



April 14, 2020

Arlington Conservation Commission
730 Massachusetts Avenue Annex
Arlington, MA 02476

**Re: Supplemental Information to Notice of Intent
77 Sunnyside Avenue (DEP File #091-0320)
Arlington, MA**

Dear Members of the Commission:

As discussed at the Public Hearing for this project on April 2, 2020, and by email following the meeting, the project team has provided clarifying information to questions discussed by the Commission and has provided additional requested materials regarding the survey, specification on the pervious pavers, Riverfront Area, the planting plan, and other minor revisions to the project design plan (see revised site plans, attached).

1) Regarding the location of the floodplain elevation versus the location shown on the FEMA maps

We have provided a signed and stamped survey plan by Registered Professional Land Surveyor (No. 47879), Douglas L. Johnson of DLJ Geomatics affirming the topography of the Site and the location of the Base Flood Elevation (BFE) at 6.7 feet. There are no discrepancies between the proposed project plan initially submitted and the attached stamped survey plan.

2) Regarding the depiction of proposed contours on the Site Plan

There will be no substantial change in elevation to the yard during construction, and proposed contours were depicted on the original plan. In the front yard, an existing tree stump will be removed from the center of the yard and the area will be backfilled with loam. The area will be graded using hand tools to direct surface runoff away from the house, but there will not be any substantial change to existing grade. The proposed contour line is shown in orange, and is located at 14-feet elevation.

The rain garden/vegetated swale is an addition to the Site Plan, following discussion regarding surface runoff from the driveway. The rain garden/vegetated swale will be created north of the existing driveway and stormwater will be directed there from a trench drain located at the foot of the driveway. The trench drain will collect excess surface runoff and any pollutants from the driveway to prevent it reaching the BVW on the east side of the road. The trench drain will connect to the rain garden through a subsurface 4" HDPE pipe. The swale will be excavated so that it is approximately 1-foot lower than existing grade. Overflow will be directed to the west, back toward the yard, and is depicted by the spot elevation shown in red at 6.90-feet. The proposed contours

for the rain garden are shown in red. The rain garden will also serve to increase flood storage on the property should flood levels increase in the future.

3) Regarding the request for a profile view of the proposed addition

We have attached architectural plans from Miller Design LLC (dated February 2, 2020) showing the profile view of the current existing conditions, and the proposed addition and deck, for your convenience.

4) Regarding the specifications of, maintenance, and location, of the pervious pavers

Information regarding specifications and installation of the pervious pavers has been provided from the proposed contractor and submitted by email from the Applicant on April 10, 2020. The Applicant intends to use Aqua-Bric pervious pavers, manufactured by Ideal. The Applicant's contractor has extensive experience installing pervious pavers, in similar conditions, and visited the home twice, on March 4, and March 9, 2020, to evaluate the efficacy of the pavers.

We have attached additional information in the form of a brochure from the manufacturer in this submittal. The brochure highlights the infiltration rate, typical installation technique, and discusses the required maintenance requirements of the pavers. The installation and maintenance plan will follow the manufacturer's recommendations:

Keep the pavement free of leaves, weeds, and sediment. Avoid the use of sand in the winter; if used, spread sparingly. Periodically sweep the openings to remove crust that forms on the surface. If puddles result from clogging, infiltration rates can be restored to 100% capacity by removing the aggregate from the openings and replacing with clean material. Do not pressure wash.

The old bituminous driveway, and concrete pad, up to the foundation of the house will be removed and replaced with the pervious pavers. This will include some areas under the proposed addition and the proposed deck. The Applicant has stated the driveway will be used for parking a single car during normal conditions, and the deck will only be used as an overhang when a visitor is at the house, so that two cars can be parked in tandem. The impervious walkway at the front of the house will also be removed and replaced with the pervious pavers.

