Tel: (508) 520-4907 Fax: (508) 520 4906

Town of Franklin

Planning Board

Due to the growing concerns regarding the COVID-19 virus, we will be conducting a remote/virtual Planning Board Meeting. In an effort to ensure citizen engagement and comply with open meeting law regulations, citizens will be able to dial into the meeting using the provided phone number (Cell phone or Landline Required) OR citizens can participate by copying the link (Phone, Computer, or Tablet required).

Please click on the link https://us02web.zoom.us/j/81419350782 **or call on your phone at 312-626-6799, meeting # 81419350782.**

July 13, 2020

7:00 PM **Commencement/General Business**

7:05 PM **PUBLIC HEARING** – *Continued*
122 Chestnut Street ***Adv.:*** *Jan. 13 & Jan. 20, 2020*
Site Plan *Abuts: January 8, 2020*

7:05 PM **PUBLIC HEARING** – *Continued*
160 Grove St ***Adv.:*** *Dec. 2 & Dec. 9, 2019*
Special Permit & Site Plan *Abuts: Nov. 26, 2019*

7:05 PM **PUBLIC HEARING** – *Continued*
176-210 Grove Street ***Adv.:*** *March 9 & March 16, 2020*
Site Plan *Abuts: March 9, 2020*

7:05 PM **PUBLIC HEARING** – *Continued*
Maple Hill ***Adv.:*** *Feb. 24 & March 2, 2020*
Definitive Subdivision *Abuts: February 24, 2020*

GENERAL BUSINESS:

A. **Final Form H:** 300 Financial Way (formerly 100 Financial Way)
B. **Partial Form H**: Residents at Dean Ave.

This agenda is subject to change. Last updated: July 6, 2020
The next meeting of the Planning Board is scheduled for July 27, 2020.

HIGHPOINT

July 6, 2020

Mr. Anthony Padula, Chairman
Franklin Planning Board
Town Hall
355 East Central Street
Franklin, MA 02038

Re: Request for Final Certificate of Completion
300 Financial Park – Warehouse Development (the Project)
431 Washington Street, Franklin, MA

Dear Mr. Chairman:

On behalf of our client Franklin Property Owner LLC (FPO), Highpoint Engineering, Inc. submits the enclosed application for a Final Certificate of Completion for the above referenced Project. Highpoint conducted a site walk on July 1st and has reviewed the site as-built plan dated July 7th, 2020 by Hancock Associates. Three remaining work items currently being completed include the installation of a section of the timber guardrail, two (2) landscape islands modifications, and a modification to the Washington Street intersection signal improvements. We expect this work to be completed by the Board's meeting July 13th, 2020.

A final as-built plan will be provided following the completion of final work items on site.

Please contact the undersigned if you have any questions.

Best regards,
HIGHPOINT ENGINEERING, Inc.

Douglas J. Hartnett, P.E.
President

encl.
cc: Will Deshler, Brian Poitras, Joe Grullon; FPO
Matt Crowley, BETA
Michael Maglio, Town Engineer
Gene Sullivan, E.T.S Engineering
Matthew Mui, Highpoint

SITE PLAN OF LAND

FORM H
ENGINEER'S CERTIFICATE OF COMPLETION
(to be executed by developer's engineer)

Site Plan known as 100 Financial Park - Warehouse Development Site Plan

I hereby certify that all improvements required for the above referenced site plan have been completed in all respects in accordance with the Town of Franklin zoning requirements and the approved plans entitled Warehouse Development Site Plan prepared by Highpoint Engineering and dated July 1, 2016 as approved by the said Planning Board on August 22, 2016

Signed this Second day of July, 2020

By _____ Reg. C.E.

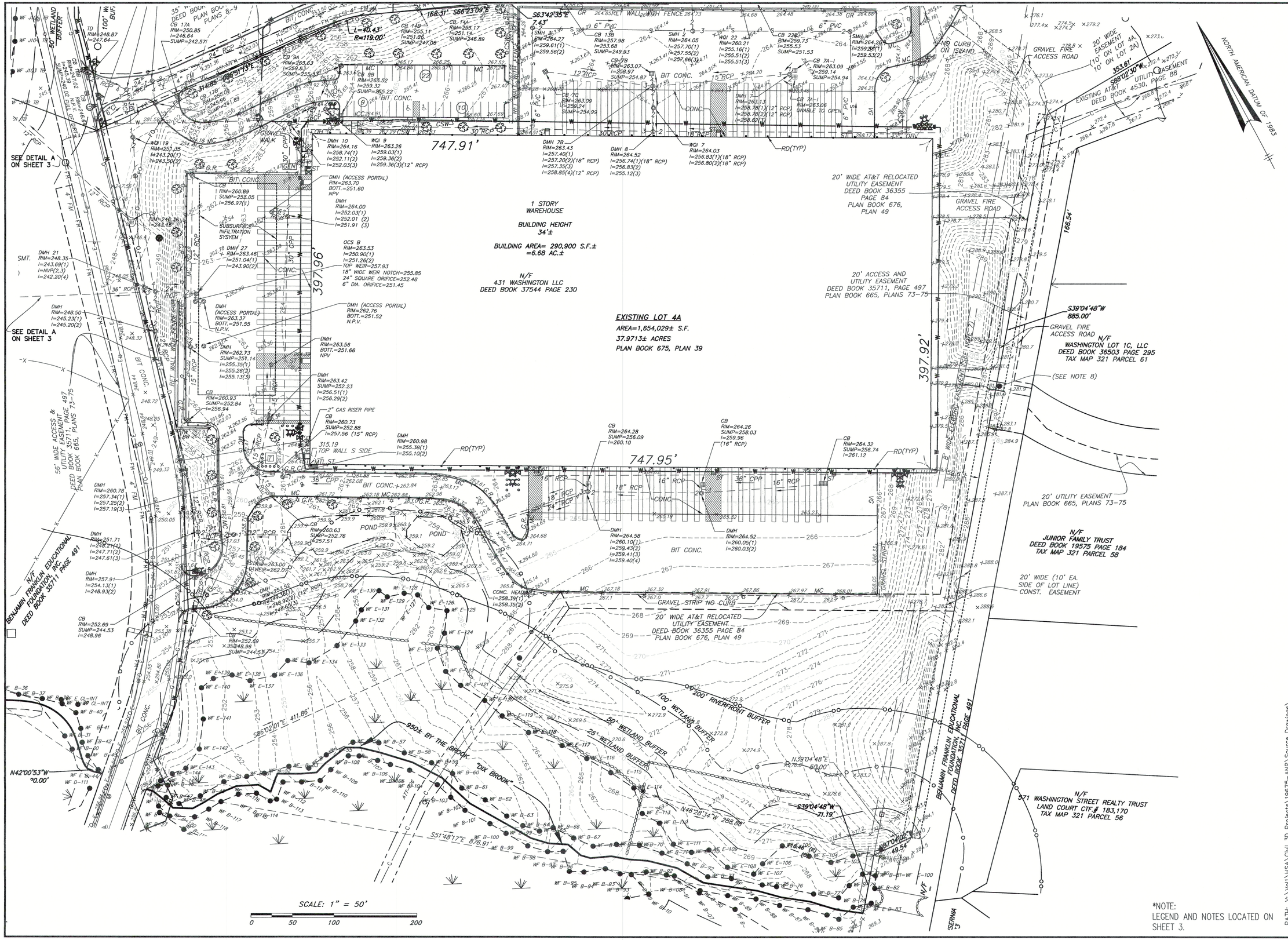
COMMONWEALTH OF MASSACHUSETTS

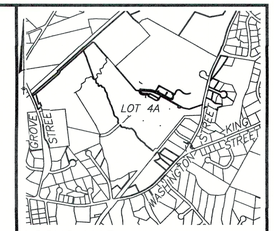
Norfolk SS. _____, 20___

On this 2nd day of July 2020 before me, the undersigned notary public, personally appeared Douglas Hartnett, P.E. *(name of engineer)*, proved to me through satisfactory evidence of identification, which were Massachusetts Drivers License to be the person whose name is signed on the preceding document in my presence.

_____
(Official signature and seal of notary)
Notary Public:
My Commission Expires: 11/16/23

Laur[illegible] A. DeSisto
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
November 16, 2023





LOCUS MAP SCALE: 1" = 1500'

SITE ADDRESS:

#300 FINANCIAL PARK

Franklin, Massachusetts

PREPARED FOR:

CRE MANAGEMENT, LLC

HANCOCK ASSOCIATES

Civil Engineers

Land Surveyors

Environmental Consultants

315 Elm Street, Marlborough, MA 01752
Voice (508) 460-1111, Fax (508) 460-1121
www.hancockassociates.com

COMMONWEALTH OF MASSACHUSETTS JOHN D. BREMSER No. 35390 PROFESSIONAL LAND SURVEYOR

7-5-20

NO.	BY	APP	DATE	ISSUE/REVISION DESCRIPTION

DATE: 7/5/20	DRAWN BY: VK/JTL
SCALE: 1" = 50'	CHECK BY: JDB

SITE AS-BUILT PLAN OF LAND IN FRANKLIN, MA

PLOT DATE: Jul 05, 2020 8:25 pm

DWG: 19675-ASBUILT Lot 4A 7-5-20.dwg

LAYOUT: SAB-1

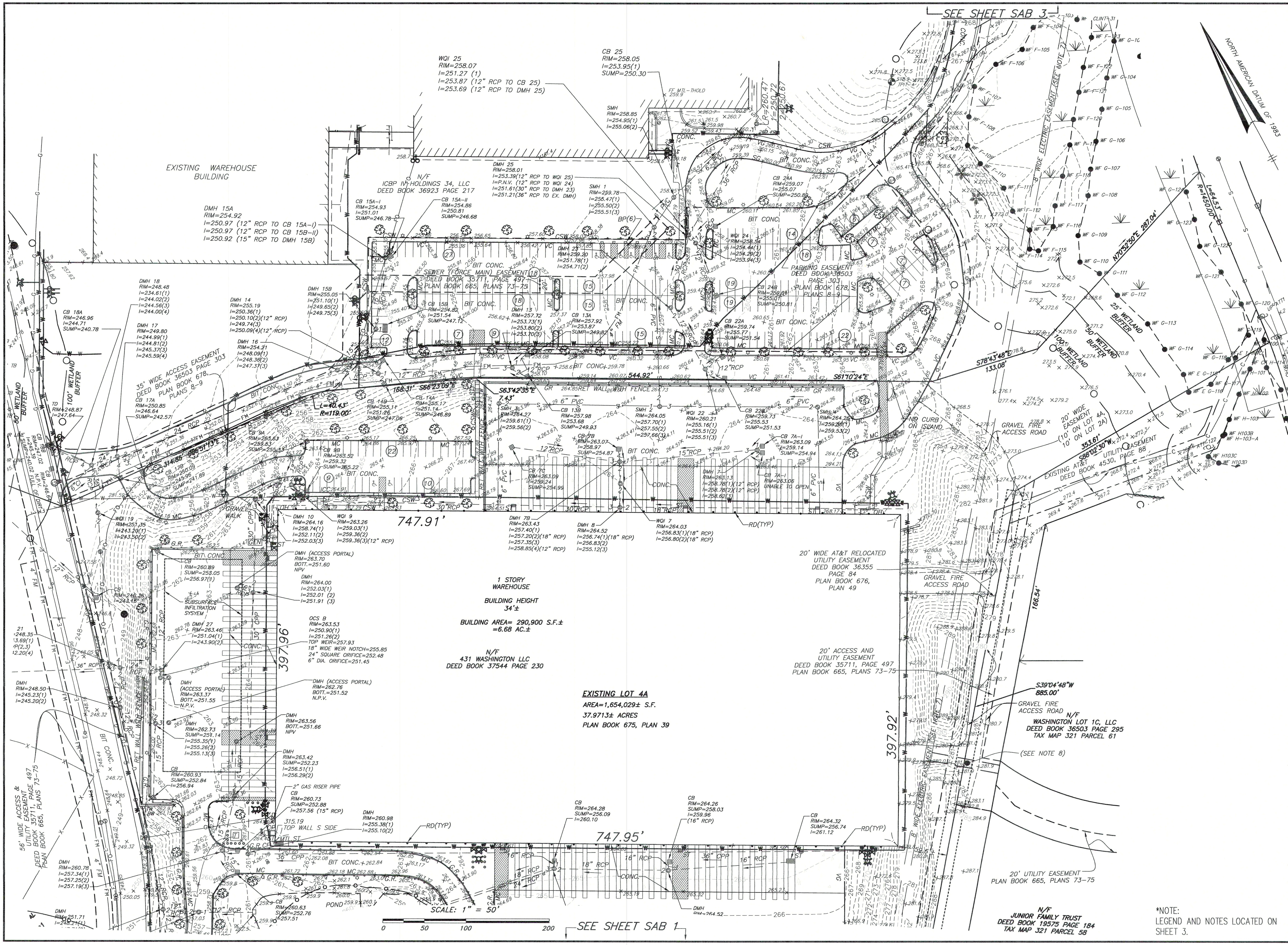
SHEET: 1 OF 3

SAB-1

PROJECT NO.: 19675

PATH: V:\Vol1\HSA\Civil 3D Projects\19675-ANR\Source Drawings\

*NOTE:
LEGEND AND NOTES LOCATED ON SHEET 3.



LOCUS MAP SCALE: 1" = 1500'

SITE ADDRESS:

#300 FINANCIAL PARK

Franklin, Massachusetts

PREPARED FOR:

CRE MANAGEMENT, LLC

HANCOCK ASSOCIATES

Civil Engineers

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COMMONWEALTH OF MASSACHUSETTS JOHN D BREMSER No. 35390 PROFESSIONAL LAND SURVEYOR

7-5-20

NO.	BY	APP	DATE	ISSUE/REVISION DESCRIPTION

DATE: 7/5/20 DRAWN BY: VK/JTL
SCALE: 1" = 50' CHECK BY: JDB

SITE AS-BUILT PLAN OF LAND IN FRANKLIN, MA

PLOT DATE: Jul 05, 2020 8:21 pm

DWG: 19675-ASBUILT Lot 4A 7-5-20.dwg

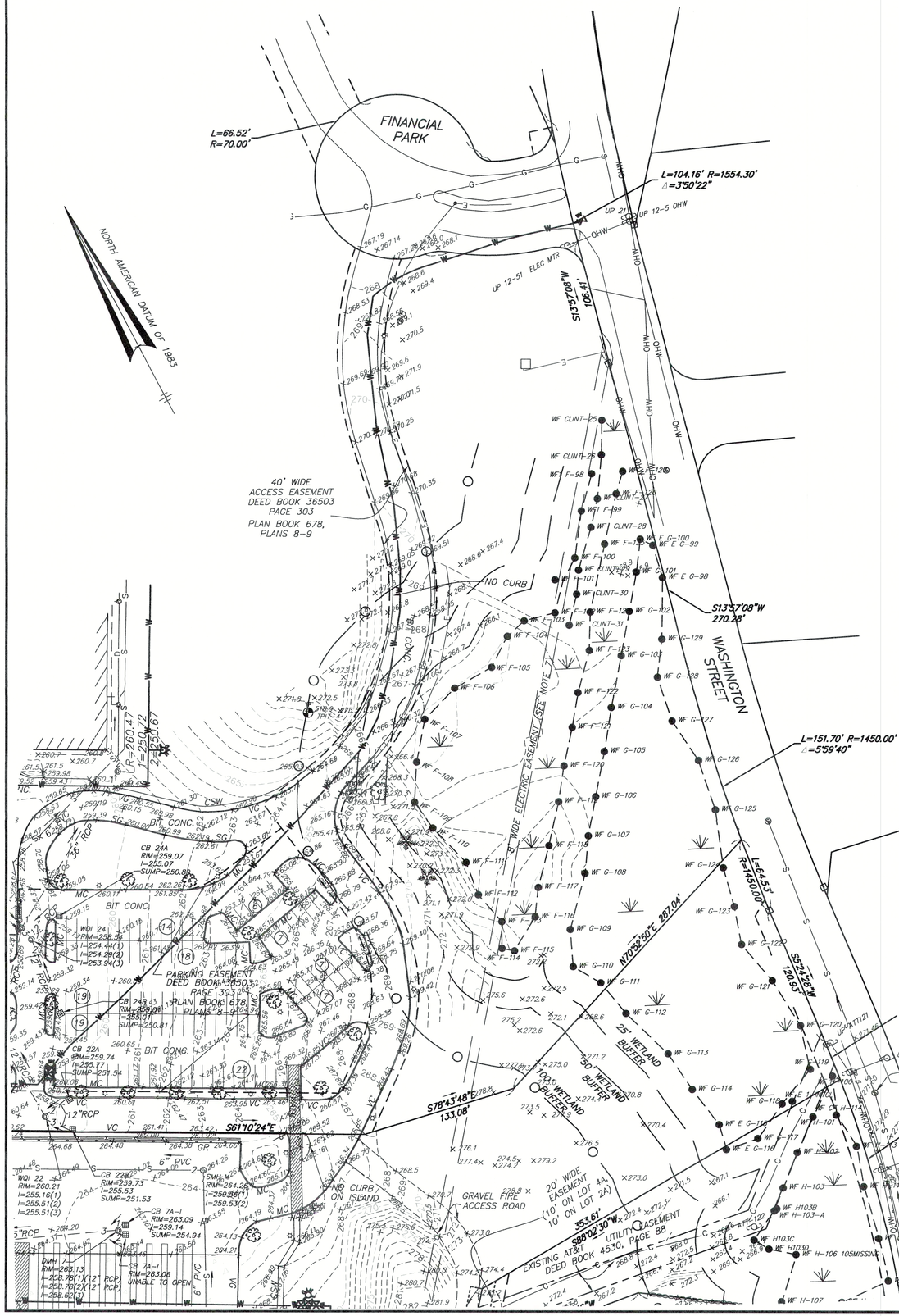
LAYOUT: SAB-2

SHEET: 2 OF 3

SAB-2

PROJECT NO.: 19675

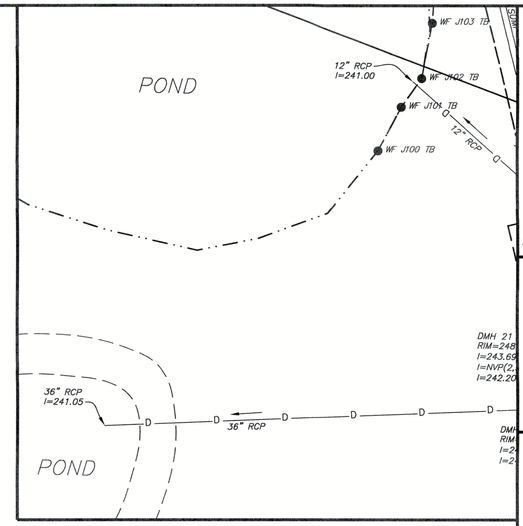
PATH: V:\Vol1\VSA\Civil 3D Projects\19675-ANR\Source Drawings\



LEGEND

× 232.6	SPOT ELEVATION
— 234 —	SURFACE CONTOUR
	EDGE OF PAVEMENT
	EDGE OF GRAVEL
208.8 WFA2	LIMIT OF BORDERING VEGETATED WETLAND WITH FLAG NUMBER AND ELEVATION
	LIMIT OF 100-FOOT WETLAND BUFFER ZONE
	LIMIT OF 50-FOOT WETLAND BUFFER ZONE
	LIMIT OF 25-FOOT WETLAND BUFFER ZONE
	STONE WALL
	GUARDRAIL
E	ELECTRIC MANHOLE & UNDERGROUND ELECTRIC LINES
	200' RIVER SETBACK
FM	SEWER FORCE MAIN
FO	BURIED FIBER OPTIC CABLE
C	BURIED CABLE
(5)	PARKING SPACE COUNT
	SIGN
	LIGHT POLE
W	MONITORING WELL
DH	DRILL HOLE FOUND
8"CI	SEWERLINE & MANHOLE WITH PIPE SIZE, MATERIAL & FLOW DIRECTION
12"RCP	DRAINLINE WITH PIPE SIZE, MATERIAL & FLOW DIRECTION, CATCHBASIN, MANHOLE & ROUND CATCHBASIN
W	WATER LINE, TEE, GATE VALVE & FIRE HYDRANT
10"DI	GAS LINE AND GATE VALVE
#181 OHW	EXISTING UTILITY POLE WITH DESIGNATION OVERHEAD WIRES AND GUY POLE
(R)	RECORD
(C)	CALC.
DIP	DUCTILE IRON PIPE
RCP	REINFORCED CONCRETE PIPE
PVC	POLYVINYL CHLORIDE PIPE
ST	STEPS
CP	CONCRETE PAD
CONC.	CONCRETE
BIT CONC.	BITUMINOUS CONCRETE
OH	OVERHANG
MC	BITUMINOUS CONCRETE BERM
VC	VERTICAL CONCRETE CURB
VG	VERTICAL GRANITE CURB
SG	SLOPED GRANITE CURB
CSW	CONCRETE SIDEWALK
RD	ROOF DRAIN DOWNSPOUT
MTL	METAL
SMH	SEWER MANHOLE
DMH	DRAIN MANHOLE
TD	TRENCH DRAIN
G.R.	GUARD RAIL

DETAIL A



RECORD OWNERS:
431 WASHINGTON LLC
c/o BARINGS LLC
ONE FINANCIAL PLAZA, SUITE 1700
HARTFORD, CT 06103

ASSESSORS:
MAP 321, LOT 60

REFERENCES:
DEED BOOK 37544, PAGE 230
PLAN BOOK 675, PAGE 39
PLAN BOOK 678, PAGES 8 & 9

ZONING:
INDUSTRIAL

NOTES:

1) PROJECT SOURCE BENCHMARK IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988

2) WETLANDS FLAGS SHOWN HEREON ARE FROM PRE-DESIGN SURVEY.

3) UNDERGROUND UTILITIES SHOWN HEREON ARE COMPILED FROM FIELD LOCATIONS OF STRUCTURES, CONTRACTOR PAINT MARKS, AND AVAILABLE RECORD INFORMATION ON FILE AT THE TOWN ENGINEERING OFFICES, TOWN D.P.W., MASS HIGHWAY DEPT. AND UTILITY COMPANIES. OTHER UNDERGROUND UTILITIES MAY EXIST. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER AND THE CONTRACTOR TO VERIFY THE LOCATION, SIZE & ELEVATION OF ALL UTILITIES WITHIN THE AREA OF ANY FUTURE PROPOSED WORK AND TO CONTACT "DIG-SAFE" AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION OR CONSTRUCTION.

4) THE LOCATION OF UNDERGROUND STORAGE TANKS, IF ANY, ARE UNKNOWN.

5) THIS TOPOGRAPHIC SURVEY WAS PREPARED AT A SCALE OF 1"=50' HORIZONTALLY AND A 1 FOOT CONTOUR INTERVAL VERTICALLY. ANY REPRODUCTIONS OR RE-SCALING MAY EFFECT THE MAP ACCURACY.

6) PORTIONS OF AT&T EASEMENT IS BASED ON FIELD LOCATIONS OF MARKER POLES.

7) ELECTRIC EASEMENT CROSSING LOCUS IS DEPICTED APPROXIMATELY PER 2-19-15 ALTA PLAN PREPARED FOR CRE MANAGEMENT, LLC. AND PLAN BOOK 56, PLAN #2653.

8) EASEMENT WIDTH CROSSING FORMER RAIL ROAD IS NOT DEFINED IN DEED NOR IN THE REFERENCED 1894 COURT CASE. EASEMENT IS SHOWN APPROXIMATELY AS PER PLAN BOOK 259, PLAN 262 OF 1977.

9) A TWO LOT DEFINITIVE SUBDIVISION PLAN WAS APPROVED FOR PREVIOUS OWNERS BUT NOT REFERENCED ON THE CURRENT DEED. THE COVER SHEET (ONLY) WAS RECORDED IN PLAN BOOK 428, PLAN 163 OF 1995 AT THE NORFOLK COUNTY REGISTRY OF DEEDS. THE LOTTING SHEETS, NOT RECORDED, ARE ON FILE AT THE FRANKLIN PLANNING BOARD. THE LOCATION OF THE "FINANCIAL PARK" CUL-DE-SAC IS SHOWN FROM SAID PLANS.

10) LOCATION OF IRRIGATION SYSTEM COMPONENTS NOT INCLUDED IN THIS SURVEY.

11) ROOF DRAINS AND TRUCK PARKING LINES WERE COMPILED IN PART FROM TAPED IN LOCATIONS AROUND PARKED TRAILERS, ETC. AND ARE APPROXIMATE.

12) THE PURPOSE OF THIS PLAN IS TO SHOW "AS-BUILT" CONDITIONS OF LOT 4A THROUGH 7-3-20. WOODEN GUARD RAILS WERE STARTING TO BE INSTALLED ON THE CAR PARKING LOT AT THE WEST END OF THE NORTH SIDE OF THE WAREHOUSE AT THE TIME OF THE LAST FIELD LOCATIONS TO DATE (7-3-20).

13) SYMBOL SIZE ON SMALLER ITEMS (BOLLARDS, HYDRANTS, CATCH BASIN AND MANHOLE FRAMES AND COVERS, ETC.) HAVE BEEN EXAGGERATED SLIGHTLY TO BE READABLE AT 50 SCALE.

SCALE: 1" = 50'

0 50 100 200

SITE ADDRESS:

#300 FINANCIAL PARK

Franklin, Massachusetts

PREPARED FOR:

CRE MANAGEMENT, LLC

HANCOCK ASSOCIATES

Civil Engineers

Land Surveyors

Environmental Consultants

315 Elm Street, Marlborough, MA 01752
Voice (508) 460-1111, Fax (508) 460-1121
www.hancockassociates.com

COMMONWEALTH OF MASSACHUSETTS
JOHN D. BREMSER
No. 35390
PROFESSIONAL LAND SURVEYOR
7-5-20

NO.	BY	APP	DATE	ISSUE/REVISION DESCRIPTION

DATE: 7/5/20 DRAWN BY: VK/JTL
SCALE: 1" = 50' CHECK BY: JDB

SITE AS-BUILT PLAN OF LAND IN FRANKLIN, MA

PLOT DATE: Jul 05, 2020 8:18 pm

DWG: 19675-ASBUILT Lot 4A 7-5-20.dwg
LAYOUT: SAB-3
SHEET: 3 OF 3
PROJECT NO.: 19675

SAB-3

PATH: V:\Vol1\HSA\Civil 3D Projects\19675-ANR\Source Drawings\

TOWN OF FRANKLIN - SITE OBSERVATION REPORT
100 Financial Parkway

Report No.:	**4831 65 - 102**	Date:	**July 7, 2020**	Arrive:	**12:05 PM**
Observer:	**Matt Crowley, PE**	Weather:	**Sunny, 80°**	Leave:	**2:45 PM**

Owner: **Franklin Property Owner, LLC**
c/o CRE Management, LLC
133 Pearl Street, Suite 300
Boston, MA 02110

Contractor: **Total Access**
75 Neal Ct
Plainville, CT 06010
Vic Dagata 860-777-7574

Items Observed: **Conformance Observation – Submitted in conjunction with Applicant's request for acceptance of Form H – Certificate of Completion**

OBSERVATIONS

Observation Requested By: Doug Hartnett – Highpoint Engineering

Met/walked site with: N/A

Current Activity on Site: Installation of timber guardrail, installation of cape cod berm

Observed Construction: BETA arrived on site to perform a construction observation in conjunction with the Applicant's request for acceptance of Form H – Certificate of Completion. The required Form H and As-built Plans, dated July 5, 2020, were provided via email. BETA's site walk and review of the Approved Plans confirmed the site to be constructed in general conformance with the Approved Plans with the following exceptions/notations:

- Timber guardrail installation has been partially completed.
- Two landscape islands were installed with cape cod berm placed on top of the top course pavement. BETA noted to the contractor that this type of installation is easily damaged by plows.
- Several hydrants were observed to be set low in relation to the surrounding ground and may not provide adequate access for a hydrant wrench. Also, the hydrant located near CB 22A did not appear to factory painted as required by Town Specifications. BETA defers to the DPW and Fire Chief on these issues.
- The proposed fall protection rail at the top of retaining walls consists of a 4' high chain link fence.
- Catch basin hoods have not been installed
- Several drainage grates (e.g. CB 22B) did not have visible markings indicating manufacturing information and therefore could not be confirmed to meet Town Specifications.
- Rip rap has been installed at the interface of the parking area and adjacent slope on the southwest side of the building. It is anticipated that the rip rap will provide erosion protection.
- The 28,000 sq. ft. warehouse building has not been constructed at the adjacent office building. It is BETA's understanding that this area has been onto a separate site through and ANR plan.
- Several areas of adjacent to parking areas and the site entrance have minimal vegetative establishment.

- Several areas of erosion were noted on the downstream end of the rip rap separating the sediment forebay and infiltration basin. The area should be stabilized/repaired to ensure the berm isn't undermined.
- A portion of the ramp/sidewalk at the northerly corner of the building is undermined.
- Erosion controls should be removed in coordination with the Conservation Commission.

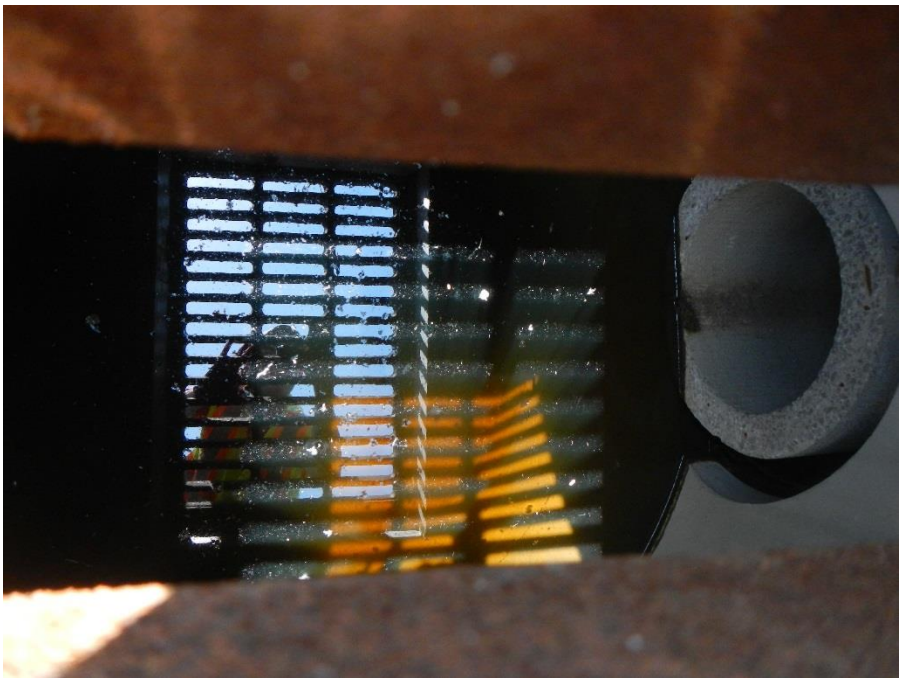
SITE PHOTOS

Typical accessible parking area

Northerly parking area with landscaped islands

Area with minimal vegetative establishment

Typical parking space dimensions of 9’ x 19’



Catch basin lacking hood

Site driveway with precast curb

Retaining wall adjacent to site driveway

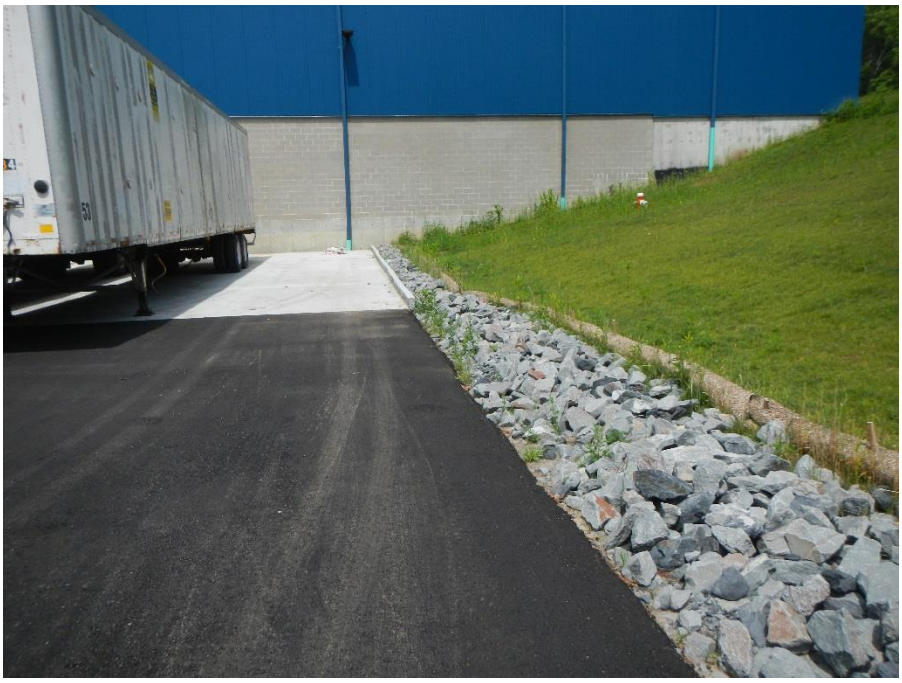
Hydrant that does not appear to be factory painted and is set low for hydrant wrench operation

Landscape island formed with cape cod berm set on top course pavement

Guardrail and fall protection fence set on retaining wall

Typical loading dock area

Concrete sidewalk connection to warehouse



Rip rap installed at interface of loading area and adjacent slope

Infiltration basin dry after recent rainfall

Some erosion present from sediment forebay overflow into infiltration basin

Sidewalk area that is undermined

Partially installed timber guardrail

Fire access road

Gmail

Amy Love <alove@franklinma.gov>

Re: 7/13 mtg

1 message

Michael Maglio <mmaglio@franklinma.gov> Mon, Jul 6, 2020 at 11:23 AM
To: Amy Love <alove@franklinma.gov>

Regarding the Washington St traffic signal, I met with the design engineer on site for a final inspection and due to some sight distance issues, the engineer made a recommendation to modify the signal heads to provide better visibility.

The engineer provided the information to the contractor who is working on making the changes but I don't have a date yet on when they will be back to do the work.

If the applicant will be before the Board prior to the changes being made, there should be something in place to guarantee the work will be completed whether that is delaying the CO or providing some kind of cash bond to cover the work.

Michael Maglio, PE - Town Engineer
Franklin DPW - Engineering Division
257 Fisher Street, Franklin, MA 02038
508-553-5500

On Thu, Jul 2, 2020 at 8:58 AM Amy Love <alove@franklinma.gov> wrote:

> Hi Mike,
> Attached is the Agenda. I am expecting a Form H from 300 Financial Way. They mentioned an issue with the signal, are there changes that need to be made. Are you satisfied with the signal that was installed? Also, I am sending a separate email to you about Maple HIll.
> Thank you - have a great vacation!
> Amy Love, Town Planner
> Town of Franklin
> 355 East Central
> Franklin, MA 02038
> 508-520-4907

On Thu, Jul 2, 2020 at 8:52 AM Michael Maglio <mmaglio@franklinma.gov> wrote:

> Hi Amy, I'm going to be on vacation the week of 7/13 and won't be available for the meeting.
>
> Can you let me know what is on the agenda? I want to make sure I can get you letters ahead of time.
>
> Thanks
> --

FRANKLIN PLANNING & COMMUNITY DEVELOPMENT
355 EAST CENTRAL STREET
FRANKLIN, MA 02038-1352
TELEPHONE: 508-520-4907
FAX: 508-520-4906

MEMORANDUM

DATE: **July 8, 2020**

TO: **Franklin Planning Board**

FROM: **Department of Planning and Community Development**

RE: 300 Financial Way – Warehouse Development
Final Form H

General

1. The Planning Board approved a Site Plan Application on August 22, 2016 to construct a 300,000 square foot one-story warehouse and a 28,000 square foot warehouse. The site is partially developed with an 180,500 square foot office building and a 56,000 square foot warehouse building. An ANR was approved to create a separate lot for the 300,000 sq/ft ware house, that is known as 300 Financial Way

2. The applicant has submitted a Final Form H and Engineer's Certificate of Completion for 300 Financial Way.

3. BETA has submitted an observation report.

4. Mike Maglio, Town Engineer, has provided an update on the signal at the intersection at Washington and King Street. Mr. Maglio is suggesting a Bond be posted for the remaining work to be done at the intersection.

DPCD refers to the Town Engineer to determine the amount of Bond that should be secured by the Town.

RJ O'CONNELL & ASSOCIATES, INC.

CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS

80 Montvale Ave., Suite 201 Stoneham, MA 02180
phone 781-279-0180 fax 781-279-0173

July 6, 2020

Mr. Anthony Padula, Chairman
Franklin Planning Board
355 East Central Street
Franklin, MA 02038

Regarding: Form H - Certificate of Partial Completion
Site Area including Clubhouse, Buildings 1, 2, 3 & 4
Fairfield Residential at Dean Avenue
Franklin, MA
Job No. 15056

Dear Mr. Padula:

Enclosed for review and approval of the Planning Board is Form H, Engineer's, and Owner's Certificate of Partial Completion, which includes the Site Plan Work Completion List and a Site Plan Exhibit attachment noting the area of completed work.

Fairfield is applying for Certificates of Occupancy for Buildings #1, 3 & 4 at this time.

As noted on the attached documents the Site Work is substantially complete in the area that includes the Clubhouse and Buildings 1, 2, 3 & 4. Also, as noted on the attached list, some of the outstanding items will be completed by your next scheduled meeting on July 13.

Access drives, traffic control, and pedestrian walkways are completed to allow for safe traffic and pedestrian circulation in this area for the public and for emergency vehicles. Sufficient parking is provided for these buildings. Water and sewer systems, as well as all other utilities and site lighting are completed and tested.

A temporary construction fence will be located at the end of the completed work as shown on the attached Site Plan Exhibit to separate the remaining construction zones from the public areas.

We would like to have this Partial Certificate of Completion reviewed at your next scheduled meeting on July 13th so we can obtain the Certificates of Occupancy for these buildings.

Sincerely,

RJ O'CONNELL & ASSOCIATES

Brian J. McCarthy
Vice President

cc: Amy Love, Town Planner
Michael Maglio, Town Engineer
Matt Crowley, BETA Group
Rob Hewitt, Fairfield Development
John Shipe, Shipe Consulting

Sidewalks complete

Top coat and stripping down

Traffic signal complete for area with top coat
Site lighting complete for finished parking and main drive area

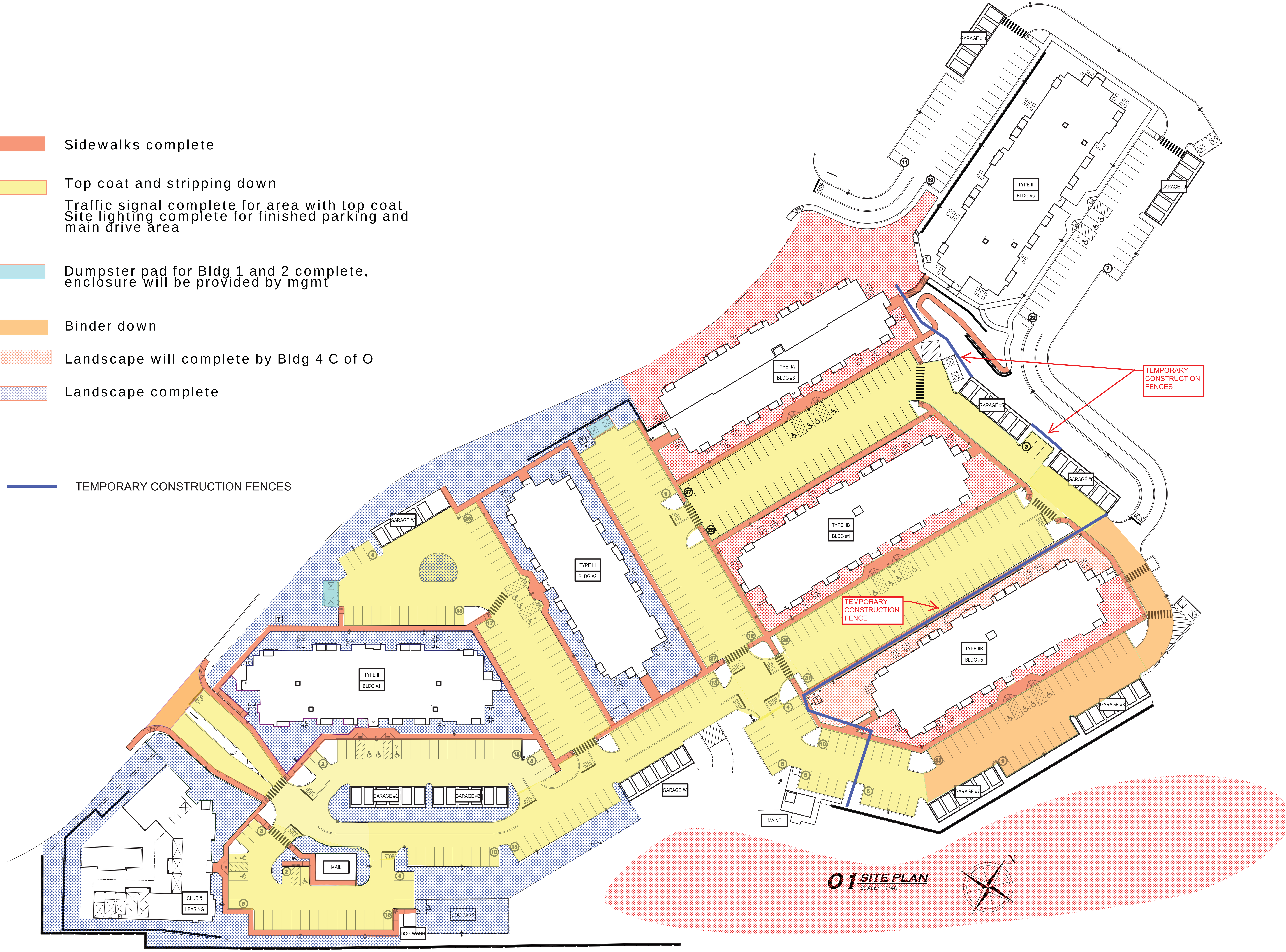
Dumpster pad for Bldg 1 and 2 complete, enclosure will be provided by mgmt

Binder down

Landscape will complete by Bldg 4 C of O

Landscape complete

TEMPORARY CONSTRUCTION FENCES



01 SITE PLAN
SCALE: 1:40

cNk ARCHITECTS, INC.
3501 W. AIRPORT FREEWAY, STE. 220 BEDFORD, TEXAS 76021
(817) 684-0088 info@cnkarch.com

KHIET NGUYEN No. 951503 BEDFORD TEXAS — REGISTERED ARCHITECT — STATE OF TEXAS
03/19/18

FAIRFIELD AT DEAN AVE
FRANKLIN, MA

Revisions:

Job no.:

Issue date:

Sheet info:
-SITE PLAN

Sheet no.
A102

SITE PLAN OF LAND

FORM H – PART 1 OF 2
ENGINEER'S AND OWNER'S CERTIFICATE OF PARTIAL COMPLETION

(to be executed by developer's engineer)

Site plan known as Fairfield at Dean Avenue.

ENGINEERS CERTIFICATION:

I hereby certify that the site work/improvements shown on the above referenced site plan in the area of the site, that includes the Clubhouse and all site work around Buildings 1, 2, 3, 4 and the Maintenance Building, performed or constructed to date have been completed in all respects in accordance with the Town of Franklin zoning requirements and the approved plans entitled: Fairfield at Dean Avenue, prepared by RJ O'Connell & Associates, Inc. and last revised with a date of August 9, 2019, as approved by the said Planning Board on September 9, 2019, except as noted on the attached Site Plan Work Completion List, dated JULY 1, 2020.

Signed this 6th day of July, 20 20

By _____, Reg. C.E.

COMMONWEALTH OF MASSACHUSETTS

Middlesex, SS.

On this 6th day of July 2020 before me, the undersigned notary public, personally appeared Brian Dundon *(name of engineer)*, proved to me through satisfactory evidence of identification, which were personal knowledge to be the person whose name is signed on the preceding document and acknowledged to me that he/she signed it voluntarily for its stated purpose.

KERRY AQUINO
Notary Public
Massachusetts
Commission Expires Dec 4, 2020

Kerry Aquino
(Official signature and seal of notary)
Notary Public: Kerry Aquino
My Commission Expires: 12/4/2020

Site Plan Work Completion List

(To accompany Form H- Engineer's and Owner's Certificate of Partial Completion)

Site Plan Name:	Fairfield at Dean Avenue
Owner Name:	Fairfield Residential Company, LLC
Owner's Engineer:	RJ O'Connell & Associates, Inc.
Date of Partial Certificate of Completion:	July 01, 2020

Outstanding Items:	Required Date of Completion:

This Partial Certificate of Completion is for the site work required for the Temporary Certificate of Occupancy for Buildings 1, 3 & 4. See attached color coded site plan for work completed at this time and work that will be completed by the requested Temporary Certificate of Occupancy Date of 07/16/20.

The stipulations issued by the Planning Board for Building 2 and the clubhouse have been completed.

Outstanding items in the site area of Buildings 1, 3 & 4 are:

1. Railings at the accessible ramp at Building 1	Complete by 07/16/20
2. The 48" high ornamental fence along the low retaining walls at Buildings 4 & 5	Complete by 07/16/20
3. Some Landscaping	Complete by 07/16/20
4. Sediment Forebay 2A rip rap splash pad at flared end inlet and rip rap berm between forebays 2A and 2B	Complete by 07/09/20
5. Grass seeding of forebays 2A and 2B	Complete by 07/16/20
6. Dumpster Enclosures	Complete by 07/31/20

See attached list

Approved by: _____, Town Engineer Date: _____

Signed by: _____, Engineer Date: 7-1-2020

Signed by: _____, Owner Date: 7-1-2020

* A Notarized *Form H- Engineer's and Owner's Certificate of Partial Completion Part 1 and 2 must accompany this form prior to acceptance by the Planning Board.*

SITE PLAN WORK COMPLETION LIST

Fairfield at Dean Ave

Page 2

7. Repair of Sediment forebay 1A interior slope and pretreatment gravel berms after 06/28/20 intense storm event. Complete by 07/09/20

8. Temporary construction fencing will be placed in the location shown on the attached plan to block off construction area. Complete by 07/16/20.

TOWN OF FRANKLIN - SITE OBSERVATION REPORT

Fairfield at Dean Avenue

Report No.:	**4831 63 – 111**	Date:	**July 7, 2020**	Arrive:	**3:00 PM**
Observer:	**Matt Crowley, PE**	Weather:	**Clear ~65°**	Leave:	**4:30 PM**

Owner: **Fairfield Residential Company**
One Edgewater Drive, Ste 107
Norwood, MA 02062

Contractor: **J. Read Corporation**
PO Box 1155
Westborough, MA 01581

Items Observed: **Conformance Observation – Submitted in conjunction with Applicant's request for acceptance of Form H – Certificate of Partial Completion**

OBSERVATIONS

Observation Requested By: Brian McCarthy – RJ O'Connell & Associates, Inc.

Met/walked site with: N/A

Current Activity on Site: Drainage excavation, general grading/site cleanup

Observed Construction: BETA arrived on site to perform a construction observation in conjunction with the Applicant's request for acceptance of Form H – Certificate of Partial Completion. The required Form H was provided via email and the as-built plan is anticipated to be provided in the future. BETA notes that the applicant is only seeking occupancy for Buildings 1, 3 and 4; therefore, BETA did not perform a detailed review of areas that remain under heavy construction (Buildings 5, 6, and associated infrastructure). During previous observations BETA did observe that all water and sewer infrastructure, as well as the majority of drainage infrastructure had been installed throughout the site. BETA's site walk and review of the Approved Plans confirmed the reviewed area of the site to be constructed in general conformance with the Approved Plans with the following exceptions/notations:

- Items included on Form H Site Plan Work Completion List with the following notations:
  - Railings at the accessible ramp at Building 1 have been installed.
  - Sediment forebay 2A and associated features have been partially completed.
  - Repair of the sediment forebay pretreatment gravel berm has been completed with 1 ½" crushed stone in place of gravel. BETA notes the stone is anticipated to provide a more stable base and will provide greater longevity.
- Several area drains are full of sediment/mulch
- Guardrail along the project boundary and Dean Avenue has not been installed.
- BETA did not observe testing of the sewer infrastructure; however, results of third-party testing have been submitted and indicate passing results.

SITE PHOTOS

Installed accessible railings at Building 1

Sediment Forebay 2A under construction

Gravel berm revised to crushed stone for stability.

Retaining wall at Building 4 that requires fence installation

Typical dumpster area that requires completion

Main site entrance at Dean Avenue

Sediment Forebay 1A that requires slope repair

Typical paved parking area (Building 1)

Typical paved parking area (Buildings 3 and 4)

Typical building entrance and accessible parking/signing

Area drain at Building 3 filled with sediment

Infiltration basin with soils scarified and seeded

Completed common dog park area

Guardrail has not been installed along Dean Avenue

FRANKLIN PLANNING & COMMUNITY DEVELOPMENT
355 EAST CENTRAL STREET
FRANKLIN, MA 02038-1352
TELEPHONE: 508-520-4907
FAX: 508-520-4906

MEMORANDUM

DATE: **July 8, 2020**

TO: **Franklin Planning Board**

FROM: **Department of Planning and Community Development**

RE: **Fairfield at Dean Ave**
Partial Form H

General

1. The applicant has submitted a Partial Form H and Engineer's Certificate of Completion listing several outstanding items. The purpose of the Partial Form H is for occupancy permit to Buildings #1, #3, and #4.
2. The Applicant has also submitted a diagram outlining what is complete and what outstanding items are still being completed.
3. BETA has provided an onsite report with pictures.

Comments

1. It has been brought to our attention about screening along the abutting property at 141 Dean Ave. 141 Dean Ave is a single family resident. The approved Site Plans requires several large trees to be planted along the property for screening. There has been communication between the home owner, developer, Building Commissioner and myself regarding the light from the building filtering off the site.

   DPCD recommends that immediate plantings be installed to provide accurate screening and prevent lighting from filtering off the site. The Planning Board may want to require that the lighting on Building #6 be reviewed or turned off until the screening is planted.

2. The Certificate of Vote required that applicant to install a Stop sign at the corner of Dean Ave and Hillside. The Applicant should provide the Planning Board with the status of the Stop Sign.

