TOWN OF WINCHENDON

AGENDA & NOTICE OF MEETING

Pursuant to the provisions of Chapter 30A, Sections 18-25 of the General Laws, as amended, notice is hereby given that a meeting of the following board, committee, or commission will be held on the date and time specified below. Said meeting will be open to the public and press and will be recorded.

BOARD/COMMITTEE: **Planning Board – Public Hearings & Meeting**

DATE: **November 19, 2019** **TIME:** **6:30 p.m.**

LOCATION: **Town Hall – 2nd Floor Auditorium**
109 Front Street Winchendon MA 01475

1. Call to Order & Pledge of Allegiance
2. Announcements
3. Public Comment
4. Business:

   Notice of Agent's Decision – Temporary Site Plan permission to utilize 23 Robert's Way for storage of unassembled buildings to be installed on adjacent parcels.
   6:35 pm - PUBLIC HEARING CONTINUED - Site plan application for a 3.135 MW DC Ground-Mount Solar Development at 185 Baldwinville Rd., (Map 13 Parcel 04).

   6:40 PUBLIC HEARINGS CONTINUED – Robert's Way Site Plan Reviews – Site plan applications for contractor garage at 20 Robert's Way and self-serve storage units at 21 Robert's Way (Map 9 Parcels 106 & 383).

   6:42 PUBLIC HEARING – 23 Robert's Way Site Plan Review – Site plan application for contractor storage use. (Map 9 Parcels 106 & 383).

   6:45 PUBLIC HEARING CONTINUED – Happy Hollow Site Plan Modification Review – application received requesting permission to clear an additional 3.47 acres of trees leaving a wooded 50' buffer with the abutting residential properties.

   Discussion of Application for Endorsement of ANR development plan for 42/44 Happy Hollow Road enabling neighbors to transfer land to one another.

   Ongoing Discussion of Complaint - Lincoln Ave Solar Glare Review following site walk completed on 10/14/19.

   Newly proposed fee structure for Planning Submissions

5. Minutes - None
6. Correspondence Update – see summary sheet
7. Adjourn

Notice- The above topics do not prohibit additional last-minute or unforeseen matters.

The meeting room is handicapped accessible. With advance notice the Planning Board can arrange reasonable accommodation for persons with other disabilities. To request assistance; contact the Department of Planning & Development at 978-297-3537.

TOWN OF WINCHENDON

Planning Board

Telephone (978) 297-3308
Facsimile (978) 297-5411

109 Front Street
Winchendon, Massachusetts 01475-1758

Notice of Finding

Site Plan Modification Approval – Agents Review

Date: October 22, 2019 PB# 2019-1022

Notice is hereby given that the Planning Agent has informally reviewed the site plan modification Application listed below in accordance with the requirements of section 2.3 of the Planning Board Site Regulations adopted in accordance with section 12.7 of the Winchendon Zoning Bylaw and finds that the plan as mitigated by the conditions listed below will not exceed the maximum impacts stated in section 2.2 of the regulations and that formal review of the site plan under section 12.5 of the Zoning Bylaw is not required.

Site Plan For:	**Robert's Way – Parcel B**
Property Located at:	Robert's Way – Parcel B Winchendon, MA 01475 Assessors Map 9 Parcels 106, 383 & 384
Applicant:	Jamison VanDyke/Barkley Enterprises
Address:	1032 NH Rt. 199, Rindge, NH 03461

The applicant has requested temporary permission to store unerected steel buildings for use on the two adjacent parcels (pending approval of Site Plan Reviews), 20 Robert's Way and 21 Robert's Way. Such use is allowed by right in the C1 zoning district and this temporary use is likely to have minimal effects on abutters, neighbor and the community; in keeping with Section 2.1.3 of the Town's Rules and Regulations for Site Plan Review.

1. This site plan approval is subject to the standard conditions listed in Section 3.6 of the Town's Rules and Regulations for Site Plan Review and shall expire on December 31, 2020. Long-term authorization for any use of this parcel requires Planning Board permission via a Formal Site Plan Review process. No performance guarantee is currently required.

Agent's review of this site plan application was conducted on October 22, 2019.

By: Alison J Manugian

Alison Manugian, Planning Agent - For the WINCHENDON PLANNING BOARD

TOWN OF WINCHENDON

Planning Board

Telephone (978) 297-5410

109 Front Street
Winchendon, Massachusetts 01475-1758

Notice is hereby given that the Winchendon Planning Board will hold Public Hearing to consider the site plan application for a 3.135 MW DC Ground-Mount Solar Development submitted by Sunpin Solar Development, LLC 3 Corporate Park, suite 168 Irvine CA on property located at 185 Baldwinville Rd., Winchendon, MA 01475 identified as Winchendon Assessors Map 13 Parcel 04 owned by Kevin A. Doyle of PO Box 113 Winchendon MA 01475 at their regularly scheduled meeting on **Tuesday, November 19, 2019 at 6:35pm** in the Town Hall Aud., 2nd Fl., 109 Front St., Winchendon, MA 01475. Said property is located in the R80 – Rural Residential zone. A copy of the application is available at the Dept. of P&D, Winchendon Town Hall. All interested persons should plan to attend.

BY: Guy C. Corbosiero, Chair
Winchendon Planning Board

November 5 & 12

Alison Manugian

From: Vardakis, Andrew <andrew.vardakis@woodplc.com>
Sent: Thursday, November 07, 2019 8:56 PM
To: Alison Manugian; David Koonce
Cc: Bill Behling; Kev.doyle@comcast.net; Herzog, Stephen; Gardiner, Emily; Jean E. Christy; Tracy Murphy
Subject: Sunpin Winchendon Solar - Continuance Requests

Hi Alison and David,

Following up on our conversation today, we respectfully request continuances of the next applicable public meetings for the Sunpin Solar Project at 185 Baldwinville Road:

Conservation Commission: Continue from November 14, 2019 to December 12, 2019

Planning Board: Continue from November 19, 2019 to December 17, 2019

As discussed, we are currently completing our responses to Tighe & Bond's peer review and updating applicable documentation. We will distribute via email to all once complete – please let me know if there are any different paper copy requests from previous submittals, and feel free to contact me with any other questions.

Thanks,
Drew

Andrew P. Vardakis, P.E.
Senior Engineer
Environment & Infrastructure Solutions
271 Mill Road, Chelmsford, MA 01824
Direct: + (978) 392 5341
Mobile: + (978) 483 6771
www.woodplc.com

TOWN OF WINCHENDON

Planning Board

Telephone (978) 297-5410

109 Front Street
Winchendon, Massachusetts 01475-1758

Town of Winchendon
Planning Board
PUBLIC HEARING NOTICE

Notice is hereby given that the Winchendon Planning Board will consider the site plan application for commercial subdivision submitted by Graz Engineering, LLC 323 West Lake Road Fitzwilliam, NH 03447 on property located at 20 Robert's Way and 21 Robert's Way Winchendon, MA 01475 identified as Winchendon Assessors Map 9 Parcels 106 & 383 owned by Jamison VanDyke of 1032 NH Rt. 119 in Rindge NH 03461 at their regularly scheduled meeting on **Tuesday, May 21, 2019 at 7:05pm** in the Town Hall Aud., 2nd Fl., 109 Front St., Winchendon, MA 01475. Said property is located in the C1 – Large Scale Commercial zone. A copy of the application is available at the Dept. of P&D, Winchendon Town Hall. Alternative translation and accommodation for persons with disabilities are available by advance request.

BY: Guy C. Corbosiero, Chair
Winchendon Planning Board

May 7 & 14

RECEIVED
APR 30 2019
WINCHENDON TOWN CLERK

TOWN OF WINCHENDON

Planning Board

Telephone (978) 297-3308
Facsimile (978) 297-5411

109 Front Street
Winchendon, Massachusetts 01475-1758

Application for Low Impact Development Permit

Fee paid: Town of Winchendon $_____

****

Pursuant to the provisions of Massachusetts General Law Chapter 40, Section 57, the Town Bylaw, Licenses and Permits of Delinquent Taxpayers, Section 21.1: 'Any Board ... shall deny the application ... for any person, corporation, or business enterprise who has neglected or refused to pay any local taxes, fees, assessments, betterments, or any other municipal charge.' **Certification must be obtained from the Town Treasurer on this form before it is submitted to the Planning Board. The Town Treasurer has up to ten (10) days to complete certification.**

I hereby certify that no debt is owed to the Town by the applicant or the owner of record for a period of time greater than twelve (12) months.

Kelly Ward / Clerk — *Town Treasurer*

4-30-19 — *Date*

****

PB # 2019-042LA **Rec'd by Planning Board** 4-30-19

APPLICANT name Jamison VanDyke

Address 1032 N.H. Rt. 119; Rindge, NH 03461 Tel. # 978-888-8407

LANDOWNER name Jamison VanDyke

Address 1032 N.H. Rt. 119; Rindge, NH 03461 Tel. # 978-888-8407

LOCATION OF LAND Robert's Way - Lot-A

Property is to be used for garages with small office spaces.

Other Permits being applied for (if any) Site Plan Approval & Conservation Approval

Area to be disturbed (square feet) 104,849 S.F.

Deed to the property, as recorded in the Worcester District Registry of Deeds;

Book 58870 Page 27 and is shown on

Assessors Map 9 Parcel 383 Zoning C1

Lot size 139,352 S.F.

The undersigned hereby request a Low Impact Development Permit under the Winchendon Low Impact Development Bylaw and further certify that all information provided in this application and supporting documents is true.

OWNER signature Jamison VanDyke

APPLICANT signature _____

* **NOTE: Supporting Documents are required with this application. See listing on the reverse of this form.**

RECEIVED
7/23/02
APR 30 2019
WINCHENDON TOWN CLERK 11:25

TOWN OF WINCHENDON

Planning Board

Telephone (978) 297-0085
Facsimile (978) 297-1616

109 Front Street
Winchendon, Massachusetts 01475-1758

Application for Site Plan Approval

Fee paid: Town of Winchendon $ _____ Winchendon Courier $_____
****

Pursuant to the provisions of Massachusetts General Law Chapter 40, Section 57, the Town Bylaw, Licenses and Permits of Delinquent Taxpayers, Section 2 L 1: 'Any Board ... shall deny the application ... for any person, corporation, or business enterprise who has neglected or refused to pay any local taxes, fees, assessments, betterments, or any other municipal charge.' **Certification must be obtained from the Town Treasurer on this form before it is submitted to the Planning Board. The Town Treasurer has up to ten (10) days to complete certification.**
I hereby certify that no debt is owed to the Town by the applicant or the owner of record for a period of time greater than twelve (12) months.

Kelly Wood / Clerk — 4-30-19
Town Treasurer — *Date*
****

PB # 2019-0422A **Rec'd by Planning Board** 4-30-19

APPLICANT name Jamison VanDyke

Address 1032 N.H. Rt. 119; Rindge, NH 03461 Tel. # 978-888-8407

LANDOWNER name Jamison VanDyke
Address 1032 N.H. Rt. 119; Rindge, NH 03461 Tel. # 978-888-8407
LOCATION OF LAND Robert's Way (Lot-A)
TITLE OF PLAN Robert's Way Garages - Robert's Way (Lot-A)
Property is to be used for Garages w/ small office spaces

under Article 3.2 of the Schedule of Use Regulations of the Town of Winchendon
Deed to the property, as recorded in the Worcester District Registry of Deeds
Book 58870 Page 27 and is shown on
Assessors Map 9 Parcel 383 Zoning C-1
Lot size 139,352 S.F.

The undersigned hereby request approval of a site plan under Section 5.2 of the Winchendon Zoning Bylaws and further certify that all information provided in this application and site plan is true.
OWNER signature Jamison VanDyke
APPLICANT signature _____

Original of this application must be submitted to the Town Clerk.

RECEIVED
APR 30 2019
WINCHENDON TOWN CLERK

TOWN OF WINCHENDON

Planning Board

Telephone (978) 297-3308
Facsimile (978) 297-5411

109 Front Street
Winchendon, Massachusetts 01475-1758

Application for Low Impact Development Permit

Fee paid: Town of Winchendon $_____

****

Pursuant to the provisions of Massachusetts General Law Chapter 40, Section 57, the Town Bylaw, Licenses and Permits of Delinquent Taxpayers, Section 21.1: 'Any Board ... shall deny the application ... for any person, corporation, or business enterprise who has neglected or refused to pay any local taxes, fees, assessments, betterments, or any other municipal charge.'
Certification must be obtained from the Town Treasurer on this form before it is submitted to the Planning Board.
The Town Treasurer has up to ten (10) days to complete certification.

Note Fee RE delinquent

I hereby certify that no debt is owed to the Town by the applicant or the owner of record for a period of time greater than twelve (12) months.

Kelly Wood Colvin — *Town Treasurer*

4-30-19 — *Date*

****

PB # 2019-0422B **Rec'd by Planning Board** 4-30-19

APPLICANT name Jamison VanDyke

Address 1032 N.H. Rt. 119; Rindge, NH 03461 Tel. # 978-888-8407

LANDOWNER name Jamison VanDyke

Address 1032 N.H. Rt. 119; Rindge, NH 03461 Tel. # 978-888-8407

LOCATION OF LAND Robert's Way - Lot-C

Property is to be used for mini-storage units.

Other Permits being applied for (if any) Site Plan Approval & Conservation Approval

Area to be disturbed (square feet) 91,326 S.F.

Deed to the property, as recorded in the Worcester District Registry of Deeds;

Book 58870 Page 27 and is shown on

Assessors Map 9 Parcel 383 Zoning C1

Lot size 208,341 S.F.

The undersigned hereby request a Low Impact Development Permit under the Winchendon Low Impact Development Bylaw and further certify that all information provided in this application and supporting documents is true.

OWNER signature Jamison VanDyke

APPLICANT signature _____

* **NOTE: Supporting Documents are required with this application. See listing on the reverse of this form.**

RECEIVED
7/23/02
APR 30 2019
WINCHENDON TOWN CLERK

TOWN OF WINCHENDON

Planning Board

Telephone (978) 297-0085
Facsimile (978) 297-1616

109 Front Street
Winchendon, Massachusetts 01475-1758

Application for Site Plan Approval

Fee paid: Town of Winchendon $ _____ Winchendon Courier $_____

****

Pursuant to the provisions of Massachusetts General Law Chapter 40, Section 57, the Town Bylaw, Licenses and Permits of Delinquent Taxpayers, Section 2 L 1: 'Any Board ... shall deny the application ... for any person, corporation, or business enterprise who has neglected or refused to pay any local taxes, fees, assessments, betterments, or any other municipal charge.' **Certification must be obtained from the Town Treasurer on this form before it is submitted to the Planning Board. The Town Treasurer has up to ten (10) days to complete certification.**

I hereby certify that no debt is owed to the Town by the applicant or the owner of record for a period of time greater than twelve (12) months.

Note FEB RE delinquent

Kelly Wood / Clerk — 4-30-19
Town Treasurer — *Date*

****

PB # 2019-0422B **Rec'd by Planning Board** 4-30-19

APPLICANT name Jamison VanDyke

Address 1032 N.H. Rt. 119; Rindge, NH 03461 Tel. # 978-888-8407

LANDOWNER name Jamison VanDyke
Address 1032 N.H. Rt. 119; Rindge, NH 03461 Tel. # 978-888-8407
LOCATION OF LAND Robert's Way (Lot-C)
TITLE OF PLAN Robert's Way Storage Units - Robert's Way (Lot-C)
Property is to be used for mini-storage units.

under Article 3.2 of the Schedule of Use Regulations of the Town of Winchendon

Deed to the property, as recorded in the Worcester District Registry of Deeds
Book 58870 Page 27 and is shown on
Assessors Map 9 Parcel 383 Zoning C-1
Lot size 208,341 S.F.

The undersigned hereby request approval of a site plan under Section 5.2 of the Winchendon Zoning Bylaws and further certify that all information provided in this application and site plan is true.

OWNER signature Jamison VanDyke
APPLICANT signature _____

Original of this application must be submitted to the Town Clerk.

Industrial Subdivision Impact Report

&

Site Soils Report

Applicant's Name: Jamison Van Dyke

Location of Project: Gardner Road, Winchendon, MA (Map-9 Parcels-62, 106)

Description of Project: Highway Commercial Subdivision for Light Industry

Prepared By: GRAZ Engineering, LLC

Date: November 16, 2016

1. Existing Conditions:

a) The project is located on the west side of Rt. 140 in Winchendon, MA about a half mile south of the intersection of Rt. 140 and Rt. 12 (Map-9 Parcels-62, 106)

b) There are no existing buildings or infrastructure on the site.

c) The soil is mostly a loamy sand with several stones and cobbles. For more information about the soil characteristics of the site, see on-site soil evaluations in appendix A.

d) There are registered endangered species on the site, however the NHESP has already been contacted and have approved the project.

2. Proposed Development

a) The permits required for the subdivision are as follows:

- Subdivision Permit
- Special Permit
- Wetlands Order of Conditions
- Site Plan Review
- Building Permit

b) There will be three new commercial lots created that will range from 3.33-4.51 acres averaging out to be about 3.79 acres each.

c)

Category	Acreage:	Percentage:
Site Area:	12.38	100.00%
Wetland and other resource areas on site:	1.57	12.68%
Area dedicated to residential lots:	0	0.00%
Area dedicated to commercial or industrial lots:	12.38	100.00%
Area dedicated to streets:	0.47	3.80%
Area dedicated to drainage and other utilities:	0.37	2.99%
Proposed Impervious Areas:	1.19*	9.61%
Total area of disturbance:	7.64	61.71%
Area reserved for recreation, parks, or other open land:	0	0.00%

* Impervious areas based on all three lots being developed.

3. Transportation

a) The most recent traffic count data (2015) indicates a daily traffic count of 10,915. This consists of 5,422 cars northbound and 5,493 cars southbound. The additional traffic will be minimal due to the subdivision, and the impact on highway capacity

will be negligible. There is a wide paved break-down lane should a truck driver wish to accelerate prior to entering the southbound lane. This ,however, should not be necessary as there is a tremendous sight distance in both directions. Field measurements indicate that there is at least 1,200 feet of sight distance in either direction. This exceeds the recommended sight distance of 475 feet for the 50mph speed limit, and doubles the recommended sight distance of 650 feet for a 60mph estimated travel speed. There is also a negative slope in both directions of the proposed development which would decrease the required stopping sight distances.

b) The proposed roadway will be a 460-foot-long, 22-foot-wide paved road (with 2' shoulders) ending in a cul-de-sac that gives access to the three lots at the end of the road. The proposed right-of-way width will be fifty. All traffic will come from Gardner Road, where the sight distance is much more than needed. The maximum slope of the proposed roadway will be a positive 3.02% towards toward the cul-de-sac.

4. Construction

a) **Phase one** of the construction will consist of clearing the land and road construction, which will occur over the course of six months starting in the summer of 2017.
Phase two will consist of the construction of a steel building on one of the lots and with begin 8 months after the start of the roadway construction. Other lots will be developed, however no plans have been made at this time.

b) The costs of construction during phase one is an estimated $300,000. Phase two will cost an additional $150,000.

c) An estimated 400 cubic yards of fill is needed during construction. It will be brought to the site Monday-Friday between the hours of 7 A.M. – 4 P.M. Fill will come from W.J. Graves Construction in Templeton, MA.

d) The different types of erosion control to be used during construction are silt fences and haybales. During phases one and two, the amount to be cleared is 3.44 acres. If extreme weather is to occur during construction, soil stockpiles should be covered as to not create unnecessary runoff pollution. The site contractor holds the responsibility to inspect any erosion control measures daily and make any repairs if necessary.

e) There are several permanent erosion control measures that will be taken on the site. Each lot will consist of an infiltration trench and a vegetated filter. A retention basin will also be constructed which will consist of two culverts that will imitate natural storm water flow on the site. Approximately 3600 sq ft of wetlands will disrupted be during road construction, however a 3600 sq ft wetland replication area is proposed to replace the disturbed area.

5. Public Utility

a) The water usage for each lot will be less than 400 gallons/day. They will be supplied by wells that will be constructed on the lot.
b) The sewage usage will be approximately 420 gallons/day. A septic system will be installed one each lot, sized sufficiently to the needs of the lot.
c) Water on the existing site drains to a wetland on the site near the edge of Gardner Rd. The retention basin (and the culverts with it), along with proposed finished grade will maintain existing flow direction after the construction is finished. Vegetation will be planted to prevent erosion pollution into the existing wetland as well.
d) Solid waste will be stored on site in a dumpster and will be removed from site through Waste Management.

6. Conservation and Recreation

a) There is a wetland along Gardner Rd. that leads to a large bog heading south. Vegetation will be cleared and a road will be constructed through a small area of this wetland, and a culvert will be installed in order to maintain water flow and allow aquatic organism passage in the wetland.
b) The hillside drains runoff into the wetland that leads to a swamp/bog to the south of the site.
c) The subsurface conditions do not limit any part of the proposed project. Two percolation tests were performed and four deep holes were inspected on each lot in order to design septic systems. The soil absorption system will be large in some cases due to a slow percolation rate, however it will not restrict the ability to construct them.
d) Water quality will not be affected on-site or downstream because all contaminated water will be treated prior to entering any waterway.
e) NHESP has approved the project with respect to the endangered species in the area. Also, the site will consist of an open-bottom box culvert in which will allow wildlife species to pass under the roadway unaffected.
f) The proposed industrial development is not reliant on the existing soils, nor will it affect the soils in any negative manner.
g) There is no proposed recreational areas or open spaces.
h) (Not Applicable)

7. Aesthetics

a) The proposed structures will be steel industrial buildings, however there is no architectural drawings at this time. There are no adjacent buildings present, and therefore architectural compatibility is not an issue.
b) Adequate lighting shall be provided to ensure safety and security for all three lots.
c) Landscaping shall consist of grass in all drainage areas, and more detail will be given in future site plans.
d) The site will not be visible from Gardner Road, and will be seen only by those intending to go to one of the three lots at the end of the proposed street.

8. Neighborhood and Community

a) There will be no impact on schools in the vicinity, whereas the subdivision is not residential in nature.
b) There will be little to no impact on the ability of the police to protect the development. The proposed roadway meets all of the standards for emergency vehicles to reach the proposed lots.
c) The work that will be conducted on the premises is low-risk in terms of fire protection needs. Adequate resources for on-site firefighting will be installed/provided in the buildings (e.g. fire extinguishers). Lastly, the proposed roadway meets all of the standards for emergency vehicles to reach the proposed lots.
d) There are no adjacent lands in use, however the Board of Appeals has granted a Special Permit to allow the commercial zone to be extended to the rear of the lot.
e) The project conforms with the master plan to construct a highway commercial zone along Gardner Road. The Board of Appeals has approved a zoning line change to allow the highway commercial zone to extend to the rear of the proposed property.

9. Social-Economic

a) Not Applicable.
b) Not Applicable.
c) A construction crew of approximately 6 people will be working on-site during construction. During operation, approximately 8-10 people will be working on-site in the early morning, and 3-4 will remain on-site throughout the day. The remaining employees will return to the site at the end of the work day. These estimates are for one lot only since no definite plans have been made for the other lots at this time.

10. Municipal Benefit/Cost

The only significant cost to the town of Winchendon in regard to the subdivision would be the need for roadway maintenance such as plowing, sanding, and repaving in the future. At this time, the applicant is planning on keeping the road private. The subdivision will generate benefits to the town as well such as increased property values resulting in higher property tax and new jobs in the area. In the table below, costs are estimated and are on a per year basis. Repaving cost is based on a 26-year lifespan of the proposed pavement. Lastly, the property taxes are reliant on all three lots being developed. Overall, the subdivision would result in a net benefit for the municipal of Winchendon.

Item	Qty	Cost ($)	Total ($)
Snowplowing	10	100	-1000
Salt/Sanding	10	300	-3000
Repaving	1	3150	-3150
Property Tax	3	4094	12282
		Net Total	$5132

(NOTE- The proposed road, Robert's Way will be private)

Gardner Rd. Traffic Data

Location ID	252206	**MPO ID**	
Type	SPOT	**HPMS ID**	
On NHS		**On HPMS**	No
LRS ID		**LRS Loc Pt.**	
SF Group	U3	**Route Type**	
AF Group	U3	**Route**	
GF Group	U3		
Class Dist Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(3) Other Principal Arterial	**Milepost**	
Located On	GARDNER ROAD		
Loc On Alias			
SOUTH OF	ROUTE 12		

PR	MP	PT

More Detail

STATION DATA

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2015	10,915	1,018	9	60			
	2003	11,500						
	1997	10,400						
	1994	10,000						
	1963	2,022						

1-5 of 6

VOLUME COUNT

	Date	Int	Total
	Mon 7/20/2015	15	12,521
	Mon 9/8/1997	60	11,573

VOLUME TREND

Year	Annual Growth
2015	0%
2003	2%
1997	1%
1994	5%
1963	7%

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,450 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Map Unit Legend

Worcester County, Massachusetts, Northwestern Part (MA614)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
59A	Bucksport and Wonsqueak mucks, 0 to 3 percent slopes	4.5	15.3%
282B	Colton gravelly loamy sand, 3 to 8 percent slopes	1.6	5.3%
908C	Becket-Skerry association, 3 to 15 percent slopes, extremely stony	13.9	47.7%
924C	Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony	9.2	31.7%
Totals for Area of Interest		**29.1**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Worcester County, Massachusetts, Northwestern Part

59A—Bucksport and Wonsqueak mucks, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: w48k
Elevation: 0 to 2,800 feet
Mean annual precipitation: 32 to 55 inches
Mean annual air temperature: 39 to 50 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Bucksport and similar soils: 45 percent
Wonsqueak and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bucksport

Setting

Landform: Bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly-decomposed herbaceous organic material

Typical profile

Oa - 0 to 18 inches: muck
Oa - 18 to 52 inches: muck
Oe - 52 to 65 inches: muck

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (2.90 to 6.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 20.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Description of Wonsqueak

Setting

Landform: Bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip

Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly-decomposed herbaceous organic material over friable loamy basal till

Typical profile

Oa - 0 to 15 inches: muck
Oa - 15 to 36 inches: muck
2C - 36 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.90 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very high (about 13.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Peacham

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Pillsbury

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Searsport

Percent of map unit: 5 percent
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

282B—Colton gravelly loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9bxn
Elevation: 10 to 2,200 feet
Mean annual precipitation: 39 to 55 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Colton

Setting

Landform: Outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loose sandy and gravelly glaciofluvial deposits derived from granite

Typical profile

Ap - 0 to 10 inches: gravelly loamy sand
Bh - 10 to 15 inches: gravelly loamy sand
Bs - 15 to 20 inches: very gravelly loamy sand
BC - 20 to 24 inches: gravelly sand
C - 24 to 33 inches: stratified extremely gravelly coarse sand to extremely gravelly sand
C - 33 to 65 inches: stratified extremely gravelly coarse sand to extremely gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Croghan

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Allagash

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Adams

Percent of map unit: 5 percent
Landform: Outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

908C—Becket-Skerry association, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 9c0l
Elevation: 0 to 3,500 feet
Mean annual precipitation: 39 to 55 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Becket and similar soils: 40 percent
Skerry and similar soils: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Becket

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Friable coarse-loamy eolian deposits over dense sandy lodgment till derived from granite and gneiss

Typical profile

A - 0 to 4 inches: fine sandy loam
Bs - 4 to 13 inches: fine sandy loam
Bs - 13 to 18 inches: sandy loam
BC - 18 to 25 inches: gravelly sandy loam
Cd - 25 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 18 to 35 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Skerry

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Friable coarse-loamy eolian deposits over dense sandy lodgment till derived from igneous and metamorphic rock

Typical profile

A - 0 to 2 inches: fine sandy loam
Bs - 2 to 7 inches: fine sandy loam

Bs - 7 to 15 inches: gravelly fine sandy loam
BC - 15 to 22 inches: gravelly sandy loam
Cd - 22 to 30 inches: gravelly loamy sand
Cd - 30 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Berkshire

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Other soils

Percent of map unit: 6 percent

Peru

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Monadnock

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Peacham

Percent of map unit: 2 percent
Landform: Depressions

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Pillsbury

Percent of map unit: 2 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

924C—Tunbridge-Lyman-Berkshire association, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 9c0t
Elevation: 0 to 3,500 feet
Mean annual precipitation: 39 to 55 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Tunbridge and similar soils: 25 percent
Lyman and similar soils: 20 percent
Berkshire and similar soils: 15 percent
Minor components: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tunbridge

Setting

Landform: Ledges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Moderately deep, friable coarse-loamy basal till derived from schist over schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 2 inches: fine sandy loam
E - 2 to 3 inches: fine sandy loam
Bs - 3 to 25 inches: gravelly sandy loam

R - 25 to 26 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 24 to 27 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Lyman

Setting

Landform: Ledges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Shallow, friable loamy basal till derived from schist over schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
E - 4 to 5 inches: fine sandy loam
Bs - 5 to 16 inches: fine sandy loam
R - 16 to 18 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 14 to 22 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Berkshire

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Friable loamy eolian deposits over firm coarse-loamy basal till derived from mica schist

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material
A - 1 to 3 inches: fine sandy loam
Bs - 3 to 8 inches: fine sandy loam
Bs - 8 to 21 inches: gravelly fine sandy loam
BC - 21 to 27 inches: gravelly sandy loam
C - 27 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (2.90 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Becket

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Skerry

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Monadnock

Percent of map unit: 8 percent
Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Other soils

Percent of map unit: 5 percent

Pillsbury

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Peacham

Percent of map unit: 2 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Marlow

Percent of map unit: 2 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-A1	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Mid-Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	275'+/-
Drinking Water Well:	N/A	**Property Line:**	45'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-8"	Fine Sandy Loam	20% Boulder	Massive	Friable	10YR 2/2	-
E	8"-16"	Fine Sandy Loam	20% Boulder	Massive	Friable	7.5YR 6/1	-
B	16"-30"	Silty Loam	10% Boulder	Massive	Friable	2.5Y 6/4	10 YR 5/8
C	30"-92"	Loamy Sand	8% Grvl, 15% Stones	Massive	Friable	10YR 5/6	-

Groundwater:

ESHWT: 25” Seeps: 72” Standing Water: 80”

Bedrock Depth: N/A Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-A3 Depth: 40” **Rate:** 15 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-A2	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Mid-Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	300'+/-
Drinking Water Well:	N/A	**Property Line:**	14'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-8"	Fine Sandy Loam	20% Boulder	Massive	Friable	10YR 2/2	-
E	8"-19"	Fine Sandy Loam	20% Boulder	Massive	Friable	7.5YR 6/1	-
B	19"-29"	Loam	10% Boulder	Massive	Friable	7.5YR 4/6	10 YR 5/8
C	29"-90"	Sandy Loam	8% Gravel, 15% Stones, 10% Cobbles	Massive	Friable	2.5Y 6/4	-

Groundwater:

ESHWT: 26” Seeps: 79” Standing Water: N/A

Bedrock Depth: N/A Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-A1 Depth: 41” **Rate:** Fail

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-A3	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Mid-Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	270'+/-
Drinking Water Well:	N/A	**Property Line:**	85'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-7"	Fine Sandy Loam	20% Boulder	Massive	Friable	10YR 2/2	-
E	7"-19"	Fine Sandy Loam	20% Boulder	Massive	Friable	7.5YR 6/1	-
B	19"-34"	Silty Loam	10% Boulder	Massive	Friable	2.5Y 6/4	10 YR 5/8
C	34"-94"	Sandy Loam w/ Fine Sand	8% Grvl, 15% Stones	Massive	Friable	10YR 5/6	-

Groundwater:

ESHWT: 28” Seeps: 80” Standing Water: 83”

Bedrock Depth: N/A Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-A2 Depth: 55” **Rate:** 32 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-A4	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Mid-Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	250'+/-
Drinking Water Well:	N/A	**Property Line:**	90'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-12"	Fine Sandy Loam	20% Boulder	Massive	Friable	10YR 2/2	-
E	12"-20"	Fine Sandy Loam	20% Boulder	Massive	Friable	7.5YR 6/1	-
B	20"-32"	Silty Loam	10% Boulder	Massive	Friable	2.5Y 6/4	10 YR 5/8
C	32"-90"	Sandy Loam w/ Fine Sand	8% Grvl, 15% Stones	Massive	Friable	10YR 5/6	-

Groundwater:

ESHWT: 28” Seeps: 80” Standing Water: 83”

Bedrock Depth: N/A Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-A2 Depth: 55” **Rate:** 32 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-A5	**Date:**	24-Oct-16	**Weather:**	Sunny
Position on Landscape:	Mid-Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	290'+/-
Drinking Water Well:	N/A	**Property Line:**	55'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-7"	Fine Sandy Loam	-	Massive	Friable	10YR 2/2	-
E	7"-19"	Fine Sandy Loam	-	Massive	Friable	7.5YR 6/1	-
B	19"-29"	Fine Sandy Loam	10% Cobbles, 8% Gravel	Massive	Friable	10YR 6/4	10 YR 5/8
C	29"-82"	Loamy Sand	8% Gravel, 10% Cobbles, 15% Boulders	Massive	Friable	10YR 5/6	-

Groundwater:

ESHWT: 26” Seeps: 82” Standing Water: N/A

Bedrock Depth: N/A Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-A3 Depth: 40” **Rate:** 15 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-B1	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Mid-Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	275'+/-
Drinking Water Well:	N/A	**Property Line:**	260'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-6"	Fine Sandy Loam	-	Massive	Friable	10YR 2/2	-
Bw	6"-25"	Fine Sandy Loam	Some Cobbles & Boulders	Massive	Friable	10YR 5/6	-
C	25"-92"	Sandy Loam	5% Gravel, 8% Stones	Prismatic	Firm	2.5Y 6/4	10 YR 5/8

Groundwater:

ESHWT: 28”

Seeps: N/A

Standing Water: N/A

Bedrock Depth: N/A

Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-B1

Depth: 51”

Rate: 18 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-B2	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Mid-Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	290'+/-
Drinking Water Well:	N/A	**Property Line:**	250'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-5"	Fine Sandy Loam	-	Massive	Friable	10YR 2/2	-
E	5"-11"	Fine Sandy Loam	-	Massive	Friable	10YR 5/1	-
Bs	11"-30"	Fine Sandy Loam	-	Prismatic	Friable	7.5YR 5/6	10 YR 5/8
C	30"-92"	Sandy Loam	-	Massive	Friable	2.5Y 6/4	-

Groundwater:

ESHWT: 27”

Seeps: N/A

Standing Water: N/A

Bedrock Depth: N/A

Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-B1

Depth: 51”

Rate: 18 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-B3	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Mid-Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	280'+/-
Drinking Water Well:	N/A	**Property Line:**	240'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-5"	Fine Sandy Loam	-	Massive	Friable	10YR 2/2	-
Bw	5"-32"	Sandy Loam	-	Massive	Friable	7.5YR 5/6	-
C	32"-91"	Sandy Loam	-	Massive	Friable	2.5Y 6/4	10 YR 5/8

Groundwater:

ESHWT: 26” Seeps: N/A Standing Water: N/A

Bedrock Depth: N/A Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-B2 Depth: 58” **Rate:** 19 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-B4	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Mid-Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	270'+/-
Drinking Water Well:	N/A	**Property Line:**	240'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-4"	Fine Sandy Loam	-	Massive	Friable	10YR 2/2	-
E	4"-20"	Fine Sandy Loam	-	Massive	Friable	10YR 5/1	-
B	20"-30"	Fine Sandy Loam	-	Prismatic	Friable	7.5YR 5/6	10 YR 5/8
C	30"-80"	Sandy Loam	-	Massive	Friable	2.5Y 6/4	-

Groundwater:

ESHWT: 26”

Seeps: N/A

Standing Water: N/A

Bedrock Depth: N/A

Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-B2

Depth: 58”

Rate: 19 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-C1	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Bottom Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	120'+/-
Drinking Water Well:	N/A	**Property Line:**	90'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-5"	Fine Sandy Loam	-	Massive	Friable	10YR 2/2	-
Bw	5"-23"	Fine Sandy Loam	-	Massive	Friable	10YR 5/6	-
C	23"-85"	Sandy Loam	-	Massive	Friable	2.5Y 6/2	10 YR 5/8

Groundwater:

ESHWT: 20” Seeps: 83” Standing Water: 83”

Bedrock Depth: N/A Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-C1 Depth: 55” **Rate:** 19 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-C2	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Bottom Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	105'+/-
Drinking Water Well:	N/A	**Property Line:**	105'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-6"	Fine Sandy Loam	-	Massive	Friable	10YR 2/2	-
Bw	6"-23"	Fine Sandy Loam	-	Massive	Friable	10YR 4/6	-
C	23"-85"	Sandy Loam	-	Massive	Friable	2.5Y 5/2	10 YR 5/8

Groundwater:

ESHWT: 15” Seeps: 62” Standing Water: 72”

Bedrock Depth: N/A Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-C1 Depth: 55” **Rate:** 19 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-C3	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Bottom Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	120'+/-
Drinking Water Well:	N/A	**Property Line:**	145'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-9"	Fine Sandy Loam	-	Massive	Friable	10YR 2/2	-
Bw	9"-25"	Sandy Loam	-	Massive	Friable	10YR 4/6	-
C	25"-85"	Sandy Loam	-	Massive	Friable	2.5Y 6/3	10 YR 5/8

Groundwater:

ESHWT: 16” Seeps: 70” Standing Water: 74”

Bedrock Depth: N/A Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-C2 Depth: 56” **Rate:** 44 MPI

On-Site Soil Evaluation

Soil Evaluator:	Paul F. Grasewicz, P.E.	**Health Agent:**	Jim Abare & Steve Calichman	**Town:**	Winchendon, MA
Client:	Jamison Van Dyke			**Job/Location:**	Gardner Rd.
Deep Hole No.:	TP-C4	**Date:**	17-Oct-16	**Weather:**	Cloudy
Position on Landscape:	Bottom Slope	**Landform:**	Drumoidal	**Surface Stone:**	Some
Vegetation:	Mixed Woods	**Slope:**	5%	**Land Use:**	Woods
		Setbacks			
Surface Water Body:	N/A	**Drainage:**	N/A	**Wetland:**	130'+/-
Drinking Water Well:	N/A	**Property Line:**	130'+/-	**Other:**	

Horizon	Depth	USDA Texture	Modifier & %	Structure	Consistence	Matrix Color	Redox
A	0"-7"	Fine Sandy Loam	-	Massive	Friable	10YR 2/2	-
B	7"-20"	Fine Sandy Loam	-	Massive	Friable	10YR 4/6	-
C	20"-84"	Sandy Loam	20% Stones, 10% Gravel	Massive	Friable	2.5Y 6/3	10 YR 5/6

Groundwater:

ESHWT: 17” Seeps: 68” Standing Water: 73”

Bedrock Depth: N/A Geologic Parent Soil: Ablation Till

Perc Tests:

Name: P-C2 Depth: 56” **Rate:** 44 MPI

STORMWATER MANAGEMENT INSPECTION & MAINTENANCE MANUAL
For Jamison VanDyke
Robert's Way Industrial Subdivision Gardner Rd; Winchendon, MA

This following manual outlines the inspection and maintenance requirements associated with stormwater management elements (best management practices) existing and/or proposed at the site. The owner, Jamison VanDyke shall provide for on-going inspections and maintenance (I&M) and long term pollution prevention as described herein. The I&M activities shall be initiated immediately following the construction/implementation of the practice and/or the completion of terrain alteration activities that direct stormwater to a particular practice. If ownership of the property is transferred, the new owner(s) shall be responsible for the I&M. Budget maintenance costs are estimated at $3,000 per year.

The following site stormwater management practices are enumerated below. Inspection and maintenance sheets are provided for type of BMP. The "Site-specific BMP's checklist should be completed at the required intervals described in the 'Maintenance' sections.

Refer to the 'BMP I.D. Plan' for the location of the site BMP's.

A- Infiltration Trenches & Grass Filter Strips

B- Grassed Swales

C- Sediment Forebays

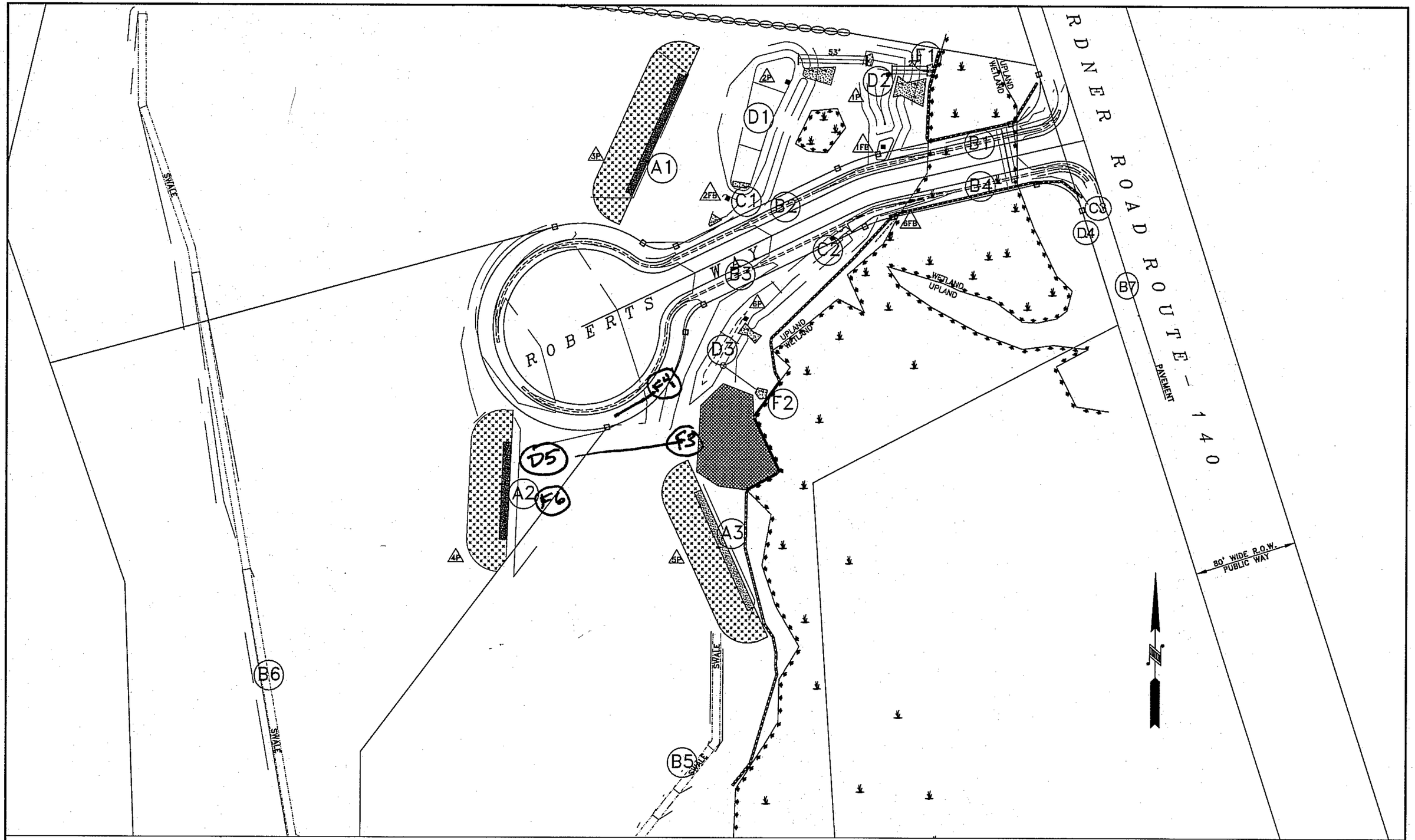
D- Detention Basins

E- Drywells/Chambers for Roof Runoff (if utilized)

F- Drain Outfalls

G- Erosion Controls

Note that illicit discharges do not presently exist on the site and shall be prohibited during and following construction. There shall be no surface discharge or illegal discharge of wastewater or stormwater contaminated by process waste, raw materials, toxic pollutants, hazardous materials, oil or grease. No fertilizer may be used on-site.


ROBERTS WAY
RDNER ROAD ROUTE - 140
PAVEMENT
80' WIDE R.O.W.
PUBLIC WAY
SWALE
SWALE
SWALE
UPLAND
WETLAND
WETLAND
UPLAND
UPLAND
WETLAND
53'
A1
A2
A3
B1
B2
B3
B4
B5
B6
B7
C1
C2
C3
D1
D2
D3
D4
D5
F1
F2
F3
F4
F5
F6
1P
1FB
2P
2FB
3P
3FB
4P
5P
6P
6FB

BMP ID PLAN

A- Infiltration Trenches & Grass Filter Strips

The next sheet specifies the inspection and maintenance requirements

Enumerate Area Numbers Below (A1-3)

Date	Inspector	Notes
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Protect the area to be used for the filter strip by using upstream sediment traps.

Use as much of the existing topsoil on the site as possible to enhance plant growth.

Maintenance

Regular maintenance is critical for filter strips to be effective and to ensure that flow does not short-circuit the system. Conduct semi-annual inspections during the first year (and annually thereafter). Inspect the level spreader for sediment buildup and the vegetation for signs of erosion, bare spots, and overall health. Regular, frequent mowing of the grass is required. Remove sediment from the toe of slope or level spreader, and reseed bare spots as necessary. Periodically, remove sediment that accumulates near the top of the strip to maintain the appropriate slope and prevent formation of a "berm" that could impede the distribution of runoff as sheet flow.

When the filter strip is located in the buffer zone to a wetland resource area, the operation and maintenance plan must include strict measures to ensure that maintenance operations do not alter the wetland resource areas. Please note, filter strips are restricted to the outer 50 feet of the buffer zone.

Cold Climate Considerations

In cold climates such as Massachusetts, the depth of soil media that serves as the planting bed must extend below the frost line to minimize the effects of freezing. Avoid using peat and compost media, which retain water and freeze during the winter, and become impermeable and ineffective.

References:

Center for Watershed Protection, Stormwater Management Fact Sheet: Grassed Filter Strip, http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool6_Stormwater_Practices/Filtering%20Practice/Grassed%20Filter%20Strip.htm

Claytor, R.A. and T.R. Schueler. 1996. Design of Stormwater Filtering Systems. Center for Watershed Protection. Silver Spring, Maryland.

Connecticut Department of Environmental Protection. 2004. Connecticut Stormwater Quality Manual.

International Stormwater BMP Database, Biofilter – Grass Strip, http://www.bmpdatabase.org

Knox County, Stormwater Management Manual, Volume 2, Section 4.3.9, Filter Strip, Pp. 4-155 to 4-164, http://knoxcounty.org/stormwater/pdfs/vol2/4-3-9%20Filter%20Strip.pdf

Knoxville, City of, 2003, Knoxville BMP Manual Stormwater Treatment, Filter Strips and Swales, Practice No. ST – 05, http://www.ci.knoxville.tn.us/engineering/bmp_manual/ST-05.pdf

Maine Department of Environmental Protection. 2006, Maine Stormwater Best Management Practices Manual, Chapter 5, Pp. 5-1 to 5-18, http://www.maine.gov/dep/blwq//docstand/stormwater/stormwaterbmps/vol3/chapter5.pdf

Maryland Department of the Environment, 2000, Maryland Stormwater Design Manual, Volume I, Chapter 2, Unified Sizing Criteria, P. 2.39, http://www.mde.state.md.us/assets/document/chapter2.pdf

Massachusetts Highway Department. 2004. Storm Water Handbook for Highways and Bridges.

Metropolitan Council. 2001. Minnesota Urban Small Sites BMP Manual: Stormwater Best Management Practices for Cold Climates. Prepared by Barr Engineering Company. St. Paul, Minnesota.

New Jersey Department of Environmental Protection, 2004, Best Management Practice Manual, Chapter 9.10, Standard for Vegetated Filter Strip, Pp. 9.10-1 to 9.11-10, http://www.njstormwater.org/tier_A/pdf/NJ_SWBMP_9.10.pdf

New York State Department of Environmental Conservation (NYDEC). 2001. New York State Stormwater Management Design Manual. Prepared by Center for Watershed Protection. Albany, New York.

United States Environmental Protection Agency (EPA). 1999. Preliminary Data Summary of Urban Storm Water Best Management Practices. EPA 821-R99-012.

Include vegetated buffers (20-foot minimum) around surface trenches. Place permeable filter fabric 6 to 12 inches below the surface of the trench, along the sides, and at the bottom of the trench.

Use filter fabric, especially at the surface to prevent clogging; if failure does occur, it can be alleviated without reconstructing the infiltration trench. Another option is to place twelve inches of sand at the bottom of the trench.

Install an observation well at the center of the trench to monitor how quickly runoff is clearing the system. Use a well-anchored, vertical perforated PVC pipe with a lockable above-ground cap.

The surface of the trench visible from the surface may either be stone or grassed. Stone is easier to rake out when clogged. If it is vegetated with grasses, use fabric above the stone to keep the soil that serves as the planting medium from clogging the stone. When trenches are designed to accept sheet flow, take into account the grass surface when determining how much of the runoff will exfiltrate into the trench.

A perforated pipe underdrain is sometimes used as part of the design. The purpose of the underdrain is to facilitate exfiltration into the parent soil. Except for underdrains placed between different trench cells, MassDEP does not allow underdrains placed near the bottom of the trench. Placement of an underdrain near the bottom of the trench reduces the amount of treatment and exfiltration, because more water is conveyed through the underdrain to the outlet point when it rains than exfiltrates into the surrounding soils.