During installation ground elevation will be reduced approximately 6-12 inches for installation of the subbase and bedding rock material. At completion of the installation the new driveway and walkway will exist at the same elevation as the current elevation. There is a doorway from the rear of the foundation to the driveway that must remain accessible, so raising the driveway above the current elevation is not feasible. The trench drain will be installed during the driveway construction and will connect to the rain garden by a subsurface 4" HDPE pipe.

5) Regarding the specifications of, maintenance, and location, of the rain garden/vegetative swale

As previously mentioned, the rain garden/vegetative swale will be positioned to the north of the existing driveway, and will be connected to the trench drain with a pitched 4" HDPE pipe. The center of the swale will be hand dug to a depth of approximately 1-foot lower than the existing grade, to 6-feet. The soil material will be removed from the Site and the swale will immediately be seeded with a wet-meadow mix, to prevent erosion and encourage absorption when accepting stormwater.

The swale is intended to capture excess stormwater runoff (if any) from the new pervious driveway. The trench drain and swale will also serve to marginally increase the carrying capacity of flood waters on the property, should the floodplain expand past current BFE. The swale will be located within the vegetative buffer zone along the edge of the property, so it will remain protected from mowing.

The pipe, trench drain, and vegetative swale will be maintained twice yearly to remove sediment, leaves and other debris, and to keep all aspects of the system in a functional capacity.

6) Regarding the Planting Plan

As discussed in the Project Narrative and depicted on the Site Plan, the crab apple shrubs located at the rear of the property (east) will be removed for the installation of the rain garden/vegetative swale. Within the interior of the rain garden/vegetative swale, the Applicant has proposed to seed the area with a "wet-meadow" mixture from New England Wetland Plants, Inc. The Applicant has also proposed that one (1) river birch (*Betula nigra*) sapling (<2" dbh) will be planted in the northeast corner of the property, adjacent to the rain garden/vegetative swale.

Additionally, the Applicant has agreed to place a vegetative buffer around almost the entirety of the property, which will be planted with purple lovegrass (*Eragrostis spectabilis*) and Canadian ginger (*Asarum canadense*). Both species are on the approved plant list supplied on the Arlington Conservation Commission's website.

In the southeast corner of the property there is currently no existing vegetation. The Applicant proposes to plant a 1-2 gallon sized red-osier dogwood (*Swida seracea*) shrub along the interior of the fence. This ground area surrounding the dogwood will also be planted with the purple lovegrass and Canadian ginger found in the vegetative buffer zone.

In the front yard, along the northern border, the Applicant proposes to remove a small grouping of trees, and replace them with three (3) eastern shadbush trees (*Amalenchier canadensis*).

The proposed planting plan meets the requirements of the 1:1 replacement for trees and the proposed planting plan results in an improvement to the riverfront area because of the an extensive restoration area of native plants, including increasing the density of proposed native plantings on the revised site plan within the 100-ft BVW buffer zone and the outer riparian zones.

As required by the town tree bylaw, the trees/shrubs will be monitored by a wetland scientist, botanist, arborist, or other person approved by the ACC, for a period of three (3) full growing seasons and evaluated for annually for fullness and vitality. The ACC may request for replacement in-kind for any tree or shrub that dies or decays that span.

7) Regarding the Riverfront Area Standards

310 CMR 10.58 (4)

According the General Performance Standards in 310 CMR 10.58 (4) the applicant shall prove by the preponderance of the evidence there are no practicable and substantially equivalent economic alternatives to the proposed project with less adverse effects on the interests of the Wetland Protection Act. The project has been currently designed to minimize impacts to the Riverfront Area and the 100-foot buffer zone to BVW to all practicable extents. The project as currently proposed is located outside of the inner riparian zone and outside of the 25-foot BVW buffer zone. As the entirety of the lot is located within the Riverfront Area, the proposed lot is allowed up to 5,000 square feet of disturbance. This project will disturb substantially less – with most of the impacts (driveway and walkway) occurring as Redevelopment under 10.58(5). The vegetative swale (a request by the Conservation Commission) will be the only additional permanent disturbance on the lot.

