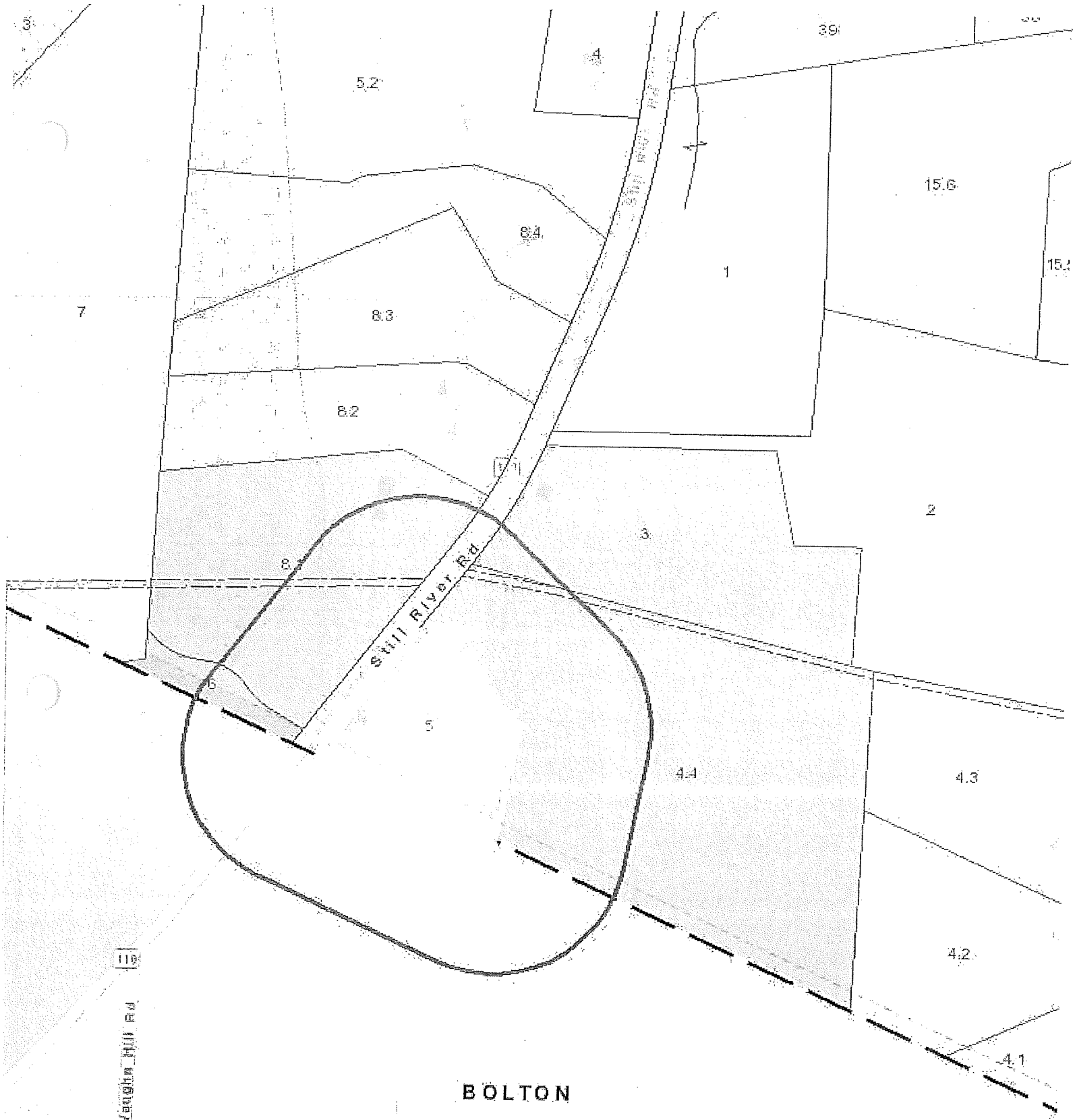

3
5.2
4
39
15.6
8.4
1
7
8.3
8.2
2
3
8
Still River Rd
6
5
4.4
4.3
4.2
4.1
Vaughn Hill Rd
BOLTON

Exhibit P

Filing Fee's

STORMWATER REPORT

FOR

STILL RIVER COMMONS

STILL RIVER ROAD, MAP 8B PARCEL 32

IN

BOLTON,
MASSACHUSETTS

PREPARED BY: DUCHARME & DILLIS
CIVIL DESIGN GROUP, INC.
P.O. Box 428
Bolton, MA 01740

PREPARED FOR: STILL RIVER ROAD DEVELOPMENT, LLC
28 Country Club Lane
Middleton, MA 01949

JUNE 27TH, 2018

CDG PROJECT # 3339-P

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS • LAND SURVEYORS • WETLAND CONSULTANTS

TABLE OF CONTENTS:

1.0 Project Narrative

1.1 Project Type

The proposed project includes the development of the 6.7-acre site located off Still River Road in the town of Bolton. The site will consist of eight (8) units in four (4) duplex-style buildings with a shared driveway and a stormwater drainage system.

1.2 Purpose and Scope

This report has been prepared to comply with the requirements of the Stormwater Management Standards incorporated in the Massachusetts Wetlands Protection Act Regulations, 310 CMR 10.00. These standards are intended to promote increased groundwater recharge and prevent stormwater discharges from causing or contributing to the pollution of surface waters and ground waters of the Commonwealth. The standards aim to accomplish these goals by encouraging the greater use of low impact development techniques and improving the operation and maintenance of stormwater best management practices.

This report addresses compliance of the proposed development with each of the ten stormwater standards, it provides calculations to support the compliance information, and it provides an Operation and Maintenance Plan and Long-Term Pollution Prevention Plan for the stormwater management system.

1.3 Proposed Development

As mentioned, the proposed project is the development of four (4) duplex-style buildings with a shared driveway. The project is being proposed pursuant to the Massachusetts General Laws Chapter 40B.

The driveway will have access off Still River Road approximately 310 feet north of the intersection of Vaughn Hill Road and Still River Road. The proposed development will include private wells and on-site septic systems.

1.4 LID Measures

Care has been taken to lay out the proposed site in a manner that works with existing topography. BMPs such as subsurface infiltration chambers are used to manage the stormwater runoff. Stormwater from the impervious areas are routed via curb and gutter systems and storm drains to subsurface infiltration chambers which contain a sediment forebay for pretreatment. This system will be used to promote groundwater recharge and limit the runoff.

1.5 Site Description

The current property is vacant consisting of a grass/brush area and a wooded area. The site is located on Still River Road approximately 310 feet north of the intersection of Vaughn Hill Road and Still River Road. The abutting properties consist of residential homes and undeveloped woods and wetlands.

A large Bordering Vegetated Wetland exists on the property as depicted on the plans. The wetland wraps around the north, east and southern sides of the property. The middle portion of the property consists of an unmaintained meadow. The site generally has mild slopes with a ridge that runs down the center of the meadow area. The grades drain to the north, south and east towards the wetland.

The Natural Resource Conservation Service (NRCS) soil survey information indicates that the site is underlain by soils classified as belonging to Hydrologic Soil Groups A and C.

1.6 Proposed Stormwater Management System

Runoff from the proposed impervious areas will be conveyed and treated through a combination of BMP's and infiltrated to the groundwater. The infiltration will help to recharge the groundwater and ensure that the proposed development will not cause any off-site flooding. The following is a brief discussion of each conveyance and treatment BMP proposed.

<u>Deep Sump Hooded Catch Basin</u>
A deep sump hooded catch basin is proposed to convey the runoff from the proposed paved areas and roofs to the subsurface infiltration chambers. The catch basin will discharge to manholes and conventional storm drains.

<u>Subsurface Infiltration Chambers</u>
A subsurface infiltration system is included on site. Cultec pre-fabricated chambers, model 330XLHD, will be installed to collect the run off from the roofs and pavement after pretreatment in the deep sump hooded catch basin. The runoff will first be directed into a small group of chambers. These chambers will be wrapped in a geotextile fabric and will act as a sediment forebay for additional pre-treatment. The runoff will then be directed towards the larger infiltration area. The chambers have been designed to accommodate the runoff associated with the 100-year storm event and have enough volume to accommodate the required recharge and water quality volumes.

<u>Trench Drain</u>
A trench drain will be installed across the shared driveway near the entrance. This drain is designed to capture additional runoff that would otherwise flow onto Still River Road. The runoff collected from the trench drain will be directed into the

deep sump hooded catch basin where it will begin treatment before infiltration.

1.7 Methods of Analysis

United States Department of Agriculture Natural Resources Conservation Service (NRCS) soil cover complex methods (TR-20) were employed to compute runoff quantities for the subject property and, where appropriate, adjacent property that drains toward a common discharge point with runoff from the subject site. HydroCAD 10.0 computer software was employed in this hydrologic analysis. A comparison of pre- and post-development runoff quantities at two different analysis points was performed in order to design a stormwater management system that will limit peak rates of runoff from the development to predevelopment levels for 24-hour rainfall events of 2-, 10-, and 100-year return frequencies. Watershed boundaries for existing conditions are depicted on the attached Predevelopment Watershed Plan. Post-Developed watershed boundaries are indicated on the Post-development Watershed Plan.

2.0 Stormwater Standards Compliance

2.1 Standard 1 – Untreated Discharges

The stormwater management system for the proposed development will not result in any new discharges of untreated stormwater to wetland resource areas. Stormwater management structures have been designed such that there is no erosion or scour to wetland resource areas or waters of the Commonwealth.

2.2 Standard 2 – Peak Rate Attenuation

Hydrologic calculations for existing and proposed site conditions are included in Appendices D and E respectively. Calculations for 24-hour rainfall events of 2-, 10- and 100-year return frequencies are provided. The following table provides a summary of peak rates of runoff related to each of these storms for a design point at the wetland boundary through which all runoff from the subject property must flow. For all rainfall events considered, the proposed stormwater management system will control runoff from the development such that corresponding peak flows at the design point will match pre-developed rates to the maximum extent practical.
As seen in the table below, the post-development rate for the 2-yr, 24-hr storm event is 0.06 cfs greater than the pre-development rate. This flow is negligible when spread out across the entire 2.9 acres modeled.

	2 YR, 24 HR		**10 YR, 24 HR**		**100 YR, 24 HR**	
	PRE	**POST**	**PRE**	**POST**	**PRE**	**POST**
DP-A	0.93	0.99	2.18	2.17	4.80	4.76

2.3 Standard 3 – Recharge

As discussed in the Introduction, Natural Resource Conservation Service data indicates that the areas within the proposed development consist of soils from Hydrologic Groups A and C. On site soil testing was also performed and the logs can be found in Appendix C.

A subsurface infiltration chamber area has been designed to provide infiltration of the required recharge and water quality volumes. Recharge calculations can be found in Appendix F. Mounding Calculations can also be found in Appendix F.

2.4 Standard 4 – Water Quality

A total of 85% TSS removal was achieved using BMPs. As part of the proposed project, infiltration requires a minimum of 44% TSS removal provided prior to discharge. Two TSS calculation sheets have been provided. The sheet with a deep sump catch basin into a sediment forebay shows proper pre-treatment before entering the subsurface infiltration chambers and infiltration basin. The sheet with deep sump catch basin into an infiltration basin shows there is enough TSS removal within the whole system. See Appendix F for detailed calculations.

2.5 Standard 5 – Land Uses with Higher Pollutant Loads

The current and proposed uses of the subject site do not constitute land use with higher potential pollutant load, thus Standard 5 does not apply to the proposed project.

2.6 Standard 6 – Critical Areas

The proposed project does not involve a stormwater discharge within or near to any of the areas defined as “Critical Areas” at 314 CMR 9.02 and 310 CMR 10.04.

2.7 Standard 7 – Redevelopment

The project does not qualify for redevelopment provisions.

2.8 Standard 8 – Construction Period Pollution Prevention and Erosion and Sediment Control

Because the project is subject to the filing of an Environmental Protection Agency Notice of Intent (EPA NOI), the Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction. This document will be prepared to satisfy the requirements of the EPA NOI and the Standard 8 Construction Period Pollution prevention and Erosion and Sedimentation Control Plan.

2.9 Standard 9 – Operation and Maintenance Plan

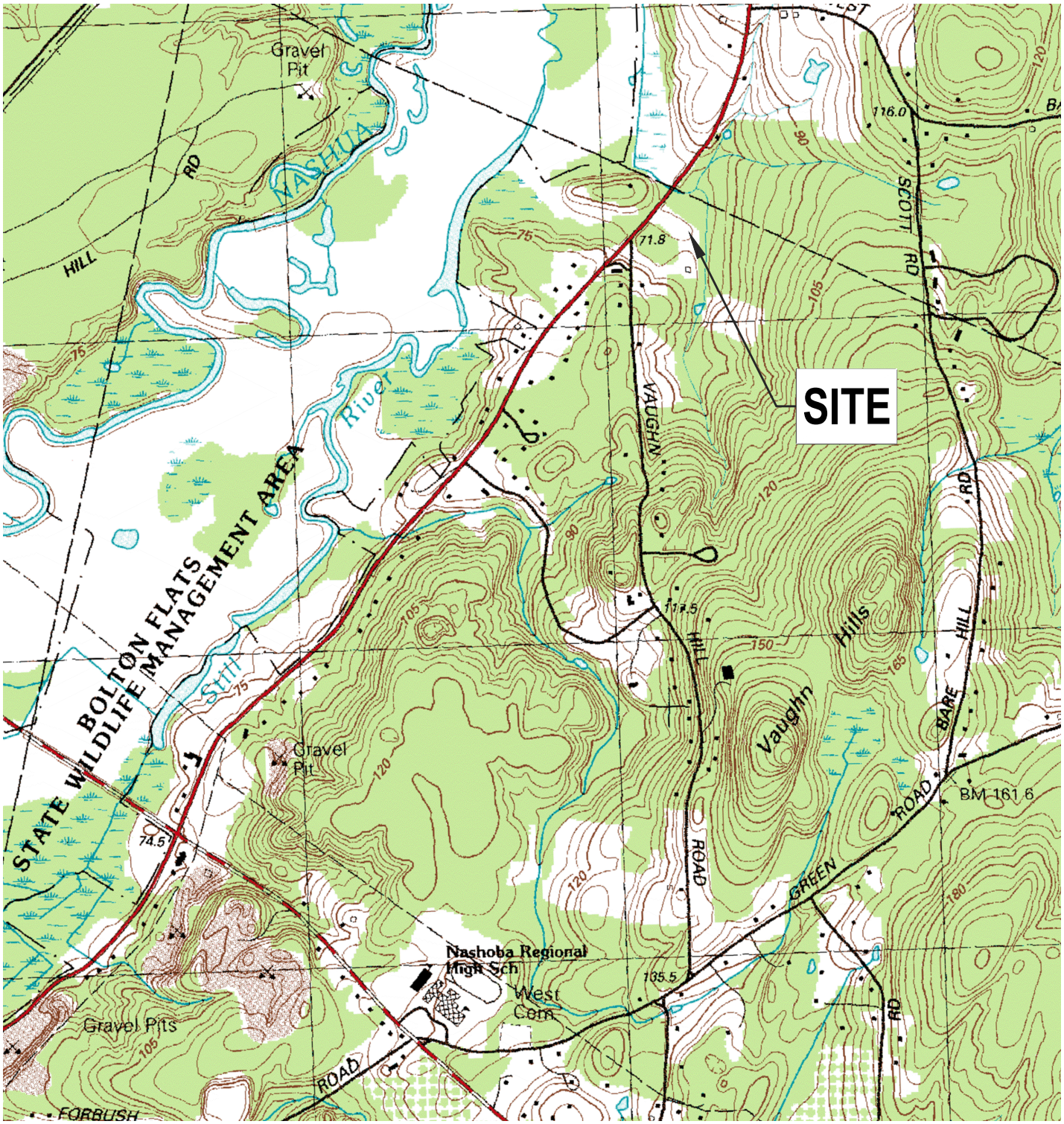
Refer to Appendix G for a complete copy of the Stormwater Operation and Maintenance Plan.

2.10 Standard 10 – Prohibition of Illicit Discharges

An illicit discharge statement will be prepared after approvals are received and prior to construction.

APPENDIX A

Locus Map



LOCUS MAP

Prepared By: Ducharme & Dillis, Civil Design Group, Inc.
1092 Main Street
P.O. Box 428
Bolton, Massachusetts

DATE: JUNE 2018

Prepared For: Still River Road Development, LLC
28 Country Club Lane
Middleton, Massachusetts

SCALE: 1" = 800'

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS• LAND SURVEYORS• WETLAND CONSULTANTS

APPENDIX B

Checklist for Stormwater Report Checklist

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
NO. 45070
REGISTERED PROFESSIONAL ENGINEER

6/27/18

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☑ New development

☐ Redevelopment (Although the project is considered redevelopment, it meets all of the Standards below)

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☑ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☑ Other (describe): Subsurface Infiltration

Standard 1: No New Untreated Discharges

- ☑ No new untreated discharges
- ☑ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☑ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

- ☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- ☑ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- ☑ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

- ☑ Soil Analysis provided.
- ☑ Required Recharge Volume calculation provided.
- ☐ Required Recharge volume reduced through use of the LID site Design Credits.
- ☑ Sizing the infiltration, BMPs is based on the following method: Check the method used.

  ☑ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

- ☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.
- ☑ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- ☑ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- ☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
  - ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
  - ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
  - ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- ☑ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- ☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

- ☑ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- ☑ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

- ☑ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
- ☑ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
  - ☐ is within the Zone II or Interim Wellhead Protection Area
  - ☐ is near or to other critical areas
  - ☑ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
  - ☐ involves runoff from land uses with higher potential pollutant loads.
- ☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.
- ☑ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

- [x] The BMP is sized (and calculations provided) based on:
  - [x] The ½" or 1" Water Quality Volume or
  - [ ] The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- [ ] The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- [ ] A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- [ ] The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- [ ] The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.
- [ ] The NPDES Multi-Sector General Permit does ***not*** cover the land use.
- [ ] LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- [ ] All exposure has been eliminated.
- [ ] All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- [ ] The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

- [ ] The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- [ ] Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- ☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

- ☐ The project is ***not*** covered by a NPDES Construction General Permit.
- ☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- ☑ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

- ☑ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
  - ☑ Name of the stormwater management system owners;
  - ☑ Party responsible for operation and maintenance;
  - ☑ Schedule for implementation of routine and non-routine maintenance tasks;
  - ☑ Plan showing the location of all stormwater BMPs maintenance access areas;
  - ☑ Description and delineation of public safety features;
  - ☑ Estimated operation and maintenance budget; and
  - ☑ Operation and Maintenance Log Form.
- ☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
  - ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
  - ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

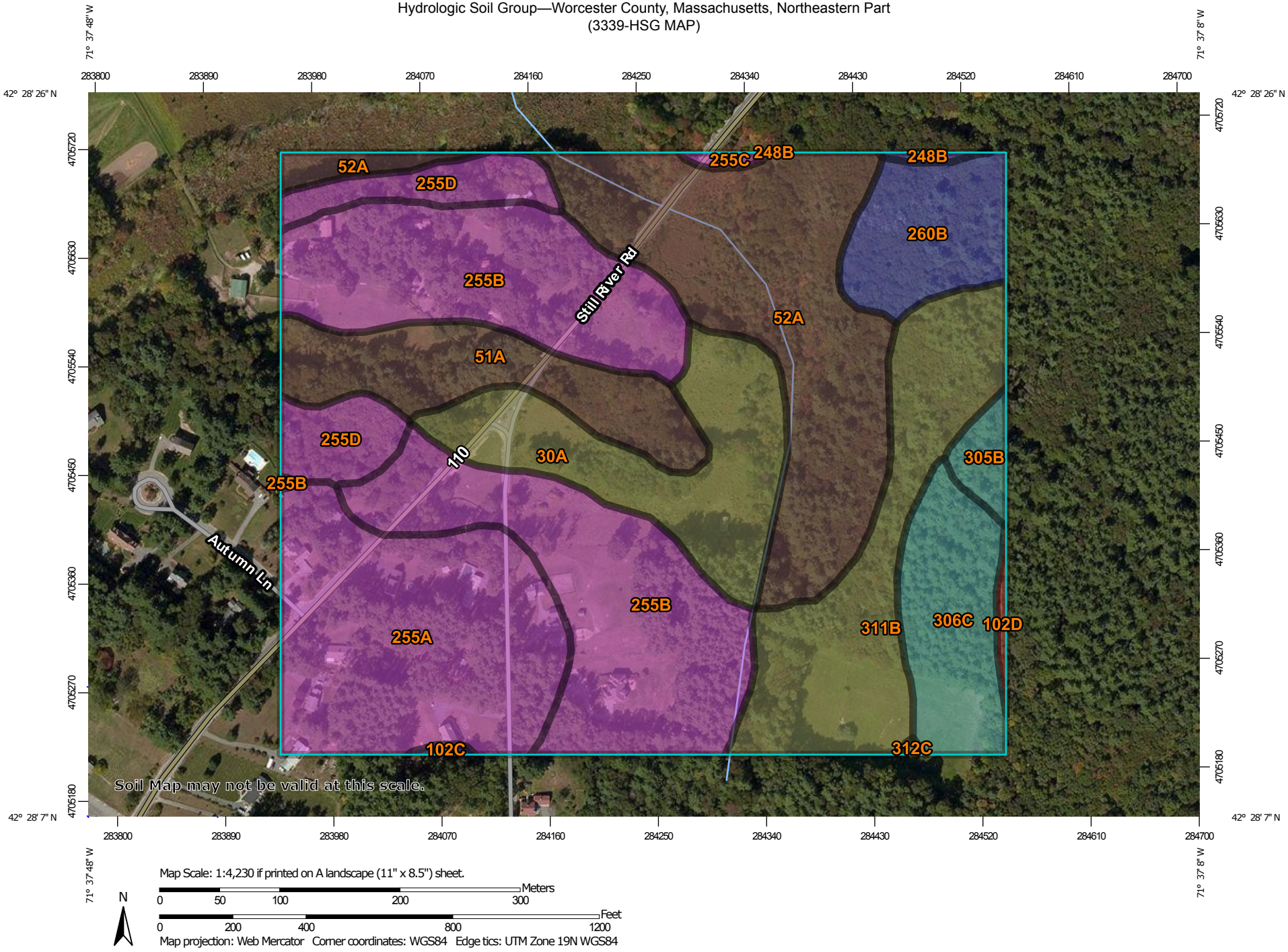
Standard 10: Prohibition of Illicit Discharges

- ☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- ☐ An Illicit Discharge Compliance Statement is attached;
- ☑ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

APPENDIX C

NRCS Soils Data

Hydrologic Soil Group—Worcester County, Massachusetts, Northeastern Part
(3339-HSG MAP)



Map Scale: 1:4,230 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

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
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Worcester County, Massachusetts, Northeastern Part
Survey Area Data: Version 12, Oct 6, 2017

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

Date(s) aerial images were photographed: Sep 12, 2014—Sep 28, 2014

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
30A	Raynham silt loam, 0 to 3 percent slopes	C/D	6.8	9.2%
51A	Swansea muck, 0 to 1 percent slopes	B/D	5.2	6.9%
52A	Freetown muck, 0 to 1 percent slopes	B/D	12.9	17.3%
102C	Chatfield-Hollis-Rock outcrop complex, 0 to 15 percent slopes	B	0.1	0.1%
102D	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	D	0.2	0.3%
248B	Amostown and Belgrade soils, 3 to 8 percent slopes	B	0.1	0.2%
255A	Windsor loamy sand, 0 to 3 percent slopes	A	10.8	14.5%
255B	Windsor loamy sand, 3 to 8 percent slopes	A	18.1	24.2%
255C	Windsor loamy sand, 8 to 15 percent slopes	A	0.2	0.3%
255D	Windsor loamy sand, 15 to 25 percent slopes	A	3.4	4.5%
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	B	3.7	4.9%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	C	0.8	1.1%
306C	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	C	4.3	5.7%
311B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	C/D	8.1	10.8%
312C	Woodbridge fine sandy loam, 8 to 15 percent slopes, extremely stony	C/D	0.0	0.1%
Totals for Area of Interest			**74.7**	**100.0%**

Description

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.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

STEVE ELKINSON
Owner Name

STILL RIVER ROAD
Street Address

Map/Lot #

BOLTON
City

MA
State

01740
Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☒ Yes ☐ No If yes: NCRS (Source) 255B (Soil Map Unit)

   WINDSOR LOAMY FINE SAND
   Soil Name

   NONE
   Soil Limitations

3. Surficial Geological Report Available? ☐ Yes ☐ No If yes: Year Published/Source | Publication Scale | Map Unit

   Geologic/Parent Material

   KAME TERRACE
   Landform

4. Flood Rate Insurance Map

   Above the 500-year flood boundary? ☐ Yes ☒ No Within the 100-year flood boundary? ☐ Yes ☒ No

   Within the 500-year flood boundary? ☒ Yes ☐ No Within a velocity zone? ☐ Yes ☒ No

5. Wetland Area: Wetlands Conservancy Program Map Map Unit | Name

6. Current Water Resource Conditions (USGS): JUNE '15 (Month/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

7. Other references reviewed:

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserved disposal area)*

Deep Observation Hole Number: 615-1/4 | 6-26-15 (Date) | 8:30 AM (Time) | CLOUDY, 70'S (Weather)

1. Location

Ground Elevation at Surface of Hole: _____ Location (identify on plan): _____

2. Land Use: OPEN FIELD (e.g., woodland, agricultural field, vacant lot, etc.) | NONE (Surface Stones) | 0-3% (Slope (%))

GRASSES (Vegetation) | KAME TERRACE (Landform) | TOP (Position on Landscape (attach sheet))

3. Distances from:

Open Water Body	100'+ feet	Drainage Way	100'+ feet	Possible Wet Area	100'+ feet
Property Line	75'+/- feet	Drinking Water Well	100'+ feet	Other	_____ feet

4. Parent Material: PROGLACIAL OUTWASH Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: SEE LOGS (Depth Weeping from Pit) | SEE LOGS (Depth Standing Water in Hole)

Estimated Depth to High Groundwater: _____ inches _____ elevation

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-1

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
58	C1	10YR 5/6	58"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
80	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, N.G.W.O.

W/ PERC-A

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-2

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
64	C1	10YR 5/6	64"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
84	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, N.G.W.O.

W/ PERC-B

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-3

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
24	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
60	C1	10YR 5/6	60"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
84	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, G.W.O. @ 82"

W/ PERC-C

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-4

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
12	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
60	C1	10YR 5/6	60"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
88	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, G.W.O. @ 88"

W/ PERC-D

Commonwealth of Massachusetts
City/Town of BOLTON
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 615-5

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
10	A	10YR 3/3				S.L.			CRUMB	FRIABLE	
20	Bw	10YR 5/8				L.S.			S.A.B.	FRIABLE	
52	C1	10YR 5/6	52"	7.5YR 6/8	5%	F-M S			MASSIVE	FRIABLE	
84	C2	10YR 5/3		7.5YR 6/1		F.S.L.			MASSIVE	FRIABL	

Additional Notes:

NO REFUSAL, G.W.O. @ 60"

NOT WITNESSED BY BOH AGENT

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

☒ Depth observed standing water in observation hole	A. SEE LOGS inches	B. SEE LOGS inches
☒ Depth weeping from side of observation hole	A. SEE LOGS inches	B. SEE LOGS inches
☒ Depth to soil redoximorphic features (mottles)	A. SEE LOGS inches	B. SEE LOGS inches
☐ Groundwater adjustment (USGS methodology)	A. inches	B. inches

2. _____ Index Well Number _____ Reading Date _____ Index Well Level

_____ Adjustment Factor _____ Adjusted Groundwater Level

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

   ☒ Yes ☐ No

   b. If yes, at what depth was it observed? Upper boundary: 10/12" inches Lower boundary: 58/64" inches

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator	6/29/15 Date
WILLIAM J. "JACK" MALONEY, JR. Typed or Printed Name of Soil Evaluator / License #	7/2014 Date of Soil Evaluator Exam
BILL BROOKINGS Name of Board of Health Witness	NABOH FOR TOWN OF BOLTON Board of Health

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Commonwealth of Massachusetts
City/Town of BOLTON

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

Use this sheet for field diagrams:

Commonwealth of Massachusetts
City/Town of BOLTON
Percolation Test
Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A. Site Information

STEVE ELKINSON
Owner Name

STILL RIVER ROAD
Street Address or Lot #

BOLTON	MA	01740
City/Town	State	Zip Code

STEVE ELKINSON	
Contact Person (if different from Owner)	Telephone Number

B. Test Results

	6/26/15	10:15 AM	6/26/15	10:15 AM
	Date	Time	Date	Time
Observation Hole #	PA/PB		PC/PD	
Depth of Perc	30"/45"		44"/46"	
Start Pre-Soak	10:45/10:46		10:47/10:48	
End Pre-Soak	UNABLE		UNABLE	
Time at 12"	TO		TO	
Time at 9"	SATURATE		SATURATE	
Time at 6"				
Time (9"-6")				
Rate (Min./Inch)	2 MPI		2 MPI	
	Test Passed:	☒	Test Passed:	☒
	Test Failed:	☐	Test Failed:	☐

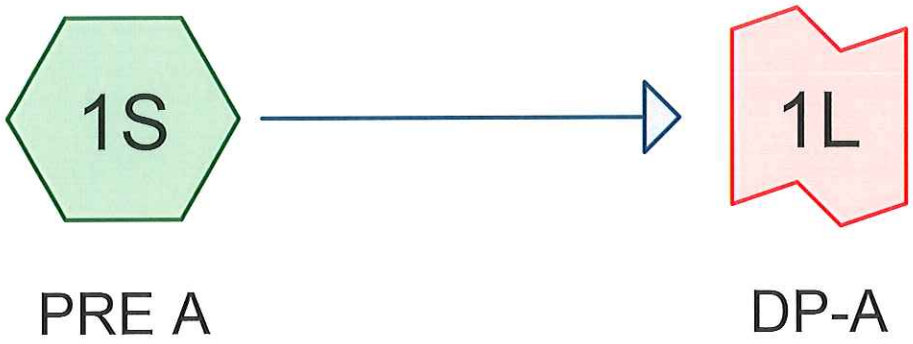
WILLIAM J. "JACK" MALONEY, JR
Test Performed By:

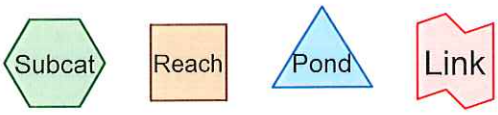
BILL BROOKINGS, NABOH AGENT-TOWN OF BOLTON
Witnessed By:

Comments:

APPENDIX D

Existing Conditions – Hydrologic Calculations





Routing Diagram for 3339-PRE
Prepared by Microsoft, Printed 7/10/2018

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE A Runoff Area=126,787 sf 0.00% Impervious Runoff Depth=0.33"
Flow Length=182' Tc=8.1 min CN=WQ Runoff=0.93 cfs 0.081 af

Link 1L: DP-A Inflow=0.93 cfs 0.081 af
Primary=0.93 cfs 0.081 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.081 af Average Runoff Depth = 0.33"
100.00% Pervious = 2.911 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: PRE A

Runoff = 0.93 cfs @ 12.13 hrs, Volume= 0.081 af, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
42,030	30	Meadow, non-grazed, HSG A
32,150	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
126,787		Weighted Average
126,787		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.0280	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	18	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	114	0.0190	0.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.1	182	Total			

Summary for Link 1L: DP-A

Inflow Area = 2.911 ac, 0.00% Impervious, Inflow Depth = 0.33" for 2-year event
Inflow = 0.93 cfs @ 12.13 hrs, Volume= 0.081 af
Primary = 0.93 cfs @ 12.13 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE A Runoff Area=126,787 sf 0.00% Impervious Runoff Depth=0.72"
Flow Length=182' Tc=8.1 min CN=WQ Runoff=2.18 cfs 0.174 af

Link 1L: DP-A Inflow=2.18 cfs 0.174 af
Primary=2.18 cfs 0.174 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.174 af Average Runoff Depth = 0.72"
100.00% Pervious = 2.911 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: PRE A

Runoff = 2.18 cfs @ 12.12 hrs, Volume= 0.174 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
42,030	30	Meadow, non-grazed, HSG A
32,150	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
126,787		Weighted Average
126,787		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.0280	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	18	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	114	0.0190	0.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.1	182	Total			

Summary for Link 1L: DP-A

Inflow Area = 2.911 ac, 0.00% Impervious, Inflow Depth = 0.72" for 10-year event
Inflow = 2.18 cfs @ 12.12 hrs, Volume= 0.174 af
Primary = 2.18 cfs @ 12.12 hrs, Volume= 0.174 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE A Runoff Area=126,787 sf 0.00% Impervious Runoff Depth=1.66"
Flow Length=182' Tc=8.1 min CN=WQ Runoff=4.80 cfs 0.402 af

Link 1L: DP-A Inflow=4.80 cfs 0.402 af
Primary=4.80 cfs 0.402 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.402 af Average Runoff Depth = 1.66"
100.00% Pervious = 2.911 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: PRE A

Runoff = 4.80 cfs @ 12.12 hrs, Volume= 0.402 af, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
42,030	30	Meadow, non-grazed, HSG A
32,150	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
126,787		Weighted Average
126,787		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.0280	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.3	18	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	114	0.0190	0.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.1	182	Total			

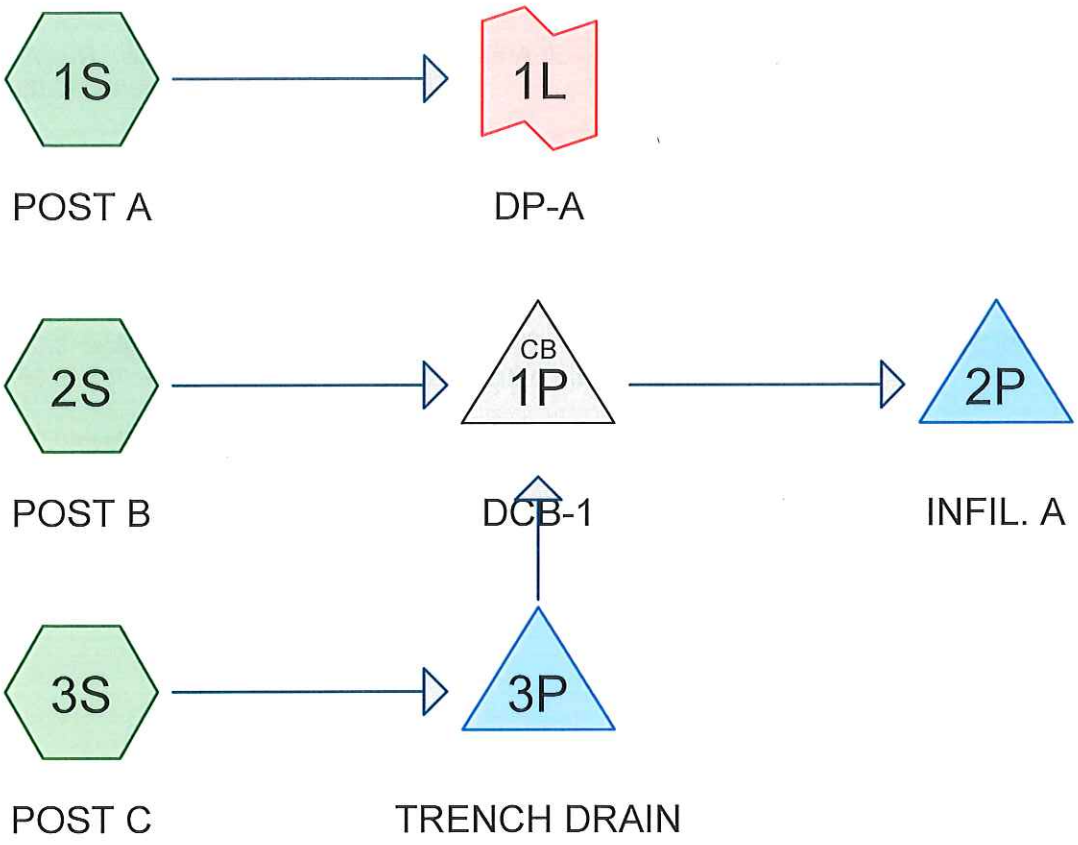
Summary for Link 1L: DP-A

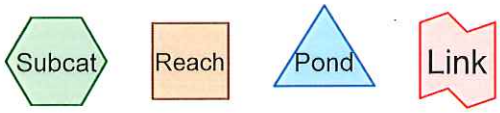
Inflow Area = 2.911 ac, 0.00% Impervious, Inflow Depth = 1.66" for 100-year event
Inflow = 4.80 cfs @ 12.12 hrs, Volume= 0.402 af
Primary = 4.80 cfs @ 12.12 hrs, Volume= 0.402 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

APPENDIX E

Proposed Conditions – Hydrologic Calculations





Routing Diagram for 3339-POST
Prepared by Microsoft, Printed 7/10/2018
HydroCAD® 10.00-17 s/n 03590 © 2016 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: POST A Runoff Area=101,027 sf 3.20% Impervious Runoff Depth=0.51"
Flow Length=60' Slope=0.0220 '/' Tc=12.3 min CN=WQ Runoff=0.99 cfs 0.099 af

Subcatchment 2S: POST B Runoff Area=20,585 sf 61.82% Impervious Runoff Depth=1.77"
Tc=6.0 min CN=WQ Runoff=0.86 cfs 0.070 af

Subcatchment 3S: POST C Runoff Area=5,198 sf 14.47% Impervious Runoff Depth=0.41"
Tc=6.0 min CN=WQ Runoff=0.05 cfs 0.004 af

Pond 1P: DCB-1 Peak Elev=232.02' Inflow=0.91 cfs 0.074 af
18.0" Round Culvert n=0.013 L=83.0' S=0.0051 '/' Outflow=0.91 cfs 0.074 af

Pond 2P: INFIL. A Peak Elev=231.33' Storage=0.024 af Inflow=0.91 cfs 0.074 af
Outflow=0.12 cfs 0.074 af

Pond 3P: TRENCH DRAIN Peak Elev=232.21' Storage=0.000 af Inflow=0.05 cfs 0.004 af
4.5" Round Culvert n=0.013 L=42.0' S=0.0105 '/' Outflow=0.05 cfs 0.004 af

Link 1L: DP-A Inflow=0.99 cfs 0.099 af
Primary=0.99 cfs 0.099 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.173 af Average Runoff Depth = 0.71"
86.82% Pervious = 2.528 ac 13.18% Impervious = 0.384 ac

Summary for Subcatchment 1S: POST A

Runoff = 0.99 cfs @ 12.19 hrs, Volume= 0.099 af, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
684	98	Paved parking, HSG A
2,550	98	Roofs, HSG A
18,011	39	>75% Grass cover, Good, HSG A
7,315	30	Meadow, non-grazed, HSG A
19,860	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
101,027		Weighted Average
97,793		96.80% Pervious Area
3,234		3.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	50	0.0220	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	10	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.3	60	Total			

Summary for Subcatchment 2S: POST B

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.070 af, Depth= 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
10,050	98	Paved parking, HSG A
2,676	98	Roofs, HSG A
7,859	39	>75% Grass cover, Good, HSG A
20,585		Weighted Average
7,859		38.18% Pervious Area
12,726		61.82% Impervious Area

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

Summary for Subcatchment 3S: POST C

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
752	98	Paved parking, HSG A
4,446	39	>75% Grass cover, Good, HSG A
5,198		Weighted Average
4,446		85.53% Pervious Area
752		14.47% Impervious Area

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

Summary for Pond 1P: DCB-1

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 1.50" for 2-year event
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 0.074 af
Outflow = 0.91 cfs @ 12.09 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 12.09 hrs, Volume= 0.074 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.02' @ 12.09 hrs
Flood Elev= 234.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	231.52'	**18.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 231.52' / 231.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.88 cfs @ 12.09 hrs HW=232.01' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.88 cfs @ 2.63 fps)

Summary for Pond 2P: INFIL. A

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 1.50" for 2-year event
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 0.074 af
Outflow = 0.12 cfs @ 12.62 hrs, Volume= 0.074 af, Atten= 87%, Lag= 31.7 min
Discarded = 0.12 cfs @ 12.62 hrs, Volume= 0.074 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 231.33' @ 12.62 hrs Surf.Area= 0.032 ac Storage= 0.024 af
Flood Elev= 234.55' Surf.Area= 0.032 ac Storage= 0.076 af

Plug-Flow detention time= 61.8 min calculated for 0.074 af (100% of inflow)

Center-of-Mass det. time= 61.8 min (818.9 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	230.17'	0.032 af	**30.50'W x 45.50'L x 3.88'H Field A** 0.123 af Overall - 0.045 af Embedded = 0.079 af x 40.0% Voids
#2A	230.67'	0.045 af	**Cultec R-330XLHD** x 36 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 6 rows
		0.076 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	230.17'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 228.17'

Discarded OutFlow Max=0.12 cfs @ 12.62 hrs HW=231.33' (Free Discharge)
└**1=Exfiltration** (Controls 0.12 cfs)

Summary for Pond 3P: TRENCH DRAIN

Inflow Area = 0.119 ac, 14.47% Impervious, Inflow Depth = 0.41" for 2-year event
Inflow = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af
Outflow = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.1 min
Primary = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.21' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 233.00' Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.9 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (757.9 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1	232.06'	0.000 af	**0.33'W x 13.33'L x 0.90'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	232.06'	**4.5" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.06' / 231.62' S= 0.0105 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.11 sf