Construction

Table IT.2 presents the minimum construction criteria for infiltration trenches. Take precautions before and during construction to minimize the risk of premature failure of the infiltration trench. First, prevent heavy equipment from operating at the locations where infiltration trenches are planned. Heavy equipment will compact soil and adversely affect the performance of the trench. Isolate the areas where the trenches will be located by roping them off and flagging them.

Construct infiltration trenches only after the site has been stabilized. Never use trenches as temporary sediment traps during construction. Use diversion berms or staked and lined hay bales around the perimeter of the trenches during their construction. Excavate and build the trench manually or with light earth-moving equipment. Deposit all excavated material from the trench downgradient to prevent re-deposition during runoff events.

Line the sides and bottom of the trench with permeable geotextile fabric. Twelve inches of sand (clean, fine aggregate) may be substituted or used in addition on the bottom. Place one to three inches of clean, washed stone in the lined trench and lightly compact the stone with plate compactors, to within approximately one foot of the surface. Place fabric filter over the top, with at least a 12-inch overlap on both sides. An underground trench may be filled with topsoil and planted. A surface trench may be filled with additional aggregate stone.

Divert drainage away from the infiltration trench until the contributing drainage area is fully stabilized, including full establishment of any vegetation.

Table IT.2 - Construction Criteria for Infiltration Trenches
1. Infiltration trenches should never serve as temporary sediment traps for construction.
2. Before the development site is graded, the area of the infiltration trench should be roped off and flagged to prevent heavy equipment from compacting the underlying soils.
3. Infiltration trenches should not be constructed until the entire contributing drainage area has been stabilized. Diversion berms should be placed around the perimeter or the infiltration trench during all phases of construction. Sediment and erosion controls should be used to keep runoff and sediment away from the trench area.
4. During and after excavation, all excavated materials should be placed downstream, away from the infiltration trench, to prevent redeposition of these materials during runoff events. These materials should be properly handled and disposed of during and after construction.
Light earth-moving equipment should be used to excavate the infiltration trench. Use of heavy equipment causes compaction of the soils in the trench floor, resulting in reduced infiltration capacity.

Maintenance

Because infiltration trenches are prone to failure due to clogging, it is imperative that they be aggressively maintained on a regular schedule. Using pretreatment BMPs will significantly reduce the maintenance requirements for the trench itself. Removing accumulated sediment from a deep sump catch basin or a vegetated filter strip is considerably less difficult and less costly than rehabilitating a trench. Eventually, the infiltration trench will have to be rehabilitated, but regular maintenance will prolong its operational life and delay the day when rehabilitation is needed. With appropriate design and aggressive maintenance, rehabilitation can be delayed for a decade or more. Perform preventive maintenance at least twice a year.

Inspect and clean pretreatment BMPs every six months and after every major storm event (2 year return frequency). Check inlet and outlet pipes to determine if they are clogged. Remove accumulated sediment, trash, debris, leaves and grass clippings from mowing. Remove tree seedlings, before they become firmly established.

Inspect the infiltration trench after the first several rainfall events, after all major storms, and on regularly scheduled dates every six months. If the top of the trench is grassed, it must be mowed on a seasonal basis. Grass height must be maintained to be no more than four inches. Routinely remove grass clippings leaves and accumulated sediment from the surface of the trench.

Inspect the trench 24 hours or several days after a rain event, to look for ponded water. If there is ponded water at the surface of the trench, it is likely that the trench surface is clogged. To address surface clogging, remove and replace the topsoil or first layer of stone aggregate and the filter fabric. If water is ponded inside the trench, it may indicate that the bottom of the trench has failed. To rehabilitate a failed trench, all accumulated sediment must be stripped from the bottom, the bottom of the trench must be scarified and tilled to induce infiltration, and all of the stone aggregate and filter fabric or media must be removed and replaced.

REFERENCES:

California Stormwater Quality Association, 2003, California Stormwater BMP Handbook 1 of 7, New Development and Redevelopment, Infiltration Trench, Practice TC-10, http://www.cabmphandbooks.com/Documents/Development/TC-10.pdf

Center for Watershed Protection, Stormwater Management Fact Sheet, Infiltration Trench, http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool6_Stormwater_Practices/Infiltration%20Practice/Infiltration%20Trench.htm

Center for Watershed Protection, Stormwater Design Example, Infiltration Trench, http://www.stormwatercenter.net/Manual_Builder/infiltration_design_example.htm

Duchene, M., McBean, E.A., Thomson, N.R., 1994, Modeling of Infiltration from Trenches for Storm-Water Control, Journal of Water Resources Planning and Management, Vol. 120, No. 3, pp. 276-293

Dewberry Companies, 2002, Land Development Handbook, McGraw Hill, New York, pp. 521, 523.

Georgia Stormwater Management Manual, Section 3.2.5, Infiltration Trench, Pp. 3.2-75 to 3.2-88, http://www.georgiastormwater.com/vol2/3-2-5.pdf

Guo, James C.Y., 2001, Design of Infiltration Basins for Stormwater, in Mays, Larry W. (ed.), 2001, Stormwater Collection Systems Design Handbook, McGraw-Hill, New York, pp. 9.1 to 9.35

Livingston, E.H. 2000. Lessons Learned about Successfully Using Infiltration Practices. Pp 81-96 in National Conference on Tools for Urban Water Resource Management and Protection Proceedings of Conference held February 7-10, 2000 in Chicago, IL. EPA/625/R-00/001 Metropolitan Council, 2001, Minnesota Urban Small Sites BMP Manual, Infiltration Trenches, Pp. 3-169 to 3-180 http://www.metrocouncil.org/Environment/Watershed/BMP/CH3_STInfilTrenches.pdf

U.S. EPA, 1999, Stormwater Technology Fact Sheet, Infiltration Trench, EPA 832-F-99-019, http://www.epa.gov/owm/mtb/infltrenc.pdf

B- Grassed Swales

The next sheet specifies the inspection and maintenance requirements

Enumerate Area Numbers Below (B1-7)

Date	Inspector	Notes
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low velocities can act as sediment traps, add extra capacity to address sediment accumulation without reducing design capacity. Add an extra 0.3 to 0.5 feet of freeboard depth, if sediment accumulation is expected. Use side slopes of 3:1 or flatter to prevent side slope erosion. Make the longitudinal slope of the channel as flat as possible and not greater than 5%.

Install check dams in drainage channels when necessary to achieve velocities of 5 feet per second or less. See check dam section of this Handbook <<LINK>>. Do not use earthen check dams because they tend to erode on the downstream side, and it is difficult to establish and maintain grass on the dams. The maximum ponding time behind the check dam should not exceed 24 hours. Use outlet protection at discharge points from a drainage channel to prevent scour at the outlet.

The design for the drainage channel must include access for maintenance. When located along a highway, provide a breakdown lane with a width of 15 feet. When located along a street, off-street parking can be doubled up as the access, provided signs are posted indicating no parking is allowed during maintenance periods. When locating drainage channels adjacent to pervious surfaces, include a 15-foot wide grass strip to provide access for maintenance trucks.

Construction

Use temporary erosion and sediment controls during construction. Soil amendments, such as using aged compost that contains no biosolids, may be needed to encourage vegetation growth. Select a vegetation mix that suits the characteristics of the site. Seeding will require mulching with appropriate materials, such as mulch matting, straw, wood chips, other natural blankets, or synthetic blankets. Anchor blanket immediately after seeding. Provide new seedlings with adequate water until they are well established. Refer to the “Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers, and Municipal Officials” <<LINK>> on sediment/erosion control for information regarding seeding, mulching, and use of blankets.

Maintenance

The maintenance and inspection schedule should take into consideration the effectiveness of the drainage channel. Inspect drainage channels the first few months after construction to make sure that there is no rilling or gullying, and that vegetation in the channels is adequate. Thereafter, inspect the channel twice a year for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding, and sediment accumulation.

Regular maintenance tasks include mowing, fertilizing, liming, watering, pruning, weeding, and pest control. Mow channels at least once per year. Do not cut the grass shorter than three to four inches. Keep grass height under 6 inches to maintain the design depth necessary to serve as a conveyance. Do not mow excessively, because it may increase the design flow velocity.

Remove sediment and debris manually at least once per year. Re-seed periodically to maintain the dense growth of grass vegetation. Take care to protect drainage channels from snow removal procedures and off-street parking. When drainage channels are located on private residential property, the operation and maintenance plan must clearly specify the private property owner who is responsible for carrying out the required maintenance. If the operation and maintenance plan calls for maintenance of drainage channels on private properties to be performed by a public entity or an association (e.g. homeowners association), maintenance easements must be obtained.

C- Sediment Forebays

The next sheet specifies the inspection and maintenance requirements

Enumerate Area Numbers Below (C1-3)

Date	Inspector	Notes
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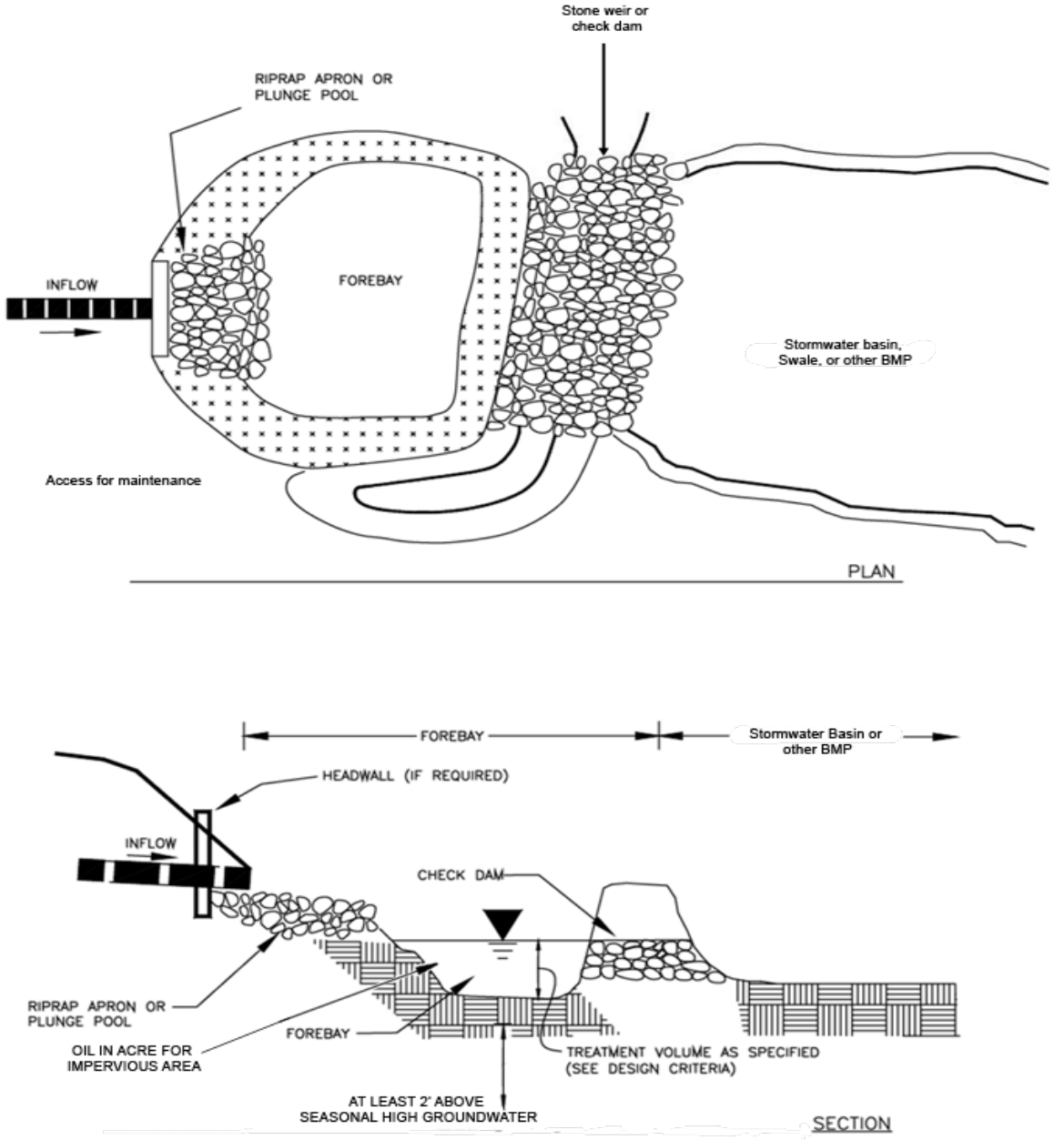
Maintenance

Sediments and associated pollutants are removed only when sediment forebays are actually cleaned out, so regular maintenance is essential. Frequently removing accumulated sediments will make it less likely that sediments will be resuspended. At a minimum, inspect sediment forebays monthly and clean them out at least four times per year. Stabilize the floor and sidewalls of the sediment forebay before making it operational, otherwise the practice will discharge excess amounts of suspended sediments. When mowing grasses, keep the grass height no greater than 6 inches. Set mower blades no lower than 3 to 4 inches. Check for signs of rilling and gullying and repair as needed. After removing the sediment, replace any vegetation damaged during the clean-out by either reseeding or re-sodding. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure that no scour occurs in the forebay, while the seeds germinate and develop roots.



CONSTRUCTION PERIOD SEDIMENT FOREBAYS SIZED 0.5"/ACRE PER ENTIRE CONTRIBUTING DRAINAGE AREA

adapted from the Vermont Stormwater Handbook

D- Detention Basins

The next sheet specifies the inspection and maintenance requirements

Enumerate Area Numbers Below (D1-4)

Date	Inspector	Notes
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the soils beneath the basin floor and side slopes and reduces infiltration capacity. Because some compaction of soils is inevitable during construction, add the required soil amendments and deeply till the basin floor with a rotary tiller or a disc harrow to a depth of 12 inches to restore infiltration rates after final grading.

Use proper erosion/sediment control during construction. Immediately following basin construction, stabilize the floor and side slopes of the basin with a dense turf of water-tolerant grass. Use low maintenance, rapidly germinating grasses, such as fescues. Do not sod the basin floor or side slopes. After the basin is completed, keep the basin roped or fenced off while construction proceeds on other parts of the site. Never direct construction period drainage to the infiltration basin. After construction is completed, do not direct runoff into the basin until the bottom and side slopes are fully stabilized.

Maintenance

Infiltration basins are prone to clogging and failure, so it is imperative to develop and implement aggressive maintenance plans and schedules. Installing the required pretreatment BMPs will significantly reduce maintenance requirements for the basin.

The Operation and Maintenance Plan required by Standard 9 must include inspections and preventive maintenance at least twice a year, and after every time drainage discharges through the high outlet orifice. The Plan must require inspecting the pretreatment BMPs in accordance with the minimal requirements specified for those practices and after every major storm event. A major storm event is defined as a storm that is equal to or greater than the 2-year, 24-hour storm (generally 2.9 to 3.6 inches in a 24-hour period, depending in geographic location in Massachusetts).

Once the basin is in use, inspect it after every major storm for the first few months to ensure it is stabilized and functioning properly and if necessary take corrective action. Note how long water remains standing in the basin after a storm; standing water within the basin 48 to 72 hours after a storm indicates that the infiltration capacity may have been overestimated. If the ponding is due to clogging, immediately address the reasons for the clogging (such as upland sediment erosion, excessive compaction of soils, or low spots).

Thereafter, inspect the infiltration basin at least twice per year. Important items to check during the inspection include:

- Signs of differential settlement,
- Cracking,
- Erosion,
- Leakage in the embankments
- Tree growth on the embankments
- Condition of riprap,
- Sediment accumulation and
- The health of the turf.

At least twice a year, mow the buffer area, side slopes, and basin bottom. Remove grass clippings and accumulated organic matter to prevent an impervious organic mat from forming. Remove trash and debris at the same time. Use deep tilling to break up clogged surfaces, and revegetate immediately.

Remove sediment from the basin as necessary, but wait until the floor of the basin is thoroughly dry. Use light equipment to remove the top layer so as to not compact the underlying soil. Deeply till the remaining soil, and revegetate as soon as possible. Inspect and clean pretreatment devices associated with basins at least twice a year, and ideally every other month.

References:

Center for Watershed Protection, http://www.stormwatercenter.net/Manual_Builder/Construction%20Specifications/Infiltration%20Trench%20Specifications.htm

Center for Watershed Protection, http://www.stormwatercenter.net/Manual_Builder/Performance%20Criteria/Infiltration.htm

Center for Watershed Protection, Stormwater Management Fact Sheet, Infiltration Basin, http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool6_Stormwater_Practices/Infiltration%20Practice/Infiltration%20Basin.htm

Ferguson, B.K., 1994. Stormwater Infiltration. CRC Press, Ann Arbor, MI.

or below the level of the adjacent grassed areas to ensure thorough drainage of these areas. When designing the channels, consider settlement of the lining and the adjacent areas, the potential for frost impacts on the lining and the potential for erosion or scour along the edges of the lining caused by bank-full velocities. Provide impervious linings with broken stone foundations and weep holes. Design the channel to maintain a low outflow discharge rate at the downstream end of the channel.

Use low-flow underdrains, connected to the principal outlet structure or other downstream discharge point, to promote thorough drying of the channel and the basin bottom. Consider the depth of the low flow channel when preparing the final bottom-grading plan.

Design dry detention basin side slopes to be no steeper than 3:1. Flatter slopes help to prevent erosion of the banks during larger storms, make routine bank maintenance tasks (such as mowing) easier, and allow access to the basin. Include a multi-stage outlet structure to provide an adequate level of water quality and flood control. To meet the water quantity control standards, use the required design storm runoff rates as outlet release rates.

Design the outlet to control the outflow rate without clogging. Locate the outlet structure in the embankment for maintenance, access, safety and aesthetics. Design the outlet to facilitate maintenance; the vital parts of the structures should be accessible during normal maintenance and emergency situations. Include a draw-down valve to allow the dry detention basin to completely drain within 24 hours. To prevent scour at the outlet, include a flow transition structure, such as a lined apron or plunge pad, to absorb the initial impact of the flow and reduce the velocity to a level that will not erode the receiving channel or area.

Design embankments and spillways in conformance with the state regulations for Dam Safety (302 CMR 10.00). All dry detention basins must have an emergency spillway capable of bypassing runoff from large storms without damaging the impounding structure. Provide an access for maintenance by public or private right-of-way, using a minimum width of 15 feet and a maximum slope of 5:1. This access should extend to the forebay, safety bench and outflow structure, and should never cross the emergency spillway, unless the spillway has been designed for that purpose. Use vegetative buffers around the perimeter of the basin for erosion control and additional sediment and nutrient removal.

Maintenance

It is critical to provide access for maintenance, especially to the interior of the basin. Inspect dry detention basins at least once per year to ensure that they are operating as intended. Inspect basins during and after storms to determine if the basin is meeting the expected detention times. Inspect the outlet structure for evidence of clogging or outflow release velocities that are greater than design flow. Potential problems that should be checked include: subsidence, erosion, cracking or tree growth on the embankment; damage to the emergency spillway; sediment accumulation around the outlet; inadequacy of the inlet/outlet channel erosion control measures; changes in the condition of the pilot channel; and erosion within the basin and banks. Make any necessary repairs immediately. During inspections, note changes to the detention basin or the contributing watershed because these changes could affect basin performance. Mow the side slopes, embankment, and emergency spillway at least twice per year. Remove trash and debris at this time. Remove sediment from the basin as necessary, and at least once every 10 years or when the basin is 50% full. Provide for an on-site sediment disposal area to reduce the overall sediment removal costs.

Resources:

MassHighway. Stormwater handbook for Highways and Bridges. May 2004.
T.R. Schueler. Center for Watershed Protection. Design of Stormwater Pond Systems. 1996.

E- Drywells/Chambers for Roof Runoff

The next sheet specifies the inspection and maintenance requirements

Enumerate Area Numbers Below (E1-3)

Date	Inspector	Notes
_____	_____	_____
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the exception of perforated pipes in leaching fields similar to Title 5 systems, must have entry ports to allow worker access for maintenance, in accordance with OSHA requirements.

Construction

Stabilize the site prior to installing the subsurface structure. Do not allow runoff from any disturbed areas on the site to flow to the structure. Rope off the area where the subsurface structures are to be placed. Accomplish any required excavation with equipment placed just outside of this area. If the size of the area intended for exfiltration is too large to accommodate this approach, use trucks with low-pressure tires to minimize compaction. Do not allow any other vehicles within the area to be excavated. Keep the area above and immediately surrounding the subsurface structure roped off to all construction vehicles until the final top surface is installed (either paving or landscaping). This prevents additional compaction. When installing the final top surface, work from the edges to minimize compaction of the underlying soils.

Before installing the top surface, implement erosion and sediment controls to prevent sheet flow or wind blown sediment from entering the leach field. This includes, but is not limited to, minimizing land disturbances at any one time, placing stockpiles away from the area intended for infiltration, stabilizing any stockpiles through use of vegetation or tarps, and placing sediment fences around the perimeter of the infiltration field.

Provide an access port, man-way, and observation well to enable inspection of water levels within the system. Make the observation well pipe visible at grade (i.e., not buried).

Maintenance

Because subsurface structures are installed underground, they are extremely difficult to maintain. Inspect inlets at least twice a year. Remove any debris that might clog the system. Include mosquito controls in the Operation and Maintenance Plan.

Adapted from:
Connecticut Department of Environmental Conservation. Connecticut Stormwater Quality Manual. 2004.
MassHighway. Storm Water Handbook for Highways and Bridges. May 2004.

F- Drain Outfalls

Inspect every six months and after any significant storm event. Maintenance required involves replacing any eroded rip-rap stone and/or keeping the outlet of the pipe free of any debris.

Enumerate Area Numbers Below (F1-2)

Date	Inspector	Notes
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G- Erosion Controls

Erosion control consists of haybales with silt fence along the wetland.

Inspections shall be made initially following every rainfall event, then following rain storms of 1/2 inch or more. Frequency may be adjusted (more or less) as deemed appropriate. Additional erosion controls should be added and documented where an erosion problem exists.
Any erosion found on-site shall be repaired for the life of the project/ use.

Date	Inspector	Notes
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INSPECTION & MAINTENANCE MANUAL
For Jamison VanDyke
Robert's Way Industrial Subdivision
Gardner Rd; Winchendon, MA

This following manual outlines the inspection and maintenance requirements associated with stormwater management elements (best management practice) existing and/or proposed at the site. The owners, Jamison VanDyke shall provide for on-going inspections and maintenance (I&M) as described herein. The I&M activities shall be initiated immediately following the construction/implementation of the practice and/or the completion of terrain alteration activities that direct stormwater to a particular practice. If ownership of the property is transferred, the new owner(s) shall be responsible for the I&M.

The following site stormwater practices are enumerated below. Inspection and maintenance sheets are provided for each location. In addition to the individual sheets, a "Stormwater Construction Site Inspection Report" is enclosed which should also be filled out for each periodic site inspection. The two page "Site-specific BMP's checklist should also be completed along with the "Overall Site Issues" checklist

Refer to the 'BMP I.D. Plan' for the location of the site BMP's.

A- Infiltration Trenches & Grass Filter Strips

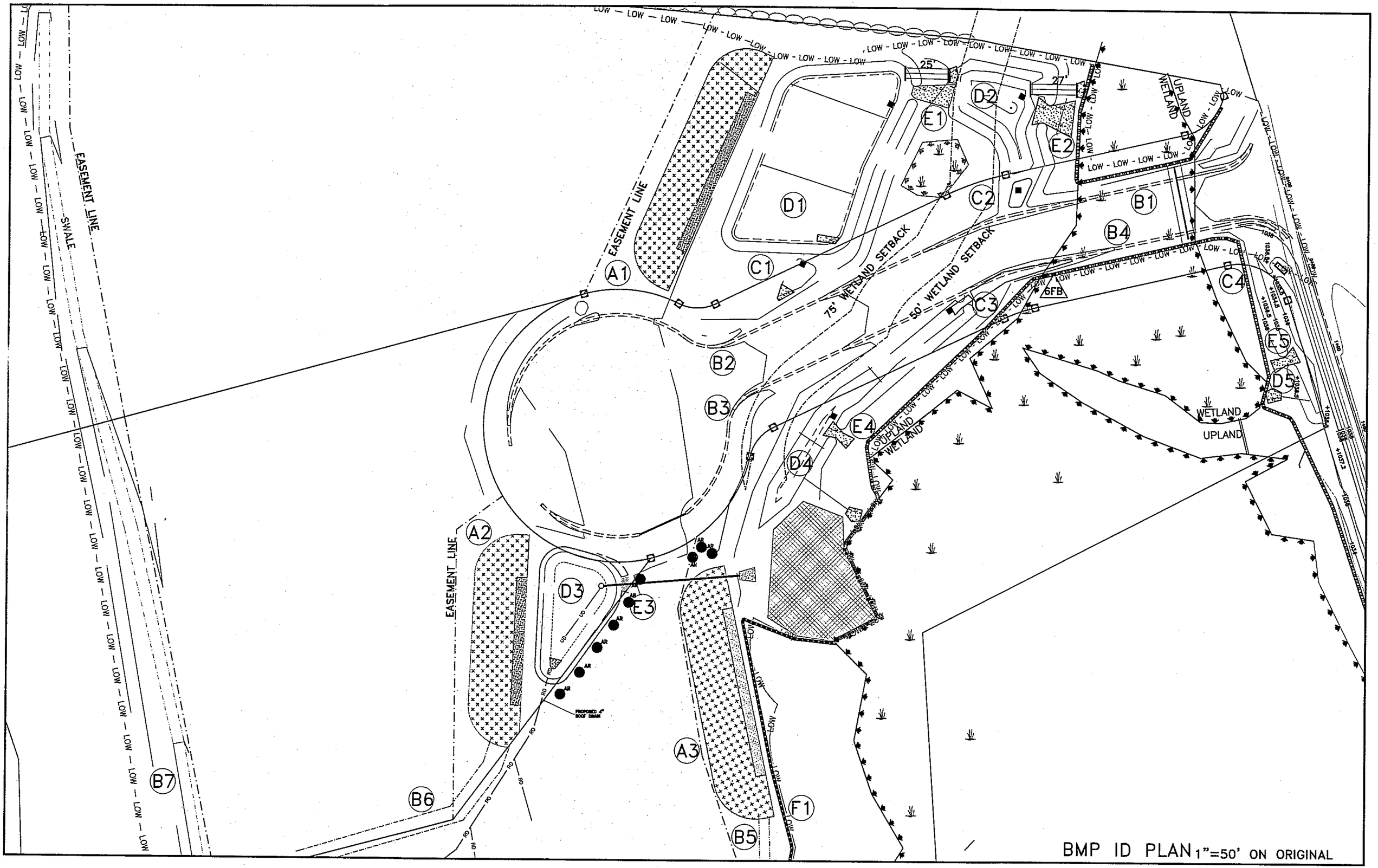
B- Grassed Swales

C- Sediment Forebays

D- Detention Basins

E- Drain Outfalls

F- Erosion Controls


EASEMENT LINE
SWALE
A1
A2
A3
B1
B2
B3
B4
B5
B6
B7
C1
C2
C3
C4
D1
D2
D3
D4
D5
E1
E2
E3
E4
F1
F5
75' WETLAND SETBACK
50' WETLAND SETBACK
UPLAND
WETLAND
6FB
25'
27'
PROPOSED 4" ROOF DRAIN
BMP ID PLAN 1"=50' ON ORIGINAL

A- Infiltration Trenches & Grass Filter Strips

The next sheet specifies the inspection and maintenance requirements

Enumerate Area Numbers Below (A1-3)

Date	Inspector	Notes

Protect the area to be used for the filter strip by using upstream sediment traps.

Use as much of the existing topsoil on the site as possible to enhance plant growth.

Maintenance

Regular maintenance is critical for filter strips to be effective and to ensure that flow does not short-circuit the system. Conduct semi-annual inspections during the first year (and annually thereafter). Inspect the level spreader for sediment buildup and the vegetation for signs of erosion, bare spots, and overall health. Regular, frequent mowing of the grass is required. Remove sediment from the toe of slope or level spreader, and reseed bare spots as necessary. Periodically, remove sediment that accumulates near the top of the strip to maintain the appropriate slope and prevent formation of a "berm" that could impede the distribution of runoff as sheet flow.

When the filter strip is located in the buffer zone to a wetland resource area, the operation and maintenance plan must include strict measures to ensure that maintenance operations do not alter the wetland resource areas. Please note, filter strips are restricted to the outer 50 feet of the buffer zone.

Cold Climate Considerations

In cold climates such as Massachusetts, the depth of soil media that serves as the planting bed must extend below the frost line to minimize the effects of freezing. Avoid using peat and compost media, which retain water and freeze during the winter, and become impermeable and ineffective.

References:

Center for Watershed Protection, Stormwater Management Fact Sheet: Grassed Filter Strip, http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool6_Stormwater_Practices/Filtering%20Practice/Grassed%20Filter%20Strip.htm

Claytor, R.A. and T.R. Schueler. 1996. Design of Stormwater Filtering Systems. Center for Watershed Protection. Silver Spring, Maryland.

Connecticut Department of Environmental Protection. 2004. Connecticut Stormwater Quality Manual.

International Stormwater BMP Database, Biofilter – Grass Strip, http://www.bmpdatabase.org

Knox County, Stormwater Management Manual, Volume 2, Section 4.3.9, Filter Strip, Pp. 4-155 to 4-164, http://knoxcounty.org/stormwater/pdfs/vol2/4-3-9%20Filter%20Strip.pdf

Knoxville, City of, 2003, Knoxville BMP Manual Stormwater Treatment, Filter Strips and Swales, Practice No. ST – 05, http://www.ci.knoxville.tn.us/engineering/bmp_manual/ST-05.pdf

Maine Department of Environmental Protection. 2006, Maine Stormwater Best Management Practices Manual, Chapter 5, Pp. 5-1 to 5-18, http://www.maine.gov/dep/blwq//docstand/stormwater/stormwaterbmps/vol3/chapter5.pdf

Maryland Department of the Environment, 2000, Maryland Stormwater Design Manual, Volume I, Chapter 2, Unified Sizing Criteria, P. 2.39, http://www.mde.state.md.us/assets/document/chapter2.pdf

Massachusetts Highway Department. 2004. Storm Water Handbook for Highways and Bridges.

Metropolitan Council. 2001. Minnesota Urban Small Sites BMP Manual: Stormwater Best Management Practices for Cold Climates. Prepared by Barr Engineering Company. St. Paul, Minnesota.

New Jersey Department of Environmental Protection, 2004, Best Management Practice Manual, Chapter 9.10, Standard for Vegetated Filter Strip, Pp. 9.10-1 to 9.11-10, http://www.njstormwater.org/tier_A/pdf/NJ_SWBMP_9.10.pdf

New York State Department of Environmental Conservation (NYDEC). 2001. New York State Stormwater Management Design Manual. Prepared by Center for Watershed Protection. Albany, New York.

United States Environmental Protection Agency (EPA). 1999. Preliminary Data Summary of Urban Storm Water Best Management Practices. EPA 821-R99-012.

Include vegetated buffers (20-foot minimum) around surface trenches. Place permeable filter fabric 6 to 12 inches below the surface of the trench, along the sides, and at the bottom of the trench.

Use filter fabric, especially at the surface to prevent clogging; if failure does occur, it can be alleviated without reconstructing the infiltration trench. Another option is to place twelve inches of sand at the bottom of the trench.

Install an observation well at the center of the trench to monitor how quickly runoff is clearing the system. Use a well-anchored, vertical perforated PVC pipe with a lockable above-ground cap.

The surface of the trench visible from the surface may either be stone or grassed. Stone is easier to rake out when clogged. If it is vegetated with grasses, use fabric above the stone to keep the soil that serves as the planting medium from clogging the stone. When trenches are designed to accept sheet flow, take into account the grass surface when determining how much of the runoff will exfiltrate into the trench.

A perforated pipe underdrain is sometimes used as part of the design. The purpose of the underdrain is to facilitate exfiltration into the parent soil. Except for underdrains placed between different trench cells, MassDEP does not allow underdrains placed near the bottom of the trench. Placement of an underdrain near the bottom of the trench reduces the amount of treatment and exfiltration, because more water is conveyed through the underdrain to the outlet point when it rains than exfiltrates into the surrounding soils.

Construction

Table IT.2 presents the minimum construction criteria for infiltration trenches. Take precautions before and during construction to minimize the risk of premature failure of the infiltration trench. First, prevent heavy equipment from operating at the locations where infiltration trenches are planned. Heavy equipment will compact soil and adversely affect the performance of the trench. Isolate the areas where the trenches will be located by roping them off and flagging them.

Construct infiltration trenches only after the site has been stabilized. Never use trenches as temporary sediment traps during construction. Use diversion berms or staked and lined hay bales around the perimeter of the trenches during their construction. Excavate and build the trench manually or with light earth-moving equipment. Deposit all excavated material from the trench downgradient to prevent re-deposition during runoff events.

Line the sides and bottom of the trench with permeable geotextile fabric. Twelve inches of sand (clean, fine aggregate) may be substituted or used in addition on the bottom. Place one to three inches of clean, washed stone in the lined trench and lightly compact the stone with plate compactors, to within approximately one foot of the surface. Place fabric filter over the top, with at least a 12-inch overlap on both sides. An underground trench may be filled with topsoil and planted. A surface trench may be filled with additional aggregate stone.

Divert drainage away from the infiltration trench until the contributing drainage area is fully stabilized, including full establishment of any vegetation.

Table IT.2 - Construction Criteria for Infiltration Trenches
1. Infiltration trenches should never serve as temporary sediment traps for construction.
2. Before the development site is graded, the area of the infiltration trench should be roped off and flagged to prevent heavy equipment from compacting the underlying soils.
3. Infiltration trenches should not be constructed until the entire contributing drainage area has been stabilized. Diversion berms should be placed around the perimeter or the infiltration trench during all phases of construction. Sediment and erosion controls should be used to keep runoff and sediment away from the trench area.
4. During and after excavation, all excavated materials should be placed downstream, away from the infiltration trench, to prevent redeposition of these materials during runoff events. These materials should be properly handled and disposed of during and after construction.
Light earth-moving equipment should be used to excavate the infiltration trench. Use of heavy equipment causes compaction of the soils in the trench floor, resulting in reduced infiltration capacity.

Maintenance

Because infiltration trenches are prone to failure due to clogging, it is imperative that they be aggressively maintained on a regular schedule. Using pretreatment BMPs will significantly reduce the maintenance requirements for the trench itself. Removing accumulated sediment from a deep sump catch basin or a vegetated filter strip is considerably less difficult and less costly than rehabilitating a trench. Eventually, the infiltration trench will have to be rehabilitated, but regular maintenance will prolong its operational life and delay the day when rehabilitation is needed. With appropriate design and aggressive maintenance, rehabilitation can be delayed for a decade or more. Perform preventive maintenance at least twice a year.

Inspect and clean pretreatment BMPs every six months and after every major storm event (2 year return frequency). Check inlet and outlet pipes to determine if they are clogged. Remove accumulated sediment, trash, debris, leaves and grass clippings from mowing. Remove tree seedlings, before they become firmly established.

Inspect the infiltration trench after the first several rainfall events, after all major storms, and on regularly scheduled dates every six months. If the top of the trench is grassed, it must be mowed on a seasonal basis. Grass height must be maintained to be no more than four inches. Routinely remove grass clippings leaves and accumulated sediment from the surface of the trench.

Inspect the trench 24 hours or several days after a rain event, to look for ponded water. If there is ponded water at the surface of the trench, it is likely that the trench surface is clogged. To address surface clogging, remove and replace the topsoil or first layer of stone aggregate and the filter fabric. If water is ponded inside the trench, it may indicate that the bottom of the trench has failed. To rehabilitate a failed trench, all accumulated sediment must be stripped from the bottom, the bottom of the trench must be scarified and tilled to induce infiltration, and all of the stone aggregate and filter fabric or media must be removed and replaced.

REFERENCES:

California Stormwater Quality Association, 2003, California Stormwater BMP Handbook 1 of 7, New Development and Redevelopment, Infiltration Trench, Practice TC-10, http://www.cabmphandbooks.com/Documents/Development/TC-10.pdf

Center for Watershed Protection, Stormwater Management Fact Sheet, Infiltration Trench, http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool6_Stormwater_Practices/Infiltration%20Practice/Infiltration%20Trench.htm

Center for Watershed Protection, Stormwater Design Example, Infiltration Trench, http://www.stormwatercenter.net/Manual_Builder/infiltration_design_example.htm

Duchene, M., McBean, E.A., Thomson, N.R., 1994, Modeling of Infiltration from Trenches for Storm-Water Control, Journal of Water Resources Planning and Management, Vol. 120, No. 3, pp. 276-293

Dewberry Companies, 2002, Land Development Handbook, McGraw Hill, New York, pp. 521, 523.

Georgia Stormwater Management Manual, Section 3.2.5, Infiltration Trench, Pp. 3.2-75 to 3.2-88, http://www.georgiastormwater.com/vol2/3-2-5.pdf

Guo, James C.Y., 2001, Design of Infiltration Basins for Stormwater, in Mays, Larry W. (ed.), 2001, Stormwater Collection Systems Design Handbook, McGraw-Hill, New York, pp. 9.1 to 9.35

Livingston, E.H. 2000. Lessons Learned about Successfully Using Infiltration Practices. Pp 81-96 in National Conference on Tools for Urban Water Resource Management and Protection Proceedings of Conference held February 7-10, 2000 in Chicago, IL. EPA/625/R-00/001 Metropolitan Council, 2001, Minnesota Urban Small Sites BMP Manual, Infiltration Trenches, Pp. 3-169 to 3-180 http://www.metrocouncil.org/Environment/Watershed/BMP/CH3_STInfilTrenches.pdf

U.S. EPA, 1999, Stormwater Technology Fact Sheet, Infiltration Trench, EPA 832-F-99-019, http://www.epa.gov/owm/mtb/infltrenc.pdf

B- Grassed Swales

The next sheet specifies the inspection and maintenance requirements

Enumerate Area Numbers Below (B1-6)

Date	Inspector	Notes

low velocities can act as sediment traps, add extra capacity to address sediment accumulation without reducing design capacity. Add an extra 0.3 to 0.5 feet of freeboard depth, if sediment accumulation is expected. Use side slopes of 3:1 or flatter to prevent side slope erosion. Make the longitudinal slope of the channel as flat as possible and not greater than 5%.

Install check dams in drainage channels when necessary to achieve velocities of 5 feet per second or less. See check dam section of this Handbook <<LINK>>. Do not use earthen check dams because they tend to erode on the downstream side, and it is difficult to establish and maintain grass on the dams. The maximum ponding time behind the check dam should not exceed 24 hours. Use outlet protection at discharge points from a drainage channel to prevent scour at the outlet.

The design for the drainage channel must include access for maintenance. When located along a highway, provide a breakdown lane with a width of 15 feet. When located along a street, off-street parking can be doubled up as the access, provided signs are posted indicating no parking is allowed during maintenance periods. When locating drainage channels adjacent to pervious surfaces, include a 15-foot wide grass strip to provide access for maintenance trucks.

Construction

Use temporary erosion and sediment controls during construction. Soil amendments, such as using aged compost that contains no biosolids, may be needed to encourage vegetation growth. Select a vegetation mix that suits the characteristics of the site. Seeding will require mulching with appropriate materials, such as mulch matting, straw, wood chips, other natural blankets, or synthetic blankets. Anchor blanket immediately after seeding. Provide new seedlings with adequate water until they are well established. Refer to the "Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers, and Municipal Officials" <<LINK>> on sediment/erosion control for information regarding seeding, mulching, and use of blankets.

Maintenance

The maintenance and inspection schedule should take into consideration the effectiveness of the drainage channel. Inspect drainage channels the first few months after construction to make sure that there is no rilling or gullying, and that vegetation in the channels is adequate. Thereafter, inspect the channel twice a year for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding, and sediment accumulation.

Regular maintenance tasks include mowing, fertilizing, liming, watering, pruning, weeding, and pest control. Mow channels at least once per year. Do not cut the grass shorter than three to four inches. Keep grass height under 6 inches to maintain the design depth necessary to serve as a conveyance. Do not mow excessively, because it may increase the design flow velocity.

Remove sediment and debris manually at least once per year. Re-seed periodically to maintain the dense growth of grass vegetation. Take care to protect drainage channels from snow removal procedures and off-street parking. When drainage channels are located on private residential property, the operation and maintenance plan must clearly specify the private property owner who is responsible for carrying out the required maintenance. If the operation and maintenance plan calls for maintenance of drainage channels on private properties to be performed by a public entity or an association (e.g. homeowners association), maintenance easements must be obtained.

C- Sediment Forebays

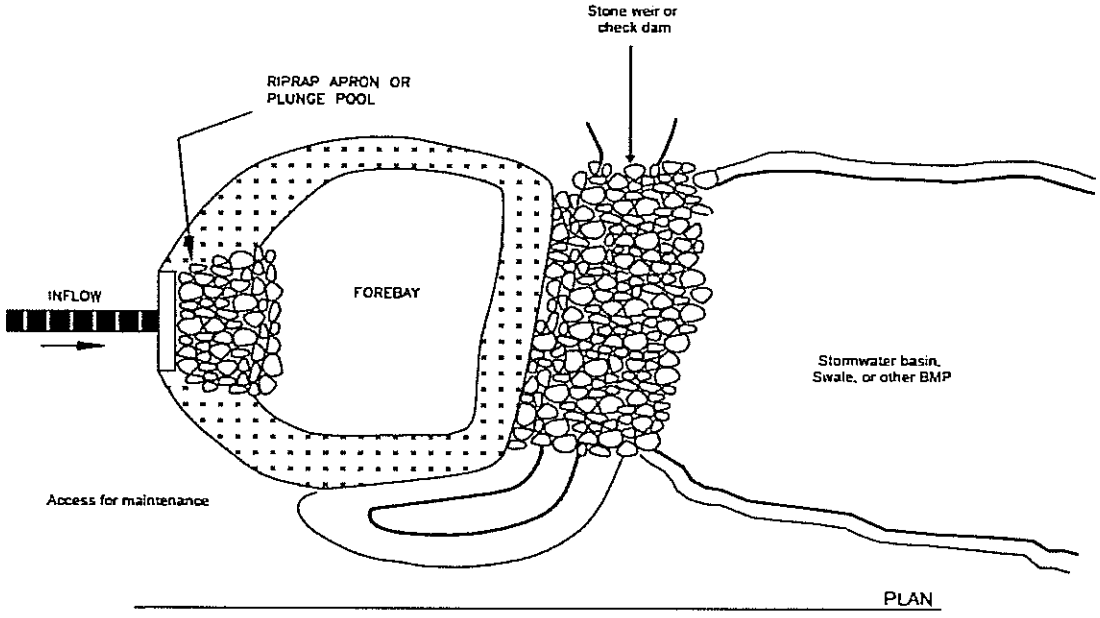
The next sheet specifies the inspection and maintenance requirements

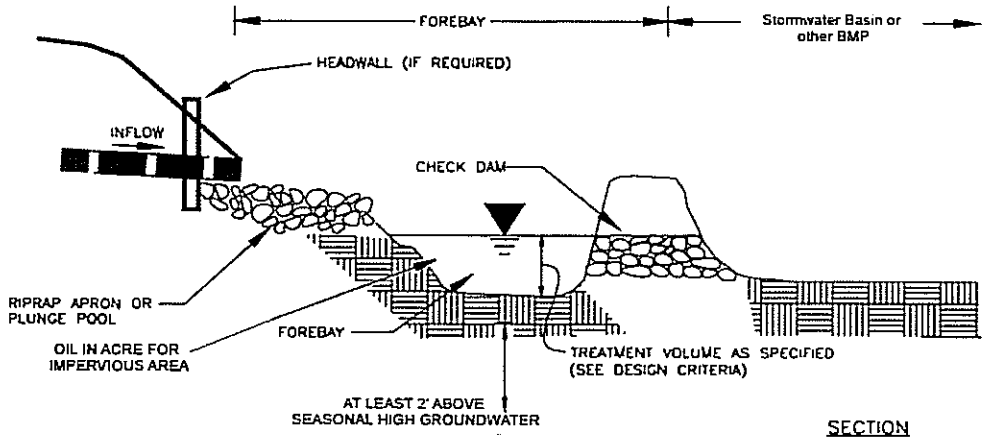
Enumerate Area Numbers Below (C1-2)

Date	Inspector	Notes

Maintenance

Sediments and associated pollutants are removed only when sediment forebays are actually cleaned out, so regular maintenance is essential. Frequently removing accumulated sediments will make it less likely that sediments will be resuspended. At a minimum, inspect sediment forebays monthly and clean them out at least four times per year. Stabilize the floor and sidewalls of the sediment forebay before making it operational, otherwise the practice will discharge excess amounts of suspended sediments. When mowing grasses, keep the grass height no greater than 6 inches. Set mower blades no lower than 3 to 4 inches. Check for signs of rilling and gullying and repair as needed. After removing the sediment, replace any vegetation damaged during the clean-out by either reseeding or re-sodding. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure that no scour occurs in the forebay, while the seeds germinate and develop roots.





CONSTRUCTION PERIOD SEDIMENT FOREBAYS SIZED 0.5"/ACRE PER ENTIRE CONTRIBUTING DRAINAGE AREA

adapted from the Vermont Stormwater Handbook

D- Detention Basins

The next sheet specifies the inspection and maintenance requirements

Enumerate Area Numbers Below (D1-3)

Date	Inspector	Notes

the soils beneath the basin floor and side slopes and reduces infiltration capacity. Because some compaction of soils is inevitable during construction, add the required soil amendments and deeply till the basin floor with a rotary tiller or a disc harrow to a depth of 12 inches to restore infiltration rates after final grading.

Use proper erosion/sediment control during construction. Immediately following basin construction, stabilize the floor and side slopes of the basin with a dense turf of water-tolerant grass. Use low maintenance, rapidly germinating grasses, such as fescues. Do not sod the basin floor or side slopes. After the basin is completed, keep the basin roped or fenced off while construction proceeds on other parts of the site. Never direct construction period drainage to the infiltration basin. After construction is completed, do not direct runoff into the basin until the bottom and side slopes are fully stabilized.

Maintenance

Infiltration basins are prone to clogging and failure, so it is imperative to develop and implement aggressive maintenance plans and schedules. Installing the required pretreatment BMPs will significantly reduce maintenance requirements for the basin.

The Operation and Maintenance Plan required by Standard 9 must include inspections and preventive maintenance at least twice a year, and after every time drainage discharges through the high outlet orifice. The Plan must require inspecting the pretreatment BMPs in accordance with the minimal requirements specified for those practices and after every major storm event. A major storm event is defined as a storm that is equal to or greater than the 2-year, 24-hour storm (generally 2.9 to 3.6 inches in a 24-hour period, depending in geographic location in Massachusetts).

Once the basin is in use, inspect it after every major storm for the first few months to ensure it is stabilized and functioning properly and if necessary take corrective action. Note how long water remains standing in the basin after a storm; standing water within the basin 48 to 72 hours after a storm indicates that the infiltration capacity may have been overestimated. If the ponding is due to clogging, immediately address the reasons for the clogging (such as upland sediment erosion, excessive compaction of soils, or low spots).

Thereafter, inspect the infiltration basin at least twice per year. Important items to check during the inspection include:

- Signs of differential settlement,
- Cracking,
- Erosion,
- Leakage in the embankments
- Tree growth on the embankments
- Condition of riprap,
- Sediment accumulation and
- The health of the turf.

At least twice a year, mow the buffer area, side slopes, and basin bottom. Remove grass clippings and accumulated organic matter to prevent an impervious organic mat from forming. Remove trash and debris at the same time. Use deep tilling to break up clogged surfaces, and revegetate immediately.

Remove sediment from the basin as necessary, but wait until the floor of the basin is thoroughly dry. Use light equipment to remove the top layer so as to not compact the underlying soil. Deeply till the remaining soil, and revegetate as soon as possible. Inspect and clean pretreatment devices associated with basins at least twice a year, and ideally every other month.

References:

Center for Watershed Protection, http://www.stormwatercenter.net/Manual_Builder/Construction%20Specifications/Infiltration%20Trench%20Specifications.htm

Center for Watershed Protection, http://www.stormwatercenter.net/Manual_Builder/Performance%20Criteria/Infiltration.htm

Center for Watershed Protection, Stormwater Management Fact Sheet, Infiltration Basin, http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool6_Stormwater_Practices/Infiltration%20Practice/Infiltration%20Basin.htm

Ferguson, B.K., 1994. Stormwater Infiltration. CRC Press, Ann Arbor, MI.

or below the level of the adjacent grassed areas to ensure thorough drainage of these areas. When designing the channels, consider settlement of the lining and the adjacent areas, the potential for frost impacts on the lining and the potential for erosion or scour along the edges of the lining caused by bank-full velocities. Provide impervious linings with broken stone foundations and weep holes. Design the channel to maintain a low outflow discharge rate at the downstream end of the channel.