As proposed the project will remove a net of 330 square feet of impervious surfaces (driveway, walkway) and although the addition will be built closer to the BVW and Brook the addition has been elevated to avoid direct impacts to the soils within Riverfront Area and BVW buffer zone. A trench drain has been proposed at the end of the driveway to capture any surface runoff from the proposed pervious driveway, and will direct it towards a rain garden/vegetated swale, which will be seeded with a native wetland plant mix. The rain garden will allow natural infiltration and remove any impurities from being directed to the BVW.

Additionally, the removal of the invasive crab apple trees, and proposed planting of the river birch and the red-osier dogwood at the rear of the yard will provide soil stabilization and wildlife habitat that were absent from the property.

Previous design iterations did not include a vegetative buffer zone. In the current design we propose a vegetative buffer which almost encapsulates the entirety of the property, with native grasses that will provide wildlife habitat, plant diversity, and help manage stormwater and erosion.

310 CMR 10.58 (5)

OA has presented the information below to show how the project complies with the Redevelopment (definitions, presumptions, and performance standards 10.58 (5)).

- For the subject project:
 - 165 square feet of currently impervious area will be redeveloped (addition, entryway)

- 495 square feet of currently impervious surface (driveway, walkway) will be converted to pervious
- This project results in an improvement over the existing conditions
- 10.58 (5) (a) – the project results in an improvement to the riverfront area because the conversion of a portion of the impervious surfaces associated with the driveway and walkway (outer riparian) to pervious, stormwater management through the use of the trench drain and rain garden/vegetative swale, and an extensive vegetative buffer area of native plants, including increasing the density of proposed native plantings on the revised site plan, within the outer riparian zone.
 - Total impervious decreases by 330 square feet in the outer 100-foot Riverfront
- (b) Stormwater management is proposed in the form of a trench drain at the end of the driveway, which directs stormwater runoff to the rain garden/vegetative swale north of the driveway. The swale will capture surface runoff and allow for natural infiltration, while filtering out impurities.
- (c) Although the proposed house is slightly closer to the stream compared to the existing conditions this can be permitted if the mitigation is sufficient (according to 10.58(5)(g)), which we believe it clearly is because of the substantial portion of the property proposed as vegetative buffer. The proposed mitigation restores an expansive portion of the Riverfront Area (see Site Plan and explanation above).
- (d) The proposed limit of yard is mostly located further from the Riverfront than the existing yard after the buffer zone plantings and OA believes the proposed mitigation more than off-sets the possible direct or indirect impacts to the function of the Riverfront Area, which again can be approved under 10.58(5)(g).
- (e) The proposed footprint of the entryway and addition (165 square feet) does not exceed the limit of the existing degraded on the property (1,141 square feet; building and driveway/walkways). The total proposed permanent/pervious work is 750 square feet, less than the existing degraded area. The existing impervious/degraded area is already greater than 10% of the Riverfront Area (10% = 323 square feet) on the property, therefore the project may alter up to 5,323 and this project is substantially less than the allowable limit.
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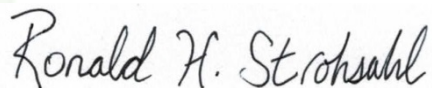
8) Regarding the Adjacent Upland Resource Area, pursuant to Arlington's Wetland Bylaw

Adjacent Upland Resource Areas (AURA) have been determined to have significant biological, chemical, and physical impacts on adjacent or associated resource areas. The proposed project protects these resource areas through a variety of tactics. The proposed project has included using pervious pavers, instead of the existing impervious bituminous asphalt, which will allow for natural recharge of groundwater, and prevent excess stormwater runoff, and erosion from infiltrating the BVW across the roadway. In addition to the pervious pavers, the project has incorporated the use of a trench drain to capture any runoff off of the pervious pavers, which will be redirected to the rain garden on the property. The inclusion of the rain garden and trench drain will essentially capture all stormwater on the property, and allow it to naturally infiltrate. The Applicant has also proposed a significant increase in the vegetated buffer throughout the BVW and Riverfront Area buffer zones around the property.