Gmail

Amy Love <alove@franklinma.gov>

Re: [EXTERNAL] Re: Question about lighting at Fairfield Apartments

1 message

Lloyd Brown <gbrown@franklinma.gov> Thu, Jun 18, 2020 at 1:00 PM
To: Steve Nurnberg <steve.nurnberg@me.com>
Cc: "Sean T. Regan" <sregan@ffres.com>, "Amy Love (alove@franklinma.gov)" <alove@franklinma.gov>, Joe Sousa <jsousa@ffres.com>

There should not be spillage, trees or not, if this is what the plan shows.
Thanks

Lloyd"Gus"Brown
Town of Franklin Building Commissioner
355 East Central Street
Franklin, MA. 02038
gbrown@franklinma.gov 508-553-4855

On Thu, Jun 18, 2020 at 12:00 PM Steve Nurnberg <steve.nurnberg@me.com> wrote:

> That is a reasonable request. Last year I put 8' poles at the location of the planned trees and the poles were below the height of the main floor of the house. This was a concern I brought up at the design review committee, but I could be wrong.
>
> When do you expect that work to be completed?
>
> Steve
>
> On June 18, 2020 at 11:42 AM, "Sean T. Regan" <sregan@ffres.com> wrote:
>
> > Hello,
> >
> > I would like to wait until all the landscaping has been done in that area. There will be a lot of 8' tall pines as well as some pin oak trees planted along the other side of the road way. This should block a lot of any light spillage. If not we do have other options as well including additional plantings and lower watt lighting.
> >
> > Thank you,
> >
> > **Sean T. Regan**
> > Project Manager - Construction
> >
> > o: 781.881.2302
> >
> > 1 Edgewater Drive, Suite 107
> > Norwood, MA 02062
> >
> > FairfieldResidential.com
> >
> > EST. 35 years 1985 FAIRFIELD RESIDENTIAL
> >
> > **From:** Lloyd Brown <gbrown@franklinma.gov>
> > **Sent:** Wednesday, June 17, 2020 1:16 PM

To: Steve Nurnberg <steve.nurnberg@me.com>; Amy Love (alove@franklinma.gov) <alove@franklinma.gov>; Sean T. Regan <sregan@ffres.com>; Joe Sousa <jsousa@ffres.com>
Subject: [EXTERNAL] Re: Question about lighting at Fairfield Apartments

Steve,

When this has happened in the past the property owner has been required to assess

the spillage with a meter. I cannot determine if there is a problem without this test.

Sean, I'm requesting this be explored to determine if there is spillage. Please contact me at your earliest convenience.

Thanks

Lloyd"Gus"Brown

Town of Franklin Building Commissioner

355 East Central Street

Franklin, MA. 02038

gbrown@franklinma.gov 508-553-4855

On Wed, Jun 17, 2020 at 10:55 AM Steve Nurnberg <steve.nurnberg@me.com> wrote:

> Hi Mr. Brown,
>
> I am waiting to hear back from Fairfield about my concern.
>
> I am hoping you can provide the process that is used regarding lighting plans.
>
> The attached plan that was approved by the town shows no light scatter on my property. I would assume the software used takes into account the fixture specifications, the height of installation and the topography of the abutting land. The plan shows 0.0 FC where my property is located. Does the town verify the lighting plan as it would for other parts of the construction such as set-backs, building codes, etc? If they are not able to meet the approved plan without meeting their safety and security needs, what recourse do I have?
>
> Feel free to call me if it is easier for you to explain the process with me.
>
> Steve Nurnberg
>
> Cell 508-330-8292

Begin forwarded message:

From: Steve Nurnberg <steve.nurnberg@me.com>
Date: 6/5/2020
To: gbrown@franklinma.gov
Subject: Question about lighting at Fairfield Apartments

Hi Mr. Brown,

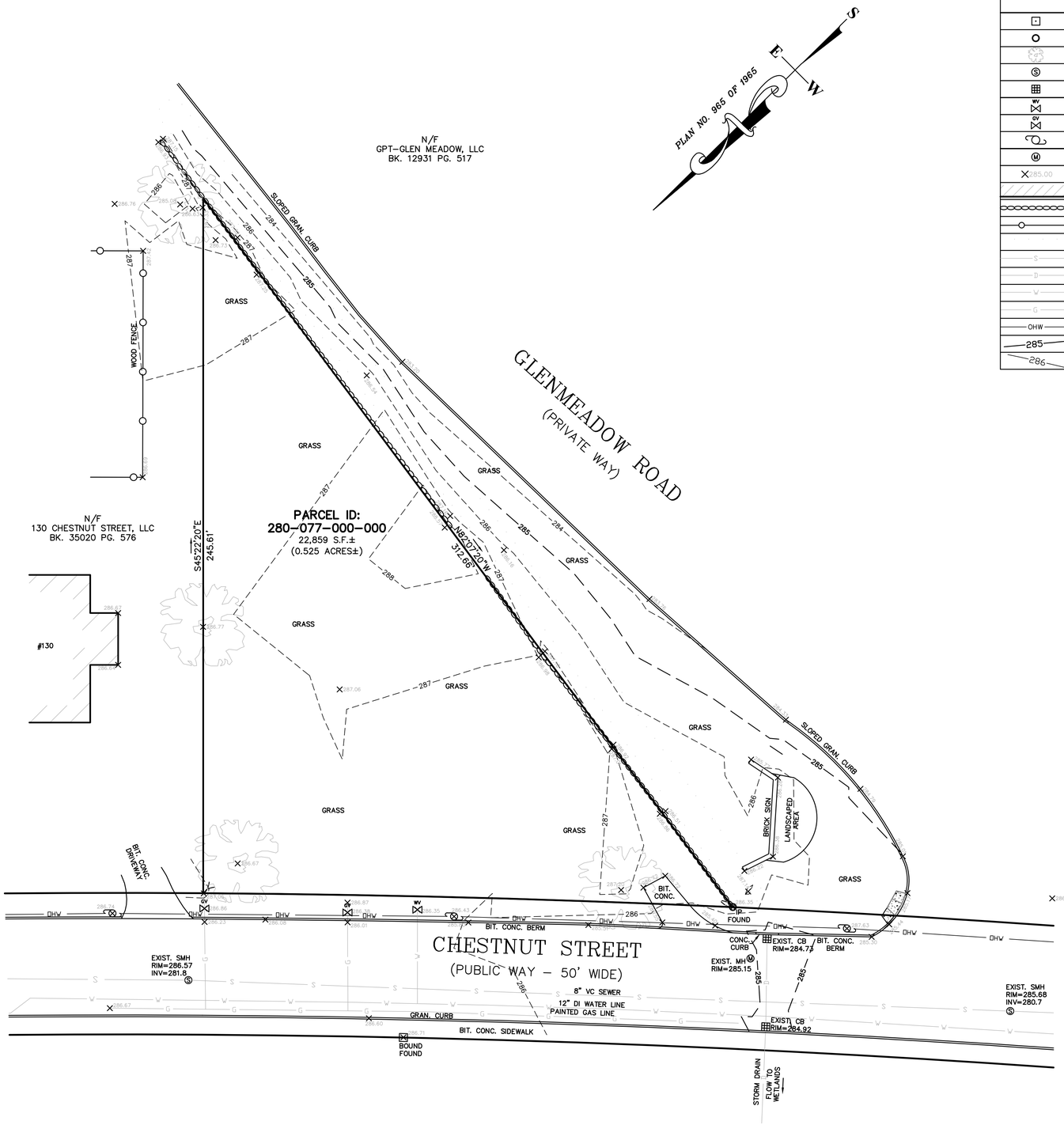
I live at 141 Dean Ave and my house is very close to building 6 at the new apartments. Last night they had the outside lights on for the first time. I noticed because my hall was lit up and upon looking outside, my house, driveway and yard were lit up. I am writing to ask what I should expect. I know the is a photometric plan. How do I know what I should accept or if I should ask questions. We were spoiled for many years with just woods next to us. I want to be reasonable. Your perspective will be appreciated.

Best regards,

Steve Nurnberg

Cell 508-330-8292

This email is intended for municipal / educational use only and must comply with the Town of Franklin and Franklin Public School's policies and state/federal laws. Under Massachusetts Law, any email created or received by an employee of The Town of or Franklin Public Schools is considered a public record. All email correspondence is subject to the requirements of M.G.L. Chapter 66. This email may contain confidential and privileged material for the sole use of the intended recipient. Any review or distribution by others is strictly prohibited. If you are not the intended recipient please contact the sender and delete all copies.



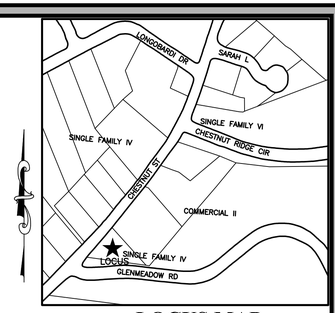
GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

LEGEND

⊡	BOUND
O	IRON PIN/PIPE
	TREE
Ⓢ	SEWER MANHOLE
	CATCH BASIN
WV	WATER VALVE
GV	GAS VALVE
	UTILITY POLE
Ⓜ	MANHOLE
X285.00	SPOT GRADE
	EXISTING BUILDING
	STONE WALL
	FENCE
	TREE LINE
S	SEWER LINE
D	DRAIN LINE
W	WATER LINE
G	GAS LINE
OHW	OVERHEAD WIRES
285	CONTOUR LINE (MJR)
286	CONTOUR LINE (MNR)



LOCUS MAP
(NOT TO SCALE)

LOT LOCATED UNDER DEP APPROVED ZONE II OF WATER RESOURCE DISTRICT.

ZONING LEGEND

ZONING DISTRICT: COMMERCIAL II

	REQUIRED	EXISTING
MIN. AREA	22,858 S.F.*	22,859 S.F.±
MIN. FRONTAGE	175'	187.15
MIN. DEPTH	150'*	–
MIN. LOT WIDTH	120'*	–
MIN. YARD FRONT	20'*	–
SIDE (RIGHT)	15'*	–
REAR	30'	–

*SPECIAL PERMIT GRANTED VARIANCES.

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER C. CHARLTON
NO. 48649
PROFESSIONAL LAND SURVEYOR

NOTES:

1. INFORMATION SHOWN ON THIS PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED BY SPRUHAN ENGINEERING, P.C. AS OF 6/26/2019.
2. DEED REFERENCE: BOOK 27480, PAGE 571
   PLAN REFERENCE 1: PLAN NO. 965 OF 1965
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   PLAN REFERENCE 3: PLAN NO. 344 OF 1994
   NORFOLK COUNTY REGISTRY OF DEEDS

   PLAN REFERENCE 4: PLAN ENTITLED "EXISTING CONDITIONS PLAN OF LAND IN FRANKLIN MASSACHUSETTS", PREPARED BY GUERRIERE & HALRON, INC., DATED JUNE 7, 2007
3. THIS PLAN IS NOT INTENDED TO BE RECORDED.
4. I CERTIFY THAT THE DWELLING SHOWN IS NOT LOCATED WITHIN A SPECIAL FLOOD HAZARD ZONE. IT IS LOCATED IN ZONE X, ON FLOOD HAZARD BOUNDARY MAP NUMBER 25021C0309E, IN COMMUNITY NUMBER: 250240, DATED 7/17/2012.
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6. FIRST FLOOR ELEVATIONS ARE TAKEN AT THRESHOLD.
7. NO RESPONSIBILITY IS TAKEN FOR ZONING TABLE AS SPRUHAN ENGINEERING, P.C. ARE NOT ZONING EXPERTS. TABLE IS TAKEN FROM TABLE PROVIDED BY LOCAL ZONING ORDINANCE. CLIENT AND/OR ARCHITECT TO VERIFY THE ACCURACY OF ZONING ANALYSIS.
8. THE ELEVATIONS SHOWN ARE ON (NGVD 1929).

Spruhan Engineering, P.C.
80 JEWETT ST, (SUITE 1)
NEWTON, MA 02458
Tel: 617-816-0722
Email:espruhan@gmail.com

122 CHESTNUT STREET
FRANKLIN
MASSACHUSETTS

CIVIL PLAN

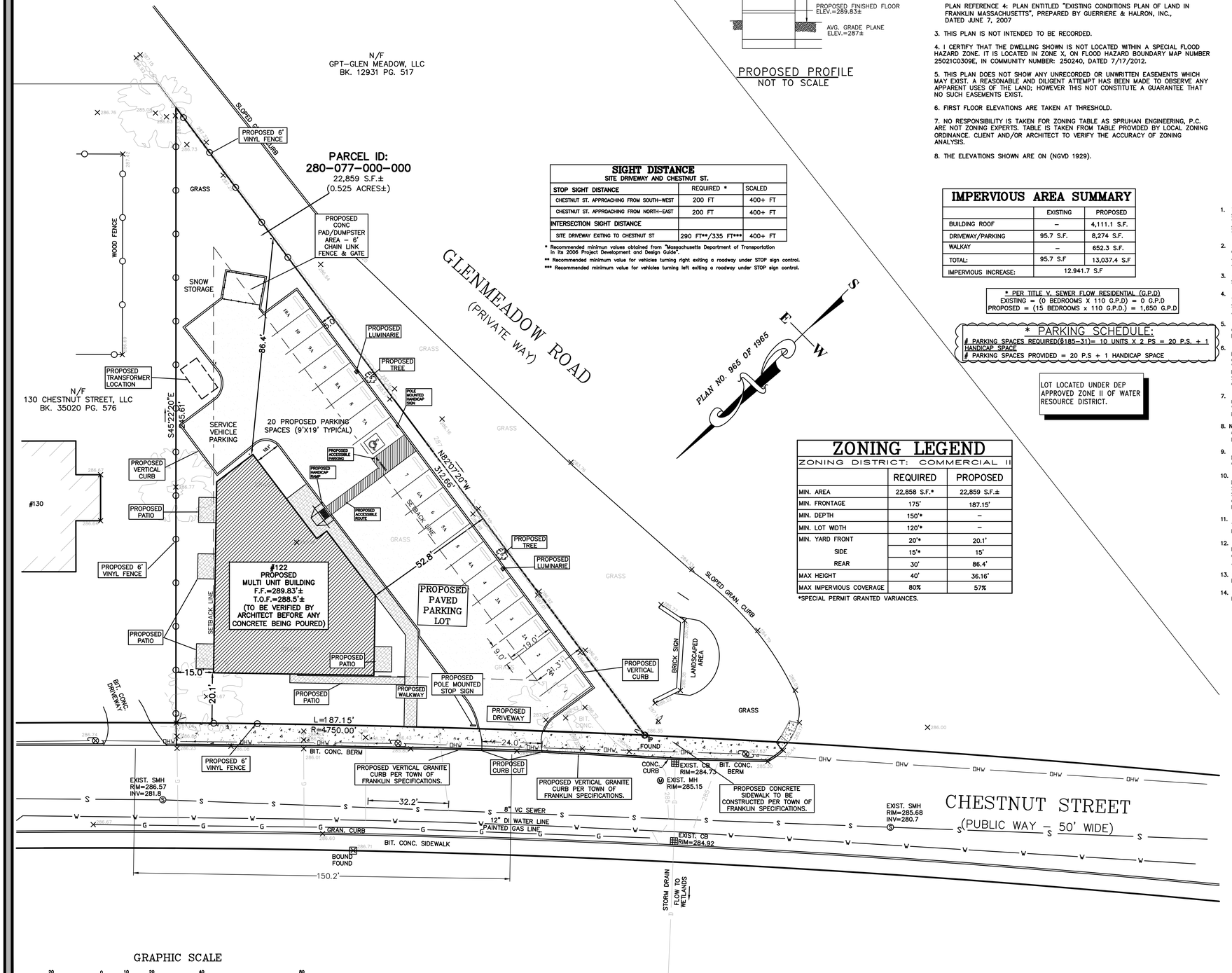
REVISION BLOCK

DESCRIPTION	DATE
REVISED AS PER TOWN OF FRANKLIN COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	6/29/2020

COMMONWEALTH OF MASSACHUSETTS
EDMOND SPRUHAN
CIVIL
NO. 43316
REGISTERED PROFESSIONAL ENGINEER

DATE:	10/21/2019
DRAWN BY:	M.G.C.
CHECKED BY:	E.S
APPROVED BY:	E.S

EXISTING CONDITIONS

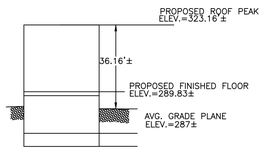


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.



PROPOSED PROFILE
NOT TO SCALE

SIGHT DISTANCE
SITE DRIVEWAY AND CHESTNUT ST.

STOP SIGHT DISTANCE	REQUIRED *	SCALED
CHESTNUT ST. APPROACHING FROM SOUTH-WEST	200 FT	400+ FT
CHESTNUT ST. APPROACHING FROM NORTH-EAST	200 FT	400+ FT
INTERSECTION SIGHT DISTANCE		
SITE DRIVEWAY EXITING TO CHESTNUT ST	290 FT**/335 FT***	400+ FT

* Recommended minimum values obtained from "Massachusetts Department of Transportation in its 2006 Project Development and Design Guide".

** Recommended minimum value for vehicles turning right exiting a roadway under STOP sign control.

*** Recommended minimum value for vehicles turning left exiting a roadway under STOP sign control.

ZONING LEGEND
ZONING DISTRICT: COMMERCIAL II

	REQUIRED	PROPOSED
MIN. AREA	22,858 S.F.*	22,859 S.F.±
MIN. FRONTAGE	175'	187.15'
MIN. DEPTH	150'*	–
MIN. LOT WIDTH	120'*	–
MIN. YARD FRONT	20'*	20.1'
SIDE	15'*	15'
REAR	30'	86.4'
MAX HEIGHT	40'	36.16'
MAX IMPERVIOUS COVERAGE	80%	57%

*SPECIAL PERMIT GRANTED VARIANCES.

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8. THE ELEVATIONS SHOWN ARE ON (NGVD 1929).

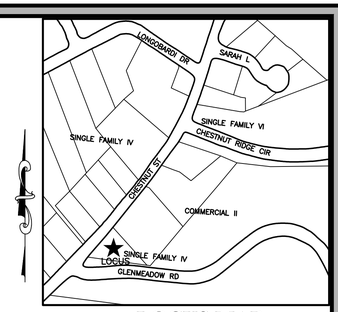
IMPERVIOUS AREA SUMMARY

	EXISTING	PROPOSED
BUILDING ROOF	–	4,111.1 S.F.
DRIVEWAY/PARKING	95.7 S.F.	8,274 S.F.
WALKAY	–	652.3 S.F.
TOTAL:	95.7 S.F	13,037.4 S.F
IMPERVIOUS INCREASE:	12.941.7 S.F	

* PER TITLE V, SEWER FLOW RESIDENTIAL (G.P.D)
EXISTING = (0 BEDROOMS X 110 G.P.D) = 0 G.P.D
PROPOSED = (15 BEDROOMS x 110 G.P.D.) = 1,650 G.P.D

* PARKING SCHEDULE:
# PARKING SPACES REQUIRED(8185-31)= 10 UNITS X 2 PS = 20 P.S. + 1 HANDICAP SPACE
# PARKING SPACES PROVIDED = 20 P.S + 1 HANDICAP SPACE

LOT LOCATED UNDER DEP APPROVED ZONE II OF WATER RESOURCE DISTRICT.



LOCUS MAP
(NOT TO SCALE)

1. THE CONTRACTOR SHALL REPORT TO THE OWNER AND ENGINEER OF ANY SIGNIFICANT VARIATIONS IN EXISTING SITE CONDITIONS FROM THOSE SHOWN ON THESE PLANS. ANY PROPOSED REVISIONS TO THE WORK, IF REQUIRED BY THESE SITE CONDITIONS, SHALL NOT BE UNDERTAKEN UNTIL REVIEWED AND APPROVED BY THE OWNER AND THE ENGINEER.
2. IN ORDER TO PROTECT THE PUBLIC SAFETY DURING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING AT ALL TIMES ALL NECESSARY SAFETY DEVICES AND PERSONNEL, WARNING LIGHTS, BARRICADES, AND POLICE OFFICERS.
3. ALL WORK SHALL CONFORM TO TOWN OF FRANKLIN GENERAL CONSTRUCTION STANDARDS.
4. THE CONTRACTOR SHALL REGULARLY INSPECT THE PERIMETER OF THE PROPERTY TO CLEAN UP AND REMOVE LOOSE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. ALL DEMOLITION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE SITE TO A LEGAL DUMP SITE. ALL TRUCKS LEAVING THE SITE SHALL BE COVERED.
5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTITUTE EROSION CONTROL MEASURES ON AN AS NECESSARY BASIS, SUCH THAT EXCESSIVE SOIL EROSION DOES NOT OCCUR.
6. THE LOCATION OF UNDERGROUND UTILITIES AS REPRESENTED ON THESE PLANS IS BASED UPON PLANS AND INFORMATION PROVIDED BY THE RESPECTIVE UTILITY COMPANIES OR MUNICIPAL DEPARTMENTS SUPPLEMENTED BY FIELD IDENTIFICATION WHEREVER POSSIBLE. NO WARRANTY IS MADE AS TO THE ACCURACY OF THESE LOCATIONS OR THAT ALL UNDERGROUND UTILITIES ARE SHOWN. THE CONTRACTOR SHALL CONTRACT DIG SAFE AT LEAST 72 HOURS PRIOR TO THE START OF CONSTRUCTION. DIG SAFE TELEPHONE NUMBER IS 1-800-322-4844.
7. THE CONTRACTOR SHALL VERIFY THE LOCATION, SIZE AND DEPTH OF EXISTING UTILITIES PRIOR TO TAPPING INTO, CROSSING OR EXTENDING THEM. IF THE NEW WORK POSES A CONFLICT WITH EXISTING UTILITIES, THE ENGINEER SHALL BE NOTIFIED PRIOR TO THE CONTRACTOR CONTINUING.
8. NO LEDGE, BOULDERS, OR OTHER UNYIELDING MATERIALS ARE TO BE LEFT WITHIN 6" OF THE WATER IN THE TRENCH, NOR ARE THEY TO BE USED FOR BACKFILL FOR THE FIRST 12" ABOVE THE PIPES.
9. PAVEMENT AREA SHALL BE PAVED TO A THICKNESS AS SHOWN ON THE PLANS MEASURED AFTER COMPACTION, WITH A BINDER COURSE AND TOP COURSE OF CLASS I BITUMINOUS CONCRETE PAVEMENT, TYPE I-1.
10. BASE MATERIAL SHALL BE CLEAN BANK RUN GRAVEL, CONFORMING TO M.D.P.W. M1.03.1, WITH NO STONES LARGER THAN THREE (3) INCHES IN DIAMETER AND SHALL BE PLACED AND ROLLED WITH AT LEAST A TEN TON ROLLER. THE SURFACES SHALL BE WET DURING ROLLING TO BIND THE MATERIAL. ALL STONES OF 4" DIAMETER OR LARGER SHALL BE REMOVED FROM THE SUB-BASE PRIOR TO PLACING BASE MATERIAL.
11. ALL EXISTING PAVING TO BE DISTURBED SHALL BE CUT ALONG A STRAIGHT LINE THROUGH ITS ENTIRE THICKNESS. BUTT THE NEW PAVING INTO THE EXISTING PAVEMENT TO REMAIN.
12. ANY PAVEMENT REMOVED FOR UTILITY TRENCH EXCAVATION OR OTHERWISE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH A PAVEMENT SECTION CONSISTING OF 1" WEAR COURSE OVERLYING A 1 1/2" BINDER COURSE OVERLYING A 8" COMPACTED GRAVEL BASE COURSE.
13. THE CONTRACTOR SHALL APPLY FOR A STREET OPENING AND UTILITY CONNECTION PERMITS AND SIDEWALK CROSSING PERMIT WITH THE TOWN OF FRANKLIN.
14. CONTRACTOR TO ENSURE THAT ALL SURFACE WATER IS DIVERTED AWAY FROM BUILDING FOUNDATION DURING FINAL GRADING.

LEGEND

⊡	BOUND
O	IRON PIN/PIPE
	TREE
Ⓢ	SEWER MANHOLE
▦	CATCH BASIN
WV	WATER VALVE
GV	GAS VALVE
	UTILITY POLE
Ⓜ	MANHOLE
×285.00	SPOT GRADE
	EXISTING BUILDING
	STONE WALL
	FENCE
	TREE LINE
S	SEWER LINE
D	DRAIN LINE
W	WATER LINE
G	GAS LINE
OHW	OVERHEAD WIRES
285	CONTOUR LINE (MJR)
286	CONTOUR LINE (MNR)

Spruhan Engineering, P.C.
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Tel: 617-816-0722
Email:espruhan@gmail.com

122 CHESTNUT STREET FRANKLIN MASSACHUSETTS

CIVIL PLAN

REVISION BLOCK

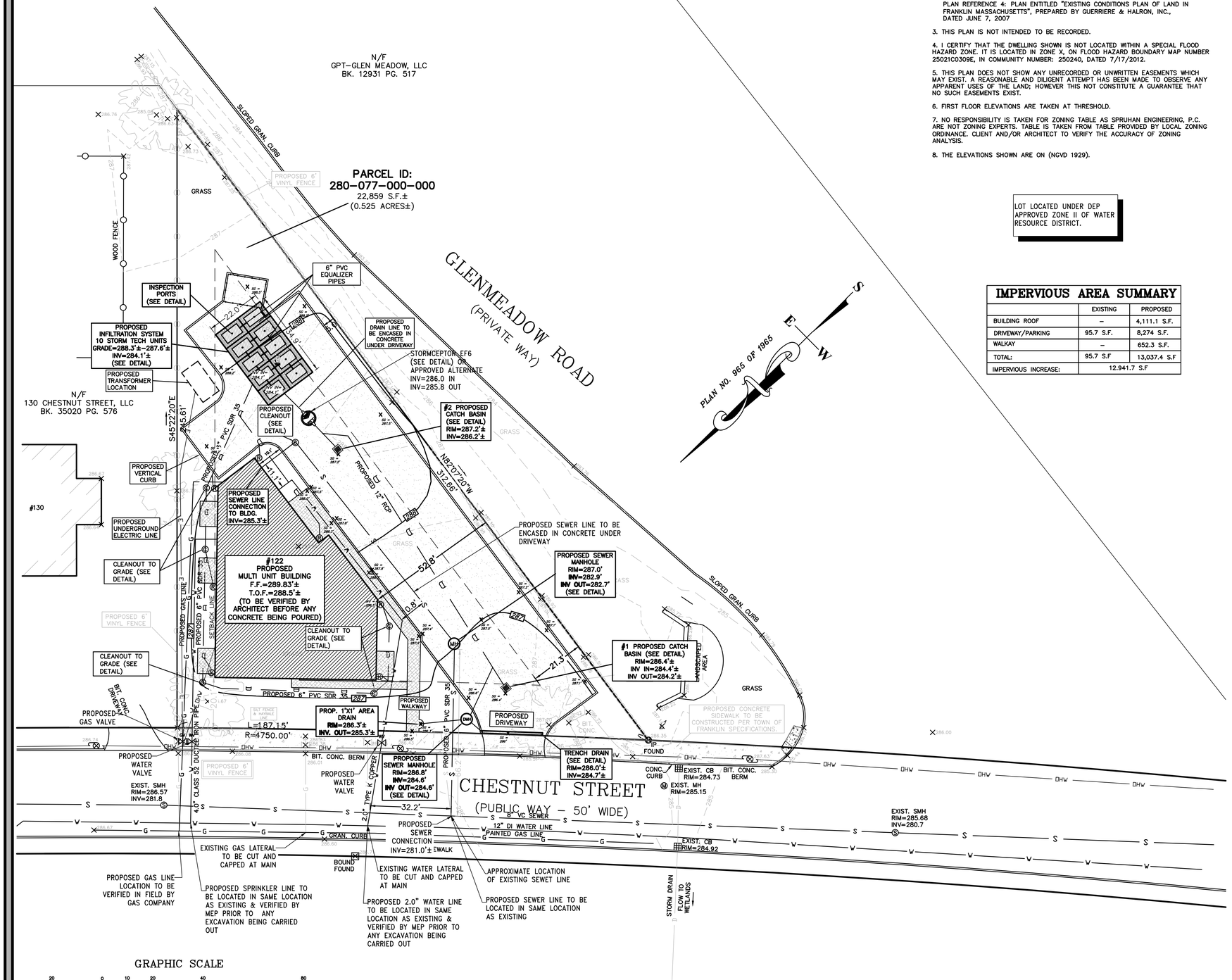
DESCRIPTION	DATE
REVISED AS PER TOWN OF FRANKLIN COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	

COMMONWEALTH OF MASSACHUSETTS
EDMOND E. SPRUHAN JR.
No. 35316
REGISTERED PROFESSIONAL ENGINEER

DATE:	11/08/2019
DRAWN BY:	G.P.
CHECKED BY:	E.S
APPROVED BY:	E.S

PROPOSED PLOT PLAN

SHEET 2 OF 12



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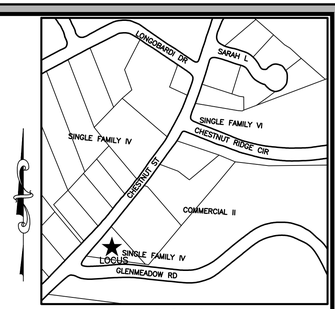

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(NOT TO SCALE)

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2. IN ORDER TO PROTECT THE PUBLIC SAFETY DURING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING AT ALL TIMES ALL NECESSARY SAFETY DEVICES AND PERSONNEL, WARNING LIGHTS, BARRICADES, AND POLICE OFFICERS.
3. ALL WORK SHALL CONFORM TO TOWN OF FRANKLIN GENERAL CONSTRUCTION STANDARDS.
4. THE CONTRACTOR SHALL REGULARLY INSPECT THE PERIMETER OF THE PROPERTY TO CLEAN UP AND REMOVE LOOSE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. ALL DEMOLITION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE SITE TO A LEGAL DUMP SITE. ALL TRUCKS LEAVING THE SITE SHALL BE COVERED.
5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTITUTE EROSION CONTROL MEASURES ON AN AS NECESSARY BASIS, SUCH THAT EXCESSIVE SOIL EROSION DOES NOT OCCUR.
6. THE LOCATION OF UNDERGROUND UTILITIES AS REPRESENTED ON THESE PLANS IS BASED UPON PLANS AND INFORMATION PROVIDED BY THE RESPECTIVE UTILITY COMPANIES OR MUNICIPAL DEPARTMENTS SUPPLEMENTED BY FIELD IDENTIFICATION WHEREVER POSSIBLE. NO WARRANTY IS MADE AS TO THE ACCURACY OF THESE LOCATIONS OR THAT ALL UNDERGROUND UTILITIES ARE SHOWN. THE CONTRACTOR SHALL CONTRACT DIG SAFE AT LEAST 72 HOURS PRIOR TO THE START OF CONSTRUCTION. DIG SAFE TELEPHONE NUMBER IS 1-800-322-4844.
7. THE CONTRACTOR SHALL VERIFY THE LOCATION, SIZE AND DEPTH OF EXISTING UTILITIES PRIOR TO TAPPING INTO, CROSSING OR EXTENDING THEM. IF THE NEW WORK POSES A CONFLICT WITH EXISTING UTILITIES, THE ENGINEER SHALL BE NOTIFIED PRIOR TO THE CONTRACTOR CONTINUING.
8. NO LEDGE, BOULDERS, OR OTHER UNYIELDING MATERIALS ARE TO BE LEFT WITHIN 6" OF THE WATER IN THE TRENCH, NOR ARE THEY TO BE USED FOR BACKFILL FOR THE FIRST 12" ABOVE THE PIPES.
9. PAVEMENT AREA SHALL BE PAVED TO A THICKNESS AS SHOWN ON THE PLANS MEASURED AFTER COMPACTION, WITH A BINDER COURSE AND TOP COURSE OF CLASS I BITUMINOUS CONCRETE PAVEMENT, TYPE I-1.
10. BASE MATERIAL SHALL BE CLEAN BANK RUN GRAVEL, CONFORMING TO M.D.P.W. M1.03.1, WITH NO STONES LARGER THAN THREE (3) INCHES IN DIAMETER AND SHALL BE PLACED AND ROLLED WITH AT LEAST A TEN TON ROLLER. THE SURFACES SHALL BE WET DURING ROLLING TO BIND THE MATERIAL. ALL STONES OF 4" DIAMETER OR LARGER SHALL BE REMOVED FROM THE SUB-BASE PRIOR TO PLACING BASE MATERIAL.
11. ALL EXISTING PAVING TO BE DISTURBED SHALL BE CUT ALONG A STRAIGHT LINE THROUGH ITS ENTIRE THICKNESS. BUTT THE NEW PAVING INTO THE EXISTING PAVEMENT TO REMAIN.
12. ANY PAVEMENT REMOVED FOR UTILITY TRENCH EXCAVATION OR OTHERWISE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH A PAVEMENT SECTION CONSISTING OF 1" WEAR COURSE OVERLYING A 1 1/2" BINDER COURSE OVERLYING A 8" COMPACTED GRAVEL BASE COURSE.
13. THE CONTRACTOR SHALL APPLY FOR A STREET OPENING AND UTILITY CONNECTION PERMITS AND SIDEWALK CROSSING PERMIT WITH THE TOWN OF FRANKLIN.
14. CONTRACTOR TO ENSURE THAT ALL SURFACE WATER IS DIVERTED AWAY FROM BUILDING FOUNDATION DURING FINAL GRADING.

LEGEND

⊡	BOUND
○	IRON PIN/PIPE
	TREE
Ⓢ	SEWER MANHOLE
▦	CATCH BASIN
WV	WATER VALVE
GV	GAS VALVE
	UTILITY POLE
Ⓜ	MANHOLE
X 285.00	SPOT GRADE
	EXISTING BUILDING
	STONE WALL
	FENCE
	TREE LINE
S	SEWER LINE
D	DRAIN LINE
W	WATER LINE
G	GAS LINE
OHW	OVERHEAD WIRES
285	CONTOUR LINE (MJR)
286	CONTOUR LINE (MNR)

Spruhan Engineering, P.C.
80 JEWETT ST, (SUITE 1)
NEWTON, MA 02458
Tel: 617-816-0722
Email:espruhan@gmail.com

122 CHESTNUT STREET
FRANKLIN
MASSACHUSETTS

CIVIL PLAN

REVISION BLOCK

DESCRIPTION	DATE
REVISED AS PER TOWN OF FRANKLIN COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	7/1/2020

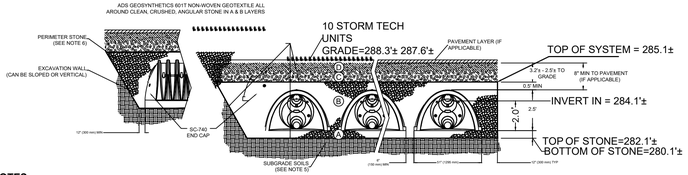
COMMONWEALTH OF MASSACHUSETTS
EDMOND P. SPRUHAN
CIVIL
No. 53318
REGISTERED PROFESSIONAL ENGINEER

DATE:	11/08/2019
DRAWN BY:	G.P.
CHECKED BY:	E.S
APPROVED BY:	E.S

PROPOSED GRADING AND UTILITIES

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145*; A-1, A-2-4, A-3 OR AASHTO M43*; 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS, TO A MIN. OF 95% RELATIVE DENSITY FOR WELL GRADED MATERIAL AND 90% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4-2 INCH (20-50 mm)	AASHTO M43*; 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4-2 INCH (20-50 mm)	AASHTO M43*; 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. * *

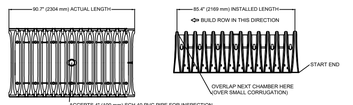


NOTES:

1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.
5. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
7. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

SC-740 TECHNICAL SPECIFICATION

NTS

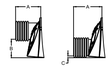


ACCEPTS 4" (100 mm) SCH 40 PVC PIPE FOR INSPECTION PORT. FOR PIPE SIZES LARGER THAN 4" (100 mm) UP TO 10" (250 mm) USE INSERTA TEE CONNECTION CENTERED ON A CHAMBER CREST CORRUGATION

NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



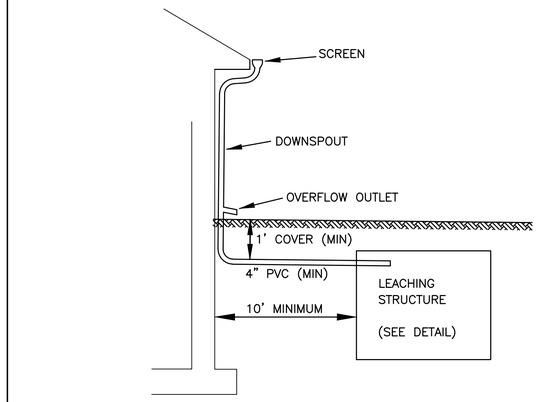
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	—
SC740EPE06B / SC740EPE06BPC			—	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	—
SC740EPE08B / SC740EPE08BPC			—	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	—
SC740EPE10B / SC740EPE10BPC			—	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	—
SC740EPE12B / SC740EPE12BPC			—	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	—
SC740EPE15B / SC740EPE15BPC			—	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	—
SC740EPE18B / SC740EPE18BPC			—	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	—	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

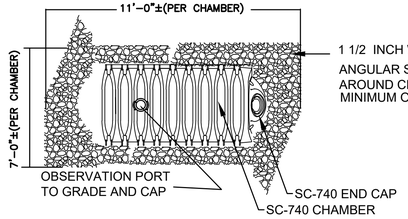


TYPICAL DOWNSPOUT DETAIL

N.T.S.

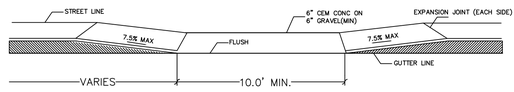
STORMTECH GENERAL NOTES

1. STORMTECH LLC ("STORMTECH") REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
2. STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.): MINIMUM COVER IS 18 INCHES NOT INCLUDING PAVEMENT. MAXIMUM COVER IS 96 INCHES INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24 INCHES, MAXIMUM COVER IS 96 INCHES.
3. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.
4. AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.
5. STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
6. BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
7. THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE: CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.
8. THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER LOCAL CODES AND DESIGN ENGINEER'S SPECIFICATIONS.



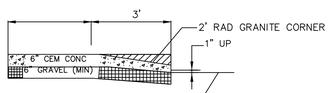
STORMTECH SC-740 CHAMBER SYSTEM PLAN VIEW DETAIL

NOT TO SCALE



DRIVEWAY ON SIDEWALKS LESS THAN 7'

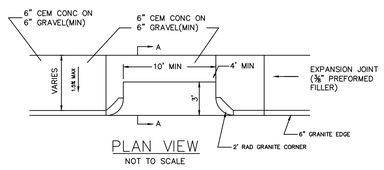
NOT TO SCALE



SECTION VIEW

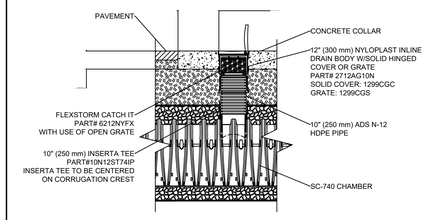
NOT TO SCALE

TYPICAL RESIDENTIAL DRIVEWAY



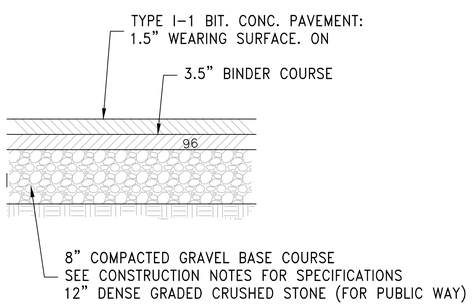
PLAN VIEW

NOT TO SCALE



SC-740 INSPECTION PORT DETAIL

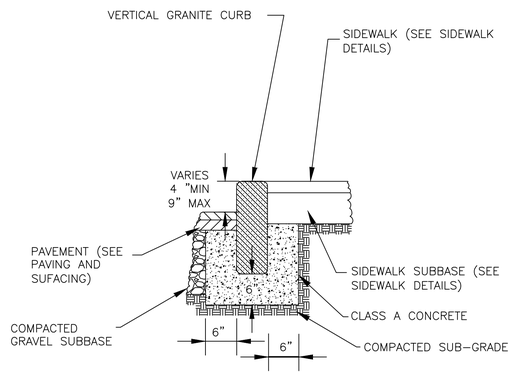
NTS



NOTE: PRIVATE PROPERTY ONLY

BITUMINOUS CONCRETE PAVEMENT/ PROPOSED DRIVEWAY

N.T.S.



VERTICAL GRANITE CURB DETAIL

SOIL LOG

DEEP OBSERVATION HOLE LOG

GENERAL SOIL CONDITIONS FOR THE AREA PERFORMED AT 122 CHESTNUT STREET, FRANKLIN BY PETER NOLAN & ASSOCIATES, LLC. AND SPRUHAN ENGINEERING, P.C.

HOLE NUMBER: TP – 1 DATED: 6/24/19

GENERAL SITE CONDITIONS:
GRASS AND TREES.

DEPTH	HORIZON	TEXTURE	COLOR	MOTTLING	OTHER
0" – 6"	A_P	LS_{ND}	7.5 YR 4/1	NO	NONE
6" – 18"	B_W	LS_{ND}	7.5 YR 5/1	NO	NONE
18" – 36"	C_1	$C_{OARSE}S_{ND}$	10 YR 6/1	NO	GRAVEL
36" – 60"	C_2	$C_{OARSE}S_{ND}$	10 YR 7/5	NO	GRAVEL
60" – 120"	C_3	$M_{EDIUM}S_{ND}$	10 YR 7/1	NO	NONE

Spruhan Engineering, P.C.
80 JEWETT ST, (SUITE 1)
NEWTON, MA 02458
Tel: 617-816-0722
Email:espruhan@gmail.com

122 CHESTNUT STREET FRANKLIN MASSACHUSETTS

CIVIL PLANS

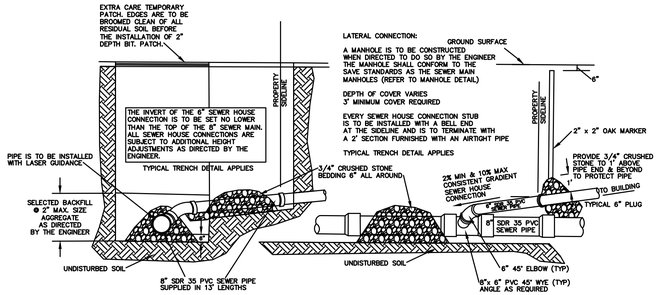
REVISION BLOCK

DESCRIPTION	DATE
REVISED AS PER TOWN OF FRANKLIN COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	03/05/2020
REVISED AS PER BETA COMMENTS	7/1/2020

COMMONWEALTH OF MASSACHUSETTS
EDMOND SPRUHAN
CIVIL
No. 49316
REGISTERED PROFESSIONAL ENGINEER

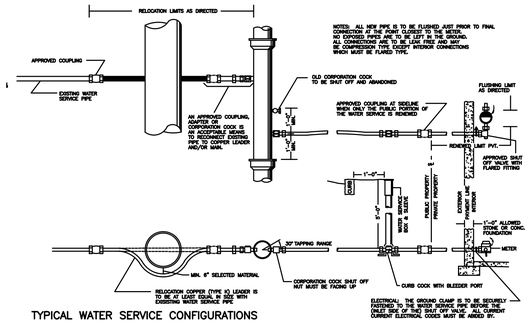
DATE:	11/08/2019
DRAWN BY:	G.P.
CHECKED BY:	E.S
APPROVED BY:	E.S

DETAILS

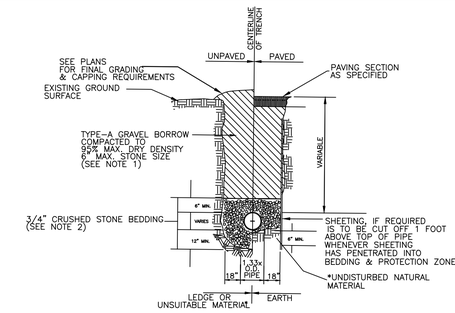


TYPICAL PVC SEWER HOUSE CONNECTION

N.T.S.



TYPICAL WATER SERVICE CONFIGURATIONS

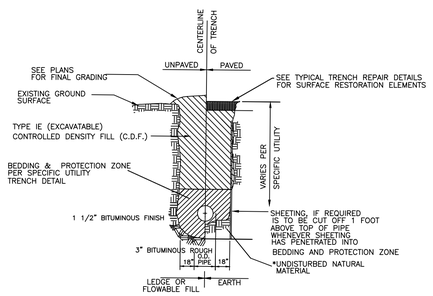


- SUITABILITY OF MATERIAL IS TO BE DETERMINED BY THE TOWN OF FRANKLIN.

1. GRAVEL BORROW SHALL CONFORM TO MASS HIGHWAY SPECIFICATION M1.03.0
2. CRUSHED STONE BEDDING SHALL CONFORM TO MASS HIGHWAY SPECIFICATION M2.01.1

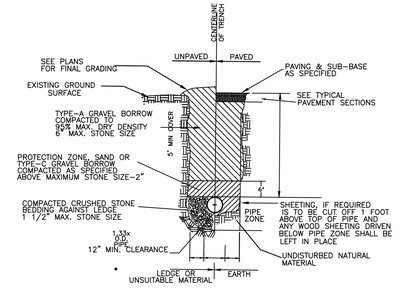
GRAVITY SEWER TRENCH DETAIL

N.T.S.



* SUITABILITY OF MATERIAL IS TO BE DETERMINED BY THE TOWN OF FRANKLIN. CONTROLLED DENSITY FILL (C.D.F.)

TYPICAL TRENCH DETAIL



SUITABILITY OF MATERIAL IS TO BE DETERMINED BY THE TOWN OF FRANKLIN.

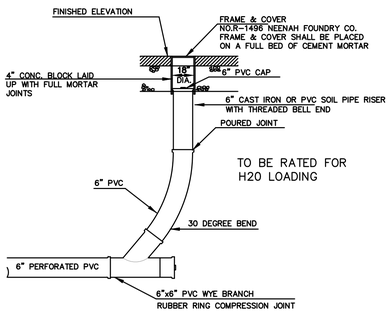
1. GRAVEL BORROW SHALL CONFORM TO MASS HIGHWAY SPECIFICATION M1.03.0
2. CRUSHED STONE BEDDING SHALL CONFORM TO MASS HIGHWAY SPECIFICATION M2.01.1

TYPICAL TRENCH DETAIL

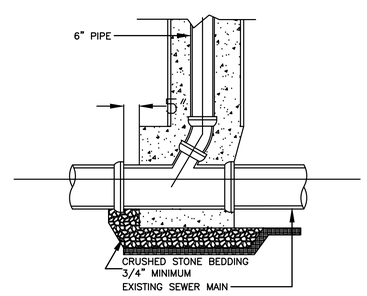
N.T.S.

TYPICAL WATER TRENCH DETAIL

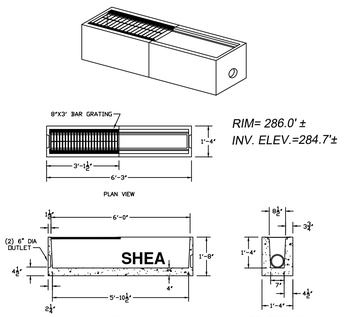
N.T.S.



CLEANOUT/INSPECTION PORT DETAIL		
NOT TO SCALE	(CLEANOUT-DETAIL)	

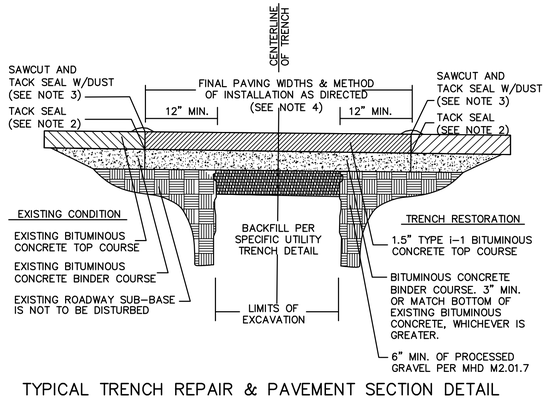


TYPICAL SEWER CONFIGURATION



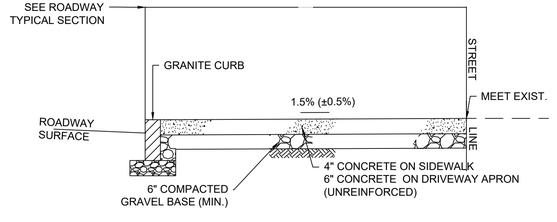
NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. AVAILABLE IN 3' AND 6' SECTIONS.
3. AVAILABLE IN END, MIDDLE, OR CLOSED SECTIONS.
4. DESIGNED FOR AASHTO HS-20 LOADING.

TRENCH DRAIN 8" x 16"



TYPICAL TRENCH REPAIR & PAVEMENT SECTION DETAIL

1. ALL INSTALLATION AND MATERIAL SPECIFICATIONS PER MASS. HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 1988 AS AMENDED.
2. ALL EXPOSED BITUMINOUS CONCRETE IS TO BE TACKED PER MHD PRIOR TO NEW BITUMINOUS CONCRETE INSTALLATIONS.
3. ALL EXPOSED JOINTS ARE TO BE SEALED WITH TACK AND STONE DUST.
4. ANY TOP COURSE APPLIED AT A WIDTH OF 6' WIDE OR GREATER IS TO BE
5. PLACED BY MACHINE/BAX SPREADER WHEN & AS DIRECTED BY THE TOWN OF FRANKLIN.



*DETAIL DEPICTS SIDEWALK CONDITION ALTHOUGH THE SAME CROSS SECTION SHALL BE USED FOR CURB RAMPS OR DRIVEWAYS.

CONCRETE SIDEWALK

SCALE: N.T.S.