Use low-flow underdrains, connected to the principal outlet structure or other downstream discharge point, to promote thorough drying of the channel and the basin bottom. Consider the depth of the low flow channel when preparing the final bottom-grading plan.

Design dry detention basin side slopes to be no steeper than 3:1. Flatter slopes help to prevent erosion of the banks during larger storms, make routine bank maintenance tasks (such as mowing) easier, and allow access to the basin. Include a multi-stage outlet structure to provide an adequate level of water quality and flood control. To meet the water quantity control standards, use the required design storm runoff rates as outlet release rates.

Design the outlet to control the outflow rate without clogging. Locate the outlet structure in the embankment for maintenance, access, safety and aesthetics. Design the outlet to facilitate maintenance; the vital parts of the structures should be accessible during normal maintenance and emergency situations. Include a draw-down valve to allow the dry detention basin to completely drain within 24 hours. To prevent scour at the outlet, include a flow transition structure, such as a lined apron or plunge pad, to absorb the initial impact of the flow and reduce the velocity to a level that will not erode the receiving channel or area.

Design embankments and spillways in conformance with the state regulations for Dam Safety (302 CMR 10.00). All dry detention basins must have an emergency spillway capable of bypassing runoff from large storms without damaging the impounding structure. Provide an access for maintenance by public or private right-of-way, using a minimum width of 15 feet and a maximum slope of 5:1. This access should extend to the forebay, safety bench and outflow structure, and should never cross the emergency spillway, unless the spillway has been designed for that purpose. Use vegetative buffers around the perimeter of the basin for erosion control and additional sediment and nutrient removal.

Maintenance

It is critical to provide access for maintenance, especially to the interior of the basin. Inspect dry detention basins at least once per year to ensure that they are operating as intended. Inspect basins during and after storms to determine if the basin is meeting the expected detention times. Inspect the outlet structure for evidence of clogging or outflow release velocities that are greater than design flow. Potential problems that should be checked include: subsidence, erosion, cracking or tree growth on the embankment; damage to the emergency spillway; sediment accumulation around the outlet; inadequacy of the inlet/outlet channel erosion control measures; changes in the condition of the pilot channel; and erosion within the basin and banks. Make any necessary repairs immediately. During inspections, note changes to the detention basin or the contributing watershed because these changes could affect basin performance. Mow the side slopes, embankment, and emergency spillway at least twice per year. Remove trash and debris at this time. Remove sediment from the basin as necessary, and at least once every 10 years or when the basin is 50% full. Provide for an on-site sediment disposal area to reduce the overall sediment removal costs.

Resources:

MassHighway. Stormwater handbook for Highways and Bridges. May 2004.
T.R. Schueler. Center for Watershed Protection. Design of Stormwater Pond Systems. 1996.

F- Drain Outfalls

Inspect every six months and after any significant storm event. Maintenance required involves replacing any eroded rip-rap stone and/or keeping the outlet of the pipe free of any debris.

Enumerate Area Numbers Below (F1-2)

Date	Inspector	Notes

G- Erosion Controls

Erosion control consists of haybales with silt fence along the wetland.

Additional fencing should be added and documented where an erosion problem exists. The next sheet provides specific maintenance requirements.

Date	Inspector	Notes

GRAZ Engineering, LLC

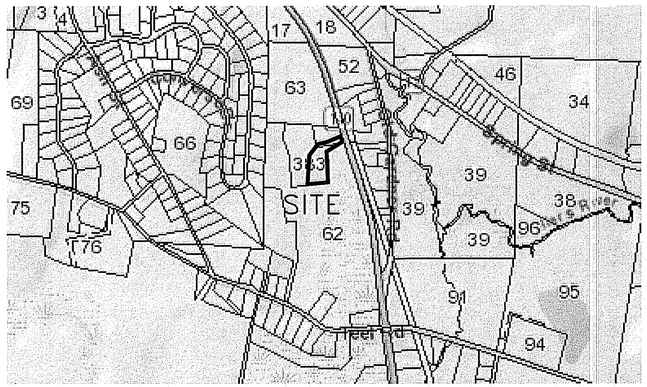
GRAZENGINEERING.COM

• 323 West Lake Road • Fitzwilliam, NH 03447 • Telephone (603) 585-6959 • Fax (603) 585-6960

Project Description for Low Impact Development Filing

Robert's Way (Lot-A) – Map-9 Lot-383 – Winchendon, MA

This Low Impact Development Permit application is being filed for the proposed work to be done on Lot-A of the Robert's Way development off of Gardner Road in Winchendon. This project consists of two 6,000 square foot garages with small offices being constructed on the lot. Access to them will be a partially paved and partially gravel driveway. These garages will share a well and septic system, which will not be a problem due to the relatively small amount of water that these buildings will require. Parking is provided in the front of each building, in between the two buildings, and there are 5 garage bays in each building that may be used for parking as well. The drainage on the lot has been sized appropriately to reduce the runoff on-site from pre-construction conditions in the 2, 10 and 100-year storms. A mixture of structural and non-structural BMPs were used to achieve this, such as infiltration trenches surrounded by vegetated filter strips.



TAX–MAP LOCUS PLAN 1"=1000'

APPROVED UNDER THE
RULES & REGULATIONS OF SITE PLANS
PLANNING BOARD OF WINCHENDON

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DATE:

ROBERT'S WAY GARAGES

ROBERT'S WAY (LOT-A)
WINCHENDON, MASSACHUSETTS
MAP-9 LOT-383

APRIL 16, 2019

APPLICANT/DEVELOPER: BARKLEY ENTERPRISES, LLC; 1032 N.H. RT 119; RINDGE, NH 03461

LAND OWNER: BARKLEY ENTERPRISES, LLC; 1032 N.H. RT 119; RINDGE, NH 03461

ENGINEER/SURVEYOR: GRAZ ENGINEERING LLC; 323 WEST LAKE ROAD; FITZWILLIAM, NH 03447

REFERENCE PLANS & DEEDS

1. SUBJECT LOT ASSESSOR'S MAP–9 LOT–383
   WCRD PLAN BOOK–924 PAGE–8
   WCRD DEED BOOK–56468 PAGE–38

NOTES:

1) ZONING DIMENSIONAL REQUIREMENTS: HIGHWAY COMMERCIAL ZONING DISTRICT

REQUIREMENT	REQUIRED	PROVIDED
FRONT SETBACK	75'	76.3'
SIDE SETBACK	25'	39.8'
REAR SETBACK	25'	153.6'
AREA	75,000 S.F.	139,352 S.F.
FRONTAGE	250'	408.9'
BLDG HEIGHT	45' MAX	20.13'
LOT COVERAGE	45% MAX	24.2%
PRKING SPACES	22	22
HANDICAP	1	1
VAN ACCESSIBLE	1	1
PRKING LOT TREES	3	4
LOT LANDSCAPE AREA	700 S.F.	737 S.F.
DIST. TO RES ZONE	50'	50'

2) ROBERT'S WAY GARAGES ARE INTENDED TO BE CONTRACTOR BAYS TO BE USED FOR CONTRACTOR MATERIAL STORAGE. NO HAZARDOUS MATERIALS TO BE STORED ON–SITE & NO BAYS SHALL BE USED FOR ANYTHING OTHER THAN WHAT IS ALLOWED BY RIGHT WITHIN THE C1 ZONING DISTRICT. (EX: NO ENGINE REPAIR SHOPS, AUTOBODY PAINTING, ETC. WITHOUT OBTAINING A SPECIAL PERMIT FROM THE ZBA). SEE SCHEDULE OF USE REGULATIONS WITHIN THE TOWN'S ZONING BYLAWS FOR A FULL LIST.

DRAWING INDEX

COMMONWEALTH OF MASSACHUSETTS
PAUL F. GRASEWICZ
CIVIL
No. 35306
REGISTERED PROFESSIONAL ENGINEER

REVISED BY: TWF
DATE: 10/7/19

PB #

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585–6959

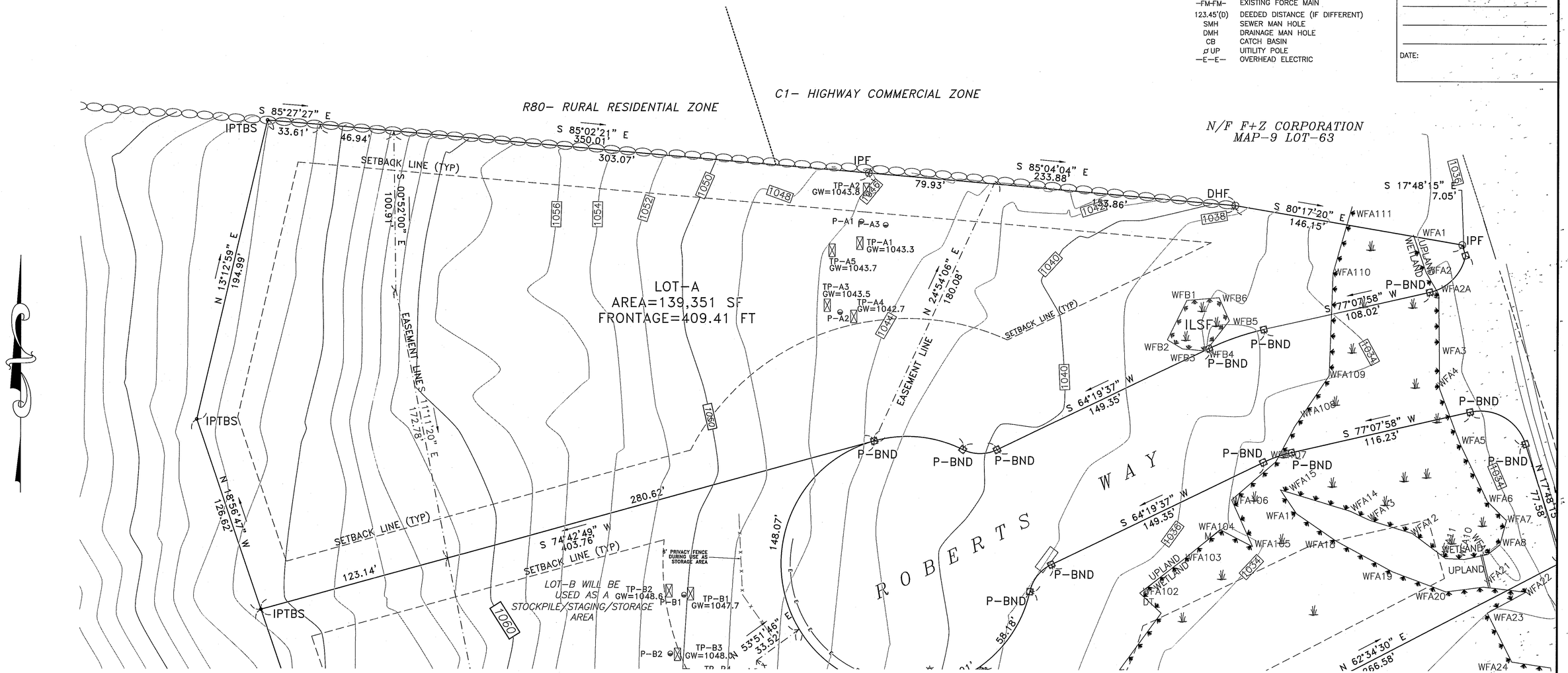
JOB NO. 15004

LEGEND

N/F	NOW OR FORMER OWNER
BND□	DRILL HOLE IN STONE BOUND FOUND
IPF ○	IRON PIN FOUND
—D—D—	EXISTING DRAINAGE
—X—X—	EXISTING FENCE
—S—S—	EXISTING SEWER
—FM—FM—	EXISTING FORCE MAIN
123.45'(D)	DEEDED DISTANCE (IF DIFFERENT)
SMH	SEWER MAN HOLE
DMH	DRAINAGE MAN HOLE
CB	CATCH BASIN
⌀ UP	UITILITY POLE
—E—E—	OVERHEAD ELECTRIC

APPROVED UNDER THE RULES & REGULATIONS OF SITE PLANS PLANNING BOARD OF WINCHENDON

DATE:



0 30 60 90

SCALE: 1"=30' ON ORIGINAL

NOTES

1. THE PURPOSE OF THIS PLAN IS TO GIVE AN OVERVIEW OF LOT–C ON ROBERT'S WAY.

2. THE SUBJECT PROPERTY IS LOCATED IN THE HIGHWAY COMMERCIAL ZONING DISTRICT.

   DIMENSIONAL REQUIREMENTS:
   AREA=75,000 S.F.
   FRONTAGE=250'
   MINIMUM FRONT SETBACK=75'
   MINIMUM SIDE SETBACK=25'
   MINIMUM REAR SETBACK=25'

3. FIELD SURVEY PERFORMED BY R–T–K GNSS & INSTRUMENT TO THE STANDARDS OF MASSACHUSETTS REGULATION 250 CMR 6.00 BY GRAZ ENGINEERING ON THE FOLLOWING DATES: 6/4/15, 6/16/15 – 6/18/15, 7/2/15, 7/6/15, 7/28/15, 10/14/16, 11/15/16, 5/4/17, AND 9/7/17.

4. CURRENT LAND USE IS WOODLAND.

COMMONWEALTH OF MASSACHUSETTS
PAUL F. GRASEWICZ
CIVIL
No. 35306
REGISTERED PROFESSIONAL ENGINEER

REV. 10/7/19 BY TWF

PB #

EXISTING PROPERTY PLAN
ROBERT'S WAY GARAGES
MAP–9 LOT–383
ROBERT'S WAY (LOT–A)
WINCHENDON, MA 01475

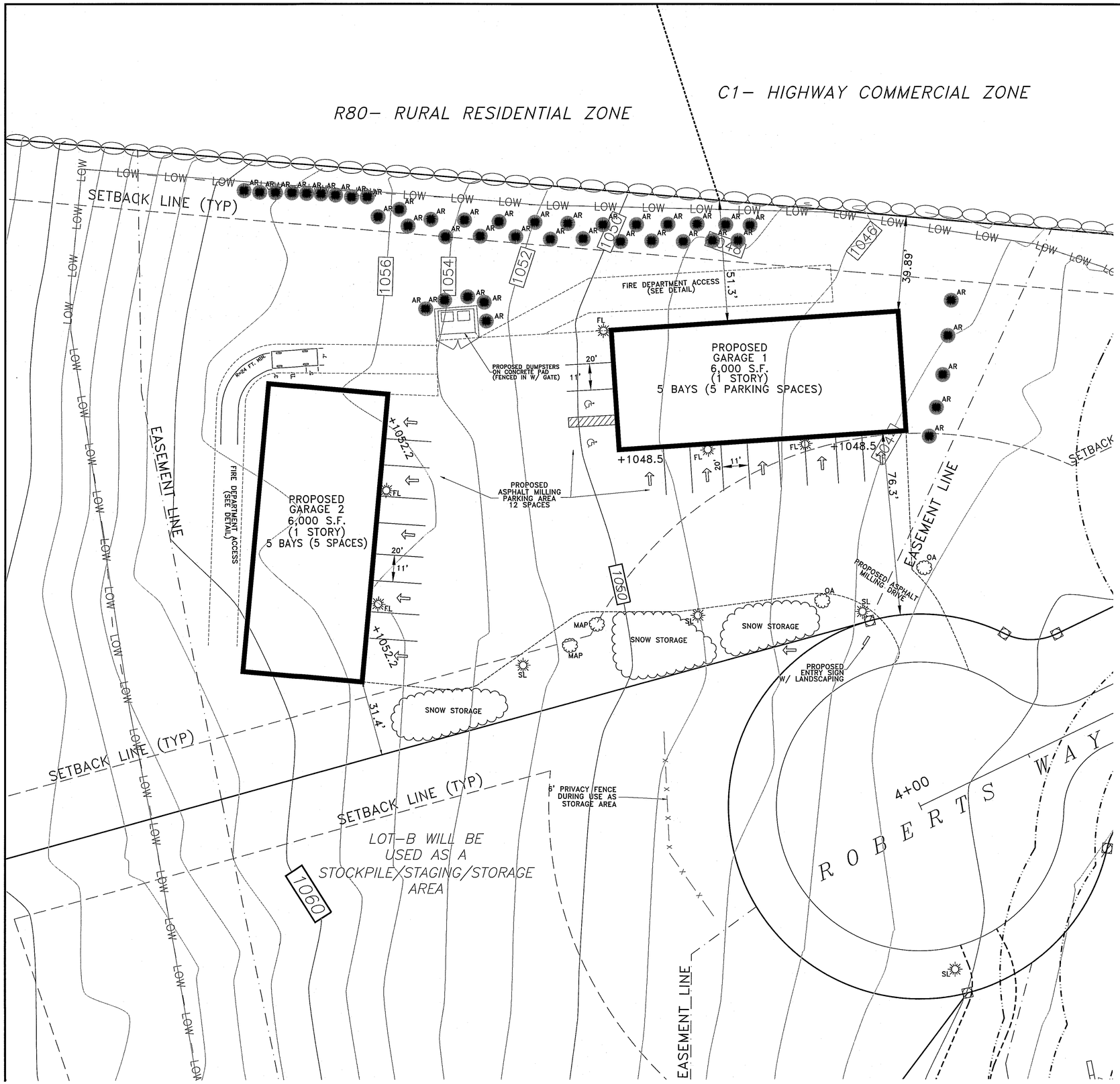
PREPARED FOR:
BARKLEY ENTERPRISES, LLC
1032 N.H. RT 119
RINDGE, NH 03461

APRIL 16, 2019

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585–6959

JOB NO. 15004

SHEET 2 OF 6



LEGEND

N/F	NOW OR FORMER OWNER
BND□	DRILL HOLE IN STONE BOUND FOUND
IPF ○	IRON PIN FOUND
FL	FLOOD LIGHT
SL	STREET LIGHT
AR	1.5" CALIPER ARBORVITAE
MAP	1.5" CALIPER MAPLE
OA	1.5" CALIPER OAK

APPROVED UNDER THE
RULES & REGULATIONS OF SITE PLANS
PLANNING BOARD OF WINCHENDON

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DATE:

NOTES

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE GENERAL LAYOUT OF THE PROPOSED BUILDING AND THE FEATURES TO SUPPORT IT.
2. THE SUBJECT PROPERTY IS LOCATED IN THE HIGHWAY COMMERCIAL ZONING DISTRICT.
   DIMENSIONAL REQUIREMENTS:
   AREA=75,000 S.F.
   FRONTAGE=250'
   MINIMUM FRONT SETBACK=75'
   MINIMUM SIDE SETBACK=25'
   MINIMUM REAR SETBACK=25'
3. ANY MINOR MODIFICATIONS TO THE INFORMATION SHOWN ON THE APPROVED SITE PLANS SHALL BE SUBMITTED TO THE BUILDING INSPECTOR AS A MINOR PLAN REVISION FOR APPROVAL PRIOR TO THE WORK BEING PERFORMED.
4. ALL HANDICAP PARKING, RAMPS, AND ACCESS SHALL CONFORM TO AAB REQUIREMENTS
5. THE PROPOSED BUILDINGS CONSIST OF 2–6,000 S.F. BUILDINGS BEING USED AS GARAGES/OFFICES. SEE PROPOSED BUILDING PLANS FOR MORE DETAILS.
6. ALL NON–IMPERVIOUS AREAS ON–SITE WITHIN THE LIMIT OF WORK SHALL BE LOAMED AND SEEDED.
7. THE NUMBER OF PARKING SPOTS REQUIRED IS 22. USING ITE PARKING GENERATION RATES FOR LIGHT INDUSTRY, THE RECOMMENDED NUMBER OF SPACES PER EMPLOYEE IS 1.10. ASSUMING TWO EMPLOYEES PER GARAGE BAY, THERE WILL BE 20 EMPLOYEES ON SITE. ACCOUNTING FOR A PARKING SPOT WITHIN EACH GARAGE BAY, THE MINIMUM NUMBER OF PARKING SPACES IS MET.
8. PROPOSED TREELINE IS TO FOLLOW THE LIMIT OF WORK LINE, WHICH SHALL BE MARKED OUT BEFORE THE START OF CONSTRUCTION.
9. THE PROPOSED "ROBERT'S WAY" IS TO REMAIN A PRIVATE WAY AFTER THE COMPLETION OF CONSTRUCTION.

0 20 40 60
SCALE: 1"=20' ON ORIGINAL

COMMONWEALTH OF MASSACHUSETTS
PAUL F. GRASEWICZ
CIVIL
No. 35306
REGISTERED PROFESSIONAL ENGINEER

REV. 10/7/19 BY TWF

PB #

LAYOUT PLAN & LANDSCAPING
ROBERT'S WAY GARAGES
MAP–9 LOT–383
ROBERT'S WAY (LOT–A)
WINCHENDON, MA 01475

PREPARED FOR:
BARKLEY ENTERPRISES, LLC
1032 N.H. RT 119
RINDGE, NH 03461

APRIL 16, 2019

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585–6959

JOB NO. 15004

SHEET 3 OF 6

NOTES

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE PROPOSED UTILITIES AND GRADING ASSOCIATED WITH THE COMPLETION OF THE PROJECT.
2. THE SUBJECT PROPERTY IS LOCATED IN THE COMMERCIAL HIGHWAY ZONING DISTRICT.
   DIMENSIONAL REQUIREMENTS:
   AREA=75,000 S.F.
   FRONTAGE=250'
   MINIMUM FRONT SETBACK=75'
   MINIMUM SIDE SETBACK=25'
   MINIMUM REAR SETBACK=25'
3. THE CONTRACTOR SHALL OBTAIN A TOWN OPENING PERMIT PRIOR TO ANY CONSTRUCTION WITHIN THE RIGHT-OF-WAY.
4. ALL WATER AND SEWER MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE TOWN OF WINCHENDON REQUIREMENTS.
5. ALL WATER AND SEWER CONSTRUCTION SHALL BE INSPECTED BY THE TOWN OF WINCHENDON BEFORE BEING BACKFILLED. THE TOWN SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE REQUIRED INSPECTIONS.
6. PLEASE REFER TO INITIAL SUBDIVISION PLANS FOR ENTIRE SITE DRAINAGE.
7. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO CONSTRUCTION.
8. EROSION CONTROL SHALL CONFORM TO THE TOWN OF WINCHENDON CONSERVATION COMMISSION REQUIREMENTS AS STATED IN THE ORDER OF CONDITIONS, IF APPLICABLE.
9. SAFETY FENCING MUST BE INSTALLED AROUND STOCKPILES OVER 10' IN HEIGHT, OR SITE ACCESS MUST BE RESTRICTED.
10. DETENTION POND 2P HAS BEEN ENLARGED FROM THE ORIGINAL SITE PLANS TO ACCOMPANY ADDITIONAL RUNOFF DUE TO AN INCREASE OF IMPERVIOUS AREA FROM ORIGINAL PLAN.
11. FILL CONTAINING HAZARDOUS MATERIALS SHALL NOT BE USED FOR FILL.
12. ANY CATCHBASINS, SUMPS AND STORMWATER BASINS SHALL BE CLEANED FOLLOWING CONSTRUCTION AND ANNUALLY THEREAFTER.
13. ANY FILL BEING HAULED TO OR OUT OF THE SITE SHALL BE RESTRICTED TO THE HOURS BETWEEN 9 A.M. AND 4 P.M. ON WEEKDAYS.
14. ALL IMPERVIOUS SURFACES (DRIVEWAYS) SHALL BE CONSTRUCTED AS SHOWN ON THE DETAIL.
15. ROOF DRAINAGE IS TO SHED OFF OF THE GARAGES AND FOLLOW NATURAL FLOW PATTERNS & SWALES TO THE WATER QUALITY BMPS & DRAINAGE BASINS.
16. 2:1 SLOPE IN REAR OF GARAGE TO BE STABILIZED DURING & AFTER CONSTRUCTION.
17. EVERY EFFORT SHALL BE MADE TO PRESERVE THE EXISTING TREES AND GROUND VEEGATION WITHIN THE 50' RESIDENTIAL PROPERTY BUFFER. PLANTED TREES WITHIN THE BUFFER MUST BE 6' HIGH AND 2" DIAMETER (AT 42" HEIGHT).

LEGEND

N/F	NOW OR FORMER OWNER
P-BND□	BOUND TO BE SET
IPTBS○	IRON PIN TO BE SET
— SD —	SUB-DRAIN
— E —	UNDERGROUND ELECTRIC
— FD —	FOOTING DRAIN
FL	FLOOD LIGHT
SL	STREET LIGHT

APPROVED UNDER THE RULES & REGULATIONS OF SITE PLANS PLANNING BOARD OF WINCHENDON

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DATE:

R80- RURAL RESIDENTIAL ZONE

C1- HIGHWAY COMMERCIAL ZONE

SETBACK LINE (TYP)

PROPOSED SEPTIC AREA

PROPOSED D-BOX

50' RESIDENTIAL PROPERTY BUFFER (SEE NOTE-17)

FIRE DEPARTMENT ACCESS (SEE DETAIL)

PROPOSED GARAGE 1
6,000 S.F.
(1 STORY)
5 BAYS (5 PARKING SPACES)

PROPOSED DUMPSTERS ON CONCRETE PAD (FENCED IN W/ GATE)

PROPOSED GARAGE 2
6,000 S.F.
(1 STORY)
5 BAYS (5 SPACES)

100' WELL RADIUS

50' WELL RADIUS

PROPOSED WELL

PROPOSED ASPHALT MILLING PARKING AREA
12 SPACES

PROPOSED 1000 GAL PUMP CHAMBER

PROPOSED TWO COMPARTMENT 1500 GAL SEPTIC TANK

PROPOSED CONSTRUCTION ENTRANCE

SNOW STORAGE

MAP

EASEMENT LINE

SWALE

LOT-B WILL BE USED AS A/ STOCKPILE/STAGING/STORAGE AREA

6' PRIVACY FENCE DURING USE AS STORAGE AREA

PROPOSED SUBDRAIN CLEANOUTS

PROPOSED SUBDRAIN (SEE DETAIL)

UNDERGROUND ELECTRIC AND CABLE UTILITIES

100' 1.2'X6' INFILTRATION TRENCH BOTTOM EL=1041.7 TRENCH TOP EL=1042.9

25' VEGETATED FILTER STRIP (SEE DETAIL)

PROPOSED 12" HDPE CULVERT

100' BUFFER

75' NO-BUILD

3-25' 6"ø PVC PIPE OUTLETS
INV 1=1038.2
INV 2=1036.0
BERM EL=1040.0
WEIR EL=1039.5

FENCE AROUND RETENTION BASIN

PROPOSED RETENTION BASIN FLOOR LP
EL=1026.0
WATER ELEV=1034.0

3-27' 6"ø PVC PIPE OUTLETS
INV 1=1034.5
INV 2=1034.0

FIRE POND

SEDIMENT GAUGE (TYP)

4" UNDERDRAIN
INV IN=1035.0
INV OUT=1034.5

PROPOSED DRY HYDRANT

BERM EL=1036.5
WEIR EL=1035.5

15' ACCESS

ROBERTS WAY

SCALE: 1"=20' ON ORIGINAL

REV. 10/7/19 BY TWF

PB #

UTILITIES, GRADING & EROSION CONTROL PLAN
ROBERT'S WAY GARAGES
MAP-9 LOT-383
ROBERT'S WAY (LOT-A)
WINCHENDON, MA 01475

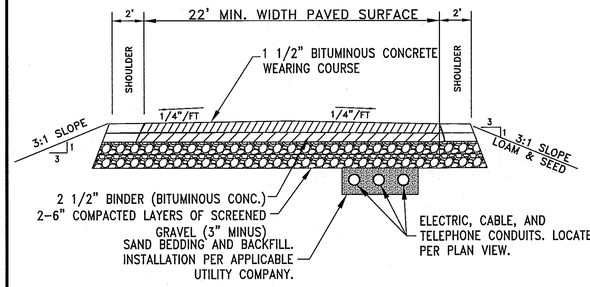
PREPARED FOR:
BARKLEY ENTERPRISES, LLC
1032 N.H. RT 119
RINDGE, NH 03461

APRIL 16, 2019

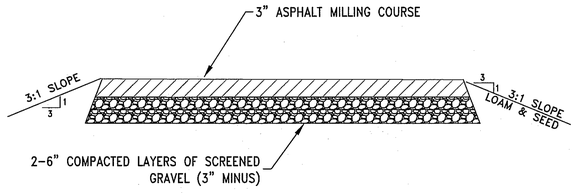
GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 15004

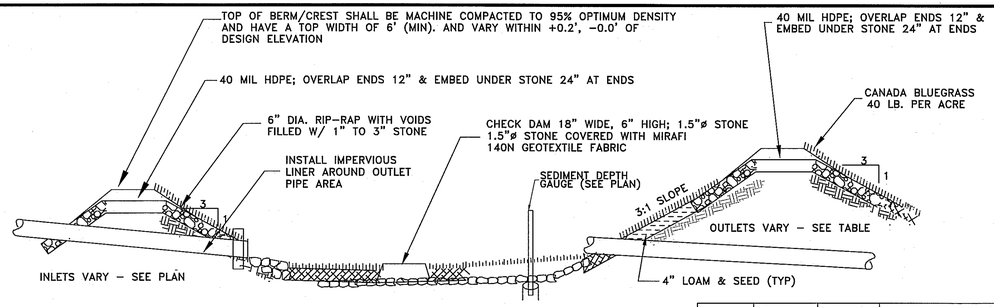
SHEET 4 OF 6



PAVED ROADWAY CROSS-SECTION NTS



ASPHALT MILLING DRIVE CROSS-SECTION NTS

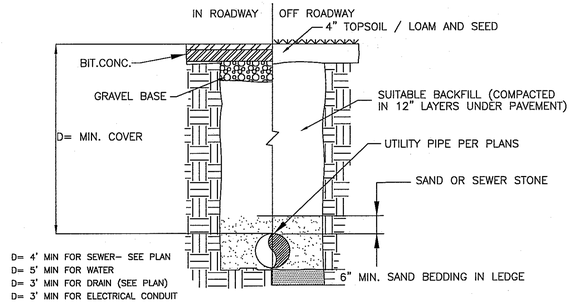


TYPICAL BASIN CROSS SECTION NTS

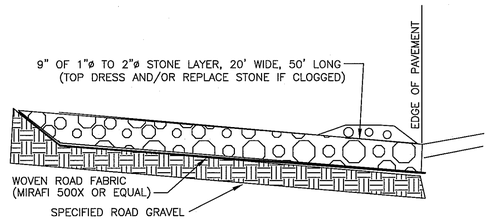
	BERM	WEIR	LOWER OUTLET
POND 2	1041.0	1039.5	1038.2 (3-6"ø CULVERTS)

APPROVED UNDER THE RULES & REGULATIONS OF SITE PLANS PLANNING BOARD OF WINCHENDON

DATE:

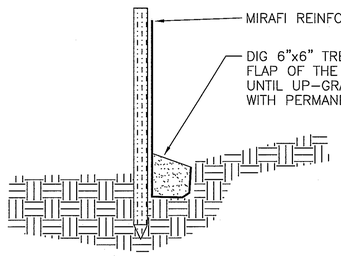


TYPICAL TRENCH DETAIL (N.T.S.)

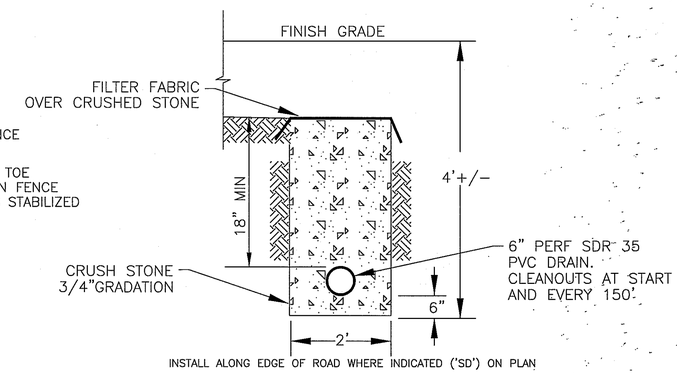


NOTE: IF STONE PAD DOES NOT ADEQUATELY PRECLUDE MUD TRACKING ONTO ROBERT'S WAY, HAND REMOVAL AND/OR WASHING AT APPROVED LOCATION SHALL BE PERFORMED.

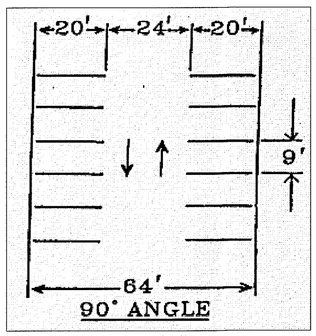
CONSTRUCTION ENTRANCE DETAIL NTS



SILT FENCE N.T.S.

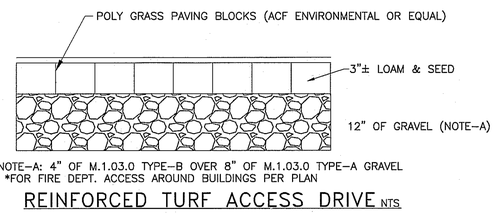


SUBDRAIN DETAIL NTS



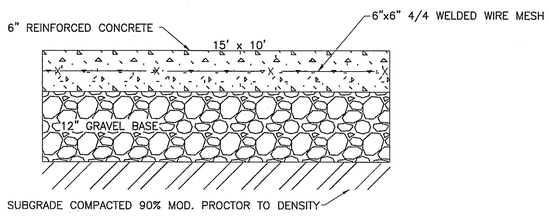
NOTE: THIS DETAIL (FROM THE WINCHENDON BYLAWS) IS GENERIC IN NATURE. PARKING SPOTS SHOULD BE 9' BY 20' WITH 24' OF DRIVING SPACE BETWEEN IT AND THE CLOSEST OBSTRUCTION (MIN.)

PARKING SPOT LAYOUT

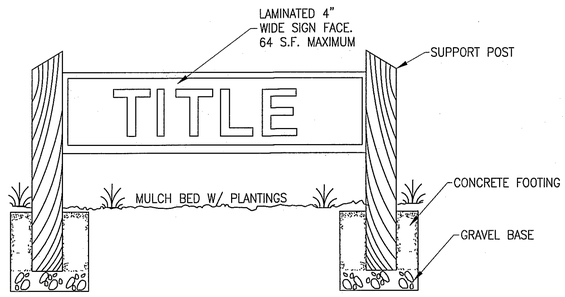


NOTE-A: 4" OF M.1.03.0 TYPE-B OVER 8" OF M.1.03.0 TYPE-A GRAVEL
*FOR FIRE DEPT. ACCESS AROUND BUILDINGS PER PLAN

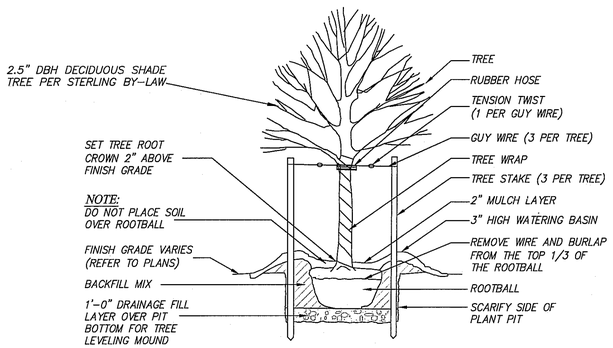
REINFORCED TURF ACCESS DRIVE NTS



CONCRETE DUMPSTER PAD N.T.S.



TYPICAL SIGN DETAIL



TREE PLANTING/WITHOUT DRAINAGE

COMMONWEALTH OF MASSACHUSETTS
PAUL F. GRASEWICZ
CIVIL
No. 35306
REGISTERED PROFESSIONAL ENGINEER

REV. 10/7/19 BY TWF

PB #

DETAIL SHEET 1
ROBERT'S WAY GARAGES
MAP-9 LOT-383
ROBERT'S WAY (LOT-A)
WINCHENDON, MA 01475

PREPARED FOR:
BARKLEY ENTERPRISES, LLC
1032 N.H. RT 119
RINDGE, NH 03461

APRIL 16, 2019

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 15004

SHEET 6 OF 6

Tighe&Bond
Engineers | Environmental Specialists

W-1157-30-003
September 12, 2019

Tracy Murphy, Director of Development
Town of Winchendon
109 Front Street
Winchendon, MA 01475

David Koonce, Conservation Agent
Town of Winchendon
109 Front Street
Winchendon, MA 01475

Re: **Robert's Way** Industrial Park, Lot A Development – Peer Review Response to Comments

Dear Tracy and David:

Tighe & Bond has been retained by the Town of Winchendon to provide Peer Review Services to the Planning Board and Conservation Commission in their review of the Site Plan Review Application, Low Impact Design Permit Application, and Notice of Intent for the two proposed 6,000 square foot garages with small offices on Robert's Way, Lot A in the Town of Winchendon, Massachusetts. The property is located within the C1-Highway Commercial zoning district, according to the latest Zoning Map, dated November 2, 2009. The Applicant, Barkley Enterprises, LLC, has provided the following documents for review:

- Site Plans entitled "Robert's Way Garages, Robert's Way (Lot-A)", dated April 16, 2019 and prepared by GRAZ Engineering, LLC
- Project Description for Low Impact Development Filing, prepared by GRAZ Engineering, LLC
- Notice of Intent, prepared by GRAZ Engineering, LLC

The Site Plans Review and LID permit application documents were reviewed for compliance with general engineering practices, Winchendon Zoning Bylaw, Low Impact Development Bylaw, Site Plan Design Guidelines of Massachusetts, the Massachusetts Stormwater Management Standards (Standards) and the Massachusetts Stormwater Handbook (Handbook). Note that we did not review the proposed septic system design as we understand the Winchendon Health Department is the regulatory authority for sanitary disposal. The Notice of Intent documents were reviewed for compliance with the Town of Winchendon Wetlands Protection Bylaw (Article 29), and the Massachusetts Wetlands Protection Act (M.G.L. c. 131 § 40) and its implementing regulations (310 CMR 10.00). Tighe & Bond issued a letter with initial peer review comments on July 1, 2019 and received responses to those comments from GRAZ Engineering, LLC (GRAZ) on August 19, 2019.

The following includes the original comment provided by Tighe & Bond, followed by GRAZ's response in bold, and any final recommendations to the Board and Commission or outstanding issues following in italics:

Zoning Compliance

1. Pursuant to Section 5.2 of the Winchendon Zoning Bylaw (Schedule of Use Regulations), commercial parking lots or parking garages are allowed by right in the C1 zoning district, but small engine repair to be enclosed in a barn or garage

require a Special Permit. The Applicant should clarify the use of the garage to further inform the appropriate approval criteria.

GRAZ: The intended use for the garage is similar to a warehouse storage facility versus repair shop. This would fall under the category of industrial **uses and is allowed under use "A. Warehouse or other building for storage, assembly or marketing wholesale products or equipment." and is allowed** in the C-1 Zoning District.

T&B Response: The comment has been addressed.

2. Section 7.2.5 of the Winchendon Zoning Bylaw requires a 50-foot vegetated buffer zone in the C1 Zoning District where the zone abuts residential property. Per the Zoning Bylaw, in the buffer zone, every effort shall be made to preserve the existing trees and ground vegetation. Where suitable vegetation is non-existent, a dense mixture of native or non-invasive trees shall be planted. We note that the subject parcel abuts a Residential Zoning District (Rural Residential − R80), but the site plans do not appear to reflect a 50-foot vegetated buffer.

   GRAZ: The Winchendon Bylaw requires a 50-foot vegetated buffer zone in the C1 Zoning district to a residential property. No existing or proposed residential property exists. The Bylaw does not mandate the buffer to residentially zoned land. We defer to the planning/zoning interpretation of this item.

   T&B Response: The parcel of the proposed project falls within both the C-1 district and R-80 district. The abutting parcel (Map-9, Lot-62), also falls within the C-1 and R-80 districts. The proposed project directly abuts a residentially zoned parcel, but there currently is not an existing structure on the residentially zoned parcel. Due to the multiple zones that exist on both properties, Tighe & Bond suggests the Planning Board consults the Winchendon Board of Appeals as the proposed project would not be permitted within the R-80 district. Within the Winchendon Zoning Bylaws, cases pertaining to lots split in separate districts, the Board of Appeals may issue a Special Permit after considering the compatibility of existing uses in the abutting lots consistent with the spirit of the bylaw and the master plan, in respect to Section 3.3 (Lots Split in Separate Districts).

3. Per Section 8.3.2 of the Zoning Bylaw, in C1, each use of property shall be provided with parking spaces in accordance with the Institute of Transportation Engineers (ITE) guidelines with an allowed variance of plus or minus 10%. Again, the Applicant should clarify the intended use of the garage (i.e. private, commercial, repairs) and office space to best inform the required number of parking spaces. Based on our review of the site plans and the ITE Parking Generation Manual, 5th Edition, the proposed 30 spaces (including five spaces in each proposed garage) would be appropriate for a small office.

   GRAZ: A large amount of parking is not going to be necessary on-site. We are estimating a workforce of 2 employees per garage bay. This would result in 20 employees, and we have supplied 22 parking spaces when the actual garage bays are accounted for.

   T&B Response: With respect to the ITE Parking Generation Manual, 5th Edition, 22 parking spaces provided would be appropriate for the designated use. The comment has been addressed.

Site Plans

The following comments pertain to the contents of the Site Plans:

4. The Applicant has provided a locus plan which is not to scale. Section 3.3.3 of Rules and Regulations for the Review and Approval of Site Plans and Site Development in Winchendon, Massachusetts requests an index at a scale of 1" = 1000'. The Board should determine whether they require the locus at a scale of 1" = 1000'.

   GRAZ: **Locus has been revised to be at a scale of 1"=1000'.**

   T&B Response: The comment has been addressed.

5. The Applicant should identify the limits of snow storage on the Layout Plan.

   GRAZ: The limits of snow storage are now shown on the plan.

   T&B Response: The comment has been addressed.

6. The Applicant should confirm the limit of work associated with this project. The limit of work line shown on the plan extends off the plan sheet to the south, indicating that additional work may be included as part of this project, specifically the drainage swale.

   GRAZ: Limit of work is adequately shown as the Notice of Intent for the entire site project shows the work around the entrance of the site, which has remained unchanged.

   T&B Response: The Limit of Work area in question includes the drainage swale west of Lot A. This component of the Robert's Way Industrial Subdivision was approved through the Definitive Subdivision process. It is unclear if the swale was constructed during the construction of Robert's Way. The Board and Commission should determine if Robert's Way infrastructure, such as roadway binder course and stormwater management systems, be constructed prior to approval of Lot A development. If those systems are currently constructed, the limit of work line should not extend around them unless modifications are proposed for lot development.

7. The Site Plans indicate a subdrain along Robert's Way. Previous Subdivision Plans for Robert's Way did not include this feature. The Applicant should confirm if this feature was installed, reasoning for such, and construction details.

   GRAZ: The roadway sub-drain has not been installed. The drain is required to minimize potential roadway damage due to frost. A detail has been provided.

   T&B Response: The comment has been addressed.

8. The Applicant should confirm the area west of Proposed Garage 2 which is proposed at a 2:1 slope will be sufficiently stabilized during and after construction.

   GRAZ: See note-16 on sheet-4.

   T&B Response: The comment has been addressed.

9. The Applicant should indicate the type of foundation to be constructed for the garages and confirm that appropriate setbacks are provided for the proposed septic system. We note that the septic system design was not reviewed as part of the Site Plan Review, LID, or Notice of Intent application.

   GRAZ: Slab foundations will be used for the garages **– requiring a 10' septic** setback, which is provided.

   T&B Response: The comment has been addressed.

10. The site plans indicate 11-foot wide parking spaces while the details indicate the spaces will be 9 feet wide. The Applicant should confirm the proposed width of the parking spaces.

    GRAZ: See note under detail. Detail shows minimum values, which are all met.

    T&B Response: The comment has been addressed.

11. The Applicant should consider the impacts of the proposed driveway to the roadside swale along Robert's Way. We recommend that a culvert be designed below the proposed driveway to provide a hydraulic connection between the up- and downstream segments of the swale.

    GRAZ: A culvert was designed for (see spot grades) but just was not drawn. It is shown on the plan.

    T&B Response: The comment has been addressed.

12. The parking lot detail (Sheet 6) does not agree with the parking lot layout provided on Sheet 3. The Applicant should confirm the intent of the parking layout.

    GRAZ: See note-10.

    T&B Response: The comment has been addressed.

13. The site sign is located in the Robert's Way ROW. The Applicant should confirm that Robert's Way will remain a private roadway, or conversely, if the roadway will be a public way, provide appropriate sign setbacks.

    GRAZ: **Robert's Way is to remain a private road (and the lots with common** ownership) and the sign location should not need to comply with sign setbacks. We will defer to Planning Board decision on this item.

    T&B Response: The comment has been addressed.

14. We recommend the drawings provide more clarity indicating existing conditions (as constructed as of today) and the work proposed.

    GRAZ: The project is under construction now, therefore, an as-built survey would provide no useful information. The road has been rough graded as have the stormwater basin(s). The wetland replication has been constructed and shall be improved upon receipt of information from the wetland scientist.

    T&B Response: The Board and Commission should determine if Robert's Way infrastructure, such as roadway binder course and stormwater management systems, be constructed prior to approval of Lot A development.

15. The Applicant should provide details pertaining to the design of the drainage swales to the west of the proposed buildings. Additionally, the drainage swale appears to discharge off-site to the south. Work associated with Lot B should be included in a separate filing with the Winchendon Planning Board and Conservation Commission.

    GRAZ: Work associated with lot-B was submitted in the original subdivision plans. The decision on what will be built on lot-B has not been finalized as of yet, so no new site plan or NOI has been finalized either. Much of lot-B shall be used for staging/ storage of materials to facilitate the construction on lot-A and lot-C.

    T&B Response: The comment has been addressed.

Stormwater Management

We offer the following comments which pertain to the contents of the Stormwater Management Report and design:

16. The Applicant should provide Drainage Area Maps for both existing and proposed conditions to accompany the hydrologic analysis. We note that hydrologic maps were provided as part of the Robert's Way Definitive Subdivision application; however, they should be revised and tailored for lot development now that design has been completed as it appears that drainage areas have altered from that original analysis.

    GRAZ: We have provided updated proposed drainage area maps in the revised hydrology report.

    T&B Response: The comment has been addressed.

17. The Site Plans indicate an underdrain within the Detention Basin; however, the hydrologic analysis does not reflect this outlet. The Applicant should confirm the hydrologic model to reflect the underdrain as an outlet from the basin.

    GRAZ: The underdrain, which will provide supplemental water to the wet pond, has been added as an outlet in the hydrology model.

    T&B Response: The comment has been addressed.

18. The Applicant should confirm the methodology for roof drainage as roof runoff collection and conveyance features do not appear to be provided on the Site Plans.

    GRAZ: See note 15 on sheet 4. Water shall shed off the roofs and follow natural drainage patterns to various BMPs.

    T&B Response: The comment has been addressed.

19. The application materials note that the Long-Term Pollution Prevention Plan was provided with the Definitive Subdivision Application. This document could not be located in Tighe & Bond's records. The Town should confirm receipt of this document in their files. We recommend the Town consider if this document should be provided specific to Lot A development, rather than the Robert's Way Industrial Subdivision project.

    GRAZ: Where the stormwater system is integrally related to the project as a whole and under single ownership, one SWPPP has been set up for the entire project.

    T&B Response: A Long-Term Pollution Prevention Plan is typically prepared for post-development pollution prevention and is indicated as having been submitted in the Definitive Subdivision Application. This indication can be found on Page 5 of 8 of the Stormwater Report Checklist under Standard 4: Water Quality. The Town should confirm receipt of this document in their files and confirm whether they prefer it is specific to Lot A development.

20. The application materials note that the Stormwater Management Operation & Maintenance Plan was provided with the Definitive Subdivision Application. Tighe & Bond revisited that document in our files and determined that the Plan should be amended to incorporate inspection and maintenance budget information. We also recommend the Town consider if this document should be provided specific to Lot A development, rather than the Robert's Way Industrial Subdivision project.

    GRAZ: Since the applicant will be in ownership of the road (and lots) and will be maintaining it himself, an inspection and maintenance budget analysis would provide any useful information.

T&B Response: Standard 9 of the Massachusetts Stormwater Handbook Stormwater Management Standards requires that an estimated operations and maintenance budget be included as part of the Long-Term Operation and Maintenance (O&M) Plan. The Plan should be amended to incorporate inspection and maintenance budget information and the Town should confirm whether they prefer it is specific to Lot A development.

21. Standard 5 - The Applicant should indicate whether the proposed use is a land use with higher potential pollutant loads. Additional information pertaining to the use of the garages should be provided, including if exterior vehicle storage is anticipated.

    GRAZ: This project is not a LUHPPL (land use with a higher potential pollutant loading). It is essentially a warehouse and there will be no vehicle washing or outside equipment repairs.

    T&B Response: The comment has been addressed.

22. Standard 6 – The Applicant should confirm there are no stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply. The Applicant should also confirm there are no discharges to other critical areas as defined in the Massachusetts Stormwater Handbook and Stormwater Standards.

    GRAZ: There are no stormwater discharges into Zone II or Interim Wellhead Protection Areas.

    T&B Response: The comment has been addressed.