There will be no new structures within the first 50-feet of AURA, and there will be a net decrease of 330 square feet of impervious surfaces within the AURA at the completion of the project. While the addition at the rear of the house will decrease the space between the structure and the resource area, mitigation in the form of the decreased impervious surface on the property, and the inclusion of the vegetative buffer surrounding the property, serves to protect the values of the BVW and Riverfront Area.

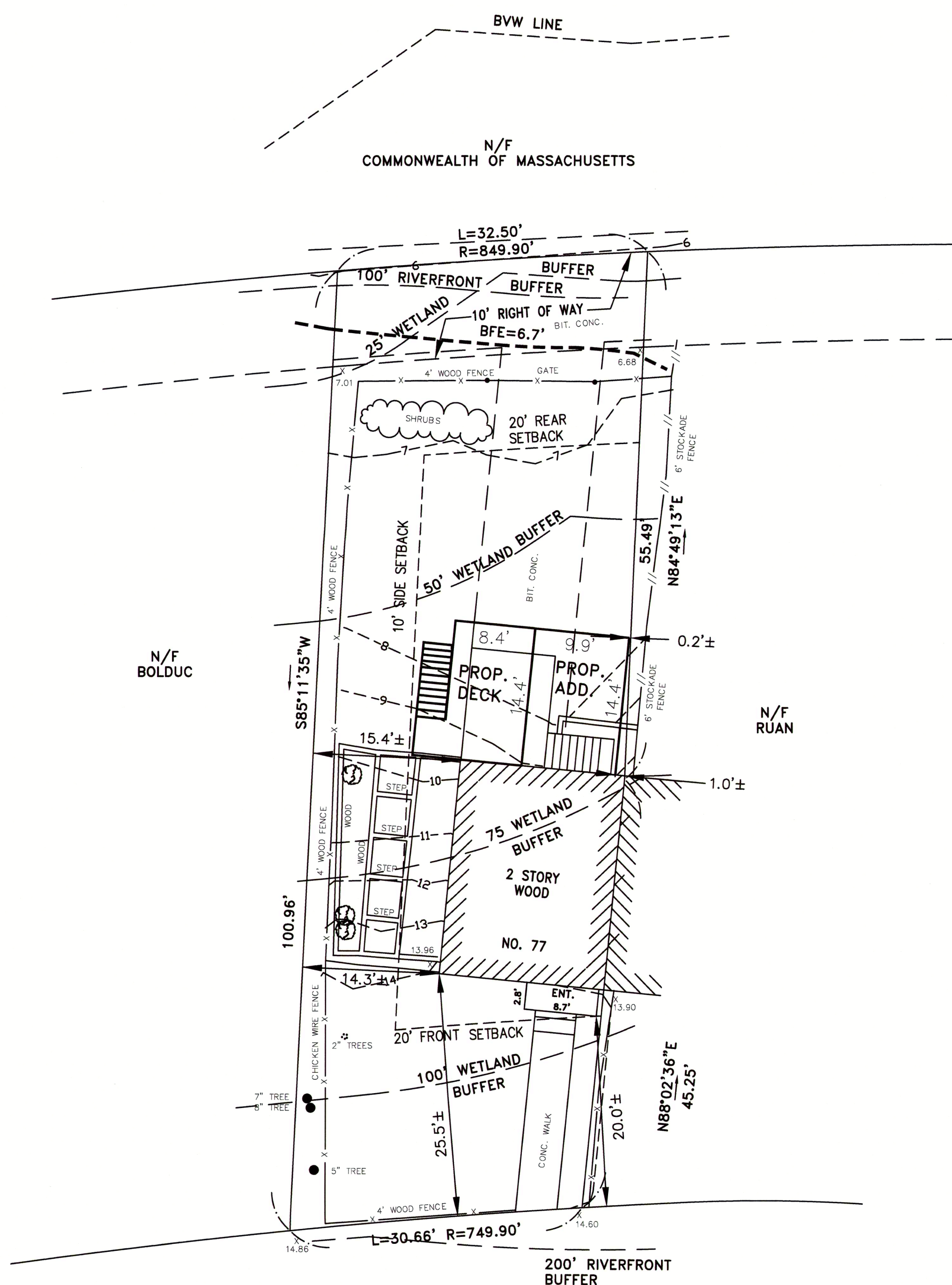
If you have any further questions, feel free to contact me at 631-655-5848 or by email at ron@oxbowassociates.com.