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122 CHESTNUT STREET
FRANKLIN
MASSACHUSETTS

CIVIL PLANS

REVISION BLOCK

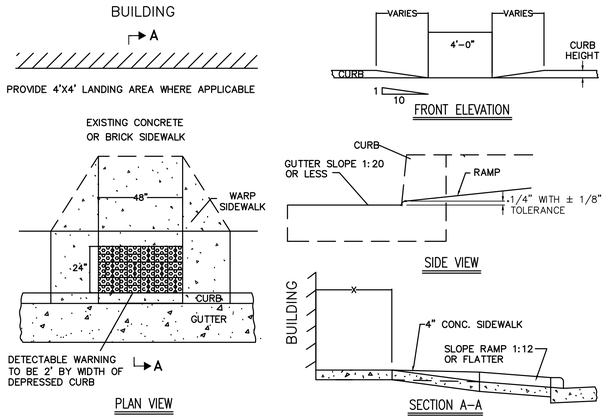
DESCRIPTION	DATE
REVISED AS PER TOWN OF FRANKLIN COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	7/1/2020

COMMONWEALTH OF MASSACHUSETTS
EDMOND J. SPRUHAN
CIVIL
No. 53316
REGISTERED PROFESSIONAL ENGINEER

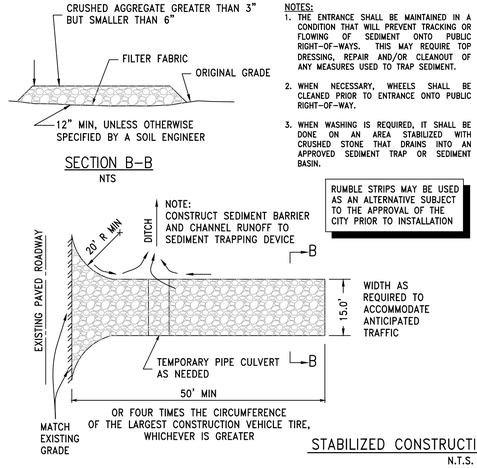
DATE:	11/08/2019
DRAWN BY:	G.P.
CHECKED BY:	E.S
APPROVED BY:	E.S

DETAILS

SHEET 5 OF 12



HANDICAP RAMP



RUMBLE STRIPS MAY BE USED AS AN ALTERNATIVE SUBJECT TO THE APPROVAL OF THE CITY PRIOR TO INSTALLATION

NOTES:

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

CONSTRUCTION SPECIFICATIONS:

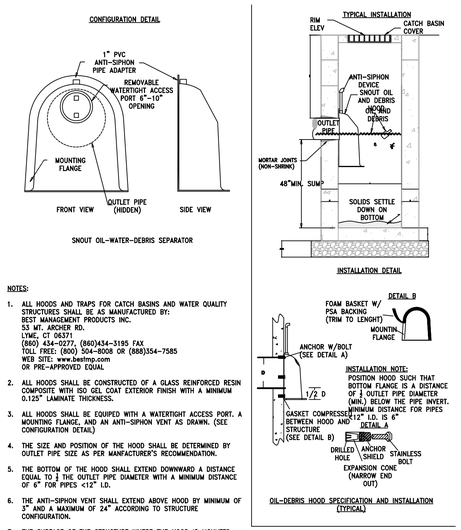
1. THE AGGREGATE SIZE FOR CONSTRUCTION OF THE PAD SHALL BE 2-3 INCH (50-75 MM) STONE. PLACE THE GRAVEL TO THE SPECIFIC GRADE AND DIMENSIONS SHOWN ON THE PLANS, AND SMOOTH IT.
2. THE THICKNESS OF THE PAD SHALL NOT BE LESS THAN 6 INCHES (152 MM). USE GEOTEXTILE FABRICS, IF NECESSARY, TO IMPROVE STABILITY OF THE FOUNDATION IN LOCATIONS SUBJECT TO SEEPAGE OR HIGH WATER TABLE.
3. THE WIDTH OF THE PAD SHALL NOT BE LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS AND IN ANY CASE SHALL NOT BE LESS THAN 12 FEET (3.6 M) WIDE.
4. THE LENGTH OF THE PAD SHALL BE AS REQUIRED, BUT NOT LESS THAN 50 FEET (15.2 M).
5. LOCATE CONSTRUCTION ENTRANCES AND EXITS TO LIMIT SEDIMENT LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. AVOID ENTRANCES WHICH HAVE STEEP GRADES AND ENTRANCES AT CURVES IN PUBLIC ROADS.
6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR MAINTENANCE OF ANY MEASURES USED TO TRAP SEDIMENT.
7. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
8. PROVIDE DRAINAGE TO CARRY WATER TO A SEDIMENT TRAP OR OTHER SUITABLE OUTLET.
9. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. SEE SEDIMENT BASIN BMP.
10. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL, STRAW BALES, OR OTHER APPROVED METHODS.

INSPECTION AND MAINTENANCE:

11. MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE.
12. REPLACE GRAVEL MATERIAL WHEN SURFACE VOIDS ARE NOT VISIBLE.
13. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY.
14. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS. REMOVE ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS WITHIN 24 HOURS.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

N.T.S.



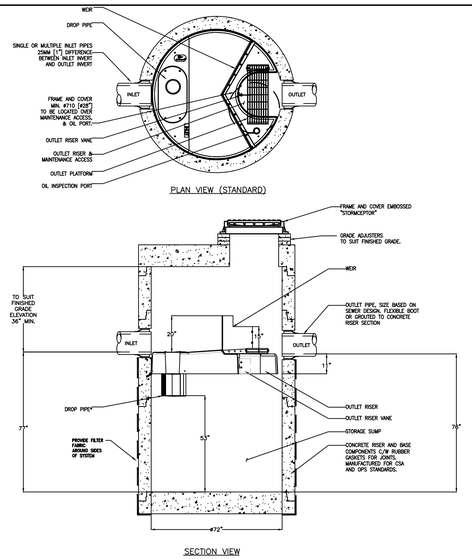
NOTES:

1. ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY:
   BEST MANAGEMENT PRODUCTS INC.
   53 MT. ARCHER RD.
   LYME, CT 06371
   (860) 434-0277, (860)434-3195 FAX
   TOLL FREE: (800) 504-8008 OR (888)354-7585
   WEB SITE: www.bestmp.com
   OR PRE-APPROVED EQUAL
2. ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
3. ALL HOODS SHALL BE EQUIPED WITH A WATERTIGHT ACCESS PORT. A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT AS DRAWN. (SEE CONFIGURATION DETAIL)
4. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANFACTURER'S RECOMMENDATION.
5. THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A DISTANCE EQUAL TO ½ THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES <12" I.D.
6. THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 24" ACCORDING TO STRUCTURE CONFIGURATION.
7. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL.
8. THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH 3/8" STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET AS SUPPLIED BY MANUFACTURER (SEE INSTALLATION DETAIL)
9. INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED INSTALLATION KIT.
   INSTALLATION SHALL INCLUDE:
   A. INSTALLATION INSTRUCTIONS
   B. PVC ANTI-SIPHON VENT PIPE AND ADAPTER
   C. OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
   D. 3/8" STAINLESS STEEL BOLTS
   E. ANCHOR SHIELDS

US PATENT # 6126817

DEEP SUMP CATCH BASIN WITH DEBRIS COLLECTOR DETAIL

N.T.S.



STORMCEPTOR EF6 (OIL/GRIT SEPARATOR) DETAIL

GENERAL NOTES:

* MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m^2 (27.9 gpm/ft^2) FOR STORMCEPTOR EF6 AND 535 L/min/m^2 (13.1 gpm/ft^2) FOR STORMCEPTOR EFO6 (OIL CAPTURE CONFIGURATION).

1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS. LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT THE DEVICE FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. DEVICE ACTIVATION, BY CONTRACTOR, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE STORMCEPTOR UNIT IS CLEAN AND FREE OF DEBRIS.

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122 CHESTNUT STREET
FRANKLIN
MASSACHUSETTS

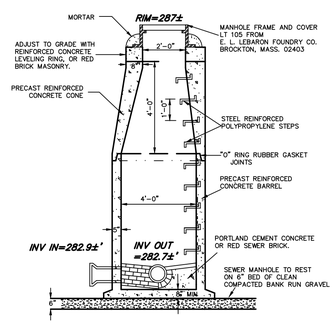
CIVIL PLANS

REVISION BLOCK

DESCRIPTION	DATE
REVISED AS PER TOWN OF FRANKLIN COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	6/29/2020

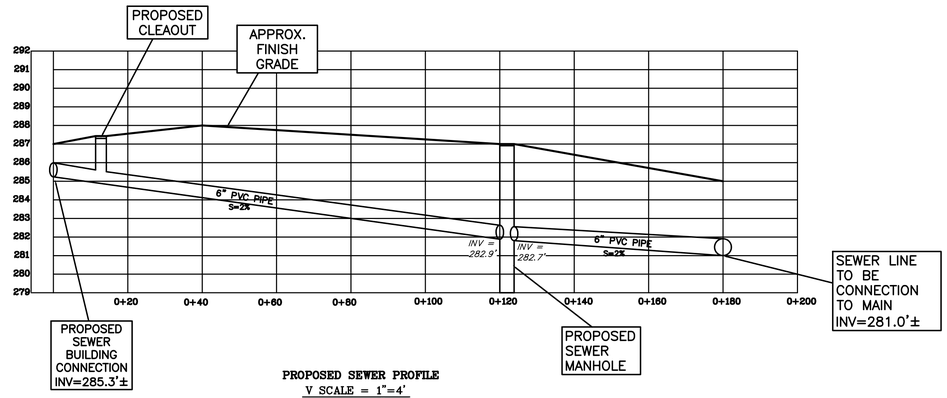
DATE:	11/08/2019
DRAWN BY:	G.P.
CHECKED BY:	E.S
APPROVED BY:	E.S

DETAILS

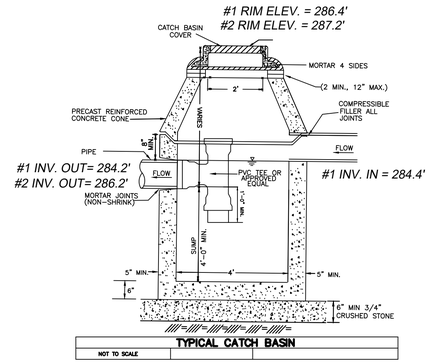


SEWER MANHOLE DETAIL

NOT TO SCALE	(SEWER-MANHOLE)	



PROPOSED SEWER PROFILE
V SCALE = 1"=4'
H SCALE = 1"=20'



TYPICAL CATCH BASIN

NOT TO SCALE		

AREA DRAIN DETAIL
NOT TO SCALE

HANDICAPPED PARKING SIGN-DETAIL
NOT TO SCALE

TYPICAL STOP SIGN-DETAIL
NOT TO SCALE

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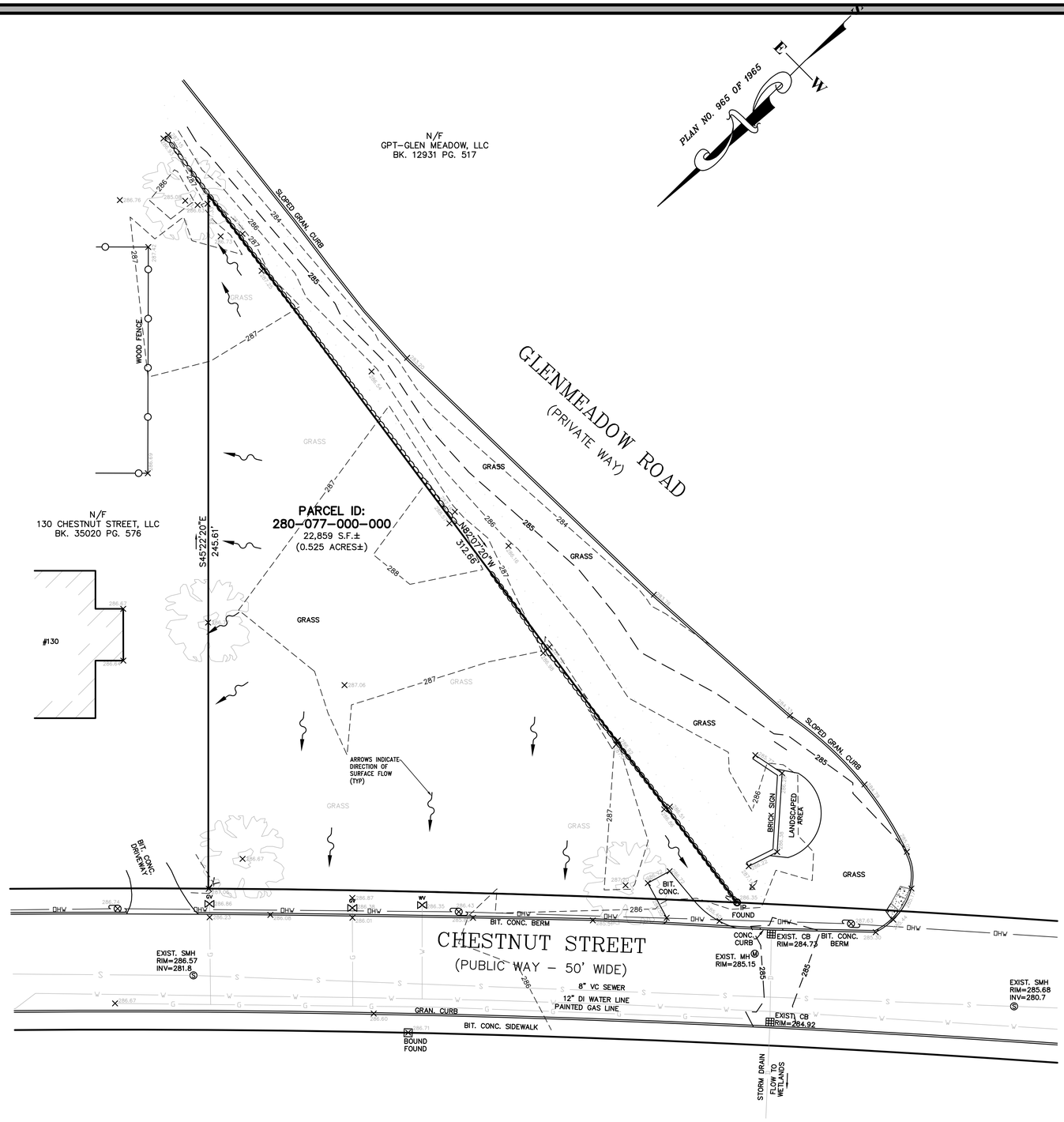
REVISED AS PER TOWN OF FRANKLIN COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	7/1/2020

DATE:	11/08/2019
DRAWN BY:	G.P.
CHECKED BY:	E.S
APPROVED BY:	E.S

DETAILS

SHEET 7 OF 12



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

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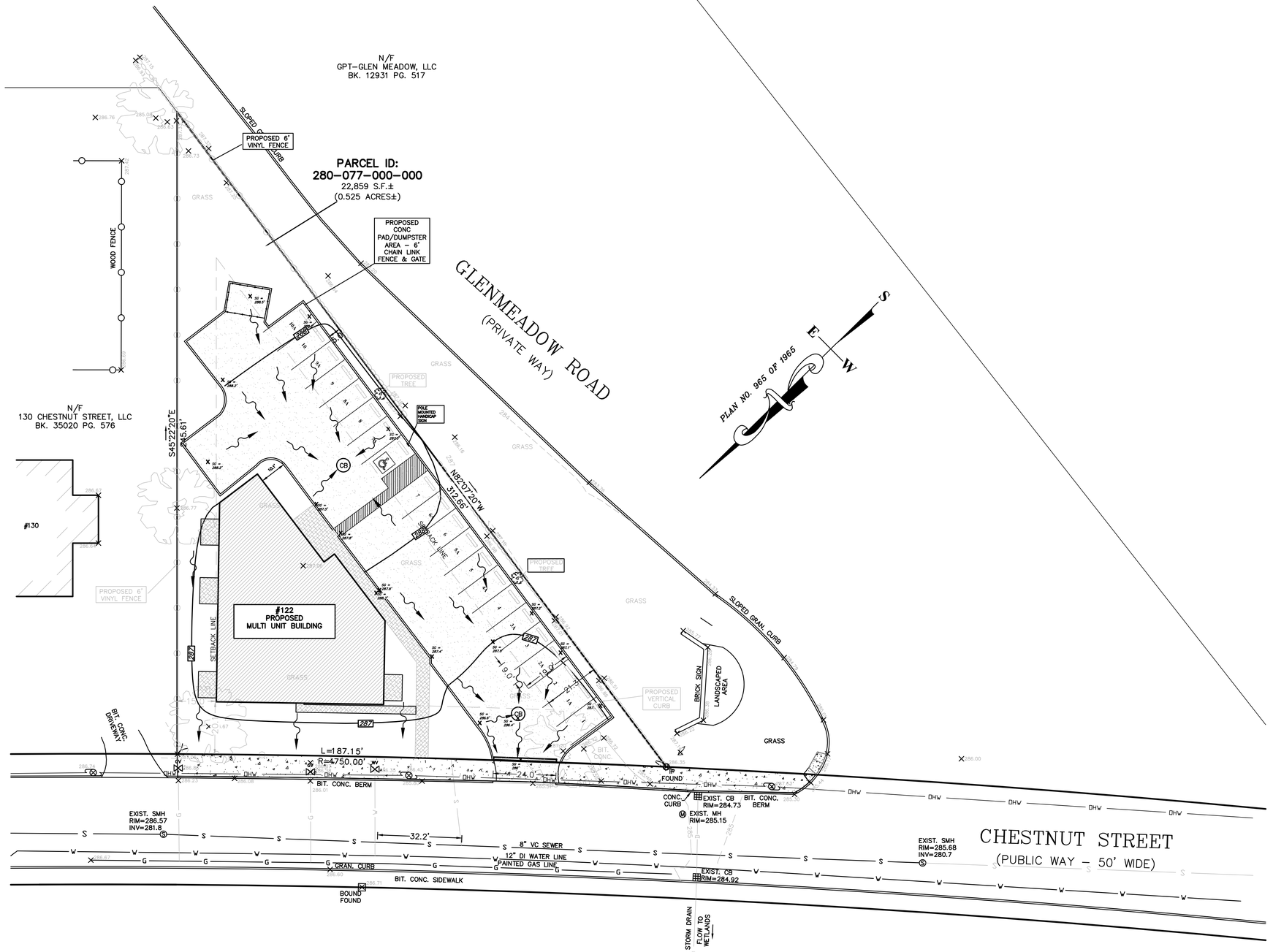
COMMONWEALTH OF MASSACHUSETTS
EDMOND SPRUHAN
No. 53311
REGISTERED PROFESSIONAL ENGINEER

DATE:	11/08/2019
DRAWN BY:	G.P.
CHECKED BY:	E.S
APPROVED BY:	E.S

EXISTING CONDITIONS WATERSHED



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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COMMONWEALTH OF MASSACHUSETTS
EDMOND E. SPRUHAN
CIVIL
53316
REGISTERED PROFESSIONAL ENGINEER

DATE:	11/08/2019
DRAWN BY:	G.P.
CHECKED BY:	E.S
APPROVED BY:	E.S

PROPOSED WATERSHED

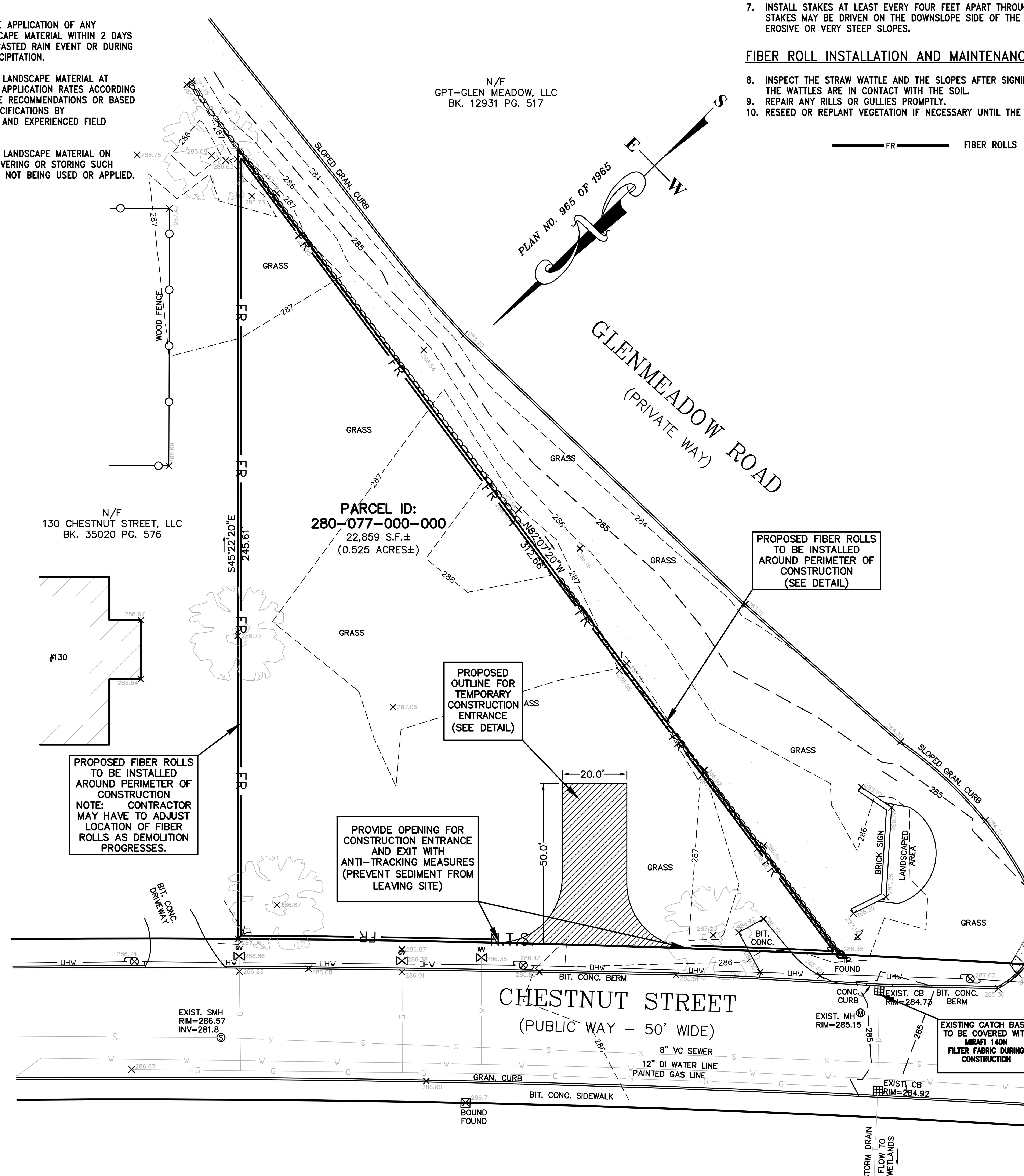
SHEET 9 OF 12

VEHICLE STORAGE AND MAINTENANCE

- MEASURES SHALL BE TAKEN TO PREVENT OIL, GREASE, OR FUEL TO LEAK IN TO THE GROUND, STORM DRAINS OR SURFACE WATERS.
- ALL EQUIPMENT OR VEHICLES, WHICH ARE TO BE FUELED, MAINTAINED AND STORED ONSITE SHALL BE IN A DESIGNATED AREA FITTED WITH APPROPRIATE BMPs.
- LEAKS SHALL BE IMMEDIATELY CLEANED AND LEAKED MATERIALS SHALL BE DISPOSED OF PROPERLY.

LANDSCAPE MATERIALS

- CONTAIN STOCKPILED MATERIALS SUCH AS MULCHES AND TOPSOIL WHEN THEY ARE NOT ACTIVELY BEING USED
- CONTAIN FERTILIZERS AND OTHER LANDSCAPE MATERIALS WHEN THEY ARE NOT ACTIVELY BEING USED.
- DISCONTINUE THE APPLICATION OF ANY ERODIBLE LANDSCAPE MATERIAL WITHIN 2 DAYS BEFORE A FORECASTED RAIN EVENT OR DURING PERIODS OF PRECIPITATION.
- APPLY ERODIBLE LANDSCAPE MATERIAL AT QUANTITIES AND APPLICATION RATES ACCORDING TO MANUFACTURE RECOMMENDATIONS OR BASED ON WRITTEN SPECIFICATIONS BY KNOWLEDGEABLE AND EXPERIENCED FIELD PERSONNEL.
- STACK ERODIBLE LANDSCAPE MATERIAL ON PALLETS AND COVERING OR STORING SUCH MATERIALS WHEN NOT BEING USED OR APPLIED.



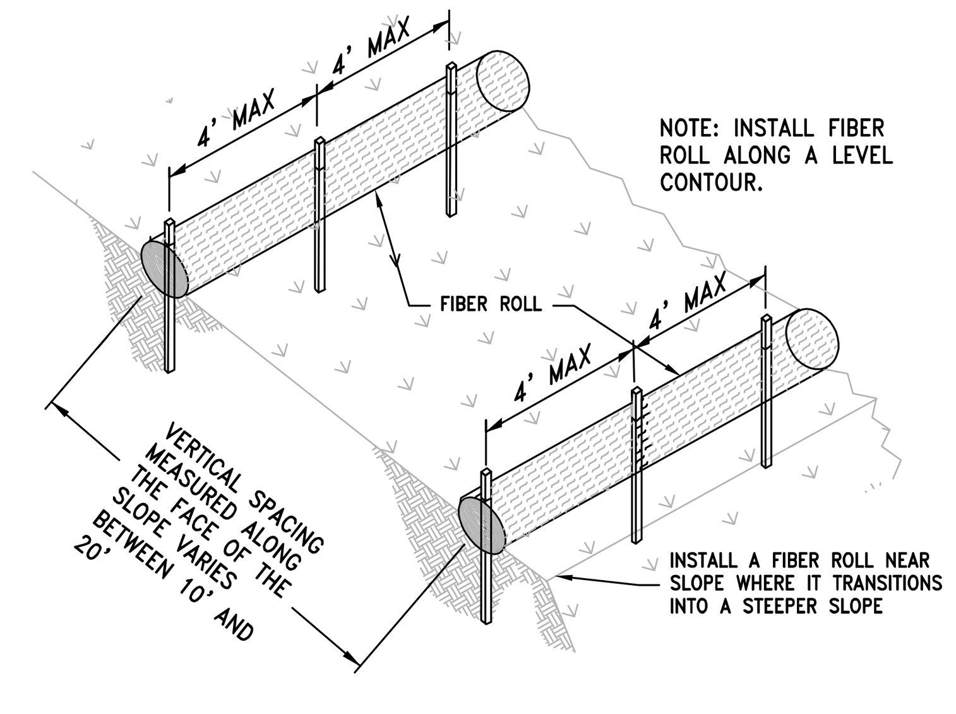
FIBER ROLL CONSTRUCTION SPECIFICATIONS

1. PREPARE SLOPE BEFORE THE WATTLING PROCEDURE IS STARTED. SHALLOW GULLIES SHOULD BE SMOOTHED AS WORK PROGRESSES.
2. DIG SMALL TRENCHES ACROSS SLOPE ON CONTOUR, TO PLACE WATTLES IN. THE TRENCH SHOULD BE DEEP ENOUGH TO ACCOMMODATE HALF THE THICKNESS OF THE WATTLE. WHEN THE SOIL IS LOOSE AND UNCOMPACTED, THE TRENCH SHOULD BE DEEP ENOUGH TO BURY THE WATTLE 2/3 OF ITS THICKNESS BECAUSE THE GROUND WILL SETTLE. IT IS CRITICAL THAT WATTLES ARE INSTALLED PERPENDICULAR TO WATER MOVEMENT, PARALLEL TO THE SLOPE CONTOUR.
3. START BUILDING TRENCHES AND INSTALL WATTLES FROM THE BOTTOM OF THE SLOPE AND WORK UP.
4. CONSTRUCT TRENCHES AT CONTOUR INTERVALS OF THREE TO EIGHT FEET APART DEPENDING ON STEEPNESS OF SLOPE. THE STEEPER THE SLOPE, THE CLOSER TOGETHER THE TRENCHES.
5. LAY THE WATTLE ALONG THE TRENCHES FITTING IT SNUGLY AGAINST THE SOIL. MAKE SURE NO GAPS EXIST BETWEEN THE SOIL AND THE STRAW WATTLE. USE A STRAIGHT BAR TO DRIVE HOLES THROUGH THE WATTLE AND INTO THE SOIL FOR THE WOODEN STAKES.
6. DRIVE THE STAKE THROUGH THE PREPARED HOLE INTO THE SOIL. LEAVE ONLY ONE OR TWO INCHES OF STAKE EXPOSED ABOVE WATTLE. IF USING WILLOW STAKES REFER TO USDA SOIL CONSERVATION SERVICE TECHNICAL GUIDE, BIOENGINEERING, FOR GUIDELINES TO PREPARING LIVE WILLOW MATERIAL.
7. INSTALL STAKES AT LEAST EVERY FOUR FEET APART THROUGH WATTLE. ADDITIONAL STAKES MAY BE DRIVEN ON THE DOWNSLOPE SIDE OF THE TRENCHES ON HIGHLY EROSIVE OR VERY STEEP SLOPES.

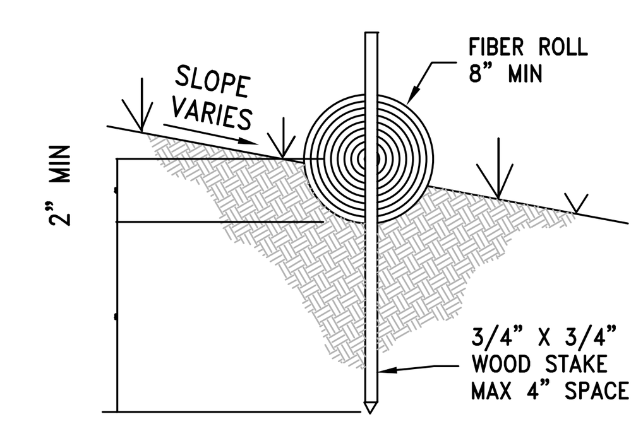
FIBER ROLL INSTALLATION AND MAINTENANCE

8. INSPECT THE STRAW WATTLE AND THE SLOPES AFTER SIGNIFICANT STORMS. MAKE SURE THE WATTLES ARE IN CONTACT WITH THE SOIL.
9. REPAIR ANY RILLS OR GULLIES PROMPTLY.
10. RESEED OR REPLANT VEGETATION IF NECESSARY UNTIL THE SLOPE IS STABILIZED.

—— FR —— FIBER ROLLS



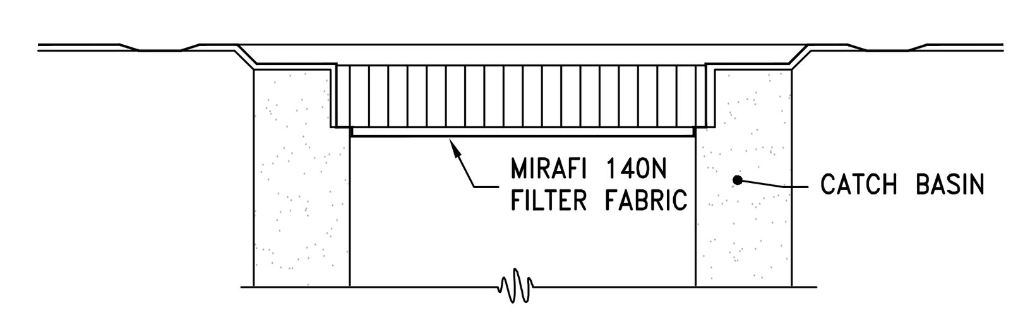
TYPICAL INSTALLATION



ENTRENCHMENT DETAIL

FIBER ROLLS

NTS



INSPECTION AND MAINTENANCE:

1. FILTER FABRIC BARRIERS SHALL BE INSPECTED WEEKLY AFTER EACH SIGNIFICANT STORM - 1 INCH RAINFALL (25.4 MM) IN 24 HOUR PERIOD. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
2. SEDIMENT SHOULD BE REMOVED WHEN IT REACHES 0.5" MAXIMUM HEIGHT. AT THAT TIME INSPECT THE FILTER MATERIAL FOR TEARS AND CLEAN OR REPLACE AS REQUIRED.
3. THE REMOVED SEDIMENT SHALL BE DISTRIBUTED EVENLY ACROSS AREAS ON-SITE, CONFORM WITH THE EXISTING GRADE AND BE REVEGETATED OR OTHERWISE STABILIZED PER EROSION CONTROL NOTES.

CATCH BASIN PROTECTION

NTS

EROSION CONTROL NOTES

1. THE EROSION CONTROL PLANS IN THIS SET SHALL BE REVIEWED AND IMPLEMENTED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR SHALL WORK WITH THE PROJECT'S ENGINEER THROUGHOUT CONSTRUCTION TO ENSURE THE SITE IS PROPERLY PROTECTED FROM POSSIBLE POLLUTANTS. THE ENGINEER HAS AUTHORIZATION TO ADD OR REMOVE BMP MEASURES THROUGHOUT CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING SITE EROSION CONTROL AT ALL TIMES.
3. IT SHALL BE THE RESPONSIBILITY OF THE OWNER AND THE PERMITTEE TO ENSURE THAT EROSION DOES NOT OCCUR FROM ANY ACTIVITY DURING OR AFTER PROJECT CONSTRUCTION. ADDITIONAL MEASURES, BEYOND THOSE SPECIFIED, MAY BE REQUIRED BY THE PLANNING DIRECTOR AS DEEMED NECESSARY TO CONTROL ACCELERATED EROSION.
4. AT THE END OF EACH WORKDAY, AT THE END OF EACH WORKWEEK, THE CONTRACTOR SHALL IMPLEMENT ALL TEMPORARY MEASURES NECESSARY TO PREVENT EROSION AND SILTATION, UNTIL THE PROJECT HAS BEEN FINALIZED. THESE MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, DIRECT SEEDING OF THE AFFECTED AREAS, STRAW MULCHING, AND/OR INSTALLATION OF STRAW BALES DAMS/SILT FENCES.
5. DURING CONSTRUCTION, NO TURBID WATER SHALL BE PERMITTED TO LEAVE THE SITE. USE OF SILT AND GREASE TRAPS, FILTER BERMS, HAY BALES OR SILT FENCES SHALL BE USED TO PREVENT SUCH DISCHARGE.
6. ALL AREAS ON- AND OFF-SITE EXPOSED DURING CONSTRUCTION ACTIVITIES, IF NOT PERMANENTLY LANDSCAPED PER PLAN, SHALL BE PROTECTED BY MULCHING AND/OR SEEDING.
7. ALL EXCAVATED MATERIAL SHALL BE REMOVED TO AN APPROVED DISPOSAL SITE OR DISPOSED OF ON-SITE IN A MANNER THAT WILL NOT CAUSE EROSION.
8. ANY MATERIAL STOCKPILED, FOR LONGER THAN 14 DAYS, DURING CONSTRUCTION SHALL BE COVERED WITH PLASTIC.
9. UPON COMPLETION OF CONSTRUCTION, ALL REMAINING EXPOSED SOILS SHALL BE PERMANENTLY REVEGETATED.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ADDITIONAL MEASURES NECESSARY TO CONTROL SITE EROSION AND PREVENT SEDIMENT TRANSPORT OFF-SITE ARE IMPLEMENTED.
11. ALL SPILLS AND/OR LEAKS SHALL BE IMMEDIATELY CLEANED UP AND MITIGATED.

CONSTRUCTION MATERIALS

- ALL LOOSE STOCKPILED CONSTRUCTION MATERIALS THAT ARE NOT ACTIVELY BEING USED (I.E. SOIL, SPOILS, AGGREGATE, FLY-ASH, STUCCO, HYDRATED LIME, ETC.) SHALL BE COVERED AND BERMED.
- ALL CHEMICALS SHALL BE STORED IN WATERTIGHT CONTAINERS (WITH APPROPRIATE SECONDARY CONTAINMENT TO PREVENT ANY SPILLAGE OR LEAKAGE) OR IN A STORAGE SHED (COMPLETELY ENCLOSED).
- EXPOSURE OF CONSTRUCTION MATERIALS TO PRECIPITATION SHALL BE MINIMIZED. THIS DOES NOT INCLUDE MATERIALS AND EQUIPMENT THAT ARE DESIGNED TO BE OUTDOORS AND EXPOSED TO ENVIRONMENTAL CONDITIONS (I.E. POLES, EQUIPMENT PADS, CABINETS, CONDUCTORS, INSULATORS, BRICKS, ETC.).
- BEST MANAGEMENT PRACTICES TO PREVENT THE OFF-SITE TRACKING OF LOOSE CONSTRUCTION AND LANDSCAPE MATERIALS SHALL BE IMPLEMENTED.

WASTE MANAGEMENT

- DISPOSAL OF ANY RINSE OR WASH WATERS OR MATERIALS ON IMPERVIOUS OR PERVIOUS SITE SURFACES OR INTO THE STORM DRAIN SYSTEM SHALL BE PREVENTED.
- SANITATION FACILITIES SHALL BE CONTAINED (E.G. PORTABLE TOILETS) TO PREVENT DISCHARGES OF POLLUTANTS TO THE STORM WATER DRAINAGE SYSTEM OR RECEIVING WATER, AND SHALL BE LOCATED A MINIMUM 20 FEET AWAY FROM AN INLET, STREET OR DRIVEWAY, STREAM, RIPARIAN AREA OR OTHER DRAINAGE FACILITY.
- SANITATION FACILITIES SHALL BE INSPECTED REGULARLY FOR LEAKS AND SPILLS AND CLEANED OR REPLACED AS NECESSARY.
- COVER WASTE DISPOSAL CONTAINERS AT THE END OF EVERY BUSINESS DAY AND DURING A RAIN EVENT.
- DISCHARGES FROM WASTE DISPOSAL CONTAINERS TO THE STORM WATER DRAINAGE SYSTEM OR RECEIVING WATER SHALL BE PREVENTED.
- STOCKPILED WASTE MATERIAL SHALL BE CONTAINED AND SECURELY PROTECTED FROM WIND AND RAIN AT ALL TIMES UNLESS ACTIVELY BEING USED.

  PROCEDURES THAT EFFECTIVELY ADDRESS HAZARDOUS AND NON-HAZARDOUS SPILLS SHALL BE IMPLEMENTED.EQUIPMENT AND MATERIALS FOR CLEANUP OF SPILLS SHALL BE AVAILABLE ON SITE AND THAT SPILLS AND LEAKS SHALL BE CLEANED UP IMMEDIATELY AND DISPOSED OF PROPERLY; AND
- CONCRETE WASHOUT AREAS AND OTHER WASHOUT AREAS THAT MAY CONTAIN ADDITIONAL POLLUTANTS SHALL BE CONTAINED SO THERE IS NO DISCHARGE INTO THE UNDERLYING SOIL AND ONTO THE SURROUNDING AREAS.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

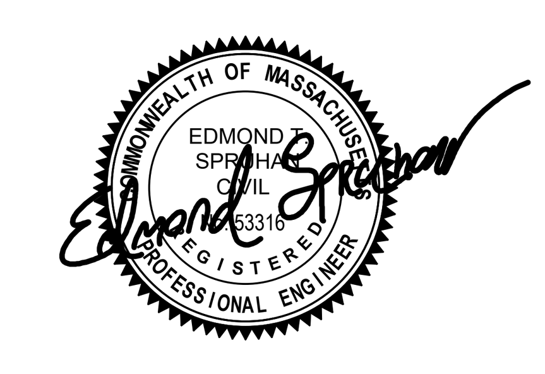
Spruhan Engineering, P.C.
80 JEWETT ST, (SUITE 1)
NEWTON, MA 02458
Tel: 617-816-0722
Email:espruhan@gmail.com

122 CHESTNUT STREET
FRANKLIN
MASSACHUSETTS

CIVIL PLANS

REVISION BLOCK

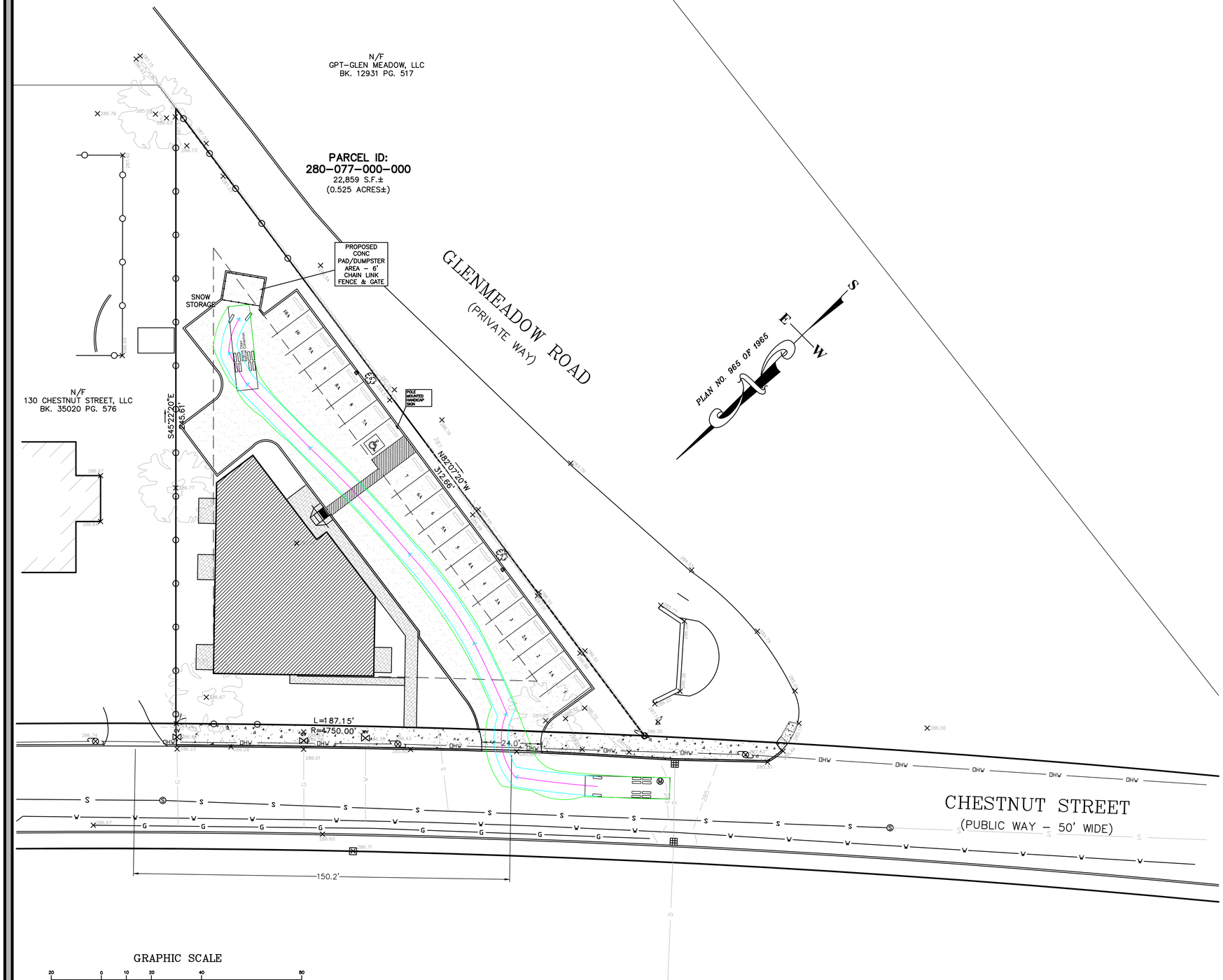
DESCRIPTION	DATE
REVISED AS PER TOWN OF FRANKLIN COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	28/02/2020
REVISED AS PER BETA COMMENTS	7/1/2020

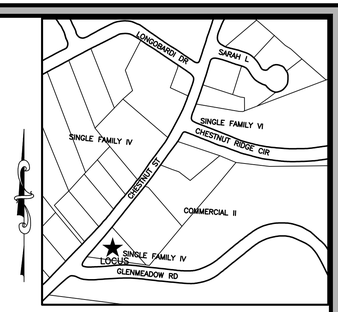


DATE:	11/08/2019
DRAWN BY:	G.P
CHECKED BY:	E.S
APPROVED BY:	E.S

DEMOLITION & EROSION CONTROL PLAN

SHEET 10 OF 12





GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Spruhan Engineering, P.C.
80 JEWETT ST, (SUITE 1)
NEWTON, MA 02458
Tel: 617-816-0722
Email:espruhan@gmail.com

122 CHESTNUT STREET
FRANKLIN
MASSACHUSETTS

CIVIL PLAN

REVISION BLOCK

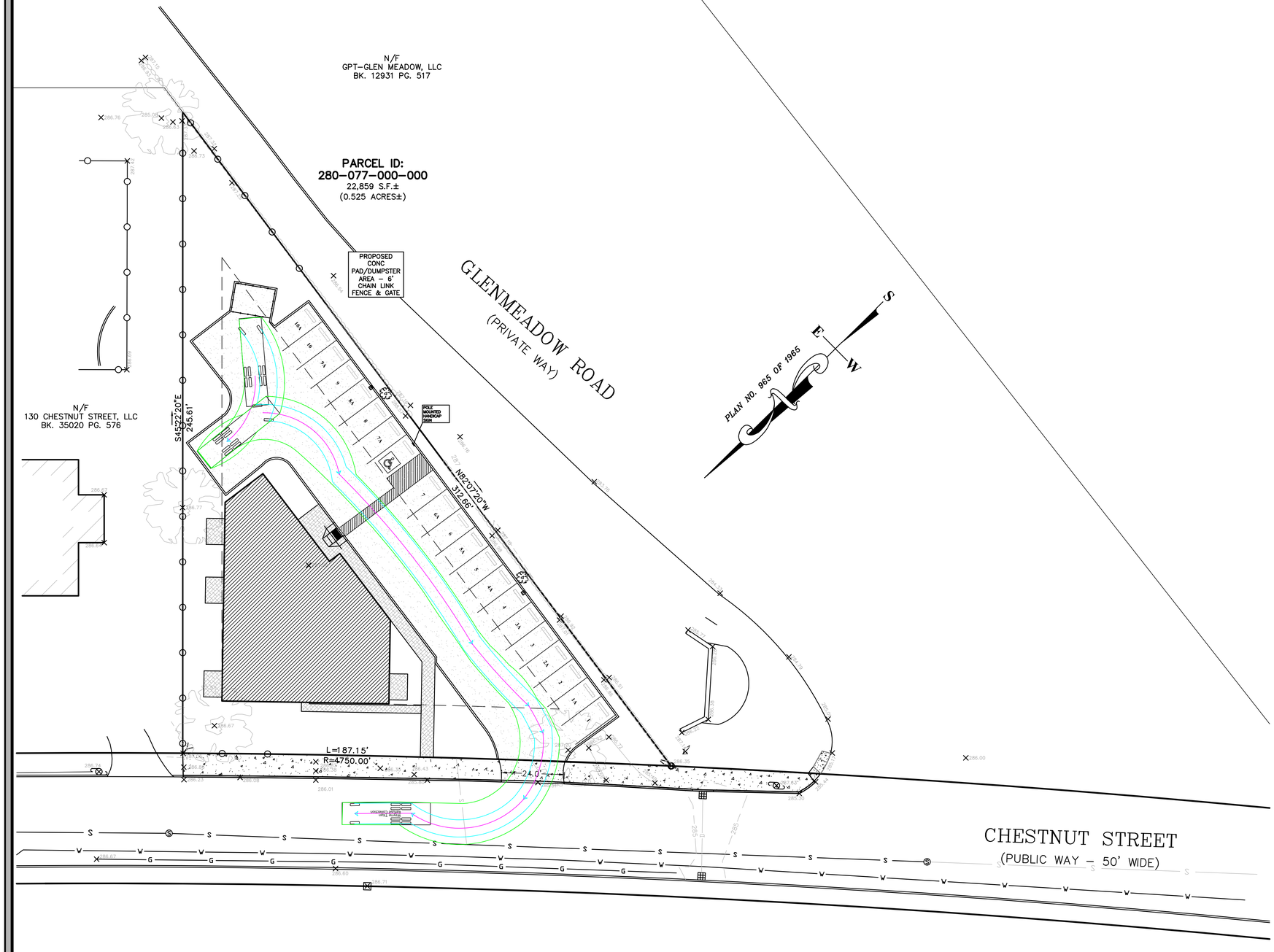
DESCRIPTION	DATE

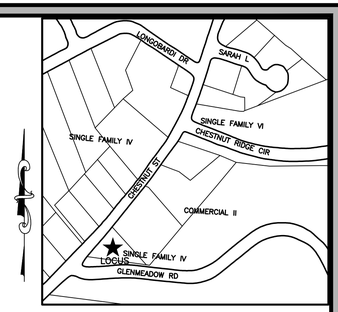
COMMONWEALTH OF MASSACHUSETTS
EDMOND SPRUHAN
CIVIL
55316
REGISTERED PROFESSIONAL ENGINEER

DATE:	7/1/2019
DRAWN BY:	G.P.
CHECKED BY:	E.S
APPROVED BY:	E.S

TURNING ANALYSIS IN

SHEET 11 OF 12





Spruhan Engineering, P.C.
80 JEWETT ST, (SUITE 1)
NEWTON, MA 02458
Tel: 617-816-0722
Email:espruhan@gmail.com

122 CHESTNUT STREET
FRANKLIN
MASSACHUSETTS

CIVIL PLAN

REVISION BLOCK

DESCRIPTION	DATE

COMMONWEALTH OF MASSACHUSETTS
EDMOND SPRUHAN
CIVIL
No. 43316
REGISTERED PROFESSIONAL ENGINEER

DATE:	7/1/2019
DRAWN BY:	G.P.
CHECKED BY:	E.S
APPROVED BY:	E.S

TURNING ANALYSIS OUT

SHEET 12 OF 12

Planting Plan (Trees)

TREE SCHEDULE			
ID	QTY	LATIN NAME	COMMON NAME
AR	2	ACER RUBRUM	RED MAPLE
JVES	15	JUNIPERUS VIRGINIANA 'EMERALD SENTINE	EMERALD SENTINEL JUNIPER
PG	1	PICEA GLAUCA	WHITE SPRUCE
PP	2	PICEA PUNGENS	COLORADO SPRUCE