23. Standard 8 - Minimum construction-period erosion and sediment controls are shown as part of the Site Plans, which is identified as silt fence. The Stormwater Report indicates that the Contractor will be required to develop a Stormwater Pollution Prevention Plan (SWPPP) prior to construction. We recommend a potential condition of approval requiring the Applicant to provide a copy of the SWPPP to the Board prior to construction.

    GRAZ: A Stormwater Pollution Prevention Plan has been prepared.

    T&B Response: We recommend a potential condition of approval requiring that the Applicant provide a copy of the SWPPP to the Board and/or Commission prior to construction.

24. We note that previous applications for Robert's Way included test pit information for the design of the sanitary disposal systems and was used representatively in the design of infiltration systems, the Applicant should indicate whether test pits were performed in locations of proposed infiltration and detention to confirm the location of groundwater. While the detention basin is not specifically designed for infiltration, there is a concern over the basin constantly dewatering groundwater through the underdrain system. The Board may wish to consider a potential condition of approval that the Applicant confirm the seasonal high groundwater elevation within the limits of the basin prior to construction.

    GRAZ: Test pit information is all generally within the location of infiltration. ESHWT was generally consistent through the site as well.

    T&B Response: We recommend a potential condition of approval requiring that test pits be performed within the infiltration basin to confirm the elevation of seasonal high groundwater and soil texture prior to construction.

25. In 2016, MassDEP published a statement that while climate change is a concern for stormwater management analyses, Technical Paper (TP) 40 rainfall depths should be used until such time as MassDEP revises wetland regulations and the Stormwater Management Standards. Alternately, an Applicant can use NOAA/Atlas 14 precipitation

values which exceed TP 40 published depths. The below table compares TP 40, NOAA/Atlas 14 and the Applicant's rainfall depths:

	2-Year	10-Year	100-Year
TP-40	3.00	4.50	6.50
NOAA/Atlas 14	2.90	4.42	6.83
Application	2.90	4.30	7.50

We note that the rainfall depths used in the analysis are generally consistent with TP-40 and the NOAA rainfall depths; however, we recommend the Applicant consider a larger rainfall depth for the 10-year storm event based on the table above.

GRAZ: Rainfall depths have been revised & a basin has been revised to mitigate the increase of runoff due to the corrected rainfall depths.

T&B Response: The comment has been addressed.

Notice of Intent

The Lot A NOI presents work that is limited to the 100-foot Buffer Zone (MAWPA, Article 29) and includes work within the limits of the 50-foot setback of undisturbed natural vegetation (Article 29). It is our understanding that an Order of Conditions was issued for the Robert's Way Industrial Subdivision project, which has not been fully closed out as of the date of this letter. According to the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) "Search Wetlands NOI Projects" online tool, the Massachusetts Department of Environmental Protection (MassDEP) Central Region Office (CERO) is in receipt of the Lot A NOI, but has not issued a file number or technical comments.

The following comments pertain specifically to the NOI application:

26. The Notice of Intent form was signed by the representative, without a signature by the Applicant or the Owner.

    GRAZ: Acknowledged.

    T&B Response: The signature of the Applicant and Property Owner(s), when the Applicant is not the owner of the land on which work is proposed, on the application form indicate knowledge and consent of the application. We recommend the Commission require the submittal of a copy of WPA Form 3 page 9 with these signatures to ensure receipt of an administratively complete application.

27. There appears to be an error in the parcel/lot number referenced in WPA Form 3 item 1.g. (page 1). The subject parcel number is 383, while the form references 393.

    We recommend the Commission note this apparent typo and reference the correct parcel number in future documents. We further note that it is within the Commission's discretion to request a corrected version of WPA Form 3 page 1.

    GRAZ: Acknowledged.

    T&B Response: The comment has been addressed.

28. The NOI documents do not present a detailed narrative project description, including but not limited to a description and color photographs of existing site conditions, proposed activities, footprint of work in Buffer Zone and local setbacks, and/or the shortest distance between the proposed limit of project disturbance and wetland resource areas.

    We recommend the Commission require the documentation summarized above, and further recommend that the Commission require the submittal of a construction sequence.

GRAZ: A narrative has been provided for the project.

T&B Response: The comment has been addressed.

29. Alterations, including grading/earthwork and the construction of stormwater management features, are proposed within the 50-foot setback of undisturbed natural vegetation as noted above and shown on sheet 4 of the project drawings. The Lot A NOI materials provided for this peer review did not include a request for waiver from the requirements of §29.9 of the Winchendon Wetlands Protection Bylaw.

    We recommend the Commission require confirmation that the Applicant is seeking a waiver for alterations within the 50-foot setback of undisturbed natural vegetation. We further recommend that, in the event that a waiver is requested, the Commission require sufficient documentation to determine if compliance with the setbacks will result in greater harm to the interests of the Bylaw, or if no harm would be done to the interests of the Bylaw, by the proposed action(s).

    As demonstration of "no harm" to the Buffer Zone and adjacent Bordering Vegetated Wetland (BVW), we further recommend the Commission require the Applicant address the change in light regime as it may affect the wetland plant community within the BVW and could be considered an alteration of vegetation and, therefore, an impact to BVW.

    GRAZ: This item was discussed at length during the July Conservation Commission meeting. The work as shown (and previously approved) will **be allowed within the 50' no**-disturb zone of the wetlands.

    T&B Response: We recommend the Commission include a statement in their official meeting minutes and/or other documentation affirming their decision to grant a Waiver from the requirements of §29.9 of the Winchendon Wetlands Protection Bylaw.

30. Based on MassGIS Google Orthoimagery of the project area dated 2017, the proposed limits of grading and construction will appear to require clearing and grubbing of a generally forested site. Presumably, as photographs of existing conditions were not provided with the Lot A NOI and the type and/or limits of existing vegetation are not clearly documented by the project drawings, the site is forested. A proposed landscaping plan was not included with the Lot A NOI materials provided for this peer review.

    We recommend the Commission require information pertaining to the proposed landscaping plan be provided for their review, with particular attention to the proposed plantings and seed mix(es) as species native to Worcester County, and approval.

    GRAZ: Trees are shown on the landscaping plan. As for general landscaping, grass seed native to the area shall be planted.

    T&B Response: We recommend the Commission require the submittal of a list plant species introduced to the site, including but not limited to, the native grass seed mix, as part of an as-built requirement. We further recommend the Commission consider a requirement prohibiting the introduction of non-native and/or invasive plant species within wetland resource areas and the Buffer Zone.

31. The Project Site (i.e., Limits of Work) and Project Locus (i.e., subject parcel on which work is proposed) is within the limits of Priority Habitats of Rare Species and Estimated Habitats of Rare Wildlife. Activities within Priority Habitats are subject to jurisdiction under the Massachusetts Endangered Species Act (MESA), as administered by the Massachusetts Natural Heritage and Endangered Species Program (NHESP), while activities in Estimated Habitat are subject to NHESP review per 310 CMR 10.59.

The NOI included NHESP correspondence dated April 18, 2017. NHESP indicated that the information submitted for their review at that time presented a scope of work that would not result in an adverse effect of rare species habitat, nor would the scope of work result in a prohibited Take of a state-listed species (as previously opined in a letter dated September 23, 2016). The NOI documents provided for this peer review did not include proof of submittal to NHESP per 310 CMR 10.59, or any more recent correspondence with NHESP.

We further note that WPA Form 3 "Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review" item 1a on page 5 confirms that the Project Site is within mapped Estimated Habitat. However, no further responses regarding the status of NHESP's review are checked off, including but not limited to the completion of a separate MESA review.

We recommend the Commission require the Applicant demonstrates that NHESP was provided a copy of the current Lot A NOI for review in accordance with the requirements set forth at 310 CMR 10.59. We further recommend the Commission require this documentation prior to closing the public hearing and rendering a decision to grant [or deny] approval.

GRAZ: NHESP has approved our proposed modification to the site work. A copy of their letter is attached for your reference.

T&B Response: Tighe & Bond has been provided a copy of correspondence from NHESP dated July 22, 2019. In this correspondence, NHESP states that the work "will not adversely affect" nor "result in a prohibited Take" of state-listed species. NHESP's findings satisfy the requirements of 310 CMR 10.59. We recommend the Commission include reference to this correspondence in future findings.

32. WPA Form 3 page 9, as provided for this peer review, does not include the Applicant's signature.

    We recommend the Commission confirm that a copy of WPA Form 3 page 9, as signed by the Applicant, is available for the Commission's files. In the event that the Applicant's signature has not been provided, we further recommend the Commission require this documentation prior to closing the public hearing and rendering a decision to grant [or deny] approval.

    GRAZ: Acknowledged.

    T&B Response: Refer to our response to Item 26.

33. The NOI provided for this peer review does not include a copy of the list of abutters.

    We recommend the Commission confirm that abutters were properly notified.

    GRAZ: The list of abutters was provided (page 20/68) of the NOI pdf.

    T&B Response: The comment has been addressed.

34. Sheets 2 and 4 of the project drawings show an area of Isolated Land Subject to Flooding (ILSF). An updated version of sheet 2 provided to Tighe & Bond by Mr. Koonce via email on June 24, 2019 includes a hand-written note that the area is "Non-Jurisdictional" ILSF. This notation is consistent with Tighe & Bond's observation that the area would be at least 6 feet deep to meet the definition of ILSF set forth at 310 CMR 10.57(2)(b), as noted in our December 2016 review of wetland boundaries presented as part of the NOI for the construction of Robert's Way on the Commission's behalf. We further note that there are no construction-period Best Management Practices (BMPs) protecting this landscape feature.

    We recommend the Commission clarify or confirm whether or not the "Non-Jurisdictional" ILSF meets the criteria to be considered an Isolated Vegetated Wetland

(IVW) subject to jurisdiction under Article 29 as "any freshwater wetland," and subject to the local setbacks set forth at §29.9.

GRAZ: **The small isolated wetland designated 'ILSF' is non**-jurisdictional. This was discussed during the original site filing and at the July 2019 meeting.

T&B Response: We recommend the Commission include a statement in their official meeting minutes and/or other documentation affirming their finding that this area is not subject to local or state jurisdiction for future reference.

We trust this information will be satisfactory for the Board in your review of the Robert's Way (Lot A) Site Plan Review, Notice of Intent and LID Permit Applications. Please do not hesitate to contact me should you have any questions or need additional information at 413.572.3238 or jechristy@tighebond.com.

Very truly yours,

TIGHE & BOND, INC.

Jean E. Christy, PE
Senior Engineer

Melissa Coady
Project Manager

Copy: Paul Grasewicz, GRAZ Engineering, LLC

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Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP: 345-0667
MassDEP File #

eDEP Transaction #

Winchendon (345)
City/Town

A. General Information

Please note: this form has been modified with added space to accommodate the Registry of Deeds Requirements

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

1. From: Winchendon Conservation Commission
Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

Jamison — a. First Name
VanDyke — b. Last Name
Barkley Enterprises, LLC — c. Organization
1032 NH Route 119 — d. Mailing Address
Rindge — e. City/Town
NH — f. State
03461 — g. Zip Code

4. Property Owner (if different from applicant):

a. First Name
b. Last Name
c. Organization
d. Mailing Address
e. City/Town
f. State
g. Zip Code

5. Project Location:

Lot A Robert's Way — a. Street Address
Winchendon — b. City/Town
9 — c. Assessors Map/Plat Number
393 — d. Parcel/Lot Number

Latitude and Longitude, if known: 42d 39m 30.24s — d. Latitude; 72d 0m 23.54s — e. Longitude

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):
   Worcester — a. County
   b. Certificate Number (if registered land)
   56468 — c. Book
   38 — d. Page

7. Dates: 05/28/19 — a. Date Notice of Intent Filed; 10/10/19 — b. Date Public Hearing Closed; c. Date of Issuance

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):
   'ROBERT'S WAY GARAGES' (5 SHEETS) — a. Plan Title
   GRAZ Engineering, LLC — b. Prepared By
   Paul Grasewicz, RPE — c. Signed and Stamped by
   10/07/19 — d. Final Revision Date
   As shown on each SHEET — e. Scale
   Stormwater Hydrology Report; Management & Inspection Manual — f. Additional Plan or Document Title
   08/14/19; 10/18/19 — g. Date

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

   Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

a. ☐ Public Water Supply
b. ☐ Land Containing Shellfish
c. ☒ Prevention of Pollution
d. ☐ Private Water Supply
e. ☐ Fisheries
f. ☐ Protection of Wildlife Habitat
g. ☒ Groundwater Supply
h. ☐ Storm Damage Prevention
i. ☐ Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

a. ☒ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

B. Findings (cont.)

Denied because:

b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☒ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) — 5 a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. ☐ Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. ☐ Land Under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		
7. ☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	a. square feet	b. square feet	c. nourishment cu yd	d. nourishment cu yd
14. ☐ Coastal Dunes	a. square feet	b. square feet	c. nourishment cu yd	d. nourishment cu yd
15. ☐ Coastal Banks	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. ☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. c/y dredged	b. c/y dredged		
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		
22. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

B. Findings (cont.)

* **#23.** If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23. ☐ Restoration/Enhancement *:

a. square feet of BVW _____ b. square feet of salt marsh _____

24. ☐ Stream Crossing(s):

a. number of new stream crossings _____ b. number of replacement stream crossings _____

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. The work is a maintenance dredging project as provided for in the Act; or
   b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
   c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on _____ unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.

C. General Conditions Under Massachusetts Wetlands Protection Act

8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.

10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

    "Massachusetts Department of Environmental Protection" [or, "MassDEP"]

    "File Number 345-667 "

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.

12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

13. The work shall conform to the plans and special conditions referenced in this order.

14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.

15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.

18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

19. The work associated with this Order (the "Project")
    (1) ☒ is subject to the Massachusetts Stormwater Standards
    (2) ☐ is NOT subject to the Massachusetts Stormwater Standards

    If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

    a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

    b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
    i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
    ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
    iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;

v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement) for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:

i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and

ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

See Additional Conditions #20 – #55 on pages 10A – 10F.

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No

2. The Winchendon Conservation Commission hereby finds (check one that applies):
   Conservation Commission

   a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

   1. Municipal Ordinance or Bylaw | 2. Citation

   Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

   b. ☒ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

   Winchendon Wetlands Protection Bylaw | See 3 below
   1. Municipal Ordinance or Bylaw | 2. Citation

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.
   The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

   All Conditions #1 – #55 pertain to both the Massachusetts Wetlands Protection Act and the Town of Winchendon Wetlands Protection Bylaw.

Applicant: Jamison VanDyke dba Barkley Enterprises, LLC (the "Applicant")
Project Address: Lot A Robert's Way (Map 9, Lot 393; the "Property")
DEP File #345-0667

<u>Summary</u>: This filing requests Conservation Commission approval for work in the 100-foot Buffer Zone to Isolated Vegetated Wetlands (IVW) for the construction and operation of stormwater management infrastructure to serve two 6,000 square-foot garages with small offices proposed to be constructed on the Property, along with associated grading and landscaping.

This Order of Conditions (aka this "Order") is approved pursuant to the provisions of the Massachusetts Wetlands Protection Act, 310 CMR 10.00, and the Town of Winchendon Wetlands Protection Bylaw, subject to the following Additional Conditions #20 – #55:

<u>Additional Conditions – General</u>

20. All proposed work shall be performed in accordance with the Notice of Intent filed May 28, 2019 and accompanying plans (the "Plans"; 5 Sheets): **'ROBERT'S WAY GARAGES'** prepared by GRAZ Engineering, LLC, final revision date October 7, 2019, signed and stamped by Paul F. Grasewicz, RPE.

21. The Winchendon Conservation Commission (aka the "Commission"), Conservation Agent (aka the "Agent"), Building Inspector, consultants acting as agents of the Commission, and the Department of Environmental Protection reserve the right to enter and inspect the Property at all reasonable times, until the issuance of the Certificate of Compliance, to evaluate compliance with this Order of Conditions, the Wetlands Protection Act, 310 CMR 10.00, and the Town of Winchendon Wetlands Protection Bylaw; may obtain any information, measurements, photographs, observations, and/or materials, and/or may require the submittal of any data or information deemed necessary by the Commission for that evaluation. Further, work shall be halted on the project if the Commission, agent or DEP determines that any of the work is not in compliance with this Order; in that case, work shall not resume until the Commission is satisfied that the work will comply, and has so notified the Applicant in writing.

22. Prior to the issuance of the Certificate of Compliance, this Order of Conditions shall apply to any successor in control or successor in interest to the Property (including future lessees and their assigns) described in the Notice of Intent and accompanying plans; prior to the issuance of the Certificate of Compliance, this Order shall be referred to in all deeds to succeeding owners in all or any portion of the Property. (Perpetual Conditions shall continue beyond the issuance of the Certificate of Compliance; see Conditions #23 and #49 – #55 below.) The Conservation Commission shall be notified in writing of all pending transfers of title in all or any portion of the Property; the Applicant and all succeeding owners shall submit a draft deed to the Agent for review prior to closing on the transfer.

23. Conditions #49 – #55 below shall continue in force beyond the Certificate of Compliance in perpetuity and shall be referred to in all future deeds to the Property. The Conservation Commission shall be notified in writing of all pending transfers of title in all or any portion of the Property; the Applicant and all succeeding owners shall submit a draft deed to the Agent for review prior to closing on the transfer (see Condition #22 above).

24. Upon completion of this project, the Applicant shall submit the following to the Conservation Commission in order to receive the Certificate of Compliance:

    1. DEP WPA Form 8A <u>Request for Certificate of Compliance</u>.

2. a. A written statement from the Applicant certifying that the work has been conducted as shown on the plan(s) and documents referenced above, and as conditioned by the Commission.

   b. A written statement from a registered professional engineer of the Commonwealth certifying that the work has been conducted as shown on the plan(s) and documents referenced above, and as conditioned by the Commission.

3. An "As-Built" plan prepared for the public record, signed and stamped by a registered professional engineer or land surveyor of the Commonwealth. In addition to all new construction, the "As-Built" plan shall show the edge of flagged wetlands, the boundary of the 100-foot Buffer Zone, limit of permanent clearing, wetland replication area(s).

Design and Pre-Construction Requirements

25. **a. Prior to the Conservation Agent's sign-off on building permit applications for this project, the Applicant's engineer shall have certified in writing that all permanent stormwater management infrastructure serving the Property (excluding roof and foundation drains), including Robert's Way, is fully constructed according to the Plans, and is operating and maintained properly. All paving, including but not limited to Robert's Way, shall be completed as soon as seasonal conditions permit, unless otherwise approved by the Agent.**

    b. Prior to the Conservation Agent's sign-off on building permit applications for this project, copies of the NPDES Construction General Permit and associated Stormwater Pollution Prevention Plan (the "SWPPP") shall have been forwarded via e-mail to the Agent.

26. If there are any changes to the plans as submitted, the Applicant shall have the responsibility to submit revised plans showing all changes to the Conservation Commission for review. This includes changes required by the Commission and/or other Town and/or State agencies as well as those introduced by the Applicant. After reviewing the revised plans, the Commission will make a determination as to whether the changes require an Amendment to this Order of Conditions or the filing of a new Notice of Intent. No work may start before the Commission has completed its review and notified the Applicant in writing of its determination.

27. No work shall commence on this project until the expiration of the 10-day appeal period, no requests for appeals having been filed with the Department of Environmental Protection, **and a copy of the first page of the recorded Order of Conditions, bearing the time-stamped Registry of Deeds Book and Page Numbers, has been submitted to the Conservation Commission.**

Installation of Erosion/Siltation/Sedimentation Controls

28. Before the start of any site work (e.g. earth disturbance, clearing of vegetation, etc.), the Applicant and/or Applicant's contractor shall notify the Conservation Agent to conduct a site inspection of erosion/siltation/sedimentation barriers. Work on the project shall be permitted to commence and proceed only with the Agent's authorization pursuant to the site inspection.

Additional Pre-Construction Requirements

29. The Applicant shall inform the Conservation Agent in writing of the name, mailing address, e-mail address, business and home telephone numbers of the project supervisor who will be responsible for ensuring on-site compliance with this Order of Conditions. The Applicant shall also provide the names and contact information for all contractors and subcontractors.

Construction Management

30. Copies of all Stormwater Reports prepared pursuant to requirements of the Stormwater Pollution Prevention Plan (the "SWPPP"; see Condition #25b above), shall be forwarded via e-mail to the Conservation Agent upon completion of each report.

31. A complete copy of this Order of Conditions, including its drawings, Special Conditions, and any amendments, shall be maintained at the work site whenever work is being performed. The Applicant shall have the responsibility to ensure that all on-site contractors, subcontractors and other personnel are fully aware of the terms and conditions of this Order and that no activity other than that authorized by this Order is permitted in areas under the jurisdiction of the Conservation Commission. A complete copy of this Order and the project plans shall be given to every contractor and subcontractor performing the work defined and described herein.

Limit of Work

32. **The Limit of Work ("LOW") shall be the erosion/siltation/sedimentation barriers.** Workers on site shall be informed that except as otherwise authorized by this Order of Conditions (e.g. construction of a wetland crossing), **no activity** is permitted on the wetland side of the LOW at any time, including, but not limited to, the use of machinery, storage of machinery or materials, stockpiling of soil or construction materials, and littering.

Erosion/Siltation/Sedimentation Controls

33. All erosion/siltation/sedimentation barriers shall be properly placed, secured, and inspected at the close of each work day, and, if possible, before heavy rainstorms. Any accumulation of soils/silt/sediment against the erosion/siltation/sedimentation barriers shall be removed if the depth reaches six (6) inches. Any barriers that have deteriorated or been damaged by construction accidents shall be immediately replaced or repaired as necessary. Any breakout of sediment due to a failure of the barriers caused by an unforeseen heavy rain event, or any other uncontrollable emergency, shall be immediately reported to the Conservation Agent.

34. All erosion/siltation/sedimentation barriers shall remain in place and be maintained in proper working order through regular cleaning, repair, and/or replacement, as necessary, during and after construction until all disturbed areas under the jurisdiction of this Order of Conditions have been permanently stabilized, inspected, and approved by the Conservation Agent. All erosion/siltation/ sedimentation barriers shall be removed prior to the issuance of the Certificate of Compliance (see Conditions #47 and #48 below.)

35. An adequate stockpile of erosion/siltation/sedimentation control materials shall be kept on site at all times for emergency or routine replacement and shall include materials to repair silt fences, hay bales, stone rip-rap filter dikes, or any other devices to be used during construction.

36. The Conservation Commission reserves the right to modify erosion/siltation/sedimentation controls based on experience at this site, or to otherwise impose additional conditions on portions of this project to mitigate any impacts which could result from site erosion, or any noticeable degradation of surface water quality discharging from the site.

37. Site grading and construction shall be scheduled to avoid periods of high surface water. Once begun, grading and construction shall move uninterrupted to completion to avoid erosion and siltation of wetlands.

Use and Storage of Motorized Vehicles/Machinery

38. Motorized vehicles or any other motorized machinery involved in the work shall be kept at least 100 feet away from the edge of wetlands (i.e. outside the 100-foot Buffer Zone) when not actually engaged in that work, including overnight and weekend storage.

39. No maintenance or refueling of motorized vehicles shall take place in wetlands or 100-foot Buffer Zone including, but not limited to, fueling, lubricating, fluid replacement, maintenance, and washing. If a spill occurs, contaminated soils shall be removed according to guidelines established by the Department of Environmental Protection, Bureau of Waste Site Cleanup. The remedial activities may be conducted in accordance with the provisions of an Immediate Response Action (IRA) or Remedial Abatement Measure (RAM) under the Massachusetts Contingency Plan. The Conservation Commission shall be provided written notice for approval of any remedial activities that are needed within the 100-foot Buffer Zone or Wetland Resource Area(s). Any damage to any Wetland Resource Area(s) and/or 100-foot Buffer Zone caused as a direct result of this project shall be the responsibility of the Applicant to repair, restore and/or replace.

40. Vehicles and equipment for fuel storage and refueling operations shall be parked in an upland area outside the 100-foot Buffer Zone.

Additional Construction Management Conditions

41. Groundwater encountered during excavation shall be directed (i.e. pumped) away from wetlands.

42. No stockpiling of construction materials in the 100-foot Buffer Zone. Unless re-used, excavated soil shall be removed from the 100-foot Buffer Zone on a day-to-day basis. All excess excavated soil and imported fill shall be removed from the 100-foot Buffer Zone upon the completion of construction and grading.

43. During construction, all solid and chemical waste shall be transported from the site and disposed of in compliance with Federal, State and local requirements for waste disposal.

44. During construction, all excavations, embankments, stockpiles, haul roads, plant sites and all other work areas within and without the project boundaries shall be maintained free from dust which

might cause a hazard or nuisance to others. Dust control shall be performed as the work proceeds or whenever a dust nuisance occurs.

45. No trash dumpsters shall be permitted within the 100-foot Buffer Zone during construction.

46. Prior to the issuance of the Certificate of Compliance, all unused construction materials, refuse and debris, including tree stumps, shall be permanently removed from, i.e. **not buried in**, the 100-foot Buffer Zone.

Stabilization

47. All embankments and disturbed areas within the 100-foot Buffer Zone and Riverfront Area shall be loamed, fertilized, and seeded upon completion of construction and grading. A minimum of 4-inches of topsoil shall form the seedbed. Only organic fertilizers with low nitrogen and phosphorous content shall be used. Loamed and seeded areas shall be mulched with hay, straw or chopped stalk mulch applied at a rate of 2½ tons per acre, and covered with erosion control blanketing, netting or other suitable material in order to provide an adequate surface protection until seed germination. Erosion control netting with biodegradable stitching is highly preferred. All disturbed areas shall be graded, loamed and seeded prior to November 1 of each year. No disturbed areas or stockpiled material shall be left unprotected during the winter season.

48. After erosion/siltation/sedimentation barriers are removed as permitted by the Conservation Agent, areas disturbed by the barriers shall be restored to match adjacent conditions.

Perpetual Conditions

The following Perpetual Conditions #49 – #55 shall remain in force permanently and will be recorded as such on the Certificate of Compliance:

49. The **STORMWATER MANAGEMENT INSPECTION & MAINTENANCE MANUAL**, submitted with the Notice of Intent, is incorporated herein, by reference, to this Order of Conditions.

50. The Conservation Agent shall be informed prior to any proposed further alterations within wetlands, 100-foot Buffer Zone, or 200-foot Riverfront Area to determine whether the work requires approval of the Conservation Commission.

51. No stormwater runoff from any impervious surfaces shall flow directly into wetlands. There shall be no erosion of the 100-foot Buffer Zone due to stormwater runoff from any impervious surfaces. (Sheet flow over a vegetated 100-foot Buffer Zone is permitted, if it causes no erosion.)

52. No non-organic fertilizers shall be used in wetlands or 100-foot Buffer Zone.

53. Except in cases of threats to human health and safety, and/or as may be permitted by an Invasive Vegetation Management Plan approved in advance by the Conservation Commission, no non-organic herbicides shall be used in wetlands or 100-foot Buffer Zone. Except in cases of threats to human health and safety (stinging insects, for example), no non-organic pesticides shall be used in lawn care, or for any other exterior purpose on a regular basis, in wetlands or 100-foot Buffer Zone.

54. There shall be no outside storage of chemicals, oil, fuel, fertilizers or other potentially hazardous materials in wetlands or 100-foot Buffer Zone.

55. No leaves, lawn clippings, or other residuals from groundskeeping operations, no Christmas trees, no pet waste, or refuse of any kind, shall be dumped in wetlands or 100-foot Buffer Zone. It is the property owner's responsibility to so inform all lawn care providers.

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

1. Date of Issuance

Please indicate the number of members who will sign this form.
This Order must be signed by a majority of the Conservation Commission.

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2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

☐ by hand delivery on

Date

☐ by certified mail, return receipt requested, on

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Winchendon Conservation Commission
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Winchendon Conservation Commission
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

Lot A Robert's Way
Project Location

345-0667
MassDEP File Number

Has been recorded at the Registry of Deeds of:

Worcester
County

Book

Page

for:
Property Owner

and has been noted in the chain of title of the affected property in:

Book

Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

GRAZ Engineering, LLC

GRAZENGINEERING.COM

• 323 West Lake Road • Fitzwilliam, NH 03447 • Telephone (603) 585-6959 • Fax (603) 585-6960

Project Description for Notice of Intent Filing

Robert's Way (Lot-C) – Map-9 Lot-383 – Winchendon, MA

This Low Impact Development Permit application is being filed for the proposed work to be done on Lot-C of the Robert's Way development off of Gardner Road in Winchendon. This project consists of five mini-storage buildings being constructed on the lot. These buildings will comprise of 12,600 S.F. of storage area. The units will range in size from 25 square feet (S.F.) to 300 S.F. The access and area around the storage units will be completely paved. There is to be no on-site well or septic because there will be no bathrooms or irrigation required either. The drainage on the lot has been sized appropriately to reduce the runoff on-site from pre-construction conditions in the 2, 10 and 100-year storms. A mixture of structural and non-structural BMPs were used to achieve this, such as infiltration trenches surrounded by vegetated filter strips. The areas being encroached on by this work consists of a wetland that leads to a very large marsh. We are proposing no work, aside from the proposed stormwater management and wetland replication that was approved through a prior notice of intent, within the 50' no disturb area. The work associated with the storage unit site plans will consist of 23,604 S.F. of area within the 100'-50' buffer zone of the wetland. There will be 2,575 S.F. of proposed pavement within the 100' buffer, about 80 feet away from the wetland. The shortest distance from any proposed work associated with the site plan would be the infiltration trench on the lot, which is 51' from the resource area.

As of October 17, 2019 there has been only minimal clearing done on Lot-C, the erosion controls have been in place and the wetland replication area has been constructed.

GRAZ Engineering, LLC
WWW.GRAZENGINEERING.COM
• 323 West Lake Road • Fitzwilliam, NH 03447 • Telephone (603) 585-6959 • Fax (603) 585-6960

October 18, 2019

Jean E. Christy, PE
Tighe & Bond
JEChristy@tigheBond.com

David Koonce, Conservation Agent
Town of Winchendon
dkoonce@townofwinchendon.com

Re: Robert's Way Industrial Park, Lot C Development
Response to Comments

Dear Jean and David:

We have enclosed a revised set of Lot-C plans for the subject site for your review, specifically:

- Site Plans entitled "Robert's Way Storage Units, Robert's Way (Lot-C)", October 17, 2019 and prepared by GRAZ Engineering, LLC
- Project Description for Low Impact Development Filing, prepared by GRAZ Engineering, LLC

The changes/edits were minor in nature and are provided to address the few remaining review comments. Review comments which were previously addressed, reviewed and mutually agreed upon have been removed from this letter.

The following includes the original comment provided by Tighe & Bond and any final recommendations to the Board and Commission or outstanding issues following in italics: followed by GRAZ's new response in bold,

Zoning Compliance

1. Pursuant to Section 5.2 of the Winchendon Zoning Bylaw (Schedule of Use Regulations), self-service storage facilities are permitted with a Special Permit by the Board of Appeals in the C1 zoning district. The Applicant should submit a Special Permit Application consistent with the requirements outlined in Section 13.6.3 B of the Winchendon Zoning Bylaw.

   T&B Response: As of the date of this letter, Tighe & Bond has not received a Special Permit application for our review.

   GRAZ: A Special Permit was approved by the ZBA on 10/16/19.

2. Section 7.2.5 of the Winchendon Zoning Bylaw requires a 50-foot vegetated buffer zone in the C1 Zoning District where the zone abuts residential property. Per the Zoning Bylaw, in the buffer zone, every effort shall be made to preserve the existing trees and ground vegetation. Where suitable vegetation is non-existent, a dense mixture of native or non-invasive trees shall be planted. We note that the subject parcel appears to abut a Residential Zoning District (Rural Residential – R80) to the south, but the site plans do not reflect a 50-foot vegetated buffer along the southern property line.

T&B Response: The parcel of the proposed project falls within both the C-1 district and R-80 district. The abutting parcel (Map-9, Lot-62), also falls within the C-1 and R-80 districts. The proposed project directly abuts a residentially zoned parcel, but currently there is not an existing structure on the residentially zoned parcel. Due to the multiple zones that exist on both properties, Tighe & Bond suggests the Planning Board consults the Winchendon Board of Appeals as the proposed project would not be permitted within the R-80 district. Within the Winchendon Zoning Bylaws, cases pertaining to lots split in separate districts, the Board of Appeals may issue a special permit after considering the compatibility of existing uses in the abutting lots consistent with the spirit of the bylaw and the master plan, in respect to Section 3.3 (Lots Split in Separate Districts).

GRAZ: A Special Permit was granted by the ZBA to extend the C1 zone to encompass all the land within this subdivision prior to submission and approval of the subdivision. The proposed work on Lot-C includes a vegetated 50 foot buffer to the residentially zoned abutting land.

3. Per Section 8.3.2 of the Zoning Bylaw, in C1, each use of property shall be provided with parking spaces in accordance with the Institute of Transportation Engineers (ITE) guidelines with an allowed variance of plus or minus 10%. The Applicant should clarify the need for parking allowances at the Site. Based on our review of the site plans, no striped parking spaces are proposed. Based on our review of the ITE Parking Generation Manual, 5th Edition, approximately three parking spaces would be appropriate for land use code (LUS) 151 (Mini-Warehouse). The Planning Board should determine whether they wish to require striped parking spaces.

   T&B Response: The site plans for the self-service storage facility should demonstrate the driveways between storage containers can accommodate two parked vehicles simultaneously if parking is omitted. The dimensions between storage facilities should be added to the site plans to display simultaneous access to multiple storage facilities is supported.

   GRAZ: Dimensions have been added to the layout plan and three parking spaces (painted) have been added.

Site Plans

7. The Applicant should confirm the limit of work associated with this project. The limit of work line shown on the plan extends off the plan sheet to the west, indicating that additional work may be included as part of this project, specifically the drainage swale.

   T&B Response: The comment has not been addressed. It is not clear if the drainage swale west and south of Lot C was constructed per the Definitive Subdivision Plans.

   GRAZ: The drainage swale has not been constructed yet, however, Conservation is requiring that it be completed now (as part of the Order for Lot-A).

9. The driveway around the west side of the westernmost storage unit appears to be approximately 10-feet wide. The Applicant should confirm adequate vehicular passing clearance is provided. We recommend the Applicant coordinate with the Fire Department regarding access throughout the project area.

   T&B Response: We recommend the Board request a review of the provided truck

routing by the Winchendon Fire Department indicating that the proposed access areas are sufficient for their emergency access needs.

GRAZ: The Fire Chief has approved the layout for fire access.

10. The Site Plans indicate a retaining wall immediately adjacent to the proposed infiltration trench. Additional information pertaining to retaining wall design and the prevention of water seeping through the wall should be provided.

    T&B Response: The comment has been addressed. We recommend, however, that the Board include a potential condition of approval to require final engineered wall design drawings prior to construction.

    GRAZ: Agreed/ Acknowledged.

11. The Applicant should provide additional detail for the proposed foundation drains for each building. It appears that the westernmost building may not provide adequate cover over the pipe base on the elevation of the outlet pipe.

    T&B Response: The Limit of Work area in question includes the drainage swale west and south of Lot C. This component of the Robert's Way Industrial Subdivision was approved through the Definitive Subdivision process. It is unclear if the swale was constructed during the construction of Robert's Way. The Board and Commission should determine if Robert's Way infrastructure, such as roadway binder course and stormwater management systems, be constructed prior to approval of Lot C development. If those systems are currently construction, the limit of work line should not extend around them unless modifications are proposed for lot development.

    GRAZ: The drainage swale has not been constructed yet, however, Conservation is requiring that it be completed now (as part of the Order for Lot-A). The 'limit of work' line was shown on the subdivision plan during our work with NHESP. The outside (west and south side) of the swale is the proposed limit of work.

12. A wetland replication area was proposed under the Robert's Way Industrial Subdivision project. Erosion control barriers should be included between the limit of work and the replicated wetland.

    T&B Response: The Commission should determine the status of the wetland replication area; if the area was constructed in accordance with the approved plan(s), the results of annual monitoring reports, and if additional restoration and/or corrective actions are required. We further recommend perimeter erosion controls be shown on the Site Plans.

    GRAZ: Erosion controls are shown on the plan (and physically exist on the site) and the replication area has been completed.

14. We recommend the drawings provide more clarity indicating existing conditions (as constructed as of today) and the work proposed.

    T&B Response: The Board and Commission should determine if Robert's Way infrastructure, such as roadway binder course and stormwater management systems, be constructed prior to approval of Lot C development.

    GRAZ: The Commission is including conditions that the subdivision stormwater system be constructed now.

    .

Stormwater Management

We offer the following comments which pertain to the contents of the Stormwater Management Report and design:

19. The Applicant has included a culvert at the proposed curb cut; however, calculations supporting the sizing of that culvert and discharge velocities were not provided for review.

    T&B Response: GRAZ should provide design calculations that support this conclusion. The calculations should include discharge velocities from the pipe to ensure downstream erosion will be prevented.

    GRAZ: The calculations are attached.

20. The application materials note that the Long-Term Pollution Prevention Plan was provided with the Definitive Subdivision Application. This document could not be located in Tighe & Bond's records. The Town should confirm receipt of this document in their files. We recommend the Town consider if this document should be provided specific to Lot C development, rather than the Robert's Way Industrial Subdivision project.

    T&B Response: A Long-Term Pollution Prevention Plan is typically prepared for post-development pollution prevention and is indicated as having been submitted in the Definitive Subdivision Application. This indication can be found on Page 5 of 8 of the Stormwater Report Checklist under Standard 4: Water Quality. The Town should confirm receipt of this document in their files and confirm whether they prefer it is specific to Lot C development.

    GRAZ: A copy of the O&M/ Long-Term Pollution Plan is enclosed.

21. The application materials note that the Stormwater Management Operation & Maintenance Plan was provided with the Definitive Subdivision Application. Tighe & Bond revisited that document in our files and determined that the Plan should be amended to incorporate inspection and maintenance budget information. We also recommend the Town consider if this document should be provided specific to Lot C development, rather than the Robert'sWay Industrial Subdivision project, and to include information regarding the easement for access and maintenance of the Detention Basin located on Lot B.

    T&B Response: Standard 9 of the Massachusetts Stormwater Handbook Stormwater Management Standards requires that an estimated operations and maintenance budget be included as part of the Long-Term Operation and Maintenance (O&M) Plan. The Plan should be amended to incorporate inspection and maintenance budget information and the Town should confirm whether they prefer it is specific to Lot C development.

    GRAZ: A copy of the O&M/ Long-Term Pollution Plan is enclosed and includes inspection & maintenance budget information.

23. Standard 8 - Minimum construction-period erosion and sediment controls are shown as part of the Site Plans, which is identified as silt fence. The Stormwater Report indicates that the Contractor will be required to develop a Stormwater Pollution Prevention Plan (SWPPP) prior to construction. We recommend a potential condition of approval requiring the Applicant to provide a copy of the SWPPP to the Board prior to construction.

    T&B Response: We recommend a potential condition of approval requiring that the Applicant provide a copy of the SWPPP to the Board prior to construction.

    GRAZ: A Stormwater Pollution Prevention Plan has been prepared, is being edited and a copy will be given to the town.

24. The Applicant should indicate whether test pits were performed in locations of proposed infiltration to confirm the location of groundwater.

    T&B Response: We recommend a potential condition of approval requiring that test pits be performed within the infiltration basin to confirm the elevation of seasonal high groundwater and soil texture prior to construction.

    GRAZ: Acknowledged.

Notice of Intent

The Lot C NOI presents work that is limited to the 100-foot Buffer Zone (MAWPA, Article 29) and excludes work within the limits of the 50-foot setback of undisturbed natural vegetation (Article 29; see review comment 20 below). It is our understanding that an Order of Conditions was issued for the Robert's Way Industrial Subdivision project, which has not been fully closed out as of the date of this letter. According to the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) "Search Wetlands NOI Projects" online tool, the Massachusetts Department of Environmental Protection (MassDEP) Central Region Office (CERO) is in receipt of the Lot C NOI but has not issued a file number or technical comments.

The following comments pertain specifically to the NOI application:

26. The Notice of Intent form was signed by the representative, without a signature by the Applicant or the Owner.

    T&B Response: The signature of the Applicant and Property Owner(s), when the Applicant is not the owner of the land on which work is proposed, on the application form indicate knowledge and consent of the application. We recommend the Commission require the submittal of a copy of WPA Form 3 page 9 with these signatures to ensure receipt of an administratively complete application.

    GRAZ: Acknowledged.

27. There appears to be an error in the parcel/lot number referenced in WPA Form 3 item 1.g. (page 1). The subject parcel number is 383, while the form references 393.

    We recommend the Commission note this apparent typographical error and reference the correct parcel number in future documents. We further note that it is within the Commission's discretion to request a corrected version of WPA Form 3 page 1.

    GRAZ: Acknowledged.

    T&B Response: The comment has been addressed.

28. The NOI documents do not present a detailed narrative project description, including but not limited to a description and color photographs of existing site conditions, proposed activities, footprint of work in Buffer Zone and local setbacks, and/or the shortest distance between the proposed limit of project disturbance and wetland resource areas.

    We recommend the Commission require the documentation summarized above, and further recommend that the Commission require the submittal of a construction sequence.

    T&B Response: Tighe & Bond is in receipt of the "NOI Narrative – Lot C" prepared by GRAZ. The brief narrative provides an overview of work proposed on Lot-C. The narrative does not quantify the footprint of work proposed within the 100-foot Buffer Zone and local setbacks, nor does it provide a measurement of the shortest distance between the proposed activities and nearest wetland resource area. The

supplemental information and responses provided by GRAZ and dated August 16, 2019 do not include site photographs documenting existing conditions. We reiterate our recommendation that the Commission require documentation of these outstanding items.

GRAZ: The narrative has been revised/updated for the project.

29. Sheet 4 of the Lot C NOI project drawings include a cross-hatched area adjacent to wetland flags WFA201, WFA202, and WFA203 that is called out as "Proposed Wetland Replication 3600 SF (see detail)." Based on Tighe & Bond's June 2019 telephone conversation with Mr. Koonce, we understand this area was prepared as mitigation for the construction of the Robert's Way roadway under MassDEP File #345-0641.

    We note the 50- and 75-foot local setbacks and 100-foot Buffer Zone are drawn from the previously delineated wetland boundary (WFA201 through WFA213 within the plan view of sheet 4), and not from the boundary of the "proposed" wetland replication area. The success of this BVW replication area is critical to compliance with the previously issued Order for MassDEP File #345-0641.

    We further note that a successful 1:1 wetland replication as mitigation for direct impacts to BVW is a requirement of the Final Order of Conditions serving as the 401 Water Quality Certificate per 314 CMR 9.03(1)(b), and that failure to meet this obligation is a violation of the Massachusetts Water Quality regulations.

    We recommend the Commission confirm the status of the wetland replication area and, if necessary, require the Applicant to identify and implement corrective actions.

    We further recommend the Commission consider the proposed activities as though the Bylaw setbacks and 100-foot Buffer Zone were drawn from the limits of the proposed wetland replacement area, which should be a functioning wetland, and request updated drawings that reflect this change. Note that revisions to Bylaw setbacks will result in proposed alterations within the 50-foot undisturbed natural vegetation setback, which would necessitate a request for and consideration of a waiver from §29.9.

    T&B Response: We recommend the Commission include a statement in their official meeting minutes and/or other documentation affirming their decision to grant a Waiver from the requirements of §29.9 of the Winchendon Wetlands Protection Bylaw.

    GRAZ: This item was discussed at length during the July Conservation Commission meeting. The work as shown (and previously approved) will be allowed within the 50' no-disturb zone of the wetlands. The wetland replication area has been constructed, repaired, surveyed and inspected/certified by the wetland scientist.

30. In consideration of Comment 20, alterations, including grading/earthwork and the construction of stormwater management features, are proposed within the 50-foot setback of undisturbed natural vegetation as noted above and shown on sheet 4 of the project drawings. The Lot C NOI materials provided for this peer review did not include a request for waiver from the requirements of §29.9 of the Winchendon Wetlands Protection Bylaw.

    We recommend the Commission require confirmation that the Applicant is seeking a waiver for alterations within the 50-foot setback of undisturbed natural vegetation. We further recommend that, in the event that a waiver is requested, the Commission require sufficient documentation to determine if compliance with the setbacks will result in greater harm to the interests of the Bylaw, or if no harm would be done to the interests of the Bylaw, by the proposed action(s).

As demonstration of “no harm” to the Buffer Zone and adjacent Bordering Vegetated Wetland (BVW), we further recommend the Commission require the Applicant address the change in light regime as it may affect the wetland plant community within the BVW and could be considered an alteration of vegetation and, therefore, an impact to BVW.

T&B Response: Refer to our response to Item 29.

GRAZ: See comment 29, above

31. Based on MassGIS Google Orthoimagery of the project area dated 2017, the proposed limits of grading and construction will appear to require clearing and grubbing of a generally forested site. Presumably, as photographs of existing conditions were not provided with the Lot A NOI and the type and/or limits of existing vegetation are not clearly documented by the project drawings, the site is forested. A proposed landscaping plan was not included with the Lot A NOI materials provided for this peer review.

    We recommend the Commission require information pertaining to the proposed landscaping plan be provided for their review and approval.

    T&B Response: We recommend the Commission require the submittal of a list plant species introduced to the site, including but not limited to, the native grass seed mix, as part of an as-built requirement. We further recommend the Commission consider a requirement prohibiting the introduction of non-native and/or invasive plant species within wetland resource areas and the Buffer Zone.

    GRAZ: Additional notes have been added to sheet-4.

33. WPA Form 3 page 9, as provided for this peer review, does not include the Applicant’s signature.

    We recommend the Commission confirm that a copy of WPA Form 3 page 9, as signed by the Applicant, is available for the Commission’s files. In the event that the Applicant’s signature has not been provided, we further recommend the Commission require this documentation prior to closing the public hearing and rendering a decision to grant [or deny] approval.

    T&B Response: Refer to our response to Item 26.

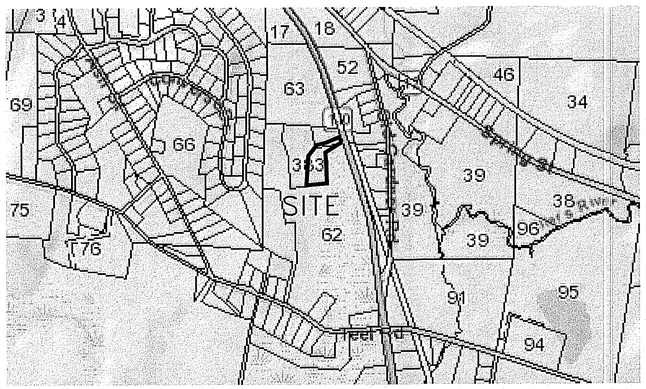
    GRAZ: Acknowledged.

Based on the preceding, I’m sure the Commission should be able to close the hearing and issue an Order of Conditions.

Sincerely,

Paul F. Grasewicz, P.E.
GRAZ Engineering, LLC

cc. Jamison Van Dyke



TAX–MAP LOCUS PLAN 1"=1000'

APPROVED UNDER THE
RULES & REGULATIONS OF SITE PLANS
PLANNING BOARD OF WINCHENDON

DATE:

ROBERT'S WAY STORAGE UNITS

ROBERT'S WAY (LOT-C)
WINCHENDON, MASSACHUSETTS
MAP-9 LOT-383
APRIL 19, 2019

APPLICANT/DEVELOPER: BARKLEY ENTERPRISES, LLC; 1032 N.H. RT 119; RINDGE, NH 03461

LAND OWNER: BARKLEY ENTERPRISES, LLC; 1032 N.H. RT 119; RINDGE, NH 03461

ENGINEER/SURVEYOR: GRAZ ENGINEERING LLC; 323 WEST LAKE ROAD; FITZWILLIAM, NH 03447

REFERENCE PLANS & DEEDS

1. SUBJECT LOT ASSESSOR'S MAP–9 LOT–383
   WCRD PLAN BOOK–924 PAGE–8
   WCRD DEED BOOK–56468 PAGE–38

NOTES:

1) ZONING DIMENSIONAL REQUIREMENTS: HIGHWAY COMMERCIAL ZONING DISTRICT

REQUIREMENT	REQUIRED	PROVIDED
FRONT SETBACK	75'	93.1'
SIDE SETBACK	25'	37.3'
REAR SETBACK	25'	27.7'
AREA	75,000 S.F.	208.341 S.F.
FRONTAGE	250'	439.79'
BLDG HEIGHT	45' MAX	24.7'
LOT COVERAGE	45% MAX	20.5%
PRKING SPACES	N/A	N/A
HANDICAP	N/A	N/A
PRKING LOT PLANTING	N/A	N/A

2) A SPECIAL PERMIT FOR THE SELF–STORAGE USE WAS GRANTED BY THE WINCHENDON ZBA ON OCTOBER 16, 2019.