Thank you,



Ronald Strohsahl
Staff Scientist

Enclosures: Certified Plot Plan, DLJ Geomatics, February 17, 2020
 Aqua-Bric Informational Brochure
 Existing and Proposed Side Profile Architectural Drawings – Sheet A8 &
 A9
 Revised Notice of Intent Site Plan, April 14, 2020



LOT AREA = 3,228 S.F.±
 EXISTING BUILDING = 391 S.F.±
 EXISTING PAVEMENT= 750 S.F.±
 PROPOSED ADDITION= 167 S.F.±
 EXISTING LOT COV. = 12.1%
 PROPOSED LOT COV. = 17.3%
 EXISTING OPEN SPACE= 64.7%
 PROPOSED OPEN SPACE = 56.4%

SEE DEED RECORDED IN MIDDLESEX COUNTY REGISTRY OF DEEDS
 IN DEED BOOK 31330 PAGE 305.

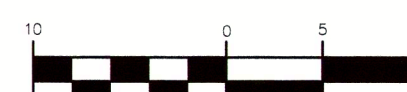
SEE PLAN RECORDED IN MIDDLESEX COUNTY REGISTRY OF DEEDS
 IN DEED BOOK 7321, END.

SUBJECT PARCEL IS LOCATED IN ZONE R2.

PORTION OF SUBJECT PARCEL IS LOCATED IN FLOOD ZONE AE
 WITH A BASE ELEVATION OF 6.7 FT. AND PART IS IN ZONE
 X(0.2% ANNUAL FLOOD HAZARD) AS SHOWN ON FIRM MAP
 25017C0417E, DATED JUNE 4, 2010.

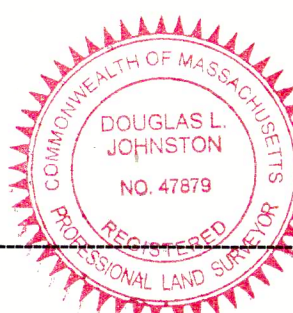
SUNNYSIDE AVENUE

BFE= 6.7'
 ALL ELEVATIONS ARE IN NGVD '88



(IN FEET)
 1 inch = 10 ft.

Douglas L. Johnston
 PROFESSIONAL LAND SURVEYOR



2-17-20
 DATE

CERTIFIED PLOT PLAN
 IN ARLINGTON, MA
 SCALE: 1" = 10' FEBRUARY 11, 2020
 DLJ GEOMATICS
 PROFESSIONAL LAND SURVEYING
 276 NORTH STREET
 WEYMOUTH, MA 02191
 (781) 812-0457
 77 SUNNYSIDE AVE ARLINGTON 10 SCALE.dwg



Aqua-Bric® Pavers



 **Pavers by**
Ideal®
IDEAL CONCRETE BLOCK COMPANY, INC.



Aqua-Bric® Pavers

INTRODUCTION

Aqua-Bric is a pedestrian friendly, ADA compliant permeable interlocking concrete paver. Properly installed, Aqua-Bric creates a smooth, stable pavement that accommodates pedestrians, wheelchairs and passenger vehicles while allowing stormwater to drain through the pavement and infiltrate into the soil below.