RED MAPLE

ACER RUBRUM

EMERALD SENTINAL JUNIPER

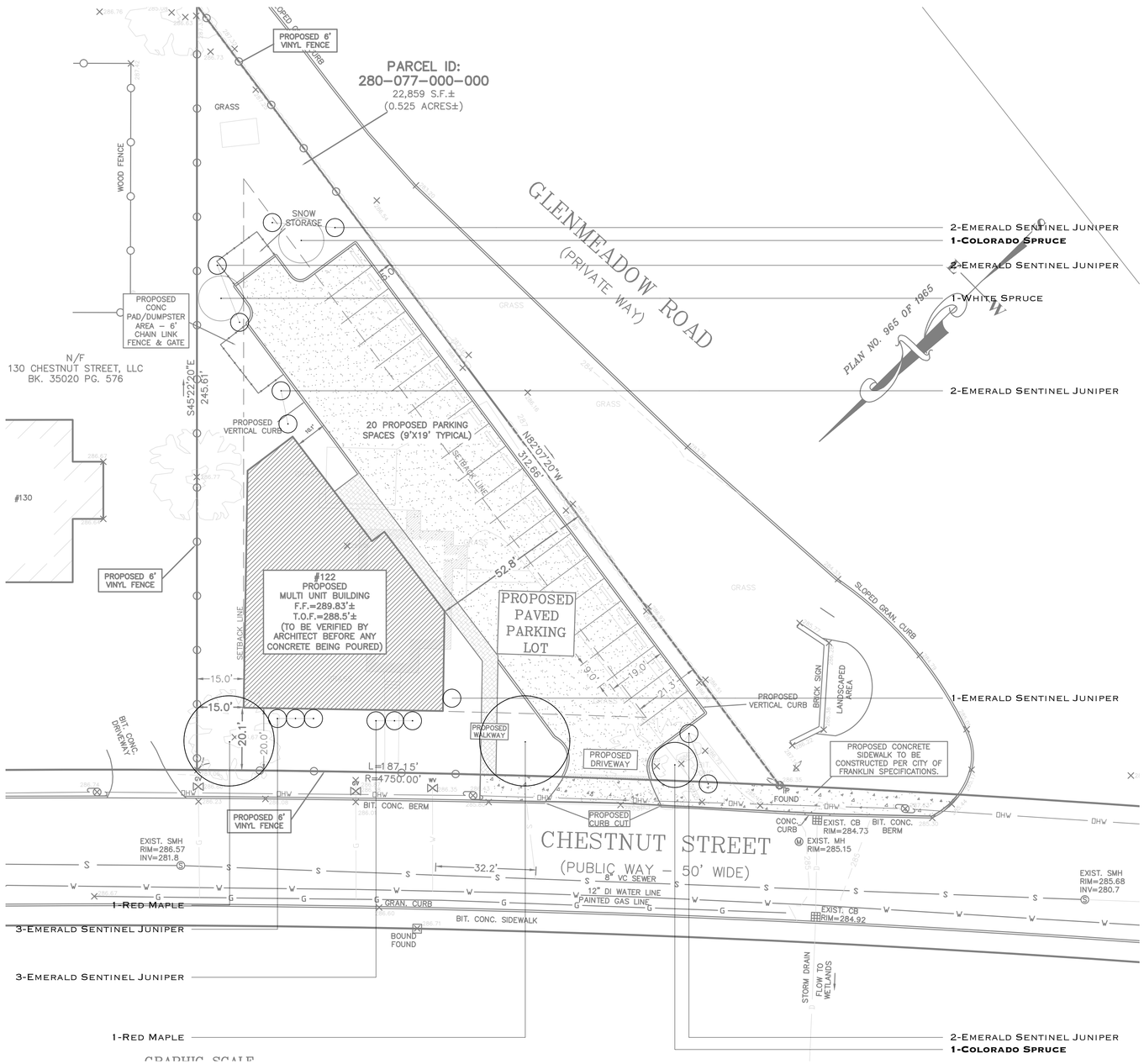
JUNIPERUS VIRGINIANA 'EMERALD SENTINEL'

WHITE SPRUCE

PICEA GLAUCA

SPRUCE (COLORADO)

PICEA PUNGENS



GRAPHIC SCALE

SHEET TITLE:
PLANTING PLAN

SCALE:
1"=20'0"

DATE: 09.22.19

PREPARED FOR:
MIKE & STEPHANIE ROSE
33 WINDING RIVER ROAD
NEEDHAM, MA 02492

PROJECT:
RESIDENCE
33 WINDING RIVER ROAD
NEEDHAM, MA 02492

ERIK J SKALA,
LANDSCAPE DESIGNER
BROAD MEADOW FARMS
56 BROAD MEADOW ROAD
NEEDHAM, MA 02492

L-4.1

Planting Plan (Shrubs)

SHRUB & PERENNIAL SCHEDULE				
ID	QTY	LATIN NAME	COMMON NAME	SIZE
AzGW	25	Azalea 'Gumpo White'	Azalea 'Gumpo White'	#3
CaB	5	Cornus alba 'Bailhalo'	Ivory Halo Dogwood	#3
HoSQ	8	Hydrangea quercifolia 'Snow Queen'	Snow Queen Oakleaf Hydrangea	#5
KLOF	8	Kalmia latifolia 'Olympic Fire'	Olympic Fire Mountain Laurel	#3
PvSh	27	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	#2
VdC	6	Viburnum dentatum 'Christom'	Viburnum 'Blue Muffin'	#5

AZALEA 'GUMPO WHITE'
Azalea
'Gumpo White'

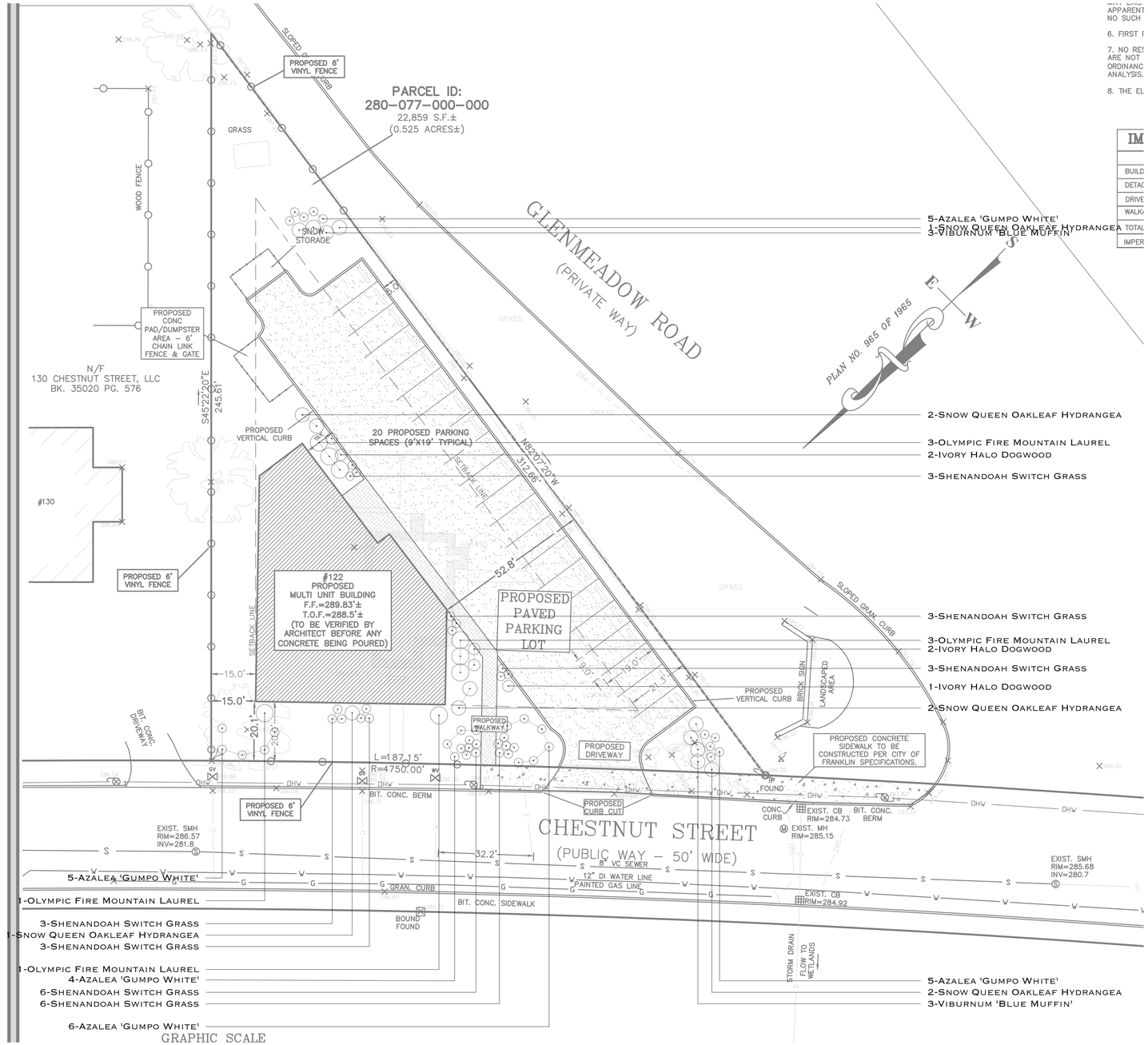
IVORY HALO DOGWOOD
Cornus alba
'Bailhalo'

SNOW QUEEN OAKLEAF HYDRANGEA
Hydrangea quercifolia
'Snow Queen'

MOUNTAIN LAUREL - OLYMPIC FIRE
Kalmia latifolia
'Olympic Fire'

PRAIRIE SWITCHGRASS
Panicum virgatum 'Shenandoah'

ARROWOOD VIBURNUM BLUE MUFFIN
Viburnum dentatum
'Christom'



Sheet Title:
Planting Plan

Scale:
1" = 20'0"

Date: 12.15.19

Prepared for:
Michael O'Brien
122 Chestnut Street
Frankin, MA

Project:
Michael O'Brien
122 Chestnut Street
Frankin, MA

Erik J Skala,
Landscape Designer
Broad Meadow Farms
56 Broad Meadow Road
Needham, MA 02492

L-4.2

SPRUHAN ENGINEERING, P.C.

80 JEWET STREET,
Newton, MA
Phone: 617-816-07-22/617-782-1533

July 1, 2020

From: Edmond Spruhan, P.E.

To: Mr. Anthony Padula, Chairman
Franklin Planning Board
355 East Central Street
Franklin, MA 02038

Thank you for the enclosed comments on this project.

122 Chestnut Street, Franklin, MA.
Prepared by: Edmund Spruhan, P.E.
Dated: October 29, 2019, Revised:

GENERAL COMMENTS

G1. Provide plans that are plotted to the indicated scale(s). SE: Spruhan Engineering revised scale on plans. *BETA2: Scale revised – issue resolved.*

G2. Provide details for pavement, sidewalks, walkways, driveway, wheelchair ramps, dumpster pad and screened enclosure, signs, sewer structure, plantings, and other site features. SE: Spruhan Engineering added details. *BETA2: Majority of details not provided – issue remains outstanding.*

SE: Missing details has been added to the plan, please see Sheet#4 to Sheet#7 and attached Landscape plan.

G3. Depict the existing wheelchair ramp at the intersection of Glen Meadow Road. *SE:* Spruhan Engineering updated the plans to show the existing wheelchair ramp. *BETA2: Information provided – issue resolved.*

G4. Review topography of existing conditions survey. Based upon a site visit there appears to be a low point in proximity to the southerly property line. SE: Spruhan Engineering believes that the low point is beyond property line but will review and update the plans if necessary. *BETA2: BETA awaits confirmation by the designer – issue remains outstanding.*
SE: **Confirmed, the topography shown on the plan has been verified**

G5. Revise the existing conditions plan to remove the building, detached garage, walks, stairs, and parking areas, which are not present. SE: Spruhan Engineering updated the Existing conditions plan to exclude the original building and driveway which was on the property. *BETA2: Plan revised – issue resolved.*

G6. Relocate the proposed dumpster pad that is currently depicted approximately 6 feet from the adjacent rehabilitation center's property line. *SE: Spruhan Engineering relocated the proposed dumpster and update the plans. BETA2: The dumpster pad has been relocated; however, it is unclear how a waste collection vehicle will be able to access the area if resident's vehicles are parked in the adjacent spaces.*

Also, based upon discussion at the previous Planning Board hearing, the designer must demonstrate that the waste collection vehicle can exit the site without backing onto a public way §185-21.D.
SE: New paved area has been added, turning analysis plan is attached to the set of plans.

ZONING

Z1. Revise Zoning Legend to include proposed dimensions and note/reference variances granted by the Board of Appeals. SE: Spruhan Engineering updated Zoning Legend. *BETA2: Legend revised to include proposed dimensions. BETA defers to the preference of the Board to require references to the granted variances.*

SE: Legend has been updated to show granted variances, Please see Sheet#2.

Z2. Clarify existing dimensions shown on the Zoning Legend as there are no existing structures on the parcel. SE: Spruhan Engineering updated the Existing conditions plan to exclude the original building and driveway which was on the property. *BETA2: Legend revised – issue resolved.*

Z3. Revise Zoning Legend to include proposed building height and impervious coverage. SE: Spruhan Engineering updated Zoning Legend. *BETA2: Information provided – issue resolved.*

PARKING,LOADING AND DRIVEWAY REQUIREMENTS (§185-21)

P1. Provide accessible parking spaces meeting ADA requirements. The common use parking areas require one accessible space (521 CMR 10.1 and 23.2.1) that must also be van accessible. Also, clarify if any of the rental units will be accessible. Per 521 CMR 10.3, parking spaces for dwelling unit occupants must be capable of complying with 521 CMR 23.2 through 521 CMR 23.8. Provide required accessible spaces, signing and striping, and demonstrate that additional accessible spaces can be provided for occupants, if necessary. SE: Spruhan Engineering provided accessible parking spaces to meet the requirements. Please see sheet#2. BETA2: An accessible space and aisle are depicted on the plans. Provide required signing and striping.

SE: Handicap striping and pole mounted handicap accessible sign has been added to the plan, Please see Sheet#2

P2. Provide an accessible route from parking space(s) to building in accordance with 521 CMR 10.2, including ramps and crosswalk. SE: Spruhan Engineering provided accessible route from parking spaces to meet the requirements. Please see sheet#2. *BETA2: Accessible route provided. Recommend swapping the location of the accessible space and access aisle to provide a direct route to the ramp.*

SE: Location of the accessible route has been updated. Please see Sheet #2.

P3. Provide spot grades along proposed walkway to clarify height of walkway compared to driveway, as necessary. SE: Spruhan Engineering updated proposed plot plan showing spot grades on the proposed walkway. Please see Sheet#3*. BETA2: Spot grades have been provided; however, they indicate the proposed walkway is between 0.9' and 1.2' above the adjacent parking area. It is recommended to reduce the differential to a typical 6"±.*

SE: Spot grades has been updated. Please see Sheet#3

P4. Provide trees for parking area in accordance with §185-21.C.(5). SE: Spruhan Engineering updated proposed plot plan showing location of trees for parking to meet the requirements. *Please see sheet#2. BETA2: Trees provided – issue resolved.*

P5. The proposed curb cut centerline is located approximately 147 feet from the existing curb cut centerline at 130 Chestnut Street and may require a Special Permit in accordance with §185-21.C.(7)(b). BETA notes the existing curb cut at 130 Chestnut appears to function as secondary connection to the parking area for greater than 20 vehicles and that the primary access is well beyond 150 feet. SE: Client

will discuss for special permit. *BETA2: The driveway centerlines are depicted less than 150 feet apart on the plans. Recommend for the Board to discuss if a Special Permit is required.*

SE: Driveway entrance has been relocated and dimension added to the plan. Please see Sheet #2.

P6. Provide sight distance (required and provided) on plans §185-21.C.(7)(c). SE: Client to discuss with planning board. *BETA2: Issue remains outstanding.*

SE: Sight distance chart has been added to plan, Please see Sheet#2.

SIDEWALKS (§185-28)

SI1. Provide sidewalks along the entire street frontage in accordance with §185-28 or request waiver from the Board. *BETA2: Sidewalks provided – issue resolved.*

SI2. Provide wheelchair ramp transitions that are consistent with adjacent properties at the proposed curb cut. *BETA2: Revise details for consistency between views and plans (e.g. curb transitions and driveway width).*
SE: Details has been revised.

CURBING (§185-29)

Vertical precast curb is proposed adjacent to parking areas.
C1. Revise curb detail to indicate that precast curb shall be reinforced. SE: Spruhan Engineering changed to vertical granite curb. *BETA2: Granite curb proposed – issue resolved.*

C2. Provide vertical granite curb along the proposed frontage sidewalk to match existing curb on Chestnut Street. SE: Spruhan Engineering updated proposed plot plan showing vertical granite curb everywhere. *BETA2: Granite curb proposed – issue resolved.*

SITE PLAN REVIEW (§185-31)

S1. Revise locus map to include boundaries of the Site and abutting land uses (§185-31.C.(3)(d)). SE: Spruhan Engineering revised and updated plans to include the requested information. *BETA2: Boundaries of site and zoning districts not depicted. Also, Single-Family IV and Residential VI districts not* shown.

SE: Locus map has been revised to show requested information.

S2. Clarify existing land use (§185-31.C.(3)(e)). SE: Spruhan Engineering revised and updated plans to include the requested information. *BETA2: Land use clarified – issue resolved.*

S3. Indicate presence of Water Resource District (§185-31.C(3)(h)). SE: Spruhan Engineering will revise and updated plans to include the requested information. *BETA2: Information provided – issue resolved.*

S4. Provide location of proposed outdoor lighting (§185-31.C.(3)(i)) and associated photometric plan (§185-31.C.(3)(l)). SE: Spruhan Engineering added the location of proposed outdoor lighting and attaching the mentioned plan. *BETA2: Lighting plan provided, which indicates general conformance with the recommendations of the Illuminating Engineering Society. Minor spillage onto the adjacent property is anticipated to be mitigated by a proposed 6' fence – issue resolved.*

S5. Provide a landscape plan showing location of existing vegetation along Glen Meadow Road and proposed plantings (§185-31.C.(3)(k)). SE: Spruhan Engineering landscaped plan to be submitted by architect. BETA2: BETA will review the landscape plan upon receipt – issue remains outstanding.

SE: Landscape plan has been attached to the set of plans.

S6. Provide parking schedule (§185-31.C.(3)(o)). SE: Spruhan Engineering: Client will provide parking schedule. *BETA2: Issue remains outstanding.*
SE: Parking Schedule has been added to the plan. Please see Sheet#2.

SCREENING (§185-35)

C3. Provide screening in areas greater than 10 feet from the street line along the property frontage adjacent to parking areas. Supplemental plantings should be also be considered along the southerly parking boundary to enhance existing vegetative screening. SE: Spruhan Engineering: landscaped plan to be submitted by architect. *BETA2: BETA will review the landscape plan upon receipt – issue remains outstanding.*

SE: Landscape plan has been attached to the set of plans.

C4. In consideration that the adjacent use at 130 Chestnut Street includes (temporary) residences, recommend providing screening along the northeasterly property line adjacent to the parking area. SE: Spruhan Engineering: landscaped plan to be submitted by architect*. BETA2: BETA will review the landscape plan upon receipt – issue remains outstanding.*
SE: Landscape plan has been attached to the set of plans.

WATER RESOURCES DISTRICT (§185-40)

WR1. Section §185-40.D.(l)(ii)) requires that the proposed groundwater recharge efforts must be approved by a hydrogeologist; however, provided that the stormwater management system is revised to fully comply with the Massachusetts Stormwater Management Standards there should be no adverse impact to groundwater as a result of the project. BETA defers to the preference of the Board to require approval by a hydrogeologist. SE: Spruhan Engineering: Has been addressed by applicant. *BETA2: As discussed at the previous hearing, review by a hydrogeologist is not required – issue dismissed.*

WR2. Note that any fill placed in quantity greater than 15 yards must be certified in accordance with §185-40.E.(5). SE: Spruhan Engineering agrees, however no fill on this site. *BETA2: Information provided – issue resolved.*

WR3. Remove outlets from subsurface infiltration system as identified in drainage calculations. All stormwater runoff from impervious areas must be recharged on-site (§185-40.E.(4)). SE: Spruhan Engineering changed the configuration of the drainage system to meet the requirements and ensure storage capacity of system is adequate for all storm events. *BETA2: Outlets removed – issue resolved.*

UTILITIES

The proposed development is shown to be serviced by water, fire service, sewer, and gas utilities. Detailed review of utilities is anticipated to be provided by the DPW.

U1. Depict anticipated locations of additional utilities (electric, etc.) that will service the development. SE: Spruhan Engineering revised and updated plans to show the requested information. *BETA2: Issue remains outstanding.*

SE: Proposed Electric line and transformer location added to the plan

U2. Provide anticipated locations of proposed gate valves, curb stops, and other appurtenances. SE: Spruhan Engineering revised and updated plans to show the requested information. *BETA2: Issue remains outstanding.*
SE: All gate valves and curb stops has been added to the plan, please see sheets #2 and #3

U3. Indicate proposed material for water service connections. SE: Spruhan Engineering revised and updated plans to show the requested information*. BETA2: Size and materials provided. Revise 4" fire service to be Class 52 ductile iron pipe.*

SE: Fire service pipe material has been updated. Please see sheet#3.

U4. Confirm proposed 1" domestic service is adequate to serve the development and note that any service greater than 1" requires a saddle at the tap. SE: Spruhan Engineering revised and changed size of pipe. *BETA2: Domestic service size revised – issue resolved.*

U5. Remove references to City of Newton on details and revise details, as necessary, to be in conformance with Town of Franklin Department of Public Works Standards for Sewer and Water Materials and Installation. SE: Spruhan Engineering updated details to comply with Town of Franklin Department of Public Works Standards. *BETA2: Reference to Newton revised. Recommend for the Board to include a condition that all water, sewer, and drainage installation shall be in conformance with Town Standards.*

SE: Agrees.

U6. Provide a note that where any utility installation detail conflicts with the Town of Franklin Department of Public Works Standards for Sewer and Water Materials and Installation (Town Standards) that the Town Standards shall govern. SE: Spruhan Engineering Added the note to the detail sheet. *BETA2: Note provided – issue resolved.*

STORMWATER MANAGEMENT

GENERAL

SW1. Provide cleanouts for roof leaders along the perimeter of the proposed building. SE: Spruhan Engineering Added the note to the detail sheet. *BETA2: Cleanouts provided – issue resolved.*

SW2. Revise RCP in areas subject to traffic loads to be a minimum of 12" in accordance with Town construction standards. Where cover is less than 42", Class V RCP is required. SE: Spruhan Engineering revised and changed pipe materials. *BETA2: Drainage pipe has been revised to PVC in areas subject to traffic loads, which is not permitted. Revise pipe to RCP with a minimum dimension of 12" – issue remains outstanding.*

SE: Drain pipe size and material has been changed to 12" RCP, please see Sheet#3.

SW3. Revise proposed roof leaders to a material that is available in the specified size. SE: Spruhan Engineering revised and changed pipe materials. *BETA2: Material revised – issue resolved.*

SW4. Confirm the proposed roof leaders are adequately sized for the calculated flows*. SE: Spruhan Engineering revised and changed pipe size (Confirmed by Manning Equation). BETA2: Information provided – issue resolved.*

SW5. Provide a stamped MassDEP stormwater checklist. SE: Spruhan Engineering will provide. *BETA2: Issue remains outstanding.*

SE: Stormwater check list has been attached.

SW6. Indicate proposed top of stone elevation (above chambers) on detail. SE: Spruhan Engineering updated storm-tech detail showing top of stone elevation. *BETA2: Information provided – issue resolved.*

SW7. Provide spot grades at select locations (e.g. pavement corners) to demonstrate positive drainage. SE: Spruhan Engineering updated the proposed plot plan and civil plan showing spot grades. *BETA2: Spot grades provided – issue resolved.*

SW8. The proposed trench drain may be subject to concentrated flows at the northern end and will be more susceptible to clogging than a catch basin. Recommend to minimize the impervious area directed to the trench drain and to consider supplementing or replacing it with an additional catch basin(s). SE: Spruhan Engineering have spoken with developer and added an extra catch basin before the trench drain which will have a much larger catchment area then trench drain*. BETA2: Additional catch basin provided and area directed to the trench drain minimized (~1,300 sq. ft.). As the trench drain will be subject to sediment loads, it should be directed to a structure with a sump. The new catch basin (#2) should be an end of line structure with the trench drain and walkway basin connections relocated to a manhole. Consider providing a cross slope to the walkway to eliminate the need for a structure within the walking path.*
SE: Trench drain and area drain are now directed to a Drain Manhole and walkway area drain has been relocated. Please see sheet#3.

MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS:

SW9. Revise cover type "grass, fair" to "grass, good" in the existing conditions model. Based upon a field visit by BETA existing grass coverage is greater than 75%. SE: Spruhan Engineering updated Hydrocad Calculations. *BETA2: Calculation revised – issue resolved.*

SW10. Provide watershed plans showing the pre- and post-development watershed areas and design points. Based upon review of the existing conditions more than one analysis point should be provided. Flow from the site is currently directed to Chestnut Street, the adjacent property at 130 Chestnut Street, and a possible low point/ponding area along the southerly property line. SE: Spruhan Engineering is providing watershed plans. *BETA2: Watershed plans provided. In consideration that the design intent is to infiltrate 100% of the impervious area, there is no need to evaluate additional watersheds – issue resolved.*

SW11. Remove impervious area associated with the one-story building and driveway in the existing conditions. These features are not present. SE: Spruhan Engineering updated the drainage analysis and storm water report. To exclude the original building and driveway which was on the property. *BETA2: Calculation revised – issue resolved.*

SW12. Clarify how infiltration system outlets will function. The HydroCAD calculations show two 6" vertical orifices at an elevation below the pavement structure. Refer to comment WR3. SE: Spruhan Engineering changed the configuration of the drainage system to meet the requirements of comment WR3 which shows system is large enough to take all storm events without overflow thus eliminating the need for orifices and updated HydroCAD calculations and stormwater report. *BETA2: Overflows eliminated – issue resolved.*

SW13. Revise invert elevations for chamber units and stone to be consistent between HydroCAD calculations and plans. SE: Spruhan Engineering revised and updated HydroCAD calculations and stormwater report. *BETA2: Calculations and plans revised – issue resolved.*

SW14. Indicate the location of the test pit location on the plans. If not within or in direct proximity to the proposed infiltration area, provide an additional test pit to confirm subsurface conditions. SE: Spruhan Engineering added the location of the test pit on the Civil Plan. *BETA2: Test pit location provided – issue resolved.*

SW15. Provide groundwater recharge calculations and demonstrate that the system will drain within 72 hours. SE: Spruhan Engineering added recharge calculations to stormwater report. *BETA2: Calculation provided – issue resolved.*

SW16. Provide TSS removal calculations for the treatment train conveying flow from parking areas. SE: Spruhan Engineering added TSS removal calculations to stormwater report. *BETA2: Calculation provided – issue resolved.*

SW17. Revise design to include adequate pretreatment prior to infiltration. The proposed trench drain and online catch basin do not receive removal credit. Refer to comment SW20. SE: Spruhan Engineering added TSS removal calculations to stormwater report. BETA2: Additional treatment provided – issue resolved.

SW18. Provide water quality volume calculations. SE: Spruhan Engineering will provide. *BETA2: All impervious area directed to the stormwater system – issue dismissed.*

SW19. Provide a Long-Term Pollution Prevention Plan (LTPPP) meeting the requirements of the Massachusetts Stormwater Handbook. The LTPPP can be incorporated into the site Operation and Maintenance Plan. SE: Spruhan Engineering added TSS removal calculations to stormwater report. *BETA2: Information provided – issue resolved.*

SW20. Provide at least 44% pretreatment prior to discharge to the infiltration system. BETA notes that the Board typically prefers the use of a proprietary water quality unit (e.g. Stormceptor, CDS, etc.) for pretreatment in the Water Resource District. SE: Spruhan Engineering added TSS removal calculations to stormwater report. *BETA2: Adequate pretreatment provided – issue resolved.*

SW21. Provide general notes, good housekeeping practices, and maintenance requirements for proposed erosion and sedimentation controls. SE: Spruhan Engineering added erosion control plan. *BETA2: Notes provided – issue resolved.*

SW22. The Best Development Practices Guidebook does not permit the use of haybales or silt fence. Revise perimeter controls to use straw wattles or compost filter tubes. SE: Spruhan Engineering added erosion control plan showing straw wattles*. BETA2: Remove silt fence from Details (Sheet 4 of 9).*

SE: Detail has been removed, please see Sheet#4.

SW23. If permitted by the DPW, provide drain inlet sediment control protection at catch basins along Chestnut Street that are subject to stormwater flow from the property. SE: Spruhan Engineering added sediment control on catch basins on erosion control plan. *BETA2: Protection provided – issue resolved.*

SW24. Provide construction period stabilized construction entrance with minimum recommended dimensions of 50’ L x 20’ W. SE: Spruhan Engineering added proposed stabilized construction entrance on erosion control plan. *BETA2: Construction entrance provided – issue resolved.*

SW25. Provide O&M Plan meeting the requirements of the Massachusetts Stormwater Handbook. SE: Spruhan Engineering is attaching O&M Plan. *BETA2: O&M Plan provided – issue resolved.*

SW26. Provide an Illicit Discharge Compliance Statement. SE: Spruhan Engineering added Illicit Discharge Compliance Statement to the stormwater report. *BETA2: Statement provided – issue resolved.*

I hope that this information is helpful to you. Please do not hesitate to call with any questions.

Respectfully submitted,

Edmond Spruhan

Edmond T. Spruhan

July 08, 2020

Mr. Anthony Padula, Chairman
Franklin Planning Board
355 East Central Street
Franklin, MA 02038

Re: 122 Chestnut Street
Site Plan Peer Review Update

Dear Mr. Padula:

BETA Group, Inc. has reviewed revised documents for the proposed Site Plan Approval application, "122 Chestnut Street," located at 122 Chestnut Street in Franklin, Massachusetts. This letter is provided to update findings, comments, and recommendations.

BASIS OF REVIEW

BETA received the following items:

- Application for Approval of a Site Plan including the following:
  - Form P Site Plan Application Form
  - Certificate of Ownership
- Plans (5 Sheets) entitled: *122 Chestnut Street,* revised July 1, 2020, prepared by Spruhan Engineering, P.C. of Newton, MA
- Stormwater Report, dated June 29, 2020, prepared by Spruhan Engineering, P.C. of Newton, MA
- *Zoning Board of Appeals Decision* dated March 30, 2017.
- *Zoning Board of Appeals Decision* dated July 18, 2019.

Review by BETA included the above items along with the following, as applicable:

- Site Visit
- ***Zoning Chapter 185 From the Code of the Town of Franklin,*** dated January 30, 2019.
- ***Zoning Map of the Town of Franklin, Massachusetts,*** attested to August 23, 2018
- ***Stormwater Management Chapter 153 From the Code of the Town of Franklin,*** Adopted May 2, 2007
- ***Subdivision Regulations Chapter 300 From the Code of the Town of Franklin,*** dated January 1, 2016.
- ***Wetlands Protection Chapter 181 From the Code of the Town of Franklin,*** dated August 20, 1997.
- ***Town of Franklin Best Development Practices Guidebook***, dated September 2016.

COMPILED REVIEW LETTER KEY

BETA reviewed this project previously and provided review comments in letters to the Board dated January 6, 2020 and March 5, 2020 (original comments in standard text), Spruhan Engineering (SE) provided

responses (responses in *italic text*), and BETA has provided comments on the status of each (status in **standard bold text**).

INTRODUCTION

The project site is an 0.53 +/- acre parcel located at 122 Chestnut Street in the Town of Franklin (the "Site"). The Town of Franklin Assessor's office identifies the parcel as Lot 280-077. The Site is located within the Commercial II zoning district. Parcels to the south and east are also located in this district, parcels to the northeast and northwest are within the Single-Family III district, and parcels to the west are within the Single-Family IV district.

The lot is currently vacant and primarily comprised of grass. A limited number of trees are present at the site and a small driveway apron is located at a curb cut on Chestnut Street.

Topography at the Site is generally flat, with a slight slope to the north. The Site is within a Zone II Wellhead Protection Area and is therefore within the Water Resources District. The project is not located in proximity to a DEP mapped Wetland resource area or an estimated habitat of rare or endangered species. The Site is not located within a FEMA-Mapped 100-year flood zone. NRCS soil maps indicate the presence of Merrimac-Urban Land complex with a Hydrologic Soil Group (HSG) rating of A (high infiltration potential).

The project proposes to construct a 4,000 +/- SF structure for use as a ten-unit apartment building. Associated site improvements include a parking area, walkway, and sidewalk. Proposed utilities include sewer, gas, and water. Stormwater management is proposed through catch basin conveyance to a subsurface infiltration system.

FINDINGS, COMMENTS AND RECOMMENDATIONS

GENERAL COMMENTS

G1. Provide plans that are plotted to the indicated scale(s). *SE: Spruhan Engineering revised scale on plans.* **BETA2: Scale revised – issue resolved.**

G2. Provide details for pavement, sidewalks, walkways, driveway, wheelchair ramps, dumpster pad and screened enclosure, signs, sewer structure, plantings, and other site features. *SE: Spruhan Engineering added details.* **BETA2: Majority of details not provided – issue remains outstanding.** *SE2: Missing details has been added to the plan, please see Sheet #4 to Sheet #7 and attached Landscape Plan.* **BETA3: Requested details provided except for dumpster pad and enclosure; however, a note has been added to the plans indicating dumpster to be placed on concrete pad and surrounded by chain link fence. Typically, the Board requires chain link fence for dumpsters to include vinyl slats for screening.**

G3. Depict the existing wheelchair ramp at the intersection of Glen Meadow Road. *SE: Spruhan Engineering updated the plans to show the existing wheelchair ramp.* **BETA2: Information provided – issue resolved.**

G4. Review topography of existing conditions survey. Based upon a site visit there appears to be a low point in proximity to the southerly property line. *SE: Spruhan Engineering believes that the low point is beyond property line but will review and update the plans if necessary.* **BETA2: BETA awaits**

confirmation by the designer – issue remains outstanding. *SE2: Confirmed, the topography shown on the plan has been verified.* **BETA2: Information provided – issue resolved.**

G5. Revise the existing conditions plan to remove the building, detached garage, walks, stairs, and parking areas, which are not present. *SE: Spruhan Engineering updated the Existing conditions plan to exclude the original building and driveway which was on the property.* **BETA2: Plan revised – issue resolved.**

G6. Relocate the proposed dumpster pad that is currently depicted approximately 6 feet from the adjacent rehabilitation center's property line. *SE: Spruhan Engineering relocated the proposed dumpster and update the plans.* **BETA2: The dumpster pad has been relocated; however, it is unclear how a waste collection vehicle will be able to access the area if resident's vehicles are parked in the adjacent spaces. Also, based upon discussion at the previous Planning Board hearing, the designer must demonstrate that the waste collection vehicle can exit the site without backing onto a public way §185-21.D.** *SE2: New paved area has been added, turning analysis plan is attached for reference.* **BETA3: Dumpster pad relocated and turn around area provided for waste collection vehicle – issue resolved.**

ZONING

The site is located within the Commercial II (CII) District and the Water Resources Protection District. The proposed use of the Site is multi-family apartment building. This use is not permitted within the Commercial II zoning district per §185 Attachment 7; however, the Board of Appeals has granted variances with conditions for the property that permits a multi-family use.

SCHEDULE OF LOT, AREA, FRONTAGE, YARD AND HEIGHT REQUIREMENTS (§185 ATTACHMENT 9)

The Zoning Board of Appeals has granted a variance for the property which allows relief from the requirements for Lot Area, Lot Width, Lot Depth, Front Yard Setback, and Side Yard Setback. Accounting for these provisions, the projects meets these requirements and is anticipated to comply with Building Height and Lot Coverage.

Z1. Revise Zoning Legend to include proposed dimensions and note/reference variances granted by the Board of Appeals. *SE: Spruhan Engineering updated Zoning Legend.* **BETA2: Legend revised to include proposed dimensions. BETA defers to the preference of the Board to require references to the granted variances.** *SE2: Legend has been updated to show granted variances, Please see Sheet #2.* **BETA3: References to granted variances provided – issue resolved.**

Z2. Clarify existing dimensions shown on the Zoning Legend as there are no existing structures on the parcel. *SE: Spruhan Engineering updated the Existing conditions plan to exclude the original building and driveway which was on the property.* **BETA2: Legend revised – issue resolved.**

Z3. Revise Zoning Legend to include proposed building height and impervious coverage. *SE: Spruhan Engineering updated Zoning Legend.* **BETA2: Information provided – issue resolved.**

PARKING, LOADING AND DRIVEWAY REQUIREMENTS (§185-21)

Access to the Site will be provided through a 24' +/- wide paved driveway from a new curb cut along Chestnut Street. Twenty-one parking spaces are proposed along the eastern side of this driveway. Proposed parking spaces are 9' wide by 19' long. No parking spaces have been designed to meet ADA requirements for accessible parking.

Section §185-21.B.(3)(a) describes the number of parking spaces required for residential buildings. Two spaces must be provided per each dwelling unit proposed. As ten dwelling units are proposed, a minimum of twenty parking spaces are required.

P1. Provide accessible parking spaces meeting ADA requirements. The common use parking areas require one accessible space (521 CMR 10.1 and 23.2.1) that must also be van accessible. Also, clarify if any of the rental units will be accessible. Per 521 CMR 10.3, parking spaces for dwelling unit occupants must be capable of complying with 521 CMR 23.2 through 521 CMR 23.8. Provide required accessible spaces, signing and striping, and demonstrate that additional accessible spaces can be provided for occupants, if necessary. *SE: Spruhan Engineering provided accessible parking spaces to meet the requirements. Please see sheet#2.* **BETA2: An accessible space and aisle are depicted on the plans. Provide required signing and striping.** *SE2: Handicap striping and pole mounted handicap accessible sign has been added to the plan, Please see Sheet #2.* **BETA3: Required signing and striping provided – issue resolved.**

P2. Provide an accessible route from parking space(s) to building in accordance with 521 CMR 10.2, including ramps and crosswalk. *SE: Spruhan Engineering provided accessible route from parking spaces to meet the requirements. Please see sheet#2.* **BETA2: Accessible route provided. Recommend swapping the location of the accessible space and access aisle to provide a direct route to the ramp.** *SE2: Location of the accessible ramp has been updated. Please see Sheet #2.* **BETA3: Location revised – issue resolved.**

P3. Provide spot grades along proposed walkway to clarify height of walkway compared to driveway, as necessary. *SE: Spruhan Engineering updated proposed plot plan showing spot grades on the proposed walkway. Please see Sheet#3.* **BETA2: Spot grades have been provided; however, they indicate the proposed walkway is between 0.9' and 1.2' above the adjacent parking area. It is recommended to reduce the differential to a typical 6"±.** *SE2: Spot grades have been updated. Please see Sheet #3.* **BETA3: Grading revised – issue resolved.**

P4. Provide trees for parking area in accordance with §185-21.C.(5). *SE: Spruhan Engineering updated proposed plot plan showing location of trees for parking to meet the requirements. Please see sheet#2.* **BETA2: Trees provided – issue resolved.**

P5. The proposed curb cut centerline is located approximately 147 feet from the existing curb cut centerline at 130 Chestnut Street and may require a Special Permit in accordance with §185-21.C.(7)(b). BETA notes the existing curb cut at 130 Chestnut appears to function as secondary connection to the parking area for greater than 20 vehicles and that the primary access is well beyond 150 feet. *SE: Client will discuss for special permit.* **BETA2: The driveway centerlines are depicted less than 150 feet apart on the plans. Recommend for the Board to discuss if a Special Permit is required.** *SE2: Driveway entrance has been relocated and dimension added to the plan. Please see Sheet #2.* **BETA3: Greater than 150' separation provided – issue resolved.**

P6. Provide sight distance (required and provided) on plans §185-21.C.(7)(c). *SE: Client to discuss with planning board.* **BETA2: Issue remains outstanding.** *SE2: Sight distance chart has been added to plan, Please see Sheet #2.* **BETA3: Information provided – issue resolved.**

SIDEWALKS (§185-28)

The project is located within the Commercial II Zoning District and is required to provide concrete sidewalks along the street frontage unless the Board determines that site conditions preclude their usefulness. A

concrete sidewalk is proposed from the building walkway to the intersection of Glen Meadow Road and will provide a continuous connection to East Central Street. An existing sidewalk is located on the opposite side of Chestnut Street; however, there are no additional sidewalks on the project side of the roadway extending to the northeast.

SI1. Provide sidewalks along the entire street frontage in accordance with §185-28 or request waiver from the Board. **BETA2: Sidewalks provided – issue resolved.**

SI2. Provide wheelchair ramp transitions that are consistent with adjacent properties at the proposed curb cut. **BETA2: Revise details for consistency between views and plans (e.g. curb transitions and driveway width).** *SE2: Details has been revised.* **BETA3: The plan view still indicates 2' radius stones, which is inconsistent with profile view and adjacent properties.**

CURBING (§185-29)

Vertical precast curb is proposed adjacent to parking areas.

C1. Revise curb detail to indicate that precast curb shall be reinforced. *SE: Spruhan Engineering changed to vertical granite curb.* **BETA2: Granite curb proposed – issue resolved.**

C2. Provide vertical granite curb along the proposed frontage sidewalk to match existing curb on Chestnut Street. *SE: Spruhan Engineering updated proposed plot plan showing vertical granite curb everywhere.* **BETA2: Granite curb proposed – issue resolved.**

SITE PLAN REVIEW (§185-31)

The proposed development is subject to Site Plan Review and must comply with the requirements of this section.

S1. Revise locus map to include boundaries of the Site and abutting land uses (§185-31.C.(3)(d)). *SE: Spruhan Engineering revised and updated plans to include the requested information.* **BETA2: Boundaries of site and zoning districts not depicted. Also, Single-Family IV and Residential VI districts not shown.** *SE2: Locus map has been revised to show requested information.* **BETA3: Requested information generally provided – issue dismissed.**

S2. Clarify existing land use (§185-31.C.(3)(e)). *SE: Spruhan Engineering revised and updated plans to include the requested information.* **BETA2: Land use clarified – issue resolved.**

S3. Indicate presence of Water Resource District (§185-31.C(3)(h)). *SE: Spruhan Engineering will revised and updated plans to include the requested information.* **BETA2: Information provided – issue resolved.**

S4. Provide location of proposed outdoor lighting (§185-31.C.(3)(i)) and associated photometric plan (§185-31.C.(3)(l)). *SE: Spruhan Engineering added the location of proposed outdoor lighting and attaching the mentioned plan.* **BETA2: Lighting plan provided, which indicates general conformance with the recommendations of the Illuminating Engineering Society. Minor spillage onto the adjacent property is anticipated to be mitigated by a proposed 6' fence – issue resolved.**

S5. Provide a landscape plan showing location of existing vegetation along Glen Meadow Road and proposed plantings (§185-31.C.(3)(k)). *SE: Spruhan Engineering landscaped plan to be submitted*

by architect. **BETA2: BETA will review the landscape plan upon receipt – issue remains outstanding.** *SE2: Landscape plan has been attached to the set of plans.* **BETA3: Landscape plan provided – issue resolved.**

S6. Provide parking schedule (§185-31.C.(3)(o)). *SE: Spruhan Engineering: Client will provide parking schedule.* **BETA2: Issue remains outstanding.** *SE2: Parking schedule has been added to the plan. Please see Sheet #2.* **BETA3: Parking schedule provided – issue resolved.**

SCREENING (§185-35)

The project proposes outdoor parking for 10 or more cars, which must be screened from adjacent residential districts/uses. Residential properties are present to the northwest and southeast. A potential residential use exists at the adjacent 130 Chestnut Street property. No screening or landscaping has been proposed.

SC1. Provide screening in areas greater than 10 feet from the street line along the property frontage adjacent to parking areas. Supplemental plantings should be also be considered along the southerly parking boundary to enhance existing vegetative screening. *SE: Spruhan Engineering: landscaped plan to be submitted by architect.* **BETA2: BETA will review the landscape plan upon receipt – issue remains outstanding.** *SE2: Landscape plan has been attached to the set of plans.* **BETA3: Screening provided – issue resolved.**

SC2. In consideration that the adjacent use at 130 Chestnut Street includes (temporary) residences, recommend providing screening along the northeasterly property line adjacent to the parking area. *SE: Spruhan Engineering: landscaped plan to be submitted by architect.* **BETA2: BETA will review the landscape plan upon receipt – issue remains outstanding.** *SE2: Landscape plan has been attached to the set of plans.* **BETA3: A 6' vinyl fence is proposed for screening – issue resolved.**

WATER RESOURCES DISTRICT (§185-40)

The Site is located entirely within the Water Resource District due to the presence of a Zone II Wellhead Protection Area.

WR1. Section §185-40.D.(l)(ii)) requires that the proposed groundwater recharge efforts must be approved by a hydrogeologist; however, provided that the stormwater management system is revised to fully comply with the Massachusetts Stormwater Management Standards there should be no adverse impact to groundwater as a result of the project. BETA defers to the preference of the Board to require approval by a hydrogeologist. *SE: Spruhan Engineering: Has been addressed by applicant.* **BETA2: As discussed at the previous hearing, review by a hydrogeologist is not required – issue dismissed.**

WR2. Note that any fill placed in quantity greater than 15 yards must be certified in accordance with §185-40.E.(5). *SE: Spruhan Engineering agrees, however no fill on this site.* **BETA2: Information provided – issue resolved.**

WR3. Remove outlets from subsurface infiltration system as identified in drainage calculations. All stormwater runoff from impervious areas must be recharged on-site (§185-40.E.(4)). *SE: Spruhan Engineering changed the configuration of the drainage system to meet the requirements and ensure*

storage capacity of system is adequate for all storm events. **BETA2: Outlets removed – issue resolved.**

UTILITIES

The proposed development is shown to be serviced by water, fire service, sewer, and gas utilities. Detailed review of utilities is anticipated to be provided by the DPW.

U1. Depict anticipated locations of additional utilities (electric, etc.) that will service the development. *SE: Spruhan Engineering revised and updated plans to show the requested information.* **BETA2: Issue remains outstanding.** *SE2: Proposed electric line and transformer location added to the plan.* **BETA3: Information provided – issue resolved.**

U2. Provide anticipated locations of proposed gate valves, curb stops, and other appurtenances. *SE: Spruhan Engineering revised and updated plans to show the requested information.* **BETA2: Issue remains outstanding.** *SE2: All gate valves and curb stops has been added to the plan, please see sheets #2 and #3.* **BETA3: Valve locations provided – issue resolved.**

U3. Indicate proposed material for water service connections. *SE: Spruhan Engineering revised and updated plans to show the requested information.* **BETA2: Size and materials provided. Revise 4" fire service to be Class 52 ductile iron pipe.** *SE2: Fire service pipe material has been updated. Please see Sheet #3.* **BETA3: Fire service material revised – issue resolved.**

U4. Confirm proposed 1" domestic service is adequate to serve the development and note that any service greater than 1" requires a saddle at the tap. *SE: Spruhan Engineering revised and changed size of pipe.* **BETA2: Domestic service size revised – issue resolved.**

U5. Remove references to City of Newton on details and revise details, as necessary, to be in conformance with Town of Franklin Department of Public Works Standards for Sewer and Water Materials and Installation. *SE: Spruhan Engineering updated details to comply with Town of Franklin Department of Public Works Standards.* **BETA2: Reference to Newton revised. Recommend for the Board to include a condition that all water, sewer, and drainage installation shall be in conformance with Town Standards.** *SE2: SE agrees.* **BETA2: BETA defers to the preference of the Board to include this condition.**

U6. Provide a note that where any utility installation detail conflicts with the Town of Franklin Department of Public Works Standards for Sewer and Water Materials and Installation (Town Standards) that the Town Standards shall govern. *SE: Spruhan Engineering Added the note to the detail sheet.* **BETA2: Note provided – issue resolved.**

STORMWATER MANAGEMENT

The project proposes to direct runoff from impervious areas into a closed drainage system comprised of roof leaders, a trench drain, and catch basin to be conveyed to a new subsurface infiltration system. All runoff from impervious will be directed to the infiltration system.

GENERAL

SW1. Provide cleanouts for roof leaders along the perimeter of the proposed building. *SE: Spruhan Engineering Added the note to the detail sheet.* **BETA2: Cleanouts provided – issue resolved.**

SW2. Revise RCP in areas subject to traffic loads to be a minimum of 12" in accordance with Town construction standards. Where cover is less than 42", Class V RCP is required. *SE: Spruhan Engineering revised and changed pipe materials.* **BETA2: Drainage pipe has been revised to PVC in areas subject to traffic loads, which is not permitted. Revise pipe to RCP with a minimum dimension of 12" – issue remains outstanding.** *SE2: Drain pipe size and material has been changed to 12" RCP, please see Sheet #3.* **BETA3: Pipe material for parking drainage revised to 12" RCP. PVC pipe is proposed beneath a portion of the parking area where roof drains connect to the subsurface infiltration system and should also be revised to RCP unless a waiver is granted by the Board.**

SW3. Revise proposed roof leaders to a material that is available in the specified size. *SE: Spruhan Engineering revised and changed pipe materials.* **BETA2: Material revised – issue resolved.**

SW4. Confirm the proposed roof leaders are adequately sized for the calculated flows. *SE: Spruhan Engineering revised and changed pipe size (Confirmed by Manning Equation).* **BETA2: Information provided – issue resolved.**

SW5. Provide a stamped MassDEP stormwater checklist. *SE: Spruhan Engineering will provide.* **BETA2: Issue remains outstanding.** *SE2: Stormwater checklist has been attached.* **BETA3: Checklist provided – issue resolved.**

SW6. Indicate proposed top of stone elevation (above chambers) on detail. *SE: Spruhan Engineering updated storm-tech detail showing top of stone elevation.* **BETA2: Information provided – issue resolved.**

SW7. Provide spot grades at select locations (e.g. pavement corners) to demonstrate positive drainage. *SE: Spruhan Engineering updated the proposed plot plan and civil plan showing spot grades.* **BETA2: Spot grades provided – issue resolved.**

SW8. The proposed trench drain may be subject to concentrated flows at the northern end and will be more susceptible to clogging than a catch basin. Recommend to minimize the impervious area directed to the trench drain and to consider supplementing or replacing it with an additional catch basin(s). *SE: Spruhan Engineering have spoken with developer and added an extra catch basin before the trench drain which will have a much larger catchment area then trench drain.* **BETA2: Additional catch basin provided and area directed to the trench drain minimized (~1,300 sq. ft.). As the trench drain will be subject to sediment loads, it should be directed to a structure with a sump. The new catch basin (#2) should be an end of line structure with the trench drain and walkway basin connections relocated to a manhole. Consider providing a cross slope to the walkway to eliminate the need for a structure within the walking path.** *SE2: Trench drain and area drain are now directed to a drain manhole and walkway area drain has been relocated. Please see Sheet #3.* **BETA3: Provide a sump in the drainage manhole to collect captured sediments and clarify structure callout to indicate "drain manhole."**

SW8A. Review and revise rim/inverts as necessary to ensure the proposed drainage infrastructure can be constructed. BETA notes the difference in rim/invert elevations is as little as 1 foot.

SW8B. Revise drainage layout to remove bends and wye connections for RCP pipe. A drainage manhole should be provided at pipe junctions.

MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS:

The project is not located in proximity to wetland resources and will not disturb greater than one acre; however, under Section §185-31C.(3)(m), the Board may require the project to comply with all federal and state requirements, including the Massachusetts Stormwater Management Standards, Town of Franklin's Subdivision of Land Stormwater Management Regulations, §300-11 as applicable, Chapter 153, Stormwater Management, of Franklin's Town Code, and the Town of Franklin Best Development Practices Guidebook.

No untreated stormwater (Standard Number 1): *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

The project does not propose any new untreated stormwater discharges to wetlands – **complies with standard.**

Post-development peak discharge rates (Standard Number 2): *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

The project proposes an increase in impervious area and will use a subsurface infiltration system to mitigate increases in post-development peak discharge rates and total runoff volumes.

SW9. Revise cover type "grass, fair" to "grass, good" in the existing conditions model. Based upon a field visit by BETA existing grass coverage is greater than 75%. *SE: Spruhan Engineering updated Hydrocad Calculations.* **BETA2: Calculation revised – issue resolved.**

SW10. Provide watershed plans showing the pre- and post-development watershed areas and design points. Based upon review of the existing conditions more than one analysis point should be provided. Flow from the site is currently directed to Chestnut Street, the adjacent property at 130 Chestnut Street, and a possible low point/ponding area along the southerly property line. *SE: Spruhan Engineering is providing watershed plans.* **BETA2: Watershed plans provided. In consideration that the design intent is to infiltrate 100% of the impervious area, there is no need to evaluate additional watersheds – issue resolved.**

SW11. Remove impervious area associated with the one-story building and driveway in the existing conditions. These features are not present. *SE: Spruhan Engineering updated the drainage analysis and storm water report. To exclude the original building and driveway which was on the property.* **BETA2: Calculation revised – issue resolved.**

SW12. Clarify how infiltration system outlets will function. The HydroCAD calculations show two 6" vertical orifices at an elevation below the pavement structure. Refer to comment WR3. *SE: Spruhan Engineering changed the configuration of the drainage system to meet the requirements of comment WR3 which shows system is large enough to take all storm events without overflow thus eliminating the need for orifices and updated HydroCAD calculations and stormwater report.* **BETA2: Overflows eliminated – issue resolved.**

SW13. Revise invert elevations for chamber units and stone to be consistent between HydroCAD calculations and plans. *SE: Spruhan Engineering revised and updated HydroCAD calculations and stormwater report.* **BETA2: Calculations and plans revised – issue resolved.**

Recharge to groundwater (Standard Number 3): *Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable.*

NRCS soil maps indicate the presence of Merrimac-Urban land complex, with a Hydrologic Soil Group Rating (HSG) of A (high infiltration potential). A soil log, located on the Details sheet, indicates the presence of coarse and medium sand in the C layer of the soil profile. The proponent proposes a subsurface infiltration system to provide groundwater recharge.

SW14. Indicate the location of the test pit location on the plans. If not within or in direct proximity to the proposed infiltration area, provide an additional test pit to confirm subsurface conditions. *SE: Spruhan Engineering added the location of the test pit on the Civil Plan.* **BETA2: Test pit location provided – issue resolved.**

SW15. Provide groundwater recharge calculations and demonstrate that the system will drain within 72 hours. *SE: Spruhan Engineering added recharge calculations to stormwater report.* **BETA2: Calculation provided – issue resolved.**

SW15A. Justify the exfiltration rate of 30 in/hr used in the HydroCAD calculations. Sand is associated with a Rawls rate of 8.27 in/hr. Saturated hydraulic conductivity testing is required for rates differing from Rawls. BETA3: Issue remains outstanding.

80% TSS Removal (Standard Number 4): *For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids.*

The project proposes to direct runoff from roofs and parking areas to a subsurface infiltration system. Pretreatment is proposed in the form of a hooded deep-sump catch basin.

SW16. Provide TSS removal calculations for the treatment train conveying flow from parking areas. *SE: Spruhan Engineering added TSS removal calculations to stormwater report.* **BETA2: Calculation provided – issue resolved.**

SW17. Revise design to include adequate pretreatment prior to infiltration. The proposed trench drain and online catch basin do not receive removal credit. Refer to comment SW20. *SE: Spruhan Engineering added TSS removal calculations to stormwater report.* **BETA2: Additional treatment provided – issue resolved.**

SW18. Provide water quality volume calculations. *SE: Spruhan Engineering will provide.* **BETA2: All impervious area directed to the stormwater system – issue dismissed.**

SW19. Provide a Long-Term Pollution Prevention Plan (LTPPP) meeting the requirements of the Massachusetts Stormwater Handbook. The LTPPP can be incorporated into the site Operation and Maintenance Plan. *SE: Spruhan Engineering added TSS removal calculations to stormwater report.* **BETA2: Information provided – issue resolved.**

Higher Potential Pollutant Loads (Standard Number 5): *Stormwater discharges from Land Uses with Higher Potential Pollutant Loads require the use of specific stormwater management BMPs*.

The project does not propose any Land Uses with Higher Potential Pollutant Loads – **not applicable.**

Critical Areas (Standard Number 6): *Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas.*

The project proposes a discharge within a Zone II Wellhead Protection Area and is thus subject to the requirements of this standard.

SW20. Provide at least 44% pretreatment prior to discharge to the infiltration system. BETA notes that the Board typically prefers the use of a proprietary water quality unit (e.g. Stormceptor, CDS, etc.) for pretreatment in the Water Resource District. *SE: Spruhan Engineering added TSS removal calculations to stormwater report.* **BETA2: Adequate pretreatment provided – issue resolved.**

Redevelopment (Standard Number 7): *Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable.*

The project is being designed as a new development – **not applicable.**

Construction Period Erosion and Sediment Controls (Standard Number 8): *Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.*

The project as currently depicted will not disturb in excess of one acre of land; therefore, a Notice of Intent with EPA and a Stormwater Pollution Prevention Plan (SWPPP) are not required. The project proposes the use of silt fence and haybales as a perimeter erosion control.

SW21. Provide general notes, good housekeeping practices, and maintenance requirements for proposed erosion and sedimentation controls. *SE: Spruhan Engineering added erosion control plan.* **BETA2: Notes provided – issue resolved.**

SW22. The Best Development Practices Guidebook does not permit the use of haybales or silt fence. Revise perimeter controls to use straw wattles or compost filter tubes. *SE: Spruhan Engineering added erosion control plan showing straw wattles.* **BETA2: Remove silt fence from Details (Sheet 4 of 9).** *SE2: Detail has been removed, please see Sheet #4.* **BETA3: Detail removed – issue resolved.**

SW23. If permitted by the DPW, provide drain inlet sediment control protection at catch basins along Chestnut Street that are subject to stormwater flow from the property. *SE: Spruhan Engineering added sediment control on catch basins on erosion control plan.* **BETA2: Protection provided – issue resolved.**

SW24. Provide construction period stabilized construction entrance with minimum recommended dimensions of 50' L x 20' W. *SE: Spruhan Engineering added proposed stabilized construction entrance on erosion control plan.* **BETA2: Construction entrance provided – issue resolved.**

Operations/maintenance plan (Standard Number 9): *A Long-Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

A Long-Term Operation and Maintenance (O&M) Plan has not been provided.

SW25. Provide O&M Plan meeting the requirements of the Massachusetts Stormwater Handbook. *SE: Spruhan Engineering is attaching O&M Plan.* **BETA2: O&M Plan provided – issue resolved.**

Illicit Discharges (Standard Number 10): *All illicit discharges to the stormwater management systems are prohibited.*

SW26. Provide an Illicit Discharge Compliance Statement. *SE: Spruhan Engineering added Illicit Discharge Compliance Statement to the stormwater report.* **BETA2: Statement provided – issue resolved.**

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,
BETA Group, Inc.

Matthew J. Crowley, PE
Project Manager

Stephen Borgatti
Staff Engineer

cc: Amy Love, Town Planner

Job No: 4830 - 58

TOWN OF FRANKLIN
DEPARTMENT OF PUBLIC WORKS
Franklin Municipal Building
257 Fisher Street
Franklin, MA 02038-3026

July 6, 2020

Mr. Anthony Padula, Chairman
Members of the Franklin Planning Board
355 East Central Street
Franklin, MA 02038

RE: Site Plan Modification – 10 Unit Multi-family, 122 Chestnut Street

Dear Mr. Chairman and Members:

We have reviewed the revised materials for the subject project and the following are our remaining outstanding comments:

1. The results of the soil test pit were included on the plans, however the location of the test pit should be shown on the plans as well.

2. Drain pipes should not have bends, rather drain manholes should be used where two lines connect.

3. A very high infiltration rate of 30 in/hr has been used for the design of the stormwater infiltration system, however the maximum Rawls Rate allowed for sandy soils is 8.27 in/hr. Please justify the use of this higher value.

Should you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

Michael Maglio, P.E.
Town Engineer

FRANKLIN PLANNING & COMMUNITY DEVELOPMENT
355 EAST CENTRAL STREET, ROOM 120
FRANKLIN, MA 02038-1352
TELEPHONE: 508-520-4907

MEMORANDUM

DATE: **July 8, 2020**

TO: **Franklin Planning Board**

FROM: **Department of Planning and Community Development**

RE: **122 Chestnut Street**
Site Plan

The DPCD has reviewed the above referenced Site Plan Modification application for the Monday, July 13, 2020 Planning Board meeting and offers the following commentary:

General:

1. The applicant is proposing to construct a 10-unit apartment building.
2. The site is not with Conservation Commission jurisdiction.
3. The following letters have been received from other Town Departments and outside Peer Review;
   - Letter dated December 26, 2019 from J. Barbieri, Deputy Fire Chief
   - Letter dated July 6, 2020 from Mike Maglio, Town Engineer
   - Letter dated December 18, 2019 from Conservation Commission
   - Letter dated July 8, 2020 from BETA

Comments:

1. The Applicant was granted several zoning reliefs from the ZBA. The Zoning variance should be noted on the front page of the Site Plan.
2. The ZBA decision dated July 18, 2019 refers to a "drawing dated 7/11/19 entitled Proposed Plot Plan – 122 Chestnut Street". This plan should be provided to compare to the submitted Site Plan.
3. The Applicant has received Design Review Commission recommendation.
4. DPCD notes that Fire is not able to access all sides of the building.
5. §185-21.C(7).a. Applicant Should provide the distance between the driveways, to ensure they are 150ft apart, or a Special Permit will be required. ***Applicant provided a distance of 150.2ft apart.***
6. The Landscaping layout plan does not match the Civil Site Plan. Plantings are proposed where a patio is to be located. Revise Landscaping plan to reflect the Civil Site Plans.

7. Per Zoning By-Law §185-31 Section 3.1.C (s), the applicant has not provided a traffic study. The Planning Board will need to determine if a Traffic study is required for this specific project. ***Planning Board decided a Traffic Study is not required.***

Outstanding Items:

1. Provide a sump in the drainage manhole to collect captured sediments and clarify structure callout to indicate "drain manhole."
2. Review and revise rim/inverts as necessary to ensure the proposed drainage infrastructure can be constructed. BETA notes the difference in rim/invert elevations is as little as 1 foot.
3. Revise drainage layout to remove bends and wye connections for RCP pipe. A drainage manhole should be provided at pipe junctions

Recommended the following Special Conditions:

1. Fencing around the dumpster shall include vinyl slats for screening.
2. Recommend for the Board to include a condition that all water, sewer, and drainage installation shall be in conformance with Town Standards.
3. Pipe material for parking drainage revised to 12" RCP. PVC pipe is proposed beneath a portion of the parking area where roof drains connect to the subsurface infiltration system and should also be revised to RCP unless a waiver is granted by the Board.

DPCD has no further comments.

PRINCE LOBEL

July 2, 2020

Town of Franklin
Planning Board
355 East Central Street
Franklin, MA 02038

Re:	Supplemental Documentation for the previously filed Application for a Special Permit and Site Plan Review (the "**Application**")
Property Address:	160 Grove Street, Franklin, MA Parcel ID: 306-002-000-000 (the "**Property**")
Applicant:	Hennep Cultivation LLC (the "**Applicant**" or "**Hennep**")

Dear Honorable Members of the Planning Board:

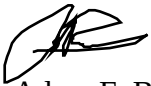
This firm represents the Applicant in connection with its previously filed application for a Special Permit and Site Plan Review from the Town of Franklin Planning Board (the "**Board**") to allow the construction and operation of its proposed recreational cannabis cultivation and production manufacturing establishment on the Property (the "**Facility**").

Enclosed in connection with the Application, please find the following additional documentation:

1. Revised Plans dated June 16, 2020 (previously submitted on June 25, 2020);
2. Revised Greenhouse Floorplan dated June 26, 2020 (previously submitted on June 29, 2020);
3. Revised Photometric Plans dated July 2, 2020;
4. Odor Mitigation Additional Information
    - Odor Mitigation memorandum
    - A web-based link to a video of the American facility in Freetown MA.
    - Neutralizer ratios and storage needs
    - Epsilon's Wind speed and direction studies
    - Speedtrace self-regulating hearing cable specifications

Please contact me should you have any question or need additional information in connection with this Application.

Sincerely,



Adam F. Braillard, Esq.
Direct: 617-456-8153
Email: abraillard@princelobel.com

Site Development Plan

Hennep Cultivation & Production Facility

INDEX OF SHEETS

SHEET NO.	TITLE
1	COVER SHEET
2	EXISTING CONDITIONS PLAN
3	SITE INDEX PLAN
4	UTILITY & GRADING PLAN
5	UTILITY & GRADING PLAN
6	SITE LAYOUT PLAN
7	SITE LAYOUT PLAN
8	DRIVEWAY PLAN & PROFILE
9	DRIVEWAY PLAN & PROFILE
10	DRIVEWAY PLAN & PROFILE
11	SEDIMENT & EROSION CONTROL PLAN
12	LANDSCAPE PLAN
13	DETAILS PLAN - STORMWATER
14	DETAILS PLAN - UTILITIES
15	DETAILS PLAN
16	DETAILS PLAN - RETAINING WALLS

LEGAL REFERENCES

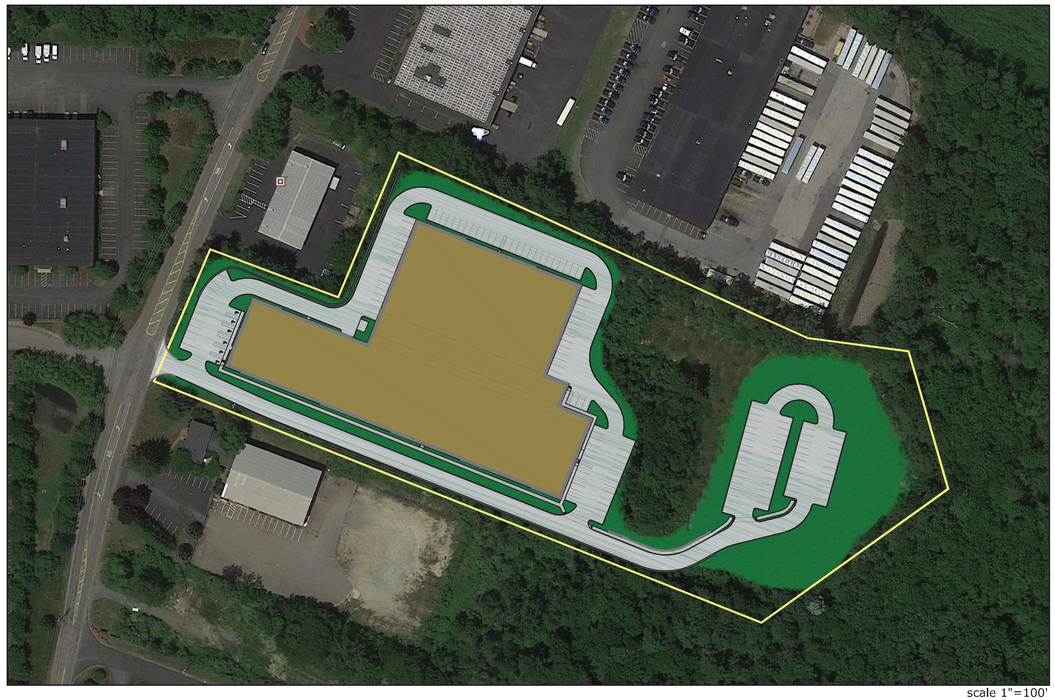
ASSESSORS: PARCEL 306-002-000
DEED: DEED BOOK 37525 PAGE 499
PLAN: PLAN BOOK 688 PAGE 38

ZONING SUMMARY

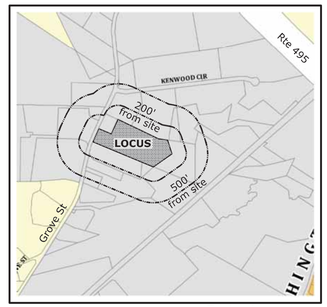
Zone: Industrial

	Required	Proposed
Frontage:	175 ft	200.21 ft
Area:	40,000 ft²	372,249 ft²
Front Yard:	40 ft	80.8 ft
Side Yard:	30 ft	55.6 ft
Rear Yard:	30 ft	328.6 ft
Bldg. Coverage:	70%	28.5% of upland
Lot Coverage:	80%	57.0% of upland
Height:	3 Stories	3 Stories

Note: Portions of the locus is located within the Water Resource District.



scale 1"=100'



Locus Map
scale 1"=1000'

Zoning Legend
Industrial
Rural Residential I

Located at
160 Grove Street
Franklin, MA

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

HENNEP CULTIVATION & PRODUCTION FACILITY

located at
160 Grove Street
Franklin, MA

Owned By
Hennep Properties, LLC
200 Brookline Ave, #508
Boston, MA

Prepared for
HENNEP CULTIVATION LLC
1330 Boylston St Unit 202
Boston, MA 02215

Scale: 1" = 100'
Revised June 16, 2020

LEGEND

SW	STONE WALL
IPF	IRON PIN FOUND
DHF	DRILL HOLE FOUND
	BOUND TO BE SET
	BOUND FOUND
	DRAIN MANHOLE
	CATCH BASIN
	UTILITY POLE
100	EXISTING CONTOUR
100	PROPOSED CONTOUR
581x5	PROPOSED SPOT GRADE
	LIGHT - WALL MOUNTED
	LIGHT - POLE MOUNTED
	SIGN
ETC	ELECT., TEL. & CABLE
W	WATER LINE
S	SEWER LINE
G	GAS LINE
OHW	OVERHEAD WIRE
	FENCE
	GUARD RAIL
x WF-#	WETLAND FLAG

COMMONWEALTH OF MASSACHUSETTS
NORMAN G. HILL
CIVIL
No. 31887
REGISTERED PROFESSIONAL ENGINEER

Date: 6/16/20
Norman G. Hill, PE #31887

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Civil Engineers • Land Surveyors
Environmental Consultants

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508-966-4130

North Grafton
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N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

Scale
1" = 100'

Date
February 14, 2020

Job No.
B2521

Sheet No.
1

Soil Logs

DH-1 3/3/2020
0"-30" Fill
30"-120" C horizon, med. sand
No mottles
Standing water @ 78"
Elevation = 264.2
Groundwater = 257.7

DH-2 3/3/2020
0"-10" A horizon, loamy sand
10"-32" B horizon, loamy sand
32"-60" C1 horizon, med. sand
60"-156" C2 horizon, loamy sand
Mottles @ 108"
No standing water
Elevation = 267.8
Groundwater = 258.8

TP-1 11/4/2019
0"-6" A horizon, loamy sand
6"-26" B horizon, loamy sand
26"-144" C horizon, med. sand w/ gravel
No mottles
No standing water
Elevation = 270.7
Groundwater = <258.7

TP-2 11/4/2019
0"-132" C horizon, med. sand w/ gravel
No mottles
Weeping water @ 125"
Elevation = 266.5
Groundwater = 256.1

TP-3 11/4/2019
0"-10" Fill
10"-134" C horizon, med. sand w/ gravel
Mottles @ 54"
Weeping water @ 95"
Standing water @ 118"
Elevation = 247.8
Groundwater = 243.3

TP-4 11/4/2019
0"-90 Fill
90"-150" C horizon, med. sand w/ gravel
Mottles @ 120"
No standing water
Elevation = 249.7
Groundwater = 239.7

TP-5 3/3/2020
0"-156" Fill
156"-168" C horizon, loamy sand
Mottles = none
Weeping water @ 156"
Elevation = 249.7
Groundwater = 236.7

General Notes

1. Topography determined by an on-the-ground survey by Land Planning, Inc. All elevations refer to NAVD 1988 datum.
2. No portion of the site is located within the limits of the 100 yr flood zone as shown on the FIRM Map #25021C0308E dated 07/17/12
3. Property lines shown are based upon an on-the-ground retracement survey performed by Land Planning, Inc.
4. Wetland resource boundaries were flagged by Northeast Ecological Services and located by Land Planning, Inc.

n/f
One Kenwood LLC

n/f
RCG Kenwood LLC

n/f
United States of America

n/f
Grove Street
Realty Trust

n/f
Charley2017 LLC

n/f
Core Real Estate
Holdings, LLC

n/f
United States of
America

Assessor ID: 306-002-000-000
372,249± sq. ft.
8.55± acres

Vegetated Wetland

Bordering
Vegetated Wetland

Grove Street
(50' Wide)

Existing trees to be removed

Existing House

Existing house razed
Dec. 2019

Roof

Shed

Metal Building

Wood Frame Building

Buildings and trailer to be removed

Utility pole to be removed

Trailer

Conc. pad

Limit of Water Resource District

100' Buffer Zone

0 to 25' Buffer Zone

25' to 50' Buffer Zone

100' Riparian

200' Riverfront Area

Bank 1
Bank 2
Bank 3
Bank 4
Bank 5
Bank of Unnamed Stream

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

Existing Conditions Plan

HENNEP CULTIVATION & PRODUCTION FACILITY

located at
160 Grove Street
Franklin, MA

Owned By
Hennep Properties, LLC
200 Brookline Ave, #508
Boston, MA

Prepared for
HENNEP CULTIVATION LLC
1330 Boylston St Unit 202
Boston, MA 02215

Scale: 1" = 40'
Revised June 16, 2020

LEGEND

SW	STONE WALL
IPF	IRON PIN FOUND
DHF	DRILL HOLE FOUND
	BOUND TO BE SET
	BOUND FOUND
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W	WATER LINE
S	SEWER LINE
G	GAS LINE
OHW	OVERHEAD WIRE
	FENCE
	GUARD RAIL
x WF-#	WETLAND FLAG

COMMONWEALTH OF MASSACHUSETTS
NORMAN G. HILL
CIVIL
No. 31887
REGISTERED PROFESSIONAL ENGINEER

Date: 6/16/20
Norman G. Hill, PE #31887

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Environmental Consultants

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Hanson, MA 02341
781-294-4144

www.landplanninginc.com

Scale
1" = 40'

Date
February 14, 2020

Job No.
B2521

Sheet No.
2

Zoning Summary

Zone: Industrial

	Required	Proposed
Frontage:	175 ft	200.21 ft
Area:	40,000 ft²	372,249 ft²
Front Yard:	40 ft	80.8 ft
Side Yard:	30 ft	55.6 ft
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Bldg. Coverage:	70%	28.5% of upland
Lot Coverage:	80%	57.0% of upland
Height:	3 Stories	3 Stories

Note: Portions of the locus is located within the Water Resource District.

Parking Summary

Use	Regulation	Area	Required Spaces
Industrial	1 per 400 ft²	17250 ft²	44 spaces
Warehouse	1 per 1000 ft²	100841 ft²	101 spaces
Office	1 per 250 ft²	4211 ft²	17 spaces

Total Parking Required = 162 spaces

Total proposed parking = 162 spaces

Earthwork Summary

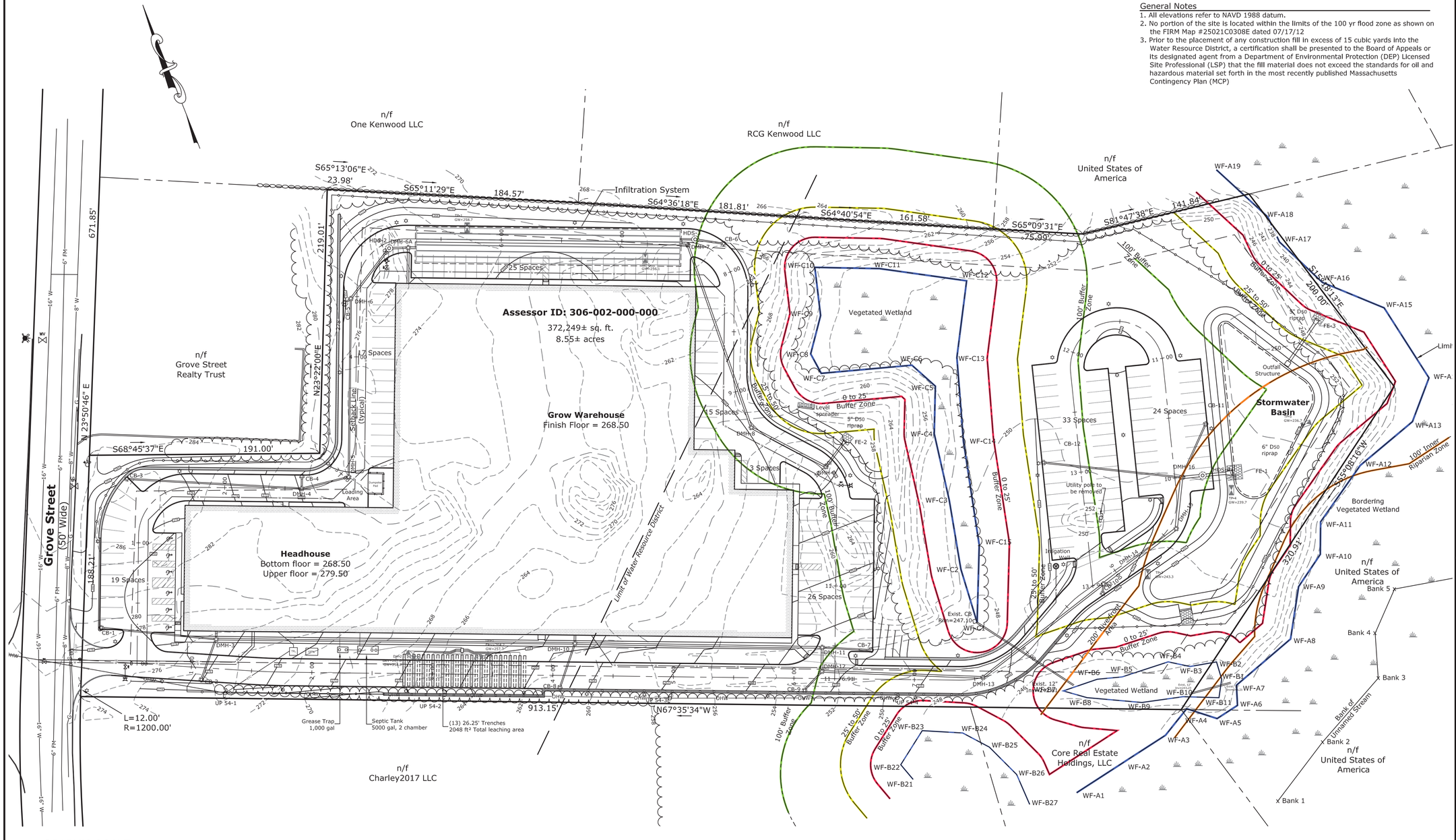
Cut	49,402 yd³
Fill	21,905 yd³
Net	27,496 yd³ cut

Utility Notes

1. Place 6" Loam and seed all disturbed areas of the project not otherwise improved.
2. All underground utility locations shown are based on field evidence and records provided to Land Planning, Inc.. These locations should be considered approximate. Other utilities may exist which are not evident or for which record information was not found. The contractor must contact all utility companies and "Dig Safe" before excavation begins. We assume no responsibility for damages incurred as a result of utilities omitted or inaccurately shown.
3. It is the responsibility of the contractor to review all of the drawings and specifications associated with this project work and project scope prior to the initiation of construction. Should the contractor find a conflict with the documents, relative to the specifications or applicable codes, it is the contractor's responsibility to notify the project engineer of record in writing prior to the start of construction. Failure by the contractor to notify the project engineer shall constitute acceptance of full responsibility by the contractor to complete the scope of work as defined by the drawings and in full conformance with local regulations and codes.
4. All work shall conform to Town of Franklin requirements and Massachusetts Highway Department construction standards as applicable.
5. Where any utility installation detail conflicts with the Town of Franklin Department of Public Works Standards for Sewer and Water Materials and Installation, the Town Standards shall govern.

General Notes

1. All elevations refer to NAVD 1988 datum.
2. No portion of the site is located within the limits of the 100 yr flood zone as shown on the FIRM Map #25021C0308E dated 07/17/12
3. Prior to the placement of any construction fill in excess of 15 cubic yards into the Water Resource District, a certification shall be presented to the Board of Appeals or its designated agent from a Department of Environmental Protection (DEP) Licensed Site Professional (LSP) that the fill material does not exceed the standards for oil and hazardous material set forth in the most recently published Massachusetts Contingency Plan (MCP)



GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

1 inch = 40 ft.

Site Index Plan

HENNEP CULTIVATION & PRODUCTION FACILITY

located at

160 Grove Street
Franklin, MA

Owned By

Hennep Properties, LLC
200 Brookline Ave, #508
Boston, MA

Prepared for

HENNEP CULTIVATION LLC
1330 Boylston St Unit 202
Boston, MA 02215

Scale: 1" = 40'
Revised June 16, 2020

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COMMONWEALTH OF MASSACHUSETTS
NORMAN G. HILL
CIVIL
No. 31887
REGISTERED PROFESSIONAL ENGINEER

Date: 6/16/20

Norman G. Hill, PE #31887

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Scale
1" = 40'

Date
February 14, 2020

Job No.
B2521

Sheet No.
3

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

Zoning Summary

Zone: Industrial

	Required	Proposed
Frontage:	175 ft	200.21 ft
Area:	40,000 ft²	372,249 ft²
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Lot Coverage:	80%	52.2%
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Assessor ID: 306-002-000-000

372,249± sq. ft.
8.55± acres

Infiltration System
6-rows of 31 Cultec R-330XLHD chambers in 25.67'x 220.50' washed stone field

TP-1
GW<258.7

TP-2
GW=256.1

25 Spaces
17 Spaces
15 Spaces
19 Spaces

Setback Line (typical)

Retaining Wall #1
Proposed segmental block wall
(design by others)

Grove Street
(50' Wide)

Headhouse
Bottom floor = 268.50
Upper floor = 278.75

See architectural plans for building mounted light fixture locations and details

Grow Warehouse
Finish Floor = 268.50

See architectural plans for building mounted light fixture locations and details

Loading Area

Dumpster Pad

Gate w/ knox box

Proposed gas service

Service saddle

8" Gate valve

16x8 Tapping saddle

2" Type K waterline

8" CLDI Fire protection waterline

Approximate location of transformer & generator. Design by others.

DH-1
Elev=264.2
GW=257.7

DH-2
Elev=267.8
GW=258.8

1" PE Water

Existing utility pole to be retained

Grease Trap
1,000 gal

Septic Tank
5000 gal, 2 chamber

(13) 26.25' Trenches
2048 ft² Total leaching area

Limit of Water Resource District

DMH-1 DMH-2 DMH-3 DMH-4 DMH-5 DMH-6 DMH-7 DMH-10
HDS-1 HDS-2 HDS-3
CB-1 CB-2 CB-3 CB-4 CB-5 CB-6 CB-8
DMH-6A

LEGEND

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Utility & Grading Plan

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located at
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Scale: 1" = 20'
Revised June 16, 2020

COMMONWEALTH OF MASSACHUSETTS
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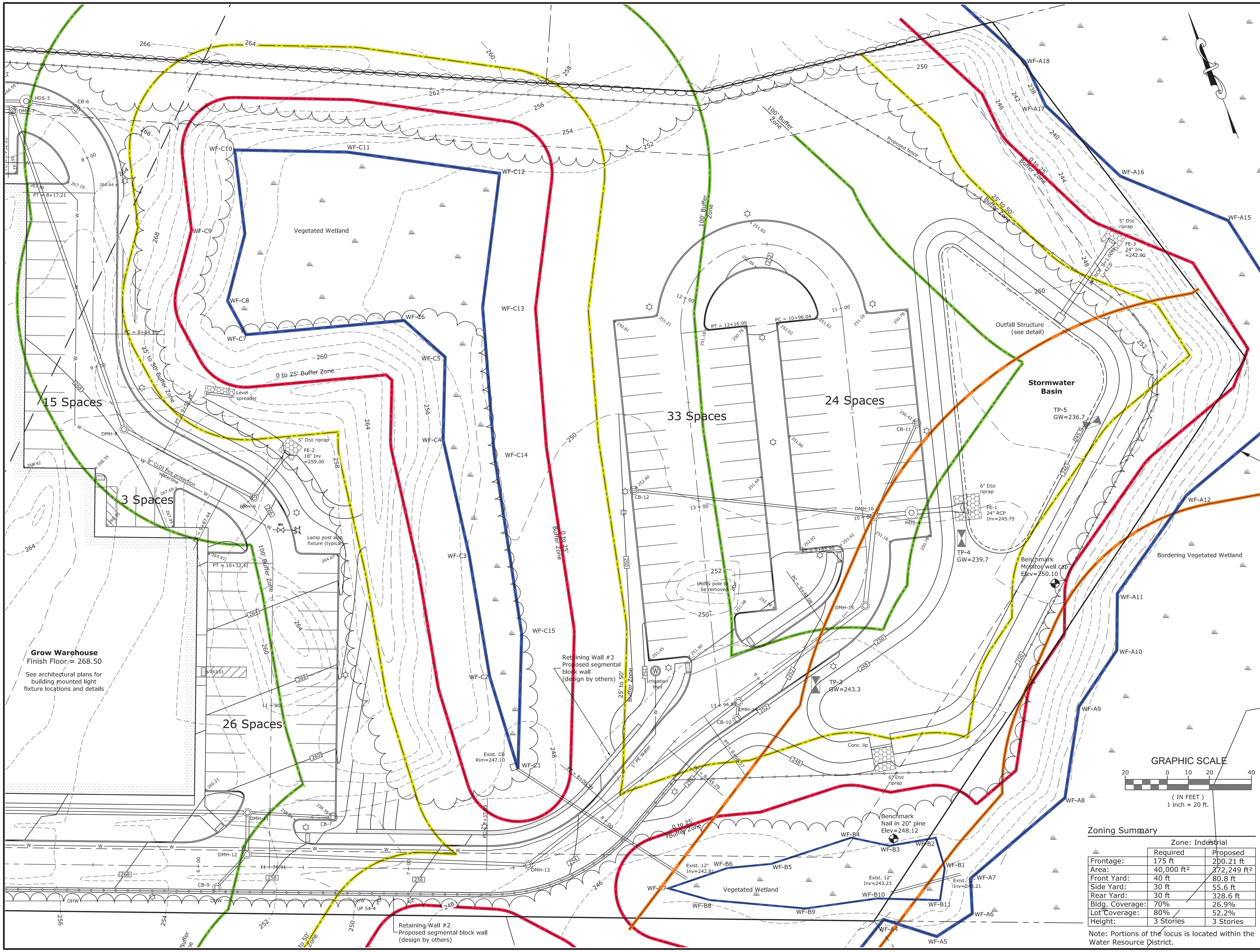
Scale **1" = 20'**
Date **February 14, 2020**
Job No. **B2521**
Sheet No. **4**



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NORMAN G. HILL CIVIL No. 31887

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Scale 1" = 20'
Date February 14, 2020
Sheet No. 5
Job No. B2521

Site Layout Plan

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located at
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LEGEND

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NORMAN G. HILL CIVIL No. 31887 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

Date: 6/16/20

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Date **February 14, 2020**

Job No. **B2521**

Sheet No. **6**

Assessor ID: 306-002-000-000

372,249± sq. ft.
8.55± acres

Infiltration System
6 rows of 31 Cultec R-330XLHD chambers in 25.67'x 220.50' washed stone field

S65°13'06"E 23.98'
S65°11'29"E 184.57'
S64°36'18"E 181.81'
S67°35'34"E 231.00'
S68°45'37"E 191.00'
S62°35'34"E 96.89'
N23°22'00"E 671.85'
N 23°50'46" E 188.21'
N22°24'26"E 126.14'
N22°24'26"E 111.41'
S22°24'26"W 66.88'
N67°35'34"W 913.15'
Limit of Water Resource District

Grove Street
(50' Wide)

25 Spaces
17 Spaces
19 Spaces
15 Spaces
Loading Area
Dumpster Pad
Snow storage area
Wheel stop (typical)
Vert. precast conc. curb (typical)
Provide accessible parking signs for each space, mounted on wall of building
Van accessible
Conc. walk flush with pavement
5' Conc. sidewalk
Setback Line (typical)
Stop sign
Proposed gas service
Service saddle
8" Gate valve
16x8 Tapping saddle
2" Type K waterline
8" CLDI Fire protection waterline
Vertical granite curb at roundings to Grove Street
Gate w/ knox box
Existing utility pole to be retained
Approximate location of transformer & generator. Design by others.
Vertical precast conc. curb (typical)
Grease Trap 1,000 gal
Septic Tank 5000 gal, 2 chamber
(13) 26.25' Trenches 2048 ft² Total leaching area
1" PE Water
Snow storage area

Headhouse
Bottom floor = 268.50
Upper floor = 278.75

See architectural plans for building mounted light fixture locations and details

Grow Warehouse
Finish Floor = 268.50

See architectural plans for building mounted light fixture locations and details

CB-1 CB-2 CB-3 CB-4 CB-5 CB-6 CB-8
DMH-2 DMH-3 DMH-4 DMH-5 DMH-6A DMH-7 DMH-10
HDS-2 HDS-3
UP 54-1 UP 54-2 UP 54-3
TR. GEN.

Site Layout Plan

HENNEP CULTIVATION & PRODUCTION FACILITY

located at
160 Grove Street
Franklin, MA

Owned By
Hennep Properties, LLC
200 Brookline Ave, #508
Boston, MA

Prepared for
HENNEP CULTIVATION LLC
1330 Boylston St Unit 202
Boston, MA 02215

Scale: 1" = 40'
Revised June 16, 2020

LEGEND

SW STONE WALL	
IPF IRON PIN FOUND	
DHF DRILL HOLE FOUND	
BOUND TO BE SET	
BOUND FOUND	
DRAIN MANHOLE	
CATCH BASIN	
UTILITY POLE	
EXISTING CONTOUR	
PROPOSED CONTOUR	
PROPOSED SPOT GRADE	
LIGHT - WALL MOUNTED	
LIGHT - POLE MOUNTED	
SIGN	
ETC ELECT., TEL. & CABLE	
W WATER LINE	
S SEWER LINE	
G GAS LINE	
OHW OVERHEAD WIRE	
FENCE	
GUARD RAIL	
x WF-# WETLAND FLAG	

COMMONWEALTH OF MASSACHUSETTS
NORMAN G. HILL
CIVIL
No. 31887
REGISTERED PROFESSIONAL ENGINEER

Date: 6/16/20

Norman G. Hill, PE #31887

Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

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508-839-9526

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1" = 20'

Date
February 14, 2020

Job No.
B2521

Sheet No.
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Grow Warehouse
Finish Floor = 268.50

See architectural plans for building mounted light fixture locations and details

Driveway Plan & Profile

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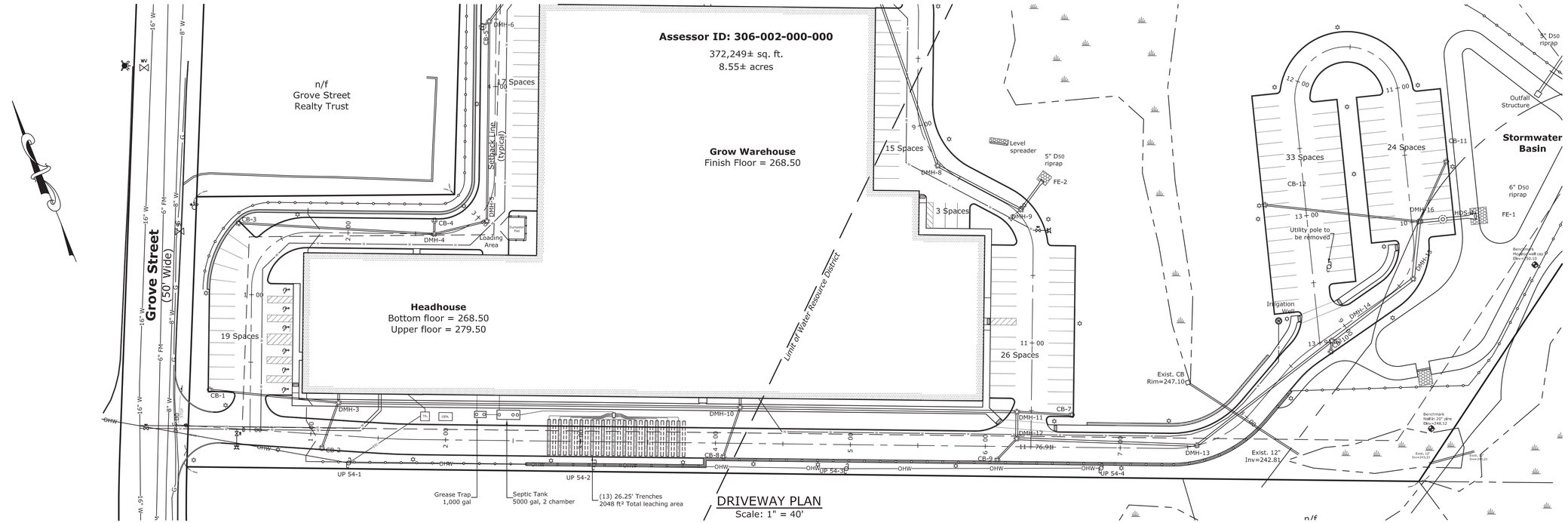
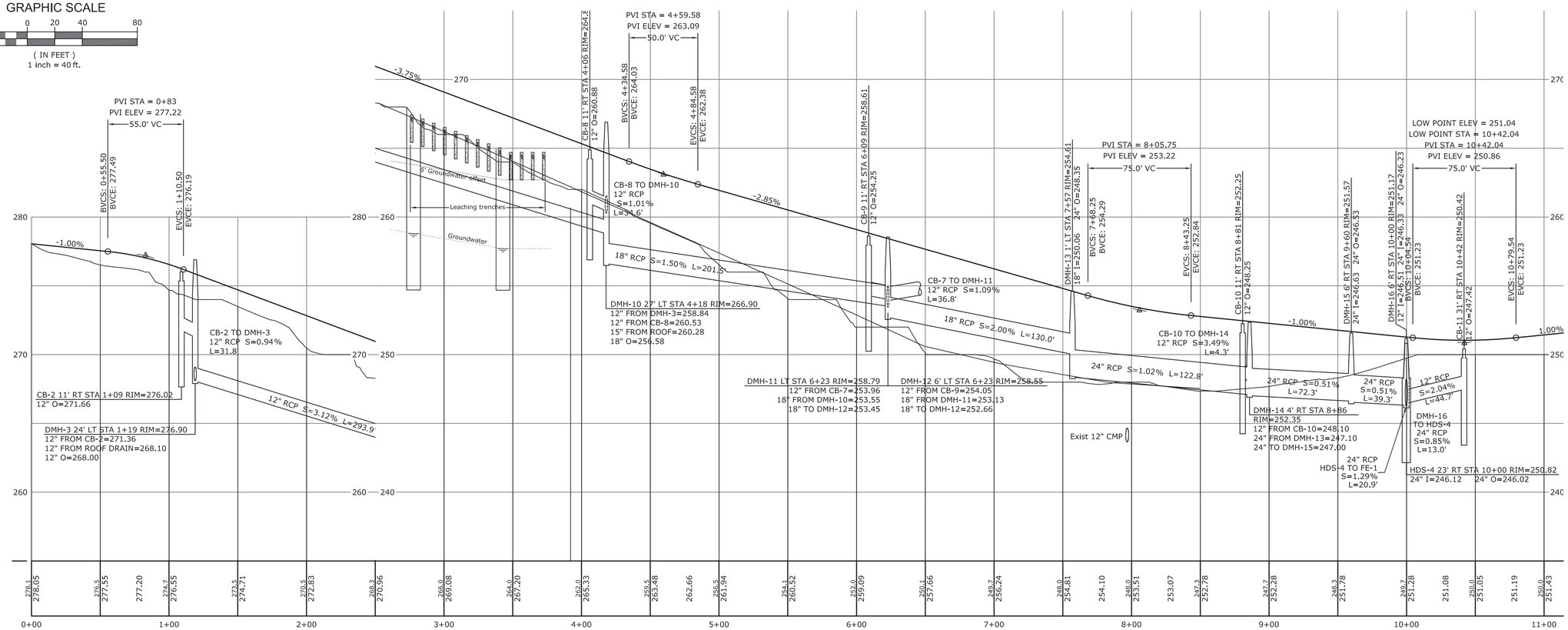


DRIVEWAY PLAN
Scale: 1" = 40'

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.



DRIVEWAY PROFILE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

Note: All RCP drain pipes are to be Class V pipe

LEGEND

SW	STONE WALL
IPF	IRON PIN FOUND
DHF	DRILL HOLE FOUND
	BOUND TO BE SET
	BOUND FOUND
	DRAIN MANHOLE
	CATCH BASIN
	UTILITY POLE
100	EXISTING CONTOUR
100	PROPOSED CONTOUR
581x5	PROPOSED SPOT GRADE
	LIGHT - WALL MOUNTED
	LIGHT - POLE MOUNTED
	SIGN
ETC	ELECT., TEL. & CABLE
W	WATER LINE
S	SEWER LINE
G	GAS LINE
OHW	OVERHEAD WIRE
	FENCE
	GUARD RAIL
x WF-#	WETLAND FLAG

COMMONWEALTH OF MASSACHUSETTS
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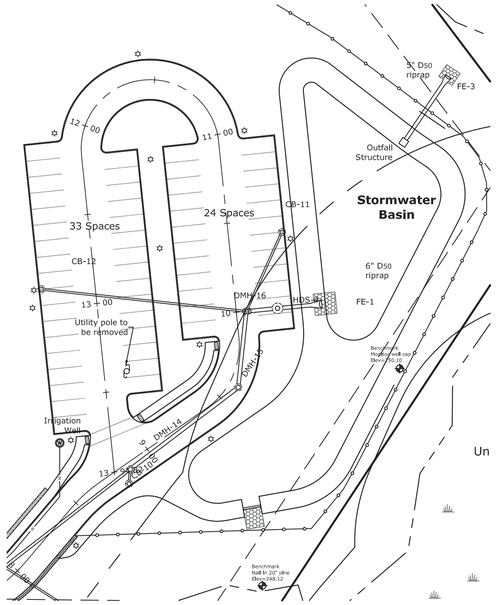
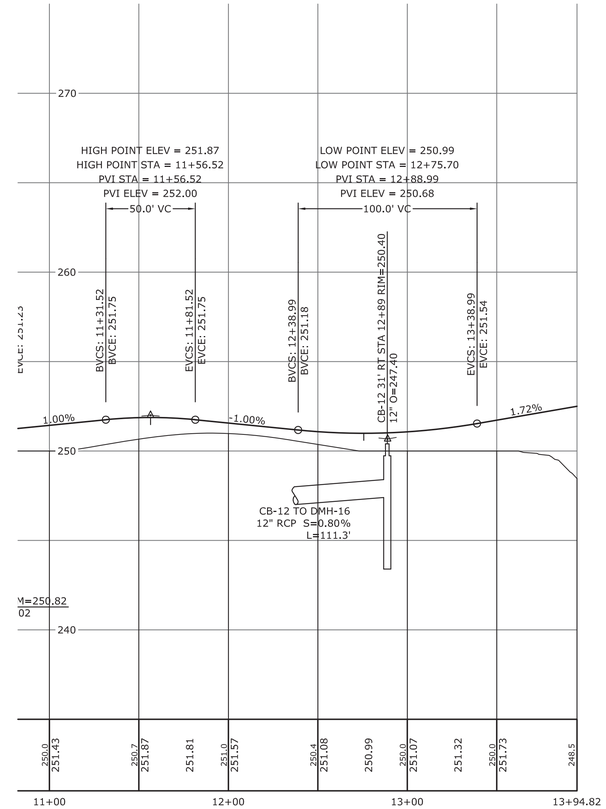
Date: **February 14, 2020**
Job No. **B2521**
Sheet No. **8**



DRIVEWAY PLAN
Scale: 1" = 40'



Note: All RCP drain pipes are to be Class V pipe

DRIVEWAY PROFILE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

GRAPHIC SCALE
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(IN FEET)
1 inch = 40 ft.