DRAWING INDEX

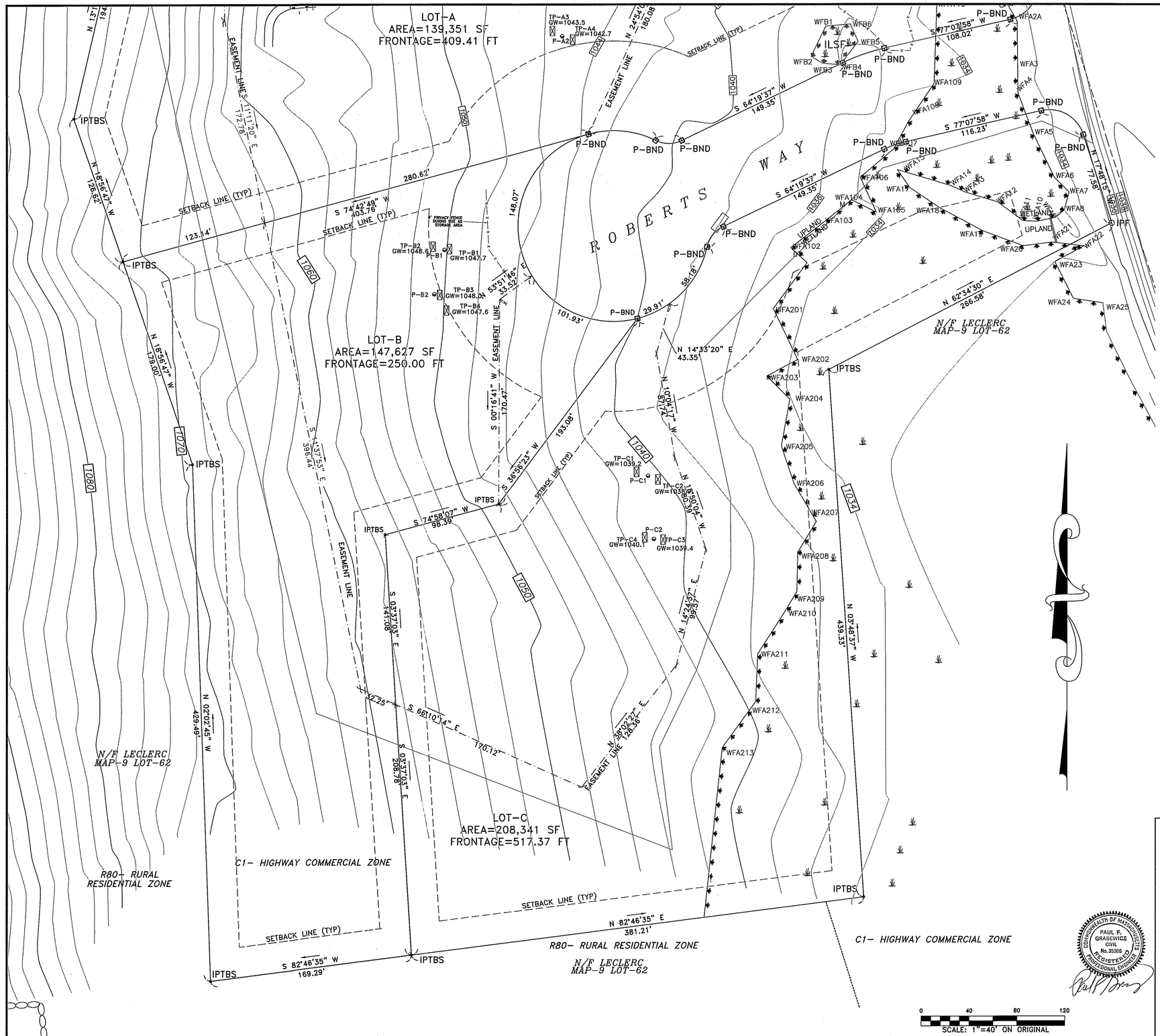
COMMONWEALTH OF MASSACHUSETTS
PAUL F. GRASEWICZ
CIVIL
No. 35306
REGISTERED PROFESSIONAL ENGINEER

REVISED BY: PFG
DATE: 10/17/19

PB #

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585–6959

JOB NO. 15004



LEGEND

N/F	NOW OR FORMER OWNER
BND□	DRILL HOLE IN STONE BOUND FOUND
IPF ○	IRON PIN FOUND
—D—D—	EXISTING DRAINAGE
—X—X—	EXISTING FENCE
—S—S—	EXISTING SEWER
—FM—FM—	EXISTING FORCE MAIN
123.45'(D)	DEEDED DISTANCE (IF DIFFERENT)
SMH	SEWER MAN HOLE
DMH	DRAINAGE MAN HOLE
CB	CATCH BASIN
⌀ UP	UTILITY POLE
—E—E—	OVERHEAD ELECTRIC

APPROVED UNDER THE
RULES & REGULATIONS OF SITE-PLANS
PLANNING BOARD OF WINCHENDON

_____

_____

_____

_____

_____

DATE:

NOTES

1. THE PURPOSE OF THIS PLAN IS TO GIVE AN OVERVIEW OF LOT-C ON ROBERT'S WAY.

2. THE SUBJECT PROPERTY IS LOCATED IN THE HIGHWAY COMMERCIAL ZONING DISTRICT.

   DIMENSIONAL REQUIREMENTS:
   AREA=75,000 S.F.
   FRONTAGE=250'
   MINIMUM FRONT SETBACK=75'
   MINIMUM SIDE SETBACK=25'
   MINIMUM REAR SETBACK=25'

3. FIELD SURVEY PERFORMED BY R-T-K GNSS & INSTRUMENT TO THE STANDARDS OF MASSACHUSETTS REGULATION 250 CMR 6.00 BY GRAZ ENGINEERING ON THE FOLLOWING DATES:
   6/4/15, 6/16/15 – 6/18/15, 7/2/15, 7/6/15, 7/28/15,
   10/14/16, 11/15/16, 5/4/17, AND 9/7/17.

4. CURRENT PRINCIPAL LAND USE IS WOODLAND.

0 40 80 120
SCALE: 1"=40' ON ORIGINAL

COMMONWEALTH OF MASSACHUSETTS
PAUL F. GRASEWICZ
CIVIL
No. 39305
REGISTERED
PROFESSIONAL ENGINEER

REVISED BY: PFG
DATE: 10/17/19

PB #

EXISTING PROPERTY PLAN
ROBERT'S WAY STORAGE UNITS
MAP-9 LOT-383
ROBERT'S WAY (LOT-C)
WINCHENDON, MA 01475

PREPARED FOR:
BARKLEY ENTERPRISES, LLC
1032 N.H. RT 119
RINDGE, NH 03461

APRIL 19, 2019

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 15004

LEGEND

N/F	NOW OR FORMER OWNER
BND□	DRILL HOLE IN STONE BOUND FOUND
IPF ○	IRON PIN FOUND
—D—D—	EXISTING DRAINAGE
—X—X—	EXISTING FENCE
—S—S—	EXISTING SEWER
—FM-FM—	EXISTING FORCE MAIN
123.45'(D)	DEEDED DISTANCE (IF DIFFERENT)
SMH	SEWER MAN HOLE
DMH	DRAINAGE MAN HOLE
CB	CATCH BASIN

APPROVED UNDER THE RULES & REGULATIONS OF SITE PLANS PLANNING BOARD OF WINCHENDON

_____

_____

_____

_____

_____

DATE:

NOTES

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE GENERAL LAYOUT OF THE PROPOSED BUILDING AND THE FEATURES TO SUPPORT IT.
2. THE SUBJECT PROPERTY IS LOCATED IN THE HIGHWAY COMMERCIAL ZONING DISTRICT.

   DIMENSIONAL REQUIREMENTS:
   AREA=75,000 S.F.
   FRONTAGE=250'
   MINIMUM FRONT SETBACK=75'
   MINIMUM SIDE SETBACK=25'
   MINIMUM REAR SETBACK=25'
3. ANY MINOR MODIFICATIONS TO THE INFORMATION SHOWN ON THE APPROVED SITE PLANS SHALL BE SUBMITTED TO THE BUILDING INSPECTOR AS A MINOR PLAN REVISION FOR APPROVAL PRIOR TO THE WORK BEING PERFORMED.
4. THE PROPOSED BUILDINGS CONSIST OF 12,600 S.F. OF MINI-STORAGE AREA.
5. TOTAL NUMBER OF UNITS PER SIZE:
   12 x 25 S.F.
   52 x 50 S.F.
   38 x 100 S.F.
   14 x 150 S.F.
   8 x 200 S.F.
   4 x 250 S.F.
   4 x 300 S.F.
6. PROPOSED TREELINE IS TO FOLLOW THE LIMIT OF WORK LINE, WHICH SHALL BE MARKED OUT BEFORE THE START OF CONSTRUCTION.
7. PROPOSED GATE TO BE A SLIDING GATE WITH KEY-CODE ENTRY.
8. PARKING SPACES SHALL BE DELINEATED WITH STANDARD WHITE PAVEMENT PAINT PER MASSDOT.

COMMONWEALTH OF MASSACHUSETTS
PAUL F. GRASEWICZ
CIVIL
No. 35306
REGISTERED PROFESSIONAL ENGINEER

0 20 40 60
SCALE: 1"=20' ON ORIGINAL

REVISED BY: PFG
DATE: 10/17/19

PB #

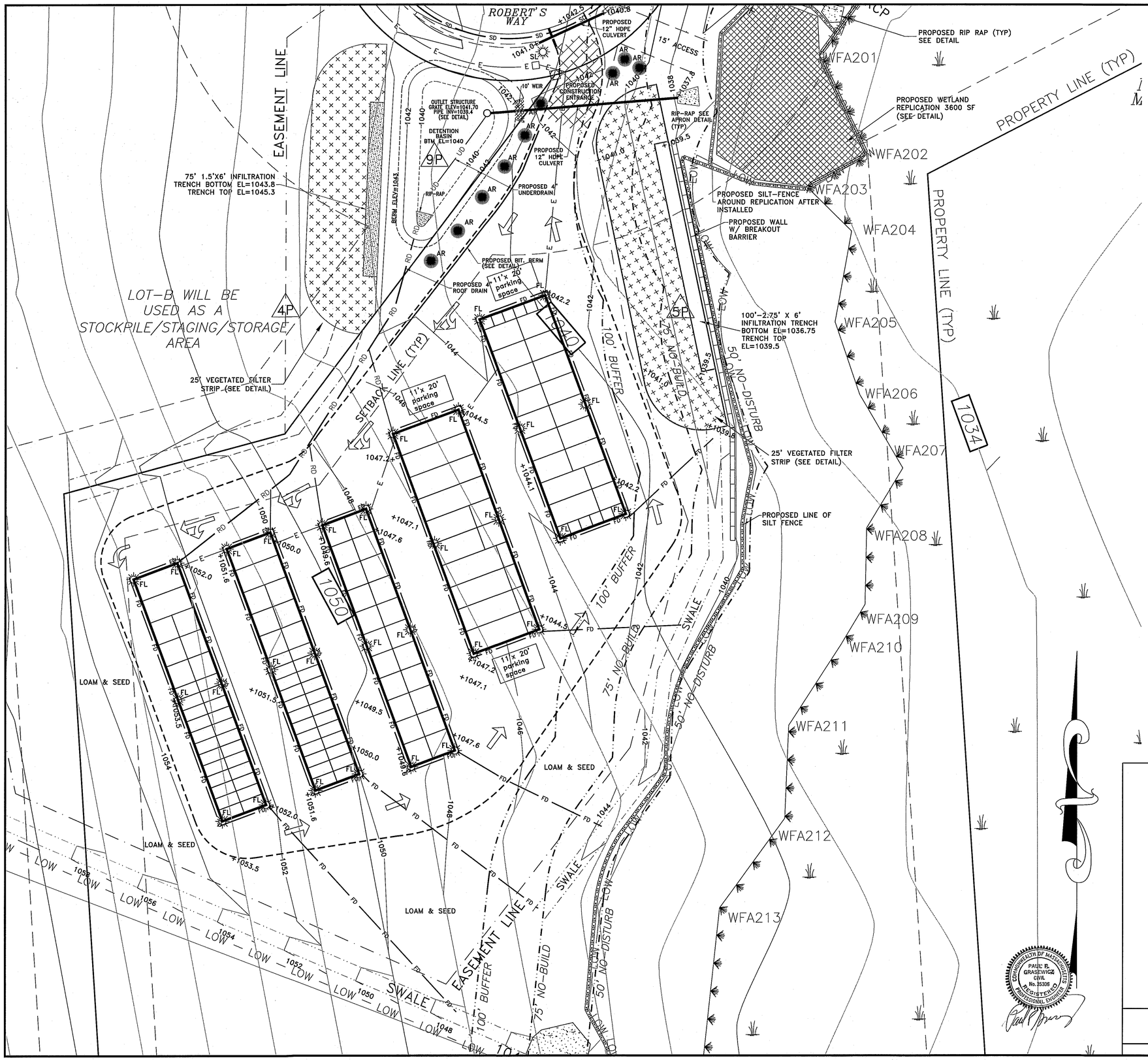
LAYOUT PLAN
ROBERT'S WAY STORAGE UNITS
MAP-9 LOT-383
ROBERT'S WAY (LOT-C)
WINCHENDON, MA 01475

PREPARED FOR:
BARKLEY ENTERPRISES, LLC
1032 N.H. RT 119
RINDGE, NH 03461

APRIL 19, 2019

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 15004



LEGEND

N/F	NOW OR FORMER OWNER
P–BND □	BOUND TO BE SET
IPTBS○	IRON PIN TO BE SET
— SD —	SUB–DRAIN
— E —	UNDERGROUND ELECTRIC
— FD —	FOOTING DRAIN
— UD —	UNDERDRAIN
— RD —	ROOF DRAIN
FL	FLOOD LIGHT
SL	STREET LIGHT
AR	1.5" CALIPER ARBORVITAE

APPROVED UNDER THE RULES & REGULATIONS OF SITE PLANS PLANNING BOARD OF WINCHENDON

DATE:

NOTES

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE PROPOSED UTILITIES, EROSION CONTROL, GRADING, AND LANDSCAPING ASSOCIATED WITH THE COMPLETION OF THE PROJECT.
2. THE SUBJECT PROPERTY IS LOCATED IN THE HIGHWAY COMMERCIAL ZONING DISTRICT.
   DIMENSIONAL REQUIREMENTS:
   AREA=75,000 S.F.
   FRONTAGE=250'
   MINIMUM FRONT SETBACK=75'
   MINIMUM SIDE SETBACK=25'
   MINIMUM REAR SETBACK=25'
3. THE CONTRACTOR SHALL OBTAIN A TOWN OPENING PERMIT PRIOR TO ANY CONSTRUCTION WITHIN TOWN RIGHT–OF–WAYS.
4. ALL WATER AND SEWER MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE TOWN OF WINCHENDON REQUIREMENTS.
5. ALL WATER AND SEWER CONSTRUCTION SHALL BE INSPECTED BY THE TOWN OF WINCHENDON BEFORE BEING BACKFILLED. THE TOWN SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE REQUIRED INSPECTIONS.
6. PLEASE REFER TO INITIAL SUBDIVISION PLANS FOR ENTIRE SITE DRAINAGE.
7. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO CONSTRUCTION.
8. EROSION CONTROL SHALL CONFORM TO THE TOWN OF WINCHENDON CONSERVATION COMMISSION REQUIREMENTS AS STATED IN THE ORDER OF CONDITIONS, IF APPLICABLE.
9. ANY STOCKPILE OVER 10' MUST HAVE SAFETY FENCING AROUND IT, OR SITE ACCESS MUST BE RESTRICTED..
10. FILL CONTAINING HAZARDOUS MATERIALS SHALL NOT BE USED FOR FILL.
11. ANY CATCHBASINS, SUMPS AND STORMWATER BASINS SHALL BE CLEANED FOLLOWING CONSTRUCTION AND ANNUALLY THEREAFTER.
12. ANY FILL BEING HAULED TO OR OUT OF THE SITE SHALL BE RESTRICTED TO THE HOURS BETWEEN 9 A.M. AND 4 P.M. ON WEEKDAYS.
13. ALL IMPERVIOUS SURFACES (DRIVEWAYS) SHALL BE CONSTRUCTED AS SHOWN ON THE DETAIL.
14. POND 9P HAS BEEN ADDED, AND THE LOT–C INFILTRATION TRENCH HAS BEEN DEEPENDED DUE TO THE ADDITIONAL RUNOFF THAT WILL OCCUR DUE TO THE INCREASE OF IMPERVIOUS AREA FROM THE ORIGINAL CONCEPTUAL DESIGN.
15. GRASS SEED SHALL CONSIST OF MASS–DOT SLOPES AND SHOULDERS SEED MIX AS SOLD BY 'SITEONE' LANDSCAPING (ITEM 32–68–859). A LIST OF SEED MIX AND PLANTS SHALL BE GIVEN TO THE COMMISSION.
16. NON–NATIVE PLANTS AN/OR INVASIVE PLANT SPECIES SHALL NOT BE INTRODUCED TO THE SITE.

REVISED BY: PFG
DATE: 10/17/19

PB #

COMMONWEALTH OF MASSACHUSETTS
PAUL R. GRASEWICZ
CIVIL
No. 35306
REGISTERED PROFESSIONAL ENGINEER

UTILITIES, GRADING, EROSION CONTROL, AND LANDSCAPING PLAN
ROBERT'S WAY STORAGE UNITS
MAP–9 LOT–383
ROBERT'S WAY (LOT–C)
WINCHENDON, MA 01475

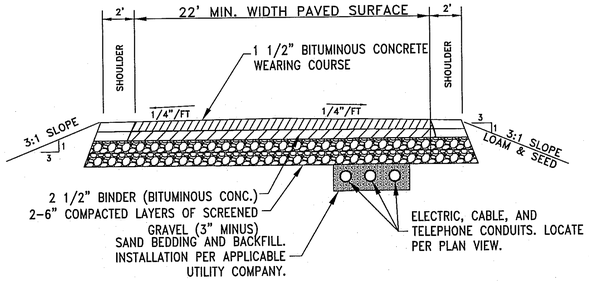
PREPARED FOR:
BARKLEY ENTERPRISES, LLC
1032 N.H. RT 119
RINDGE, NH 03461

APRIL 19, 2019

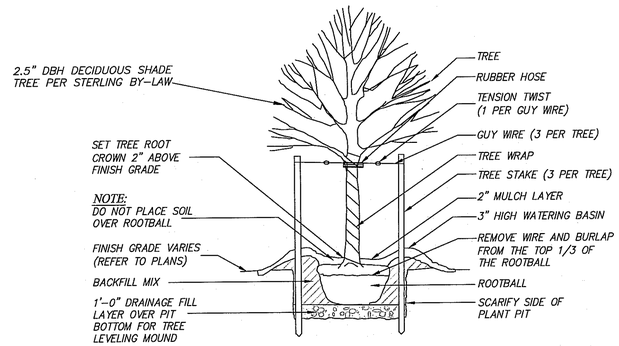
GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585–6959

JOB NO. 15004

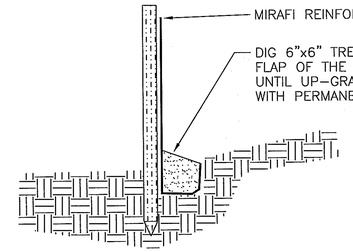
SHEET 4 OF 5



DRIVEWAY CROSS-SECTION NTS



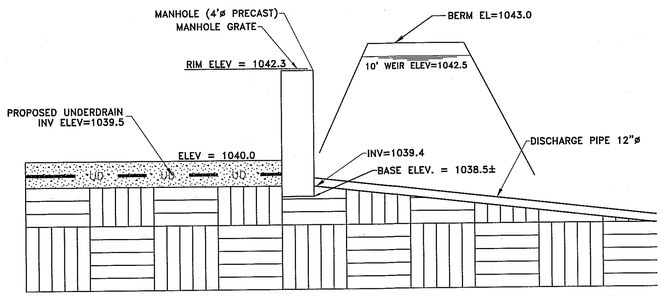
TREE PLANTING/WITHOUT DRAINAGE



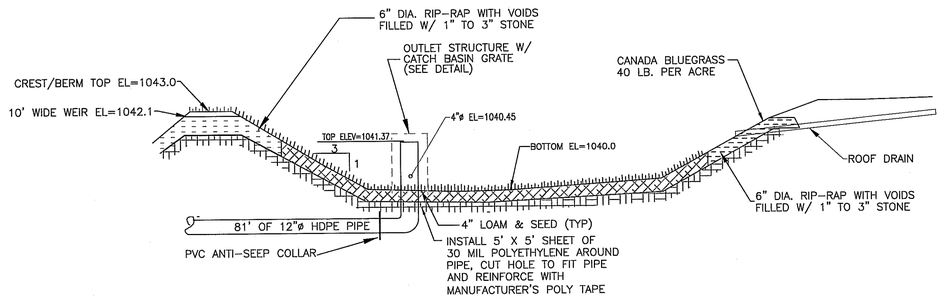
SILT FENCE N.T.S.

APPROVED UNDER THE RULES & REGULATIONS OF SITE PLANS PLANNING BOARD OF WINCHENDON

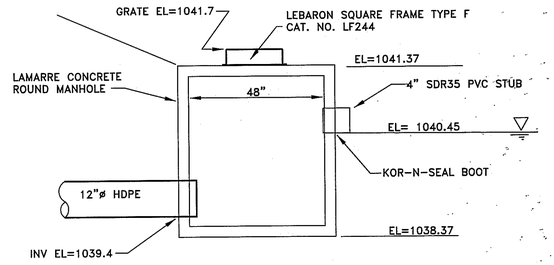
DATE:



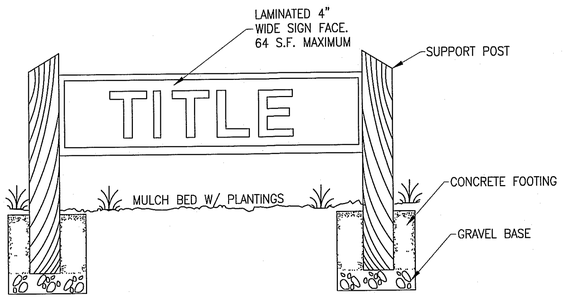
BASIN 9P CROSS-SECTION AT OUTLET NTS



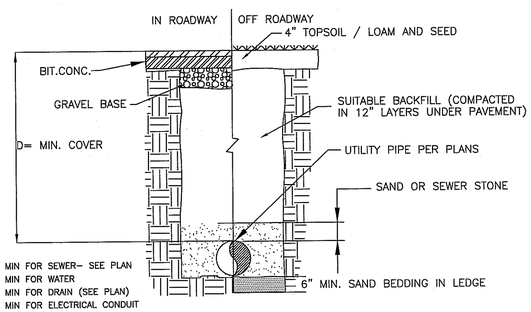
POND-9P CROSS SECTION NTS



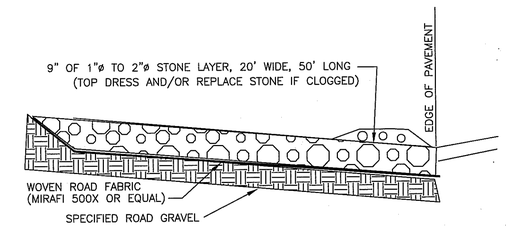
OUTLET STRUCTURE DETAIL NTS



TYPICAL SIGN DETAIL



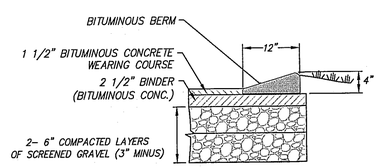
TYPICAL TRENCH DETAIL (N.T.S.)



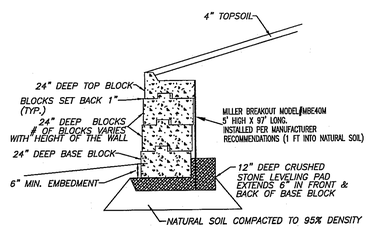
NOTE: IF STONE PAD DOES NOT ADEQUATELY PRECLUDE MUD TRACKING ONTO ROBERT'S WAY, HAND REMOVAL AND/OR WASHING AT APPROVED LOCATION SHALL BE PERFORMED.

CONSTRUCTION ENTRANCE DETAIL NTS

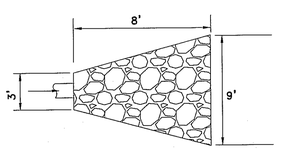
REVISED BY: PFG
DATE: 10/17/19



BITUMINOUS BERM



CONCRETE BLOCK WALL DETAIL



CULVERT DISCHARGE APRON

COMMONWEALTH OF MASSACHUSETTS
PAUL R. GRASEWICZ
CIVIL
No.48396
REGISTERED
PROFESSIONAL ENGINEER

PB #

DETAIL SHEET 1
ROBERT'S WAY STORAGE UNITS
MAP-9 LOT-383
ROBERT'S WAY (LOT-C)
WINCHENDON, MA 01475

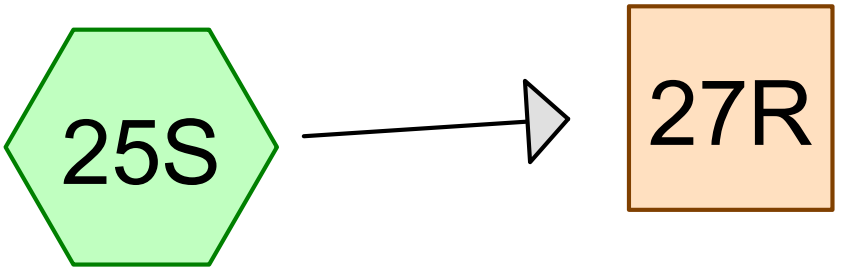
PREPARED FOR:
BARKLEY ENTERPRISES, LLC
1032 N.H. RT 119
RINDGE, NH 03461

APRIL 19, 2019

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 15004

SHEET 5 OF 5



Area to Culvert

Culvert

Subcat Reach Pond Link

Routing Diagram for 15004- Culvert
Prepared by HP, Printed 10/17/2019

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.561	74	>75% Grass cover, Good, HSG C (25S)
0.066	98	Paved parking, HSG C (25S)
0.627	**77**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 25S: Area to Culvert Runoff Area=27,315 sf 10.56% Impervious Runoff Depth>0.98"
Tc=6.0 min CN=77 Runoff=0.75 cfs 0.051 af

Reach 27R: Culvert Avg. Flow Depth=0.38' Max Vel=2.71 fps Inflow=0.75 cfs 0.051 af
12.0" Round Pipe n=0.010 L=37.0' S=0.0027 '/' Capacity=2.41 cfs Outflow=0.74 cfs 0.051 af

Total Runoff Area = 0.627 ac Runoff Volume = 0.051 af Average Runoff Depth = 0.98"
89.44% Pervious = 0.561 ac 10.56% Impervious = 0.066 ac

Summary for Subcatchment 25S: Area to Culvert

Runoff = 0.75 cfs @ 12.10 hrs, Volume= 0.051 af, Depth> 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.00"

Area (sf)	CN	Description
2,885	98	Paved parking, HSG C
24,430	74	>75% Grass cover, Good, HSG C
27,315	77	Weighted Average
24,430		89.44% Pervious Area
2,885		10.56% Impervious Area

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

Summary for Reach 27R: Culvert

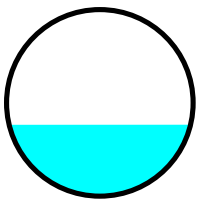
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.627 ac, 10.56% Impervious, Inflow Depth > 0.98" for 2-Year event
Inflow = 0.75 cfs @ 12.10 hrs, Volume= 0.051 af
Outflow = 0.74 cfs @ 12.10 hrs, Volume= 0.051 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.71 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.15 fps, Avg. Travel Time= 0.5 min

Peak Storage= 10 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.41 cfs

12.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 37.0' Slope= 0.0027 '/'
Inlet Invert= 1,041.20', Outlet Invert= 1,041.10'



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 25S: Area to Culvert Runoff Area=27,315 sf 10.56% Impervious Runoff Depth>2.05"
Tc=6.0 min CN=77 Runoff=1.59 cfs 0.107 af

Reach 27R: Culvert Avg. Flow Depth=0.59' Max Vel=3.28 fps Inflow=1.59 cfs 0.107 af
12.0" Round Pipe n=0.010 L=37.0' S=0.0027 '/' Capacity=2.41 cfs Outflow=1.58 cfs 0.107 af

Total Runoff Area = 0.627 ac Runoff Volume = 0.107 af Average Runoff Depth = 2.05"
89.44% Pervious = 0.561 ac 10.56% Impervious = 0.066 ac

Summary for Subcatchment 25S: Area to Culvert

Runoff = 1.59 cfs @ 12.09 hrs, Volume= 0.107 af, Depth> 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
2,885	98	Paved parking, HSG C
24,430	74	>75% Grass cover, Good, HSG C
27,315	77	Weighted Average
24,430		89.44% Pervious Area
2,885		10.56% Impervious Area

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

Summary for Reach 27R: Culvert

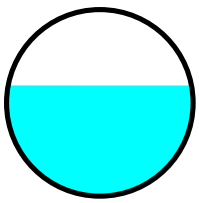
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.627 ac, 10.56% Impervious, Inflow Depth > 2.05" for 10-Year event
Inflow = 1.59 cfs @ 12.09 hrs, Volume= 0.107 af
Outflow = 1.58 cfs @ 12.10 hrs, Volume= 0.107 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.28 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 0.5 min

Peak Storage= 18 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.41 cfs

12.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 37.0' Slope= 0.0027 '/'
Inlet Invert= 1,041.20', Outlet Invert= 1,041.10'



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 25S: Area to Culvert Runoff Area=27,315 sf 10.56% Impervious Runoff Depth>3.17"
Tc=6.0 min CN=77 Runoff=2.44 cfs 0.166 af

Reach 27R: Culvert Avg. Flow Depth=0.83' Max Vel=3.49 fps Inflow=2.44 cfs 0.166 af
12.0" Round Pipe n=0.010 L=37.0' S=0.0027 '/' Capacity=2.41 cfs Outflow=2.43 cfs 0.165 af

Total Runoff Area = 0.627 ac Runoff Volume = 0.166 af Average Runoff Depth = 3.17"
89.44% Pervious = 0.561 ac 10.56% Impervious = 0.066 ac

Summary for Subcatchment 25S: Area to Culvert

Runoff = 2.44 cfs @ 12.09 hrs, Volume= 0.166 af, Depth> 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=5.90"

Area (sf)	CN	Description
2,885	98	Paved parking, HSG C
24,430	74	>75% Grass cover, Good, HSG C
27,315	77	Weighted Average
24,430		89.44% Pervious Area
2,885		10.56% Impervious Area

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

Summary for Reach 27R: Culvert

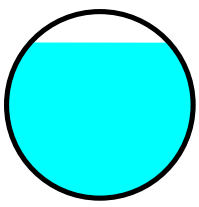
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 101% of Manning's capacity

Inflow Area = 0.627 ac, 10.56% Impervious, Inflow Depth > 3.17" for 50-Year event
Inflow = 2.44 cfs @ 12.09 hrs, Volume= 0.166 af
Outflow = 2.43 cfs @ 12.10 hrs, Volume= 0.165 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.49 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.46 fps, Avg. Travel Time= 0.4 min

Peak Storage= 26 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.41 cfs

12.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 37.0' Slope= 0.0027 '/'
Inlet Invert= 1,041.20', Outlet Invert= 1,041.10'



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 25S: Area to Culvert Runoff Area=27,315 sf 10.56% Impervious Runoff Depth>3.95"
Tc=6.0 min CN=77 Runoff=3.03 cfs 0.206 af

Reach 27R: Culvert Avg. Flow Depth=1.00' Max Vel=3.40 fps Inflow=3.03 cfs 0.206 af
12.0" Round Pipe n=0.010 L=37.0' S=0.0027 '/' Capacity=2.41 cfs Outflow=2.41 cfs 0.206 af

Total Runoff Area = 0.627 ac Runoff Volume = 0.206 af Average Runoff Depth = 3.95"
89.44% Pervious = 0.561 ac 10.56% Impervious = 0.066 ac

Summary for Subcatchment 25S: Area to Culvert

Runoff = 3.03 cfs @ 12.09 hrs, Volume= 0.206 af, Depth> 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.83"

Area (sf)	CN	Description
2,885	98	Paved parking, HSG C
24,430	74	>75% Grass cover, Good, HSG C
27,315	77	Weighted Average
24,430		89.44% Pervious Area
2,885		10.56% Impervious Area

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

Summary for Reach 27R: Culvert

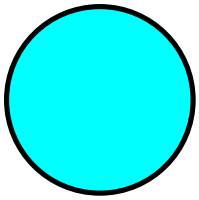
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 126% of Manning's capacity
[76] Warning: Detained 0.004 af (Pond w/culvert advised)

Inflow Area = 0.627 ac, 10.56% Impervious, Inflow Depth > 3.95" for 100-Year event
Inflow = 3.03 cfs @ 12.09 hrs, Volume= 0.206 af
Outflow = 2.41 cfs @ 12.10 hrs, Volume= 0.206 af, Atten= 20%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.40 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.52 fps, Avg. Travel Time= 0.4 min

Peak Storage= 29 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.41 cfs

12.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 37.0' Slope= 0.0027 '/'
Inlet Invert= 1,041.20', Outlet Invert= 1,041.10'



Based on Figure 7.45, use a 6" dia stone apron 8' lg x 3' & 9' widths

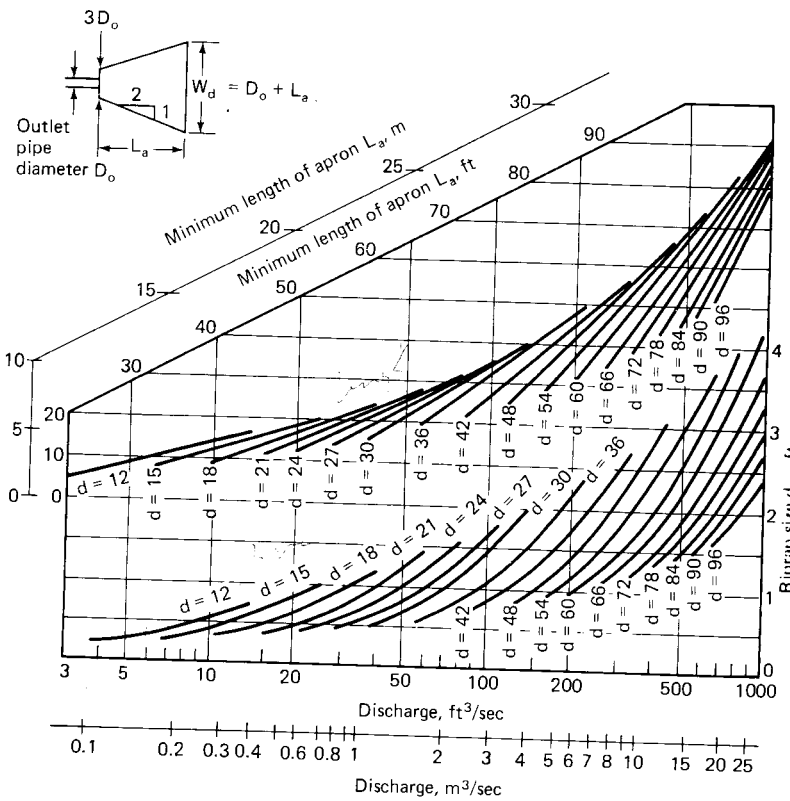


Fig. 7.45 Design of riprap outlet protection from a round pipe flowing full; mini tailwater conditions. (6, 14)

to find the riprap size and apron length. The apron width at the pipe end sh be 3 times the pipe diameter. Where there is a well-defined channel immedia downstream from the apron, the width of the downstream end of the ap should be equal to the width of the channel. Where there is no well-defined c nel immediately downstream from the apron, minimum tailwater conditi apply and the width of the downstream end of the apron should be equal to t pipe diameter plus the length of the apron.

EXAMPLE 7.4 Riprap Outlet Protection Design Calculation for Mini Tailwater Condition

Given: A flow of 6 ft^3/sec (0.17 m^3/sec) discharges from a 12-in (30-cm) pipe onto a 2 percent grassy slope with no defined channel.

Find: The required length, width, and median stone size d_{50} for a riprap apron.

Tighe&Bond
Engineers | Environmental Specialists

W-1157-30
October 24, 2019

Tracy Murphy, Director of Development
Town of Winchendon
109 Front Street
Winchendon, MA 01475

David Koonce, Conservation Agent
Town of Winchendon
109 Front Street
Winchendon, MA 01475

Re: **Robert's Way** Industrial Park, Lot C Development – Peer Review
Final Response to Comments

Dear Tracy and David:

Tighe & Bond has been retained by the Town of Winchendon to provide Peer Review Services to the Planning Board and Conservation Commission in their review of the Site Plan Review Application, Low Impact Design Permit Application, and Notice of Intent for the construction of multiple storage buildings on Robert's Way, Lot C in the Town of Winchendon, Massachusetts. The property is located within the C1-Highway Commercial zoning district, according to the latest Zoning Map, dated November 2, 2009. The Applicant, Barkley Enterprises, LLC, has provided the following documents for review:

- Site Plans entitled "Robert's Way Storage Units, Robert's Way (Lot-C)", dated April 19, 2019 and prepared by GRAZ Engineering, LLC
- Project Description for Low Impact Development Filing, prepared by GRAZ Engineering, LLC
- Notice of Intent, prepared by GRAZ Engineering, LLC

The Site Plans Review and LID permit application documents were reviewed for compliance with general engineering practices, Winchendon Zoning Bylaw, Low Impact Development Bylaw, Site Plan Design Guidelines of Massachusetts, the Massachusetts Stormwater Management Standards (Standards) and the Massachusetts Stormwater Handbook (Handbook). The Notice of Intent documents were reviewed for compliance with the Massachusetts Wetlands Protection Act (M.G.L. c. 131 § 40) and its implementing regulations (310 CMR 10.00). Tighe & Bond issued a letter with initial peer review comments on July 1, 2019 and received responses to those comments from GRAZ Engineering, LLC (GRAZ) on August 19, 2019. A second round of comments was provided to the Town and GRAZ, dated September 12, 2019. A response to those comments was provided by GRAZ, dated October 18, 2019. Included with those comments were the following:

- Site Plans entitled "Robert's Way Storage Units, Robert's Way (Lot-C)", revised October 18, 2019 and prepared by GRAZ Engineering, LLC
- Stormwater Management Inspection & Maintenance Manual, dated October 18, 2019
- Project Description for Low Impact Development Filing, prepared by GRAZ Engineering, LLC

- Culvert Hydrology, dated October 17, 2019

The following includes the original comment provided by a series of Tighe & Bond comments, followed by GRAZ's response in bold, and any final recommendations to the Board and Commission or outstanding issues following in italics. We note that not all comments required a response from GRAZ following the September 12, 2019 letter issuance.

Zoning Compliance

1. Pursuant to Section 5.2 of the Winchendon Zoning Bylaw (Schedule of Use Regulations), self-service storage facilities are permitted with a Special Permit by the Board of Appeals in the C1 zoning district. The Applicant should submit a Special Permit Application consistent with the requirements outlined in Section 13.6.3 B of the Winchendon Zoning Bylaw.

   GRAZ: A Special Permit application will be submitted.

   T&B Response: As of the date of this letter, Tighe & Bond has not received a Special Permit application for our review.

   GRAZ Response 10/18/19: A Special Permit was approved by the ZBA on 10/16/19.

   T&B Response 10/24/19: The comment has been addressed.

2. Section 7.2.5 of the Winchendon Zoning Bylaw requires a 50-foot vegetated buffer zone in the C1 Zoning District where the zone abuts residential property. Per the Zoning Bylaw, in the buffer zone, every effort shall be made to preserve the existing trees and ground vegetation. Where suitable vegetation is non-existent, a dense mixture of native or non-invasive trees shall be planted. We note that the subject parcel appears to abut a Residential Zoning District (Rural Residential – R80) to the south, but the site plans do not reflect a 50-foot vegetated buffer along the southern property line.

   GRAZ: **The closest residential zone is >50' away from the proposed work (to the southeast). There is a 50' no**-disturb zone from a wetland that **ensures that there is 50'. The Bylaw does not mandate the** buffer to residentially zoned land. We defer to the planning/zoning interpretation of this item.

   T&B Response: The parcel of the proposed project falls within both the C-1 district and R-80 district. The abutting parcel (Map-9, Lot-62), also falls within the C-1 and R-80 districts. The proposed project directly abuts a residentially zoned parcel, but currently there is not an existing structure on the residentially zoned parcel. Due to the multiple zones that exist on both properties, Tighe & Bond suggests the Planning Board consults the Winchendon Board of Appeals as the proposed project would not be permitted within the R-80 district. Within the Winchendon Zoning Bylaws, cases pertaining to lots split in separate districts, the Board of Appeals may issue a special permit after considering the compatibility of existing uses in the abutting lots consistent with the spirit of the bylaw and the master plan, in respect to Section 3.3 (Lots Split in Separate Districts).

   GRAZ Response 10/18/19: A Special Permit was granted by the ZBA to extend the C1 zone to encompass all the land within this subdivision prior to submission and approval of the subdivision. The proposed work on Lot-C includes a vegetated 50 foot buffer to the residentially zoned abutting land.

   T&B Response 10/24/19: The comment has been addressed.

3. Per Section 8.3.2 of the Zoning Bylaw, in C1, each use of property shall be provided with parking spaces in accordance with the Institute of Transportation Engineers (ITE) guidelines with an allowed variance of plus or minus 10%. The Applicant should clarify the need for parking allowances at the Site. Based on our review of the site plans, no striped parking spaces are proposed. Based on our review of the ITE Parking Generation Manual, 5th Edition, approximately three parking spaces would be appropriate for land use code (LUS) 151 (Mini-Warehouse). The Planning Board should determine whether they wish to require striped parking spaces.

   GRAZ: Parking spaces should not be needed as there will be no employee(s) on-site and it is self-service. The users typically drive up to their unit and load/ unload.

   T&B Response: The site plans for the self-service storage facility should demonstrate the driveways between storage containers can accommodate two parked vehicles simultaneously if parking is omitted. The dimensions between storage facilities should be added to the site plans to display simultaneous access to multiple storage facilities is supported.

   GRAZ Response 10/18/19: Dimensions have been added to the layout plan and three parking spaces (painted) have been added.

   T&B Response 10/24/19: The comment has been addressed.

Site Plans

The following comments pertain to the contents of the Site Plans:

4. The Applicant has provided a locus plan which is not to scale. Section 3.3.3 of Rules and Regulations for the Review and Approval of Site Plans and Site Development in Winchendon, Massachusetts requests an index at a scale of 1" = 1000'. The Board should determine whether they require the locus at a scale of 1" = 1000'.

   GRAZ: **Locus has been revised to be at a scale of 1"=1000'.**

   T&B Response: The comment has been addressed. .

5. The Applicant should provide a detail for the proposed gate.

   GRAZ: A notation as to the type of gate has been added to the plan.

   T&B Response: The comment has been addressed. .

6. The Applicant should define the general landscaping to be performed in the "general landscaping and snow storage" area.

   GRAZ: General landscaping requirements are noted on the plan.

   T&B Response: The comment has been addressed.

7. The Applicant should confirm the limit of work associated with this project. The limit of work line shown on the plan extends off the plan sheet to the west, indicating that additional work may be included as part of this project, specifically the drainage swale.

   GRAZ: The additional work being referred to was shown on the original subdivision plans & was approved by the Conservation Commission.

   T&B Response: The comment has not been addressed. It is not clear if the drainage swale west and south of Lot C was constructed per the Definitive Subdivision Plans.

   GRAZ Response 10/18/19: The drainage swale has not been constructed yet, however, Conservation is required that is be completed now (as part of the Order for Lot-A).

T&B Response 10/24/19: The comment has been addressed.

8. The Applicant should confirm the grading in the area west of the storage units. It is unclear how the 1052 and 1054 tie into existing conditions contours.

   GRAZ: Some of the contour layer(s) were inadvertently turned off, please see the revised plans.

   T&B Response: The comment has been addressed.

9. The driveway around the west side of the westernmost storage unit appears to be approximately 10-feet wide. The Applicant should confirm adequate vehicular passing clearance is provided. We recommend the Applicant coordinate with the Fire Department regarding access throughout the project area.

   GRAZ: **The 11' wide lane at the west end of the property was designed for** passenger cars/trucks only. If a fire truck needed to get into the area it **would use the last 24' lane, designed to accommodate truck turning.**

   T&B Response: We recommend the Board request a review of the provided truck routing by the Winchendon Fire Department indicating that the proposed access areas are sufficient for their emergency access needs.

   GRAZ Response 10/18/19: The Fire Chief has approved the layout for fire access.

   T&B Response 10/24/19: The comment has been addressed.

10. The Site Plans indicate a retaining wall immediately adjacent to the proposed infiltration trench. Additional information pertaining to retaining wall design and the prevention of water seeping through the wall should be provided.

    GRAZ: A barrier has been specified for the back of the retaining wall.

    T&B Response: The comment has been addressed. We recommend, however, that the Board include a potential condition of approval to require final engineered wall design drawings prior to construction.

11. The Applicant should provide additional detail for the proposed foundation drains for each building. It appears that the westernmost building may not provide adequate cover over the pipe base on the elevation of the outlet pipe.

    GRAZ: The westernmost building has been altered to discharge its foundation drain at a lower elevation to provide additional cover over the pipe.

    T&B Response: The Limit of Work area in question includes the drainage swale west and south of Lot C. This component of the Robert's Way Industrial Subdivision was approved through the Definitive Subdivision process. It is unclear if the swale was constructed during the construction of Robert's Way. The Board and Commission should determine if Robert's Way infrastructure, such as roadway binder course and stormwater management systems, be constructed prior to approval of Lot C development. If those systems are currently construction, the limit of work line should not extend around them unless modifications are proposed for lot development.

    GRAZ Response 10/18/19: The drainage swale has not been constructed yet, however, Conservation is requiring that it be completed now (as part of the Order for Lot-**A). The 'limit of work' line was shown on the** subdivision plan during our work with NHESP. The outside (west and south side) of the swale is the proposed limit of work.

    T&B Response 10/24/19: The comment has been addressed.

12. A wetland replication area was proposed under the Robert's Way Industrial Subdivision project. Erosion control barriers should be included between the limit of work and the replicated wetland.

    GRAZ: Erosion controls will be added to the replication area once it is complete.

    T&B Response: The Commission should determine the status of the wetland replication area; if the area was constructed in accordance with the approved plan(s), the results of annual monitoring reports, and if additional restoration and/or corrective actions are required. We further recommend perimeter erosion controls be shown on the Site Plans.

    GRAZ Response 10/18/19: Erosion controls are shown on the plan (and physically exist on the site) and the replication area has been completed.

    T&B Response 10/24/19: The comment has been addressed.

13. The site sign is located in the Robert's Way ROW. The Applicant should confirm that Robert's Way will remain a private roadway, or conversely, if the roadway will be a public way, provide appropriate sign setbacks.

    GRAZ: **Robert's Way is to remain a private road (and the lots with c**ommon ownership) and the sign location should not need to comply with sign setbacks. We will defer to the Planning Board decision on this item.

    T&B Response: The comment has been addressed.

14. We recommend the drawings provide more clarity indicating existing conditions (as constructed as of today) and the work proposed.

    GRAZ: The project is under construction now, therefore, an as-built survey would provide no useful information. The road has been rough graded as have the stormwater basin(s). The wetland replication has been constructed and shall be improved upon receipt of information from the wetland scientist.

    T&B Response: The Board and Commission should determine if Robert's Way infrastructure, such as roadway binder course and stormwater management systems, be constructed prior to approval of Lot C development.

    GRAZ Response 10/18/19: The Commission is including conditions that the subdivision stormwater be constructed now.

    T&B Response 10/24/19: The comment has been addressed.

15. The Applicant should provide details pertaining to the design of the drainage swales to the south of the proposed buildings. Additionally, the drainage swale appears to discharge off-site to the south without detail of the outfall configuration.

    GRAZ: Drainage swales were proposed on the original subdivision plans which were approved.

    T&B Response: The comment has been addressed.

Stormwater Management

We offer the following comments which pertain to the contents of the Stormwater Management Report and design:

16. The Applicant should provide Drainage Area Maps for both existing and proposed conditions to accompany the hydrologic analysis. We note that hydrologic maps were provided as part of the Robert's Way Definitive Subdivision application; however, they should be revised and tailored for lot development now that design

has been completed as it appears that drainage areas have altered from that original analysis.

GRAZ: We have provided updated drainage area maps in the new Hydrology Report.

T&B Response: The comment has been addressed.

17. In the hydrologic analysis, four of the five buildings appear to be accounted for in drainage area 21S. It is unclear where the fifth building is accounted for. The Applicant should provide the full hydrologic analysis for review to confirm that ground covers are considered appropriately.

    GRAZ: The fifth building was included in the impervious area that discharged over the grassed area into the infiltration trench. It has been labelled more clearly to avoid any confusion.

    T&B Response: The comment has been addressed.

18. The Site Plans indicate an underdrain within the Detention Basin; however, the hydrologic analysis does not reflect this feature. The Applicant should confirm the hydrologic model to reflect the underdrain as an outlet from the basin.

    GRAZ: The underdrain, which will provide supplemental water to the wet pond, has been added as an outlet in the hydrology model.

    T&B Response: The comment has been addressed.