Primary OutFlow Max=0.05 cfs @ 12.09 hrs HW=232.21' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.05 cfs @ 1.79 fps)

Summary for Link 1L: DP-A

Inflow Area =	2.319 ac,	3.20% Impervious,	Inflow Depth =	0.51"	for 2-year event
Inflow =	0.99 cfs @	12.19 hrs, Volume=	0.099 af		
Primary =	0.99 cfs @	12.19 hrs, Volume=	0.099 af,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: POST A Runoff Area=101,027 sf 3.20% Impervious Runoff Depth=1.06"
Flow Length=60' Slope=0.0220 '/' Tc=12.3 min CN=WQ Runoff=2.17 cfs 0.204 af

Subcatchment 2S: POST B Runoff Area=20,585 sf 61.82% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=WQ Runoff=1.25 cfs 0.105 af

Subcatchment 3S: POST C Runoff Area=5,198 sf 14.47% Impervious Runoff Depth=0.71"
Tc=6.0 min CN=WQ Runoff=0.07 cfs 0.007 af

Pond 1P: DCB-1 Peak Elev=232.13' Inflow=1.33 cfs 0.113 af
18.0" Round Culvert n=0.013 L=83.0' S=0.0051 '/' Outflow=1.33 cfs 0.113 af

Pond 2P: INFIL. A Peak Elev=231.95' Storage=0.040 af Inflow=1.33 cfs 0.113 af
Outflow=0.15 cfs 0.113 af

Pond 3P: TRENCH DRAIN Peak Elev=232.25' Storage=0.000 af Inflow=0.07 cfs 0.007 af
4.5" Round Culvert n=0.013 L=42.0' S=0.0105 '/' Outflow=0.07 cfs 0.007 af

Link 1L: DP-A Inflow=2.17 cfs 0.204 af
Primary=2.17 cfs 0.204 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.317 af Average Runoff Depth = 1.31"
86.82% Pervious = 2.528 ac 13.18% Impervious = 0.384 ac

Summary for Subcatchment 1S: POST A

Runoff = 2.17 cfs @ 12.18 hrs, Volume= 0.204 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
684	98	Paved parking, HSG A
2,550	98	Roofs, HSG A
18,011	39	>75% Grass cover, Good, HSG A
7,315	30	Meadow, non-grazed, HSG A
19,860	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
101,027		Weighted Average
97,793		96.80% Pervious Area
3,234		3.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	50	0.0220	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	10	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.3	60	Total			

Summary for Subcatchment 2S: POST B

Runoff = 1.25 cfs @ 12.09 hrs, Volume= 0.105 af, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
10,050	98	Paved parking, HSG A
2,676	98	Roofs, HSG A
7,859	39	>75% Grass cover, Good, HSG A
20,585		Weighted Average
7,859		38.18% Pervious Area
12,726		61.82% Impervious Area

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

Summary for Subcatchment 3S: POST C

Runoff = 0.07 cfs @ 12.09 hrs, Volume= 0.007 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
752	98	Paved parking, HSG A
4,446	39	>75% Grass cover, Good, HSG A
5,198		Weighted Average
4,446		85.53% Pervious Area
752		14.47% Impervious Area

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

Summary for Pond 1P: DCB-1

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 2.28" for 10-year event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.113 af
Outflow = 1.33 cfs @ 12.09 hrs, Volume= 0.113 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.09 hrs, Volume= 0.113 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.13' @ 12.09 hrs
Flood Elev= 234.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	231.52'	**18.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 231.52' / 231.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.29 cfs @ 12.09 hrs HW=232.12' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.29 cfs @ 2.89 fps)

Summary for Pond 2P: INFIL. A

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 2.28" for 10-year event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.113 af
Outflow = 0.15 cfs @ 12.77 hrs, Volume= 0.113 af, Atten= 89%, Lag= 40.8 min
Discarded = 0.15 cfs @ 12.77 hrs, Volume= 0.113 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 231.95' @ 12.77 hrs Surf.Area= 0.032 ac Storage= 0.040 af
Flood Elev= 234.55' Surf.Area= 0.032 ac Storage= 0.076 af

Plug-Flow detention time= 96.7 min calculated for 0.112 af (100% of inflow)

Center-of-Mass det. time= 96.6 min (853.5 - 756.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	230.17'	0.032 af	**30.50'W x 45.50'L x 3.88'H Field A** 0.123 af Overall - 0.045 af Embedded = 0.079 af x 40.0% Voids
#2A	230.67'	0.045 af	**Cultec R-330XLHD** x 36 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 6 rows
		0.076 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	230.17'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 228.17'

Discarded OutFlow Max=0.15 cfs @ 12.77 hrs HW=231.95' (Free Discharge)
└**1=Exfiltration** (Controls 0.15 cfs)

Summary for Pond 3P: TRENCH DRAIN

Inflow Area = 0.119 ac, 14.47% Impervious, Inflow Depth = 0.71" for 10-year event
Inflow = 0.07 cfs @ 12.09 hrs, Volume= 0.007 af
Outflow = 0.07 cfs @ 12.09 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.1 min
Primary = 0.07 cfs @ 12.09 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.25' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 233.00' Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.7 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (790.9 - 790.2)

Volume	Invert	Avail.Storage	Storage Description
#1	232.06'	0.000 af	**0.33'W x 13.33'L x 0.90'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	232.06'	**4.5" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.06' / 231.62' S= 0.0105 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.11 sf

Primary OutFlow Max=0.07 cfs @ 12.09 hrs HW=232.24' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.07 cfs @ 1.97 fps)

Summary for Link 1L: DP-A

Inflow Area = 2.319 ac, 3.20% Impervious, Inflow Depth = 1.06" for 10-year event
Inflow = 2.17 cfs @ 12.18 hrs, Volume= 0.204 af
Primary = 2.17 cfs @ 12.18 hrs, Volume= 0.204 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: POST A Runoff Area=101,027 sf 3.20% Impervious Runoff Depth=2.34"
Flow Length=60' Slope=0.0220 '/' Tc=12.3 min CN=WQ Runoff=4.76 cfs 0.451 af

Subcatchment 2S: POST B Runoff Area=20,585 sf 61.82% Impervious Runoff Depth=4.47"
Tc=6.0 min CN=WQ Runoff=2.02 cfs 0.176 af

Subcatchment 3S: POST C Runoff Area=5,198 sf 14.47% Impervious Runoff Depth=1.64"
Tc=6.0 min CN=WQ Runoff=0.15 cfs 0.016 af

Pond 1P: DCB-1 Peak Elev=232.32' Inflow=2.17 cfs 0.192 af
18.0" Round Culvert n=0.013 L=83.0' S=0.0051 '/' Outflow=2.17 cfs 0.192 af

Pond 2P: INFIL. A Peak Elev=233.96' Storage=0.075 af Inflow=2.17 cfs 0.192 af
Outflow=0.22 cfs 0.192 af

Pond 3P: TRENCH DRAIN Peak Elev=232.34' Storage=0.000 af Inflow=0.15 cfs 0.016 af
4.5" Round Culvert n=0.013 L=42.0' S=0.0105 '/' Outflow=0.15 cfs 0.016 af

Link 1L: DP-A Inflow=4.76 cfs 0.451 af
Primary=4.76 cfs 0.451 af

Total Runoff Area = 2.911 ac Runoff Volume = 0.644 af Average Runoff Depth = 2.65"
86.82% Pervious = 2.528 ac 13.18% Impervious = 0.384 ac

Summary for Subcatchment 1S: POST A

Runoff = 4.76 cfs @ 12.17 hrs, Volume= 0.451 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
684	98	Paved parking, HSG A
2,550	98	Roofs, HSG A
18,011	39	>75% Grass cover, Good, HSG A
7,315	30	Meadow, non-grazed, HSG A
19,860	30	Woods, Good, HSG A
39,848	71	Meadow, non-grazed, HSG C
12,759	70	Woods, Good, HSG C
101,027		Weighted Average
97,793		96.80% Pervious Area
3,234		3.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	50	0.0220	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	10	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.3	60	Total			

Summary for Subcatchment 2S: POST B

Runoff = 2.02 cfs @ 12.09 hrs, Volume= 0.176 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
10,050	98	Paved parking, HSG A
2,676	98	Roofs, HSG A
7,859	39	>75% Grass cover, Good, HSG A
20,585		Weighted Average
7,859		38.18% Pervious Area
12,726		61.82% Impervious Area

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

Summary for Subcatchment 3S: POST C

Runoff = 0.15 cfs @ 12.11 hrs, Volume= 0.016 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.00"

Area (sf)	CN	Description
752	98	Paved parking, HSG A
4,446	39	>75% Grass cover, Good, HSG A
5,198		Weighted Average
4,446		85.53% Pervious Area
752		14.47% Impervious Area

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

Summary for Pond 1P: DCB-1

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 3.90" for 100-year event
Inflow = 2.17 cfs @ 12.09 hrs, Volume= 0.192 af
Outflow = 2.17 cfs @ 12.09 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min
Primary = 2.17 cfs @ 12.09 hrs, Volume= 0.192 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.32' @ 12.09 hrs
Flood Elev= 234.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	231.52'	**18.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 231.52' / 231.10' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.12 cfs @ 12.09 hrs HW=232.31' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.12 cfs @ 3.25 fps)

Summary for Pond 2P: INFIL. A

Inflow Area = 0.592 ac, 52.27% Impervious, Inflow Depth = 3.90" for 100-year event
Inflow = 2.17 cfs @ 12.09 hrs, Volume= 0.192 af
Outflow = 0.22 cfs @ 12.95 hrs, Volume= 0.192 af, Atten= 90%, Lag= 51.8 min
Discarded = 0.22 cfs @ 12.95 hrs, Volume= 0.192 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 233.96' @ 12.95 hrs Surf.Area= 0.032 ac Storage= 0.075 af
Flood Elev= 234.55' Surf.Area= 0.032 ac Storage= 0.076 af

Plug-Flow detention time= 153.8 min calculated for 0.192 af (100% of inflow)

Center-of-Mass det. time= 153.7 min (914.4 - 760.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	230.17'	0.032 af	**30.50'W x 45.50'L x 3.88'H Field A** 0.123 af Overall - 0.045 af Embedded = 0.079 af x 40.0% Voids
#2A	230.67'	0.045 af	**Cultec R-330XLHD** x 36 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 6 rows
		0.076 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	230.17'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 228.17'

Discarded OutFlow Max=0.22 cfs @ 12.95 hrs HW=233.96' (Free Discharge)
└**1=Exfiltration** (Controls 0.22 cfs)

Summary for Pond 3P: TRENCH DRAIN

Inflow Area = 0.119 ac, 14.47% Impervious, Inflow Depth = 1.64" for 100-year event
Inflow = 0.15 cfs @ 12.11 hrs, Volume= 0.016 af
Outflow = 0.15 cfs @ 12.11 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.1 min
Primary = 0.15 cfs @ 12.11 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 232.34' @ 12.11 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 233.00' Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.4 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (818.9 - 818.4)

Volume	Invert	Avail.Storage	Storage Description
#1	232.06'	0.000 af	**0.33'W x 13.33'L x 0.90'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	232.06'	**4.5" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 232.06' / 231.62' S= 0.0105 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.11 sf

Primary OutFlow Max=0.15 cfs @ 12.11 hrs HW=232.34' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.15 cfs @ 2.35 fps)

Summary for Link 1L: DP-A

Inflow Area =	2.319 ac,	3.20% Impervious,	Inflow Depth =	2.34"	for 100-year event
Inflow =	4.76 cfs @	12.17 hrs, Volume=	0.451 af		
Primary =	4.76 cfs @	12.17 hrs, Volume=	0.451 af,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

APPENDIX F

Recharge Volume / Water Quality Volume / TSS Removal / Mounding Calculations

Still River Commons
Bolton, MA

June 27, 2018
3339

Subsurface Infiltration

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.384	0.6	0.019
Total	**0.384**		**0.019**

Total Recharge Volume Required = 0.019 Ac-ft
Total Recharge Volume Required (Rv) = 836 C.ft

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.309 Ac
Required Sediment Forebay vol, Fv= 112 C.ft

Sediment Volume Provided = 115.5 **C.ft**
*Two Cultec 330 XLHD Chambers

Capture Area Adjustment, Rvadj:

$$R_v adj = \frac{A_t}{A_p} x R_v$$

[1] Imp. area captured by ponds, Ap = 0.309 Ac
[1] Total impervious area on site, AT = 0.384 Ac
Recharge volume required, Rv = 836 C.ft
Capture Rate= **80%** OK
Capture Area Adjustment Factor= **1.24**
Adjusted Recharge Volume Required Rvadj = 1,039 C.ft

[1] Total Recharge Volume Provided = 3,317.8 **C.ft**

NOTES:
Input Values
[1] = Refer to Proposed Conditions HydroCAD modeling report

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Still River Commons
Bolton, MA

June 27, 2018
3339

Subsurface Infiltration

Water Quality Calculations

CALCULATIONS

Water Quality Calculation:

$$V_{WQ} = D_{WQ}(ft) x\ A_T(ft^2)$$

Water Quality Depth =	0.5	in
Water Quality Depth , DWQ =	**0.04**	**ft.**
Total impervious area on site, AT =	0.384	Ac.
=	**16,727**	**ft^2**
Required Water Quality Volume, VWQ =	**697**	**C.ft.**
Total Treatment Volume Provided =	3,317.8	**C.ft**

REFERENCES

1 inch depth
Zone II discharges
IWPA discharges
Critical Area
Runoff from LUHPPL
Infiltration rate >2.4 inches/hour
1/2 inch depth
Discharge to other ares
8 inch
9 inch
10 inch
11 inch

Still River Commons
Bolton, MA

June 27, 2018
3339

Subsurface Infiltration

Drawdown Calculations

CALCULATIONS

REFERENCES

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

Drawdown Calculations:

Soil Texture: 2 Loamy Sand

[1]Bottom Surface Area (A):	1,401	SF
Rawls Rate:	**2.41**	**in/hr**
Total Adjusted Recharge Volume Required =	**1,039**	**C.ft**
Drawdown:	**3.69**	**hr**
	Drawdown is less than 72 Hours as Required	

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

NOTES:

Input Values

[1] = Refer to bottom surface area on the Site Plans. A non-rectangular infiltration area is proposed

Groundwater Mound Beneath Rectangular Recharge Area

by Glenn M. Duffield, President, HydroSOLVE, Inc.

Hantush (1967) presented the following equations for predicting the maximum height of the water table beneath a rectangular recharge area:

$$h_m^2 - h_i^2 = Z_m(t) = (2w/K)\nu t S^*(0.5A/(4\nu t)^{1/2}, 0.5B/(4\nu t)^{1/2}) \quad . . . . . (1)$$

$$\nu = K\bar{b}/\varepsilon \quad . . . . . (2)$$

$$\bar{b} = 0.5[h_i(0) + h(t)] \quad . . . . . (3)$$

where h_m is maximum height of mound above aquifer base (i.e., maximum saturated thickness of aquifer beneath recharge area); h_i is initial height of water table above aquifer base (i.e., initial saturated thickness of aquifer); K and ε are hydraulic conductivity and storativity (specific yield) of aquifer, respectively; w is constant rate of percolation from rectangular recharge area of length A and width B; $\bar{b}$ is a constant of linearization; and the function S* is an integral expression (see Hantush 1967). The aquifer is unconfined and assumed to have infinite extent.

If infiltration ends at time $t=t_0$, Hantush (1967) applied the principle of superposition to compute the decay of the mound as follows:

$$h_m^2 - h_i^2 = Z_m(t) - Z_m(t-t_0) \quad . . . . . (4)$$

Equation (1) is nonlinear owing to the definition of $\bar{b}$ in Equation (3); however, the solution is readily obtained by successive approximation.

Results of Groundwater Mounding Calculation

Solution by Successive Approximation

Iteration	$\bar{b}$	h_m*	% Change
1	16	16.2888968101816	1.8056050636353
2	16.144448405090	16.2889265428232	1.82533181392053E-04
3	16.144463271411	16.2889265458959	1.88636439801826E-08

K [L/T]	ε	h_i [L]	A [L]	B [L]	w [L/T]	t [T]	h_m [L]
2.00	0.25	16	45.5	30.5	0.20	72	16.2889265458959

maximum water-table rise (h_m - h_i) at time t = 72 is 0.288926545895894
decay of mound computed after time t = 25

A 0.29 FT RISE IN GW DOES NOT REACH THE CHAMBERS

TIME THAT THE POND STOPS INFILTRATING (SEE HYDROCAD)

Return to Groundwater Mounding Calculator

Click here for a benchmark for this calculator.

Hantush mounding calculations with contouring now available in AQTESOLV.

L = LENGTH = FEET
T = TIME = HOURS

★ USE RAWLS RATE OF 2.41 IN/HR (0.20 FT/HR) FOR W.

★ K = W × 10

★ REFER TO WELL LOGS FOR H_i ASSUMPTION

MassDEP

Well Completion Report

WELL LOCATION

GPS North: 42.477100 GPS West: -71.621883 Assessors Map:

Address: 320 Still River Road Assessors Lot:

Sub Division: Permit Number: 5477

City/Town: HARVARD Date Issued: 01/24/2008

Board Of Health Permit Obtained: Y

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock
New Well	Domestic	Air Hammer	Air Hammer

ADDITIONAL WELL INFORMATION

Developed: Yes

Disinfected: Yes

Total Well Depth: 600.00

Fracture Enhancement: No

Well Seal Type: None

Depth to Bedrock: 16.00

ASSUME h_i = 16' FOR MOUNDING CALCS. MOST CONSERVATIVE VALUE FROM NEIGHBORING WELLS

PERMANENT PUMP (IF AVAILABLE)

Pump Description: 3WVS

Type:

Nominal Pump Capacity: 10.00

Intake Depth: 500.00

Horsepower: 1.5

Comments:

CASING

From(ft)	To(ft)	Type	Thickness	Diameter
2.00 (Above Ground)	98.00	Steel	17#	6

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface
02/08/2008	65.00

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery
02/07/2008	Variable Rate Pump	6.00	008:00	440	024:00	65

OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate
0.00	16.00	Clay			No			

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft
16	100	Shale		No						
100	200	Shale		No						
200	300	Shale		No						
300	400	Shale		No						
400	420	Shale		Yes					Addition	
420	500	Shale		No						
500	600	Shale		No						

MassDEP

Well Completion Report

WELL LOCATION

GPS North: 42.472610 GPS West: -71.628586 Assessors Map:

Address: 438 Still River Road Assessors Lot:

Sub Division: Permit Number:

City/Town: BOLTON Date Issued:

Board Of Health Permit Obtained:

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock
	Domestic	Air Rotary	Air Rotary

ADDITIONAL WELL INFORMATION

Developed: No

Disinfected: No

Total Well Depth: 460.00

Fracture Enhancement: No

Well Seal Type:

Depth to Bedrock: 105.00

PERMANENT PUMP (IF AVAILABLE)

Pump Description:

Type:

Nominal Pump Capacity:

Intake Depth:

Horsepower:

Comments: Gravel Pack Well: N

CASING

From(ft)	To(ft)	Type	Thickness	Diameter
0.00	120.00			6

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface
12/22/1987	20.00

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery
12/22/1987		4.00				

OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate
0.00	10.00			Sand				
10.00	30.00	Clay						
30.00	50.00	Clay						
50.00	70.00	Clay						
70.00	90.00	Clay						
90.00	105.00	Clay						

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft

MassDEP

Well Completion Report

WELL LOCATION

GPS North:
GPS West:
Assessors Map:
Address: 401 Still River Road
Assessors Lot:
Sub Division:
Permit Number:
City/Town: BOLTON
Date Issued:
Board Of Health Permit Obtained: NR

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock

ADDITIONAL WELL INFORMATION

Developed:
Disinfected:
Total Well Depth: 120.00
Fracture Enhancement:
Well Seal Type:
Depth to Bedrock: ASSUME >120

PERMANENT PUMP (IF AVAILABLE)

Pump Description:
Type:
Nominal Pump Capacity:
Intake Depth:
Horsepower:
Comments: Nashoba BOH Report Source of water: Drilled Method of drawing water: Electric

CASING

From(ft)	To(ft)	Type	Thickness	Diameter

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery

OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft

APPENDIX G

Operation and Maintenance Plan

STORMWATER OPERATION & MAINTENANCE MANUAL

FOR

STILL RIVER COMMONS
STILL RIVER ROAD, MAP 8B PARCEL 32

IN

BOLTON,
MASSACHUSETTS

PREPARED BY: DUCHARME & DILLIS
CIVIL DESIGN GROUP, INC.
P.O. Box 428
Bolton, MA 01740

PREPARED FOR: STILL RIVER ROAD DEVELOPMENT, LLC
28 Country Club Lane
Middleton, MA 01949

JUNE 27TH, 2018

CDG PROJECT # 3339-P

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS • LAND SURVEYORS • WETLAND CONSULTANTS

TABLE OF CONTENTS:

1.0 Project Narrative

1.1 Proposed Stormwater Management System

Runoff from the proposed development will be conveyed and treated through a combination of Best Management Practices (BMP's). The following is a brief discussion of each conveyance and treatment BMP proposed.