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Date
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9

GRAPHIC SCALE

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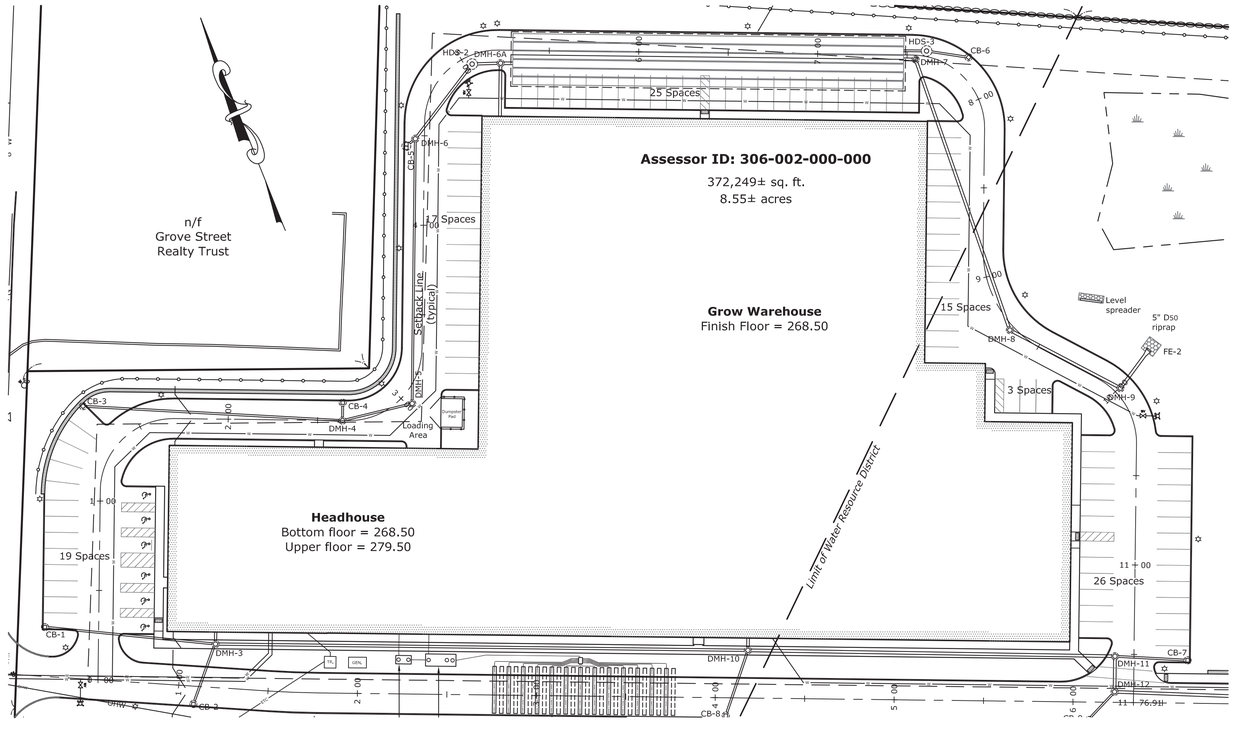
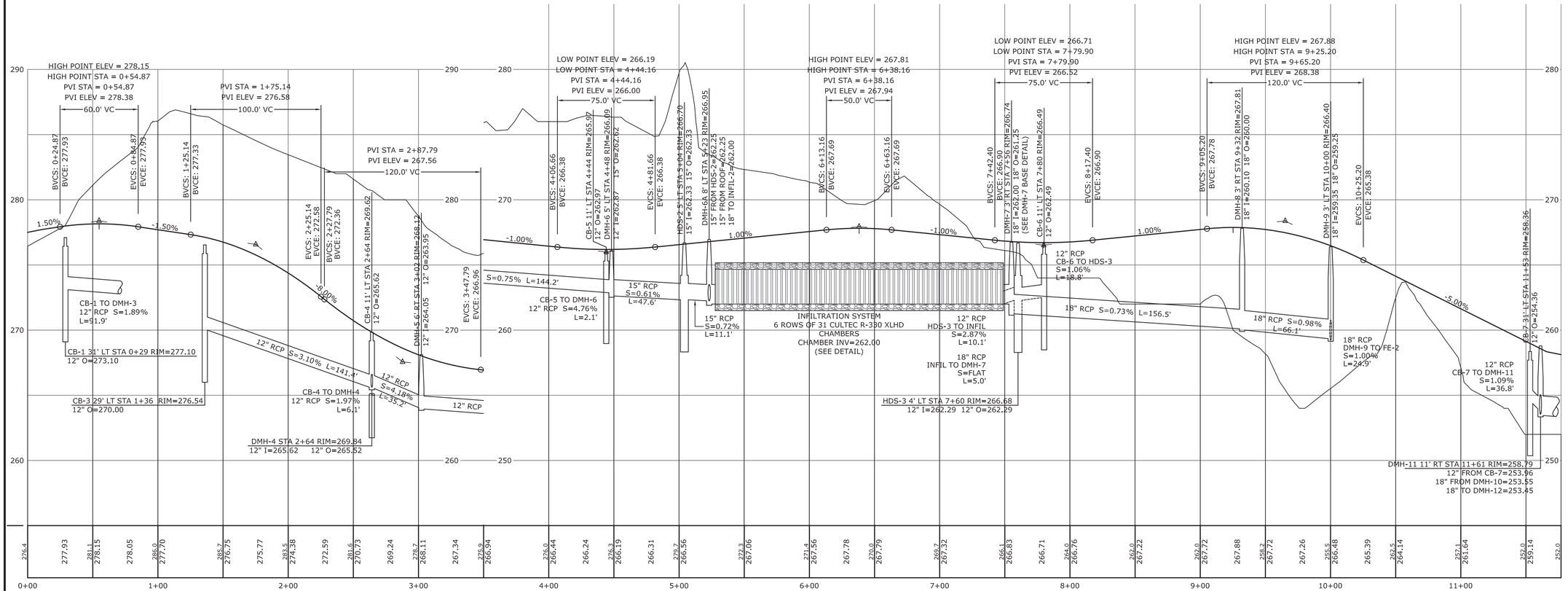
(IN FEET)
1 inch = 40 ft.





Note: All RCP drain pipes are to be Class V pipe

DRIVEWAY PROFILE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

Driveway Plan & Profile

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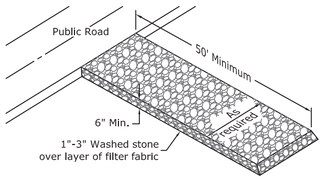
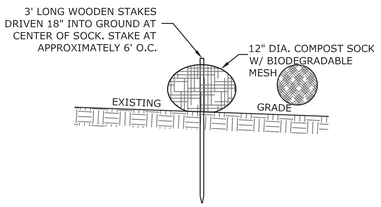
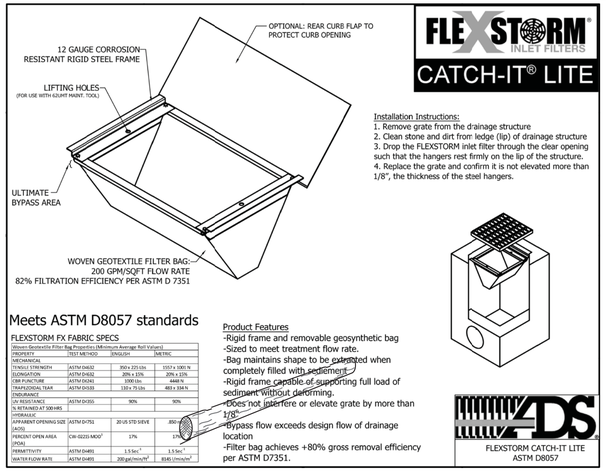


CONSTRUCTION ENTRANCE ANTI-TRACKING PAD DETAIL
Not to Scale





FLEXSTORM® INLET FILTERS
CATCH-IT® LITE

Installation Instructions:
1. Remove grate from the drainage structure
2. Clean stone and dirt from ledge (lip) of drainage structure
3. Drop the FLEXSTORM inlet filter through the clear opening such that the hangers rest firmly on the lip of the structure.
4. Replace the grate and confirm it is not elevated more than 1/8", the thickness of the steel hangers.

Meets ASTM D8057 standards

FLEXSTORM FX FABRIC SPECS

(Woven Geotextile Fills Bag Properties (Minimum Average Roll Values))			
PROPERTY	TEST METHOD	ENGLISH	METRIC
MECHANICAL			
TENSILE STRENGTH	ASTM D4632	350 x 225 lbs	1557 x 1001 N
ELONGATION	ASTM D4632	20% x 15%	20% x 15%
CBR PUNCTURE	ASTM D6241	1000 lbs	4448 N
TRAPEZOIDAL TEAR	ASTM D4533	130 x 75 lbs	489 x 334 N
ENDURANCE			
UV RESISTANCE	ASTM D4355	90%	90%
% RETAINED AT 500 HRS			
HYDRAULIC			
APPARENT OPENING SIZE (AOS)	ASTM D-751	20 US STD SIEVE	850 µm
PERCENT OPEN AREA (POA)	CW-02215 MOD*	17%	17%
PERMITTIVITY	ASTM D4491	1.5 Sec^{-1}	1.5 Sec^{-1}
WATER FLOW RATE	ASTM D4491	200 gal/min/ft^2	8145 l/min/m^2

Product Features
-Rigid frame and removable geosynthetic bag
-Sized to meet treatment flow rate.
-Bag maintains shape to be emptied when completely filled with sediment
-Rigid frame capable of supporting full load of sediment without deforming.
-Does not interfere or elevate grate by more than 1/8"
-Bypass flow exceeds design flow of drainage location
-Filter bag achieves +80% gross removal efficiency per ASTM D7351.

FLEXSTORM CATCH-IT LITE ASTM D8057

CATCH BASIN FILTER BAG DETAIL
(not to scale)

Erosion & Sediment Control Notes

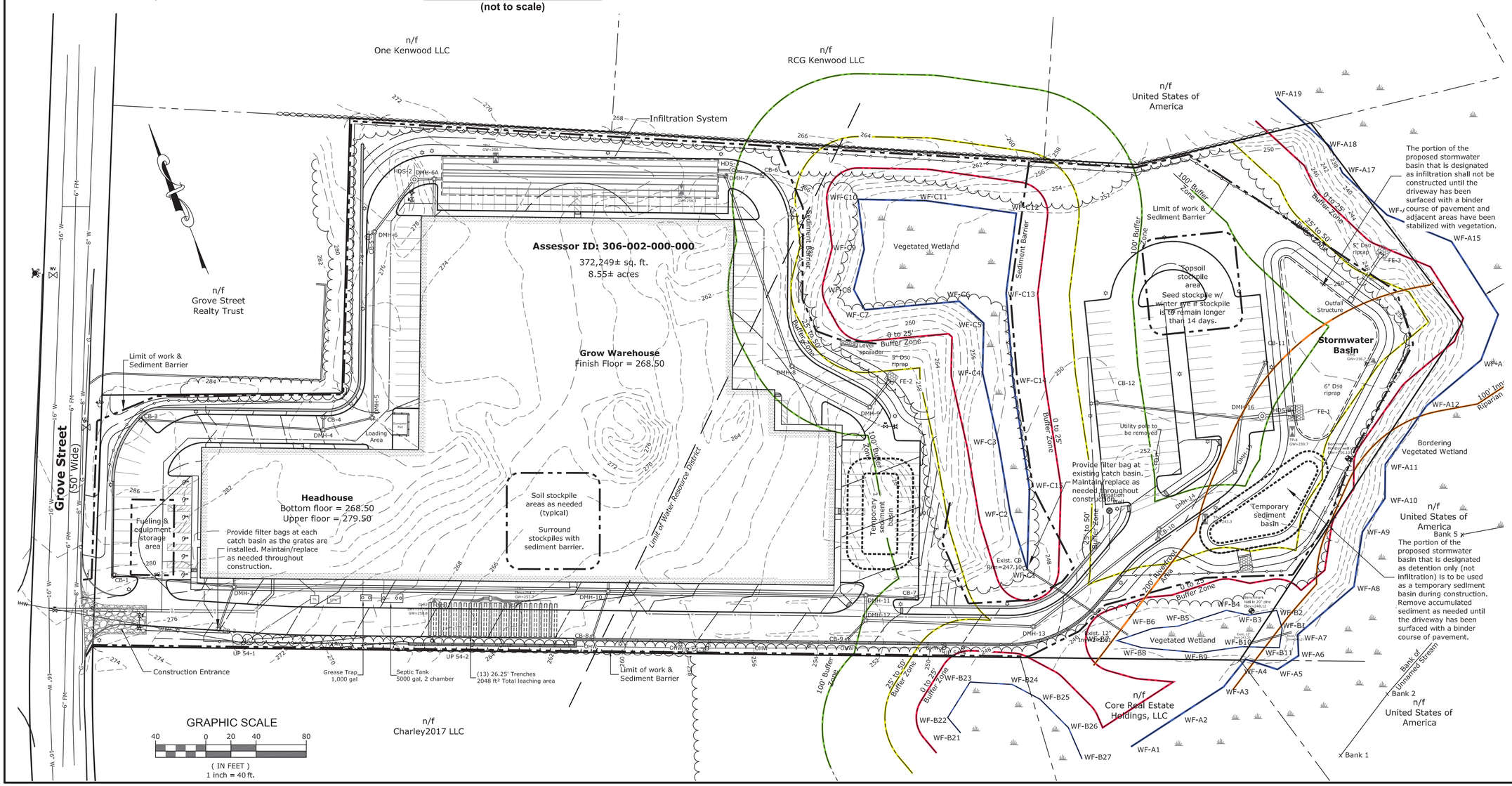
1. Sediment barriers are to be installed where shown on this plan. The contractor and the owner are responsible for the proper maintenance of the sediment barriers and to identify and correct all sources of erosion. Extra sediment barrier materials are to be stored on site in order to quickly repair erosion prone areas. Periodic maintenance of the erosion control structures is required in order to insure the proper protection of the resource areas.
2. Rough grading and pavement construction are to be confined to areas as shown on these plans. Any stockpiled material that is subject to erosion shall be protected at its base on the down-slope side with a silt fence.
3. Temporary stabilization of disturbed areas is required to limit erosion toward abutting properties and public ways. All graded slopes are to be stabilized on a daily basis with special care taken to avoid routing rainfall through gullies toward the resource areas. Areas of erosion are to be repaired on a daily basis.
4. The contractor is to use proper judgment relative to construction practices during adverse weather conditions or periods of high groundwater. No work is to be performed near the wetland areas during periods of heavy rainfall. Inspection is required after more than 1/2" of rainfall in 24 hours.
5. All graded areas are to be loamed and seeded as soon as possible in order to insure the rapid stabilization of the erosion prone areas. A grass seed mixture of 20% Red Top, 60% Chewings Fescue and 20% Kentucky Bluegrass is recommended. "Hydroseed" with high fiber content.
6. The Sediment barriers shall remain in place until all upgradient areas have been stabilized.
7. During periods of heavy rainfall, it will be expected to experience erosion of the unstabilized slopes. Immediate attention to the maintenance of these eroded areas will further insure the successful stabilization of the exposed slopes while limiting the impacts to nearby resource areas.
8. See the Construction Stormwater Pollution Prevention Plan for additional practices and controls.

Utility Notes

1. Place 4" Loam and seed all disturbed areas of the project not otherwise improved.
2. All underground utility locations shown are based on field evidence and records provided to Land Planning, Inc.. These locations should be considered approximate. Other utilities may exist which are not evident or for which record information was not found. The contractor must contact all utility companies and "Dig Safe" before excavation begins. We assume no responsibility for damages incurred as a result of utilities omitted or inaccurately shown.
3. It is the responsibility of the contractor to review all of the drawings and specifications associated with this project work and project scope prior to the initiation of construction. Should the contractor find a conflict with the documents, relative to the specifications or applicable codes, it is the contractor's responsibility to notify the project engineer of record in writing prior to the start of construction. Failure by the contractor to notify the project engineer shall constitute acceptance of full responsibility by the contractor to complete the scope of work as defined by the drawings and in full conformance with local regulations and codes.
4. All work shall conform to Town of Franklin requirements and Massachusetts Highway Department construction standards as applicable.

General Notes

1. All elevations refer to NAVD 1988 datum.
2. No portion of the site is located within the limits of the 100 yr flood zone as shown on the FIRM Map #25021C0308E dated 07/17/12



Sediment & Erosion Control Plan

HENNEP CULTIVATION & PRODUCTION FACILITY

located at
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Prepared for
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Scale: 1" = 40'
Revised June 16, 2020

LEGEND

SW	STONE WALL
IPF	IRON PIN FOUND
DHF	DRILL HOLE FOUND
	BOUND TO BE SET
	BOUND FOUND
	DRAIN MANHOLE
	CATCH BASIN
	UTILITY POLE
100	EXISTING CONTOUR
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581x5	PROPOSED SPOT GRADE
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COMMONWEALTH OF MASSACHUSETTS
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Date **February 14, 2020**
Job No. **B2521**
Sheet No. **11**

Landscape Plan

HENNEP CULTIVATION & PRODUCTION FACILITY

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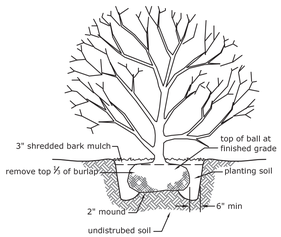
PLANTING LEGEND

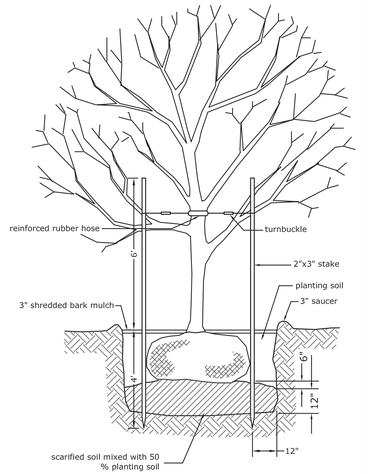
❀	TREE - 2" MIN. CALIPER
🟩	TURF GRASS
🟩	BUFFER ZONE & RIVERFRONT AREA RESTORATION TREES - 30' SPACING E. RED CEDAR & CHOKEBERRY SHRUBS - 25' SPACING GRAY DOGWOOD, BAYBERRY, STAGHORN SUMAC HERBACEOUS - THROUGHOUT @ 1 LB/1750 FT² NEW ENGLAND CONSERVATION/WILDLIFE MIX
🟦	DETENTION BASIN BOTTOM AND INNER BERM - EROSION CONTROL/RESTORATION MIX @ 35 LB/ACRE
🟧	BOTTOM OF INFILTRATION STAGE OF STORMWATER BASIN - 6" OF C33 SAND

PLANTING NOTES

1. ALL OTHER DISTURBED AREAS NOT DESIGNATED AS TURF GRASS TO BE MULCHED
2. TREES TO BE SELECTED FROM THE TOWN OF FRANKLIN BEST DEVELOPMENT PRACTICES GUIDEBOOK

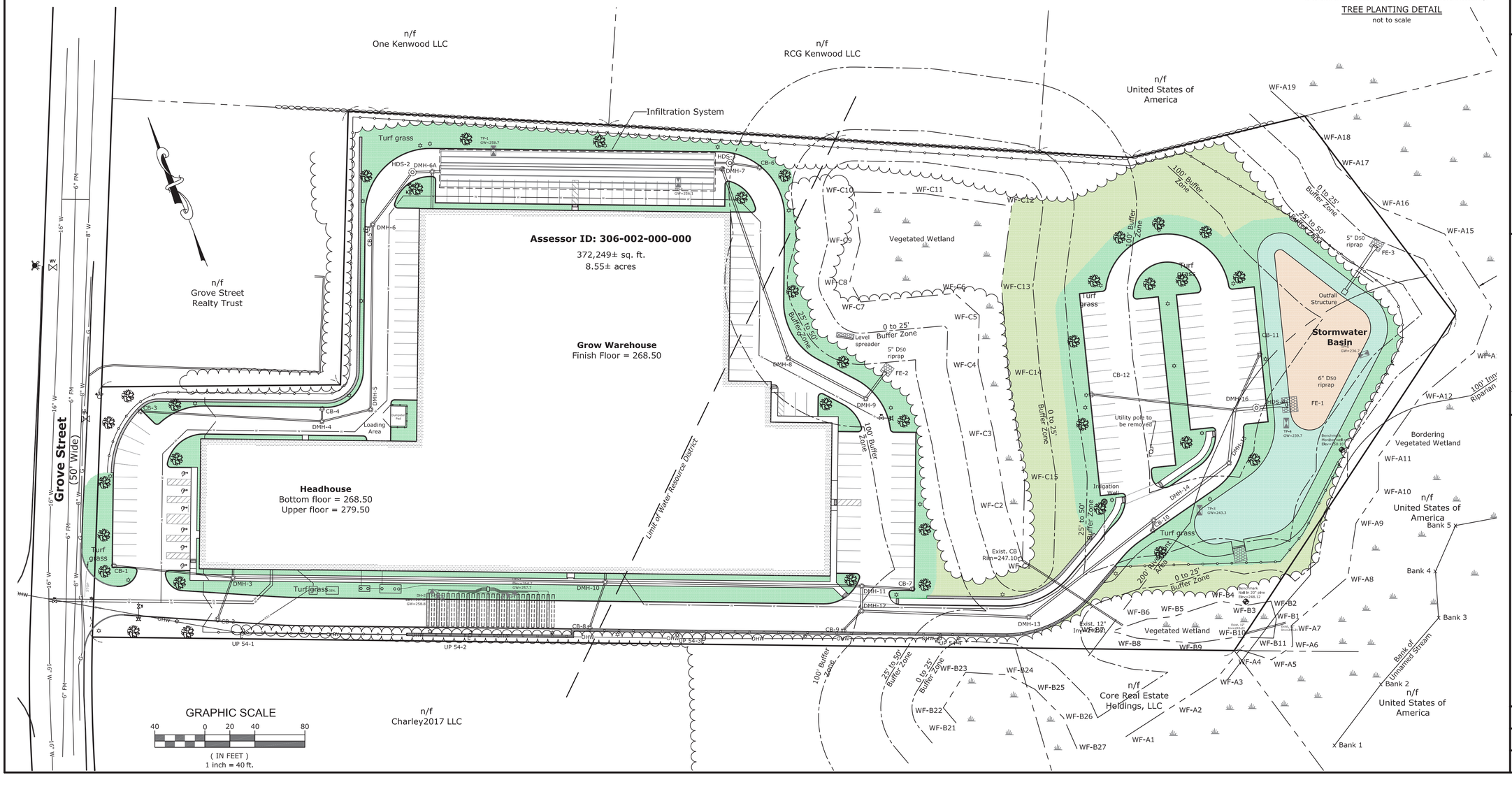


SHRUB PLANTING DETAIL
not to scale



note: guying systems employing buckles & cables shall be brought to tension & turnbuckle threads be flattened to prevent loosening.

TREE PLANTING DETAIL
not to scale



LEGEND

○○○○○○	SW STONE WALL
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▪	BOUND FOUND
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☌	UTILITY POLE
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☼	LIGHT - POLE MOUNTED
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o—o—o	GUARD RAIL
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NORMAN G. HILL
CIVIL
No. 31887

Norm G Hill, PE

Date: 6/16/20

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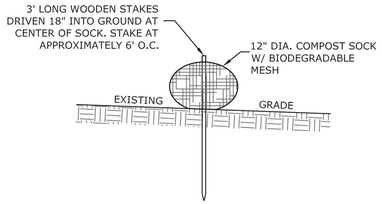
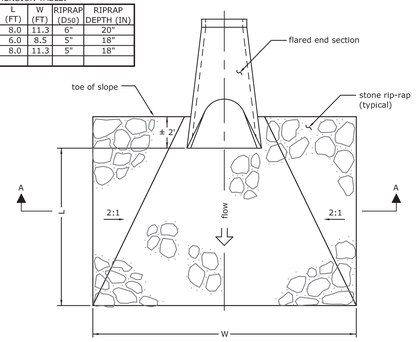
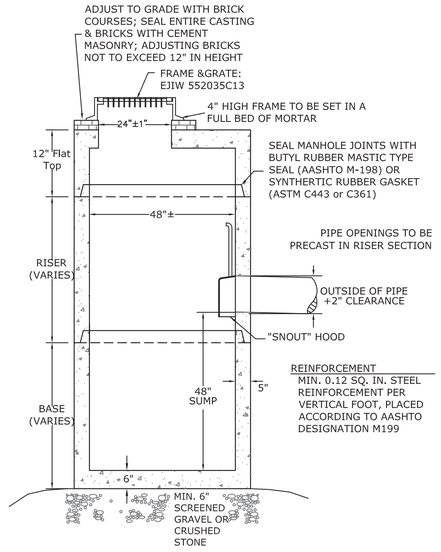


DIMENSION TABLE:

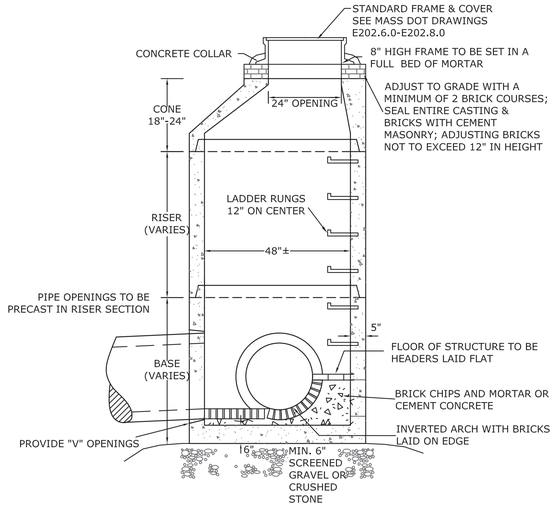
FLARED END	PIPE DIA.	L (FT)	W (FT)	RIPRAP (D50)	RIPRAP DEPTH (IN)
FE-1	24"	8.0	11.3	6"	20"
FE-2	18"	6.0	8.5	5"	18"
FE-3	24"	8.0	11.3	5"	18"



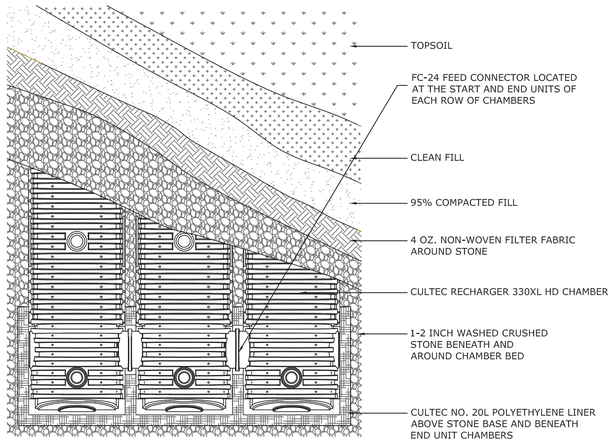
FLARED END EROSION PROTECTION DETAIL
not to scale



PRECAST CONCRETE CATCH BASIN DETAIL
(not to scale)

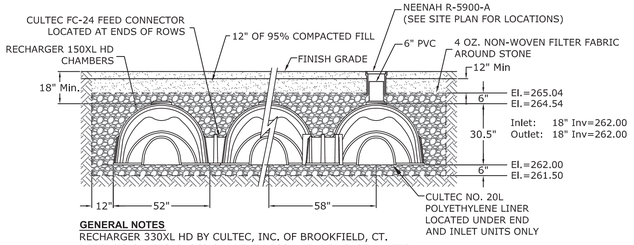


PRECAST CONCRETE MANHOLE DETAIL
(not to scale)



INFILTRATION SYSTEMS - PLAN VIEW
(not to scale)

Infiltration system consists of 6 rows of 31 Recharger 330XL HD units. All rows to be connected with FC-24 Feed Connectors between the end units of each row.



GENERAL NOTES
RECHARGER 330XL HD BY CULTEC, INC. OF BROOKFIELD, CT. REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.

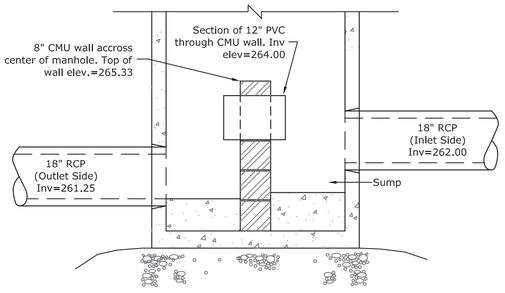
INFILTRATION SYSTEMS - CROSS SECTION
(not to scale)

INFILTRATION SYSTEM FILL SPECIFICATIONS:

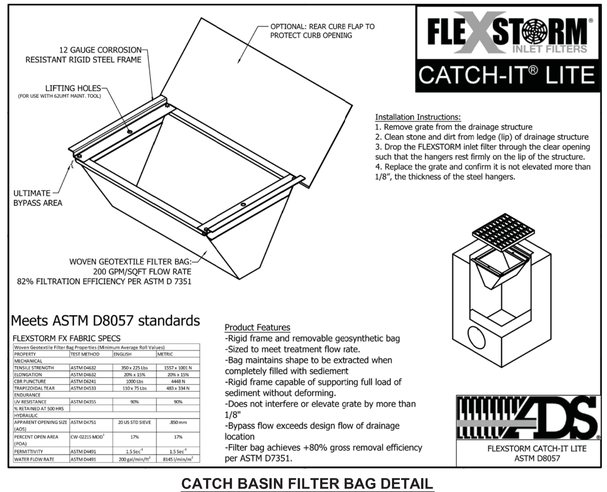
Fill material required beneath the infiltration system shall consist of select on-site or imported soil material. The fill shall be comprised of clean granular sand, be free from organic matter and deleterious substances, and shall not contain Remediation Waste as that term is defined in 310 CMR 40.0000. Mixtures and layers of different classes of soil shall not be used. The fill shall not contain any material larger than two inches. A sieve analysis, using a #4 sieve, shall be performed on a representative sample of the fill. Up to 45 % by weight of the fill sample may be retained on the #4 sieve. Sieve analyses also shall be performed on the fraction of the fill sample passing the #4 sieve, such analyses must demonstrate that the material meets each of the following specifications:

SIEVE SIZE	EFFECTIVE PARTICLE SIZE	% THAT MUST PASS SIEVE
# 4	4.75 mm	100%
# 50	0.30 mm	10% - 100%
#100	0.15 mm	0% - 20%
#200	0.075 mm	0% - 5%

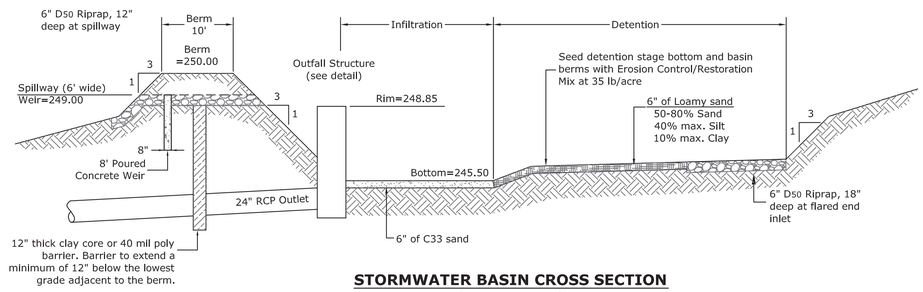
Any fill required to replace unsuitable or impermeable soils, the excavation of the unsuitable material shall extend a minimum of five feet laterally in all directions beyond the outer perimeter of the infiltration system to the depth of naturally occurring pervious material, and replaced with suitable fill material.



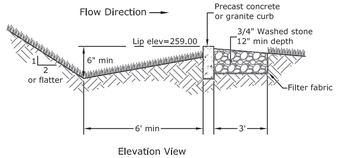
DMH-7 MANHOLE BASE
(not to scale)



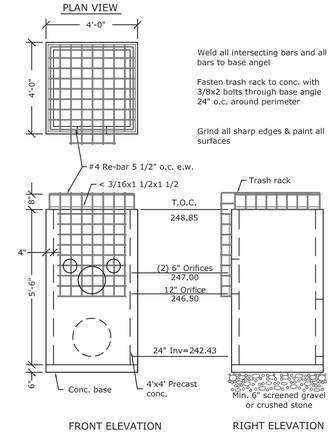
CATCH BASIN FILTER BAG DETAIL
(not to scale)



STORMWATER BASIN CROSS SECTION
(not to scale)



LEVEL SPREADER DETAIL
not to scale



OUTFALL STRUCTURE DETAIL
(not to scale)

Details Plan

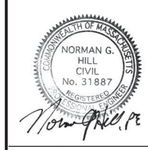
HENNEP CULTIVATION & PRODUCTION FACILITY

located at
160 Grove Street
Franklin, MA

Owned By
Hennep Properties, LLC
200 Brookline Ave, #508
Boston, MA

Prepared for
HENNEP CULTIVATION LLC
1330 Boylston St Unit 202
Boston, MA 02215

Scale: As Noted
Revised June 16, 2020



Date: 6/16/20
Norman G. Hill, PE #31887

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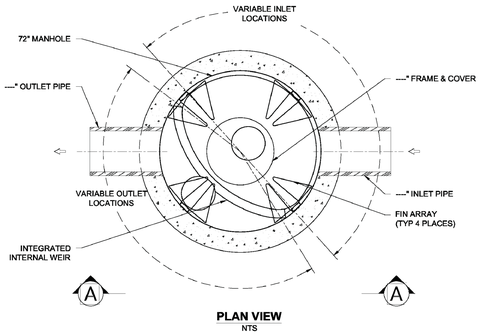
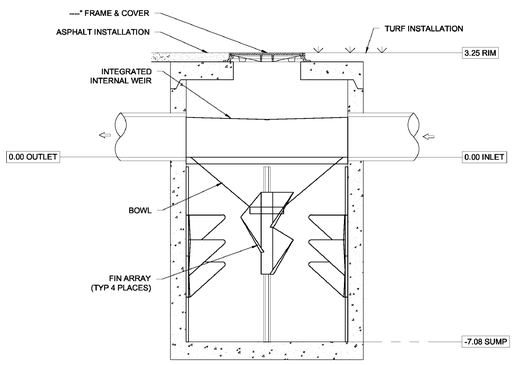
Date
February 14, 2020

Job No.
B2521

Sheet No.
13

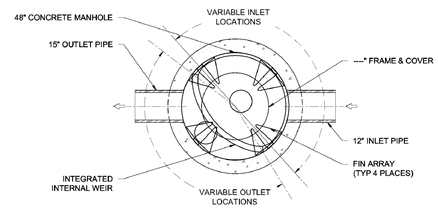


PLAN VIEW
NTS

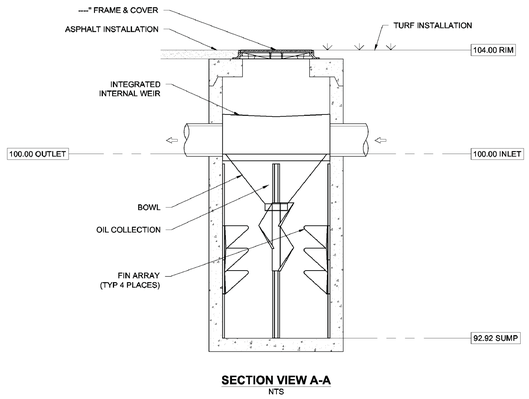


SECTION VIEW A-A
NTS

BARRACUDA S6 DETAIL
(not to scale)
Use S6 unit at HDS-4

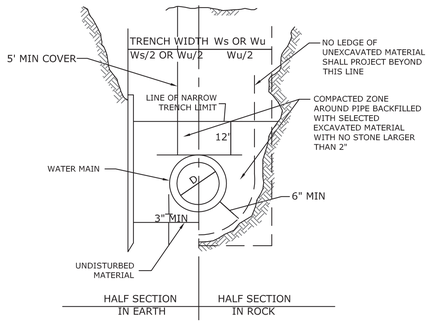


PLAN VIEW
NTS



SECTION VIEW A-A
NTS

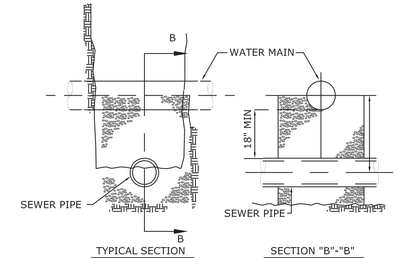
BARRACUDA S4 DETAIL
(not to scale)
Use S4 unit at HDS-2 and HDS-3



FOR SHEETED TRENCH Ws=4/D + 32" OR 50", WHICHEVER IS GREATER.
FOR UNSHEETED TRENCH Wu=4/3 D + 18" OR 36", WHICHEVER IS GREATER.

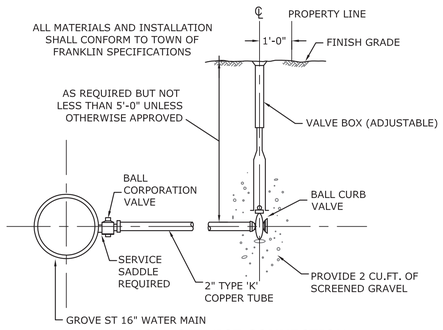
NOTES:
1. TRENCHES MAY BE EXCAVATED WIDER THAN THE TRENCH WIDTH Ws ABOVE THE "LINE OF NARROW TRENCH LIMIT.
2. BELOW THE "LINE OF NARROW TRENCH LIMIT" THE TRENCH SHALL NOT BE EXCAVATED BEYOND THE TRENCH WIDTH Ws.
3. SHEETING, IF USED, IN ALL CASES SHALL BE LEFT IN PLACE BELOW A LINE ONE FOOT ABOVE THE TOP OF THE PIPE, UNLESS OTHERWISE INDICATED OR DIRECTED.
4. "COVER" AT ANY POINT SHALL BE DEFINED AS THE VERTICAL DISTANCE FROM THE UPPERMOST POINT OF THE PIPE TO A LINE WHICH CONNECTS THE SURFACE OF UNDISTURBED GROUND AT EITHER SIDE OF THE TRENCH AND IS AT RIGHT ANGLES TO THE DIRECTION OF THE PIPE.
5. WHERE FUTURE EXTENSION OF A PLUGGED PIPE OR PLUGGED BRANCH WILL ENTAIL ROCK EXCAVATION, TRENCH EXCAVATION IN ROCK SHALL BE EXTENDED FOR A DISTANCE OF FIVE FEET BEYOND THE PLUG.

WATER MAIN TRENCH DETAIL
NOT TO SCALE

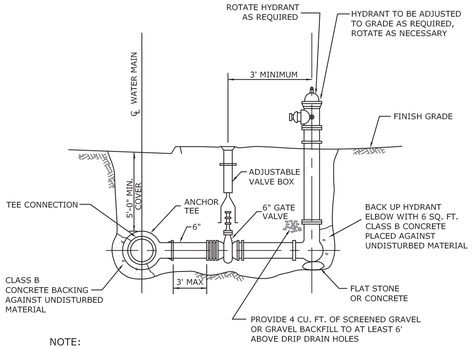


NOTE: IN THE EVENT OF A SEWER MAIN OR SEWER SERVICE CROSSING A WATER MAIN OR WATER SERVICE CLOSER THAN 10', THE SEWER MAIN OR SERVICE SHALL BE COMPLETELY ENCASED IN 6" OF 3,000 P.S.I. CONCRETE FOR A DISTANCE OF 10' ON EACH SIDE OF THE CROSSING.

UTILITY CROSSING DETAIL
N.T.S.

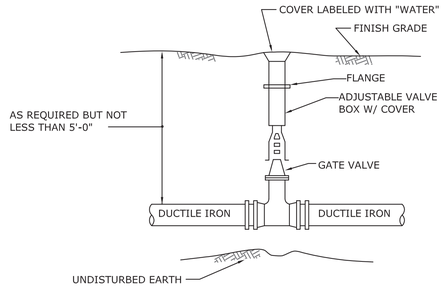


TYPICAL SERVICE CONNECTION
NOT TO SCALE

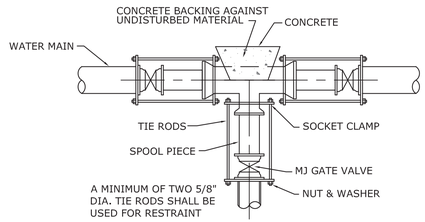


NOTE:
1. HYDRANT AND GATE VALVE TO BE RODDED TO ANCHOR TEE.
2. SEE FORCE MAIN THRUST BLOCK DETAIL FOR THE AREA OF CONCRETE REQUIRED

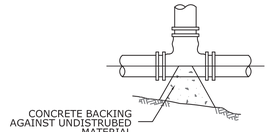
TYPICAL HYDRANT AND VALVE DETAIL
NOT TO SCALE



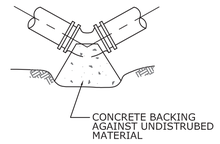
TYPICAL GATE VALVE
NOT TO SCALE



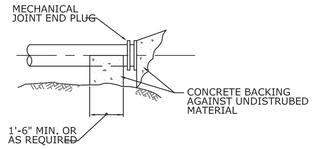
TYPICAL VALVE CONNECTION
RESTRAINED JOINT TEE
NOT TO SCALE



TYPICAL TEE



TYPICAL BEND



TYPICAL PLUG

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NORMAN G. HILL
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REGISTERED PROFESSIONAL ENGINEER

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Job No.: **B2521**
Sheet No.: **14**

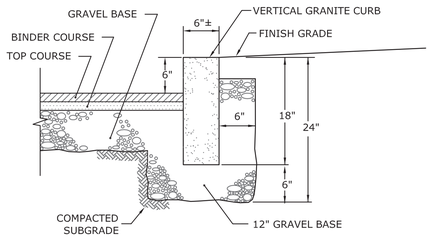
Sign to be mounted on post at 7' height to bottom of sign

Sign to be mounted on building wall at the head of standard accessible parking spaces

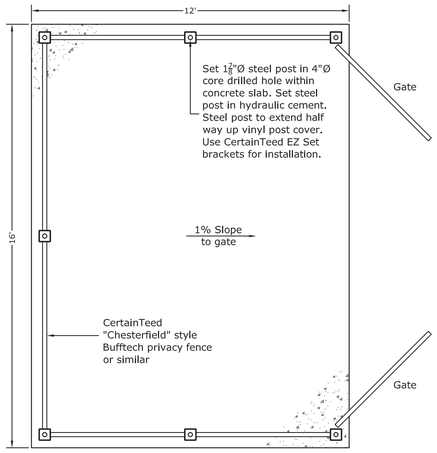
Sign to be mounted on building wall at the head of van accessible parking spaces

Mount signs 5' min. to 8' max. to top of sign

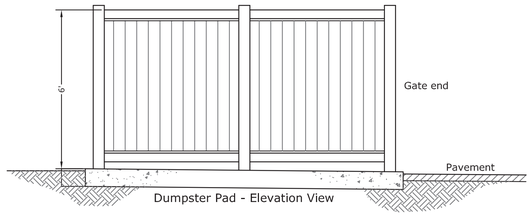
SIGN DETAILS
(not to scale)



VERTICAL GRANITE CURB DETAIL
(not to scale)

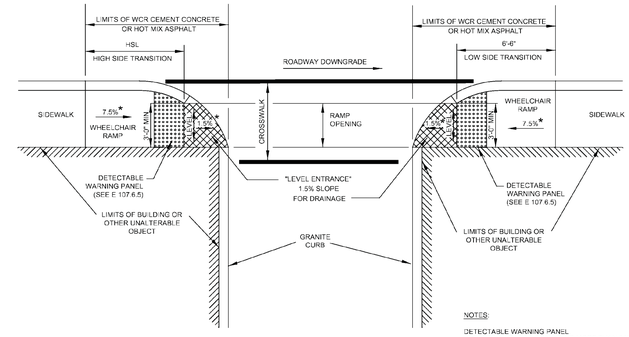


Dumpster Pad - Plan View



Dumpster Pad - Elevation View

Dumpster Pad and Fence Detail
not to scale



LEGEND

HSL = HIGH SIDE TRANSITION LENGTH (SEE E 107.9.0)

★ = TOLERANCE FOR CONSTRUCTION ±0.5%

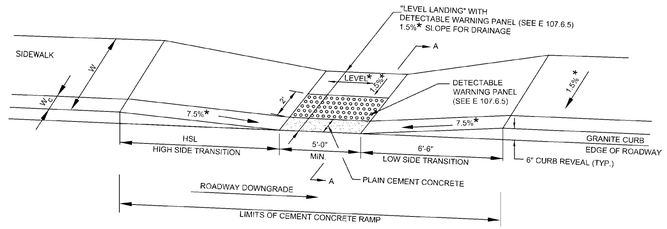
NOTES:

DETECTABLE WARNING PANEL LOCATED NOT LESS THAN 6" OR MORE THAN 24" FROM ROADWAY EDGE (GUTTER LINE). TRUNCATED DOMES TO BE ALIGNED WITH DIRECTION OF TRAVEL.

FOR DETAILS OF TRUNCATED DOMES SEE DRAWING E 107.6.5.

ROADWAY, GUTTER, AND FIRST 6" OF SIDEWALK TO BE ADJUSTED FOR FIELD CONDITIONS

MassDOT Highway Division — CONSTRUCTION STANDARDS	WHEELCHAIR RAMP FOR ONE CONTINUOUS DIRECTION OF PEDESTRIAN TRAVEL	DATE OF ISSUE: OCTOBER 2017
		DRAWING NUMBER: E 107.6.0

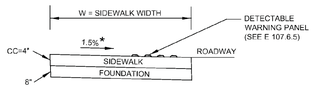


LEGEND

HSL = HIGH SIDE TRANSITION LENGTH (SEE E 107.9.0)
W = SIDEWALK WIDTH
W_C = CURB WIDTH
CC = CEMENT CONCRETE
★ = TOLERANCE FOR CONSTRUCTION ±0.5%

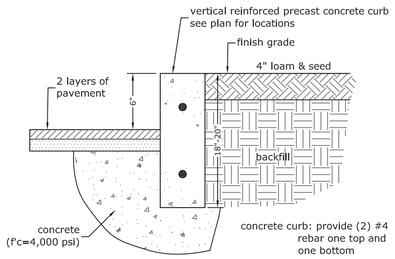
USABLE SIDEWALK WIDTH PER AAB = W-Wc
USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'0"
SEE E 107.6.5 FOR DETAILS OF DETECTABLE WARNING PANEL

NOTE:
ROADWAY, GUTTER, AND FIRST 6" OF SIDEWALK TO BE ADJUSTED FOR FIELD CONDITIONS

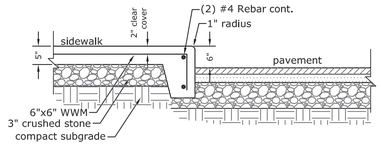


SECTION A-A

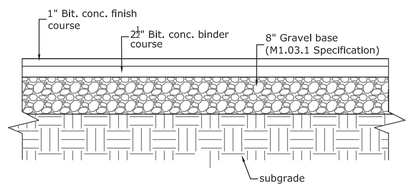
MassDOT Highway Division — CONSTRUCTION STANDARDS	WHEELCHAIR RAMP ON NARROW SIDEWALK WITH DETECTABLE WARNING PANEL	DATE OF ISSUE: OCTOBER 2017
		DRAWING NUMBER: E 107.2.1



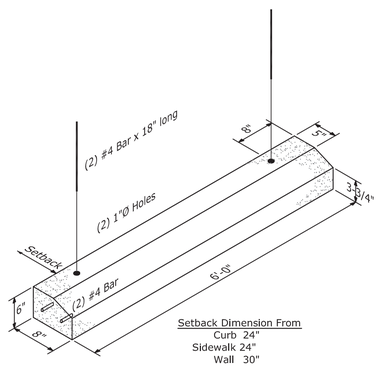
VERTICAL PRECAST CONCRETE CURB DETAIL
not to scale



MONOLITHIC CONCRETE SIDEWALK/CURB DETAIL
not to scale



BITUMINOUS CONCRETE PAVING DETAIL
not to scale



PRECAST CONCRETE WHEEL STOP DETAIL
not to scale

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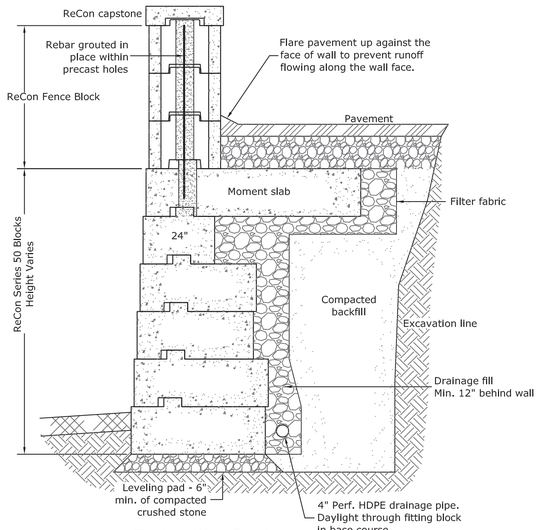
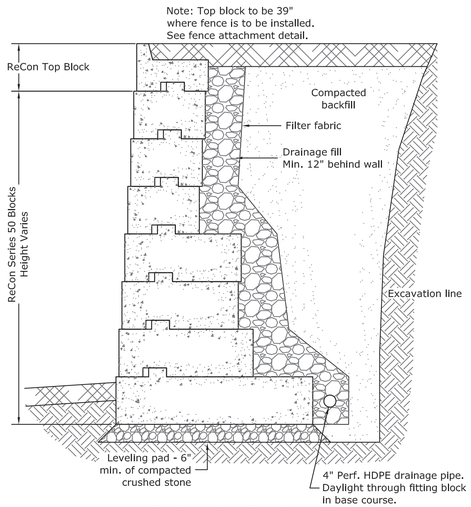
Job No.: **B2521**
Sheet No.: **15**

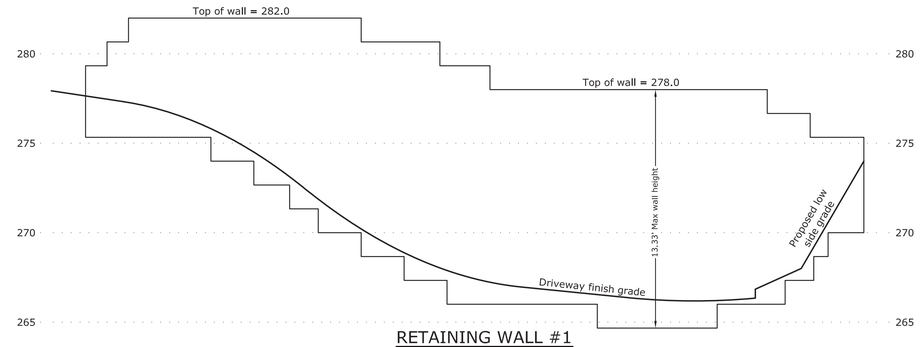
Note: Wall details depict the general requirements for the proposed segmental block gravity walls. Structural analysis and design, construction details, and specifications to be provided by others.