19. The Applicant has included a culvert at the proposed curb cut; however, calculations supporting the sizing of that culvert and discharge velocities were not provided for review.

    GRAZ: **The drainage area to this culvert was small enough that a 12" culvert** handles the water.

    T&B Response: GRAZ should provide design calculations that support this conclusion. The calculations should include discharge velocities from the pipe to ensure downstream erosion will be prevented.

    GRAZ Response 10/18/19: The calculations are attached.

    T&B Response 10/24/19: The comment has been addressed.

20. The application materials note that the Long-Term Pollution Prevention Plan was provided with the Definitive Subdivision Application. This document could not be located in Tighe & Bond's records. The Town should confirm receipt of this document in their files. We recommend the Town consider if this document should be provided specific to Lot C development, rather than the Robert's Way Industrial Subdivision project.

    GRAZ: Where the stormwater system is integrally related to the project as a whole and under single ownership, one SWPPP has been set up for the entire project.

    T&B Response: A Long-Term Pollution Prevention Plan is typically prepared for post-development pollution prevention and is indicated as having been submitted in the Definitive Subdivision Application. This indication can be found on Page 5 of 8 of the Stormwater Report Checklist under Standard 4: Water Quality. The Town should confirm receipt of this document in their files and confirm whether they prefer it is specific to Lot C development.

    GRAZ Response 10/18/19: A copy of the O&M/Long-Term Pollution Plan is enclosed.

    T&B Response 10/24/19: The comment has been addressed.

21. The application materials note that the Stormwater Management Operation & Maintenance Plan was provided with the Definitive Subdivision Application. Tighe & Bond revisited that document in our files and determined that the Plan should be amended to incorporate inspection and maintenance budget information. We also recommend the Town consider if this document should be provided specific to Lot C development, rather than the Robert's Way Industrial Subdivision project, and to include information regarding the easement for access and maintenance of the Detention Basin located on Lot B.

    GRAZ: Since the applicant will be in ownership of the road (and lots) and will be maintaining it himself, an inspection and maintenance budget analysis would provide any useful information.

    T&B Response: Standard 9 of the Massachusetts Stormwater Handbook Stormwater Management Standards requires that an estimated operations and maintenance budget be included as part of the Long-Term Operation and Maintenance (O&M) Plan. The Plan should be amended to incorporate inspection and maintenance budget information and the Town should confirm whether they prefer it is specific to Lot C development.

    GRAZ Response 10/18/19: A copy of the O&M/Long-Term Pollution Plan is enclosed and includes inspection & maintenance budget information.

    T&B Response 10/24/19: The comment has been addressed.

22. Standard 6 – The Applicant should confirm there are no stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply. The Applicant should also confirm there are no discharges to other critical areas as defined in the Massachusetts Stormwater Handbook and Stormwater Standards.

    GRAZ: There are no stormwater discharges into Zone II or Interim Wellhead Protection Areas.

    T&B Response: The comment has been addressed.

23. Standard 8 - Minimum construction-period erosion and sediment controls are shown as part of the Site Plans, which is identified as silt fence. The Stormwater Report indicates that the Contractor will be required to develop a Stormwater Pollution Prevention Plan (SWPPP) prior to construction. We recommend a potential condition of approval requiring the Applicant to provide a copy of the SWPPP to the Board prior to construction.

    GRAZ: A Stormwater Pollution Prevention Plan has been prepared.

    T&B Response: We recommend a potential condition of approval requiring that the Applicant provide a copy of the SWPPP to the Board prior to construction.

    GRAZ Response 10/18/19: A Stormwater Pollution Prevention Plan has been prepared, is being edited and a copy will be given to the Town.

    T&B Response 10/24/19: The comment has been addressed.

24. The Applicant should indicate whether test pits were performed in locations of proposed infiltration to confirm the location of groundwater.

    GRAZ: Test pit information is all generally within the location of infiltration. ESHWT was generally consistent throughout the site as well.

    T&B Response: We recommend a potential condition of approval requiring that test pits be performed within the infiltration basin to confirm the elevation of seasonal high groundwater and soil texture prior to construction.

25. In 2016, MassDEP published a statement that while climate change is a concern for stormwater management analyses, Technical Paper (TP) 40 rainfall depths should be

used until such time as MassDEP revises wetland regulations and the Stormwater Management Standards. Alternately, an Applicant can use NOAA/Atlas 14 precipitation values which exceed TP 40 published depths. The below table compares TP 40, NOAA/Atlas 14 and the Applicant's rainfall depths:

	2-Year	10-Year	100-Year
TP-40	3.00	4.50	6.50
NOAA/Atlas 14	2.90	4.42	6.83
Application	2.90	4.30	7.50

We note that the rainfall depths used in the analysis are generally consistent with TP-40 and the NOAA rainfall depths; however, we recommend the Applicant consider a larger rainfall depth for the 10-year storm event based on the table above.

GRAZ: Rainfall depths have been revised & a basin has been revised to mitigate the increase of runoff due to the corrected rainfall depths.

T&B Response: The comment has been addressed.

Notice of Intent

The Lot C NOI presents work that is limited to the 100-foot Buffer Zone (MAWPA, Article 29) and excludes work within the limits of the 50-foot setback of undisturbed natural vegetation (Article 29; see review comment 20 below). It is our understanding that an Order of Conditions was issued for the Robert's Way Industrial Subdivision project, which has not been fully closed out as of the date of this letter. According to the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) "Search Wetlands NOI Projects" online tool, the Massachusetts Department of Environmental Protection (MassDEP) Central Region Office (CERO) is in receipt of the Lot C NOI but has not issued a file number or technical comments.

The following comments pertain specifically to the NOI application:

26. The Notice of Intent form was signed by the representative, without a signature by the Applicant or the Owner.

    GRAZ: Acknowledged.

    T&B Response: The signature of the Applicant and Property Owner(s), when the Applicant is not the owner of the land on which work is proposed, on the application form indicate knowledge and consent of the application. We recommend the Commission require the submittal of a copy of WPA Form 3 page 9 with these signatures to ensure receipt of an administratively complete application.

27. There appears to be an error in the parcel/lot number referenced in WPA Form 3 item 1.g. (page 1). The subject parcel number is 383, while the form references 393.

    We recommend the Commission note this apparent typographical error and reference the correct parcel number in future documents. We further note that it is within the Commission's discretion to request a corrected version of WPA Form 3 page 1.

    GRAZ: Acknowledged.

    T&B Response: The comment has been addressed.

28. The NOI documents do not present a detailed narrative project description, including but not limited to a description and color photographs of existing site conditions, proposed activities, footprint of work in Buffer Zone and local setbacks, and/or the shortest distance between the proposed limit of project disturbance and wetland resource areas.

We recommend the Commission require the documentation summarized above, and further recommend that the Commission require the submittal of a construction sequence.

GRAZ: A narrative has been provided for the project.

T&B Response: Tighe & Bond is in receipt of the "NOI Narrative – Lot C" prepared by GRAZ. The brief narrative provides an overview of work proposed on Lot-C. The narrative does not quantify the footprint of work proposed within the 100-foot Buffer Zone and local setbacks, nor does it provide a measurement of the shortest distance between the proposed activities and nearest wetland resource area. The supplemental information and responses provided by GRAZ and dated August 16, 2019 do not include site photographs documenting existing conditions. We reiterate our recommendation that the Commission require documentation of these outstanding items.

GRAZ Response 10/18/19: The narrative has been revised/updated for the project.

T&B Response 10/24/19: The revised narrative did not include site photographs. We recommend the Commission require the submittal of color site photographs of current site conditions at this location.

29. Sheet 4 of the Lot C NOI project drawings include a cross-hatched area adjacent to wetland flags WFA201, WFA202, and WFA203 that is called out as "Proposed Wetland Replication 3600 SF (see detail)." Based on Tighe & Bond's June 2019 telephone conversation with Mr. Koonce, we understand this area was prepared as mitigation for the construction of the Robert's Way roadway under MassDEP File #345-0641.

    We note the 50- and 75-foot local setbacks and 100-foot Buffer Zone are drawn from the previously delineated wetland boundary (WFA201 through WFA213 within the plan view of sheet 4), and not from the boundary of the "proposed" wetland replication area. The success of this BVW replication area is critical to compliance with the previously issued Order for MassDEP File #345-0641.

    We further note that a successful 1:1 wetland replication as mitigation for direct impacts to BVW is a requirement of the Final Order of Conditions serving as the 401 Water Quality Certificate per 314 CMR 9.03(1)(b), and that failure to meet this obligation is a violation of the Massachusetts Water Quality regulations.

    We recommend the Commission confirm the status of the wetland replication area and, if necessary, require the Applicant to identify and implement corrective actions.

    We further recommend the Commission consider the proposed activities as though the Bylaw setbacks and 100-foot Buffer Zone were drawn from the limits of the proposed wetland replacement area, which should be a functioning wetland, and request updated drawings that reflect this change. Note that revisions to Bylaw setbacks will result in proposed alterations within the 50-foot undisturbed natural vegetation setback, which would necessitate a request for and consideration of a waiver from §29.9.

    GRAZ: This item was discussed at length during the July Conservation Commission meeting. The work as shown (and previously approved) will **be allowed within the 50' no**-disturb zone of the wetlands.

    T&B Response: We recommend the Commission include a statement in their official meeting minutes and/or other documentation affirming their decision to grant a Waiver from the requirements of §29.9 of the Winchendon Wetlands Protection Bylaw.

GRAZ Response 10/18/19: This item was discussed at length during the July Conservation Commission meeting. The work as shown (and **previously approved) will be allowed within the 50' no**-disturb zone of the wetlands. The wetland replication area has been constructed, repaired, surveyed and inspection/certified by the wetland scientist.

T&B Response 10/24/19: Tighe & Bond has not been provided with documentation regarding the status of the wetland replication area, including but not limited to construction methods, materials used or corrective measures, post-construction surveys and/or inspection or certification reports by the wetland scientist. As such, we defer to the Commission discretionary judgement.

30. In consideration of Comment 20, alterations, including grading/earthwork and the construction of stormwater management features, are proposed within the 50-foot setback of undisturbed natural vegetation as noted above and shown on sheet 4 of the project drawings. The Lot C NOI materials provided for this peer review did not include a request for waiver from the requirements of §29.9 of the Winchendon Wetlands Protection Bylaw.

    We recommend the Commission require confirmation that the Applicant is seeking a waiver for alterations within the 50-foot setback of undisturbed natural vegetation. We further recommend that, in the event that a waiver is requested, the Commission require sufficient documentation to determine if compliance with the setbacks will result in greater harm to the interests of the Bylaw, or if no harm would be done to the interests of the Bylaw, by the proposed action(s).

    As demonstration of "no harm" to the Buffer Zone and adjacent Bordering Vegetated Wetland (BVW), we further recommend the Commission require the Applicant address the change in light regime as it may affect the wetland plant community within the BVW and could be considered an alteration of vegetation and, therefore, an impact to BVW.

    GRAZ: See comment 29, above

    T&B Response: Refer to our response to Item 29.

    GRAZ Response 10/18/19: See comment 29, above

    T&B Response 10/24/19: Refer to our final response to Item 29.

31. Based on MassGIS Google Orthoimagery of the project area dated 2017, the proposed limits of grading and construction will appear to require clearing and grubbing of a generally forested site. Presumably, as photographs of existing conditions were not provided with the Lot A NOI and the type and/or limits of existing vegetation are not clearly documented by the project drawings, the site is forested. A proposed landscaping plan was not included with the Lot A NOI materials provided for this peer review.

    We recommend the Commission require information pertaining to the proposed landscaping plan be provided for their review and approval.

    GRAZ: The proposed landscaping is shown for this lot. It consists of arborvitae and loam and seeding around the driving area.

    T&B Response: We recommend the Commission require the submittal of a list plant species introduced to the site, including but not limited to, the native grass seed mix, as part of an as-built requirement. We further recommend the Commission consider a requirement prohibiting the introduction of non-native and/or invasive plant species within wetland resource areas and the Buffer Zone.

    GRAZ Response 10/18/19: Additional notes have been added to sheet-4.

T&B Response 10/24/19: We recommend the Commission confirm that the MassDOT seed mix, as referenced on Sheet 4, does not include any invasive or non-native species.

32. The Project Site (i.e., Limits of Work) and Project Locus (i.e., subject parcel on which work is proposed) is within the limits of Priority Habitats of Rare Species and Estimated Habitats of Rare Wildlife. Activities within Priority Habitats are subject to jurisdiction under the Massachusetts Endangered Species Act (MESA), as administered by the Massachusetts Natural Heritage and Endangered Species Program (NHESP), while activities in Estimated Habitat are subject to NHESP review per 310 CMR 10.59.

    The NOI included NHESP correspondence dated April 18, 2017. NHESP indicated that the information submitted for their review at that time presented a scope of work that would not result in an adverse effect of rare species habitat, nor would the scope of work result in a prohibited Take of a state-listed species (as previously opined in a letter dated September 23, 2016). The NOI documents provided for this peer review did not include proof of submittal to NHESP per 310 CMR 10.59, or any more recent correspondence with NHESP.

    We further note that WPA Form 3 "Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review" item 1a on page 5 confirms that the Project Site is within mapped Estimated Habitat. However, no further responses regarding the status of NHESP's review are checked off, including but not limited to the completion of a separate MESA review.

    We recommend the Commission require the Applicant demonstrates that NHESP was provided a copy of the current Lot C NOI for review in accordance with the requirements set forth at 310 CMR 10.59. We further recommend the Commission require this documentation prior to closing the public hearing and rendering a decision to grant [or deny] approval.

    GRAZ: NHESP has approved our proposed modifications to the site work. A copy of their letter is attached for your reference.

    T&B Response: Tighe & Bond has been provided a copy of correspondence from NHESP dated July 22, 2019. In this correspondence, NHESP states that the work "will not adversely affect" nor "result in a prohibited Take" of state-listed species. NHESP's findings satisfy the requirements of 310 CMR 10.59. We recommend the Commission include reference to this correspondence in future findings.

33. WPA Form 3 page 9, as provided for this peer review, does not include the Applicant's signature.

    We recommend the Commission confirm that a copy of WPA Form 3 page 9, as signed by the Applicant, is available for the Commission's files. In the event that the Applicant's signature has not been provided, we further recommend the Commission require this documentation prior to closing the public hearing and rendering a decision to grant [or deny] approval.

    GRAZ: Acknowledged.

    T&B Response: Refer to our response to Item 26.

We trust this information will be satisfactory for the Board and Commission in your review of the Robert's Way (Lot C) Site Plan Review, Notice of Intent and LID Permit Applications. Please do not hesitate to contact me should you have any questions or need additional information at 413.572.3238 or jechristy@tighebond.com.

Very truly yours,

TIGHE & BOND, INC.

Jean E. Christy, PE
Senior Engineer

Melissa Coady
Project Manager

Copy: Paul Grasewicz, GRAZ Engineering, LLC

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Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
345-0668
MassDEP File #

eDEP Transaction #

Winchendon (345)
City/Town

A. General Information

Please note: this form has been modified with added space to accommodate the Registry of Deeds Requirements

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

1. From: Winchendon Conservation Commission
   Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

Jamison	VanDyke
a. First Name	b. Last Name
Barkley Enterprises, LLC	
c. Organization	
1032 NH Route 119	
d. Mailing Address	
Rindge	NH / 03461
e. City/Town	f. State / g. Zip Code

4. Property Owner (if different from applicant):

a. First Name	b. Last Name
c. Organization	
d. Mailing Address	
e. City/Town	f. State / g. Zip Code

5. Project Location:

Lot C Robert's Way	Winchendon
a. Street Address	b. City/Town
9	393
c. Assessors Map/Plat Number	d. Parcel/Lot Number

Latitude and Longitude, if known: 42d 39m 26.75s (d. Latitude) 72d 0m 21.46s (e. Longitude)

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):

Worcester	
a. County	b. Certificate Number (if registered land)
56468	38
c. Book	d. Page

7. Dates:

05/28/19	10/24/19	
a. Date Notice of Intent Filed	b. Date Public Hearing Closed	c. Date of Issuance

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):

'ROBERT'S WAY STORAGE UNITS' (5 SHEETS)	
a. Plan Title	
GRAZ Engineering, LLC	Paul Grasewicz, RPE
b. Prepared By	c. Signed and Stamped by
10/17/19	As shown on each SHEET
d. Final Revision Date	e. Scale
Stormwater Hydrology Report; Management & Inspection Manual	08/14/19; 10/18/19
f. Additional Plan or Document Title	g. Date

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

a. ☐ Public Water Supply
b. ☐ Land Containing Shellfish
c. ☒ Prevention of Pollution
d. ☐ Private Water Supply
e. ☐ Fisheries
f. ☒ Protection of Wildlife Habitat
g. ☒ Groundwater Supply
h. ☐ Storm Damage Prevention
i. ☐ Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

a. ☒ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

B. Findings (cont.)

Denied because:

b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☒ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) — 50 a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. ☐ Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. ☐ Land Under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		
7. ☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	a. square feet	b. square feet	c. nourishment cu yd	d. nourishment cu yd
14. ☐ Coastal Dunes	a. square feet	b. square feet	c. nourishment cu yd	d. nourishment cu yd
15. ☐ Coastal Banks	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. ☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. c/y dredged	b. c/y dredged		
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		
22. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

B. Findings (cont.)

* #23. If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23. ☐ Restoration/Enhancement *:

a. square feet of BVW

b. square feet of salt marsh

24. ☐ Stream Crossing(s):

a. number of new stream crossings

b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. The work is a maintenance dredging project as provided for in the Act; or
   b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
   c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on _____ unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.

C. General Conditions Under Massachusetts Wetlands Protection Act

8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.

10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

    "Massachusetts Department of Environmental Protection" [or, "MassDEP"]

    "File Number 345-668 "

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.

12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

13. The work shall conform to the plans and special conditions referenced in this order.

14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.

15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.

18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

19. The work associated with this Order (the "Project")
    (1) ☒ is subject to the Massachusetts Stormwater Standards
    (2) ☐ is NOT subject to the Massachusetts Stormwater Standards

    If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

    a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

    b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
    i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
    ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
    iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;

v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement) for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:

i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and

ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

See Additional Conditions #20 – #55 on pages 10A – 10F.

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No

2. The Winchendon Conservation Commission hereby finds (check one that applies):
   Conservation Commission

   a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

   1. Municipal Ordinance or Bylaw | 2. Citation

   Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

   b. ☒ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:
   Winchendon Wetlands Protection Bylaw | See 3 below
   1. Municipal Ordinance or Bylaw | 2. Citation

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.
   The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

   All Conditions #1 – #55 pertain to both the Massachusetts Wetlands Protection Act and the Town of Winchendon Wetlands Protection Bylaw.

Applicant: Jamison VanDyke dba Barkley Enterprises, LLC (the "Applicant")
Project Address: Lot C Robert's Way (Map 9, Lot 393; the "Property")
DEP File #345-0668

Summary: This filing requests Conservation Commission approval for work in the 100-foot Buffer Zone to Bordering Vegetated Wetlands for the construction of five proposed storage unit buildings (2@3000 square feet, 3@2200 square feet), along with associated paving, stormwater management infrastructure, grading, and landscaping.

This Order of Conditions (aka this "Order") is approved pursuant to the provisions of the Massachusetts Wetlands Protection Act, 310 CMR 10.00, and the Town of Winchendon Wetlands Protection Bylaw, subject to the following Additional Conditions #20 – #55:

Additional Conditions – General

20. All proposed work shall be performed in accordance with the Notice of Intent filed May 28, 2019 and accompanying plans (the "Plans"; 5 Sheets): **'ROBERT'S WAY STORAGE UNITS'** prepared by GRAZ Engineering, LLC, final revision date October 17, 2019, signed and stamped by Paul F. Grasewicz, RPE.

21. The Winchendon Conservation Commission (aka the "Commission"), Conservation Agent (aka the "Agent"), Building Inspector, consultants acting as agents of the Commission, and the Department of Environmental Protection reserve the right to enter and inspect the Property at all reasonable times, until the issuance of the Certificate of Compliance, to evaluate compliance with this Order of Conditions, the Wetlands Protection Act, 310 CMR 10.00, and the Town of Winchendon Wetlands Protection Bylaw; may obtain any information, measurements, photographs, observations, and/or materials, and/or may require the submittal of any data or information deemed necessary by the Commission for that evaluation. Further, work shall be halted on the project if the Commission, agent or DEP determines that any of the work is not in compliance with this Order; in that case, work shall not resume until the Commission is satisfied that the work will comply, and has so notified the Applicant in writing.

22. Prior to the issuance of the Certificate of Compliance, this Order of Conditions shall apply to any successor in control or successor in interest to the Property (including future lessees and their assigns) described in the Notice of Intent and accompanying plans; prior to the issuance of the Certificate of Compliance, this Order shall be referred to in all deeds to succeeding owners in all or any portion of the Property. (Perpetual Conditions shall continue beyond the issuance of the Certificate of Compliance; see Conditions #23 and #49 – #55 below.) The Conservation Commission shall be notified in writing of all pending transfers of title in all or any portion of the Property; the Applicant and all succeeding owners shall submit a draft deed to the Agent for review prior to closing on the transfer.

23. Conditions #49 – #55 below shall continue in force beyond the Certificate of Compliance in perpetuity and shall be referred to in all future deeds to the Property. The Conservation Commission shall be notified in writing of all pending transfers of title in all or any portion of the Property; the Applicant and all succeeding owners shall submit a draft deed to the Agent for review prior to closing on the transfer (see Condition #22 above).

24. Upon completion of this project, the Applicant shall submit the following to the Conservation Commission in order to receive the Certificate of Compliance:

    1. DEP WPA Form 8A Request for Certificate of Compliance.

2. a. A written statement from the Applicant certifying that the work has been conducted as shown on the plan(s) and documents referenced above, and as conditioned by the Commission.

   b. A written statement from a registered professional engineer of the Commonwealth certifying that the work has been conducted as shown on the plan(s) and documents referenced above, and as conditioned by the Commission.

3. An "As-Built" plan prepared for the public record, signed and stamped by a registered professional engineer or land surveyor of the Commonwealth. In addition to all new construction, the "As-Built" plan shall show the edge of flagged wetlands, the boundary of the 100-foot Buffer Zone, limit of permanent clearing, wetland replication area(s).

Design and Pre-Construction Requirements

25. **a. Prior to the Conservation Agent's sign-off on building permit applications for this project, the Applicant's engineer shall have certified in writing that all permanent stormwater management infrastructure serving the Property (excluding roof and foundation drains), including Robert's Way, is fully constructed according to the Plans, and is operating and maintained properly. All paving, including but not limited to Robert's Way, shall be completed as soon as seasonal conditions permit, unless otherwise approved by the Agent.**

    b. Prior to the Conservation Agent's sign-off on building permit applications for this project, copies of the NPDES Construction General Permit and associated Stormwater Pollution Prevention Plan (the "SWPPP") shall have been forwarded via e-mail to the Agent.

26. If there are any changes to the plans as submitted, the Applicant shall have the responsibility to submit revised plans showing all changes to the Conservation Commission for review. This includes changes required by the Commission and/or other Town and/or State agencies as well as those introduced by the Applicant. After reviewing the revised plans, the Commission will make a determination as to whether the changes require an Amendment to this Order of Conditions or the filing of a new Notice of Intent. No work may start before the Commission has completed its review and notified the Applicant in writing of its determination.

27. No work shall commence on this project until the expiration of the 10-day appeal period, no requests for appeals having been filed with the Department of Environmental Protection, **and a copy of the first page of the recorded Order of Conditions, bearing the time-stamped Registry of Deeds Book and Page Numbers, has been submitted to the Conservation Commission.**

Installation of Erosion/Siltation/Sedimentation Controls

28. Before the start of any site work (e.g. earth disturbance, clearing of vegetation, etc.), the Applicant and/or Applicant's contractor shall notify the Conservation Agent to conduct a site inspection of erosion/siltation/sedimentation barriers. Work on the project shall be permitted to commence and proceed only with the Agent's authorization pursuant to the site inspection.

Additional Pre-Construction Requirements

29. The Applicant shall inform the Conservation Agent in writing of the name, mailing address, e-mail address, business and home telephone numbers of the project supervisor who will be responsible for ensuring on-site compliance with this Order of Conditions. The Applicant shall also provide the names and contact information for all contractors and subcontractors.

Construction Management

30. Copies of all Stormwater Reports prepared pursuant to requirements of the Stormwater Pollution Prevention Plan (the "SWPPP"; see Condition #25b above), shall be forwarded via e-mail to the Conservation Agent upon completion of each report.

31. A complete copy of this Order of Conditions, including its drawings, Special Conditions, and any amendments, shall be maintained at the work site whenever work is being performed. The Applicant shall have the responsibility to ensure that all on-site contractors, subcontractors and other personnel are fully aware of the terms and conditions of this Order and that no activity other than that authorized by this Order is permitted in areas under the jurisdiction of the Conservation Commission. A complete copy of this Order and the project plans shall be given to every contractor and subcontractor performing the work defined and described herein.

Limit of Work

32. **The Limit of Work ("LOW") shall be the erosion/siltation/sedimentation barriers.** Workers on site shall be informed that except as otherwise authorized by this Order of Conditions (e.g. construction of a wetland crossing), **no activity** is permitted on the wetland side of the LOW at any time, including, but not limited to, the use of machinery, storage of machinery or materials, stockpiling of soil or construction materials, and littering.

Erosion/Siltation/Sedimentation Controls

33. All erosion/siltation/sedimentation barriers shall be properly placed, secured, and inspected at the close of each work day, and, if possible, before heavy rainstorms. Any accumulation of soils/silt/sediment against the erosion/siltation/sedimentation barriers shall be removed if the depth reaches six (6) inches. Any barriers that have deteriorated or been damaged by construction accidents shall be immediately replaced or repaired as necessary. Any breakout of sediment due to a failure of the barriers caused by an unforeseen heavy rain event, or any other uncontrollable emergency, shall be immediately reported to the Conservation Agent.

34. All erosion/siltation/sedimentation barriers shall remain in place and be maintained in proper working order through regular cleaning, repair, and/or replacement, as necessary, during and after construction until all disturbed areas under the jurisdiction of this Order of Conditions have been permanently stabilized, inspected, and approved by the Conservation Agent. All erosion/siltation/ sedimentation barriers shall be removed prior to the issuance of the Certificate of Compliance (see Conditions #47 and #48 below.)

35. An adequate stockpile of erosion/siltation/sedimentation control materials shall be kept on site at all times for emergency or routine replacement and shall include materials to repair silt fences, hay bales, stone rip-rap filter dikes, or any other devices to be used during construction.

36. The Conservation Commission reserves the right to modify erosion/siltation/sedimentation controls based on experience at this site, or to otherwise impose additional conditions on portions of this project to mitigate any impacts which could result from site erosion, or any noticeable degradation of surface water quality discharging from the site.

37. Site grading and construction shall be scheduled to avoid periods of high surface water. Once begun, grading and construction shall move uninterrupted to completion to avoid erosion and siltation of wetlands.

Use and Storage of Motorized Vehicles/Machinery

38. Motorized vehicles or any other motorized machinery involved in the work shall be kept at least 100 feet away from the edge of wetlands (i.e. outside the 100-foot Buffer Zone) when not actually engaged in that work, including overnight and weekend storage.

39. No maintenance or refueling of motorized vehicles shall take place in wetlands or 100-foot Buffer Zone including, but not limited to, fueling, lubricating, fluid replacement, maintenance, and washing. If a spill occurs, contaminated soils shall be removed according to guidelines established by the Department of Environmental Protection, Bureau of Waste Site Cleanup. The remedial activities may be conducted in accordance with the provisions of an Immediate Response Action (IRA) or Remedial Abatement Measure (RAM) under the Massachusetts Contingency Plan. The Conservation Commission shall be provided written notice for approval of any remedial activities that are needed within the 100-foot Buffer Zone or Wetland Resource Area(s). Any damage to any Wetland Resource Area(s) and/or 100-foot Buffer Zone caused as a direct result of this project shall be the responsibility of the Applicant to repair, restore and/or replace.

40. Vehicles and equipment for fuel storage and refueling operations shall be parked in an upland area outside the 100-foot Buffer Zone.

Additional Construction Management Conditions

41. Groundwater encountered during excavation shall be directed (i.e. pumped) away from wetlands.

42. No stockpiling of construction materials in the 100-foot Buffer Zone. Unless re-used, excavated soil shall be removed from the 100-foot Buffer Zone on a day-to-day basis. All excess excavated soil and imported fill shall be removed from the 100-foot Buffer Zone upon the completion of construction and grading.

43. During construction, all solid and chemical waste shall be transported from the site and disposed of in compliance with Federal, State and local requirements for waste disposal.

44. During construction, all excavations, embankments, stockpiles, haul roads, plant sites and all other work areas within and without the project boundaries shall be maintained free from dust which

might cause a hazard or nuisance to others. Dust control shall be performed as the work proceeds or whenever a dust nuisance occurs.

45. No trash dumpsters shall be permitted within the 100-foot Buffer Zone during construction.

46. Prior to the issuance of the Certificate of Compliance, all unused construction materials, refuse and debris, including tree stumps, shall be permanently removed from, i.e. **not buried in**, the 100-foot Buffer Zone.

Stabilization

47. All embankments and disturbed areas within the 100-foot Buffer Zone and Riverfront Area shall be loamed, fertilized, and seeded upon completion of construction and grading. A minimum of 4-inches of topsoil shall form the seedbed. Only organic fertilizers with low nitrogen and phosphorous content shall be used. Loamed and seeded areas shall be mulched with hay, straw or chopped stalk mulch applied at a rate of 2½ tons per acre, and covered with erosion control blanketing, netting or other suitable material in order to provide an adequate surface protection until seed germination. Erosion control netting with biodegradable stitching is highly preferred. All disturbed areas shall be graded, loamed and seeded prior to November 1 of each year. No disturbed areas or stockpiled material shall be left unprotected during the winter season.

48. After erosion/siltation/sedimentation barriers are removed as permitted by the Conservation Agent, areas disturbed by the barriers shall be restored to match adjacent conditions.

Perpetual Conditions

The following Perpetual Conditions #49 – #55 shall remain in force permanently and will be recorded as such on the Certificate of Compliance:

49. The **STORMWATER MANAGEMENT INSPECTION & MAINTENANCE MANUAL**, submitted with the Notice of Intent, is incorporated herein, by reference, to this Order of Conditions.

50. The Conservation Agent shall be informed prior to any proposed further alterations within wetlands, 100-foot Buffer Zone, or 200-foot Riverfront Area to determine whether the work requires approval of the Conservation Commission.

51. No stormwater runoff from any impervious surfaces shall flow directly into wetlands. There shall be no erosion of the 100-foot Buffer Zone due to stormwater runoff from any impervious surfaces. (Sheet flow over a vegetated 100-foot Buffer Zone is permitted, if it causes no erosion.)

52. No non-organic fertilizers shall be used in wetlands or 100-foot Buffer Zone.

53. Except in cases of threats to human health and safety, and/or as may be permitted by an Invasive Vegetation Management Plan approved in advance by the Conservation Commission, no non-organic herbicides shall be used in wetlands or 100-foot Buffer Zone. Except in cases of threats to human health and safety (stinging insects, for example), no non-organic pesticides shall be used in lawn care, or for any other exterior purpose on a regular basis, in wetlands or 100-foot Buffer Zone.

54. There shall be no outside storage of chemicals, oil, fuel, fertilizers or other potentially hazardous materials in wetlands or 100-foot Buffer Zone.

55. No leaves, lawn clippings, or other residuals from groundskeeping operations, no Christmas trees, no pet waste, or refuse of any kind, shall be dumped in wetlands or 100-foot Buffer Zone. It is the property owner's responsibility to so inform all lawn care providers.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
345-0668
MassDEP File #

eDEP Transaction #

Winchendon (345)
City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

Please indicate the number of members who will sign this form.
This Order must be signed by a majority of the Conservation Commission.

1. Date of Issuance

2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

☐ by hand delivery on

Date

☐ by certified mail, return receipt requested, on

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Winchendon Conservation Commission
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Winchendon Conservation Commission
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

Lot C Robert's Way
Project Location

345-0668
MassDEP File Number

Has been recorded at the Registry of Deeds of:

Worcester
County

Book

Page

for:
Property Owner

and has been noted in the chain of title of the affected property in:

Book

Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

TOWN OF WINCHENDON

Planning Board

Telephone (978) 297-5410

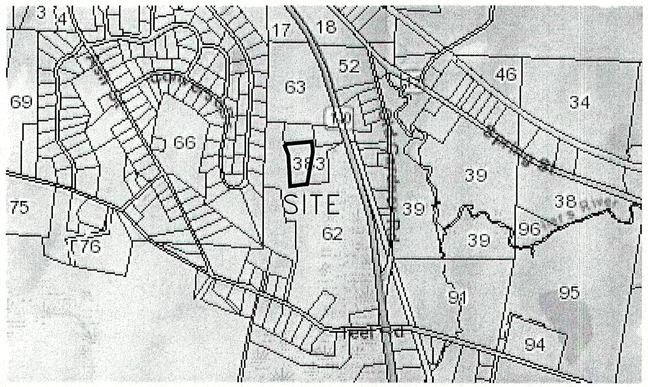
109 Front Street
Winchendon, Massachusetts 01475-1758

Town of Winchendon
Planning Board
PUBLIC HEARING NOTICE

Notice is hereby given that the Winchendon Planning Board will consider the site plan application for commercial subdivision submitted by Graz Engineering, LLC 323 West Lake Road Fitzwilliam, NH 03447 on property located at 23 Robert's Way Winchendon, MA 01475 identified as Winchendon Assessors Map 9 Parcels 106 & 383 owned by Jamison VanDyke of 1032 NH Rt. 119 in Rindge NH 03461 at their regularly scheduled meeting on **Tuesday, November 19, 2019 at 6:42pm** in the Town Hall Aud., 2nd Fl., 109 Front St., Winchendon, MA 01475. Said property is located in the C1 – Large Scale Commercial zone. A copy of the application is available at the Dept. of P&D, Winchendon Town Hall. Alternative translation and accommodation for persons with disabilities are available by advance request.

BY: Guy C. Corbosiero, Chair
Winchendon Planning Board

November 5 & 12



TAX–MAP LOCUS PLAN 1"=1000'

APPROVED UNDER THE
RULES & REGULATIONS OF SITE PLANS
PLANNING BOARD OF WINCHENDON

DATE:

REFERENCE PLANS & DEEDS

1. SUBJECT LOT ASSESSOR'S MAP–9 LOT–383
   WCRD PLAN BOOK–924 PAGE–8
   WCRD DEED BOOK–56468 PAGE–38

ROBERT'S WAY STORAGE YARD

ROBERT'S WAY (LOT-B)
WINCHENDON, MASSACHUSETTS
MAP-9 LOT-383
OCTOBER 24, 2019

APPLICANT/DEVELOPER: BARKLEY ENTERPRISES, LLC; 1032 N.H. RT 119; RINDGE, NH 03461

LAND OWNER: BARKLEY ENTERPRISES, LLC; 1032 N.H. RT 119; RINDGE, NH 03461

ENGINEER/SURVEYOR: GRAZ ENGINEERING LLC; 323 WEST LAKE ROAD; FITZWILLIAM, NH 03447

NOTES:

1) ZONING DIMENSIONAL REQUIREMENTS: HIGHWAY COMMERCIAL ZONING DISTRICT

REQUIREMENT	REQUIRED	PROVIDED
FRONT SETBACK	75'	N/A
SIDE SETBACK	25'	N/A
REAR SETBACK	25'	N/A
AREA	75,000 S.F.	147,627 S.F.
FRONTAGE	250'	408.9'
BLDG HEIGHT	45' MAX	N/A
LOT COVERAGE	45% MAX	0%
PRKING SPACES	N/A	N/A
HANDICAP	N/A	N/A
VAN ACCESSIBLE	N/A	N/A
PRKING LOT TREES	N/A	N/A
LOT LANDSCAPE AREA	N/A	N/A
DIST. TO RES ZONE	50'	N/A

2) ROBERT'S WAY LOT–B IS INTENDED TO BE USED AS A BUILDING MATERIALS OR CONTRACTOR'S YARD ALLOWED IN THE C–1 ZONING DISTRICT UNDER THE WINCHENDON ZONING BYLAWS TABLE OF USES AS INDUSTRIAL USE E. THIS DOES NOT ALLOW FOR STORAGE OF HAZARDOUS MATERIALS ON–SITE.

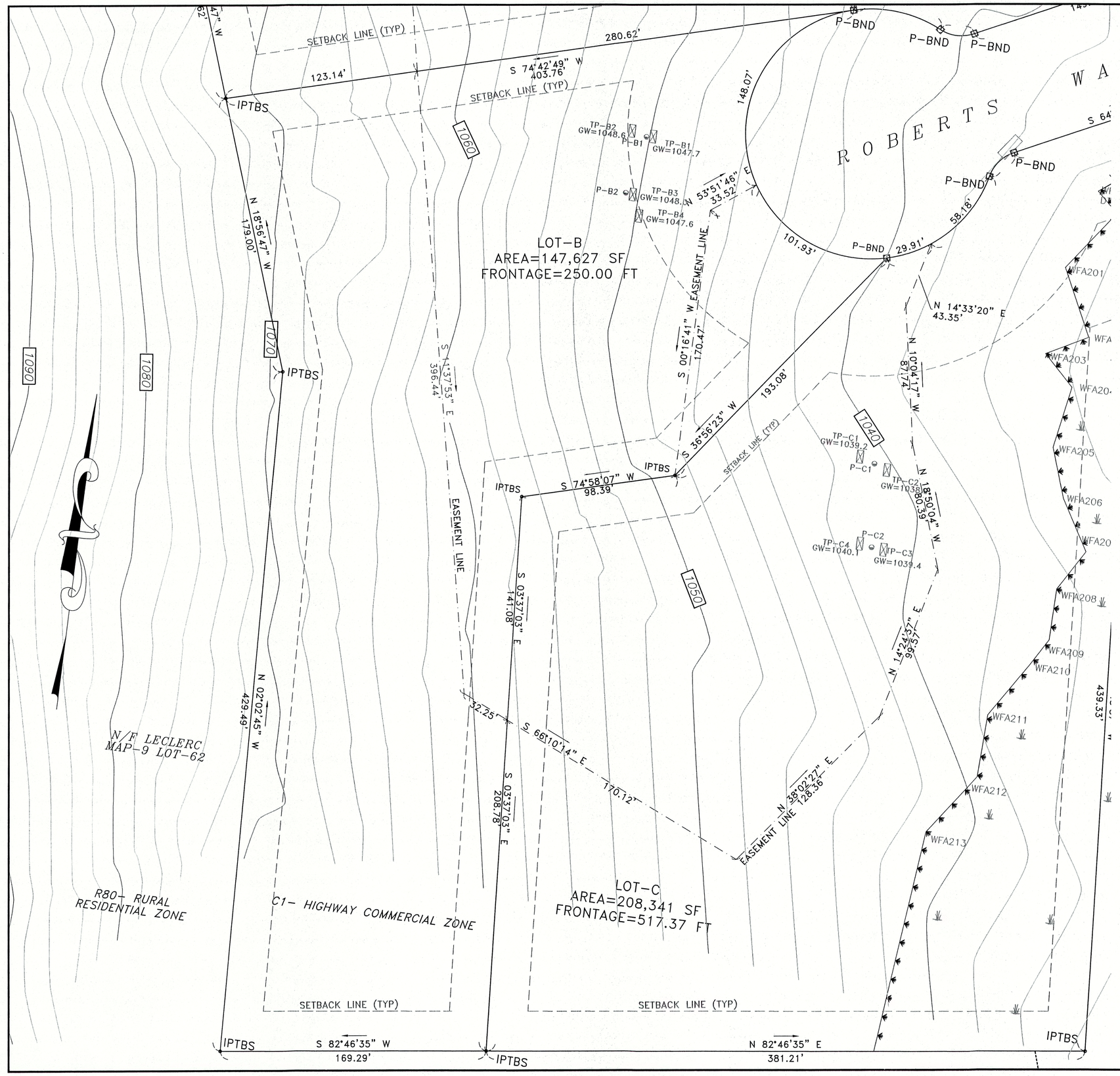
DRAWING INDEX

COMMONWEALTH OF MASSACHUSETTS
PAUL F. GRASEWICZ
CIVIL
No. 35306
REGISTERED
PROFESSIONAL ENGINEER

PB #

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585–6959

JOB NO. 15004



LEGEND

N/F	NOW OR FORMER OWNER
BND□	DRILL HOLE IN STONE BOUND FOUND
IPF ○	IRON PIN FOUND
—D—D—	EXISTING DRAINAGE
—X—X—	EXISTING FENCE
—S—S—	EXISTING SEWER
—FM-FM—	EXISTING FORCE MAIN
123.45'(D)	DEEDED DISTANCE (IF DIFFERENT)
SMH	SEWER MAN HOLE
DMH	DRAINAGE MAN HOLE
CB	CATCH BASIN
⌀UP	UITILITY POLE
—E—E—	OVERHEAD ELECTRIC

APPROVED UNDER THE RULES & REGULATIONS OF SITE PLANS PLANNING BOARD OF WINCHENDON-

DATE:

NOTES

1. THE PURPOSE OF THIS PLAN IS TO GIVE AN OVERVIEW OF LOT-B ON ROBERT'S WAY.
2. THE SUBJECT PROPERTY IS LOCATED IN THE HIGHWAY COMMERCIAL ZONING DISTRICT.

   DIMENSIONAL REQUIREMENTS:
   AREA=75,000 S.F.
   FRONTAGE=250'
   MINIMUM FRONT SETBACK=75'
   MINIMUM SIDE SETBACK=25'
   MINIMUM REAR SETBACK=25'
3. FIELD SURVEY PERFORMED BY R-T-K GNSS & INSTRUMENT TO THE STANDARDS OF MASSACHUSETTS REGULATION 250 CMR 6.00 BY GRAZ ENGINEERING ON THE FOLLOWING DATES: 6/4/15, 6/16/15 - 6/18/15, 7/2/15, 7/6/15, 7/28/15, 10/14/16, 11/15/16, 5/4/17, AND 9/7/17.
4. CURRENT LAND USE IS WOODLAND.

COMMONWEALTH OF MASSACHUSETTS
PAUL F. GRASEWICZ
CIVIL
No. 33306
REGISTERED PROFESSIONAL ENGINEER

0 30 60 90
SCALE: 1"=30' ON ORIGINAL

PB #

EXISTING PROPERTY PLAN
ROBERT'S WAY STORAGE YARD
MAP-9 LOT-383
ROBERT'S WAY (LOT-B)
WINCHENDON, MA 01475

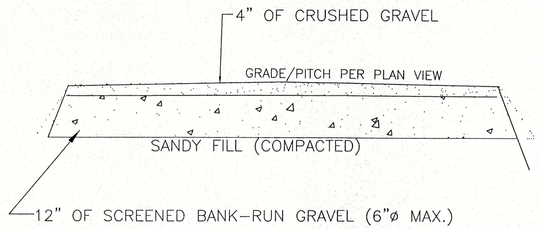
PREPARED FOR:
BARKLEY ENTERPRISES, LLC
1032 N.H. RT 119
RINDGE, NH 03461

OCTOBER 24, 2019

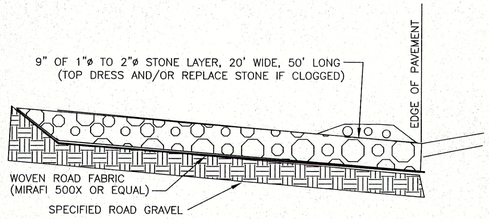
GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 15004

SHEET 2 OF 3



GRAVEL PARKING AREA CROSS-SECTION NTS



NOTE: IF STONE PAD DOES NOT ADEQUATELY PRECLUDE MUD TRACKING ONTO ROBERT'S WAY, HAND REMOVAL AND/OR WASHING AT APPROVED LOCATION SHALL BE PERFORMED.

CONSTRUCTION ENTRANCE DETAIL NTS

LEGEND

N/F	NOW OR FORMER OWNER
P-BND□	BOUND TO BE SET
IPTBS○	IRON PIN TO BE SET
— SD —	SUB-DRAIN
— E —	UNDERGROUND ELECTRIC
— FD —	FOOTING DRAIN
FL	FLOOD LIGIHT
SL	STREET LIGHT

APPROVED UNDER THE RULES & REGULATIONS OF SITE PLANS PLANNING BOARD OF WINCHENDON

_____

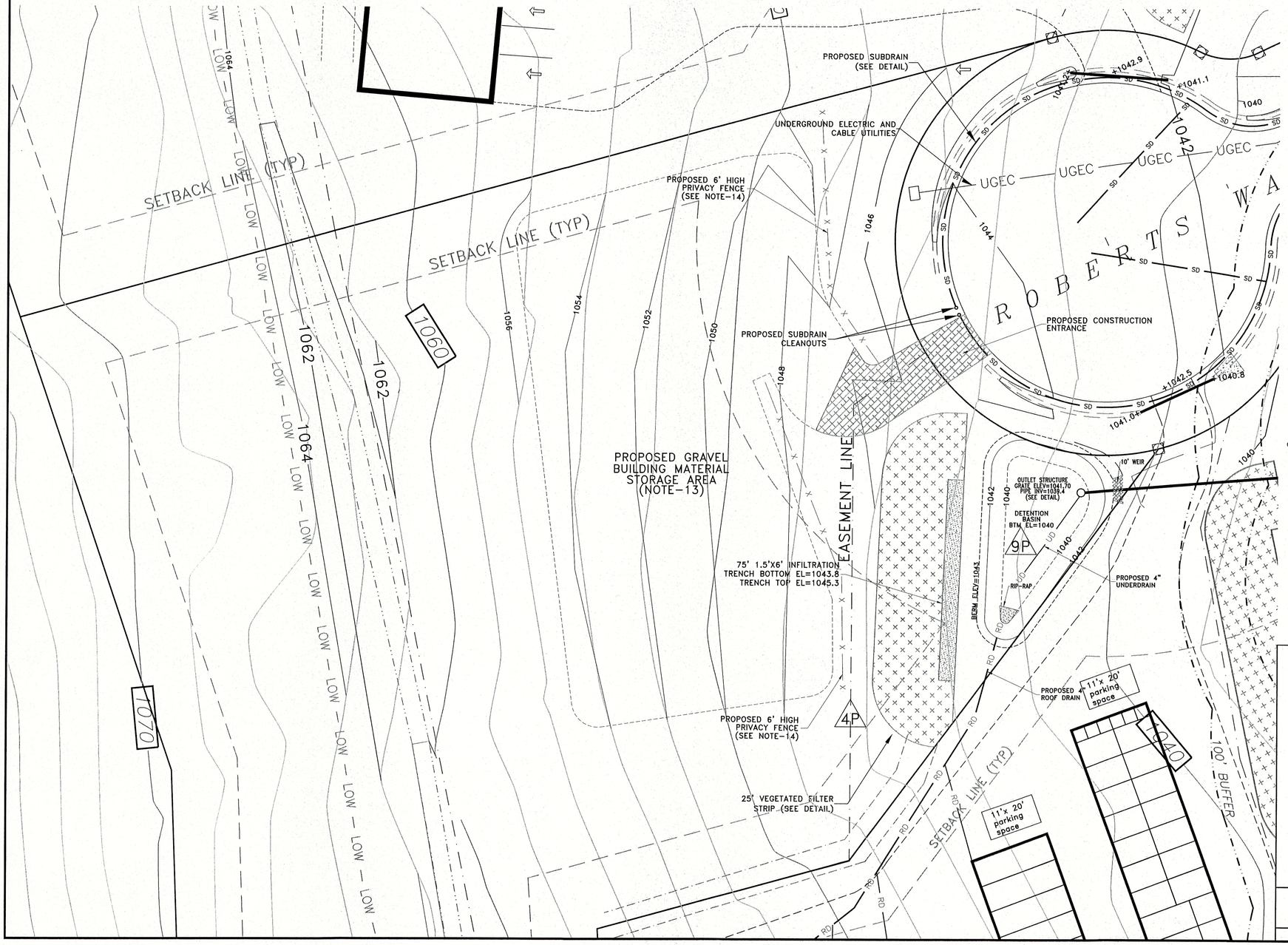
_____

_____

_____

_____

DATE:



NOTES

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE PROPOSED LAYOUT AND GRADING ASSOCIATED WITH THE COMPLETION OF THE PROJECT.
2. THE SUBJECT PROPERTY IS LOCATED IN THE COMMERCIAL HIGHWAY ZONING DISTRICT.
   DIMENSIONAL REQUIREMENTS:
   AREA=75,000 S.F.
   FRONTAGE=250'
   MINIMUM FRONT SETBACK=75'
   MINIMUM SIDE SETBACK=25'
   MINIMUM REAR SETBACK=25'
3. THE CONTRACTOR SHALL OBTAIN A TOWN OPENING PERMIT PRIOR TO ANY CONSTRUCTION WITHIN THE RIGHT-OF-WAY.
4. ALL WATER AND SEWER MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE TOWN OF WINCHENDON REQUIREMENTS.
5. ALL WATER AND SEWER CONSTRUCTION SHALL BE INSPECTED BY THE TOWN OF WINCHENDON BEFORE BEING BACKFILLED. THE TOWN SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE REQUIRED INSPECTIONS.
6. PLEASE REFER TO INITIAL SUBDIVISION PLANS AND SITE PLANS FOR LOT-A AND LOT-C FOR THE STORMWATER MANAGEMENT SYSTEM COMPONENT DETAILS.
7. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO CONSTRUCTION.
8. EROSION CONTROL SHALL CONFORM TO THE TOWN OF WINCHENDON CONSERVATION COMMISSION REQUIREMENTS AS STATED IN THE ORDER OF CONDITIONS, IF APPLICABLE.
9. SAFETY FENCING MUST BE INSTALLED AROUND STOCKPILES OVER 10' IN HEIGHT, OR SITE ACCESS MUST BE RESTRICTED.
10. FILL CONTAINING HAZARDOUS MATERIALS SHALL NOT BE USED FOR FILL.
11. ANY CATCHBASINS, SUMPS AND STORMWATER BASINS SHALL BE CLEANED FOLLOWING CONSTRUCTION AND ANNUALLY THEREAFTER.
12. ANY FILL BEING HAULED TO OR OUT OF THE SITE SHALL BE RESTRICTED TO THE HOURS BETWEEN 9 A.M. AND 4 P.M. ON WEEKDAYS.
13. ALL IMPERVIOUS SURFACES (DRIVEWAY/STORAGE AREA) SHALL BE CONSTRUCTED AS SHOWN ON THE DETAIL, AND SHALL SHED ALL RUNOFF ONTO THE VEGETATED FILTER STRIP.
14. PRIVACY FENCE SHALL CONSIST OF A 6' HIGH CHAIN LINK FENCE WITH VINYL PRIVACY SLATS INSTALLED.
15. THERE IS NO PROPOSED LIGHTING, SEPTIC, OR WATER FOR THIS LOT.