Deep Sump Hooded Catch Basin

A deep sump hooded catch basin is proposed to convey the runoff from the proposed roadway to the subsurface infiltration system. This catch basin will discharge to manholes and conventional storm drains.

Subsurface Infiltration Chambers

A subsurface infiltration system is included on site. Cultec pre-fabricated chambers, model 330XLHD, will be installed to collect the run off from the roofs and pavement after pretreatment in the deep sump hooded catch basin. The runoff will first be directed into a small group of chambers. These chambers will be wrapped in a geotextile fabric and will act as a sediment forebay for additional pre-treatment. The runoff will then be directed towards the larger infiltration area. The chambers have been designed to accommodate the runoff associated with the 100-year storm event and have enough volume to accommodate the required recharge and water quality volumes.

Trench Drain

A trench drain will be installed across the shared driveway near the entrance. This drain is designed to capture additional runoff that would otherwise flow onto Still River Road. The runoff collected from the trench drain will be directed into the deep sump hooded catch basin where it will begin treatment before infiltration.

1.2 Operation & Maintenance Tasks

The following activities should be performed routinely to allow for proper functioning of the stormwater system. The following are guidelines referring to each major component of the stormwater management system.

1.2.1 Street Sweeping

Street sweeping should be preformed at least semi annually. For most effective results, sweeping should be preformed by a vacuum style truck in the early spring before spring rain events can wash silt and sediment into the stormwater system. Silt and sediment should be disposed of in

accordance with local, state and federal guidelines for hazardous waste.

1.2.2 Drain Manholes

Manholes shall be inspected semi-annually for signs of wear, settling, cracking or other fatigue. Manhole casting should be inspected for signs of root intrusion, or significant water infiltration. Weirs shall be inspected for signs of cracking or other fatigue. Manhole sumps should be checked for silt /sediment buildup and cleaned as necessary. Cleaning should be performed by a vacuum truck. Manholes should be resealed as required and outlets should be inspected incidentally with all structure inspections.

1.2.3 Storm Drain Lines

Storm drainage inlets and outlets should be inspected incidentally with all structure inspections. Evidence of debris intrusion or excessive siltation or sedimentation could result in the need to clean a storm drain line. Flushing or jetting should be performed as required. All flushing and jetting should be performed in the direction away from any outlet devices. A vacuum truck should be used at the opposite end of the flushing or jetting to remove any silt or sediment that is cleaned from the storm drain.

1.2.4 Deep Sump Catch Basin

The deep sump catch basin shall be inspected at least semi-annually for signs of wear, settling, cracking or other fatigue. Catch basin castings should be inspected for signs of root intrusion, or significant water infiltration. Catch basin sump should be check for silt/sediment buildup and cleaned as necessary. Cleaning should be performed by a vacuum truck. Catch basins should be resealed as required and outlets should be inspected incidentally with all structure inspections.

1.2.5 Subsurface Infiltration System

The subsurface infiltration system should be monitored and maintained regularly to ensure no obstructions in the systems are present. Any depressions noticed in the areas could indicate that the system has collapsed and should be inspected immediately. The system is equipped with an inspection port to monitor the buildup of sedimentation. If the depth of sedimentation is in excess of the manufacturer's guidelines, the system will need to be cleaned out with high pressure water. The high-pressure water should be used on one end and a vacuum truck will be used on the opposite end to remove any silt or sediment that is cleaned from the chambers. Other maintenance will include checking the inlets and outlet for debris, survey the surrounding area for depressions and confirm no

unauthorized modifications have been performed to the system. See Appendix A for the Cultec Operation and Maintenance Guidelines.

1.2.6 Trench Drain

The trench drain shall be inspected semi-annually for any signs of wear or cracking. The grates and outlet pipe should be inspected for any debris that could block flow and should be removed as needed. The drain should be checked for silt/sediment buildup and cleaned as necessary.

O&M Schedule

	O&M Task	Monthly	Quarterly	Spring	Fall	2-years	As-required
1.	**Street Sweeping**			x	x		
2.	**Drain Manholes**						
	Inspect Rims			x	x		
	Inspect inside/inlet and outlet pipes					x	
	Remove sediment					x	x
3.	**Storm drain Lines**						
	Inspection			x			x
	Clean						x
4.	**Catch Basins**						
	Inspect Rims			x	x		
	Inspect inside/inlet and outlet pipes					x	
	Remove sediment					x	x
5.	**Underground Infiltration Area**	**(See appendix A)**					
6.	**Trench Drain**						
	Inspection						x
	Clean						x

APPENDIX A

Cultec Operation & Maintenance

Contactor® & Recharger®
Stormwater Chambers The Chamber With The Stripe®

Operation and Maintenance Guidelines

CULTEC™

Operation & Maintenance

This manual contains guidelines recommended by CULTEC, Inc. and may be used in conjunction with, but not to supersede, local regulations or regulatory authorities. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Introduction

The CULTEC Subsurface Stormwater Management System is a high-density polyethylene (HDPE) chamber system arranged in parallel rows surrounded by washed stone. The CULTEC chambers create arch-shaped voids within the washed stone to provide stormwater detention, retention, infiltration, and reclamation. Filter fabric is placed between the native soil and stone interface to prevent the intrusion of fines into the system. In order to minimize the amount of sediment which may enter the CULTEC system, a sediment collection device (stormwater pretreatment device) is recommended upstream from the CULTEC chamber system. Examples of pretreatment devices include, but are not limited to, an appropriately sized catch basin with sump, pretreatment catchment device, oil grit separator, or baffled distribution box. Manufactured pretreatment devices may also be used in accordance with CULTEC chambers. Installation, operation, and maintenance of these devices shall be in accordance with manufacturer's recommendations. Almost all of the sediment entering the stormwater management system will be collected within the pretreatment device.

Best Management Practices allow for the maintenance of the preliminary collection systems prior to feeding the CULTEC chambers. The pretreatment structures shall be inspected for any debris that will restrict inlet flow rates. Outfall structures, if any, such as outlet control must also be inspected for any obstructions that would restrict outlet flow rates. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Operation and Maintenance Requirements

I. Operation

CULTEC stormwater management systems shall be operated to receive only stormwater run-off in accordance with applicable local regulations. CULTEC subsurface stormwater management chambers operate at peak performance when installed in series with pretreatment. Pretreatment of suspended solids is superior to treatment of solids once they have been introduced into the system. The use of pretreatment is adequate as long as the structure is maintained and the site remains stable with finished impervious surfaces such as parking lots, walkways, and pervious areas are properly maintained. If there is to be an unstable condition, such as improvements to buildings or parking areas, all proper silt control measures shall be implemented according to local regulations.

II. Inspection and Maintenance Options

A. The CULTEC system may be equipped with an inspection port located on the inlet row. The inspection port is a circular cast box placed in a rectangular concrete collar. When the lid is removed, a 6-inch (150 mm) pipe with a screw-in plug will be exposed. Remove the plug. This will provide access to the CULTEC Chamber row below. From the surface, through this access, the sediment may be measured at this location. A stadia rod may be used to measure the depth of sediment if any in this row. If the depth of sediment is in excess of 3 inches (76 mm), then this row should be cleaned with high pressure water through a culvert cleaning nozzle. This would be carried out through an upstream manhole or through the CULTEC StormFilter Unit (or other pre-treatment device). CCTV inspection of this row can be deployed through this access port to determine if any sediment has accumulated in the inlet row.

B. If the CULTEC bed is not equipped with an inspection port, then access to the inlet row will be through an upstream manhole or the CULTEC StormFilter.

1. Manhole Access

This inspection should only be carried out by persons trained in confined space entry and sewer inspection services. After the manhole cover has been removed a gas detector must be lowered into the manhole to ensure that there are not high concentrations of toxic gases present. The inspector should be lowered into the manhole with the proper safety equipment as per OSHA requirements. The inspector may be able to observe sediment from this location. If this is not possible, the inspector will need to deploy a CCTV robot to permit viewing of the sediment.

2. **StormFilter Access**
Remove the manhole cover to allow access to the unit. Typically a 30-inch (750 mm) pipe is used as a riser from the StormFilter to the surface. As in the case with manhole access, this access point requires a technician trained in confined space entry with proper gas detection equipment. This individual must be equipped with the proper safety equipment for entry into the StormFilter. The technician will be lowered onto the StormFilter unit. The hatch on the unit must be removed. Inside the unit are two filters which may be removed according to StormFilter maintenance guidelines. Once these filters are removed the inspector can enter the StormFilter unit to launch the CCTV camera robot.

C. The inlet row of the CULTEC system is placed on a polyethylene liner to prevent scouring of the washed stone beneath this row. This also facilitates the flushing of this row with high pressure water through a culvert cleaning nozzle. The nozzle is deployed through a manhole or the StormFilter and extended to the end of the row. The water is turned on and the inlet row is back-flushed into the manhole or StormFilter. This water is to be removed from the manhole or StormFilter using a vacuum truck.

III. Maintenance Guidelines

The following guidelines shall be adhered to for the operation and maintenance of the CULTEC stormwater management system:

A. The owner shall keep a maintenance log which shall include details of any events which would have an effect on the system's operational capacity.

B. The operation and maintenance procedure shall be reviewed periodically and changed to meet site conditions.

C. Maintenance of the stormwater management system shall be performed by qualified workers and shall follow applicable occupational health and safety requirements.

D. Debris removed from the stormwater management system shall be disposed of in accordance with applicable laws and regulations.

IV. Suggested Maintenance Schedules

A. Minor Maintenance
The following suggested schedule shall be followed for routine maintenance during the regular operation of the stormwater system:

Frequency	Action
Monthly in first year	Check inlets and outlets for clogging and remove any debris as required.
Spring and Fall	Check inlets and outlets for clogging and remove any debris as required.
One year after commissioning and every third year following	Check inlets and outlets for clogging and remove any debris as required.

B. Major Maintenance
The following suggested maintenance schedule shall be followed to maintain the performance of the CULTEC stormwater management chambers. Additional work may be necessary due to insufficient performance and other issues that might be found during the inspection of the stormwater management chambers. (See table on next page)

Major Maintenance *(continued)*

	Frequency	Action
Inlets and Outlets	Every 3 years	• Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
	Spring and Fall	• Check inlet and outlets for clogging and remove any debris as required.
CULTEC Stormwater Chambers	2 years after commissioning	• Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
	9 years after commissioning every 9 years following	• Clean stormwater management chambers and feed connectors of any debris. • Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
	45 years after commissioning	• Clean stormwater management chambers and feed connectors of any debris. • Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. • Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique.
	45 to 50 years after commissioning	• Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. • Attain the appropriate approvals as required. • Establish a new operation and maintenance schedule.
Surrounding Site	Monthly in 1st year	• Check for depressions in areas over and surrounding the stormwater management system.
	Spring and Fall	• Check for depressions in areas over and surrounding the stormwater management system.
	Yearly	• Confirm that no unauthorized modifications have been performed to the site.

For additional information concerning the maintenance of CULTEC Subsurface Stormwater Management Chambers, please contact CULTEC, Inc. at 1-800-428-5832.

CULTEC
Chamber of Choice™

CULTEC, Inc.
878 Federal Road • P.O. Box 280 • Brookfield, CT 06804
Phone: 203-775-4416 • Toll Free: 800-4-CULTEC • Fax: 203-775-1462
Web: www.cultec.com • E-mail: custservice@cultec.com

APPENDIX B

Stormwater Management System Owners/Operators

1.	Stormwater Management System Owners:	To be determined
2.	Current and future operators:	To be determined
3.	Emergency contact information:	To be determined
4.	Change of trustee:	To be determined
5.	Financial Responsible Party:	To be determined
6.	Routine Maintenance:	To be determined
7.	O&M activities:	To be determined
8.	Record keeping	To be determined

APPENDIX H

Long Term Pollution Prevention Plan

LONG-TERM POLLUTION PREVENTION PLAN

FOR

STILL RIVER COMMONS
STILL RIVER ROAD, MAP 8B PARCEL 32

IN

BOLTON,
MASSACHUSETTS

PREPARED BY: DUCHARME & DILLIS
CIVIL DESIGN GROUP, INC.
P.O. Box 428
Bolton, MA 01740

PREPARED FOR: STILL RIVER ROAD DEVELOPMENT, LLC
28 Country Club Lane
Middleton, MA 01949

JUNE 27TH, 2018

CDG PROJECT # 3339-P

DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS • LAND SURVEYORS • WETLAND CONSULTANTS

1.0 Summary

This Long-Term Pollution Prevention Plan (LTPPP) has been prepared by Ducharme & Dillis Civil Design Group, Inc. pursuant to the Massachusetts Stormwater Regulations. The proposed project includes the development of 4 duplex-style apartments with a shared driveway. The project is being proposed pursuant to the Massachusetts General Laws Chapter 40B.

The layout of the proposed site has been carefully planned to reduce the amount of stormwater leaving the site. The stormwater management system has been designed in accordance with the Massachusetts Stormwater Regulations to provide pretreatment of the stormwater prior to discharge.

2.0 Spill Prevention Plan

No hazardous materials other than normal cleaning items are expected to be stored on site after the construction period has ended.

It is expected that normal DEP notification procedures would be triggered for major spills such as heating oil or propane and natural gas leaks.

3.0 Stormwater System O&M

A Stormwater Operation & Maintenance plan has been prepared for the proposed stormwater management system. Refer to this document for details pertaining to the required inspections, routine maintenance and operation details.

4.0 Fertilizers, herbicides and pesticides

Application of fertilizer, herbicides and pesticides shall be performed in a manner consistent with the industry standards for the application.

No application of chemicals is to be performed within the stormwater management areas on the site.

5.0 Snow/Salt Management

5.1 Snow Plowing

It is expected that the site will be plowed by a private contractor. Refer to the Erosion Control Plans for snow storage locations

5.2 Salt/Sand Usage

It is expected that sanding and salting will be performed on an infrequent basis

during times when unusually icy conditions persist for periods of time.

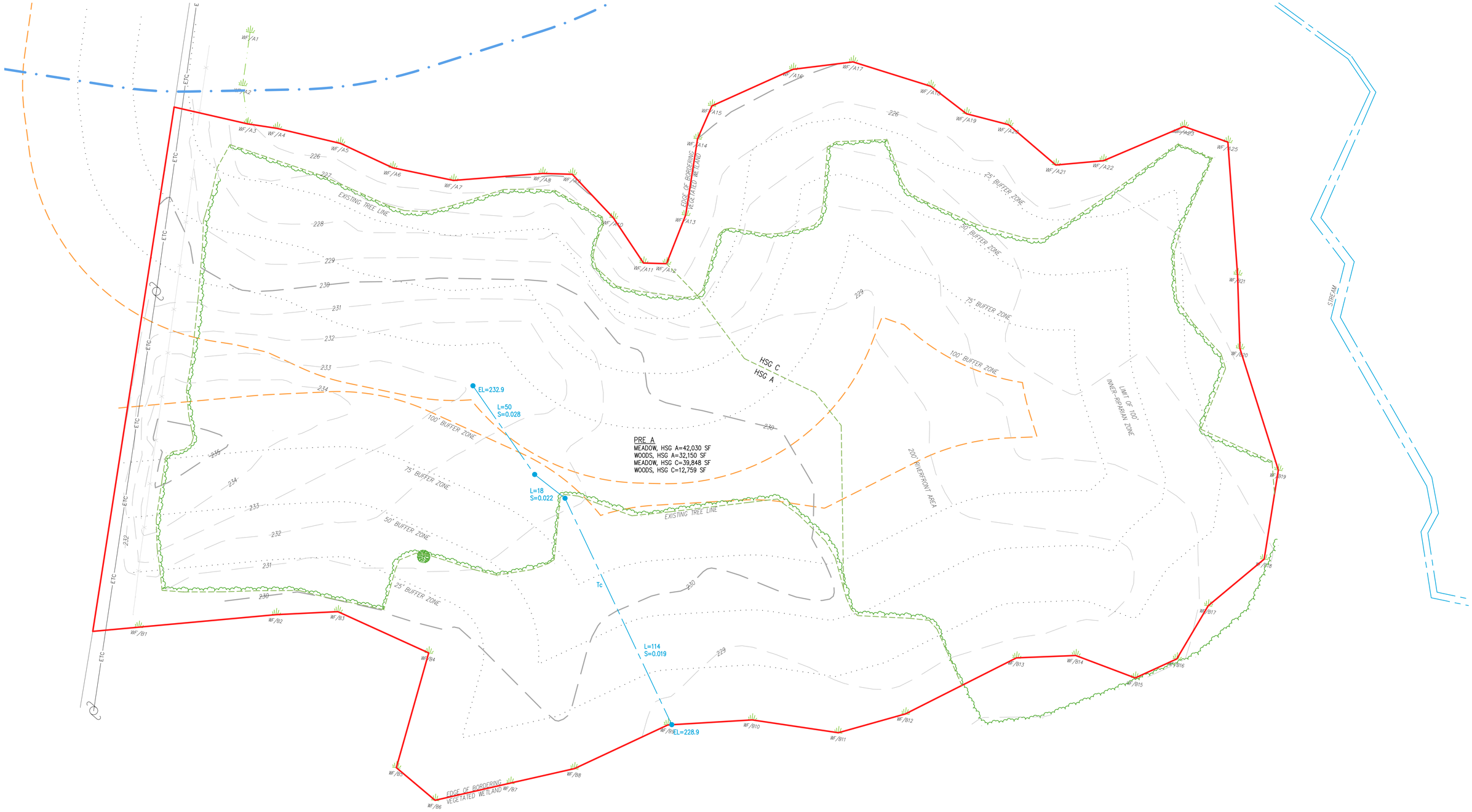
5.3 Street Sweeping

The Stormwater Operation & Maintenance Plan calls for the shared driveway to be swept in the spring, after the threat of winter precipitation has passed, and in the fall.

6.0 Waste Management

6.1 Solid Waste

A dumpster will be located on the site during construction. This area will be the primary area for the on-site storage of solid waste prior to pick-up by a waste management company.