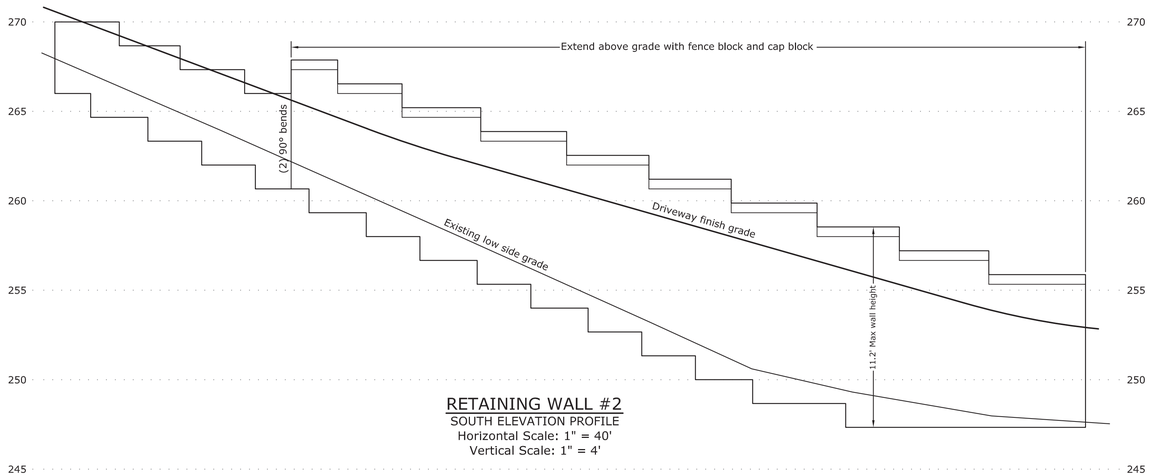
Typical Wall Section
(Wall Adjacent to Pavement)
Scale: 1/2" = 1'-0"



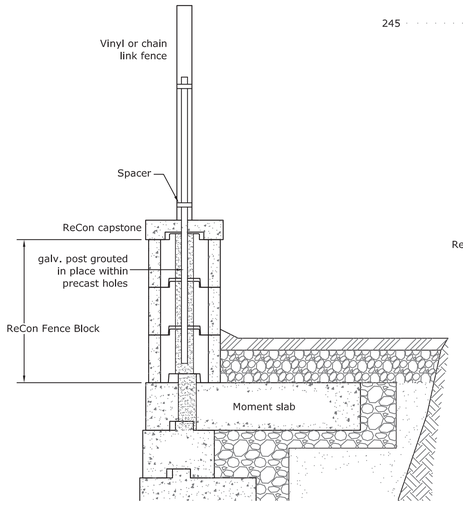
Typical Wall Section
(Wall Adjacent to Landscape Area)
Scale: 1/2" = 1'-0"



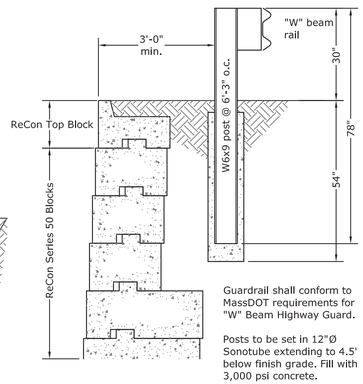
RETAINING WALL #1
SOUTH/EAST ELEVATION PROFILE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



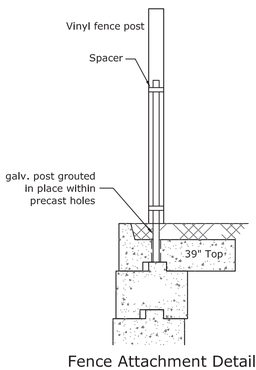
RETAINING WALL #2
SOUTH ELEVATION PROFILE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



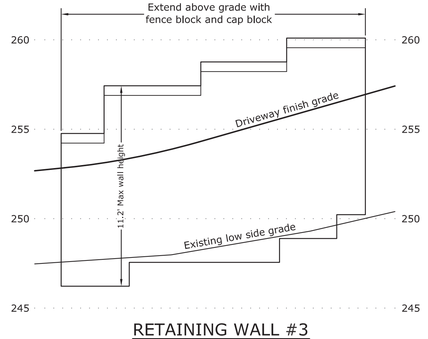
Fence Attachment Detail
(Wall Adjacent to Pavement)
Scale: 1/2" = 1'-0"



Guard Rail Placement Detail
Scale: 1/2" = 1'-0"



Fence Attachment Detail
(Wall Adjacent to Landscape Area)
Scale: 1/2" = 1'-0"



RETAINING WALL #3
NORTH ELEVATION PROFILE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

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Owned By
Hennep Properties, LLC
200 Brookline Ave, #508
Boston, MA

Prepared for
HENNEP CULTIVATION LLC
1330 Boylston St Unit 202
Boston, MA 02215

Scale: As Noted
Revised June 16, 2020

COMMONWEALTH OF MASSACHUSETTS
NORMAN G. HILL
CIVIL
No. 31887
REGISTERED PROFESSIONAL ENGINEER

Date: 6/16/20
Norman G. Hill, PE #31887

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Scale: **1" = As Noted**
Date: **February 14, 2020**
Job No.: **B2521**
Sheet No.: **16**

Grove Street Development Trip Generation

		Weekday	IN	OUT	AM	IN	OUT	PM	IN	OUT	Saturday	IN	OUT	Mid-day	IN	OUT
160 Grove Street		-	-	-	106	77	29	48	5	43	-	-	-	-	-	-
162 Grove Street		3,416	1,708	1,708	187	101	86	335	10	175	3,638	1,819	1,819	403	194	209
164 Grove Street																
176 and 210 Grove Street		282	141	141	26	20	6	29	8	21	-	-	-	-	-	-
TOTAL		3,698	1,849	1,849	319	198	121	412	23	239	3,638	1,819	1,819	403	194	209

IMPROVING COMMUNITIES TOGETHER

July 08, 2020

Mr. Anthony Padula, Chairman
Franklin Planning Board
355 East Central Street
Franklin, MA 02038

Re: Hennep Cultivation and Production Facility – Site Development Plan & Special Permit
160 Grove Street Peer Review Update

Dear Mr. Padula:

BETA Group, Inc. has reviewed revised documents for the proposed Site Plan and Special Permit application, "Hennep Cultivation and Production Facility," located at 160 Grove Street in Franklin, Massachusetts. This letter is provided to update findings, comments, and recommendations.

BASIS OF REVIEW

The following documents were received by BETA and form the basis of the review:

- Plans (16 Sheets) entitled ***Site Development Plan: Hennep Cultivation & Production Facility,*** revised to June 16, 2020 prepared by Land Planning Inc. of Bellingham, MA
- Application for Approval of a Site Plan and Special Permits including the following:
  - Special Permit and Site Plan Application Form
  - Certificate of Ownership Authorization Form
  - Certified List of Abutters within 300-feet
  - Supporting Statement
  - Odor Abatement Report
  - Host Community Agreement
  - Use Square Footage Analysis for Parking Space Determination
  - Waiver Requests (Parking)
  - Security Plan
- Cooling Fan performance charts, provided January 28, 2020.
- **Stormwater Report,** revised May 20, 2020, prepared by Land Planning, Inc.

Review by BETA included the above items along with the following, as applicable:

- Site Visit
- ***Zoning Chapter 185 From the Code of the Town of Franklin,*** dated January 30, 2019.
- ***Zoning Map of the Town of Franklin, Massachusetts,*** attested to August 23, 2018
- ***Stormwater Management Chapter 153 From the Code of the Town of Franklin,*** Adopted May 2, 2007
- ***Subdivision Regulations Chapter 300 From the Code of the Town of Franklin,*** dated January 1, 2016.
- ***Wetlands Protection Chapter 181 From the Code of the Town of Franklin,*** dated August 20, 1997.
- ***Town of Franklin Best Development Practices Guidebook***, dated September 2016.

INTRODUCTION

The project site is an 8.55 +/- acre parcel located at 160 Grove Street in the Town of Franklin (the "Site"). The Town of Franklin Assessor's office identifies the parcel as Lot 306-002. The Site is located within the Industrial (I) zoning district; parcels in all directions are also located in this district. Portions of the property are within the Water Resources district.

The front portion of the lot is partially developed with a residential building (1,250 +/- SF) near Grove Street. The rear portion of the lot is improved with two structures (2,820 +/- SF and 1,810 +/- SF). A driveway provides access to each of these structures from Grove Street. Additional existing site development includes landscaping, sheds, concrete pads, and trailers. Undeveloped portions of the lot are generally woodlands or wetlands.

Topography at the Site generally slopes towards the east into several series of vegetated wetlands. Slopes are varied throughout the Site, with steep (25% - 50%) slopes in the center and edges of the property, and shallower slopes near the developed portions. A vegetated wetland is located in the center of the property, and bordering vegetated wetlands are located along its eastern boundary. A Zone II Wellhead Protection Area is present on the eastern portion of the Site. The project is not located in proximity to an estimated habitat of rare or endangered species. The Site is not located within a FEMA-Mapped 100-year flood zone. NRCS soil maps indicate the presence of Merrimac fine sandy loam with a Hydrologic Soil Group (HSG) rating of A (high infiltration potential).

The project proposes to remove existing structures and construct a 100,528 +/- SF structure for use as a recreational use cultivation and production manufacturing marijuana establishment. Associated site improvements include tree clearing, re-grading, the installation of paved parking areas and driveways, loading areas, a septic system, domestic and fire protection water services, odor abatement technologies, and security/safety measures. Stormwater management is proposed to be accomplished through a closed drainage system with catch basin and manhole conveyance, two subsurface infiltration systems, and a stormwater basin. Work is proposed within wetland buffer zones, but no alterations are proposed within wetland resource areas.

COMPILED REVIEW LETTER KEY

BETA reviewed this project previously and provided review comments in letters to the Board dated December 31, 2019, March 6, 2020, and May 28, 2020 (original comments in standard text), Price Lobel Tye, LLP (PLT) and Land Planning, Inc. (LPI) provided responses (responses in *italic text*), and BETA has provided comments on the status of each (status in **standard bold text**).

FINDINGS, COMMENTS AND RECOMMENDATIONS

GENERAL COMMENTS

G1. Provide details for pavement, sidewalks, wheelchair ramps, retaining walls, erosion controls, curbs, signs, drainage structures, subsurface infiltration system, stormwater basin, utility installations, fences, dumpster pads, tree plantings, and other site features. *PLT: The Revised Plans depict these details, with the exception of the dumpster pad detail, which will be added to the next revised set of plans.* **BETA2: Provide details for retaining walls, utility installations, dumpster pads, signs, and each style of wheelchair ramp proposed.** *LPI: The requested additional details have been provided.* **BETA3: Details provided – issue resolved.**

G2. Provide legend/labels for all proposed site features including, but not limited to, walks, stairs, curbing, fence, etc. *PLT: The Revised Plans address this comment.* **BETA2: Legend not provided – issue remains outstanding.** *LPI: The legend has been revised.* **BETA3: Legend revised to include additional features – issue resolved.**

G3. Indicate source and methodology for obtaining existing survey data. *PLT: A note referencing the source and methodology will be added to the next revised plan.* **BETA2: Issue remains outstanding.** *LPI: The note regarding the sources of survey information has been added to the General Notes on sheet 2, Existing Conditions Plan.* **BETA3: Information provided – issue resolved.**

G4. Confirm the project will fully comply with §185-22.B. and provide information on any regulations or restrictions related to the proposed external deodorant agent (Odor Armor 420). The manufacturer's Material Safety Data Sheet should also be provided. *PLT: The project and the proposed Facility will comply with Section 185-22.B of the Town of Franklin Zoning Bylaws (the "Bylaws") and the Applicant is working with BETA Group Inc's sub-consultants to address this requirements.* **BETA2: Information provided. Review of proposed odor control mitigation to be provided under separate cover.**

G5. Provide fire hydrants around the building to the satisfaction of the Fire Chief. *PLT: The Revised Plans show the fire main service line coming into the building of the Facility. Engel Architects is designing additional specifications and will be working with the Franklin Fire Department.* **BETA2: BETA defers to the Fire Chief on this issue; however, notes that no hydrants are currently depicted on the plans.** *LPI: Hydrants have been added to the plans.* **BETA3: Two hydrants provided. BETA defers to the Fire Chief on this issue – no further comment.**

G6. Provide spot grades to identify grading along sidewalks, ramps, and building entrances. Detailed grading should be provided for accessible parking and routes to ensure compliance with Massachusetts Architectural Access Board requirements. *PLT: The Plans comply with ADA and AAB requirements. Additional grades will be added to the next revised grading plan.* **BETA2: Issue remains outstanding. BETA notes that grading depicted on the plans indicates that slopes within the accessible parking areas exceed the maximum 2% permitted.** *LPI: The accessible parking area has been reconfigured and regraded to comply with the requirements of 521 CMR.* **BETA3: Grading revised at accessible parking – issue resolved.**

G7. Provide top and bottom elevations for all retaining walls. *PLT: The retaining wall elevations and details will be shown on a revised set of plans. Please note that the Applicant proposes fencing along all proposed retaining walls. Moreover, all retaining walls require building permits, which will address the heights and structural requirements.* **BETA2: Issue remains outstanding.** *LPI: General details and*

elevations of the 3 proposed retaining walls have been added to sheet 16 of the plans. The specifics of the structural design and details will be provided by others as part of the building permit application for the retaining walls. **BETA3: Information provided. BETA notes that due to height of the walls (>10 feet) structural design and permitting through the building department will be required prior to construction.** *LPI2: The necessary information will be provided to the Building Department with the application for the required Building Permit.* **BETA3: Information provided – no further comment.**

ZONING

The Site is located within the Industrial (I) zoning district; parcels in all directions are also located in this district. The eastern portion of the property is located within the Water Resources district. A non-medical marijuana facility is permitted in the Industrial zoning district via a Special Permit by the Planning Board. An application for a Special Permit has been provided, and the Site is within the Marijuana Use Overlay District.

SCHEDULE OF LOT, AREA, FRONTAGE, YARD AND HEIGHT REQUIREMENTS (§185 ATTACHMENT 9)

As proposed, the lot complies with minimum lot area, frontage, depth, width, front, rear, and side yard dimensions, and maximum impervious coverage of structures and structures plus paving. The lot does not abut any residential uses that would require increases to side and rear yard dimensions.

PARKING, LOADING AND DRIVEWAY REQUIREMENTS (§185-21)

Access to the facility will be provided through a 22' – 24' +/- wide paved driveway replacing the existing curb cut in the southwestern portion of the Site. This driveway will encircle the proposed structure and provide access to a number of parking spaces along the building. The driveway also extends through the wetland buffer zone to provide access to a new paved parking area in the rear portion of the Site.

Section §185-21.B.(3)(b) describes the number of parking spaces required for nonresidential buildings. According to the provided planset, the facility will be divided between Office, Warehouse, and Industrial uses for the purposes of this section. Based on the proposed parking summary, 162 spaces are required.

The proposed plan includes 162 9' x 19' parking spaces, 105 which are located adjacent to the building. Five accessible parking spaces are proposed, two of which are van accessible.

The applicant initially requested a waiver from the required number of parking spaces on the grounds that only 30-35 employees are anticipated to be in the facility at any given time and it will not be open to the public; however, revised parking provides the required number of spaces, based upon a predominant warehouse use. The applicant has also requested a waiver from the requirement that parking spaces be located greater than 300 feet from the building entrance.

P1. At the discretion of the Board, provide a plan depicting features that can be constructed without granting waivers. *PLT: P1-P3 above have been addressed in the Revised Plans and in conjunction with the discussion with the Planning Board at its meeting of January 6, 2020.* **BETA2: BETA defers to the preference of the Board on this issue.**

P2. As requested by the Board, a floor plan depicting the number of employees required in each area of the building has been provided. Clarify the maximum number of employees per shift. *PLT: P1-P3 above have been addressed in the Revised Plans and in conjunction with the discussion with the Planning Board at its meeting of January 6, 2020.* **BETA2: Floor plan provided – issue resolved.**

P3. Recommend providing ramps and crosswalks for the sidewalk connections to the rear parking area. Ensure there are reasonable pedestrian accommodations from all parking areas to building entrances. *PLT: P1-P3 above have been addressed in the Revised Plans and in conjunction with the discussion with the Planning Board at its meeting of January 6, 2020.* **BETA2: Ramps provided. Recommend providing crosswalks for ramp connections. No pedestrian accommodations appear to be provided for the 25 spaces on the north side of the building. At a minimum, an access aisle should be provided between the parking spaces so pedestrians have unobstructed access to the building entrance.** *LPI: An access aisle has been provided as suggested.* **BETA3: Crosswalks and access aisle provided – issue resolved.**

P4. Provide empirical data from other facilities to demonstrate that the proposed number of parking spaces is adequate and designated "warehouse" use is appropriate for parking calculations. *PLT: The Applicant believes that it addressed this concern pursuant to the discussions with the Planning Board at its meeting of January 6, 2020. Additionally, the Applicant notes that the Board accepted the "Warehouse" use category for the grow areas of the recently approved cultivation facility at 4 Liberty Way, Franklin.* **BETA2: Information provided – issue resolved.**

P5. Quantify the number of parking spaces that are located greater than 300 feet from a building entrance, including those spaces adjacent to the building. *PLT: P5-P8 above have been addressed in the Revised Plans.* **BETA2: Based on the previous public hearing, the Board has indicated they are generally satisfied with the proposed parking layout – issue dismissed.**

P6. Provide trees for each parking area with 20 or more spaces in accordance with §185-21.C.(5). *PLT: P5-P8 above have been addressed in the Revised Plans.* **BETA2: Trees provided – issue resolved.**

P7. Provide typical dimensions for parking stalls, access aisles, and driveways. *PLT: P5-P8 above have been addressed in the Revised Plans.* **BETA2: Provide typical dimension for parking aisles – issue remains outstanding.** *LPI: The widths of the parking aisles have been added to the Site Layout Plans.* **BETA3: Dimensions provided – issue resolved.**

P8. Provide an additional accessible parking space to meet Massachusetts Architectural Access Board (MAAB) requirements. *PLT: P5-P8 above have been addressed in the Revised Plans.* **BETA2: Additional space provided. Relocate the two accessible spaces on the west side of the access aisle to the east to provide the shortest accessible route to the building, as required.** *LPI: The accessible parking area has been reconfigured to comply with the requirements of 521 CMR.* **BETA3: Accessible spaces relocated – issue resolved.**

P9. Revise accessible parking spaces to include handicap parking designations and signs in conformance with MAAB requirements. *PLT: Sign details/requirements will be added to the next plan revision.* **BETA2: Issue remains outstanding.** *LPI: Notes regarding the required accessible parking signage has been added to the plan. Details of the signs have been added to sheet 15, Details Plan.* **BETA3: Accessible signing and striping provided – issue resolved.**

P10. Provide ramps to the sidewalk at each shared aisle from accessible spaces. *PLT: Additional sidewalk ramps will be added to the next revised set of plans.* **BETA2: Issue remains outstanding.** *LPI: The sidewalk adjacent to the accessible parking has been lowered to be flush with the adjacent pavement. Ramps at each access aisle will not be required.* **BETA3: Provide bollards or car stops to prevent vehicles from encroaching onto sidewalk and provide protection to pedestrians.** *LPI2: Wheel stops*

have been added to all parking spaced immediately adjacent to a sidewalk, building wall, or retaining wall. **BETA3: Car stops provided – issue resolved.**

P11. Confirm that the proposed 22' access driveways are acceptable to the Fire Chief. *PLT: The proposed emergency vehicle accessibility is acceptable to the Fire Chief pursuant to his letter, dated November 26, 2019.* **BETA2: BETA defers to the Fire Chief – no further comment.**

EARTH REMOVAL REGULATIONS (§185-23)

Review of the grading plan indicates there are proposed cuts up to approximately 13 feet throughout the Site for installation of the parking areas and building. Earth removal of greater than 1,000 cubic yards of material requires a special permit by the Board of Appeals.

ER1. Provide an estimate of the total earth removal from the site. *PLT: The earthworks calculations will be updated to determine if there is a net cut/removal from the site.* **BETA2: Issue remains outstanding.** *LPI: The earthworks analysis has not been completed at this time. The cut/fill volumes will be provided at a later date.* **BETA3: Issue remains outstanding.** *LPI2: A summary of the estimated earthwork has been provided on Sheet 3 of the plans. The site requires a net cut of 27,496 yd3.* **BETA3: Information provided. BETA notes that the project will require an earth removal permit from the Board of Appeals prior to construction.**

CURBING (§185-29)

Although the plan set does not specifically note the proposed pavement edge treatments, typical line types appear to depict curbing along the driveway radius at Grove Street and between the parking area and front of the building. The remainder of the site appears to propose cape cod berm along the edge of pavement.

C1. The Bylaw does not include any provisions for the installation of cape cod berm. Revise berm to be vertical granite or reinforced concrete curbing adjacent to parking areas. Granite curb is required within the Grove Street right-of-way. BETA defers to the preference of the Board for the use of vertical or slant curbing along access driveways and the radius at Grove Street. *PLT: Additional notes regarding curbing materials will be added to the next revised set of plan. A vertical granite curbing detail will be added to the plan.* **BETA2: Issue remains outstanding.** *LPI: A vertical granite curb detail has been added to the detail sheet for the roundings adjacent to Grove Street. The remaining curbing on the site will be reinforced concrete. The linewidths have been adjusted on the plans and additional labels provided.* **BETA3: Vertical granite and reinforced concrete curb provided. Final plans should indicate that concrete shall be precast. Clarify if curb is proposed along the sidewalk adjacent to parking spaces (26 and 3) at the southeast corner of the building. BETA also notes there appears to be no barrier between the building and the 17 proposed spaces on the west side of the building and the 15 spaces proposed along the east side of the building. Consider providing curb, bollards, or car stops.** *LPI2: Additional clarifications have been made on the plans regarding the proposed curbing. Wheel stops have been added to all parking spaces immediately adjacent to a sidewalk, building wall, or retaining wall.* **BETA3: Concrete curb detail revised and barrier (curb stops or monolithic curb/sidewalk) provided between vehicles and building/walks – issue resolved.**

SITE PLAN AND DESIGN REVIEW (§185-31)

The proposed improvements are subject to site plan review and thus must comply with the provisions of site plan approval requirements.t

S1. Provide north arrow on Sheets 2 through 5 §185-31.1.C.(3)(b). *PLT: This comment is addressed in the Revised Plans.* **BETA2: Arrow provided – issue resolved.**

S2. Revise locus map to include zoning information §185-31.1.C.(3)(d). *PLT: This will be added to the next set of revised plans.* **BETA2: Issue remains outstanding.** *LPI: The zoning information has been added to the locus map.* **BETA3: Locus revised – issue revised.**

S3. Indicate locations of proposed hydrants and lighting §185-31.1.C.(3)(i). *PLT: This comment is addressed in the Revised Plans.* **BETA2: Locations of light poles provided – issue resolved. BETA defers to the Fire Chief regarding the location of hydrants.**

S4. Provide the location, size, and sketch for all proposed signs §185-31.1.C.(3)(j). *PLT: This will be added to the next set of revised plans once determined.* **BETA2: Issue remains outstanding.** *LPI: Details for the proposed stop sign and accessible parking signs have been added to the plans.* **BETA3: Sign details provided – issue resolved.**

S5. Provide a landscaping plan and depict the existing tree line along the frontage of the property §185-31.1.C.(3)(k). *PLT: A landscape plan was included in the Revised Plans, subject to final review and change.* **BETA2: Landscaping Plan provided. Revise Note 2 to indicate that tree species shall be from the Town of Franklin Best Development Practices Guidebook and depict the existing tree line along the frontage of the property.** *LPI: A note referencing the Best Development Practices Guidebook for the selection of suitable planting materials has been added to the Landscaping Plan.* **BETA3: Note provided – issue resolved.**

S6. Provide a photometric plan for proposed lighting §185-31.1.C.(3)(l). In consideration of the proposed use, lighting should at a minimum conform with the Illuminating Engineer Society's "Lighting for Parking Facilities" and have sufficient illuminance around the building perimeter for security. *PLT: The Applicant is consulting with a photometric consultant for the selection of building and pole mounted fixtures.* **BETA2: Issue remains outstanding.** *LPI: A photometric plan has been provided with the revised plans.* **BETA3: Photometric plan provided. Indicate units for depicted illuminance levels and evaluate if spillage onto adjacent industrial properties can be reduced or eliminated. Also, although spillage onto Grove Street may be considered beneficial for roadway safety, the designer should confirm that the anticipated illuminance is not excessive compared to typical Town roadway lighting.** *LPI2: The lighting levels will be reviewed as suggested and a revised photometric plan will be provided as needed.* **BETA3: Revised plan provided that reduces spillage onto Grove Street to acceptable levels and significantly reduces spillage onto adjacent industrial properties. It is not anticipated that any of the spillage would be considered a nuisance; however, BETA defers to the preference of the Board.**

S7. Provide data quantifying the on-site generation of noise and calculated sound levels at the property lines §185-22.A. and §185-31.1.C.(3)(r). *PLT: The Applicant has provided noise specifications from the air handling fans that it proposes to use.* **BETA2: Sound information provided. Refer to review provided under separate cover.**

S8. Provide a trip generation summary for total and peak trips, including deliveries/shipments §185-31.1.C.(3)(s). *PLT: To be provided by the Applicant.* **BETA2: Issue remains outstanding.** *LPI: A Traffic Assessment report has been prepared by Ron Müller & Associates and has been included with the submittal of revised documents. The outstanding issues are addressed within the report.* **BETA3:**

Information provided. BETA defers to the preference of the Board to require a full review of the traffic analysis.

S9. Provide sight line information at the proposed entrance/exit in accordance with §185-21.C.(7)(c) §185-31.1.C.(3)(t). BETA notes that the existing tree line and topography restrict sight distance to the north of the site. *PLT: The available sight distance will be added to further revised plans. The Applicant expects some improvement to the existing sight distance as a result of clearing and grading adjacent to Grove Street.* **BETA2: Issue remains outstanding.** *LPI: A Traffic Assessment report has been prepared by Ron Müller & Associates and has been included with the submittal of revised documents. The outstanding issues are addressed within the report.* **BETA3: Sight line information provided indicating that minimum stopping sight distances can be provided at the intersection of the site driveway and Grove Street. Based on the information provided in the traffic report, the proponent should evaluate relocating or raising the existing private sign (Doering Equipment) located to the south to increase sight distance above the required minimum for stopping sight distance and to bring greater conformity to the desired intersection sight distance, particularly if the sign is located within the Town right-of-way. The traffic report also notes that grading and clearing is required to provide the minimum stopping sight distance to the north; however, site plans do not appear to indicate any grading with the Town right-of-way. BETA recommends the proponent work with the Town to perform grading within the right-of-way to increase sight distance to the north.** *LPI2: The applicant will provide updated information to the Board regarding the southerly abutter's sign that is obstructing the sight line. Revisions to the proposed grading between the front parking lot and the Grove Street curb have been made to maximize the sight distance available north of the driveway.* **BETA3: Grading revised to provide additional sight distance to north. BETA notes that the proposed Site Plan for the 162 Grove Street property calls to remove the existing "Doering Equipment" sign and the design engineer has been notified of sight distance concerns – issues resolved.**

WATER RESOURCE DISTRICT (§185-40)

The eastern portion of the Site is located within the Water Resource District due to the presence of a Zone II Wellhead Protection Area. An on-site sewage disposal system is depicted on the plans outside of, but in proximity, to the Water Resource District. It is anticipated that stormwater treatment and recharge calculations will be provided in the future as part of a Stormwater Management Report.

WR1. Provide estimated sewage flow to verify compliance with §185-40.D.(1)(i) and (k). *PLT: The calculated daily flow for the proposed septic system is 1500 GPD and is within the limitations of 185-40.D.(1)(i) and (k).* **BETA2: Information provided – issue resolved.**

WR2. Clarify if there will be any storage or disposal (i.e. directed to septic) of toxic or hazardous materials, fertilizers, pesticides, process chemicals, or fuel oil on the site to verify compliance with §185-22.B. §185-40.D.(1)(a) and (d). *PLT: No exterior storage of materials is proposed. The Applicant will provide additional information on any interior storage of materials. Moreover, all interior storage will be within the head-house, outside of the Water Resource District.* **BETA2: Issue remains outstanding.** *LPI: The applicant will provide additional information.* **BETA3: BETA recommends for the applicant discuss this issue with the Board.** *LPI2: The applicant will provide all necessary information necessary to satisfy any concerns the Board may have regarding material storage.* **BETA3: BETA defers to the Board on this issue.**

WR3. Provide a note requiring that any construction fill in excess of 15 cubic yards must be certified in accordance with the requirements of §185-40.E.(5). *PLT: The requested note will be added to a further revised set of plans.* **BETA2: Issue remains outstanding.** *LPI: The requested note has been added to the General Notes found on sheets 3 and 4 of the plans.* **BETA3: Note provided – issue resolved.**

WR4. Provide additional snow storage for parking/driveway areas outside of the Water Resource District. Snow containing deicing chemicals cannot be brought into the Water Resource District. *PLT: Snow storage areas adjacent to the paved surfaces, both inside and outside the Water Resource District, are shown on the Revised Plans.* **BETA2: Snow storage areas have been identified on the plans – issue resolved.**

MARIJUANA USE OVERLAY DISTRICT (§185-49)

The project is located within the Marijuana Use Overlay District and proposes the development of a Non-medical marijuana establishment. The proposed use is allowed by Special Permit within the overlay district.

WETLANDS PROTECTION (§181)

The project proposes alterations within the 100' buffer zone of an isolated vegetated wetland and bordering vegetated wetlands. Bordering vegetated wetlands are regulated by the Massachusetts Wetlands Protection Act and all freshwater wetlands are regulated by the Town's Wetlands Bylaw. The project will require a Notice of Intent to be submitted to the Franklin Conservation Commission and review will be provided under separate cover.

UTILITIES

The proposed development will be serviced by Town water and private septic. The proposed septic system will require approval from the Board of Health.

U1. Provide information for proposed drainage, sewer, and water, including size, material, and invert elevations where appropriate. Identify locations of proposed gate valves, curb stops, fittings, and other appurtenances. *PLT: The requested information will be provided following the anticipated March 3, 2020 soil tests and after consultation with the fire protection engineer and mechanical engineer for service sizing.* **BETA2: Information for drainage provided. Remaining issues outstanding.** *LPI: The additional utility information has been added to the Utility & Grading Plans and the Details Plan.* **BETA3: Information provided – issue resolved.**

U2. Provide a note that where any utility installation detail conflicts with the Town of Franklin Department of Public Works Standards for Sewer and Water Materials and Installation (Town Standards) that the Town Standards shall govern. *PLT: The requested note will be added to the utility notes on a further revised plan.* **BETA2: Issue remains outstanding.** *LPI: The requested note has been added to the Utility Notes on the Utility & Grading Plan.* **BETA3: Note provided – issue resolved.**

U3. Clarify how the existing residence is currently serviced by water, sewer, and gas and in coordination with the Department of Public Works and Board of Health, how they will be terminated during demolition. BETA notes the DPW typically requires municipal water services to be terminated at the main. *PLT: The demolition of the existing residence has been completed. The existing septic was abandoned per Title 5 requirements, the water service was capped, and the electric service was removed.* **BETA2: Information provided. BETA defers to the DPW to confirm they are satisfied with the cap for the water.**

STORMWATER MANAGEMENT

The project proposes two separate means of stormwater management. Runoff from much of the western portion of the Site will be conveyed via catch basin and manhole connections to a subsurface infiltration system. Overflow from this system is discharged towards the central wetlands area then conveyed to the northern wetlands. Runoff from all other impervious areas will be conveyed via catch basin and manhole connections to a stormwater basin located in the eastern portion of the Site. Overflow from this system will be discharged towards the eastern wetlands.

Best Development Practices Guidebook

The project has been designed to meet portions of the stormwater management requirements of the BDPG (i.e. peak development discharge and volume rates). Further discussion on these topics, along with sedimentation and erosion control, is provided in the Massachusetts Stormwater Management Standards section below.

GENERAL

SW1. Provide Class V RCP where cover is less than 42" (§300-11.B.(2)(a)). *LPI: A note requiring Class V pipe throughout the site has been added on the Driveway Plan & Profile sheets.* **BETA2: Note provided – issue resolved.**

SW2. Provide roof leader and drain layout to show connections between roof areas and drainage systems. *LPI: Perimeter gutters and downspouts are not proposed. The roof drains are collected within the building and discharged through the foundation wall at 3 locations: to DMH-6A, DMH-3, and DMH-10. The details of the building's internal roof drainage system will be shown within the plans submitted for the application of a building permit.* **BETA2: Information provided – issue dismissed.**

MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS:

The proposed development will disturb greater than one acre; therefore, the project is subject to Chapter 153: Stormwater Management of the Town of Franklin Bylaws and MassDEP Stormwater Management Standards.

No untreated stormwater (Standard Number 1): *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

The project does not propose any new untreated discharges directly to wetlands. Discharges from the subsurface system and the stormwater basin have outfalls located within the 100' wetland buffer zone. Riprap aprons are proposed to mitigate erosion potential. An existing outfall will continue to discharge stormwater directly to wetland resource areas; however, does not received any untreated flow from impervious areas.

SW3. Revise dimension table on Flared End Erosion Protection Detail to match rip rap apron sizing calculations in the Stormwater Report. *LPI: The table on sheet 13 has been revised to match the calculations within the Stormwater Report.* **BETA2: Table revised – issue resolved.**

SW4. Provide rip rap on the downgradient side of level spreaders. *LPI: Riprap has been added to the level spreaders.* **BETA2: Rip rap provided – issue resolved.**

Post-development peak discharge rates (Standard Number 2): *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

The project proposes to attenuate post-development peak discharge rates and volumes through the use of a subsurface infiltration system and an infiltration basin. Stormwater will be conveyed to these BMPs via catch basin to manhole connections. Calculations show a reduction in post-development peak discharge rate compared to pre-development conditions.

SW5. Provide additional spot grades throughout the parking areas to confirm positive drainage. *LPI: Spot grades have been added to the parking areas.* **BETA2: Information provided – issue resolved.**

SW6. Recommend using a minimum Time of Concentration (TOC) of 6 minutes for Subcatchment areas S2a2 and S2b1. The minimal area of grass and woods used to calculate the TOC will likely underestimate the peak runoff rates from the significantly larger roof and parking areas. *LPI: A Tc of 6 minutes has been used for the 2 subcatchments as suggested.* **BETA2: TOC revised – issue resolved.**

SW7. Verify area of "Gravel Surface" used in pre-development model for Subcatchment S2b as well as length of "unpaved" surface used in flow path. Plans depict an area/length much lower than that used in the calculations. *LPI: The discrepancies in the Tc lengths have been resolved within the revised Stormwater Report. The extent of the gravel surface has been revised on the Existing Conditions Plan to reflect recent survey information.* **BETA2: Information provided – issue resolved.**

SW8. Verify length of flow path in TOC calculations for Subcatchments S2a3, S2b1, and S2b2, which differ from lengths indicated on plans. **BETA2: TOC revised – issue resolved.**

SW9. Model basin area as impervious to avoid "double-counting" infiltration potential. *LPI: The infiltration stage of the stormwater basin has been modeled as impervious within the revised Stormwater Report.* **BETA2: Model revised – issue resolved.**

SW10. Provide summary table comparing pre-development and post-development runoff volumes, including Wetland C as a design point. Runoff volumes may not increase per §300-11.A.(3) and the Best Development Practices Guidebook. *LPI: The flow rate summary table has been revised to include Wetland C and a volume summary table has been added to the stormwater report.* **BETA2: Table provided indicating a reduction in peak runoff rates and volumes – issue resolved.**

Recharge to groundwater (Standard Number 3): *Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable.*

NRCS soil maps indicate the presence of Merrimac fine sandy loam with a Hydrologic Soil Group (HSG) rating of A (high infiltration potential) and Scarboro and Birdsail soils with HSG A/D (very low infiltration potential when saturated). Plans indicate that test pits have been conducted at the Site, but logs of these investigations have not been provided to BETA. Calculations indicate the project will provide a recharge volume in excess of that required. All BMPs are shown to drain within 72 hours.

SW11. Provide test pit logs. Also, conduct additional test pits within the limits of the proposed open-air infiltration basin. *LPI: The test pit logs have been added to the sheet 2, Existing Conditions Plan.* **BETA2: Test pit information provided – issue resolved.**

SW12. Specify soil media to be applied to the stormwater basin. Typical loam and turf grass is likely to restrict the infiltration potential of the basin. Consider a special loamy sand mixture with 50% sand and a restoration seed mixture. *LPI: The soil media for the stormwater basin has been added to the basin cross section on sheet 13, Details Plan.* **BETA2: Loamy sand mixture proposed – issue resolved.**

SW13. Test pits conducted for Infiltration System 2 indicate groundwater within 4 feet of the system bottom. Revise system to provide 4 feet of separation or provide the required mounding analysis. *LPI: A mounding analysis has been added to the stormwater report for the subsurface infiltration system. The report demonstrates that the mound will not adversely impact the functioning of the system.* **BETA2: Mounding analysis provided – issue resolved.**

80% TSS Removal (Standard Number 4): *For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids.*

The project proposes to direct runoff from all impervious areas through a closed drainage system to either a subsurface infiltration system or an infiltration basin. Water quality units are provided for pretreatment prior to discharge to each infiltration area. The proposed BMPs will treat a water quality volume that exceeds that required for the proposed impervious increase and will provide the minimum required 80% TSS removal. The 44% TSS removal required for pretreatment prior to discharge to soils with rapid infiltration rates will also be provided.

Higher Potential Pollutant Loads (Standard Number 5): *Stormwater discharges from Land Uses with Higher Potential Pollutant Loads require the use of specific stormwater management BMPs*.

The project does not propose any land uses with Higher Potential Pollutant Loads – **not applicable.**

Critical Areas (Standard Number 6): *Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas.*

The eastern portion of the Site is within a Zone II Wellhead Protection Area which is classified as a critical area. Proposed water quality units and infiltration structures are consistent with DEP recommendations for discharges to Zone II areas.

Redevelopment (Standard Number 7): *Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable.*

The project has been designed as a new development **– not applicable.**

Construction Period Erosion and Sediment Controls (Standard Number 8): *Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.*

The project as currently depicted will disturb in excess of one acre of land; therefore, a Notice of Intent with EPA and a Stormwater Pollution Prevention Plan (SWPPP) are required. The project proposes the use of erosion control barrier (straw wattle and filter fabric combination), catch basin inlet protection, and a stabilized construction entrance. A draft SWPPP was provided as part of the Stormwater Management Report.

SW14. Revise sediment control barrier to remove silt fence, which is not permitted in the Town of Franklin per the BDPG and Conservation Commission. *LPI: The sediment barrier details have been revised to show a 12" compost sock.* **BETA2: Detail revised – issue resolved.**

SW15. In consideration of the overall development area and presence of wetland resources, straw wattles are not anticipated to be sufficient on their own. Recommend replacing the straw wattle with a compost filter tube (12" diameter minimum). *LPI: The sediment barrier details have been revised to show a 12" compost sock.* **BETA2: Detail revised – issue resolved.**

SW16. Provide detail for inlet sediment control protection. *LPI: A detail of the catch basin filter bag has been added to sheet 13, Details Plan.* **BETA2: Detail provided – issue resolved.**

Operations/maintenance plan (Standard Number 9): *A Long-Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

A Long-Term Operation and Maintenance (O&M) Plan was included as part of the Stormwater Management Report.

SW17. Provide estimated operations and maintenance budget. *LPI: The operation and maintenance budget has been added to the Operation & Maintenance Plan within the stormwater report.* **BETA2: Budget provided – issue resolved.**

SW18. Provide maintenance requirements for deep sump catch basins. *LPI: The maintenance requirements for deep sump catch basins has been added to the Operation & Maintenance Plan within the stormwater report.* **BETA2: Information provided – issue resolved.**

SW19. Revise infiltration basin maintenance/inspection requirements to include all activities and frequencies outlined in the Mass Stormwater Handbook. *LPI: The basin maintenance and inspection requirements have been revised within the stormwater report.* **BETA2: Information provided – issue resolved.**

SW20. Remove text that does not appear to pertain to this project, e.g. "Pocket Wetland" and "Water Quality Swale." Revise Maintenance Log to include all proposed BMPs. *LPI: The references to "Pocket Wetland" and "Water Quality Swale" have been removed from the stormwater report.* **BETA2: Text revised – issue resolved.**

SW21. Provide sufficient maintenance access area around the perimeter of the basin berm. *LPI: The proposed fence has been relocated off the top of the berm to allow maintenance access.* **BETA2: Fence relocated – issue resolved.**

Illicit Discharges (Standard Number 10): *All illicit discharges to the stormwater management systems are prohibited.*

A signed Illicit Discharge Compliance Statement was provided.

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,
BETA Group, Inc.

Matthew J. Crowley, PE
Project Manager

Stephen Borgatti
Staff Engineer

cc: Amy Love, Town Planner
Jennifer Delmore, Conservation Agent

TOWN OF FRANKLIN
DEPARTMENT OF PUBLIC WORKS
Franklin Municipal Building
257 Fisher Street
Franklin, MA 02038-3026

July 6, 2020

Mr. Anthony Padula, Chairman
Members of the Franklin Planning Board
355 East Central Street
Franklin, MA 02038

RE: Site Plan and Special Permit – #160 Grove St

Dear Mr. Chairman and Members:

We have reviewed the revised materials for the subject project and offer the following comments:

1. A plan for the proposed Grove St pavement marking modifications should be included in the final plan set to be endorsed by the Board.

2. As previously noted there is a potential for varying soil conditions in one of the test pits. We recommend that if the project is approved, a condition be included that existing soil conditions are to be evaluated by the design engineer during construction to verify field conditions.

3. As requested by the Board, I have performed a cursory review of the traffic study in regards to trip generation and found that the projected data was based on traffic counts performed at two similar nearby grow facilities and was appropriate for this study.

Should you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

Michael Maglio, P.E.
Town Engineer

FRANKLIN PLANNING & COMMUNITY DEVELOPMENT
355 EAST CENTRAL STREET, ROOM 120
FRANKLIN, MA 02038-1352
TELEPHONE: 508-520-4907

MEMORANDUM

DATE: **July 8, 2020**

TO: **Franklin Planning Board**

FROM: **Department of Planning and Community Development**

RE: **160 Grove Street**
Special Permit & Site Plan

The DPCD has reviewed the above referenced Site Plan application for the Monday, July 13, 2020 Planning Board meeting and offers the following commentary:

General:

- The site is approximately 8.55 acres and is located at 160 Grove Street. The property is within the Industrial Zoning District - Marijuana Overlay District, Assessor's Map 306 Lot 002.
- The applicant seeks approval to construct a 121,000 sq/ft facility for the cultivation, processing, and distribution of Marijuana and Marijuana related products and office space.
- Applicant has approved by the Conservation Commission.

Comments:

1. Epsilon Associates, Odor Consultant has suggested several conditions to monitor the odor mitigation system.
2. The applicant has not filed with the Design Review Commission.
3. Applicant should provide color renderings of the building to the Planning Board for review.
4. BETA has provided a summary of trips for the projects on Grove Street.

Suggested Special Conditions:

1. A plan for the proposed Grove St pavement marking modifications should be included in the final plan set to be endorsed by the Board
2. Existing soil conditions are to be evaluated by the design engineer during construction to verify field conditions.
3. To minimize noise, there will be no deliveries past 10:00PM and none before 7:00AM, 7 days a week.
4. Road improvements on Grove Street shall be complete prior to any Occupancy Permit.
5. Applicant should submit color renderings of the building prior to endorsement.

Suggested Odor Mitigation Conditions:

1. Provide mitigation of a fan and similar continuous noise sources if those sounds are perceptible without instruments more than 400 feet from the boundaries of the property.

2. Installation of a weather station, capable of logging wind speed, wind direction and temperature to assist in identification of odor complaint tracking (Applicant has committed to this condition).
3. Applicant should provide a specific plan to retrofit additional controls in the event the proposed odor control system is not effective. This should include the ability to collect exhaust for additional mitigation or additional dispersion.
4. The Board may want to consider requiring an alternative odor mitigation system be provided, should the proposed system not be efficient.
5. Prior to endorsement, the Applicant should provide the Board with an Odor Complaint Tracking system.

Applicant submitted the following revised plans (July 2, 2020):

1. Revised Site Plans dated June 16, 2020
2. Revised Greenhouse Floorplan
3. Revised Photometric Plans dated July 2, 2020
4. Odor Mitigation documentation:
    a. Odor Mitigation Memorandum
    b. Web-based link to video (did not work)
    c. Neutralizer ratios and storage needs
    d. Epsilon's Wind Speed and direction studies
    e. Speedtrace self-regulating hearing cable specifications

Applicant submitted the following revised plans (May 22, 2020):

1. Existing Photos of Property showing disturbed areas
2. Revised Stormwater Management Narrative and Maps
3. Revised Site Plans dated May 20, 2020
4. Traffic Study
5. Left Turn Lane plans (For Grove St)
6. Land Planning Response to BETA's report dated March 6, 2020
7. Odor and Noise – Criterion (BETA's subcontractor) respo0nse to the Epilson Report
8. Photograph Simulation of the Street Sign

Records on File:

1. Application for Site Plan and Special Permit
2. Certificate of Ownership
3. Special Permit Criteria
4. Abutters certified mailing
5. Overview of Proposed project and Special Permit Findings
6. Cannabis Odor Abatement Plan
7. Host Community Agreement
8. Waiver Request for Parking
9. Security System and Plans
10. Employee and Occupancy Schematics

ROLE CALL VOTE:

This determination shall be in addition to the following specific findings:

Special Permit VOTE for USE: §185 Attachment 3 Section 2.23 – Non-Medical Marijuana facility

If you vote NO on any of the following, please state reason why you are voting NO:

(1) Special Permit: To allow retail marijuana in the Marijuana use overlay district.

(a) Proposed project addresses or is consistent with neighborhood or Town need.

Anthony Padula	YES	NO	Joseph Halligan	YES	NO
Rick Power	YES	NO	Gregory Rondeau	YES	NO
William David	YES	NO			

(b) Vehicular traffic flow, access and parking and pedestrian safety are properly addressed.

Anthony Padula	YES	NO	Joseph Halligan	YES	NO
Rick Power	YES	NO	Gregory Rondeau	YES	NO
William David	YES	NO			

(c) Public roadways, drainage, utilities and other infrastructure are adequate or will be upgraded to accommodate development.

Anthony Padula	YES	NO	Joseph Halligan	YES	NO
Rick Power	YES	NO	Gregory Rondeau	YES	NO
William David	YES	NO			

(d) Neighborhood character and social structure will not be negatively impacted.

Anthony Padula	YES	NO	Joseph Halligan	YES	NO
Rick Power	YES	NO	Gregory Rondeau	YES	NO
William David	YES	NO			

(e) Project will not destroy or cause substantial damage to any environmentally-significant natural resource, habitat, or feature or, if it will, proposed mitigation, remediation, replication or compensatory measures are adequate.

Anthony Padula	YES	NO	Joseph Halligan	YES	NO
Rick Power	YES	NO	Gregory Rondeau	YES	NO
William David	YES	NO			

(f) Number, height, bulk, location and siting of building(s) and structure(s) will not result in abutting properties being deprived of light or fresh air circulation or being exposed to flooding or subjected to excessive noise, odor, light, vibrations, or airborne particulates.

Anthony Padula	YES	NO	Joseph Halligan	YES	NO
Rick Power	YES	NO	Gregory Rondeau	YES	NO
William David	YES	NO			

(g) Water consumption and sewer use, taking into consideration current and projected future local water supply and demand and wastewater treatment capacity, will not be excessive.

Anthony Padula	YES	NO	Joseph Halligan	YES	NO

Rick Power	YES	NO	Gregory Rondeau	YES	NO
William David	YES	NO			

The proposed use will not have adverse effects which overbalance its beneficial effects on either the neighborhood or the Town, in view of the particular characteristics of the site and of the proposal in relation to that site.

Anthony Padula	YES	NO	Joseph Halligan	YES	NO
Rick Power	YES	NO	Gregory Rondeau	YES	NO
William David	YES	NO			

March 13th, 2020,
Revised: July 2nd, 2020

PRINCIPALS

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Attention: Anthony Padula
Chair, Franklin Planning Board
355 East Central Street
Franklin, MA 02038

Subject: Third Party Odor and Noise Review for the Cannabis Cultivation Facility for the Franklin Planning Board

Dear Mr. Padula:

INTRODUCTION

Epsilon Associates, Inc was tasked with conducting a third-party review of the odor and noise mitigation plans for the proposed Hennep Cultivation and Production Facility (Hennep) located at 160 Grove Street in Franklin, MA.

Epsilon Associates, Inc (Epsilon) is a mid-sized engineering and environmental consulting firm located in Maynard, MA. Epsilon has served manufacturing, energy, institutional and government clients for over twenty years and has Professional Engineers and Certified Consulting Meteorologists with decades of experience analyzing air quality impacts. I am a certified consulting air pollution meteorologist and public health professional with over 15 years of experience in preparing these types of analyses. In performing my review, I reviewed the Cannabis Odor Abatement Plan[1], noise performance details on the cooling fans[2], the Site Development Plan[3], and details on the location of the fans in relation to the property boundary. Epsilon also received responses[4] concerning some of the recommendations concerning the initial report on May 21st, 2020 and attended a web-based Franklin Planning Board meeting on June 1st, 2020 where the applicant presented additional information concerning the project.

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[1] Prepared by Criterion Environmental, Inc. Dated November 22nd, 2019.
[2] Provided by Prince Lobel Tye, LLP on January 28th, 2020
[3] Dated December 23rd, 2019.
[4] Addendum to November 2019 Odor Control Plan: Epsilon Response Letter, dated May 21st, 2020

BACKGROUND

Hennep is a proposed cannabis cultivation and production facility located in an industrially zoned area at 160 Grove Street in Franklin, MA. A residential house is located adjacent to Grove Street but is scheduled to be demolished. Immediately northeast of the site are two commercial buildings, immediately to the west of the proposed site is a small business park. South of the property are several commercial buildings, east of the site is thick vegetation. The nearest residential property is located southwest of the proposed site approximately 700 feet from the property line. Figure 1 shows the location of the proposed site and Figure 2 shows the distance to the nearest residence.

The proposed site is approximately 8.43 acres and will include a grow warehouse (~90,000 square feet) and a Headhouse (~26,000 square feet) where cannabis will be processed and dried, within the Headhouse there will also be office space. Once fully operational the growing warehouse will contain 10,584 cannabis plants. Operations associated with the Hennep facility are anticipated to occur indoors.

Based on the description in the Cannabis Odor Plan, the growing and cultivation process consists of several stages, the first stage which lasts up to 30 days is the immature plant stage during this stage odor is minimal. The second stage, the flowering stage, which can last up to 35 days, can be quite odorous as the plants begin producing terpenes, the final stage is the processing stage where the plants are cut and dried this can take up to 21 days. The odor control technologies described in the odor control plan are evaluated in detail below.

Noise associated with the Hennep facility is anticipated to be primarily from fans, associated with the heating and ventilation (HVAC) equipment system; traffic traveling to and from the facility; and equipment used to process the cannabis for packaging in totes. Of these three potential sources of noise, the one with the potential for the most significant impact is the operation of the HVAC equipment, this is evaluated in detail below.

METEOROLOGICAL CONDITIONS IN FRANKLIN

Weather conditions play a role in how readily odors dissipate and how noise propagates. For example, higher temperatures generally lead to more turbulence being generated in the atmosphere which leads to more rapid dispersal of odors. Calmer winds allow for far less turbulence being generated, and more meandering of the wind in the atmosphere and can result in higher concentrations of odors. Rainfall can often reduce odor, as it helps to “wash” odor molecules from the atmosphere.

One useful tool for understanding the magnitude and direction of the wind, is a wind rose. A wind rose shows the direction the wind is blowing from and gives an idea as to how

often the wind is not blowing. Figure 3 shows the wind rose for Norwood airport, which is located approximately 10 miles from the proposed site for 2015 to 2019. This wind rose shows that the wind is predominantly from the south, and that "calm" wind conditions exist approximately 30% of the time.