0 20 40 60

SCALE: 1"=20' ON ORIGINAL

PB #

LAYOUT & GRADING PLAN
ROBERT'S WAY STORAGE YARD
MAP-9 LOT-383
ROBERT'S WAY (LOT-B)
WINCHENDON, MA 01475

PREPARED FOR:
BARKLEY ENTERPRISES, LLC
1032 N.H. RT 119
RINDGE, NH 03461

OCTOBER 24, 2019

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 15004

SHEET 3 OF 3

TOWN OF WINCHENDON

Planning Board

Telephone (978) 297-5410

109 Front Street
Winchendon, Massachusetts 01475-1758

PUBLIC HEARING NOTICE

Notice is hereby given that at their regularly scheduled meeting of **Tuesday, October 15, 2019 at 6:40pm** in the Town Hall Aud., 2nd Fl., 109 Front St., Winchendon, MA 01475 the Winchendon Planning Board will hold a Public Hearing to consider the application for amendment to the approved site plan for reduction in approved vegetated buffer with adjacent residential parcels. The application for amendment has been submitted by Happy Hollow Road, on land owned by Fletcher Trust, located on Assessors Map 13, Parcels 61, 60, 234, and 74. Plans Submitted by Borrego Solar Systems, Inc. Said property is located in the R80 – Rural Residential zone. A copy of the application is available at the Dept. of P&D, Winchendon Town Hall. All interested persons should plan to attend.

BY: Guy C. Corbosiero, Chair
Winchendon Planning Board

October 1 & 8

RECEIVED
1/25/02
OCT - 9 2019 10:07 AM
WINCHENDON TOWN CLERK

TOWN OF WINCHENDON

Planning Board

Telephone (978) 297-0085
Facsimile (978) 297-1616

109 Front Street
Winchendon, Massachusetts 01475-1758

Application for Site Plan Approval

Fee paid: Town of Winchendon $ 550 Winchendon Courier $_____
****

Pursuant to the provisions of Massachusetts General Law Chapter 40, Section 57, the Town Bylaw, Licenses and Permits of Delinquent Taxpayers, Section 2 L 1: 'Any Board ... shall deny the application ... for any person, corporation, or business enterprise who has neglected or refused to pay any local taxes, fees, assessments, betterments, or any other municipal charge.' **Certification must be obtained from the Town Treasurer on this form before it is submitted to the Planning Board. The Town Treasurer has up to ten (10) days to complete certification.**
I hereby certify that no debt is owed to the Town by the applicant or the owner of record for a period of time greater than twelve (12) months.

Kelly Wood / Clerk _____ 10 - 9 - 19
Town Treasurer *Date*
****

PB # 2019 - 1003 **Rec'd by Planning Board** 10/8/19

APPLICANT name Borrego Solar Systems, Inc. (David Albrecht)

Address 55 Technology Drive, Suite 102 Lowell, MA 01851 Tel. # 978-513-2621

LANDOWNER name Fletcher Trust No. 1

Address 147 Gardner Road Gardner, MA 01440 (J. Fletcher) Tel. #_____

LOCATION OF LAND North side of Happy Hollow Road

TITLE OF PLAN 7.0 MW Ground mount solar photovoltaic system

Property is to be used for Solar photovoltaic system

under Article 3.2 of the Schedule of Use Regulations of the Town of Winchendon

Deed to the property, as recorded in the Worcester District Registry of Deeds

Book 8401 Page 238 (5/6/1991) and is shown on

Assessors Map 13 Parcel 61, 60, 234 and 75 Zoning Rural Residential (R-80)

Lot size_____

The undersigned hereby request approval of a site plan under Section 5.2 of the Winchendon Zoning Bylaws and further certify that all information provided in this application and site plan is true.

OWNER signature See attached authorization memo

APPLICANT signature David Albrecht dated Oct. 7, 2019.

Original of this application must be submitted to the Town Clerk.

$203 pd - abutters fee
$550 pd - site fee

BORREGO SOLAR

October 7, 2019

Mr. Guy Corbosiero, Chairman
Planning Board
Town of Winchendon
109 Front Street
Winchendon, MA 01475

RE: Amended Site Plan Review Application
7,018.220 kW Ground Mounted PV Facility
38 Happy Hollow Road (APN 13-060/061/234/75)
Winchendon, Massachusetts

Dear Chairman:

Borrego Solar Systems, Inc., is pleased to submit our amendment to our Site Plan Approval and Low Impact Development Permit for the above-referenced solar photovoltaic energy generating facility. As discussed with the planning office, we are looking to clear additional trees to the south of the solar project. We are looking to update our approvals to include clearing to within 50 feet of our southernly boundary. As required under Article 6.11 Solar Energy Collection Systems of the Town of Winchendon Zoning Bylaws and Article 31 of the Bylaws of the Town of Winchendon we request the Planning Board to review the attached as part of our application:

- One (1) copy of the completed Application for Site Plan Approval with attached authorization letter.
- Eight (8) copies of the full size (24 x 36) plan entitled "Tree Clearing Plan"
- Four (4) copies of the reduced size (11 x 17) plans above.
- Abutters fee for 29 parcel notices $203.00 (check #3119).
- Site Plan Approval fee of $550.00 (check #3105).

We look forward to presenting this project to the Planning Board at the October 15, 2019 planning board meeting.

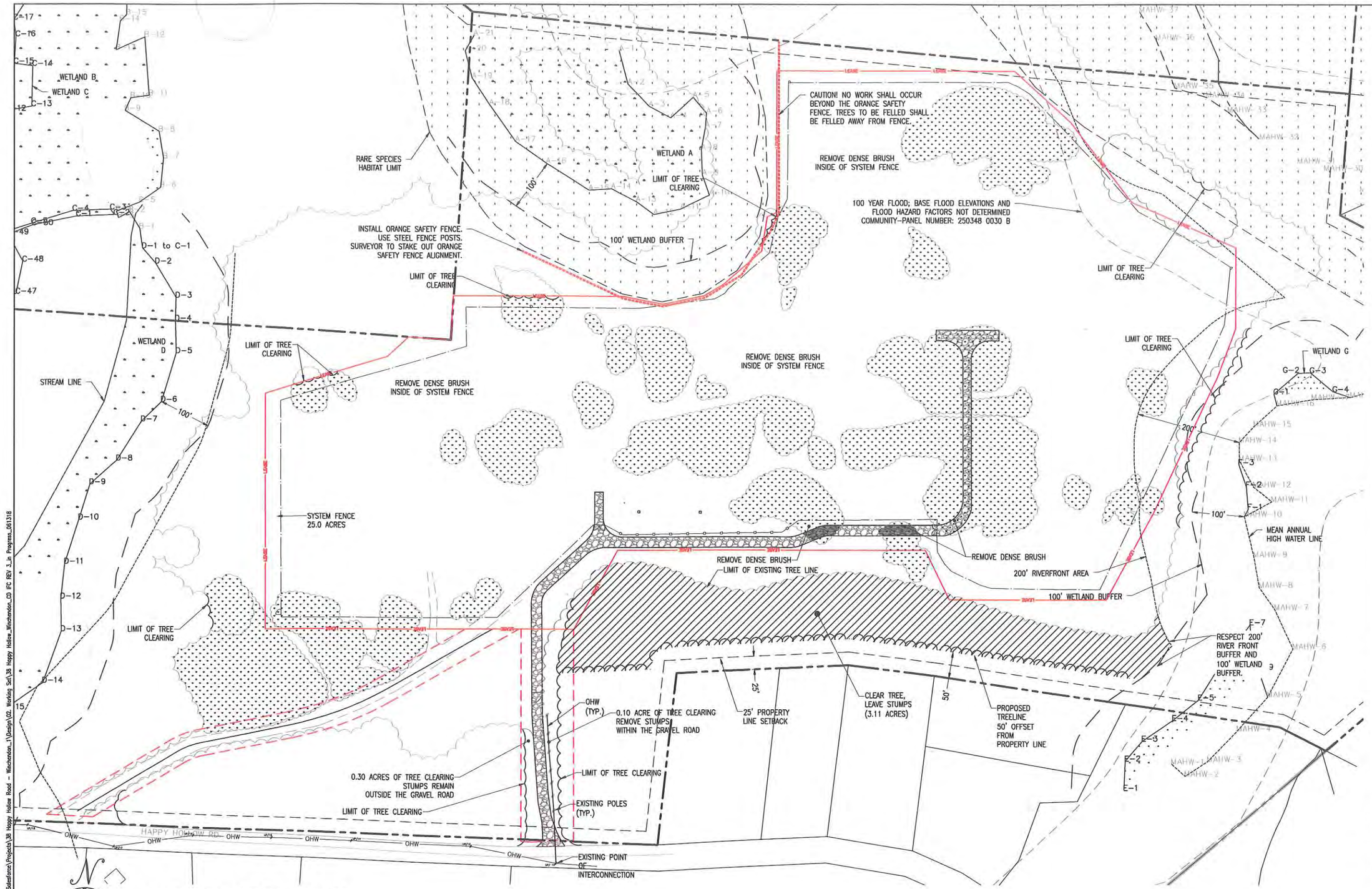
If you have any questions regarding the above, please do not hesitate to call.

Very truly yours,
Borrego Solar Systems

David Albrecht

David M. Albrecht, P.E. Principal
Civil Engineer

55 Technology Drive, Suite 102
Lowell, MA 01851



TREE CLEARING PLAN

SCALE: 1" = 80'

0 80' 160'

BORREGO SOLAR
55 TECHNOLOGY DRIVE, SUITE 102
LOWELL, MA 01851
PHONE: (888) 898-6273
FAX: (888) 843-9778
WWW.BORREGOSOLAR.COM

BY STAMPING THIS RECORD DRAWING, I AM REFLECTING ONLY COMMENTS REPORTED AND MADE BY BORREGO REPRESENTATIVES. NO ENGINEERING HAS BEEN PROVIDED.

38 HAPPY HOLLOW ROAD
WINCHENDON, MA 01440

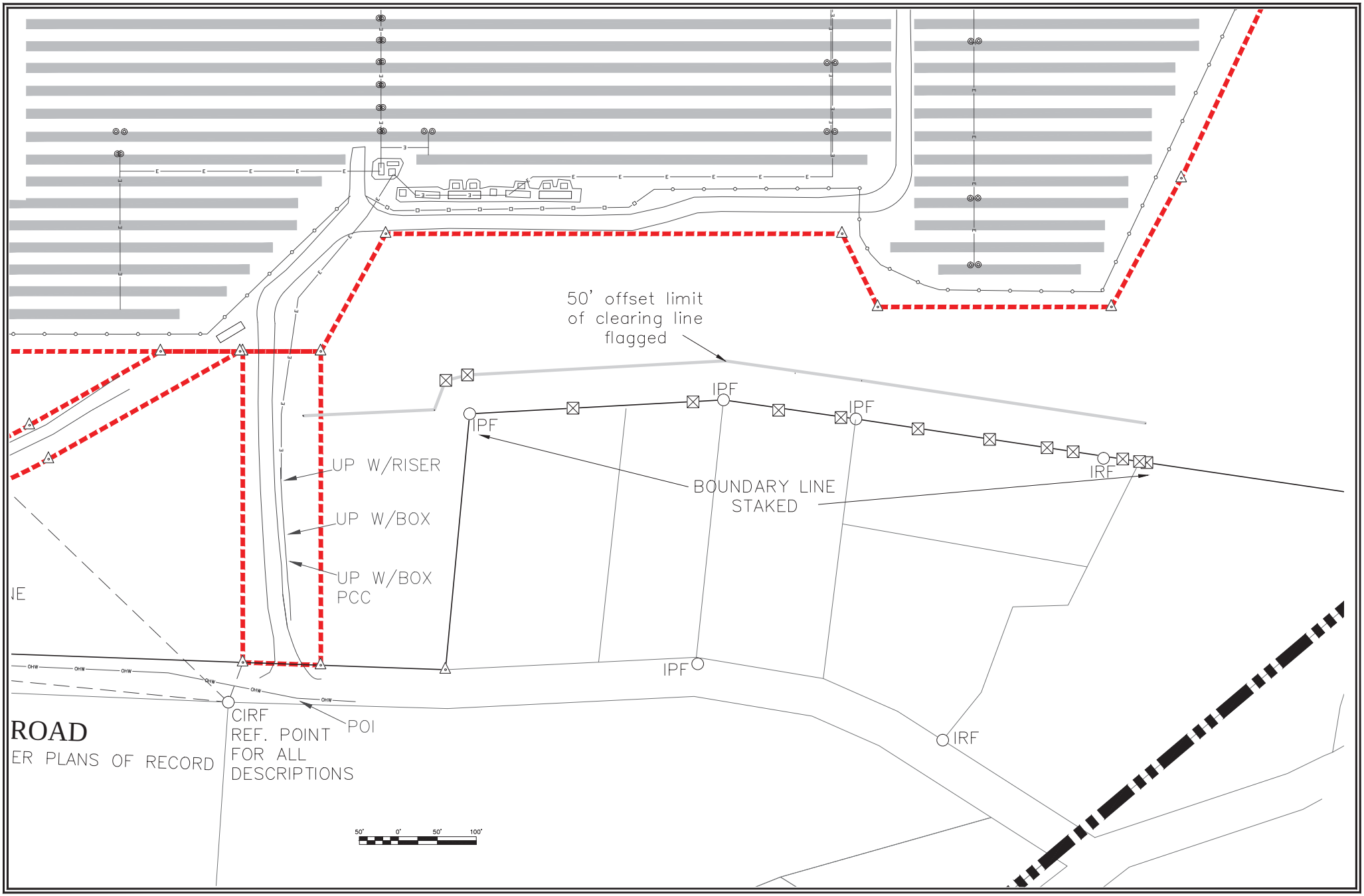
PROJECT NUMBER: 905-1015

REV	DATE	DRWN	CHECKED	RELEASE LEVEL
1	01/29/18	MAS	DMA	PB SUBMISSION-MINOR MODIFICATION
	02/12/18	RP	KL	DEV SET
	03/07/18	TG	RS	CD SET ISSUED FOR REVIEW
	05/16/18	TG	RS	CD SET ISSUED FOR CONSTRUCTION
2	07/10/18	RS	---	CD IFC SET REVISION 1
	06/14/19		RS	RECORD SET

SCALES STATED ON DRAWINGS ARE VALID ONLY WHEN PLOTTED ARCH D 24" X 36"

C-2.0
TREE CLEARING PLAN

C:\Users\estondah\Box Sync\Salesforce\Projects\38 Happy Hollow Road - Winchendon_1\Design\02. Working Set\38 Happy Hollow_Winchendon_CD IFC REV 2_in Progress_061318


50' offset limit
of clearing line
flagged
IPF
IPF
IPF
IRF
BOUNDARY LINE
STAKED
UP W/RISER
UP W/BOX
UP W/BOX
PCC
IPF
IRF
CIRF
REF. POINT
FOR ALL
DESCRIPTIONS
POI
ROAD
ER PLANS OF RECORD
50' 0' 50' 100'

Winchendon Planning Board,

Town Hall, 109 Front Street, Winchendon, MA 01475
Telephone (508) 297-0085
Fax (508) 297-1616

RECEIVED 10:20AM
OCT 29 2019
WINCHENDON TOWN CLERK

FORM A
(ANR)

To the Planning Board: The undersigned, believing that the accompanying plan of property in the Town of Winchendon does not constitute a subdivision within the meaning of the Subdivision Control Law, herewith submits such plan for a determination and endorsement that Planning Board approval under the Subdivision Control Law is not required.

Received by Planning Board 10/29/19 PB# 2019-1029A

Location of land 42 & 44 HAPPY HOLLOW ROAD

# of lots being created herein

Any remaining land does not create a nonconforming lot.

APPLICANT DOREEN HERR CHELLANE N. COTE
Address 48 CROSBY ROAD, WINCHENDON, MA 01475 44 HAPPY HOLLOW ROAD WINCHENDON, MA 01475
Telephone number 470-409-5720
LANDOWNER DOREEN HERR CHELLANE N. COTE
Address 48 CROSBY ROAD, WINCHENDON, MA 01475 44 HAPPY HOLLOW ROAD WINCHENDON, MA 01475
TITLE OF PLAN PLAN OF LAND TO EXCHANGED BETWEEN DOREEN HERR & CHELLANE N. COTE
Deed to the property is recorded in the Worcester District Registry of Deeds at:
Book 49653 57063 Page 87 171
Assessor's Map 13 Parcel 70 & 71 Zoning District R-80

"One original (mylar) and five copies of this plan are to be submitted with this Form A to the Town Clerk, along with the filing fee."

Signature of Applicant Doreen Herr Chellane N Cote

Signature of Landowner Doreen Herr Chellane N Cote

To Town Clerk
You are hereby notified that the plan described above has/has not been endorsed by the Planning Board on _____ as follows: "Planning Board Approval Under Subdivision Control Law Not Required".

_____ _____
(Chairman)

_____ _____

_____

Date copy sent to applicant

Revised 6/8/04

Parcel B
633 sq.ft.

A certain parcel of land situated off the northerly side of Happy Hollow Road, Winchendon, Worcester County Massachusetts, and being shown as PARCEL "B" on a plan entitled "PLAN OF LAND TO BE EXCHANGED BETWEEN DOREEN HERR AND CHELLANE N. COTE, WINCHENDON, MA, SCALE 1 INCH = 40 FEET, SEPTEMBER 25, 2019, EDMOND J. BOUCHER, PLS, 4 JOLLY ROAD, ROYALSTON, MA, 01368 recorded in plan book , plan , bounded and described as follows:

Beginning at an iron pipe in the end of a stone wall at the northwest corner of land of Chellane N. Cote; thence South 12°00'00" West by Cote land 118.95 feet to land of Doreen Herr; thence North 06°49'09" East by Herr land 117.72 feet to an iron pin in a stone wall at land of John L. & James L. Fletcher, Trustees of Fletcher Trust No. 1; thence South 87°09'22" East by a stone wall and Fletcher land 10.77 feet to a an iron pipe in the end of a stone wall and the point of beginning. Containing 633 square feet.

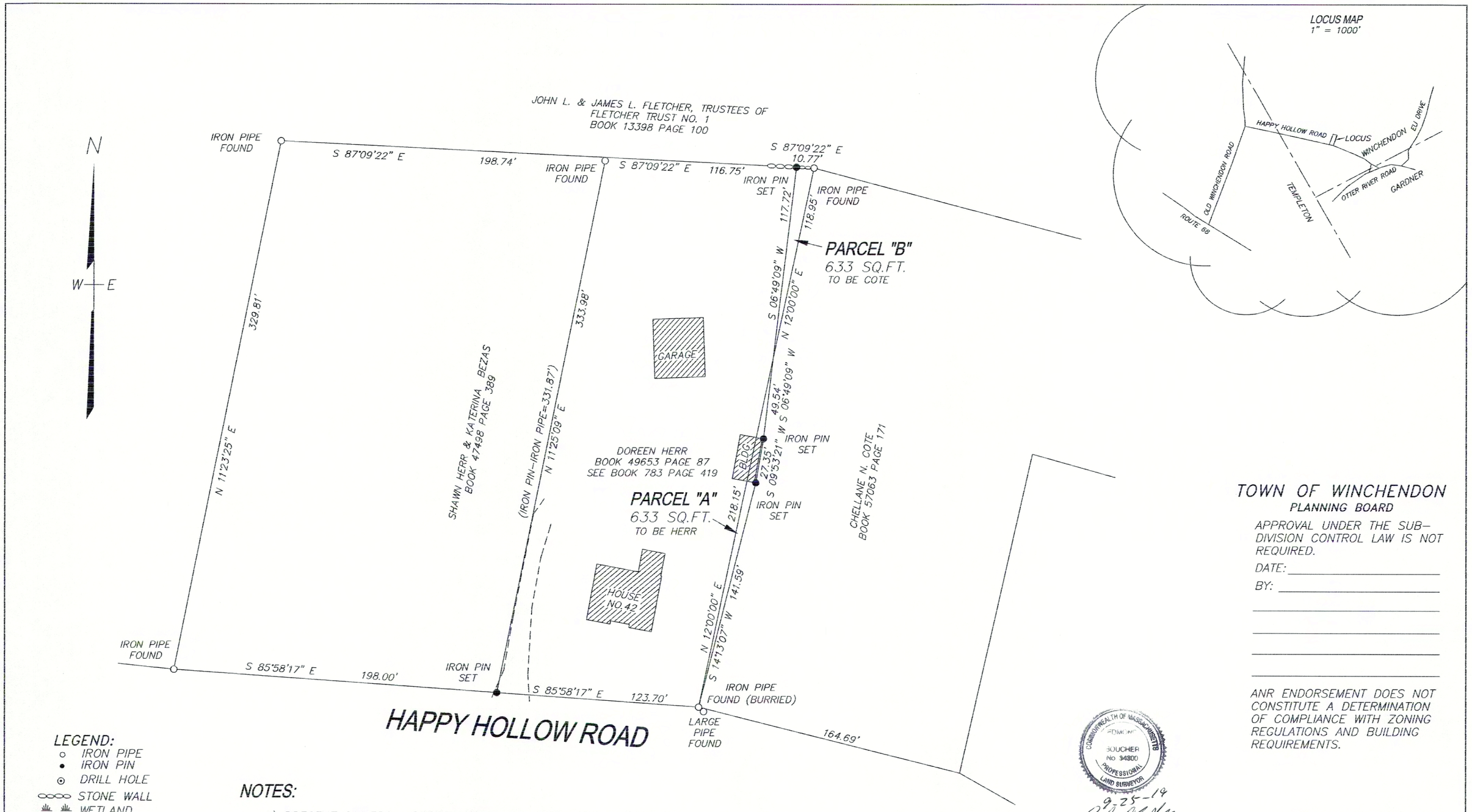
Being a portion of book 49653 page 87.

Parcel A
633 sq.ft.

A certain parcel of land situated on the northerly side of Happy Hollow Road, Winchendon, Worcester County Massachusetts, and being shown as PARCEL "A" on a plan entitled "PLAN OF LAND TO BE EXCHANGED BETWEEN DOREEN HERR AND CHELLANE N. COTE, WINCHENDON, MA, SCALE 1 INCH = 40 FEET, SEPTEMBER 25, 2019, EDMOND J. BOUCHER, PLS, 4 JOLLY ROAD, ROYALSTON, MA, 01368 recorded in plan book , plan , bounded and described as follows:

Beginning at an iron pipe on the northerly line of Happy Hollow Road at land of Doreen Herr; thence North 12°00'00" East by Herr land 218.15 feet to land of Chellane N. Cote; thence South 06°49'09" West by Cote land 49.54 feet to an iron pin; thence South 09°53'21" West by Cote land 27.35 feet to an iron pin; thence South 14°13'07" West by Cote land 141.59 feet an iron pipe on the northerly line of Happy Hollow Road and the point of beginning.
Containing 633 square feet.

Being a portion of book 57063 page 171.



LEGEND:
- IRON PIPE
- IRON PIN
- DRILL HOLE
- STONE WALL
- WETLAND

NOTES:

1) PRESENT OWNERS : DOREEN HERR. SEE BOOK 49653, PAGE 87.
CHELLANE N. COTE. SEE BOOK 57063 PAGE 171

2) SEE ASSESSORS MAP 13, PARCELS 70 & 71

3) THESE LOTS ARE IN ZONE R-80

4) ABUTTERS SHOWN WERE TAKEN FROM THE MOST RECENT TAX LIST.

5) PARCEL "A" IS TO BE CONVEYED TO DOREEN HERR AND COMBINED WITH HER OTHER LAND AND IS NOT TO BE CONSIDERED AS A SEPARATE BUILDING LOT.

6) PARCEL "B" IS TO BE CONVEYED TO CHELLANE N. COTE AND COMBINED WITH HER OTHER LAND AND IS NOT TO BE CONSIDERED AS A SEPARATE BUILDING LOT.

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

E.J. Boucher

GRAPHIC SCALE

40 0 20 40 80 160

1 INCH = 40 FEET

FOR REGISTRY USE

TOWN OF WINCHENDON
PLANNING BOARD

APPROVAL UNDER THE SUB-DIVISION CONTROL LAW IS NOT REQUIRED.

DATE: _____

BY: _____

ANR ENDORSEMENT DOES NOT CONSTITUTE A DETERMINATION OF COMPLIANCE WITH ZONING REGULATIONS AND BUILDING REQUIREMENTS.

COMMONWEALTH OF MASSACHUSETTS
EDMUND J. BOUCHER
No. 34300
PROFESSIONAL LAND SURVEYOR

9-25-19

PLANNING BOARD ID BLOCK

PLAN OF LAND
TO BE EXCHANGED BETWEEN
DOREEN HERR
AND
CHELLANE N. COTE
WINCHENDON, MA

SCALE 1 INCH = 40 FEET SEPTEMBER 25, 2019

EDMOND J. BOUCHER, PLS, 4 JOLLY ROAD, ROYALSTON, MA, 01368

JOB NO. H-660

Alison Manugian

From: Alison Manugian
Sent: Tuesday, October 22, 2019 10:09 AM
To: 'Tony Kurylo'
Cc: Tracy Murphy
Subject: RE: Solar Glare

Tony,

I have reviewed the photos and your email along with the notes I took at the recent Planning Board meeting that you attended. I appreciate your attention to detail and the amount of information you have been able to share with me. From my notes I believe that your written complaint came in on September 19, 2019 (following our phone conversation the week prior). You and John Perry, of Dynamic Energy, met on your property later that day and he submitted a report with additional photos.

I found that the original application to erect a ground-mounted solar array on the property on Lincoln Avenue was submitted on September 14, 2017. The Planning Board held a Public Hearing on October 3rd that was continued to November 7, 2017 and closed. At this hearing the public was invited to speak to the proposed project and the feedback of the peer review engineer was discussed. Notices of the pending Public Hearing went out to all property owners within 300' in mid-September; and your name and address are among those on our certified list. The intent of the Public Hearing process is to inform potentially impacted parties and ensure that the Board has all possible information prior to making any decisions. The Board voted to approve the Site Plan on November 7, 2017. Following approval a decision is held for 21 days to allow for appeal of the decision by any member of the public. Since the original approval was issued, an extension of buildout time was approved by the Planning Board in July of 2018 and an electrical modification was approved by the Planning Board in August of 2019.

As you can imagine, the Town of Winchendon has comprehensive "Rules and Regulations For the Review and Approval of Site Plans and Site Development". These rules are intended to ensure that development is appropriate to the proposed site and is not detrimental to the Town and abutters. These Rules can be found on the Town of Winchendon website at the address listed here: https://www.townofwinchendon.com/sites/winchendonma/files/uploads/sprr.pdf . This project proceeded in accordance with these regulations and the approvals (both original and modifications) include both Standard Conditions and Special Conditions to which the developer must adhere.

It is always disappointing to hear from a community member that they feel a completed project has had adverse impacts. It does not appear that the project is in violation of the approvals or conditions so there may not be recourse that the Board can offer to address your concerns at this point. I will reach out to John Perry again to see if there are any mitigation alternatives that he feels could help to address your concerns. If he has suggestions, or if we are able to identify any within the office, we can discuss them on November 19th as scheduled with the Planning Board. I regret that you have found the project to be detrimental and hope that the impacts prove to be both seasonal and of less impact than you anticipate.

Thank you,
Alison

Alison Manugian
Planning Agent - Town of Winchendon
109 Front Street
Winchendon, MA 01475
978-297-5410

From: Tony Kurylo [mailto:anjoku@verizon.net]
Sent: Tuesday, October 15, 2019 3:50 PM
To: Alison Manugian <AManugian@townofwinchendon.com>
Subject: Re: Solar Glare

Sure Alison,
I would like dynamic energy to eliminate the intrusion of glare from their panels onto my property. Although they may be in compliance with the relative setback requirements, they have made no provision as to allow for any wooded buffer and their installation is so close to property boundaries that there is little room to add any plantings that may alleviate glare or the inherent unsightliness of the project.

If they can eliminate the glare with plantings I'm all in favor of a natural solution such as that. If a fence were prescribed it could be most effective but unsightly as well. Other options may be to remove, adjust, or cover the offending panels. I'm open to any meaningful suggestion.

Just as noise, debris, or offensive odors from a commercial operation that intrude on residential areas are addressed, so too should glare from solar electric grids that have the net effect of multiplying the output of the sun and altering its location on the horizon which I would submit is no small condition.

There are things called glint and glare studies that use computer modeling to predict glare probability and I would like to see the Board consider these for future projects they may encounter. In addition I would like to see the Board revisit any wooded buffers that may be discussed as my buffer is in effect 600' and yet glare manages to penetrate it and that is before the leaves have fallen.
Tony Kurylo.

Sent from my iPhone

> On Oct 15, 2019, at 3:03 PM, Alison Manugian <AManugian@townofwinchendon.com> wrote:
>
> Tony,
>
> I have 14 emails from you with photos, but have yet to review them all. It would be helpful as I review them to understand what you are hoping will be the outcome. I don't know if you are thinking that plantings would help or if there is a different idea. Can you fill me in on what you envision?
>
> Thank you,
> Alison
>
> Alison Manugian
> Planning Agent - Town of Winchendon
> 109 Front Street
> Winchendon, MA 01475
> 978-297-5410
>
>

Alison Manugian

From: tony kurylo <anjoku@verizon.net>
Sent: Wednesday, September 18, 2019 12:22 PM
To: Alison Manugian
Subject: solar glare from Lincoln ave Solar project

Winchendon Planning Board,
I'm writing to make a formal complaint concerning solar glare from the Lincoln Ave Solar project.Though the panels have been in place for just a few weeks, the afternoon glare from them has proven to be a nuisance. It has already shown to be an imediment to the quiet enjoyment of my property.
Additionally the glare has the potential to devalue my property for potential future building or subdivision. The glare as well as the visibility of the project make it an unsightly neighbor to say the very least.

Lastly, I am informing you that I have never recieved an abutters notice from the Board and am late to comment as a result. I'm asking the Board to require the owner(s) to mitigate the glare and shield my property from the unpleasant view I now have as a result of this monstrosity.

Anthony Kurylo
35 northern heights dr
978-340-5805

Dynamic Energy™

Project: Winchendon Lincoln Ave Solar 2

RE: Meeting with Abutter regarding:

- View of modules

Property Owner: Mr. Anthony Kurylo

Address: 35 Northern Heights Dr.

Telephone: 978-340-5805

Property description: ~25-acre parcel to the east of Lincoln Ave Solar 2, heavily wooded: hemlock, oak, birch

Meeting Status: Concern expressed to the Planning Board, a hearing has been scheduled for October 3, 6:45.

A notification regarding Mr. Kurylo was sent to me on September 17th by Alison Manugian, Assistant Town Planner.

- I called Mr. Kurylo on September 17-direct to voicemail, and again on the 18th, direct to voicemail, followed up with an e-mail on the 18th.

- Mr. Kurylo returned my call on 9/19, and I agreed to meet him at his home during the periods that he said that the modules/ light was most visible, he indicated the light was at its worst around 6PM and was also bad until 6:20, specifically bad from his dining room. We met on site from 4:25 until 7PM on 9/19. Sunset was 6:47 on 9/19. The sun sets directly to the west of Mr. Kurylo's dining room.

- My observation was that there was some reflected light that coincided with when the sun was low/ lowest, just before sunset. For a time, ~20 minutes, around/before sunset. We stood outside of his dining room where he had described the light as blinding, photos attached.

    - There are peek-a-boo views of the modules through the trees along a path in his woods that parallels the east side of the array
    - Pictures taken from about 4:30 to 6:30 PM at Mr. Kurylo's property are below taken on 9/19, full sun no clouds all day (pls see picture at Town hall), sunset was 6:47 PM on 9/19. 12 megapixel camera

Dynamic Energy™

Picture outside of Town Hall 9/19 at about 4:15 showing clear skies, bright sun and reflections off of trees, pavement, and chrome car trim

P: 877.809.8884 F: 610.267.5403

1550 Liberty Ridge Drive | Suite 310 | Wayne, PA 19087

Dynamic Energy™

4:31 PM (sunset 6:47) westerly/s/w view toward the array, very sunny day, no clouds, sun is still quite high as seen in the upper right corner

Dynamic Energy™

4:36 PM (sunset at 6:47) PM northern central part of the Property looking directly at the array, somewhat N/westerly. Peek-a-boo views in the central part of the frame, photo taken from a wooded path slightly N of the house about halfway to the array E/W headed west toward the array from the approximate location of the house. Sun was still quite high

Dynamic Energy™

4:51 PM central part of the property from a wooded path about halfway to the array from the house E/W within the property a few hundred yards from the house-lower right corner peek-a-boo view of the modules

P: 877.809.8884 F: 610.267.5403

POWER AHEAD.

1550 Liberty Ridge Drive | Suite 310 | Wayne, PA 19087

DYNAMICENERGYUSA.COM

6:02 (sunset 6:47) PM looking directly west to the array from the exterior of the home outside the dining room

6:09 PM (sunset 6:47) looking west to the array from the exterior of the home outside the dining room, sun was quite low

Dynamic Energy™

6:13 PM looking west to the array from the exterior of the home outside the dining room

Dynamic Energy™

6:23 PM looking west to the array from the exterior of the home outside the dining room

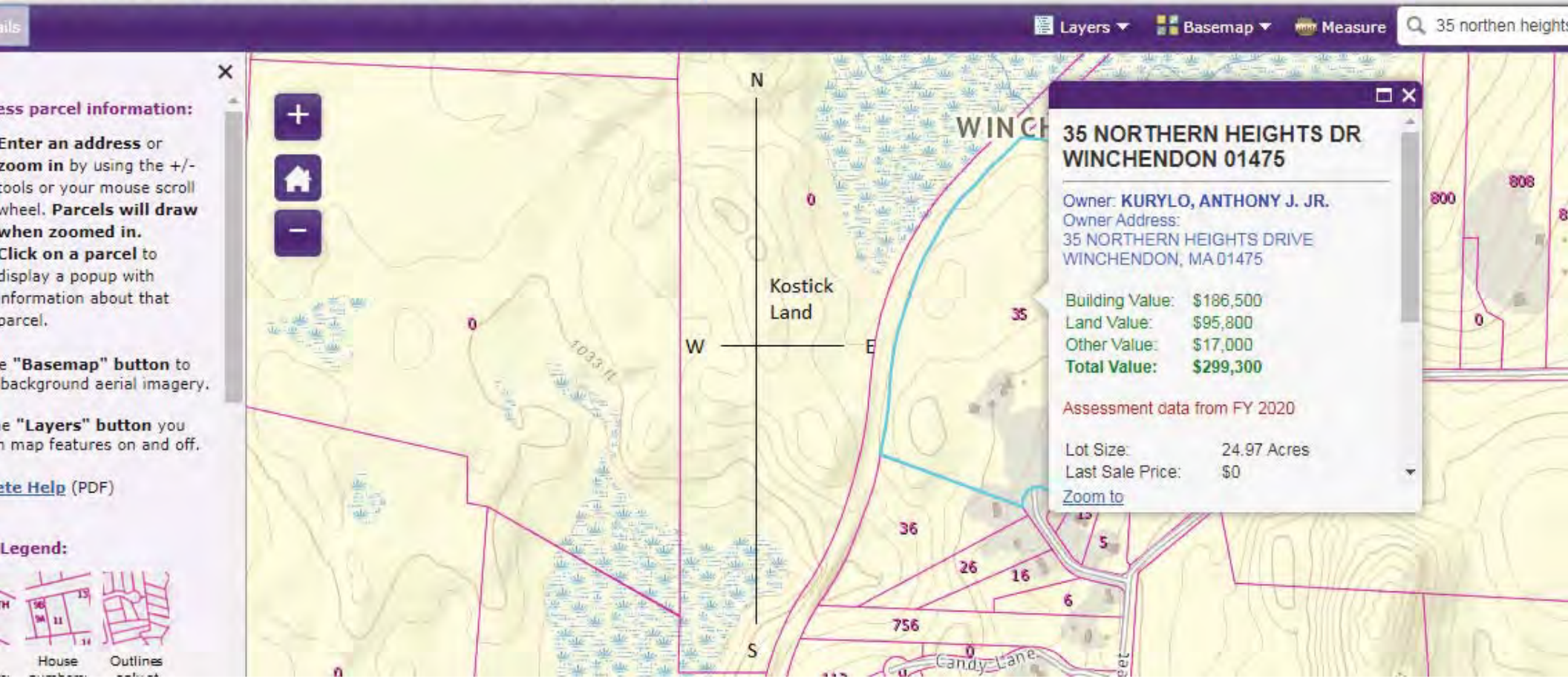
P: 877.809.8884 F: 610.267.5403

1550 Liberty Ridge Drive | Suite 310 | Wayne, PA 19087

6:31 PM (sunset 6:47) looking west to the array from the exterior of the home at the rear N/W corner of the house outside the dining room

Sun then dropped out of site

ssachusetts Interactive Property Map




NEW HAMPSHIRE
NOT TO SCALE FOR REFENCE ONLY
Robbins Brook
Array
Google

CLEANENERGYRESULTS

Questions & Answers

Ground-Mounted Solar Photovoltaic Systems

Westford Solar Park, photo courtesy of EEA

June 2015

Massachusetts Department of Energy Resources
Massachusetts Department of Environmental Protection
Massachusetts Clean Energy Center

Glare

Question: How important is reflectivity and potential visual impacts from solar projects, especially near airports?

Bottom Line: Solar panels are designed to reflect only about 2 percent of incoming light, so issues with glare from PV panels are rare. Pre-construction modeling can ensure that the placement of solar panels prevents glare.

More Information: Solar panels are designed to absorb solar energy and convert it into electricity. Most are designed with anti-reflective glass front surfaces to capture and retain as much of the solar spectrum as possible. Solar module glass has less reflectivity than water or window glass. Typical panels are designed to reflect only about 2 percent of incoming sunlight. Reflected light from solar panels will have a significantly lower intensity than glare from direct sunlight.

An analysis of a proposed 25-degree fixed-tilt flat-plate polycrystalline PV system located outside of Las Vegas, Nevada showed that the potential for hazardous glare from flat-plate PV systems is similar to that of smooth water and not expected to be a hazard to air navigation.

Many projects throughout the US and the world have been installed near airports with no impact on flight operations. United Kingdom and U.S. aircraft accident databases contain no cases of accidents in which glare caused by a solar energy facility was cited as a factor.

When siting solar PV arrays pre-construction modeling can ensure the panels are placed in a way that minimizes any potential glare to surrounding areas.

Resources:

Technical Guidance for Evaluating Selected Solar Technologies on Airports, Federal Aviation Administration, November 2010 (currently under review), http://www.faa.gov/airports/environmental/policy_guidance/media/airport_solar_guide.pdf

A Study of the Hazardous Glare Potential to Aviators from Utility-Scale Flat-Plate Photovoltaic Systems, Black & Veatch Corporation, August 2011, http://www.isrn.com/journals/re/2011/651857/

Solar Photovoltaic Energy Facilities, Assessment of Potential Impact on Aviation, Spaven Consulting, January 2011: http://www.solarchoice.net.au/blog/solar-panels-near-airports-glare-issue/

Scene drawing tool:

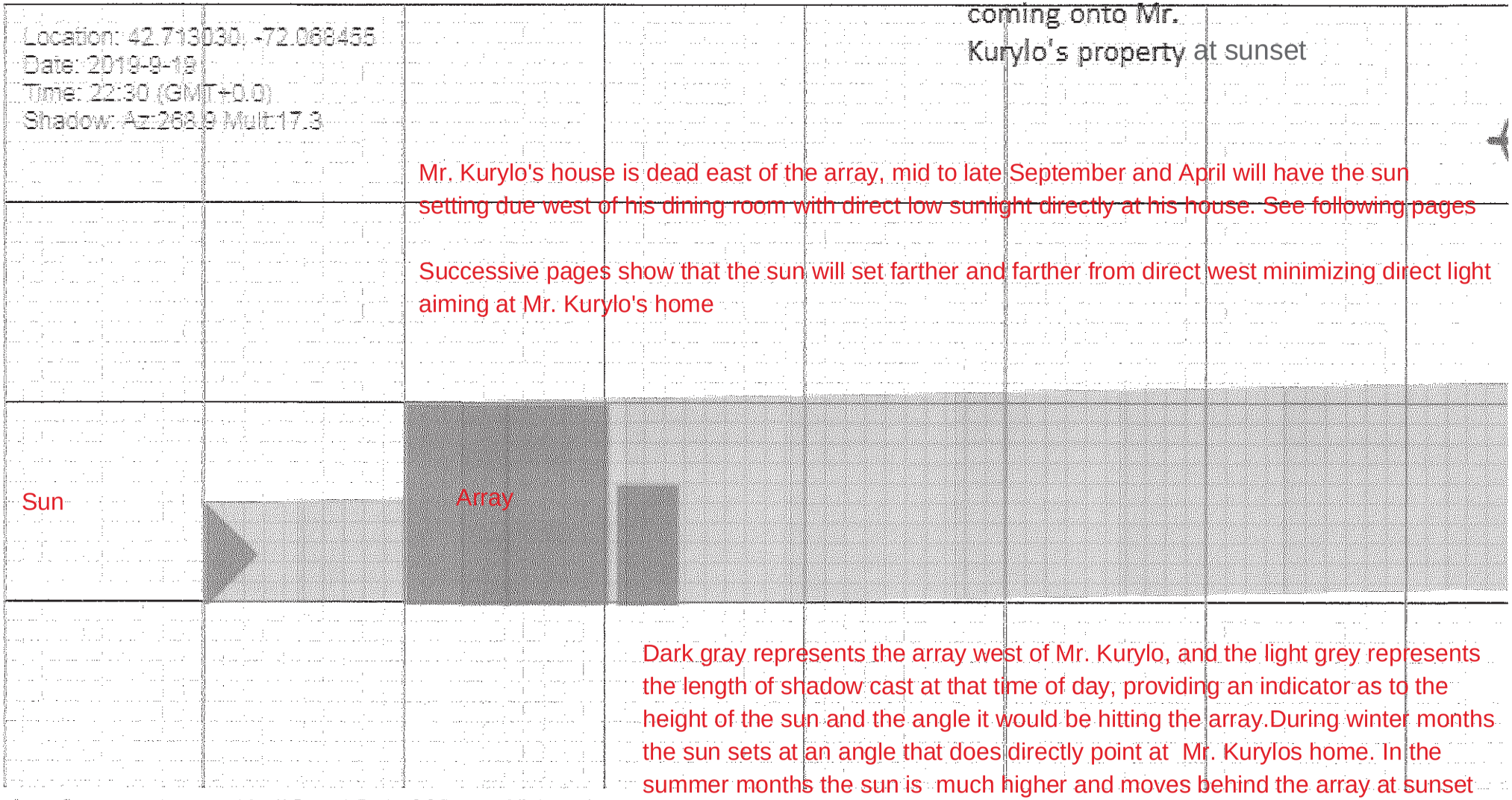
6:30 PM

Show shadows: ☐ Daily aggregate ☑ Snapshot time

This is the day I visited the site, 9/19/19
May be the very worst time of the year for the relationship of the sun's angle related to light coming onto Mr. Kurylo's property at sunset

Displayed Time: **22:30 (GMT+0.0) Az:268.9 Mult:17.3**

<Prev Next> Aut



Mr. Kurylo's house is dead east of the array, mid to late September and April will have the sun setting due west of his dining room with direct low sunlight directly at his house. See following pages

Successive pages show that the sun will set farther and farther from direct west minimizing direct light aiming at Mr. Kurylo's home