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BOLTON, MASSACHUSETTS 01740
PHONE: (978) 779-6091 FAX: (978) 779-0260
www.DucharmeandDillis.com

OWNER:
TURN LEFT, LCC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

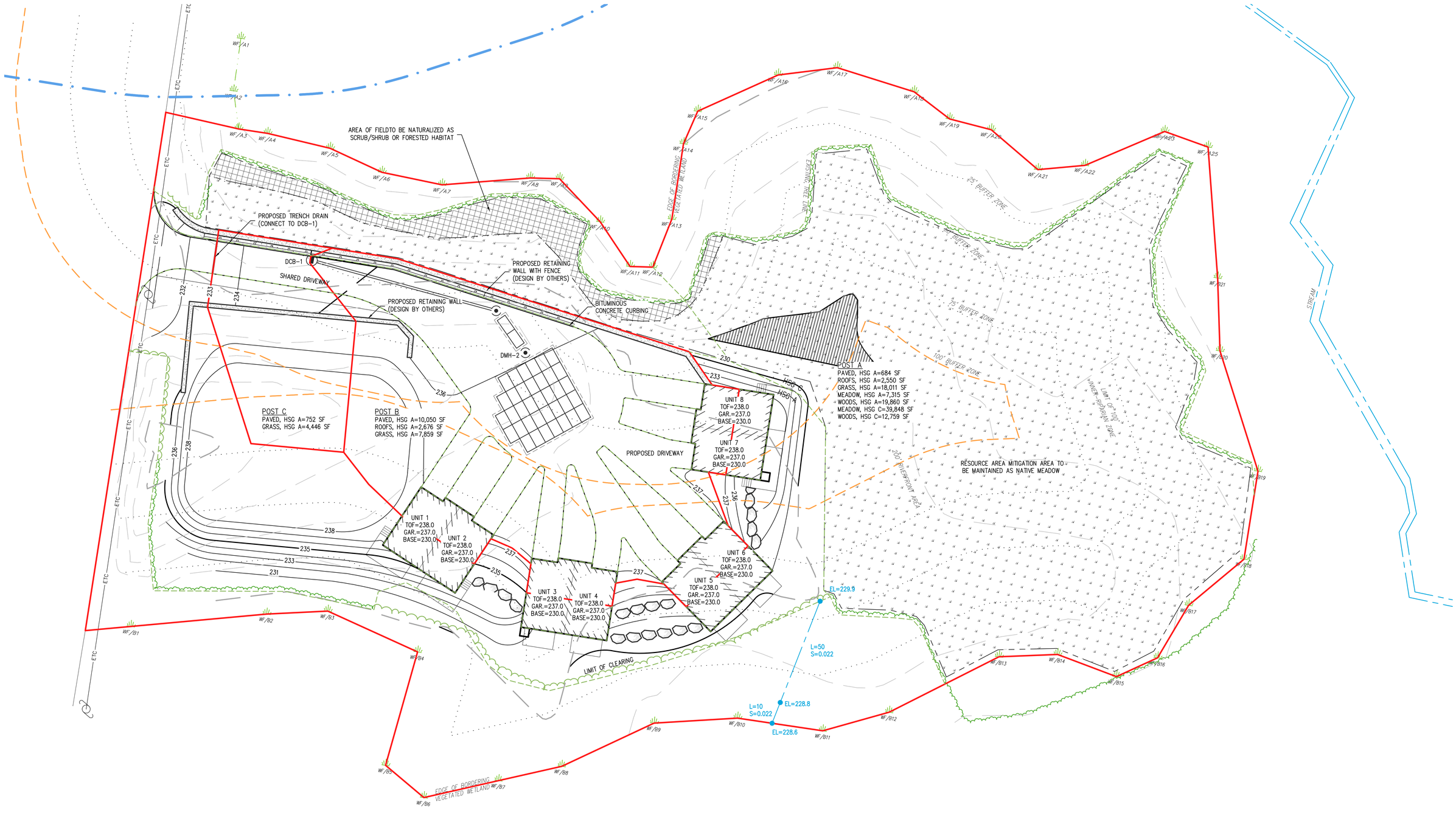
SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

DATE: 6/27/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

PRE-DEVELOPMENT DRAINAGE MAP
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339
DRAWING NO. 3339-PRE DEV
SHEET NO. 1 OF 1



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OWNER:
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130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

DATE: 6/27/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

POST-DEVELOPMENT DRAINAGE MAP
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

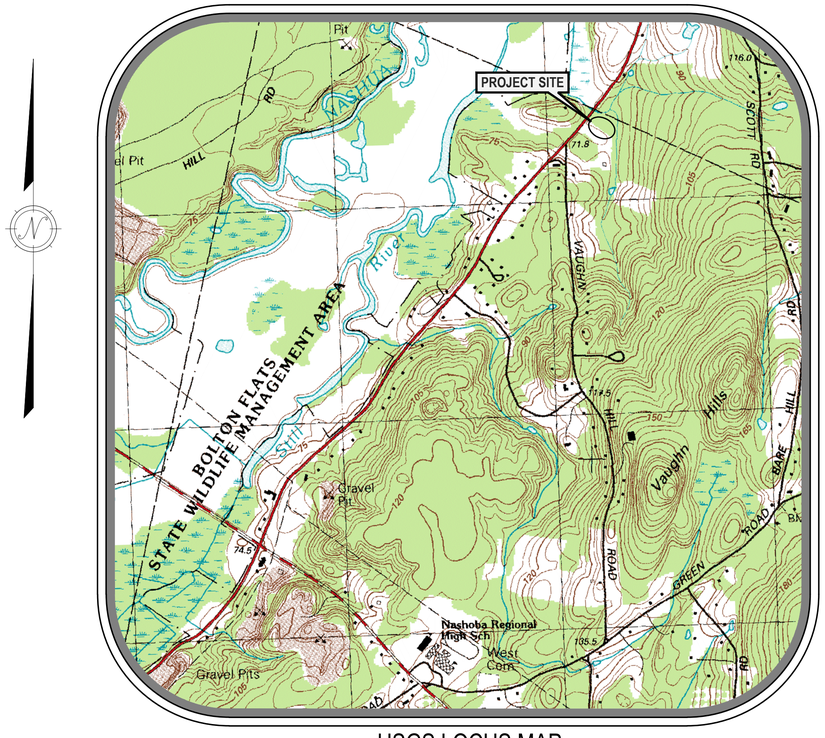
JOB NO. 3339
DRAWING NO. 3339-POST DEV.
SHEET NO. 1 OF 1

COMPREHENSIVE PERMIT PLAN

STILL RIVER ROAD, MAP 8.B PARCEL 32

BOLTON, MA

STILL RIVER COMMONS



USGS LOCUS MAP

SCALE: 1"=1,100'±

2014 ORTHOPHOTO LOCUS

SCALE: 1"=250'±

SHEET INDEX

RECORD INFORMATION

RECORD OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MA 01843

DEED REFERENCE:
BOOK 58346 PAGE 149

PLAN REFERENCE:
PLAN BOOK 932 PLAN 91

ASSESSORS REFERENCE:
MAP: 8B PARCEL: 32

ZONING DISTRICT:
RESIDENCE DISTRICT

ZONING TABLE

	REQUIRED	PROVIDED LOT 2B	PROVIDED LOT 2C
MIN LOT AREA	80,000 SF	90,836 SF	200,035 SF
MIN LOT FRONTAGE	200'	281.36'	305.19'
MIN WIDTH AT 100' FROM STREET LINE	150'	248.38'	323.11'
MIN FRONT YARD	50'	99.9'	239.9'
MIN OTHER YARDS	20'	6.0'	12.8'
MIN SHAPE FACTOR	0.5	0.4	0.97

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

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OWNER:
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130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:

COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
No. 46607
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

TITLE SHEET
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-TITLE
SHEET NO. C1.0

LEGEND

EXIST. FEATURE	DESCRIPTION
	STREAMS/RIVERS
	WETLANDS
	LIMIT OF BUFFER ZONE
LEDGE	LEDGE
100' WELL OFFSET	WELL RADIUS
	PROPERTY LINE
	EASEMENT LINE
X X	WIRE FENCE
	WOOD FENCE
	GUARD RAIL
	CHAIN LINK FENCE
CONC. WALL	CONCRETE RETAINING WALL
STONE WALL	STONE RETAINING WALL
	STONE WALL
W	WATER LINE
G	GAS LINE
E	ELECTRICAL LINE
S	SANITARY SEWER
D	STORM DRAIN
T	ELEPHONE LINE
CATV	CABLE LINE
OW	EXISTING OVER-HEAD WIRES
180	EXISTING CONTOUR (INDEX)
179	EXISTING CONTOUR (INTERMEDIATE)
	EXISTING SPOT ELEVATION
	EXISTING BUILDING/HOUSE
TREE LINE	TREE LINE

EXIST. SYM.	DESCRIPTION
	LIGHT POLE
	TELEPHONE POLE
	GUY WIRE
	HYDRANT
S	SEWER MANHOLE
D	STORM WATER MANHOLE
W	WELL
	MISCELLANEOUS MANHOLE
WF A1	WETLAND FLAG
	CATCH BASIN
WV	WATER GATE VALVE
GV	GAS GATE VALVE
E	ELECTRICAL METER
G	GAS METER
TS	TRAFFIC SIGNAL SWITCH
S	SIGN
PT A	PERC TEST
TP 1105-1	TEST PIT
T TRANS	ELECTRICAL TRANSFORMER
T TEL	TELEPHONE BOX
C	CABLE BOX
	FLAG POLE
WSO	WATER SHUT OFF
	SHRUB
	CLEANOUT
FA	FIRE ALARM
Ø	VENT PIPE

REPLICATED WETLANDS	PROPOSED LIGHT POLE
PROPERTY LINE	PROPOSED TELEPHONE POLE
EASEMENT LINE	PROPOSED HYDRANT
HAYBALES	PROPOSED SANITARY MANHOLE (SMH-1)
WIRE FENCE	PROPOSED STORM WATER MANHOLE (DMH-1)
WOOD FENCE	PROPOSED TELEPHONE MANHOLE
GUARD RAIL	PROPOSED ELECTRICAL MANHOLE
CHAIN LINK FENCE	PROPOSED WATER SHUTOFF
RET. WALL (CONC.) POURED CONCRETE RETAINING WALL	PROPOSED POST
RET. WALL (BLOCK) CONC. BLOCK RETAINING WALL	PROPOSED CATCH BASIN (CB-1)
RET. WALL (STONE) STONE RETAINING WALL	PROPOSED DOUBLE CATCH BASIN (DCB-1)
W PROPOSED WATER LINE	PROPOSED WATER GATE VALVE
G PROPOSED GAS LINE	PROPOSED GAS GATE VALVE
E PROPOSED ELECTRICAL LINE	PROPOSED ELECTRICAL TRANSFORMER
S PROPOSED SANITARY SEWER	PROPOSED ELECTRICAL JUNCTION BOX
D PROPOSED STORM DRAIN	PROPOSED GAS METER
RD PROPOSED ROOF DRAIN	PROPOSED TRAFFIC SIGNAL SWTCH
UD PROPOSED UNDER DRAIN	PROPOSED SIGN
T PROPOSED TELEPHONE LINE	BORING (B-1)
CATV PROPOSED CABLE LINE	HANDICAPPED SPACE
BCCB PROPOSED BACK CAPE COD BERM	PROPOSED FLARED END SECTION (FES)
EOP PROPOSED EDGE OF PAVEMENT	PROPOSED RIPRAP
PROPOSED UNPAVED ROAD	PROPOSED STONE BOUND (CB)
180 PROPOSED CONTOUR (INDEX)	STANDARD TREE
179 PROPOSED CONTOUR (INTERMEDIATE)	PINE TREE
175x5 PROPOSED SPOT ELEVATION	SHRUB
PROPOSED BUILDING/HOUSE	
TREE LINE TREE LINE	

ABBREVIATIONS

ABB.	DESCRIPTION
ATM	ATMOSPHERIC TANK
UD	UNDERDRAIN
FD	FOUNDATION DRAIN
F.S.	FIRE SERVICE
DOM.	DOMESTIC WATER SERVICE
B.O	WATER BLOW OFF
DMH	DRAIN MANHOLE
SMH	SEWER MANHOLE
ST	SEPTIC TANK
PC	PUMP CHAMBER
DP1	DRAIN PIPE ID
SP1	SEWER PIPE ID
DB	DISTRIBUTION BOX
SC	STORMCEPTOR CATCH BASIN
GAL	GALLON
TOF	TOP OF FOUNDATION
EL	ELEVATION
INV.	INVERT
WSO	WATER SHUTOFF
BCCB	BITUMINOUS CAPE COD BERN
RET	RETAINING WALL
C.O.	CLEAN OUT
INSP.T.	INSPECTION PORT
VCC	VERTICAL CONCRETE CURB
BCCB	BITUMINOUS CAPE COD BERM

GENERAL NOTES:

1. TOPOGRAPHIC INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC. BASED ON AN ON-THE-GROUND SURVEY ON A VERTICAL DATUM OF N.A.V.D 1988.
2. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC. BASED ON AN ON-THE-GROUND SURVEY AND RECORDED PLANS AND DEEDS. (SEE WORCESTER REGISTRY OF DEEDS PLAN BOOK 918, PLAN 86).
3. RESOURCE AREAS AS DEFINED BY THE MASSACHUSETTS WETLANDS PROTECTION ACT AND THE TOWN OF BOLTON WETLANDS BYLAW WERE DELINEATED BY DUCHARME & DILLIS CIVIL DESIGN GROUP, INC.
4. A PORTION OF THE SITE IS LOCATED WITHIN THE 100 YEAR FLOOD ZONE AS SHOWN ON THE FLOOD INSURANCE RATE MAP 25027C0457E & 25027C0476E, EFFECTIVE DATE JULY 04, 2011 FOR THE TOWN OF BOLTON.
5. EXISTING UTILITIES SHOWN ON THIS PLAN WERE COMPLIED FROM FIELD MEASUREMENT AND RECORD PLANS. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY AND SHOULD NOT BE ASSUMED TO BE CORRECT NOR SHOULD IT BE ASSUMED THAT THE UTILITIES SHOWN ARE THE ONLY UTILITIES LOCATED ON OR NEAR THE SITE. THE CONTRACTOR SHALL CALL DIG SAFE 1-888-DIG-SAFE PRIOR TO CONSTRUCTION IN ACCORDANCE WITH STATE LAWS.
6. THE SITE IS LOCATED WITHIN A PRIORITY HABITAT OR RARE SPECIES. ALTERATIONS ARE SUBJECT TO APPROVAL BY N.H.E.S.P. UNDER FILE NUMBER 15-34941.
7. THIS PLAN IS INTENDED FOR THE FILING OF A COMPREHENSIVE PERMIT WITH THE BOLTON ZONING BOARD OF APPEALS.

NOTES/SPECIFICATIONS:

ALL CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE COMPREHENSIVE PERMIT. IN THE EVENT OF A CONFLICT BETWEEN THE PERMIT AND THESE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR CLARIFICATION PRIOR TO CONSTRUCTION.

1.0 SITE PREPARATION

1.1 TREE CLEARING

1.1.1 ALL EROSION CONTROL SHALL BE PLACED PRIOR TO TREE REMOVAL.
1.1.2 THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR STAKING OF THE LIMITS OF TREE REMOVAL REQUIRED FOR THE CONSTRUCTION OF THE ROAD AND APPURTENANCES PRIOR TO BEGINNING WORK.
1.1.3 TREE DEBRIS SUCH AS CHIPS, TRUNKS AND STUMPS SHALL BE CHIPPED OR REMOVED FROM SITE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. WOOD WASTE SHALL NOT BE BURIED ONSITE.

1.2 EARTHWORK

1.2.1 STRIP TOPSOIL FROM ROADWAY, SEPTIC AND BUILDING AREAS AREAS.
1.2.2 STRIP SUBSOIL FROM UNDER ROADWAY WITHIN A 1 ON 1 INFLUENCE OF THE PROPOSED EDGE OF PAVEMENT.
1.2.3 CONTRACTOR TO REMOVE UNSUITABLE MATERIAL, IF ENCOUNTERED, FROM THE SITE.
1.2.4 SUB-SOIL MAY BE USED FOR NON-STRUCTURAL FILL ON SITE.
1.2.5 STOCKPILE TOPSOIL FOR REUSE ON SITE.
1.2.6 CONTRACTOR TO FILL AREAS UNDER THE PROPOSED ROADWAY TO SUB-GRADE AS REQUIRED.
1.2.7 REFER TO STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL REQUIREMENTS PERTAINING TO STOCKPILING FOR LONG PERIODS OF TIME.

1.3 COORDINATION WITH OTHER CONSTRUCTION ACTIVITIES

1.3.1 CONTRACTOR TO REFER TO THE APPROVED SDS PLANS FOR DETAILS PERTAINING TO THE CONSTRUCTION OF THE ON-SITE SEWAGE DISPOSAL SYSTEMS AND WELLS.
1.3.2 CONTRACTOR TO REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL REQUIREMENTS PERTAINING TO THE EROSION AND SEDIMENTATION CONTROL ON THE SITE DURING CONSTRUCTION ACTIVITIES.

2.0 MATERIALS

2.1 PIPE & FITTINGS

2.1.1 STORM DRAIN PIPE SHALL BE AS SHOWN ON THE PLANS. ALL DRAIN PIPE SHALL BE AS SPECIFIED ON PLANS.
2.1.2 REFER TO THE APPROVED SDS PLANS FOR SPECIFICATIONS PERTAINING TO THE PIPES AND FITTINGS FOR PROPOSED SANITARY SEWER.

2.2 STORM DRAIN STRUCTURES

2.2.1 MANHOLES SHALL BE STANDARD 4' DIAMETER STRUCTURES AS SHOWN ON THE DETAIL ON SHEET C3.1.
2.2.2 CATCH BASINS SHALL BE STANDARD 4' DIAMETER STRUCTURE WITH A 4' SUMP AND HOOD AS SHOWN OF THE DETAIL ON SHEET C3.1.
2.2.3 MANHOLE RIMS SHALL BE AS MANUFACTURED BY E.J. PRESCOTT (OR APPROVED EQUAL).
2.2.4 CATCH BASIN RIMS SHALL BE AS MANUFACTURED E.J. PRESCOTT (OR APPROVED EQUAL).

2.3 CONCRETE

2.3.1 CAST-IN PLACE CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI OR GREATER UNLESS OTHERWISE NOTED.
2.3.2 CONTRACTOR TO PROVIDE FOR ALL FORM WORK AND REMOVAL OF FORMS AS REQUIRED FOR CAST IN PLACE CONCERT STRUCTURES.

2.4 BITUMINOUS PAVEMENT

2.4.1 ASPHALT BINDER COURSE SHALL BE 3" THICK COMPACTED IN PLACE CONFORMING TO SSHB M03.11.03 TABLE A BINDER COURSE. BINDER SHALL BE PLACED IN TWO LIFTS.
2.4.2 ASPHALT WEARING COURSE SHALL BE 2" THICK COMPACTED IN PLACE CONFORMING TO SSHB M03.11.03 TABLE A TOP COURSE. TOP COURSE SHALL BE PLACED IN ONE LIFT.
2.4.3 ASPHALT FOR DRIVEWAYS SHALL BE 1 $\frac{1}{2}$" WEARING COURSE CONFORMING TO SSHB M03.11.03 TABLE A TOP COURSE OVER 1 $\frac{1}{2}$" BINDER COURSE CONFORMING TO SSHB M03.11.03 TYPE A BINDER COURSE.
2.4.4 NO PAVING BETWEEN NOVEMBER 15TH AND APRIL 1ST.

2.5 SOIL MATERIALS

2.5.1 ROAD GRAVEL SHALL BE PLACED IN TWO LIFTS AS SHOWN ON THE ROAD CROSS SECTIONS ON SHEET C5.3. PLACE 4" OF GRAVEL CONFORMING TO SSHB M.1.03.0 TYPE B OVER 8" OF GRAVEL CONFORMING TO SSHB M.1.03.0 TYPE B. ROAD GRAVEL SHALL BE COMPACTED TO 95% DRY DENSITY.
2.5.2 STRUCTURAL FILL SHALL CONFORM TO SSHB M1.03.0 TYPE C GRAVEL BORROW (UNLESS OTHERWISE NOTED ON PLANS).
2.5.3 COMMON FILL SHALL CONFORM TO SSHB M1.01.0 ORDINARY BORROW.
2.5.4 TOPSOIL SHALL CONFORM TO SSHB M1.07.0 TOPSOIL AND PLANTABLE SOIL BORROW.
2.5.6 CRUSHED STONE SHALL CONFORM TO SSHB M2.01.1 CRUSHED STONE.
2.5.7 CONTRACTOR IS RESPONSIBLE FOR PROVIDING SIEVE ANALYSIS, GRADATION AND COMPACTION TEST DATA OF MATERIALS AS REQUIRED BY THE TOWN'S INSPECTOR.

2.6 GUARDRAIL

2.8.1 GUARDRAIL SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPROVED MASS HIGHWAY DETAILS AND PRACTICES.
2.8.2 GUARDRAIL SHALL BE WOODEN WITH STEEL REINFORCEMENT CONFORMING TO THE REQUIREMENTS OF MASS HIGHWAY STANDARDS.
2.8.3 CONTRACTOR TO SUBMIT DRAWINGS FOR APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION OF THE GUARDRAIL.