FEATURES

- Provides 100% stormwater infiltration - up to 6" of rain-fall per hour over the 30-year design life of the pavement
- Withstands NaCl deicing salts, and snow can be safely and easily removed with snow shovels, snow blowers or snow plows
- Qualifies for credits under the LEED® Green Building Certification System
- Cost is comparable to conventional impervious pavement with catch basins and underground pipe
- Outperforms other types of porous pavements

COMPOSITION & PERFORMANCE

Aqua-Bric permeable pavers are manufactured under controlled factory conditions offering superb quality, strength and durability. In the event underground repairs are required, the stones can be lifted and reinstated without leaving an unsightly patch. Aqua-Bric pavers form a skid and slip-resistant surface with notched openings that comply with ADA criteria for joint spacing and chamfer width. Aqua-Bric is suitable for walkways, patios, sidewalks, courtyards, plazas and residential driveways. For pavements with heavy duty traffic, the Aqua Bric IV™ style (8 cm thick) is capable of supporting H20 loads.

PHYSICAL CHARACTERISTICS

Aqua-Bric pavers meet or exceed North American industry standards, including the requirements of ASTM C 936 for Solid Concrete Interlocking Paving Stones and CSA Standards for freeze-thaw performance. Our strict quality control ensures consistent strength, color and size.

Nominal Size/Coverage: 4" x 8" • 4.5 pcs/sf

Thicknesses: 2 3/8" (6 cm)

Note: A 3 1/8" (8 cm) thickness, Aqua-Bric IV, is also available

Compressive Strength: 8500 psi minimum

Water Absorption: 5% maximum

Freeze Thaw: No Effect

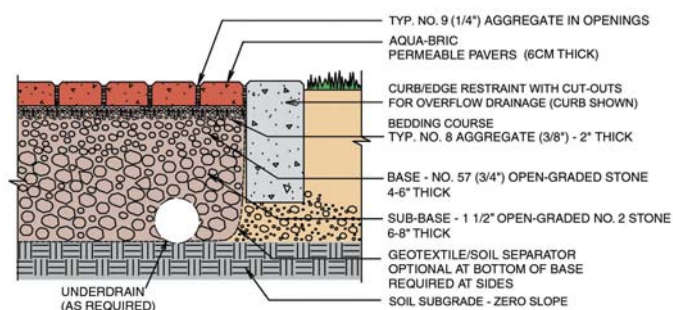
Slip and Skid Resistance: Excellent to ADA

Aqua-Bric® is a trademark of Advanced Pavement Technology

©2006-2013

DESIGN & CONSTRUCTION

Permeable interlocking concrete pavements use open-graded aggregates for the base, setting bed and joint fill, as they provide void space to accommodate stormwater infiltration. The illustration shown below represents a typical installation, though permeable interlocking pavements should be designed by design professionals to meet project parameters. The base/sub-base must be of adequate thickness to support traffic and meet hydrological requirements. If the subgrade is comprised of low-draining soils such as clay, a perforated pipe is usually placed in the base to remove excess water.

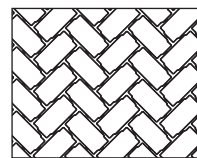


MAINTENANCE

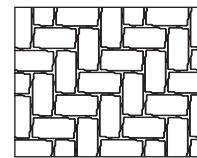
Permeable pavers function as an effective stormwater treatment system and remain clog-free for years with reasonable good housekeeping practices. Keep the pavement free of leaves, weeds, and sediment. Avoid the use of sand in the winter; if used, spread sparingly. Periodically sweep the openings to remove crust that forms on the surface. A stiff bristle broom works well for residential walks and driveways, while a conventional commercial sweeper is appropriate for parking lots. If puddles result from clogging, infiltration rates can be restored to 100% capacity by removing the aggregate from the openings and replacing it with clean material. Do not pressure wash.