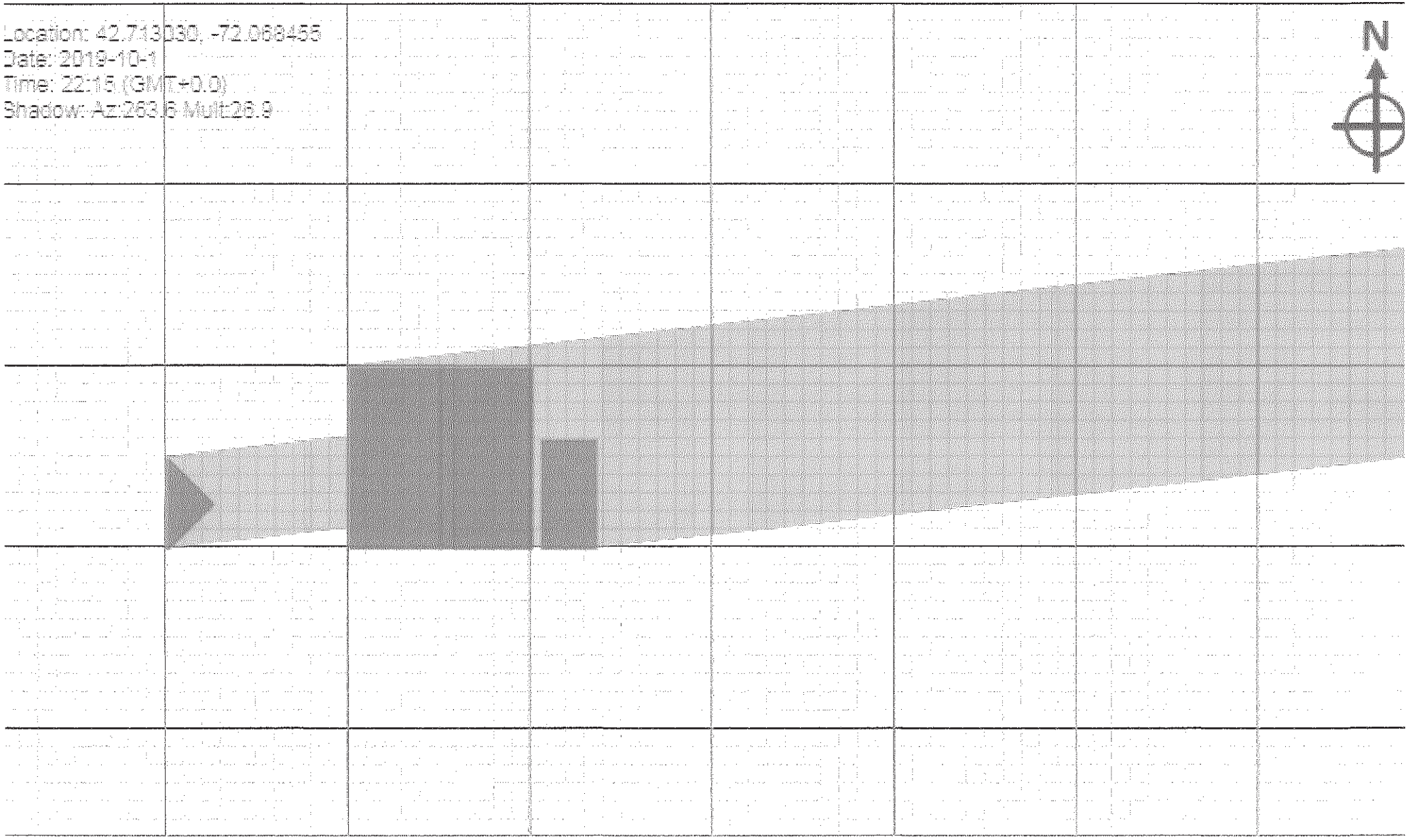
Dark gray represents the array west of Mr. Kurylo, and the light grey represents the length of shadow cast at that time of day, providing an indicator as to the height of the sun and the angle it would be hitting the array.During winter months the sun sets at an angle that does directly point at Mr. Kurylos home. In the summer months the sun is much higher and moves behind the array at sunset

how shadows: ☐ Daily aggregate ☑ Snapshot time

October 1, 2019
6:15
Sunset 6:26
Extermely low sun on
the most W/E

isplayed Time: 22:15 (GMT+0.0) Az:263.6 Mult:26.9 ▾

<Prev Next> Auto-Pla



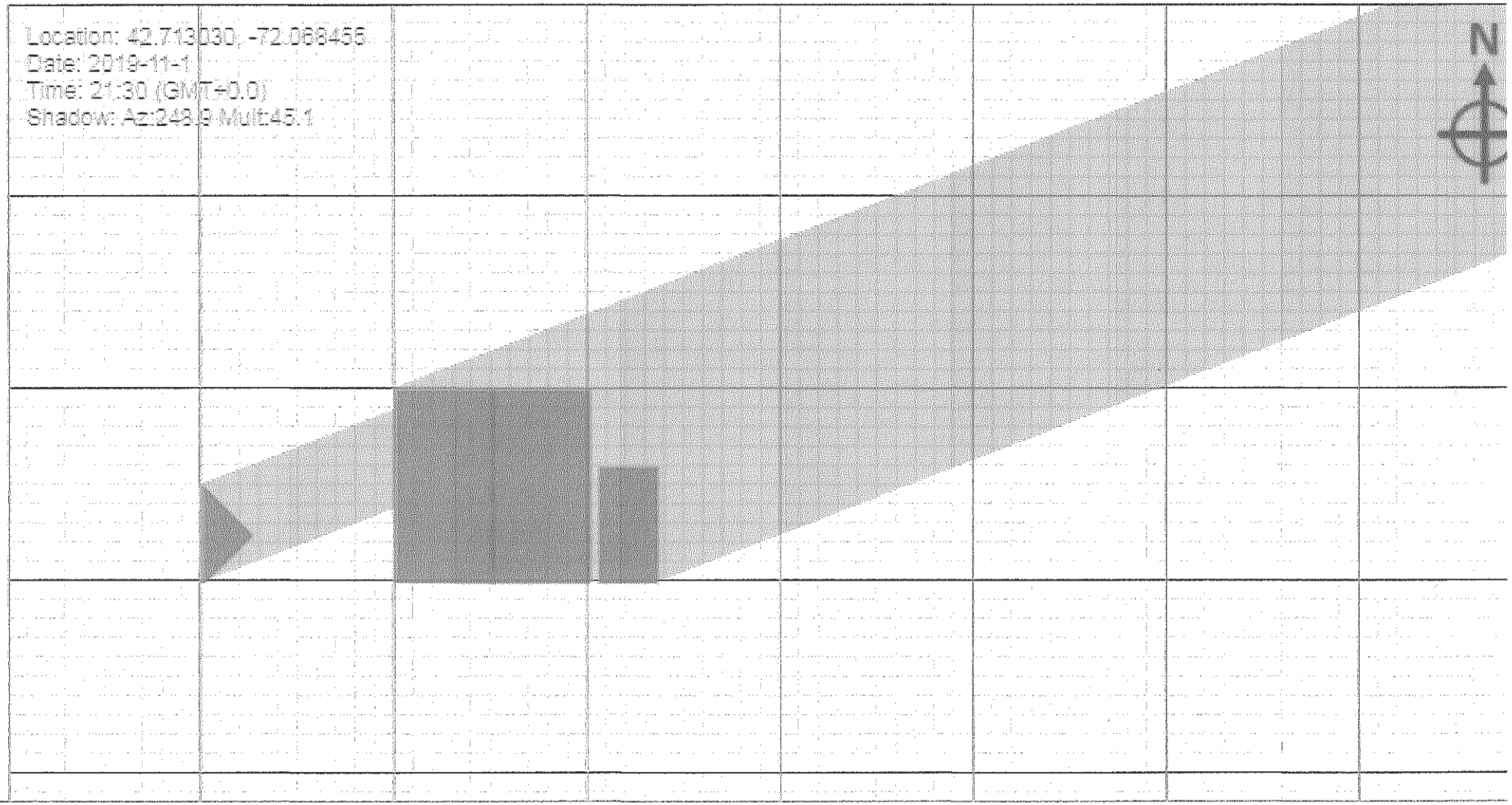
Scene drawing tool:

Show shadows: ☐ Daily aggregate ☑ Snapshot time

Nov 1, 2019 @5:30
Sunset at 5:37

Displayed Time: **21:30 (GMT+0.0) Az:248.9 Mult:45.1** ▾

<Prev Next> Auto-Pla



zimuth d-1.pdf ^

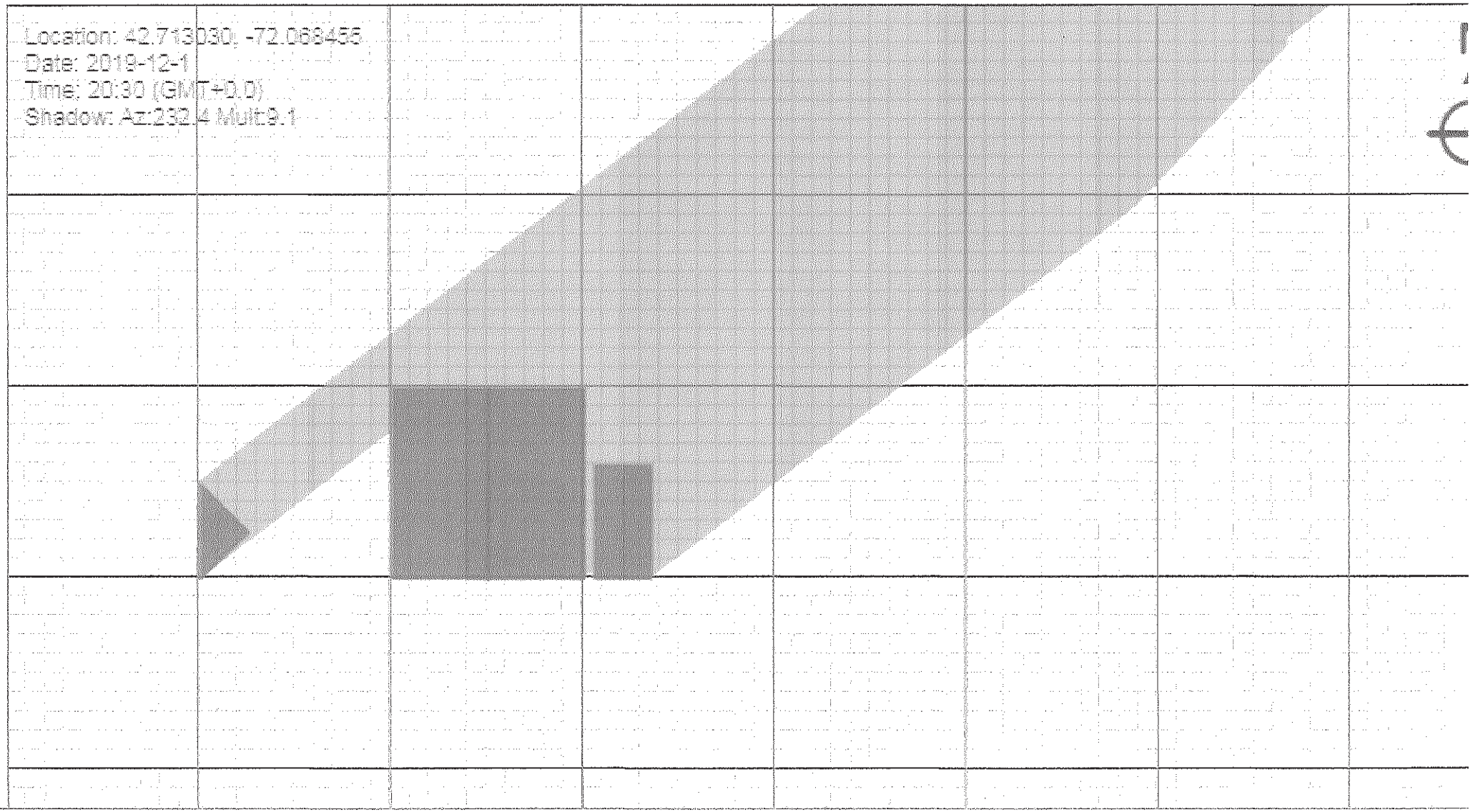
Scene drawing tool:

Show shadows: ☐ Daily aggregate ☑ Snapshot time

December 1, 2019
4:30 PM
Sunset 4:12

Displayed Time: 20:30 (GMT+0.0) Az:232.4 Mult:9.1

<Prev Next> Auto-



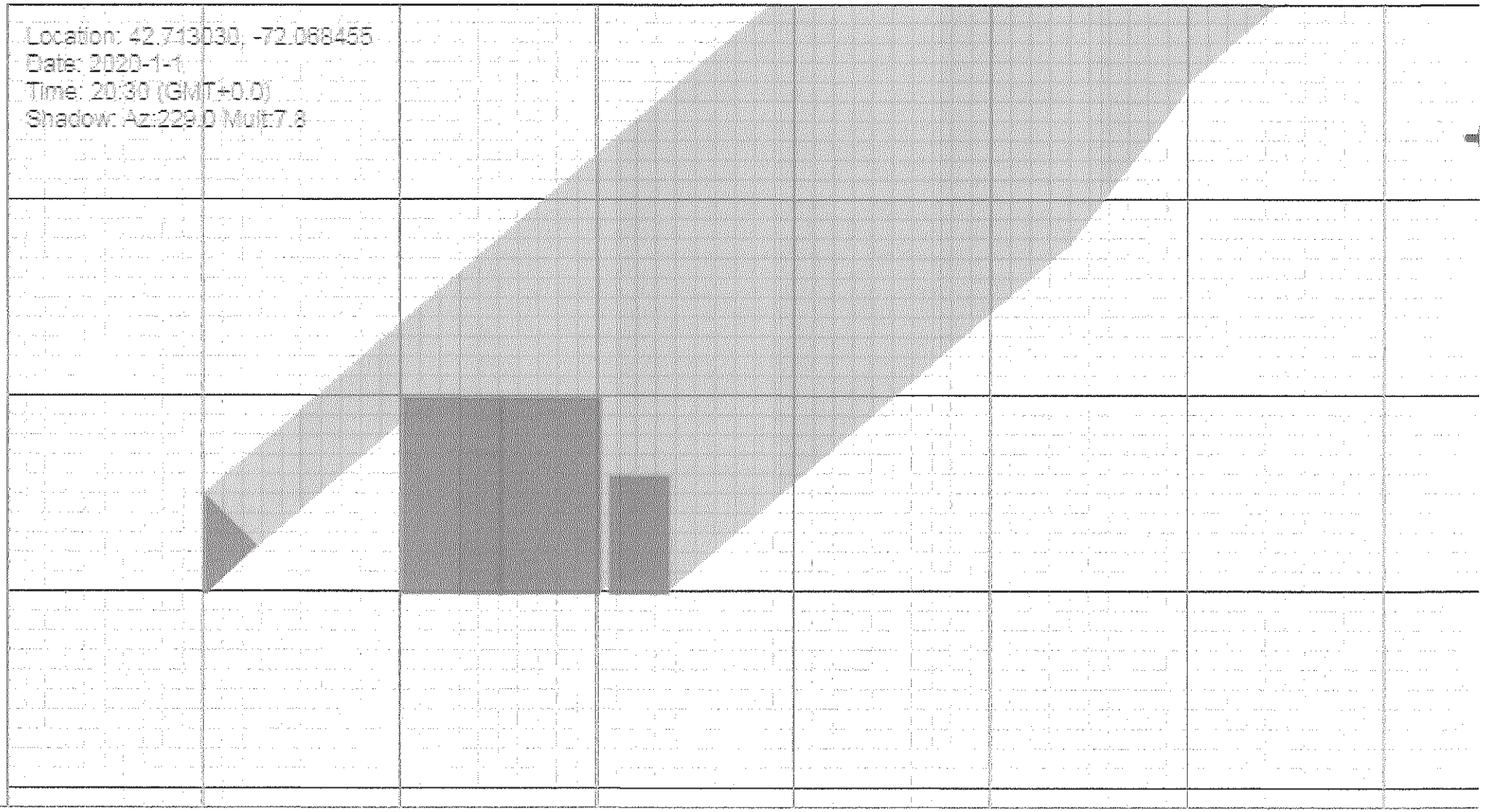
Scene drawing tool:

Show shadows: ☐ Daily aggregate ☑ Snapshot time

January 01, 2020
4:30 PM
Sunset 4:22

Displayed Time: **20:30 (GMT+0.0) Az:229.0 Mult:7.8** ▾

<Prev Next> Au



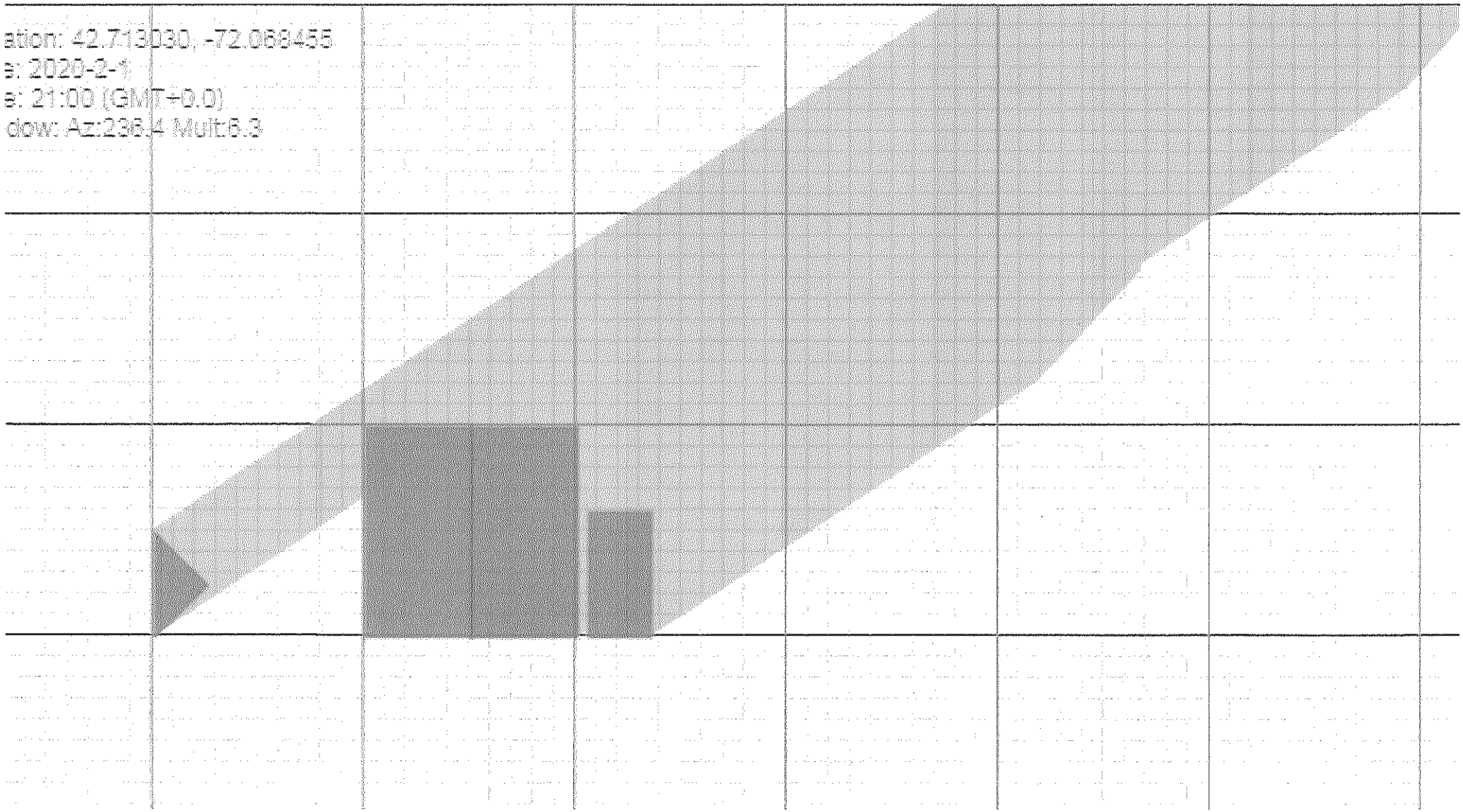
ne drawing tool.

w shadows: Daily aggregate Snapshot time

February 1, 2020
5PM
Sunset, 4:57PM

layed Time: 21:00 (GMT+0.0) Az:236.4 Mult:6.3

Prev Next>

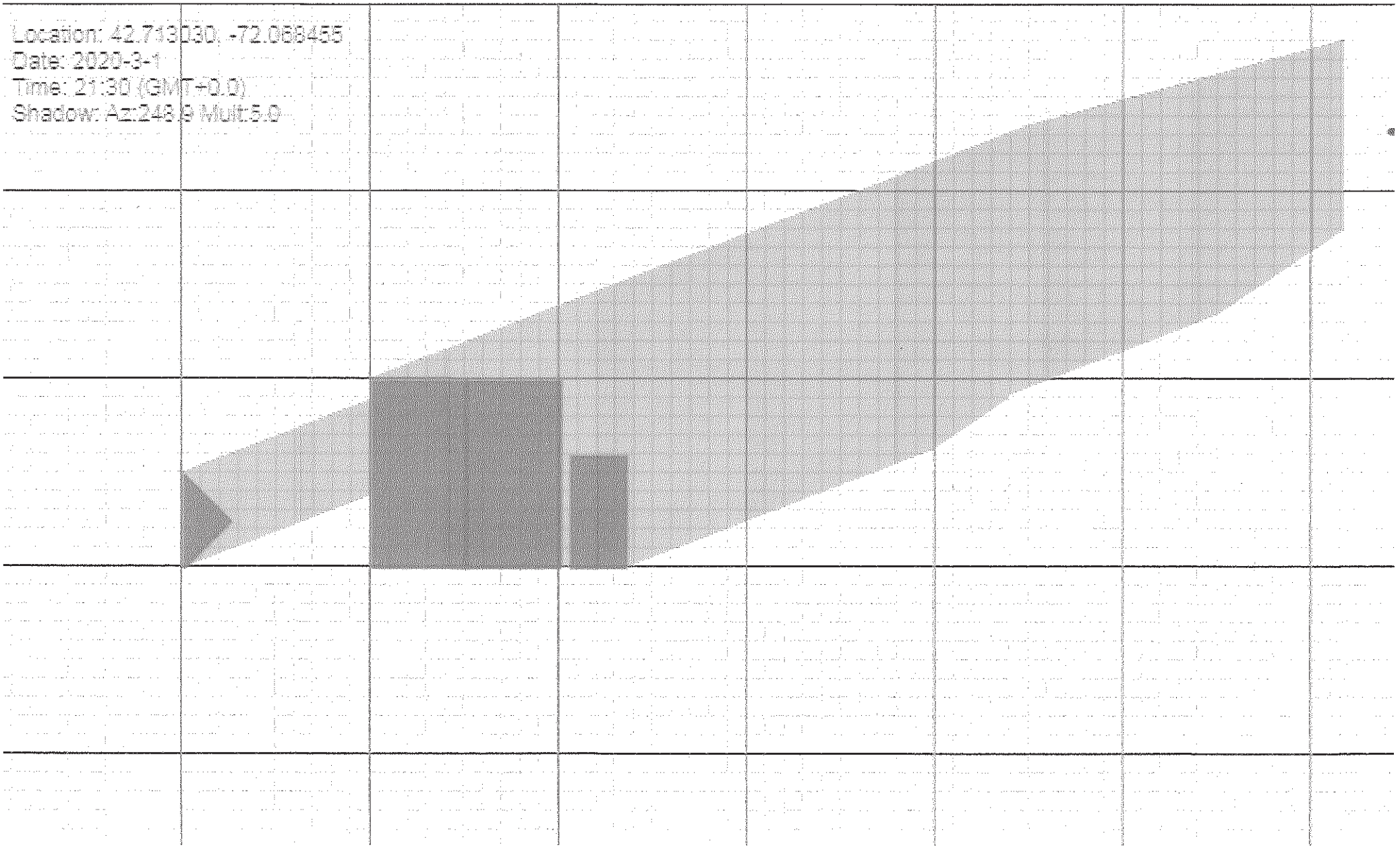


Show shadows: ☐ Daily aggregate ☑ Snapshot time

March 01, 2020
5:30 PM
Sunset 5:34

Displayed Time: 21:30 (GMT+0.0) Az:248.9 Mult:5.0 ▼

<Prev Next> Al



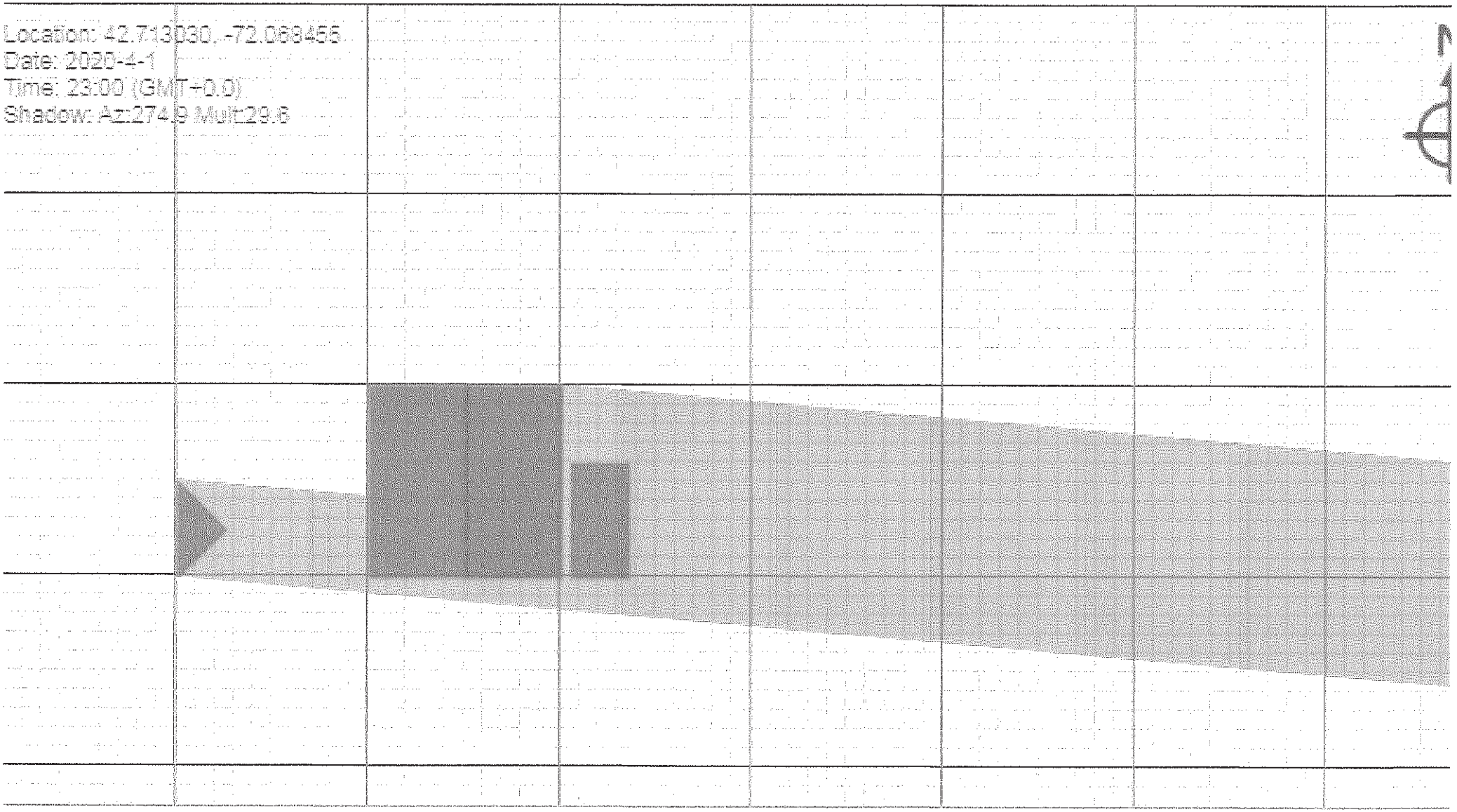
cene drawing tool:

how shadows: ☐ Daily aggregate ☑ Snapshot time

isplayed Time: 23:00 (GMT+0.0) Az:274.9 Mult:29.6 ▾

April 01, 2020
7PM
Sunset 7:10 PM

<Prev Next> Auto-F

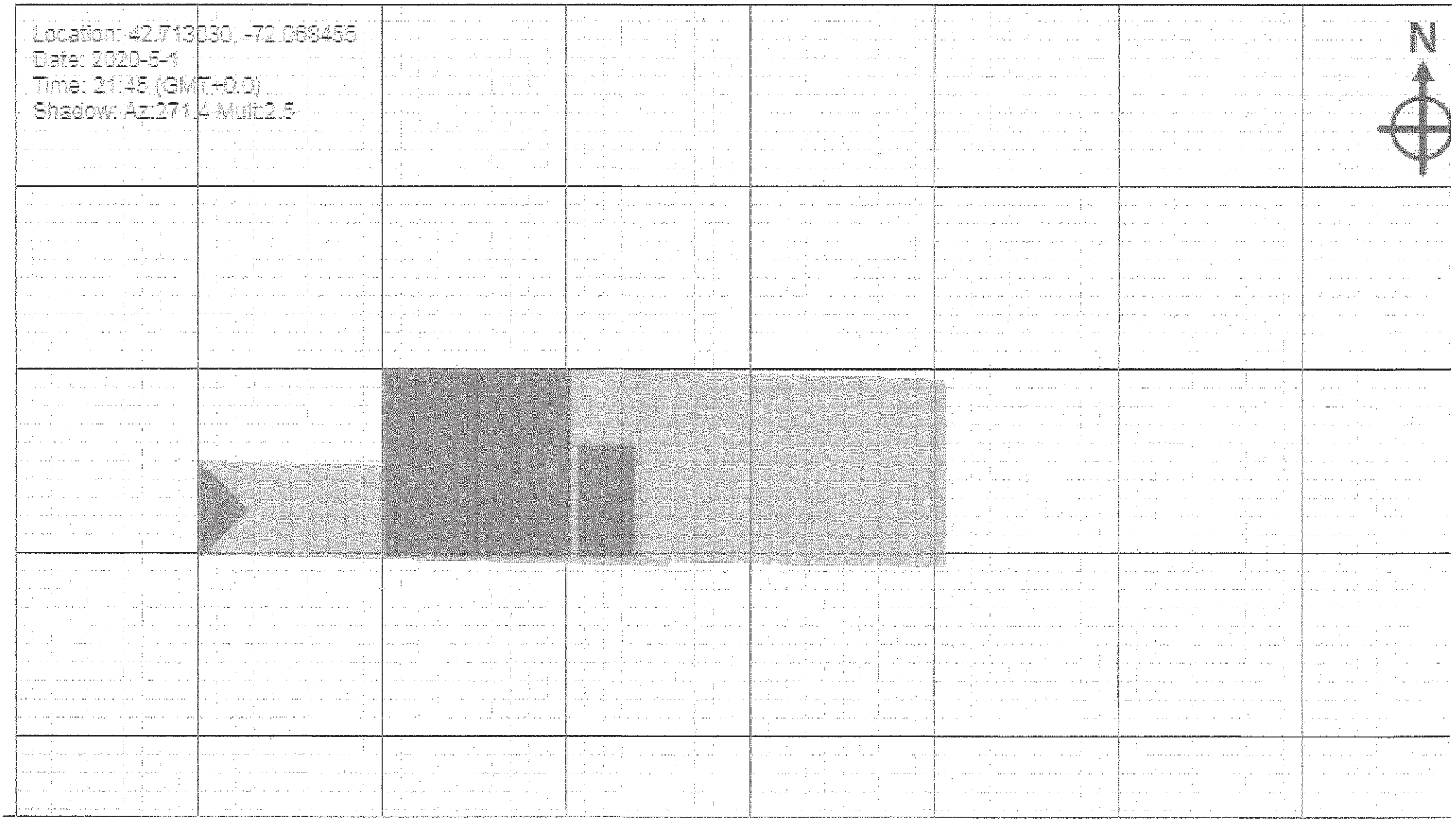


Show shadows: ☑ Daily aggregate ☑ Snapshot time

Displayed Time: **21:45 (GMT+0.0) Az:271.4 Mult:2.5**

May 01, 2020
5:45
Sunset 7:44
Notice how high the sun
is-very short shadows

<Prev Next> Auto-Pla

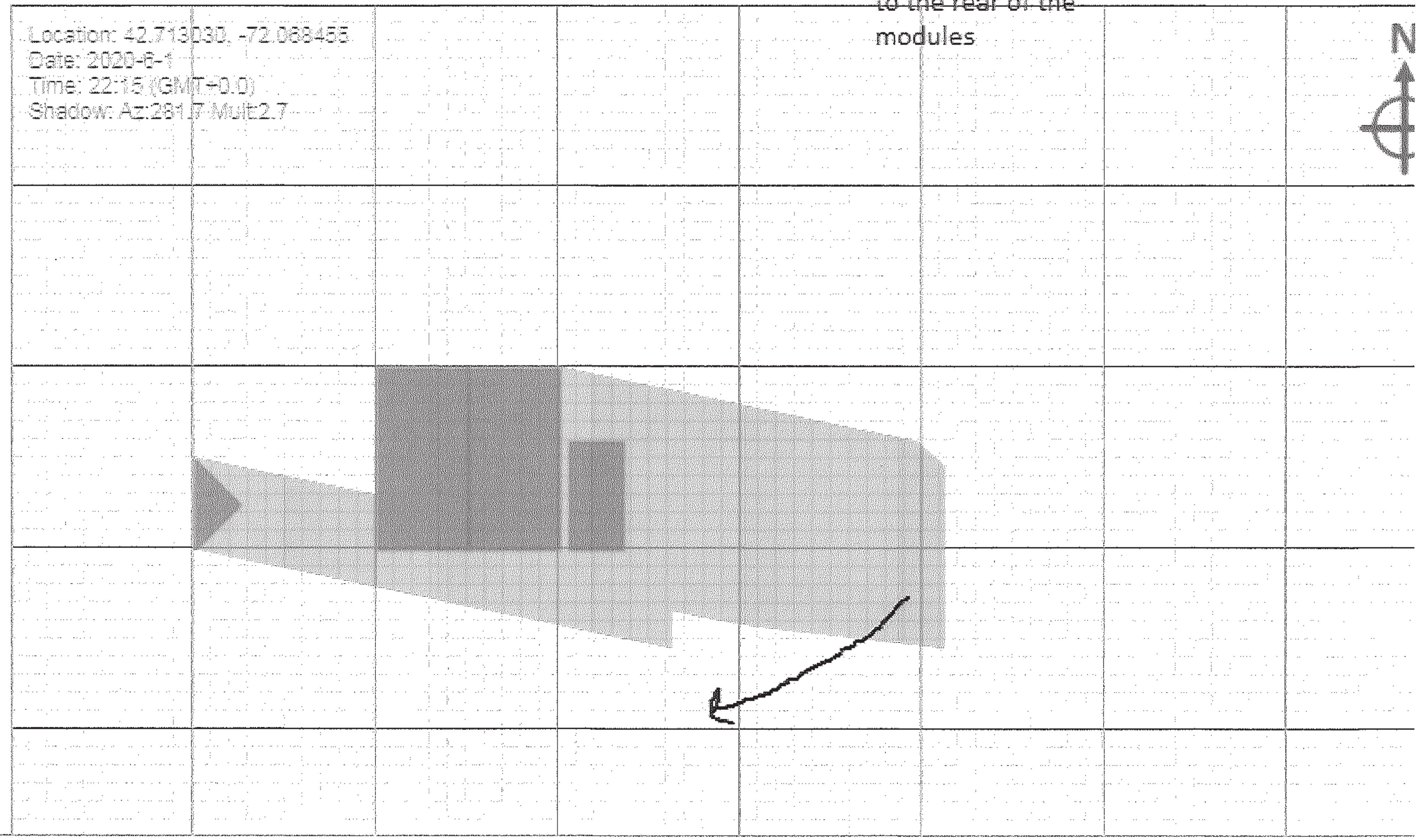


Show shadows: ☐ Daily aggregate ☑ Snapshot time

Displayed Time: **22:15 (GMT+0.0) Az:281.7 Mult:2.7**

<Prev Next> Auto-P

June 01, 2020
4:15 PM
Sunset 8:14
Very short shadows, sun
is very high and movint
to the rear of the
modules



muth d-.pdf

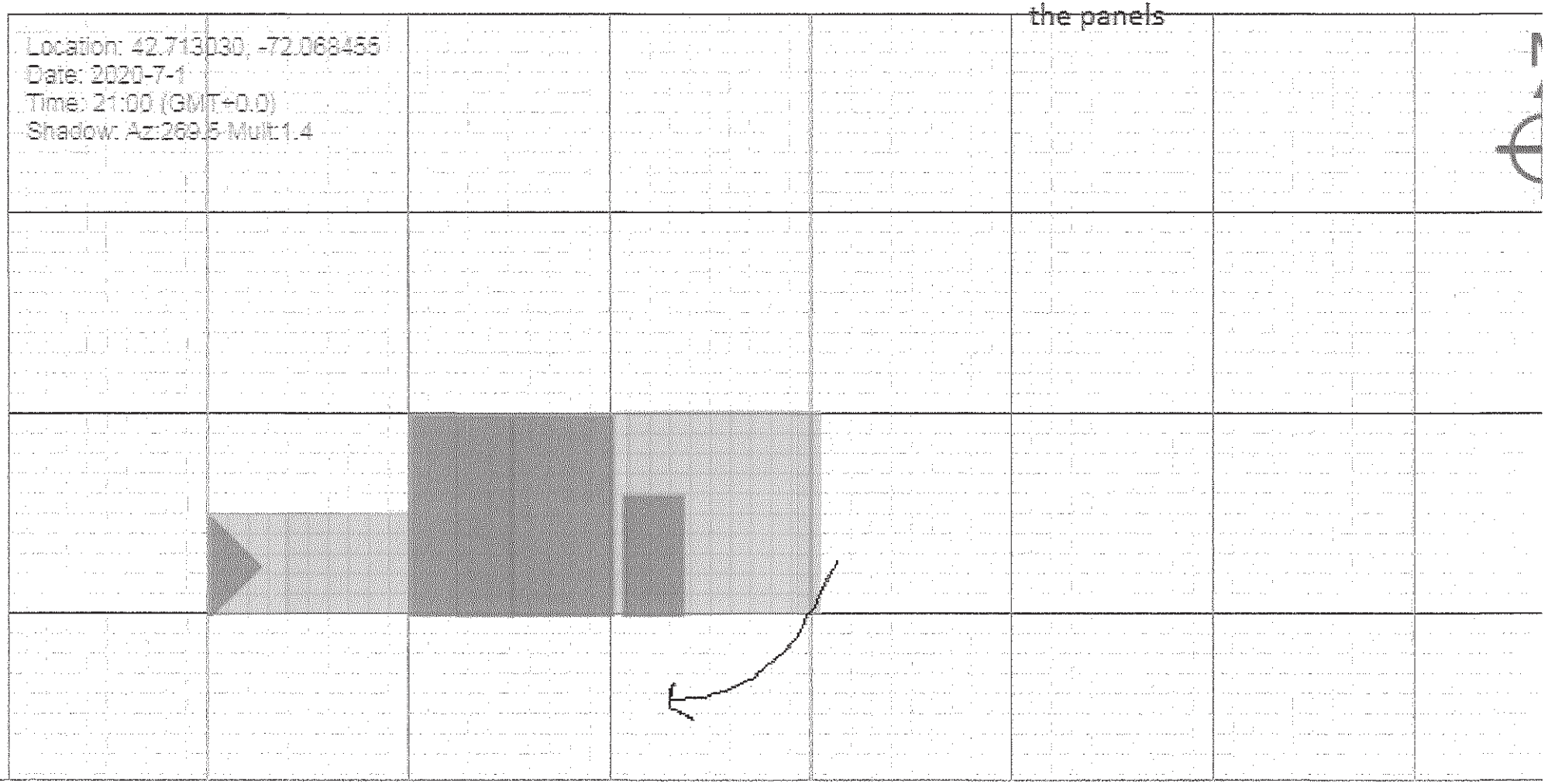
Scene drawing tool:

Show shadows: ☐ Daily aggregate ☑ Snapshot time

Displayed Time: **21:00 (GMT+0.0) Az:269.5 Mult:1.4**

July 1, 2020
5PM
Sunset 8:24
Sun is very high at its most W/E direction and moving to the rear of the panels

<Prev Next> Auto-



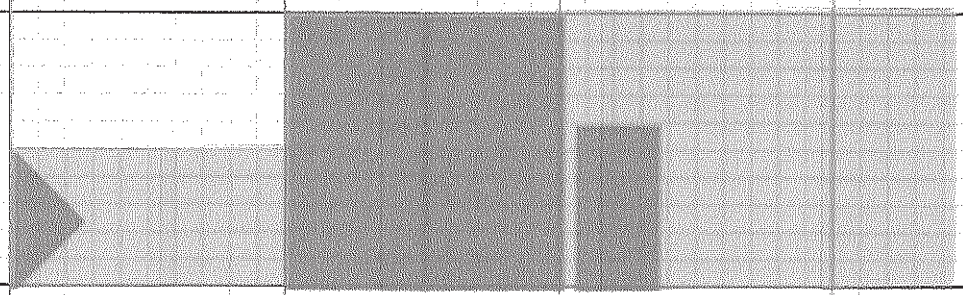
azimuth d-J.pdf

Displayed Time: **21:30 (GMT+0.0) Az:269.4 Mult:1.9**

August 1, 2020
5:30 Pm
Sunset 8:03
Very high sun during most W/E time of day

<Prev Next> Au

Location: 42.713030, -72.068455
Date: 2020-8-1
Time: 21:30 (GMT+0.0)
Shadow: Az:269.4 Mult:1.9

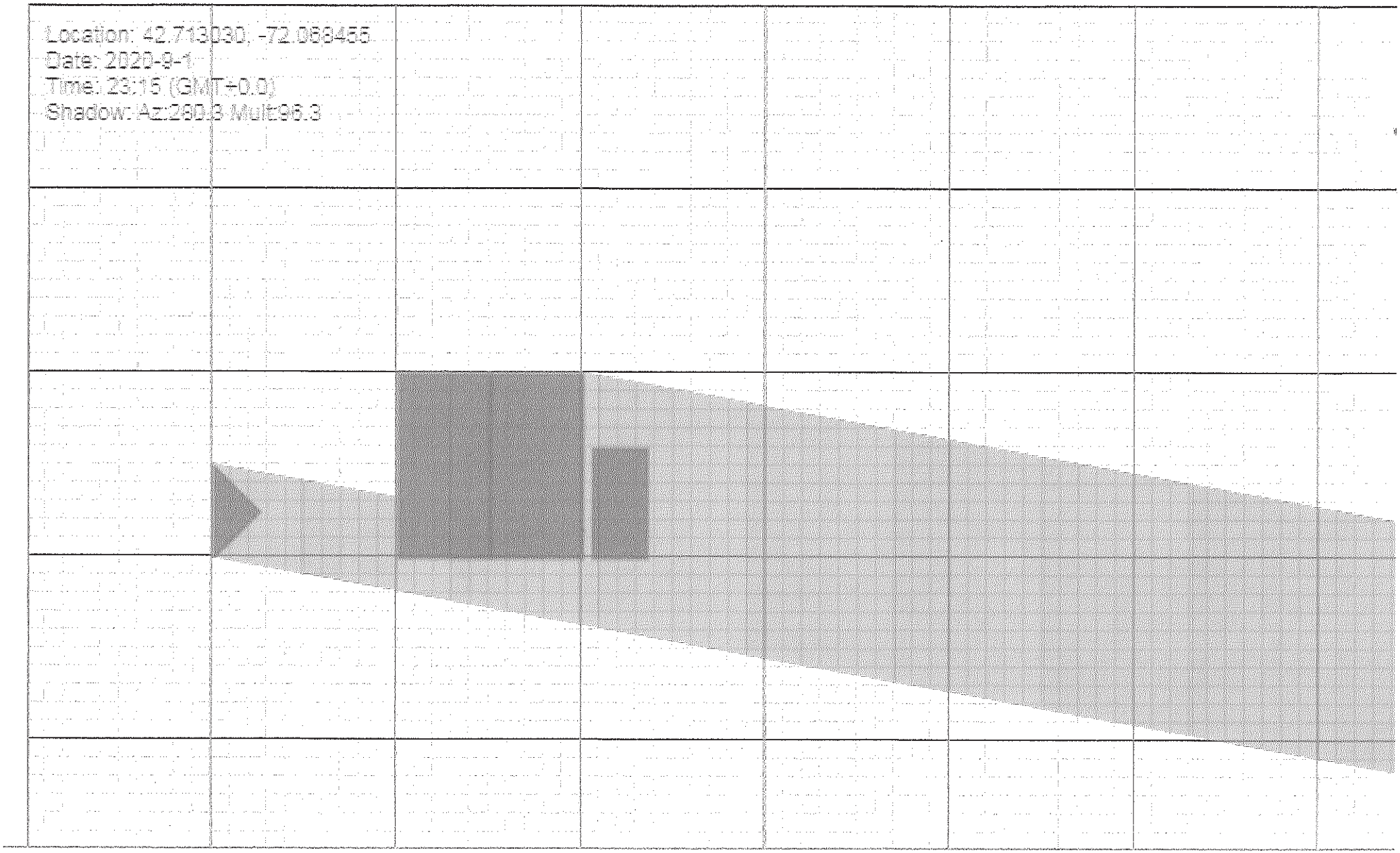


Show shadows: ☐ Daily aggregate ☑ Snapshot time

September 01, 2020
7:15 PM
Sunset 7:18

Displayed Time: **23:15 (GMT+0.0) Az:280.3 Mult:96.3** ▾

<Prev Next>



Town of Winchendon Proposed Standard Fee Schedule

	Winchendon Existing	Winchendon Proposed
Public Hearing Public Notice fee shall be the actual cost of newspaper notice as billed to the Town of Winchendon		
Public Hearing Abutter Notice Fee (per addressee)		$ 7
Consultant Review Deposit (required with application - amount may be reduced or waived by the Planning Board)		$ 5,000
Release of lots from performance guarantee (per request)	$ 275	$ 250
ZBA HEARING:		
Hearing for Special Permit, Variance, Finding or Administrative Appeal	$ 100	$ 250
Massachusetts Comprehensive Permit Hearing		$.01 per sf of land
PLANNING BOARD SITE PLAN REVIEW:		
By Planning Agent	$ 50	$ 200
Requiring Planning Board Public Hearing (includes LID endorsement)	$ 1,000	$ 1,000
PLANNING BOARD SPECIAL PERMIT:		
In conjunction with other Board submissions	$ 1,000	$ 500
Without other Board submissions	$ 1,000	$ 1,000
PLANNING BOARD ENDORSEMENT OF AN APPROVAL NOT REQUIRED PLAN:		
Application Fee for plan showing up to two new lots, whether or not buildable	$ 110	$ 150
Each additional lot	$ 200	$ 200
PLANNING BOARD SUBDIVISION REVIEW:		
Preliminary	$ 550	$ 550
Definitive - Up to 4 lots (includes LID endorsement)		$ 1,000
Definitive - Per lot beyond 4 (includes LID endorsement)		+ $200 per lot
definitive fee shall be reduced by $550 if preliminary subdivision was submitted and not disapproved		
$200 per lot fee shall be automatically waived for proposed lots with affordable deed restrictions		
PLANNING BOARD MODIFY OR AMEND DEFINITIVE SUBDIVISION, FORMAL SITE PLAN OR SPECIAL PERMIT:		
By Planning Agent (without Public Hearing)	$ 550	$ 200
Requiring Planning Board Public Hearing (includes LID endorsement)	$ 550	$ 1,000
Time extension only	$ 300	$ 300

		Orange and Royalston Fees are not available on line			
Standard Fee Schedule: Permits and Approvals Under the Zoning Bylaw:		**Ashburnham**	**Athol**	**Templeton**	**Winchendon Existing**
Any project may require Peer Review, as determined by the Town of Winchendon, which requires a deposit payable in advance to the Town.					
Additional advertising fees					
Mail Notice Fee (per addressee)					
Planning Board Consultant Review Deposit					
ZBA Hearing Fee		$ 100			$ 100
	Hearing for Special Permit, Variance or Appeal				
	Massachusetts Comprehensive Permit Hearing				
ENDORSEMENT OF AN APPROVAL NOT REQUIRED PLAN:					
	Application Fee for plan showing two new lots, whether or not buildable	$ 100	300 (1-4 lots)	300/lot	$ 110
	Each additional lot	$ 100	$1000 (5+ lots)		$ 200
	5 lot anr	$ 400	$ 1,000	$ 1,500	$ 710
RESIDENTIAL DEVELOPMENT PLAN					$ 375
PRELIMINARY SUBDIVISION PLAN:		$ 500	500 + 100/lot	500 + 200/lot	$ 550
DEFINITIVE SUBDIVISION PLAN:					
	If preliminary plan or residential sketch was submitted and not disapproved	1500 + $100 per lot	500 (1-3 lots) + 200/lot	$700 + $300/lot	$ 500
	If no preliminary plan or residential sketch was submitted or such was disapproved	2000 + $100 per lot	500 (1-3 lots) + 600/lot	$700 + $600/lot	$ 1,000
	Application Fees shall be reduced to 50% for minor subdivisions, those proposing no more than three dwelling units and no more than 500 feet of new road				
	20 lot residential subdivision w/ preliminary not disapproved	$ 3,500	$ 3,900	$ 6,700	$ 500
RELEASE OF LOTS (1 OR MORE) FROM PERFORMANCE GUARANTEE:		100 per request			$ 275
SITE PLAN REVIEW BY PLANNING AGENT:					$ 50
SITE PLAN FORMAL REVIEW (PUBLIC HEARING):			$.001 per sf (w/structure) - $500 min		
	Existing Construction (Minor)	$ 50	$.0005 per sf (w/o structure) - $100 min	$ 100	$ 1,000
	New Construction (Major)	$ 200		$.10/sf of usable, leasable space of facility excluding disturbed land and parking areas	$ 1,000
PLANNING BOARD SPECIAL PERMIT				$ 500	
	In conjunction with other Board submissions	$ 100	$ 125		$ 1,000
	Without other Board submissions	$ 100	$ 125		$ 1,000
	Residential project on a single lot		$ 125		$ 1,000
	Common Driveway	$ 200	$ 125		$ 1,000
	Open Space Residential Development (w/o Defin subdivision)	500 + $50/lot	$ 125		$ 1,000
	Open Space Residential Development (w/ Defin subdivision)	$ 500	$ 125		$ 1,000
MODIFY OR AMEND DEFINITIVE SUBDIVISION, FORMAL SITE PLAN OR SPECIAL PERMIT:			1500 + 200/new lot		
	w/o Public Hearing				
	requiring Public Hearing				
	Preliminary Subdivision		1500 + 200/new lot	$600 + $300 per new or impacted lot	$ 550
	Definitive Subdivision	$ 500	1500 + 200/new lot	$600 + $300 per new or impacted lot	$ 550
	Open Space Residential Development - Minor Modif	$ 50	1500 + 200/new lot		$ 550
	Open Space Residential Development - Major Modif	$ 250	1500 + 200/new lot		$ 550
	Site Plan Modification	$ 50	1500 + 200/new lot		$ 550
	Special Permit		1500 + 200/new lot	$ 400	$ 550
TIME EXTENSION FOR APPROVED SUBDIVISION, SITE PLAN OR SPECIAL PERMIT:		$ 200			$ 300
REPETITIVE PETITION				$ 300	$ 300
PUBLIC HEARING CONTINUATION FEE					
	Due with continuation requests beyond the first				
Scenic Road Hearing		$ 100			$ 55
Project Specific:					
	Cell Towers			$ 1,000	
	Large Solar Arrays				
	Windmills				
	Large Solar Array as Accessory to Agriculture				$ 500
LID					
	w/o other application for same site				110+ $.03/sf of impervious + $.02 per sf of new disturbance
	w/ site plan, subdivision or special permit				$ 25
	modification w/ other type of modification				100+ $.03/sf of impervious + $.02 per sf of new disturbance +$.005 per sf of previously disturbed land
	modification w/o other type of modification				$ 25
	extension				$ 25

TOWN OF WINCHENDON

Planning Board Correspondence Summary
November 19, 2019 Meeting

Items before the Select Board with Planning Comments/Issues:

NONE

Items before the Select Board without Planning Comments/Issues:

NONE

Meeting Notices from Local Communities:

Royalston Planning Board held a public hearing on 10/30/19 to consider a proposed Recreational Marijuana Establishment/Cultivator/Manufacturer to be located at 130 South Royalston Road.

Decisions from Local Communities:

City of Gardner ZBA granted a variance to allow a garage to be constructed at 99 Lovewell Street

Other Notices/Announcements:

(For actual copies of notices please see Alison Manugian in the Planning Office at Town Hall)