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

PREPARED BY:
DUCHARME & DILLIS
Civil Design Group, Inc.
CIVIL ENGINEERS• LAND SURVEYORS• WETLAND CONSULTANTS
1092 MAIN STREET, P.O. BOX 428
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www.DucharmeandDillis.com

OWNER:
TURN LEFT, LCC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:

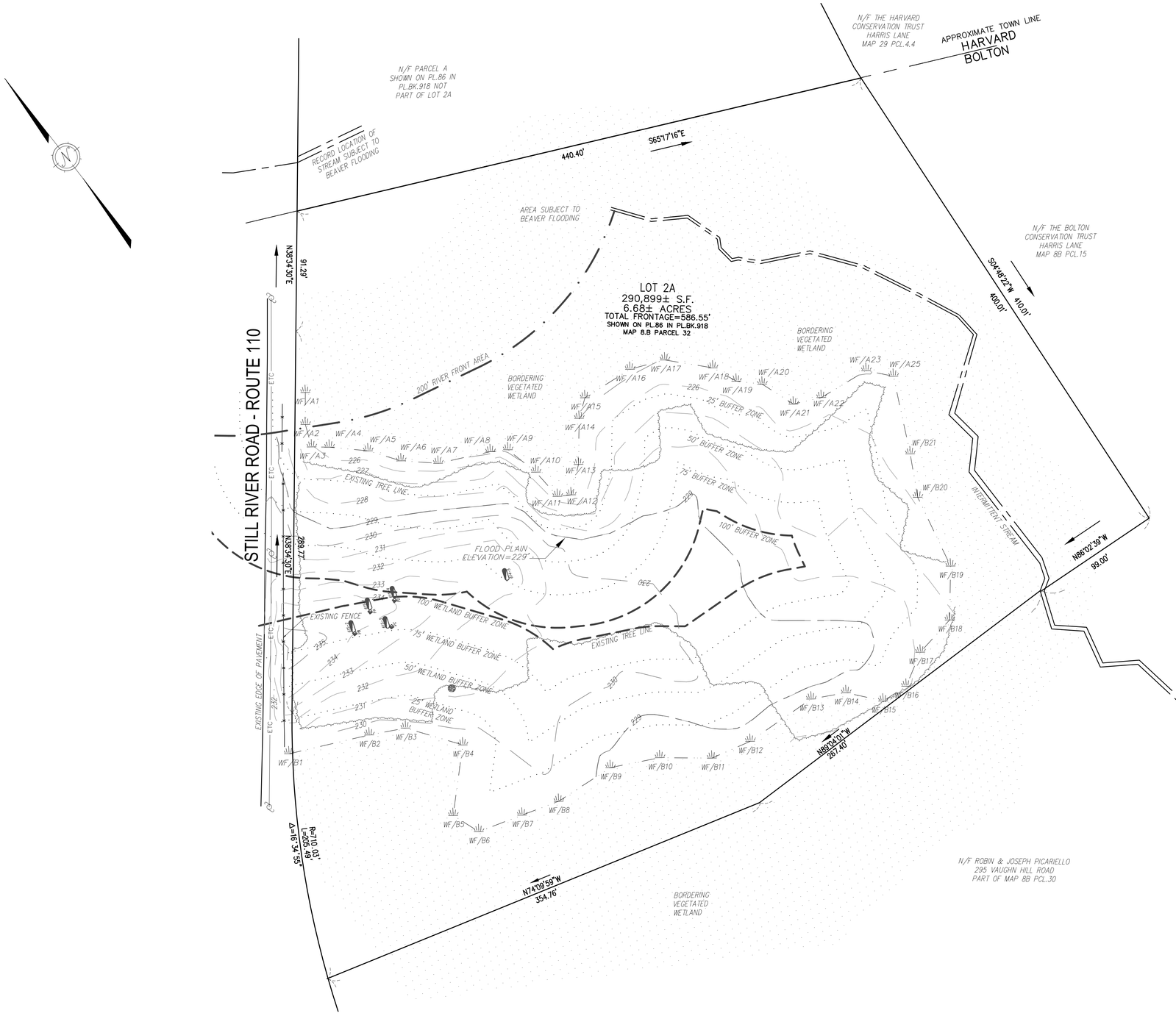
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
No. 46604
REGISTERED PROFESSIONAL ENGINEER
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

NOTES, SYMBOLS AND ABBREVIATIONS
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-NOTES
SHEET NO. C1.1



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6. THE SITE IS LOCATED WITHIN A PRIORITY HABITAT OR RARE SPECIES. ALTERATIONS ARE SUBJECT TO APPROVAL BY N.H.E.S.P. UNDER FILE NUMBER 15-34941.
7. THIS PLAN IS INTENDED FOR THE FILING OF A COMPREHENSIVE PERMIT WITH THE BOLTON ZONING BOARD OF APPEALS.

SOIL TEST DATA

NAME OF APPROVING AUTHORITY: BOLTON BOARD OF HEALTH BILL BROOKINGS, NABOH AGENT

NAME OF SOIL EVALUATOR: DUCHARME AND DILLIS CIVIL DESIGN GROUP WILLIAM J. "JACK" MALONEY, JR. (SE-13704)

IN-SEASON GROUND WATER TESTING – (IF REQ'D)

TEST PIT NO.	DATE	SURFACE ELEVATION	DEPTH TO OBSERVED GROUNDWATER	G.WATER ELEVATION

PERCOLATION TEST DATA

TEST PIT NO.	DATE	TOP OF 12" OF WATER: DEPTH FROM SURFACE	TOP OF 12" OF WATER: SURFACE ELEVATION	RATE: MINUTES PER INCH
PA	6/26/15	30"	234.2±	2 MPI
PB	6/26/15	45"	234.2±	2 MPI
PC	6/26/15	44"	233.8±	2 MPI
PD	6/26/15	46"	233.8±	2 MPI

SOIL CLASSIFICATION: WINDSOR-LOAMY FINE SAND
GEOLOGICAL MATERIAL: PROGLACIAL OUTWASH
LAND FORM: KAME TERRACE

DEEP TEST PIT: 615-1	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
DATE OF TEST: 6/26/15	0-10"	A	S.L.	10YR 3/3	NONE	NONE	CRUMB, FRIABLE
REFUSAL AT: NONE OBSERVED	10-20"	Bw	L.S.	10YR 5/8	NONE	NONE	S.A.B., FRIABLE
	20-58"	C1	F-M S.	10YR 5/6	@ 58"	NONE	MASSIVE, FRIABLE
(SURFACE ELEV. = 234.2±)	58-80"	C2	F.S.L.	10YR 5/3		NONE	MASSIVE, FRIABLE
ESTIMATED SEASONAL HIGH GROUND WATER				AT 58" (ELEVATION = 229.3±)			

DEEP TEST PIT: 615-2	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
DATE OF TEST: 6/26/15	0-10"	A	S.L.	10YR 3/3	NONE	NONE	CRUMB, FRIABLE
REFUSAL AT: NONE OBSERVED	10-20"	Bw	L.S.	10YR 5/8	NONE	NONE	S.A.B., FRIABLE
	20-64"	C1	F-M S.	10YR 5/6	@ 64"	NONE	MASSIVE, FRIABLE
(SURFACE ELEV. = 234.2±)	64-84"	C2	F.S.L.	10YR 5/3		NONE	MASSIVE, FRIABLE
ESTIMATED SEASONAL HIGH GROUND WATER				AT 64" (ELEVATION = 228.8±)			

DEEP TEST PIT: 615-3	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
DATE OF TEST: 6/26/15	0-10"	A	S.L.	10YR 3/3	NONE	NONE	CRUMB, FRIABLE
REFUSAL AT: NONE OBSERVED	10-24"	Bw	L.S.	10YR 5/8	NONE	NONE	S.A.B., FRIABLE
	24-60"	C1	F-M S.	10YR 5/6	@ 60"	NONE	MASSIVE, FRIABLE
(SURFACE ELEV. = 233.8±)	60-84"	C2	F.S.L.	10YR 5/3		@ 82"	MASSIVE, FRIABLE
ESTIMATED SEASONAL HIGH GROUND WATER				AT 60" (ELEVATION = 228.8±)			

DEEP TEST PIT: 615-4	DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
DATE OF TEST: 6/26/15	0-12"	A	S.L.	10YR 3/3	NONE	NONE	CRUMB, FRIABLE
REFUSAL AT: NONE OBSERVED	12-20"	Bw	L.S.	10YR 5/8	NONE	NONE	S.A.B., FRIABLE
	20-60"	C1	F-M S.	10YR 5/6	@ 60"	NONE	MASSIVE, FRIABLE
(SURFACE ELEV. = 233.8±)	60-88"	C2	F.S.L.	10YR 5/3		@ 88"	MASSIVE, FRIABLE
ESTIMATED SEASONAL HIGH GROUND WATER				AT 60" (ELEVATION = 228.8±)			

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

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www.DucharmeandDillis.com

OWNER:
TURN LEFT, LCC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
40 0 20 40 80 160
1 in. = 40 ft.

COMMONWEALTH OF MASSACHUSETTS
STANLEY R. DILLIS
No. 35734
PROFESSIONAL LAND SURVEYOR

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

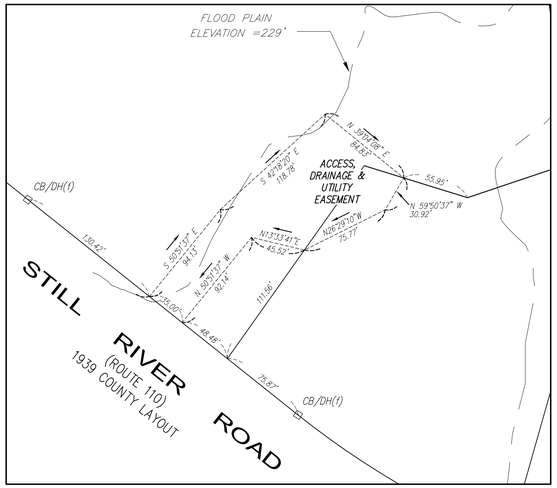
EXISTING CONDITIONS PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

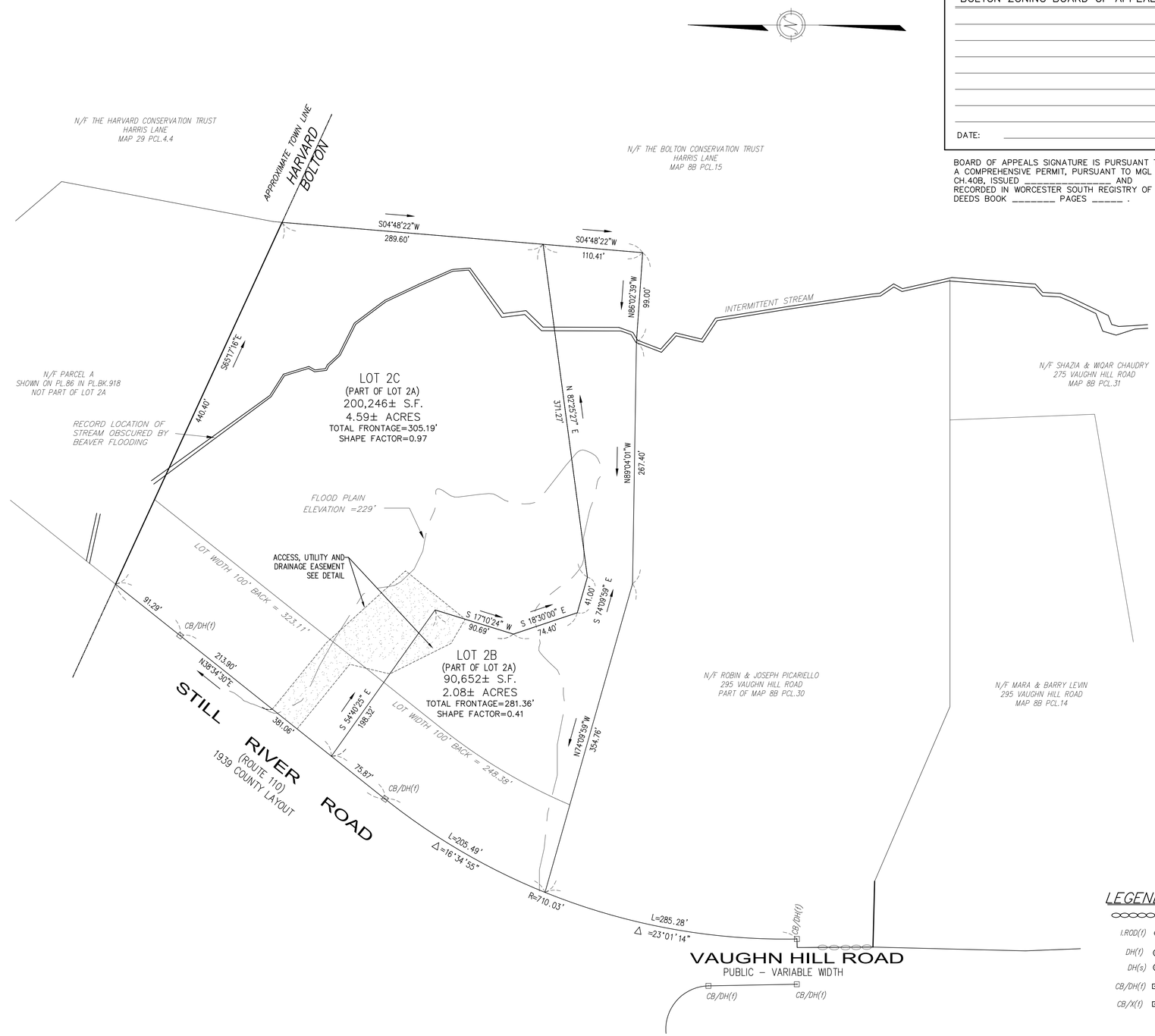
JOB NO. 3339-P
DRAWING NO. 3339-EXISTING
SHEET NO. C1.2

APPROVAL NOT REQUIRED UNDER THE SUBDIVISION CONTROL LAW BOLTON ZONING BOARD OF APPEALS	RESERVED FOR REGISTRY USE
DATE:	

BOARD OF APPEALS SIGNATURE IS PURSUANT TO A COMPREHENSIVE PERMIT, PURSUANT TO MGL CH.40B, ISSUED _____ AND RECORDED IN WORCESTER SOUTH REGISTRY OF DEEDS BOOK _____ PAGES _____ .



ACCESS, DRAINAGE & UTILITY EASEMENT DETAIL
1"=60'



NOTES:

RECORD OWNER:
TURN LEFT, LLC
130 PARKER STREET, UNIT 12
LAWRENCE, MA

DEED REFERENCE:
BOOK 58346 PAGE 149

PLAN REFERENCE:
PLAN BOOK 728 PLAN 87
PLAN BOOK 728 PLAN 63
PLAN BOOK 814 PLAN 73
PLAN BOOK 809 PLAN 96
PLAN BOOK 808 PLAN 36
PLAN BOOK 918 PLAN 86
PLAN BOOK 932 PLAN 91

ASSESSORS REFERENCE: MAP 8B, PARCEL 32

ZONING DISTRICT: RESIDENTIAL

LOTS 2B & 2C ARE A DIVISION OF LOT 2A SHOWN ON PL.86 IN PL.BK.918.

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

COMMONWEALTH OF MASSACHUSETTS
STANLEY J. DILLIS
No. 35195
PROFESSIONAL LAND SURVEYOR

PROFESSIONAL LAND SURVEYOR

LEGEND

	DENOTES STONE WALL
I.ROD(f)	DENOTES IRON PIPE FOUND
DH(f)	DENOTES DRILL HOLE FOUND
DH(s)	DENOTES DRILL HOLE SET
CB/DH(f)	DENOTES CONCRETE BOUND WITH DRILL HOLE FOUND
CB/X(f)	DENOTES CONCRETE BOUND WITH X FOUND

PREPARED BY:
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LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

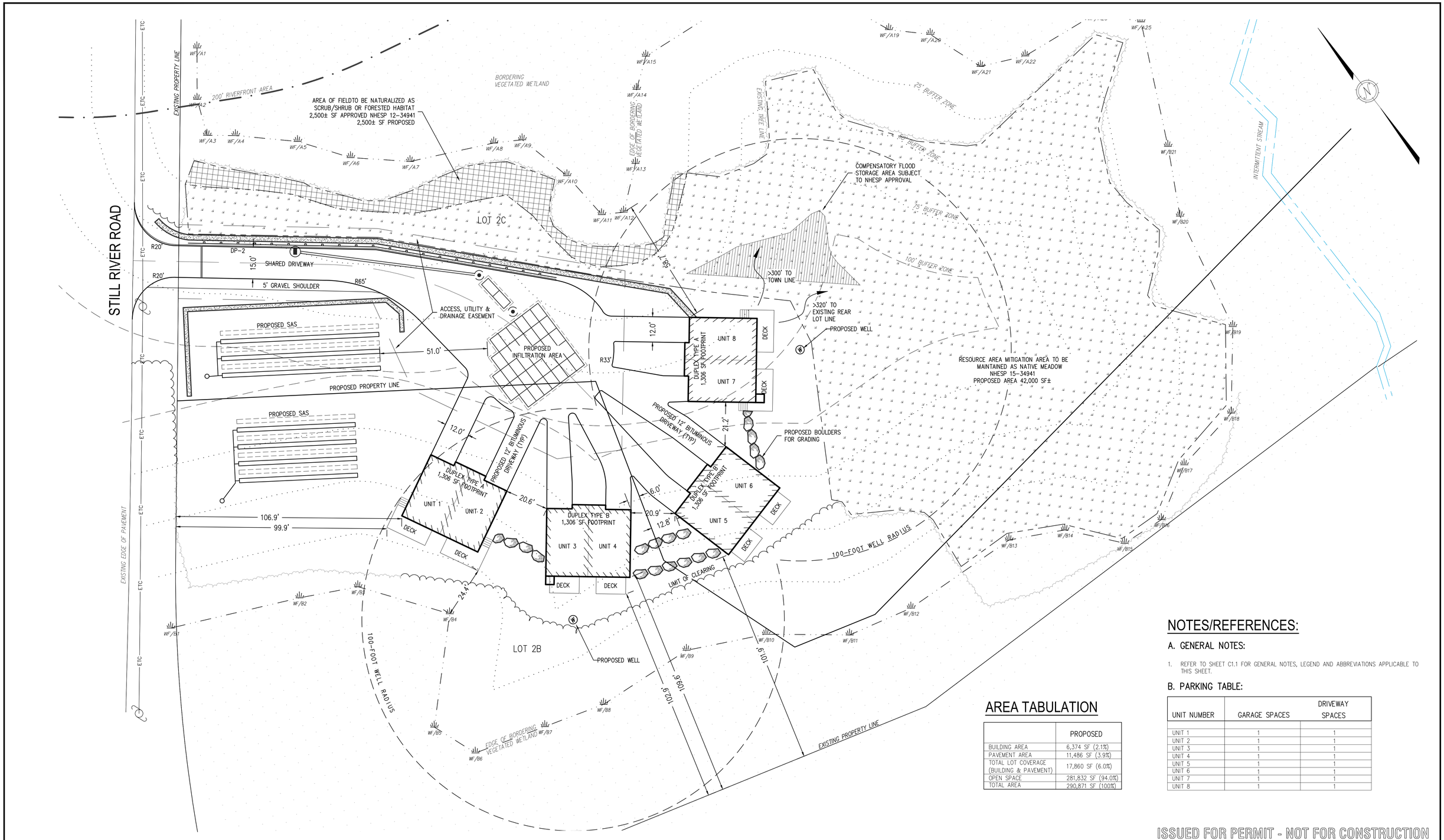
SCALE:
60 0 30 60 120 240
1 in. = 60 ft.