TECHNICAL SERVICES

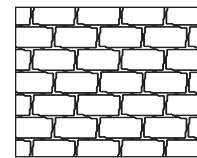
Please contact our sales office or visit our website at www.idealconcreteblock.com for comprehensive technical information and literature.



45° Herringbone



90° Herringbone



Running bond

A white deposit known as efflorescence may appear naturally on any concrete or masonry product. It does not effect the structural integrity and will diminish over time. Efflorescence is not indicative of a flawed product. For more information, ask for Ideal's Efflorescence Advisory.

45-55 Power Road, Westford, MA 01886
232 Lexington Street, Waltham, MA 02452

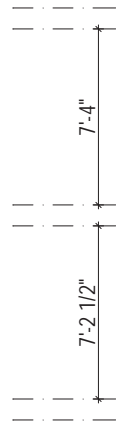
Main Phone: (781) 894-3200 • Main Fax: (978) 692-0817

www.IdealConcreteBlock.com

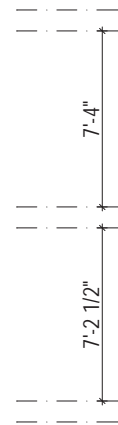
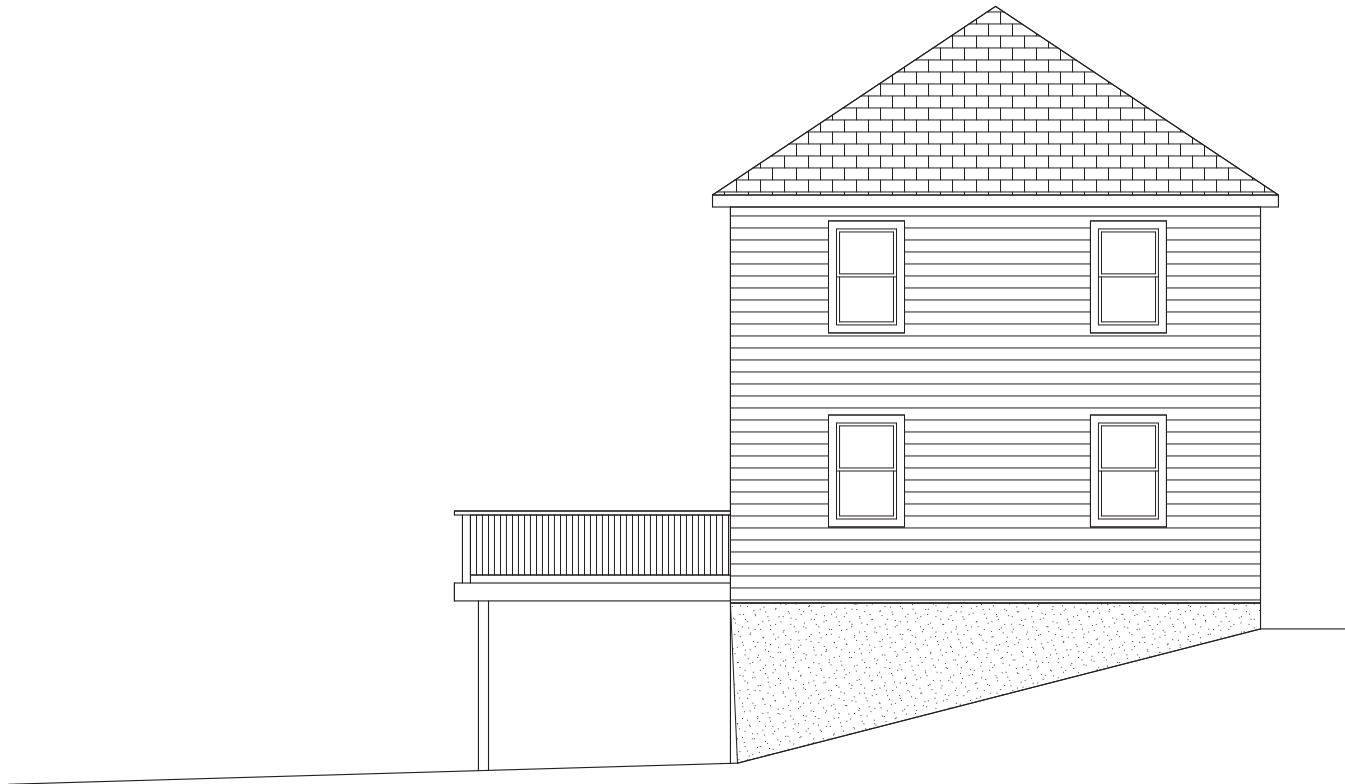
AB-2500-5/13