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

LOT LAYOUT PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-EXISTING
SHEET NO. C2.0



NOTES/REFERENCES:

A. GENERAL NOTES:

1. REFER TO SHEET C1.1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS APPLICABLE TO THIS SHEET.

B. PARKING TABLE:

UNIT NUMBER	GARAGE SPACES	DRIVEWAY SPACES
UNIT 1	1	1
UNIT 2	1	1
UNIT 3	1	1
UNIT 4	1	1
UNIT 5	1	1
UNIT 6	1	1
UNIT 7	1	1
UNIT 8	1	1

AREA TABULATION

	PROPOSED
BUILDING AREA	6,374 SF (2.1%)
PAVEMENT AREA	11,486 SF (3.9%)
TOTAL LOT COVERAGE (BUILDING & PAVEMENT)	17,860 SF (6.0%)
OPEN SPACE	281,832 SF (94.0%)
TOTAL AREA	290,871 SF (100%)

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

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APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

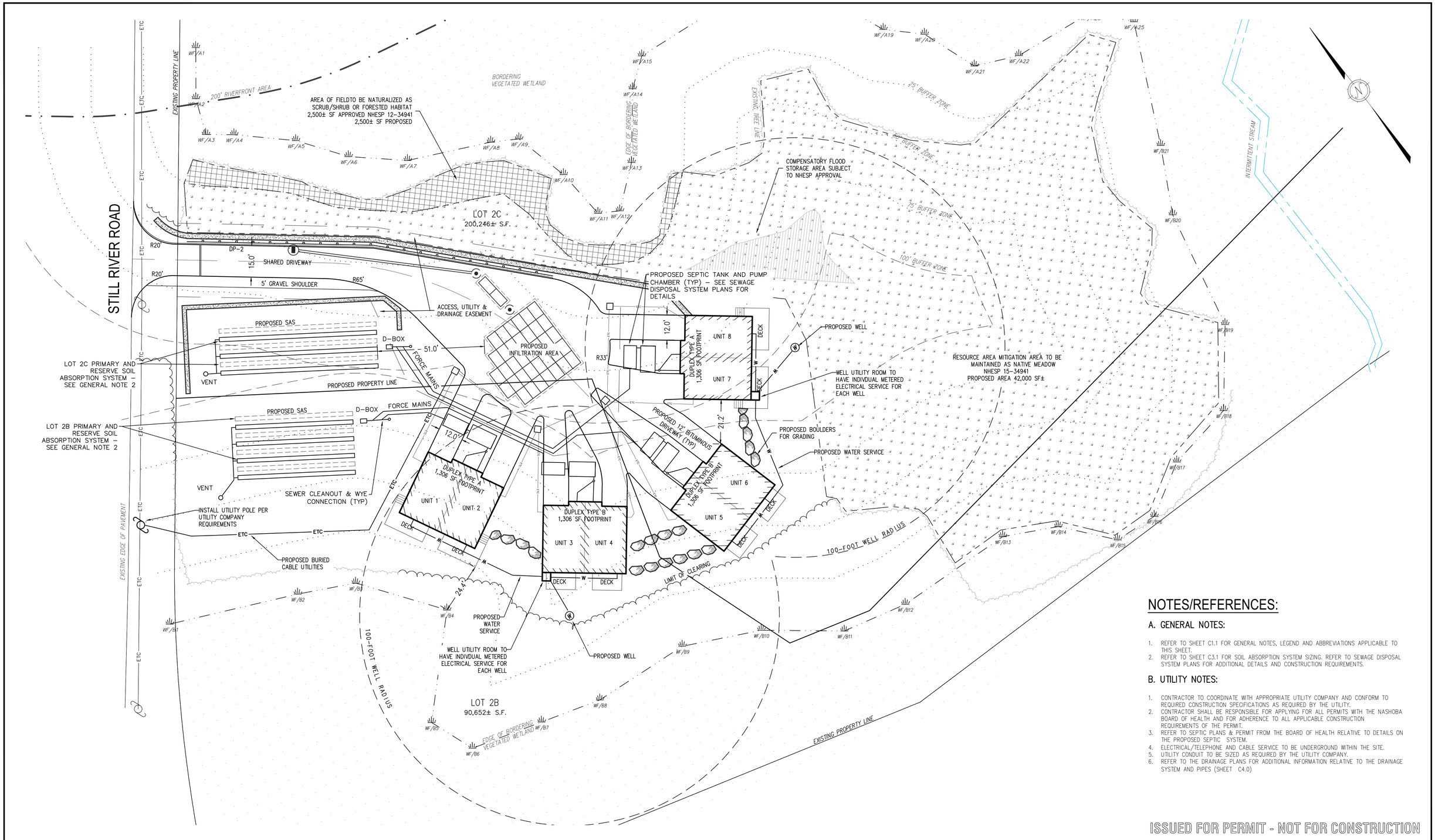
GREGORY S. ROY CIVIL No. 46604 COMMONWEALTH OF MASSACHUSETTS
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

UNIT LAYOUT
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-UNIT_LAYOUT
SHEET NO. C2.1



NOTES/REFERENCES:

A. GENERAL NOTES:

1. REFER TO SHEET C1.1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS APPLICABLE TO THIS SHEET.
2. REFER TO SHEET C3.1 FOR SOIL ABSORPTION SYSTEM SIZING. REFER TO SEWAGE DISPOSAL SYSTEM PLANS FOR ADDITIONAL DETAILS AND CONSTRUCTION REQUIREMENTS.

B. UTILITY NOTES:

1. CONTRACTOR TO COORDINATE WITH APPROPRIATE UTILITY COMPANY AND CONFORM TO REQUIRED CONSTRUCTION SPECIFICATIONS AS REQUIRED BY THE UTILITY.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR APPLYING FOR ALL PERMITS WITH THE NASHOBA BOARD OF HEALTH AND FOR ADHERENCE TO ALL APPLICABLE CONSTRUCTION REQUIREMENTS OF THE PERMIT.
3. REFER TO SEPTIC PLANS & PERMIT FROM THE BOARD OF HEALTH RELATIVE TO DETAILS ON THE PROPOSED SEPTIC SYSTEM.
4. ELECTRICAL/TELEPHONE AND CABLE SERVICE TO BE UNDERGROUND WITHIN THE SITE.
5. UTILITY CONDUIT TO BE SIZED AS REQUIRED BY THE UTILITY COMPANY.
6. REFER TO THE DRAINAGE PLANS FOR ADDITIONAL INFORMATION RELATIVE TO THE DRAINAGE SYSTEM AND PIPES (SHEET C4.0)

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

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MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

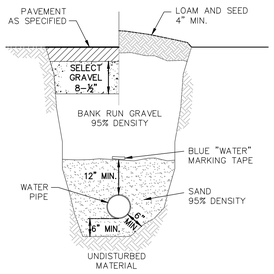
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
No. 46607
REGISTERED PROFESSIONAL ENGINEER
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

UTILITIES PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

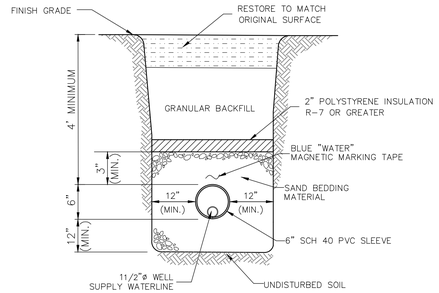
NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-UTILITY
SHEET NO. C3.0



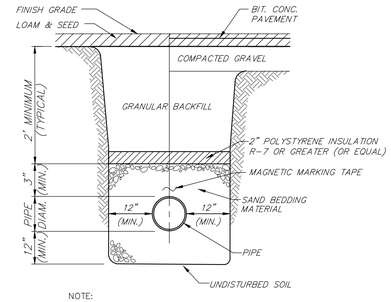
WATER MAIN IN TRENCH DETAIL

NOT TO SCALE



WATERLINE INSULATION

AT WETLAND CROSSING
NOT TO SCALE



NOTE:
TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.

FORCE MAIN INSULATION

NOT TO SCALE

SEWAGE DISPOSAL CALCULATIONS:

SEE SEWAGE DISPOSAL SYSTEM PLANS FOR DESIGN DETAILS, CONSTRUCTION DETAILS AND PUMPING SPECIFICATIONS

HYDRAULIC LOADING:
EACH SYSTEM HAS BEEN DESIGNED FOR NINE (9) BEDROOMS AT 110 GALLONS PER DAY PER BEDROOM = 990 GALLONS PER DAY.

SEPTIC TANK SIZE:
AVERAGE DAILY FLOW 2 BEDROOM UNIT = 220 G.P.D.
MINIMUM STORAGE REQUIRED 2 BEDROOM UNIT: 220 GPD X 200% = 440 GAL
AVERAGE DAILY FLOW 3 BEDROOM UNIT = 330 G.P.D.
MINIMUM STORAGE REQUIRED 3 BEDROOM UNIT: 330 GPD X 200% = 660 GAL
SEPTIC TANK PROVIDED UNITS 1 & 2 = 2,500 GALLON TWO-COMPARTMENT TANK (H20 REQUIRED)
SEPTIC TANK PROVIDED UNITS 3 & 4 = 2,500 GALLON TWO-COMPARTMENT TANK (H20 REQUIRED)
SEPTIC TANK PROVIDED UNITS 5 & 6 = 2,500 GALLON TWO-COMPARTMENT TANK (H20 REQUIRED)
SEPTIC TANK PROVIDED UNITS 7 & 8 = 2,500 GALLON TWO-COMPARTMENT TANK (H20 REQUIRED)

PRIMARY LEACHING AREA LOT 2B (UNITS 1 – 4):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (4) 56' TRENCHES, 2' WIDE x 2' DEEP (4 X 56 X 6) = 1344 S.F.
TOTAL DESIGN FLOW = 1344 S.F. X 0.74 GALLON/S.F. = 994 GALLONS.

RESERVE LEACHING AREA LOT 2B (UNITS 1 – 4):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (4) 56' TRENCHES, 2' WIDE X 2' DEEP (4 X 56 X 6) = 1344 S.F.
TOTAL DESIGN FLOW = 1344 S.F. X 0.74 GALLON/S.F. = 994 GALLONS.

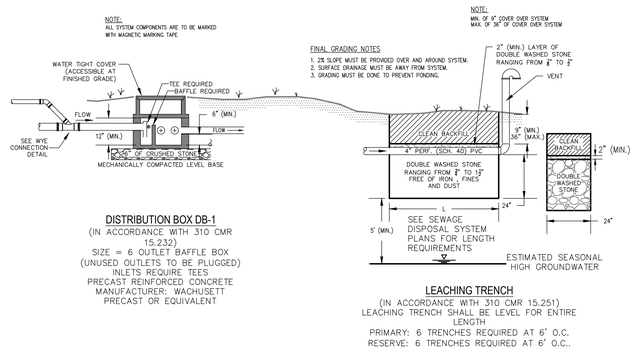
PRIMARY LEACHING AREA LOT 2C (UNITS 5–6):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (3) 75' TRENCHES, 2' WIDE X 2' DEEP (3 X 75 X 6) = 1350 S.F.
TOTAL DESIGN FLOW = 1350 S.F. X 0.74 GALLON/S.F. = 999 GALLONS.

RESERVE LEACHING AREA LOT 2C (UNITS 5–6):
DESIGN PERCOLATION RATE = 2 M.P.I. (SOIL CLASS I)
EFFLUENT LOADING RATE = 0.74 GALLONS/S.F.
LEACHING AREA REQUIRED = 990 GPD / 0.74 GPD/S.F. = 1338 S.F.
TOTAL LEACHING AREA PROVIDED = (3) 75' TRENCHES, 2' WIDE X 2' DEEP (3 X 75 X 6) = 1350 S.F.
TOTAL DESIGN FLOW = 1350 S.F. X 0.74 GALLON/S.F. = 999 GALLONS.

NITROGEN LOADING:
LOT AREA / 40,000 SF X 440 GPD

LOT 2B
90,836 SF / 40,000 SF x 440 GPD = 999 GPD
OK 999 GPD > 990 GPD

LOT 2C
200,035 SF / 40,000 SF X 440 GPD = 2,200 GPD
OK 2,200 GPD > 990 GPD

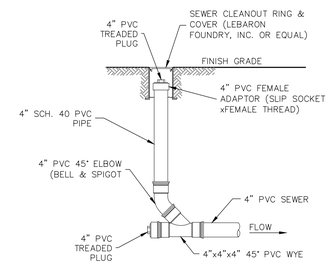


DISTRIBUTION BOX DB-1
(IN ACCORDANCE WITH 310 CMR 15.232)
SIZE = 6 OUTLET BAFFLE BOX
(UNUSED OUTLETS TO BE PLUGGED)
INLETS REQUIRE TEES
PRECAST REINFORCED CONCRETE
MANUFACTURER: WACHUSETT
PRECAST OR EQUIVALENT

LEACHING TRENCH
(IN ACCORDANCE WITH 310 CMR 15.251)
LEACHING TRENCH SHALL BE LEVEL FOR ENTIRE LENGTH
PRIMARY: 6 TRENCHES REQUIRED AT 6' O.C.
RESERVE: 6 TRENCHES REQUIRED AT 6' O.C..

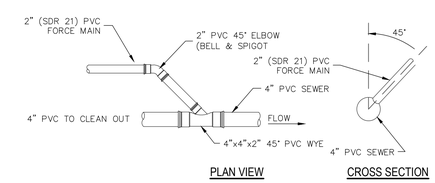
TYPICAL SAS PROFILE

NOT TO SCALE



SEWER CLEANOUT DETAIL

NOT TO SCALE



WYE CONNECTION DETAIL

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OWNER:
TURN LEFT, LCC
130 PARKER STREET, UNIT 12
LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:

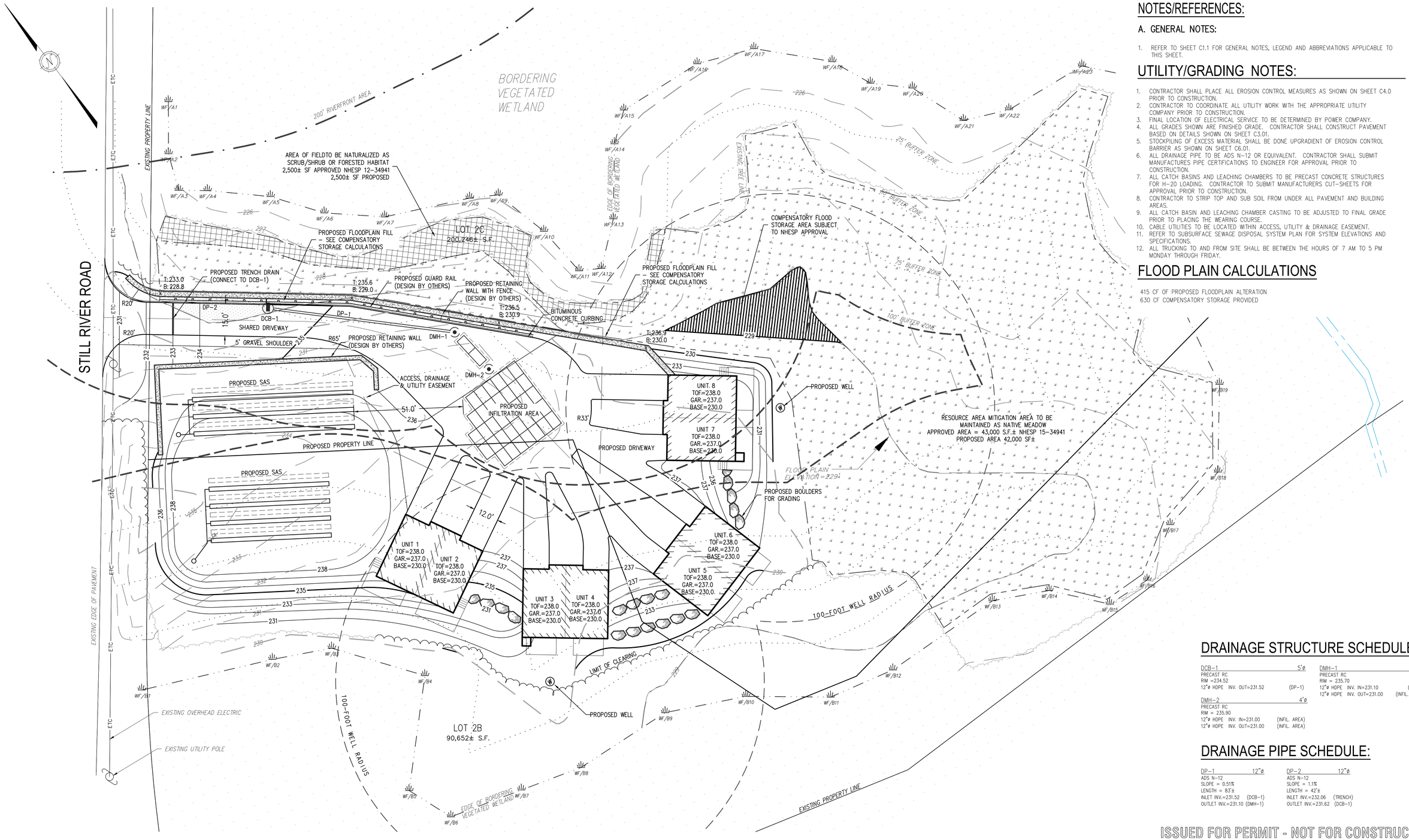
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
No. 49660
REGISTERED PROFESSIONAL ENGINEER
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

UTILITY DETAIL PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-UTILITY
SHEET NO. C3.1



NOTES/REFERENCES:

A. GENERAL NOTES:

1. REFER TO SHEET C1.1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS APPLICABLE TO THIS SHEET.

UTILITY/GRADING NOTES:

1. CONTRACTOR SHALL PLACE ALL EROSION CONTROL MEASURES AS SHOWN ON SHEET C4.0 PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO COORDINATE ALL UTILITY WORK WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO CONSTRUCTION.
3. FINAL LOCATION OF ELECTRICAL SERVICE TO BE DETERMINED BY POWER COMPANY.
4. ALL GRADES SHOWN ARE FINISHED GRADE. CONTRACTOR SHALL CONSTRUCT PAVEMENT BASED ON DETAILS SHOWN ON SHEET C3.01.
5. STOCKPILING OF EXCESS MATERIAL SHALL BE DONE UPGRADIENT OF EROSION CONTROL BARRIER AS SHOWN ON SHEET C6.01.
6. ALL DRAINAGE PIPE TO BE ADS N-12 OR EQUIVALENT. CONTRACTOR SHALL SUBMIT MANUFACTURES PIPE CERTIFICATIONS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
7. ALL CATCH BASINS AND LEACHING CHAMBERS TO BE PRECAST CONCRETE STRUCTURES FOR H-20 LOADING. CONTRACTOR TO SUBMIT MANUFACTURERS CUT-SHEETS FOR APPROVAL PRIOR TO CONSTRUCTION.
8. CONTRACTOR TO STRIP TOP AND SUB SOIL FROM UNDER ALL PAVEMENT AND BUILDING AREAS.
9. ALL CATCH BASIN AND LEACHING CHAMBER CASTING TO BE ADJUSTED TO FINAL GRADE PRIOR TO PLACING THE WEARING COURSE.
10. CABLE UTILITIES TO BE LOCATED WITHIN ACCESS, UTILITY & DRAINAGE EASEMENT.
11. REFER TO SUBSURFACE SEWAGE DISPOSAL SYSTEM PLAN FOR SYSTEM ELEVATIONS AND SPECIFICATIONS.
12. ALL TRUCKING TO AND FROM SITE SHALL BE BETWEEN THE HOURS OF 7 AM TO 5 PM MONDAY THROUGH FRIDAY.

FLOOD PLAIN CALCULATIONS

415 CF OF PROPOSED FLOODPLAIN ALTERATION
630 CF COMPENSATORY STORAGE PROVIDED

DRAINAGE STRUCTURE SCHEDULE:

DCB-1 5'ø
PRECAST RC
RIM =234.52
12"ø HDPE INV. OUT=231.52 (DP-1)

DMH-1 4'ø
PRECAST RC
RIM = 235.70
12"ø HDPE INV. IN=231.10 (DP-1)
12"ø HDPE INV. OUT=231.00 (INFIL. AREA)

DMH-2 4'ø
PRECAST RC
RIM = 235.90
12"ø HDPE INV. IN=231.00 (INFIL. AREA)
12"ø HDPE INV. OUT=231.00 (INFIL. AREA)

DRAINAGE PIPE SCHEDULE:

DP-1 12"ø
ADS N-12
SLOPE = 0.51%
LENGTH = 83'±
INLET INV.=231.52 (DCB-1)
OUTLET INV.=231.10 (DMH-1)

DP-2 12"ø
ADS N-12
SLOPE = 1.1%
LENGTH = 42'±
INLET INV.=232.06 (TRENCH)
OUTLET INV.=231.62 (DCB-1)

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LAWRENCE, MASSACHUSETTS

APPLICANT:
STILL RIVER ROAD DEVELOPMENT, LLC
28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

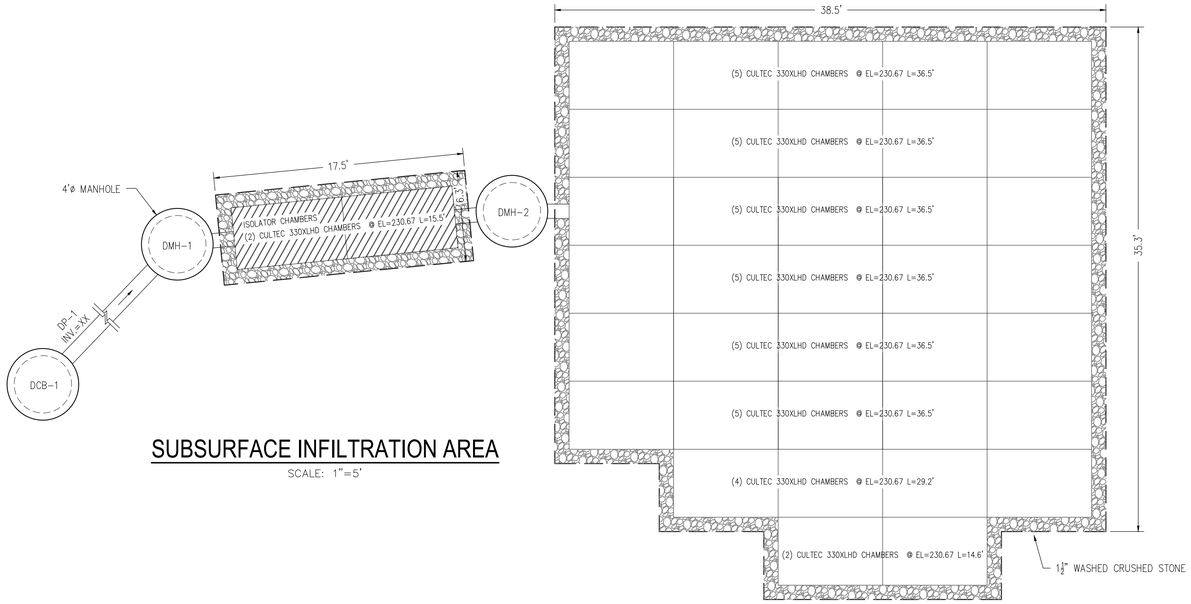
COMMONWEALTH OF MASSACHUSETTS GREGORY S. ROY CIVIL No. 46604 7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

GRADING & DRAINAGE PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

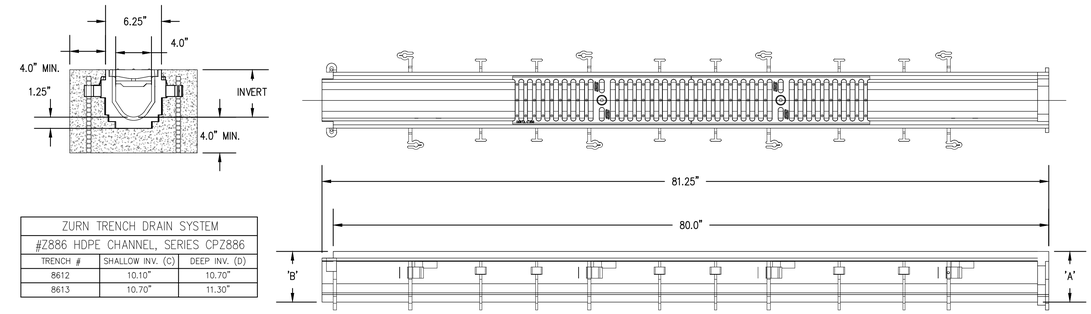
NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-GRADE
SHEET NO. C4.0



SUBSURFACE INFILTRATION AREA

SCALE: 1"=5'

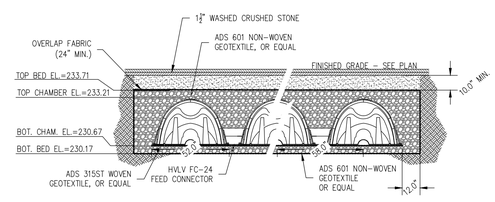


ZURN TRENCH DRAIN SYSTEM		
#Z886 HDPE CHANNEL, SERIES CPZ886		
TRENCH #	SHALLOW INV. (C)	DEEP INV. (D)
8612	10.10"	10.70"
8613	10.70"	11.30"

NOTES:
1. ACTUAL CHANNEL LENGTH IS 81.25" TO ALLOW FOR OVERLAP.
2. INSTALL Z886 E4 4" OUTLET END CAP.