A Registered Trademark of Ideal Concrete Block Company, Inc.



1 FRONT ELEVATION
SCALE: 1/8" = 1'



2 SIDE ELEVATION (NEIGHBOR'S)
SCALE: 1/8" = 1'



3 REAR ELEVATION
SCALE: 1/8" = 1'

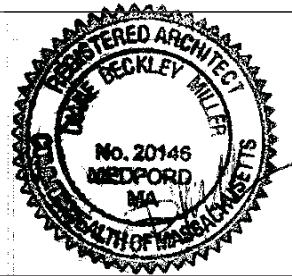
MILLER
DESIGN LLC



80 CLARK STREET
BELMONT, MA 02478

Architect:
Miller Design LLC
80 Clark Street
Belmont MA 02478
617-993-3157

Date:	Issued for:
8/12/16	SCHEMATIC DESIGN
10/4/16	DESIGN DEVELOPMENT
10/11/16	CONSTRUCTION DOCS
9/20/19	REVISIONS
10/2/19	REVISIONS
1/21/20	REVISIONS
2/5/20	REVISIONS

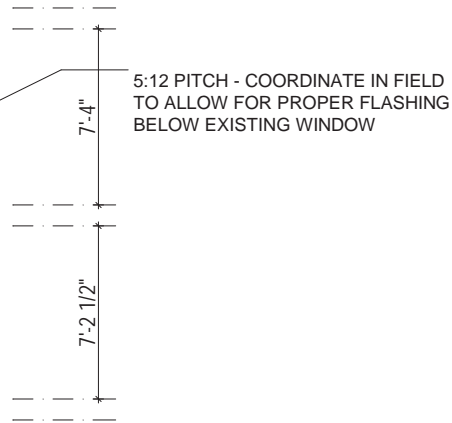


ALEXANDER RESIDENCE
77 SUNNYSIDE AVE
ARLINGTON MA 02474

EXISTING
ELEVATIONS

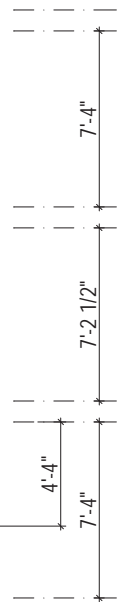
Sheet
Number:

A8



1 FRONT ELEVATION
SCALE: 1/8" = 1'

APPROXIMATE LINE OF AVERAGE GRADE -
SEE CERTIFIED PLOT PLAN FOR EXACT
DIMENSION

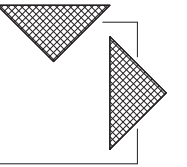


2 SIDE ELEVATION (NEIGHBOR'S)
SCALE: 1/8" = 1'



3 REAR ELEVATION
SCALE: 1/8" = 1'

MILLER
DESIGN LLC



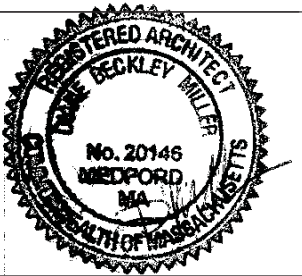
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2/5/20	REVISIONS



ALEXANDER RESIDENCE
77 SUNNYSIDE AVE
ARLINGTON MA 02474

NEW
ELEVATIONS

Sheet
Number:

A9

S H E E T C-1