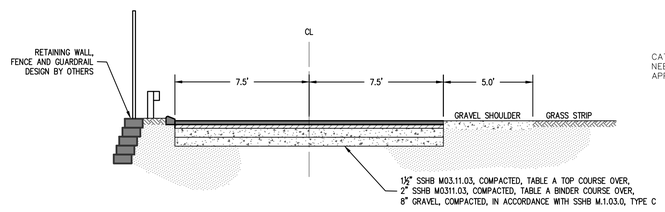
ZURN TRENCH DRAIN DETAIL

NOT TO SCALE



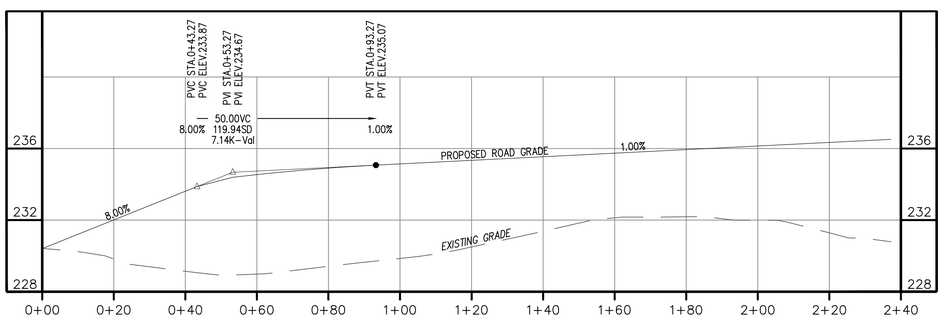
SUBSURFACE INFILTRATION AREA CROSS-SECTION

SCALE: 1"=4'



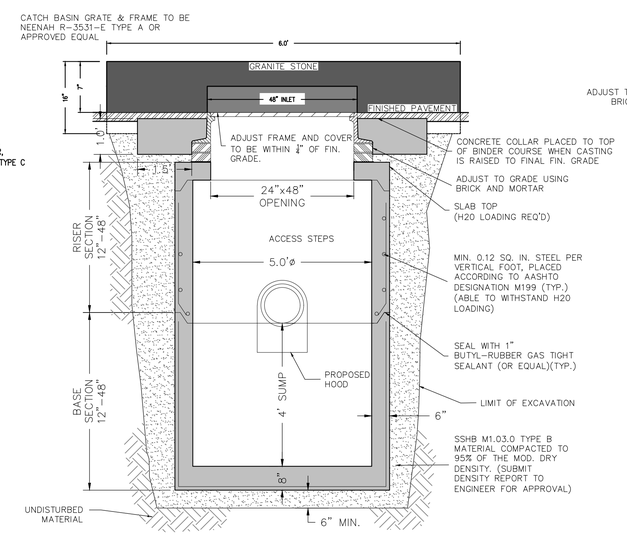
DRIVEWAY CROSS SECTION

SCALE: 1"=4'



DRIVEWAY PROFILE

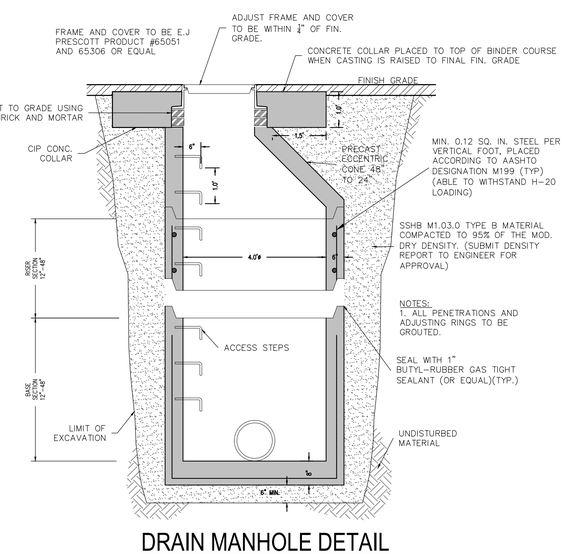
SCALE: 1" = 20' (HOR.)
1" = 4' (VERT.)



DEEP SUMP CONC. DOUBLE CATCH BASIN

NOT TO SCALE

NOTES:
1. ALL PENETRATIONS AND ADJUSTING BRICKS TO BE GROUTED.
2. INSTALL AN ADS ENVIROHOOD (OR EQUAL) ON OUTLET



DRAIN MANHOLE DETAIL

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28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

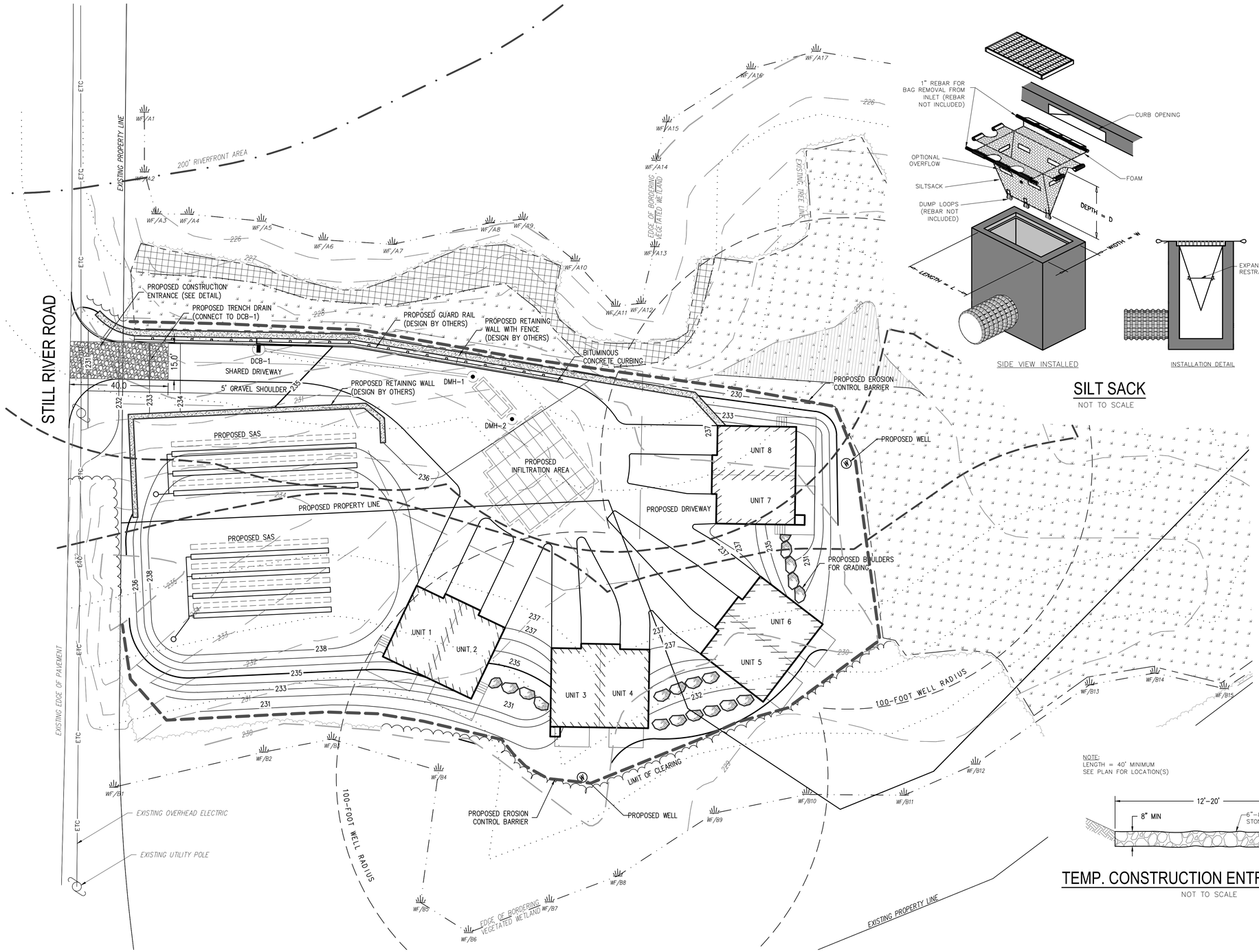
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
No. 46466
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

GRADING & DRAINAGE DETAILS
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-GRADE
SHEET NO. C4.1



SILT SACK

NOT TO SCALE

EROSION CONTROL NOTES:

A. MANAGEMENT STRATEGIES:

1. CONSTRUCTION SHALL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
2. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY DISTURBANCE ON SITE.
3. AREAS WHICH ARE NOT TO BE DISTURBED SHALL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC. RETAIN EXISTING VEGETATION WHERE FEASIBLE.
4. THERE SHALL BE NO STORAGE OF ANY KIND OF ANY CHEMICALS, PESTICIDES, FUELS AND OTHER POTENTIALLY TOXIC OR HAZARDOUS MATERIALS ON SITE.
5. NO DEBRIS, JUNK, RUBBISH OR OTHER WASTE MATERIALS SHALL BE BURIED ON THE SITE.
6. STUMPS AND OTHER WOOD DEBRIS SHALL BE DISPOSED OF IN ACCORDANCE WITH THE "POLICY ON THE DISPOSAL OF WOODWASTES" PUBLISHED BY THE DEPARTMENT OF ENVIRONMENTAL AFFAIRS, DATED AUGUST 14, 1987.
7. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.

B. MAINTENANCE/ PERFORMANCE STANDARDS:

ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH RAINFALL WITH AN ACCUMULATION OF ½" OR MORE. THE FOLLOWING ITEMS SHALL BE CHECKED IN PARTICULAR:

1. THE SILT FENCE BARRIERS SHALL BE CHECKED REGULARLY FOR TEARS, DETERIORATION, AND UNDERMINING.
2. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE RESEEDED AS NEEDED.
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO THE PUBLIC ROAD. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2 INCH STONE AS CONDITIONS DEMAND AND OR CLEANOUT/REPLACEMENT OF STONE IF CLOGGING OR SEDIMENTATION OCCURS. ALL MATERIALS SPILLED DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO THE TOWN ROAD MUST BE REMOVED DAILY BY SWEEPING OR OTHER SUITABLE MEANS.
4. ALL AREAS ON SITE SUBJECT TO EROSION/SEDIMENTATION SHALL BE INSPECTED ON A REGULAR BASIS. ALL ITEMS SPECIFIED ON THIS AND OTHER PLANS SHALL BE INSPECTED TO VERIFY THAT THEY ARE OPERATING AS DESIGNED AND INTENDED. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO MAINTAIN AND REPAIR ALL STRUCTURES.
5. THE ENTIRE DRAINAGE SYSTEM SHALL BE INSPECTED ON A REGULAR BASIS AND PRIOR TO AND IMMEDIATELY AFTER ANY RAINFALL EVENT WHILE THE SITE IS DISTURBED.
   - CATCH BASINS SHALL BE INSPECTED WEEKLY TO ENSURE THAT THEY ARE WATER TIGHT, HAVE ADEQUATE SUMP CAPACITY, THAT OIL AND GAS TRAPS ARE IN PLACE. THEY SHALL ALSO BE INSPECTED AFTER EVERY SIGNIFICANT RAINFALL EVENT (I.E. A TWO-YEAR STORM EVENT OR GREATER) DURING THE FIRST THREE (3) MONTHS OF BEING PLACED IN SERVICE TO ENSURE THAT THEY ARE FUNCTIONING IN AN ADEQUATE FASHION. THE BASINS SHALL BE CLEANED WITH A VACUUM TRUCK WHEN ⅓ OF THE SUMP IS FILLED WITH SEDIMENT BUT NOT LESS THAN TWO (2) TIMES PER YEAR. AFTER THE FIRST THREE (3) MONTHS OF SERVICE THE BASINS SHALL BE INSPECTED NOT LESS THAN ONE (1) TIME PER YEAR TO ENSURE ADEQUATE FUNCTIONALITY. OIL/GAS TRAPS SHALL BE CLEANED WITH A VACUUM TRUCK AND MONITORED FOR HYDROCARBON BUILD UP SEMIANNUALLY
   - THE TRENCH DRAIN DURING CONSTRUCTION SHALL BE INSPECTED MONTHLY FOR SEDIMENT ACCUMULATION AND LEAF BUILDUP. ALL SEDIMENT SHALL BE REMOVED AND LEAF LITTER REMOVED.
   - DEWATERING OF EXCAVATIONS DURING CONSTRUCTION SHALL BE ADDRESSED ON AN INDIVIDUAL BASIS AS NEEDED. IF TEMPORARY DEWATERING IS REQUIRED ON THE SITE OR IN CLOSE PROXIMITY TO THE 100 FT BUFFER ZONE, SEDIMENT BASINS SHALL BE CONSTRUCTED OR SILT TRAPS SHALL BE UTILIZED. SILT TRAPS AND SEDIMENT BASINS SHALL BE MAINTAINED DURING THE DEWATERING OPERATION.

D. TEMPORARY MEASURES:

1. PLACE SILT FENCE AND SILT FENCE WITH STRAW BALES AS SHOWN ON THIS PLAN.
2. IF LOAM IN PLACED OUTSIDE OF THE NORMAL GROWING SEASON SILT FENCE OR STRAW WADDLES SHALL BE PLACED BETWEEN THE LAWN AREA AND PAVEMENT.
3. CONSTRUCT TEMPORARY STONE PAD AT EXIT TO THE SITE AS SHOWN ON THE EROSION CONTROL PLAN.
4. DURING DRY PERIODS, PROVIDE MEANS FOR MITIGATION OF DUST, SUCH AS WATERING OF EXPOSED AREAS.
5. STOCKPILE LOCATIONS SHALL BE WITHIN THE PROPOSED LIMIT OF WORK. PLACE SILT FENCE AROUND ALL STOCK PILE AREAS. PILES LEFT FOR 21 DAYS OR MORE SHALL BE SEEDED OR COVER WITH PLASTIC SHEETING.
6. WASTE DISPOSAL RECEPTACLES AND TRAILERS WILL BE USED FOR THE DISPOSAL OF CONSTRUCTION DEBRIS, WHICH WILL BE REMOVED FROM SITE ACCORDING TO STATE, LOCAL AND FEDERAL GUIDELINES. CONSTRUCTION DEBRIS WILL INCLUDE PAVEMENT, UTILITY, EARTH AND BUILDING MATERIALS THAT CANNOT BE REUSED. THE RECEPTACLES WILL BE LOCATED ON-SITE AND COVERED.
7. PLACE CATCHBASIN INSERTS IN CATCHBASINS AFTER CONSTRUCTED.
8. IN ADDITION TO WHAT IS DEPICTED ON THE PLANS, SILT FENCE SHALL BE PLACED DOWN GRADIENT (UP-GRADIENT OF ANY STORM WATER APPURTENANCES, WETLAND BUFFER ZONES AND AREAS TO BE LEFT UNDISTURBED) TO EACH STRUCTURE DURING THE CONSTRUCTION PROCESS UNTIL THE DISTURBED AREA IS RESTORED.

E. PERMANENT STABILIZATION:

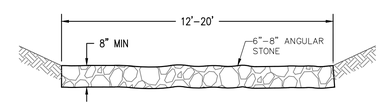
2. SLOPES IN EXCESS OF 3 TO 1 SHALL BE HYDRO-MULCHED. LOAMED (6" MIN.) AND SEEDED SLOPES WILL BE PROTECTED FROM WASHOUT BY MULCHING OR OTHER ACCEPTABLE SLOPE PROTECTION UNTIL VEGETATION IS ESTABLISHED.
3. UNLESS OTHERWISE INDICATED HEREON ALL DISTURBED AREAS SHALL BE LOAMED (6" MIN.) AND SEEDED WITH AN APPROPRIATE MIXTURE OF GRASSES SUITABLE FOR THE AREA. AREAS NOT STABILIZED BEFORE THE END OF THE FALL PLANTING SEASON SHALL BE HYRDO-MULCHED AND SEEDED IN THE SPRING.
4. SLOPES STEEPER THAN 3 TO 1 SHALL BE RESTORED WITH 6" OF LOAM (MIN.), SEED, FERTILIZER AND STAKED DOWN EROSION CONTROL BLANKET SIMILAR TO NORTH AMERICAN GREEN SC 150 BN. INSTALL IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
5. THE TEMPORARY MEASURES WILL NOT BE REMOVED UNTIL PERMANENT STABILIZATION HAS OCCURRED.
6. PROPOSED GARDEN AREA SHALL HAVE 12" ORGANIC MATERIAL CONFORMING TO SSHB M1.06.1.

F. CONSTRUCTION SEQUENCE:

DURING THIS SEQUENCE ALL EROSION CONTROLS SHALL BE INSPECTED AND MAINTAINED. ALL DISTURBED AREAS SHALL BE STABILIZED BY SEEDING OR SODDING AS SOON AS POSSIBLE AFTER GRADING IS COMPLETE. EROSION BARRIERS SHALL BE REMOVED AFTER SLOPE STABILIZATION IS COMPLETE.

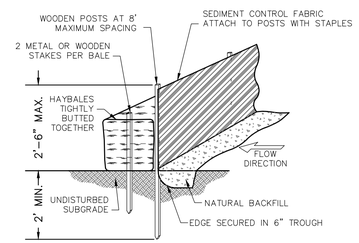
2. INSTALL EROSION AND SEDIMENT CONTROL MEASURES.
3. EXCAVATE TO SUBGRADE IN CUT SECTIONS; BRING FILL SECTIONS TO SUBGRADE USING EXCAVATED SOIL.
4. INSTALL BUILDING PAD AND UTILITIES INCLUDING, DRAINAGE SYSTEM, WATER, GAS AND ELECTRICAL UTILITIES.
5. PLACE COMPACTED BASE GRAVEL FOR THE PAVED AREAS; ROUGH GRADE AREAS TO BE LOAMED AND SEEDED.
6. INSTALL PAVEMENT.
7. FINALIZE GRADING. LOAM, SEED AND MULCH DISTURBED AREAS.

NOTE:
LENGTH = 40' MINIMUM
SEE PLAN FOR LOCATION(S)



TEMP. CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



SILTATION BARRIER

NOT TO SCALE

ISSUED FOR PERMIT - NOT FOR CONSTRUCTION

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28 COUNTRY CLUB LANE
MIDDLETON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

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No. 49612
COMMONWEALTH OF MASSACHUSETTS
7/5/18

DATE: 7/5/18
DESIGN BY: JPL
DRAWN BY: JPL
CHECKED BY: GSR

EROSION & SEDIMENTATION CONTROL PLAN
STILL RIVER COMMONS
BOLTON, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 3339-P
DRAWING NO. 3339-EROSION
SHEET NO. C5.0