Given the 24-hour operation of the facility it is also useful to characterize the wind speed and direction during daytime and nighttime periods. Often, during daytime periods the winds tend to be stronger, which helps odors to disperse more readily. Consequently, during nighttime periods winds can often be calmer, allowing for odor to disperse far less readily. Figures 4 and Figure 5 show the wind roses under daytime and nighttime conditions. During daytime periods the wind is predominantly from the west and northwest with wind speeds generally ranging from 3.3 miles per hour to 18 miles per hour. During nighttime periods the wind is predominantly from the south with wind speeds generally ranging from 3.3 miles per hour to 11 miles per hour.

BACKGROUND ON ODOR

Odor is considered an air pollutant by the Massachusetts Department of Environmental Protection (MassDEP), and therefore must be controlled in order to prevent a condition of air pollution (i.e. cause a nuisance, injure someone, or unreasonably interfere with the enjoyment of one's life and property). The intensity of an odor can vary and is often a function of the weather conditions (temperature, wind direction, humidity), distance from the source and magnitude of odor compounds generated. The ability of an individual to detect an odor varies with some individuals having very sensitive noses which can detect odors at very low concentrations. As a result, from a single source, the intensity of an odor can vary over time based on changes in the process and underlying weather conditions are constantly changing.

The odor associated with cannabis is generated by terpene molecules, terpenes are a class of molecules known to be very volatile. The cannabis odor has been described as "skunk-like" and if left uncontrolled depending on the magnitude and weather conditions can travel over a half-mile.

Odor from a proposed facility can be modeled using an air dispersion model such as AERMOD. An air dispersion model uses weather data, building layouts, terrain information, and details on the source to simulate downwind odor concentrations at specific points. This can be a useful technique for informing odor design criteria under a variety of meteorological conditions (odor modeling is typically done using meteorological data over a five-year period to account fluctuations in weather conditions and to account for changes in seasons that may contribute to odor concentrations).

Odor can also be sampled by a few different methods. One method is to take an odor sample which is typically obtained as a "grab" of exhaust air and held in a Tedlar bag. The

sample is then sent to special olfactory laboratories where it is analyzed by a trained odor "panel". The sample is then volumetrically diluted with odor-free air until a specified percentage of members of the panel are no longer able to detect the odor. This results in quantifiable odor sample strength in units of "dilutions to threshold" or "D/T". As a source emits this odorous air, it is dispersed and diluted through the atmosphere until it reaches a downwind location. Whether it is detectable at this location varies with the individual person's sense of smell, and the nature of the odor.

In some instances, odor modeling may be used to inform the odor control system design, then once sampling is conducted the model can be run again to document that the odor control system is effectively neutralizing odor across the five-year suite of meteorological conditions. This technique was used at the proposed Valley Green Grow facility, in Charlton, MA.[5]

Massachusetts Department of Environmental Protection Odor Requirements

Massachusetts does not have a statutory odor limit. MassDEP does not have a formal published odor threshold policy. However, the agency historically used 5 D/T for a modeled 5-minute average time as an acceptable threshold. More recently, MassDEP has accepted a value of 1 D/T in a 10-minute average time as an acceptable threshold for other Projects.[6]

Local Regulations

The Town of Franklin limits odor from industrial processes in §185-22(A) of the Industrial Zoning Requirements in the Franklin town code:

Disturbances. No sound, noise, vibration, odor or flashing (except for warning devices, temporary construction or maintenance work, parades, agricultural activities or other special circumstances) shall be perceptible without instruments more than 400 feet from the boundaries of the originating premises within an Industrial District or more than 200 feet inside the boundaries of a commercial or business district or more than 100 feet inside the boundaries of a residential district. However, the Board of Appeals may grant a special permit for an exception for activities not meeting these standards in cases where the Board determines that no objectionable conditions will thereby be created for the use of other properties.

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[5] https://www.townofcharlton.net/DocumentCenter/View/1186/VGG-Odor-Mitigation-PDF

[6] Trinity Consultants, Inc., Air Dispersion Modeling of Hydrogen Sulfide and Sulfur Dioxide Emissions from Nasoya Foods, December 2018. Project 182201.0004

ANALYSIS OF ODOR CONTROL TECHNOLOGY FROM PROPOSED FACILITY

The Hennep facility proposes the use of two different odor mitigation strategies for managing the odor during the growing and processing of the cannabis. During the growing, the Hennep facility has proposed to utilize the Fogco Odor Control system which uses a fogging system to deploy an odor neutralizer as the air from within the grow warehouse is exhausted from 36 roof-mounted fans. Hennep proposes to utilize the odor neutralizer Odor Armor 420. During the processing of cannabis activated carbon will be used to control odor.

Fogco Odor Control System and Odor Armor 420

Odor Armor and other odor neutralizers work by altering the odor molecule to render the molecule odorless. There are several limitations to this approach, the first is there must be enough of the odor neutralizer present in order to neutralize the odor molecules present. If the ratio of neutralizer to odor molecules is out of balance, there could still be an odor. The odor control plan should describe how it intends to determine the correct ratio of neutralizer to odor molecule in order to prevent odorous conditions from occurring from this system. During the June 1st meeting, this was discussed, and the proponent indicated there is an initial phasing in period of the odor mitigation system where the ratio of neutralizer to odor molecule is optimized.

In addition, the Fogco Odor control system relies on treating the growing room exhaust as it exits the building. This means that the growing room should be under negative pressure (i.e. that pressure inside the building is less than the pressure outside, causing air to leak into the building), this will ensure that untreated odor is not exiting the building without undergoing treatment. Based on the May 21st response letter, the proposed facility intends to maintain positive pressure and monitor this using a manometer.

A third potential limitation to the Fogco system is that the Odor Armor 420 is mixed with deionized water and injected into the exhaust stream external to the building. Review of the manufacturers data indicates that the Odor Armor 420 has a potential to freeze at temperatures below 30^{o} Fahrenheit (F) and applications in environments where temperatures dip below 30^{o} F may need to install heat tracing in order to guard against the odor control system freezing. Based on the May 21st response letter, the proposed facility described the extensive heat tracing on the system, during the June 1st meeting a concern was raised by one of the planning board members concerning the Odor Armor 420 freezing after it has been released from the Fogco system, the proponent indicated a willingness to look into the experiences at other facilities in Massachusetts to see if the Fogco system was being utilized in order to understand if this was a limitation of the Fogco system.

Based on the potential limitations above of the Fogco system, the proponent should provide additional information on other facilities using this technology that are in New England. The odor control plan as written, is reactive rather than proactive. A concern is what is the process if the odor control system as designed is not effective at eliminating the odor from the facility. The proposed facility should describe the details concerning the phasing in of the odor control system to ensure that a prolonged odor condition does not persist while the system is being optimized. If the facility intends to perform odor panels or other initial testing to gauge the effectiveness of the odor control system this should be described as well as relevant benchmarks for documenting the odor control system is operating as designed.

Activated Carbon

During the processing of the cannabis, the odor mitigation technology proposed is the use of activated carbon filters. Carbon filters have been shown to be effective at mitigating many different types of odor but do require active ventilation (i.e. a fan blowing air through the filter for it to be effective). One important consideration when utilizing activated carbon, is to understand the breakthrough in order to appropriately time replacement of the activated carbon. "Breakthrough" is the idea that as the activated carbon traps odor molecules a portion of the carbon is unable to trap odor. This is considered "spent" carbon; once the activated carbon within the filter is completely spent, odor molecules would "breakthrough" uncontrolled. The proponent should describe in detail the mechanism they intend to use to determine how much of the activated carbon has been used to trap odor in order to adequately determine a site-specific replacement schedule for the spent carbon.

During the June 1st, Planning Board meeting the issue of breakthrough on the carbon canisters was discussed. Following the meeting, I conferred with one of my colleagues about this question and the answer is that there are several American Society for Testing and Materials (ASTM) methods for measuring how much of the activated carbon remains available for odor (VOC) control.

These methods include:

- ASTM D3467-04 Standard Test Method for Carbon Tetrachloride Activity of Activated Carbon
- ASTM D5832-98 Standard Test Method for Volatile Matter Content of Activated Carbon Samples
- ASTM D5160-95 Standard Guide for Gas-Phase Adsorption Testing of Activated Carbon

An alternative to laboratory testing is to arrange the carbon adsorption system using two separate systems in series (e.g. two carbon "beds") with a sampling point in between the

two beds. When odor can be detected at the sampling point, the first bed has been "loaded".

Using one or more of the methods above the facility should develop a site-specific plan that tests the activated carbon prior to use, then retests the activated carbon after some time to determine how much of the activated carbon has been "loaded". One potential mechanism for determining how much of the activated carbon has been "loaded" within the canister is to sample the carbon at different depths within the canister. This information could then be used to help ensure that the activated carbon canister replacement is being done proactively rather than after an odor concern has been raised.

The odor mitigation plan did not include a detailed discussion of other technologies that may be feasible for controlling odor from the proposed operation. For example, in Epsilon's experience we have seen that the installation of an exhaust collection system to a centralized stack as being on additional method that can prove effective at mitigating odor concerns. Additionally, biofilters, activated carbon, and scrubbers have been used to mitigate odor, including one being deployed at a cultivation facility in Franklin; after its initial odor mitigation equipment was ineffective at curbing the cannabis odor. The town should consider defining a set period that if the odor control system is not effective that the facility installs an alternative technology.

The odor plan discusses a back-up system for mitigating odors but does not describe this back-up system in any detail. Broadly, odor mitigation is more of an art than a science. The proposed system should be capable of sufficiently mitigating odor, but it will be important to have a plan in-place and ready to implement if the proposed system does not work as planned.

ODOR COMPLAINT TRACKING SYSTEM

The odor complaint documentation system described in the odor mitigation plan is robust. The odor mitigation plan describes a process by where individuals would contact a hotline that would enable a response within an hour with corrective action being implemented within two hours of the initial call. The tracking system records a number of pieces of information including: the date, time and details of complaint; the source of the complaint; whether all product was being stored in air-tight containers and storage rooms; if the odor mitigation system is active; activate the back-up system if necessary; log the resolution to the complaint; communicate back to the source of the complaint the resolution; and evaluate measures to ensure this event isn't repeated. The system also includes a process to notify the Town of Franklin of any complaints within 24 hours.

One additional measure that should be considered is logging the meteorological conditions that occurred during the complaint. This should at a minimum include the wind direction, wind speed, temperature, and precipitation. Ideally this would come from

a weather station located onsite in order to ensure the accuracy of the wind speed and wind direction. Based on the May 21st letter, the proposed facility indicated they would be installing a weather station to assist in identifying the meteorological conditions occurring during any complaints. The weather station should be capable of logging (storing) the weather data so it can be reviewed as necessary.

BACKGROUND ON NOISE

There are several ways in which sound (noise) levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. The following information defines the noise measurement terminology used in this analysis.

The decibel scale is logarithmic to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a three-decibel increase (to 53 dB), not a doubling to 100 dB. Thus, every three dB change in sound levels represents a doubling or halving of sound energy.

Another property of decibels is that if one source of noise is 10 dB (or more) louder than another source, then the quieter source does not contribute significantly to overall sound level which remains the same as that of the louder source. For example, a source of sound at 60 dB plus another source of sound at 47 dB is simply 60 dB.

The human ear does not perceive changes in the sound pressure level as equal changes in loudness. Scientific research demonstrates that the following general relationships hold between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- **1 dBA** is the practically achievable limit of the accuracy of sound measurement systems and corresponds to an approximate 10% variation in sound pressure. A 1 dBA increase or decrease is a non-perceptible change in sound.
- **3 dBA** increase or decrease is a doubling (or halving) of acoustic energy and it corresponds to the threshold of perceptibility of change. In practice, a 3 dBA change in environmental sound is just perceptible to the average person.[7]
- **5 dBA** increase or decrease is described as a perceptible change in sound level and is a discernable change in an outdoor environment.

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7 2009 ASHRAE Handbook – Fundamentals, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., Atlanta, GA, 2009.

- **10 dBA** increase or decrease is a tenfold increase or decrease in acoustic energy, but is perceived as a doubling or halving in sound (*i.e.*, the average person will judge a 10 dBA change in sound level to be twice or half as loud).[8]

The sound level meter used to measure noise is a standardized instrument.[9] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various circumstances. One network is the A-weighting network (there are also B- and C-weighting networks). The A-weighted scale (dBA) most closely approximates how the human ear responds to sound at various frequencies, and is the accepted scale used for community sound level measurements. Sounds are frequently reported as detected with the A-weighting network of the sound level meter. A-weighted sound levels emphasize the middle frequency (*i.e.,* middle pitched – around 1,000 Hertz sounds), and de-emphasize lower and higher frequency sounds. A-weighted sound levels are reported in decibels designated as "dBA." Sound pressure levels for some common indoor and outdoor environments are shown in Figure 6.

Because the sounds in our environment vary with time they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are exceedance levels and the equivalent level, both of which are derived from many moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value of 0 to 100 percent. Several sound level metrics that are commonly reported in community noise monitoring are described below.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the residual sound level, which is the sound level observed when there are no obvious nearby intermittent noise sources.

- L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (*i.e.,* the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level is designated L_{eq} and is also A-weighted. The equivalent level represents the

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8 Procedures for the Computation of Loudness of Steady Sounds, American National Standard, ANSI S3.4-2007, Annex A, NY.

9 *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983, published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by occasional loud noises.

Massachusetts Department of Environmental Protection Noise Policy

The MassDEP has the authority to regulate noise under 310 CMR 7.10, which is part of the Commonwealth's air pollution control regulations. According to MassDEP, "unnecessary" noise is considered an air contaminant and thus prohibited by 310 CMR 7.10.

The MassDEP administers this regulation through Noise Policy DAQC 90-001 dated February 1, 1990. The policy limits a source to a 10-dBA increase above the ambient sound measured (the L_{90} sound level) at the property line for the site and at the nearest residences.

The MassDEP policy further prohibits "pure tone" conditions where the sound pressure level in one octave band center frequency is 3 dB or more greater than the sound levels in each of two adjacent bands. An example of a "pure tone" is a fan with a damaged bearing that is producing an objectionable squealing sound.

Local Regulations

The Town of Franklin limits noise from industrial processes in §185-22(A) of the Industrial Zoning Requirements in the Franklin town code:

A. *Disturbances. No sound, noise, vibration, odor or flashing (except for warning devices, temporary construction or maintenance work, parades, agricultural activities or other special circumstances) shall be perceptible without instruments more than 400 feet from the boundaries of the originating premises within an Industrial District or more than 200 feet inside the boundaries of a commercial or business district or more than 100 feet inside the boundaries of a residential district. However, the Board of Appeals may grant a special permit for an exception for activities not meeting these standards in cases where the Board determines that no objectionable conditions will thereby be created for the use of other properties.*

Compliance with the town industrial zoning requirements and the MassDEP Noise Policy can be assessed using the inverse square law which uses the distance from a source of sound to account for how rapidly the sound will diminish. While this basic approach does not account for reflection, wind effects, etc., it can provide a useful indication of whether sound effects are likely to cause an offsite concern.

ANALYSIS OF FAN NOISE IMPACTS FROM PROPOSED FACILITY

The fans associated with the HVAC system have a dual purpose, climate control of the proposed facility and implementation of the odor mitigation via fogging. Climate control and odor mitigation are expected to be a continuous 24 hours-seven day a week operation and controlled by 36 rooftop fans. The proposed facility is considering two different fans each with identical noise data, this data appears as an attachment.

Figure 7 shows the proposed location of the fans on the property and the distance to the nearest property line. Using the inverse square law, the noise anticipated from each individual fan at the nearest residence. Table 1 summarizes the anticipated noise from each fan at varying distances.[10]

Table 1: Noise Levels from One Fan at Selected Distances

Location	Distance from Fan (feet)	Decibels (A-weighted)
Onsite	5’	68
Property Line	57’	47
400 Feet from the Property Line	457’	29
Nearest Residence	700’	25

Table 2 provides estimates using key assumptions of the combined impact of multiple fans operating at 400 feet from the facility’s property line, and at the nearest inhabited residence.

Table 2: Noise Levels at Selected Distances

	400 Feet from Property Line	Nearest Residence
Combined sound from ten fans, Decibels (A-weighted)	39 dBA	35 dBA

[10] https://www.omnicalculator.com/physics/distance-attenuation

Background, assuming quiet suburban nighttime, Decibels (A-weighted)	37 dBA	37 dBA
Total sound fans plus background, Decibels (A-weighted)	41 dBA	39 dBA
Increase above background, Decibels (A-weighted)	4 dBA	2 dBA

The following conclusions can be reached from Table 2:

1. Based on the key assumptions, it is likely that the fan noise will meet the MassDEP Noise Policy and would not be considered by MassDEP to be causing a noise nuisance condition at the nearest inhabited property.
2. Based on the key assumptions, the fan noise may or may not meet the Town of Franklin code. Specifically, the fan noise may or may not be "*perceptible without instruments more than 400 feet from the boundaries of the originating premises within an Industrial District.*"

The key assumptions are as follows:

- Straight line propagation with no reflections or atmospheric effects;
- Background ambient noise is "quiet suburban nighttime" from Figure 6 (no ambient measurements have been conducted); and
- A total of ten fans could significantly contribute to additive noise at a single receptor. The calculation assumes ten fans at a single location; the other fans are assumed to be blocked or assumed to be too far away from one another to significantly contribute to the total.
- Fans operate per their manufacturer-supplied fan data. A failed bearing or similar problem could cause increased noise including a "pure tone" squeaking or squealing sound.

Additional analysis could provide a more accurate prediction of fan noise impacts. That additional analysis would include measurements of nighttime ambient sound levels in the area and would include computer modeling of sound using a 3-D model that accounts for terrain, atmospheric effects, and space between noise sources.

We are not recommending additional noise analysis, for two reasons. First, even a refined analysis would not exactly duplicate what will be experienced once the facility is built. Second, we believe the proponent will have the ability to provide field modifications to mitigate sound if sound is causing a nuisance condition, a violation of MassDEP guidance, or a violation of Town Code requirements. Insulation, lagging, rooftop barriers, or fan

swap-outs for quieter models are all feasible field modifications that should be effective to eliminate noise nuisance conditions from the fans.

OTHER NOISE IMPACTS FROM PROPOSED FACILITY

Beyond the ventilation fans, the proposed facility will have noise from deliveries and employee vehicle trips, indoor equipment, and limited outdoor equipment. These have not been analyzed quantitatively. To avoid a nuisance condition, we recommend that facility operations avoid nighttime deliveries, and avoid significant outdoor equipment operation at night. During the June 1st Planning Board meeting the proposed facility committed to avoiding nighttime deliveries.

RECOMMENDATIONS (UPDATES TO THE REPORT ARE IN BOLD)

- The proponent should commit to mitigation of fan and similar continuous noise sources if those sounds are perceptible without instruments more than 400 feet from the boundaries of the property.
- The proponent should commit to avoiding nighttime outdoor noise generating activities, including truck deliveries. **Update: the proposed facility committed to this during the June 1st, planning board meeting.**
- The facility should describe the proposed back-up odor mitigation system
- Installation of a weather station, capable of logging wind speed, wind direction and temperature to assist in identification of odor complaint tracking. **Update: a commitment was made by the proposed facility in the May 21st supplement odor response document.**
- The odor control plan should describe how it intends to determine the correct ratio of neutralizer to odor molecule in order to prevent odorous conditions from occurring from this system. **Update: the manufacturer's recommendations were provided in the May 21st supplemental odor response document; however, questions remain about the phasing in period of the Fogco Odor Neutralization system and what measures will be taken during this period to ensure that a prolonged period of off-site odors are avoided and what measures will be used to document that the Fogo Odor Neutralization is functioning as designed.**
- The proponent should describe any heat tracing on the system in order to ensure the odor mitigation system remains operational during winter periods. **Update: this was described in the May 21st supplemental odor response document.**
- The proponent should provide a specific plan to retrofit additional controls in the event the proposed odor control system is not effective. That should include the ability to collect exhaust for additional mitigation or additional dispersion.

- **The proponent should provide a list of facilities in New England currently utilizing the Fogco Odor Neutralization System in order to document that the odor control system is effective in a winter climate.**
- The odor mitigation plan should describe in detail the mechanism they intend to use to determine how much of the activated carbon has been used to trap odor in order to adequately determine a site-specific replacement schedule for the spent carbon. **Update: manufacturers recommendations were provided in the May 21st supplemental odor response document; however, a site-specific schedule should be developed based on the ASTM standards referenced earlier.**
- The proposed facility should describe how it intends to ensure that negative pressure is maintained in order to prevent uncontrolled odors from escaping the growing room. **Update: this was described in the May 21st supplemental odor response document.**
- **The board should consider placing a restriction on the length of phase-in period of the odor control system and require the proponent to install an alternative technology. We recommend a specific requirement to implement an identified alternative technology upon the determination by the Town that repeated, documented offsite odors have occurred and that correction activities have not been effective. We recommend a maximum allowable time to design and implement the identified alternative technology.**

Sincerely,

Joseph E. Sabato

Joseph Sabato, CCM , MPH
EPSILON ASSOCIATES, INC.

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

160 Grove Street Franklin, Massachusetts

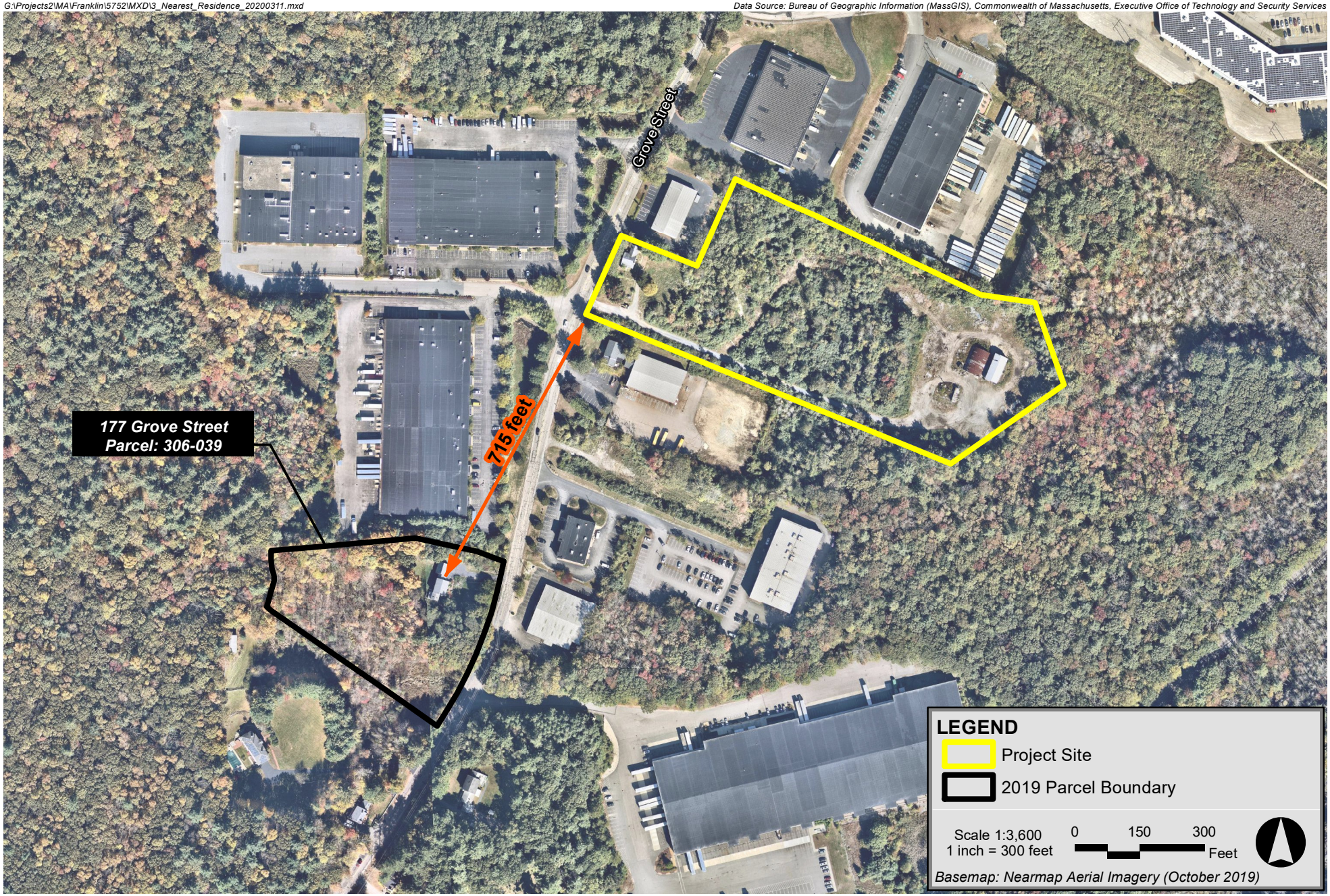
Epsilon ASSOCIATES INC.

Figure 1

Aerial Locus Map

G:\Projects2\MA\Franklin\5752\MXD\3_Nearest_Residence_20200311.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

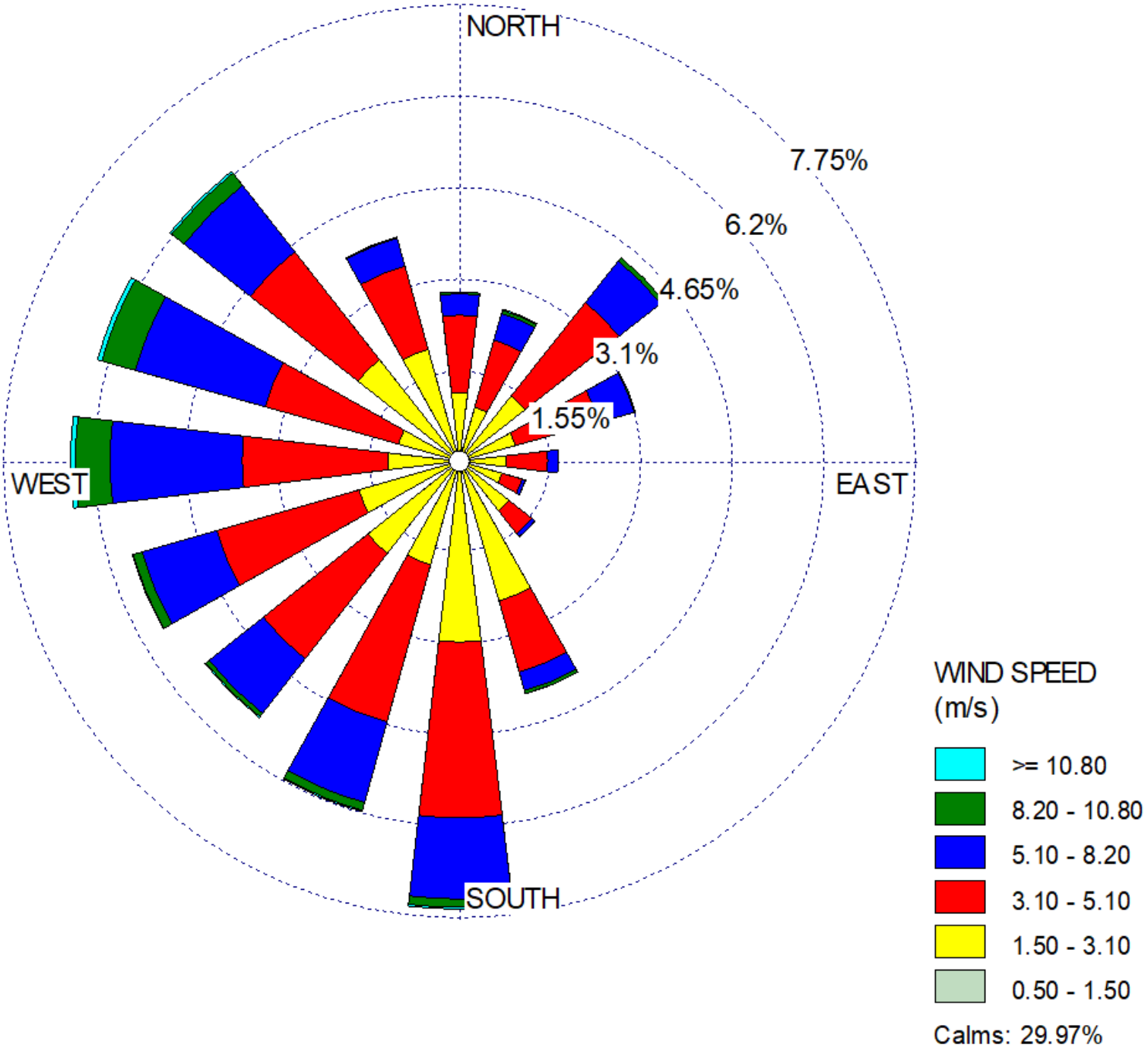


160 Grove Street Franklin, Massachusetts

Epsilon Associates Inc.

Figure 2

Distance to Nearest Residence



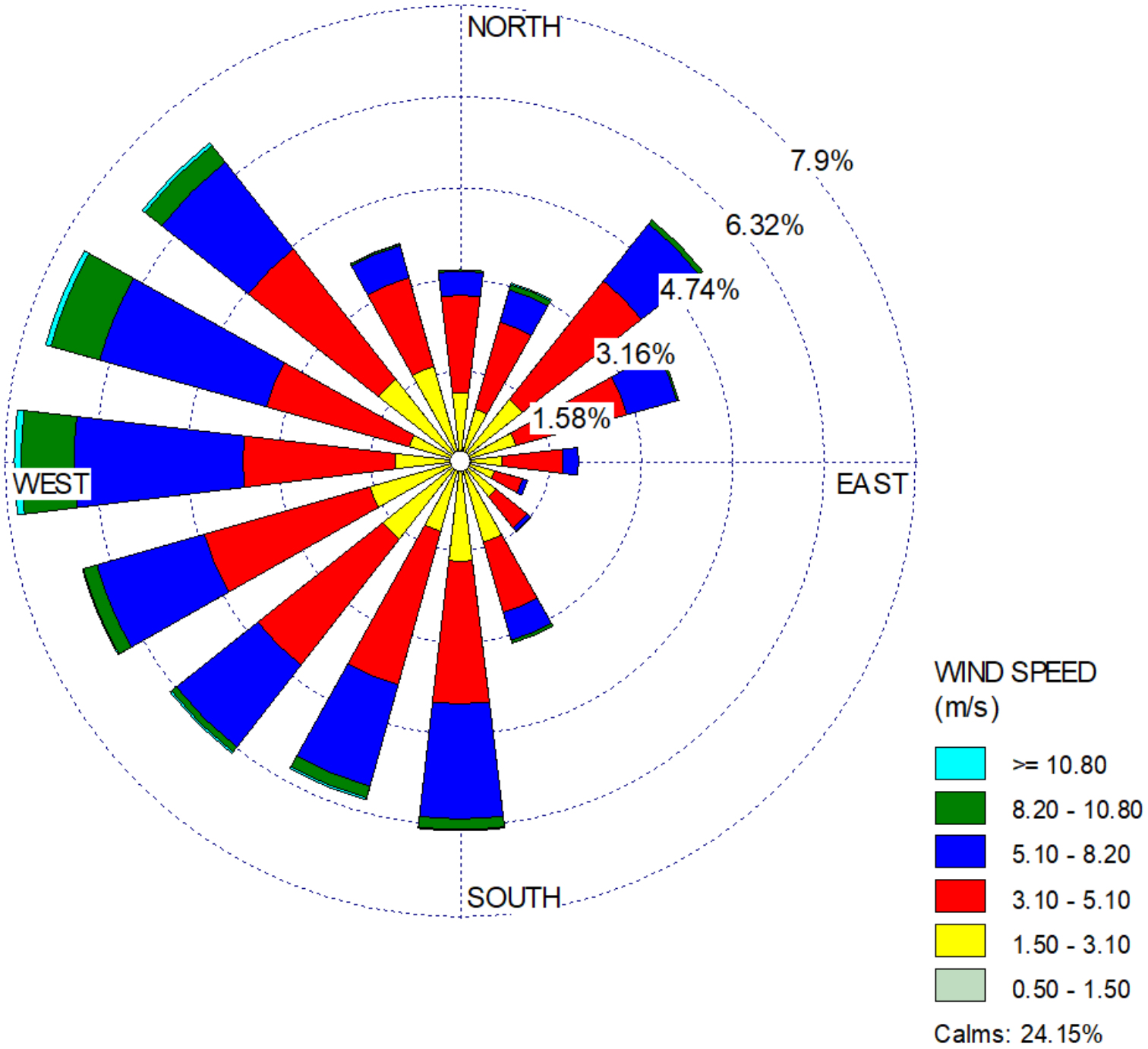
Cannabis Cultivation Facility, Franklin, MA

Epsilon ASSOCIATES INC.

Figure 3

24-hour Wind Rose

Norwood Memorial Airport, Norwood, MA 2015-2019

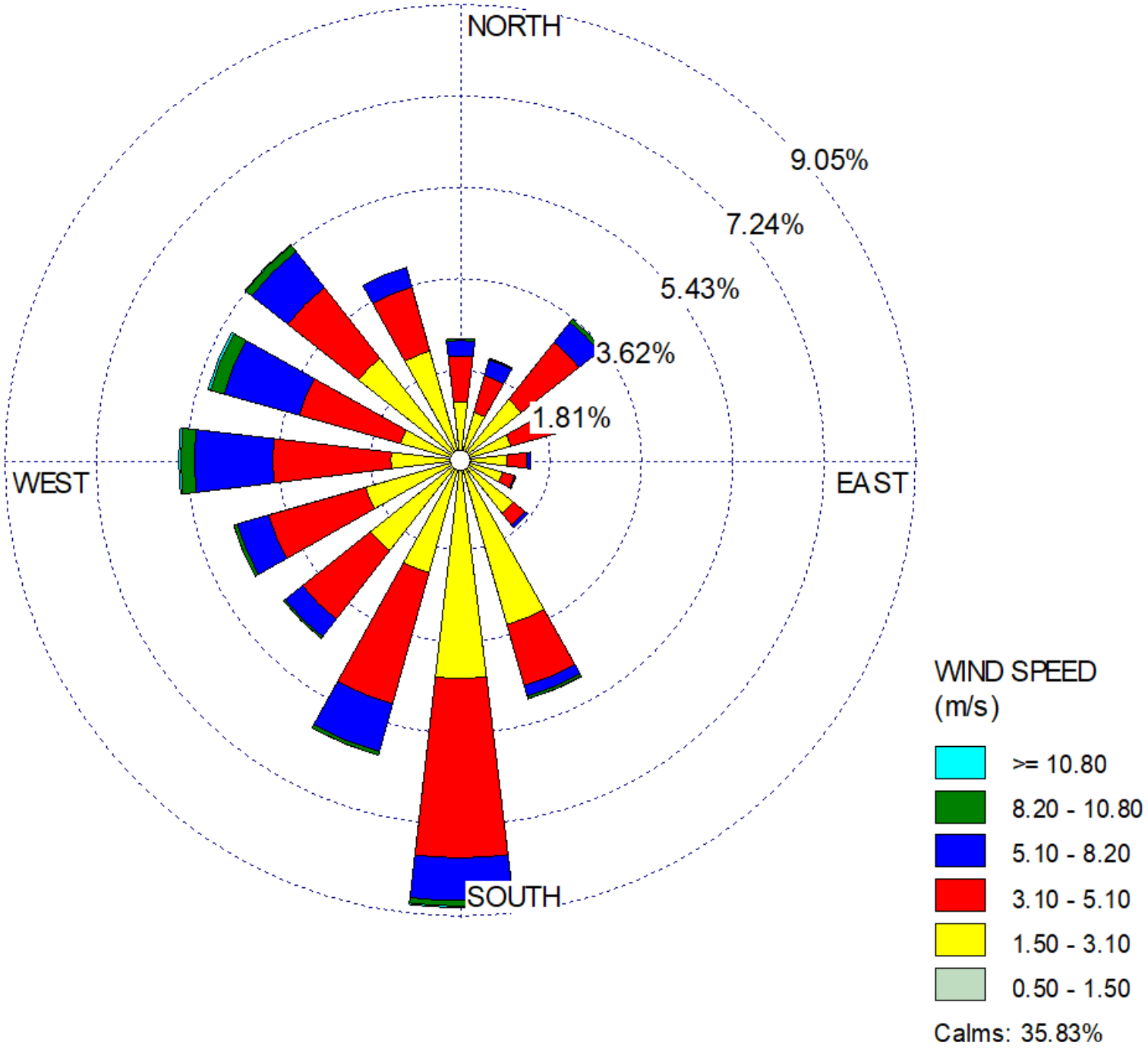


Cannabis Cultivation Facility, Franklin, MA

Figure 4

Daytime Only (6am to 6pm) Wind Rose

Norwood Memorial Airport, Norwood, MA 2015-2019

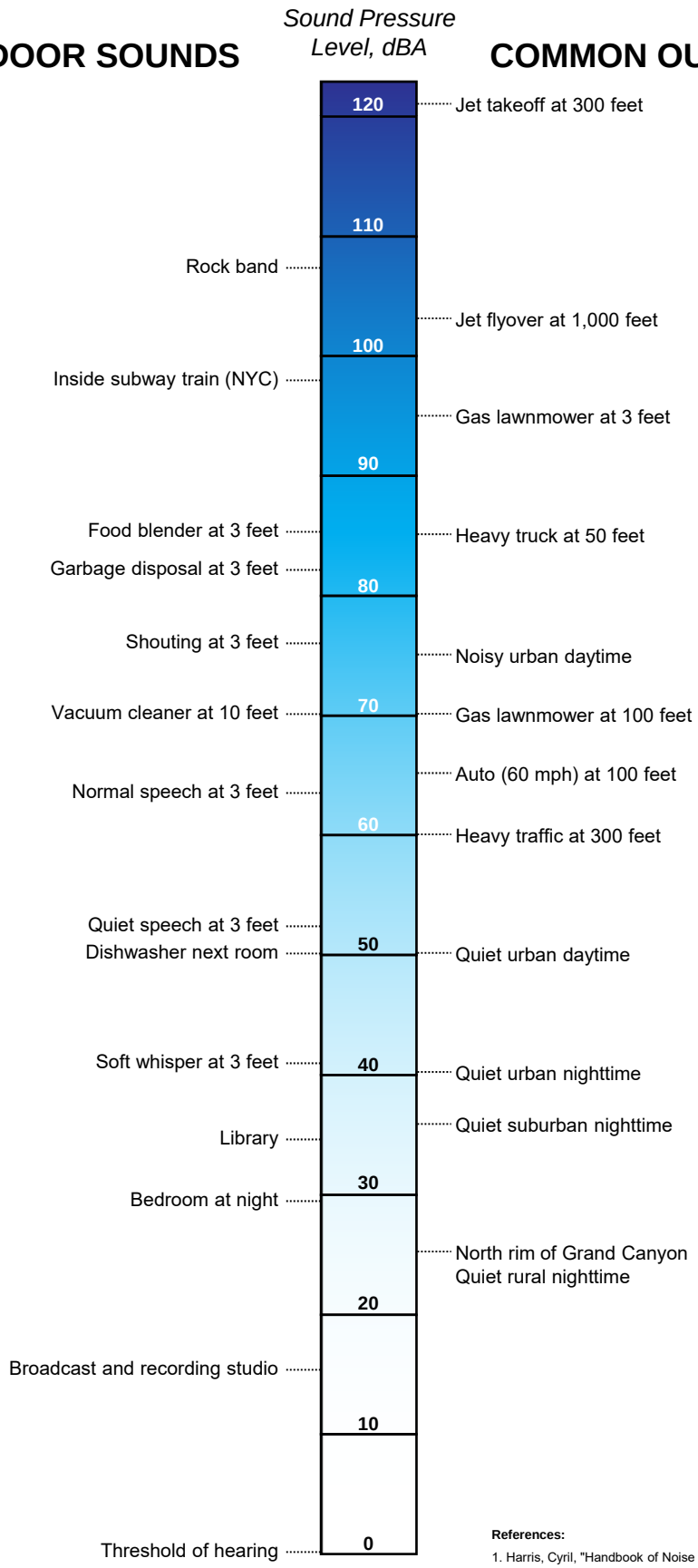


Epsilon ASSOCIATES INC.

Figure 5

Nighttime Only (6pm to 6am) Wind Rose

Norwood Memorial Airport, Norwood, MA 2015-2019



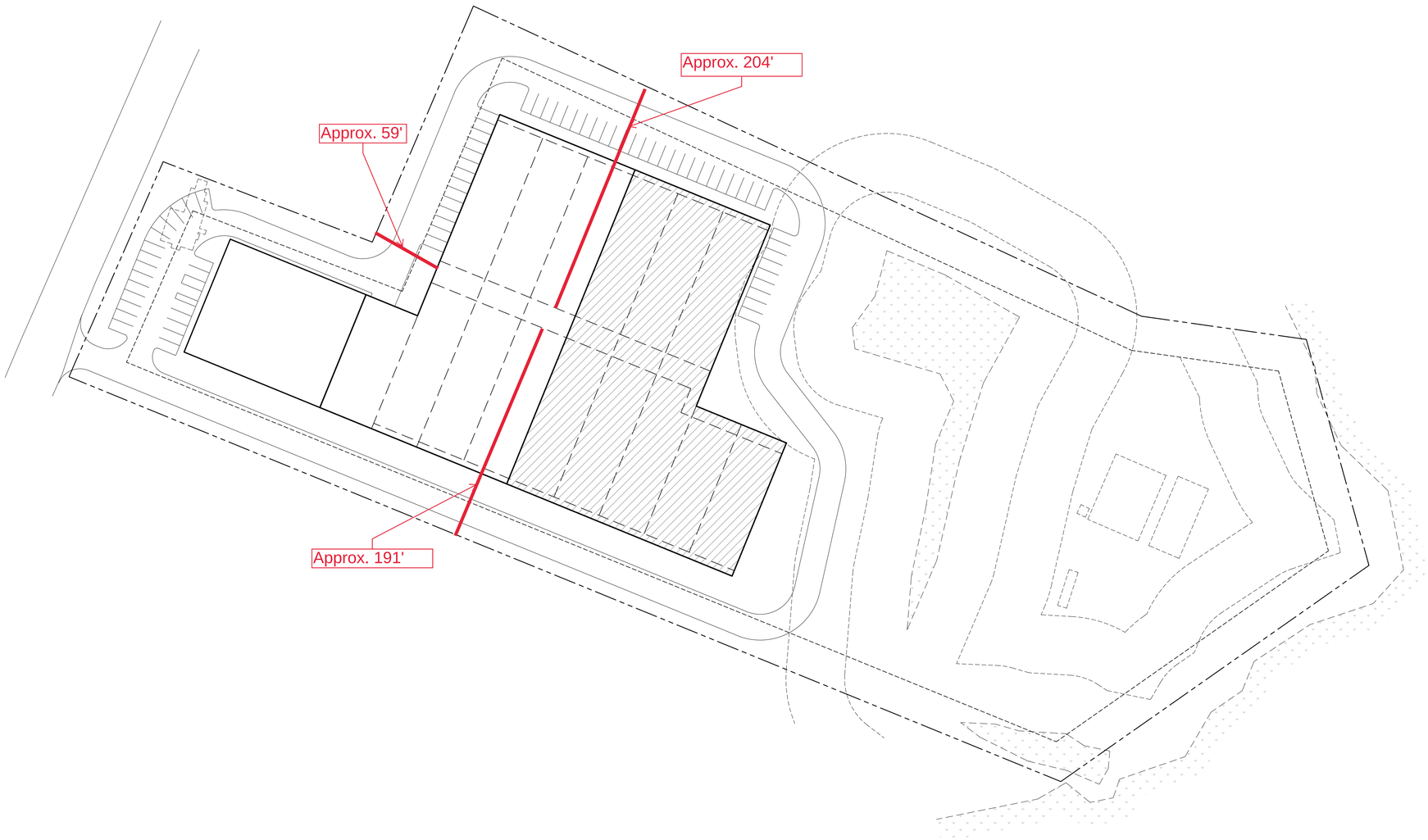
References:

1. Harris, Cyril, "Handbook of Noise Acoustical Measurements and Noise Control", p 1-10., 1998
2. "Controlling Noise", USAF, AFMC, AFDTC, Elgin AFB, Fact Sheet, August 1996
3. California Dept. of Trans., "Technical Noise Supplement", Oct, 1998

Figure 6

Typical Noise Levels from Our Environment

Figure 7 Distances of Fans to Nearest Property Line



1 A0.1 SITE PLAN
SCALE: 1"= 50'-0"

NORTH

PRELIMINARY - NOT FOR CONSTRUCTION 10/8/2019

Growing Facility for HENNEP

Engel Architects, LLC
1854 Lincoln Highway East
Lancaster, PA 17602
(717)392-8021, fax 392-7140

SEAL

PROJECT NO.
18161

MANAGED BY
.

DRAWN BY
D. ENGEL

REVISIONS

DATE
.

DRAWING TITLE
SITE PLAN

SHEET NO.
A0.1

Additional comments regarding Odor from June 3, 2020:

Hi Matt –

It was nice to meet you (virtually) at the meeting the other night. I did want to clarify one thing that was brought up regarding the question one of the planning board members asked if there was any testing that could be done to ascertain how much carbon was still available to capture cannabis odor. I conferred with one of my colleagues about this question and the answer is that there is a ASTM method for measuring how much of the activated carbon remains available for odor (VOC) control. ASTM Method D5832, "Standard Test Method for Volatile Matter Content of Activated Carbon Samples," measures the amount of volatile matter absorbed on a given carbon sample by gravimetric difference. For odor issues associated with a paint booth operation we recommended the following approach ASTM method D5832 along with the ASTM Method D5742, "Standard Test Method for Determination of Butane Activity of Activated Carbon," which measured the capacity of a given carbon sample to absorb butane. One or both of the test methods may be useful in this case.

In the paint booth odor control we offered the following method for determining how much of the activated carbon had been loaded:
Both test methods require representative sampling of the carbon bed, and analysis of the samples, upon both the initial deployment of carbon (before use) and at a reasonable time interval after some use has occurred. The relative measurements (used versus virgin) are compared as follows.

- For the amount of volatile matter absorbed the used carbon weight is compared to the virgin carbon weight for a fixed sample volume. The percent increase in weight is compared to the predicted adsorption capacity of the carbon.
- For the butane number, the carbon would be considered spent when the used carbon sample tested shows a butane number value 20 to 30 percent lower than the virgin carbon butane number.

One option for understanding how much of the carbon remains is to take samples at different levels within the carbon bed. This way the facility could understand the extent of how much of the activated carbon had been loaded. If the facility did this a few times it may assist them in identifying a site specific schedule for replacing the activated carbon rather than waiting for an odor issue to occur and replacing the activated carbon at the point. I wasn't sure the best way to share this information with the Board.

Thanks,
Joe Sabato

Joseph Sabato, CCM
Senior Consultant

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

160 Grove Street Franklin, Massachusetts

Epsilon Associates Inc.

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Aerial Locus Map

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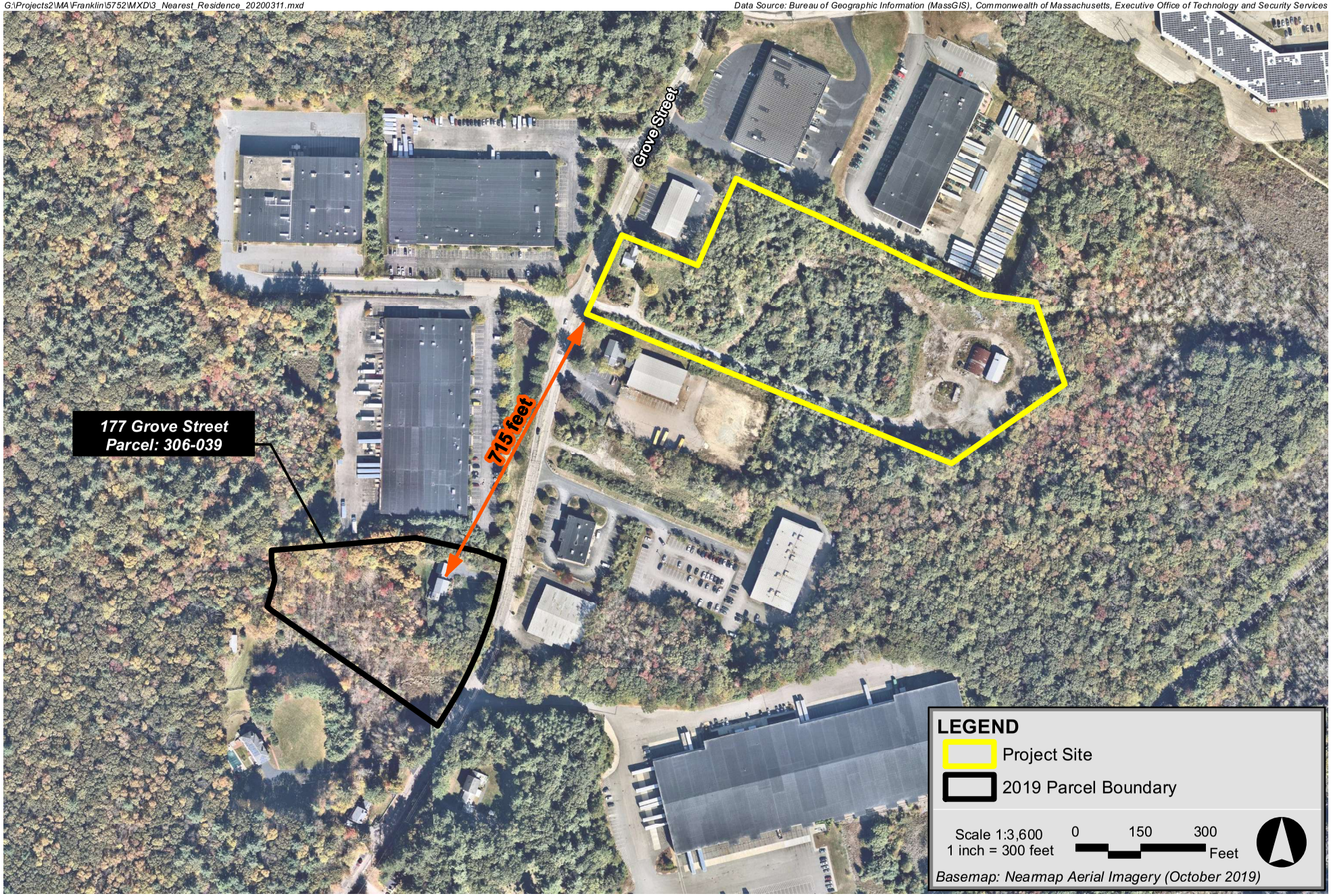
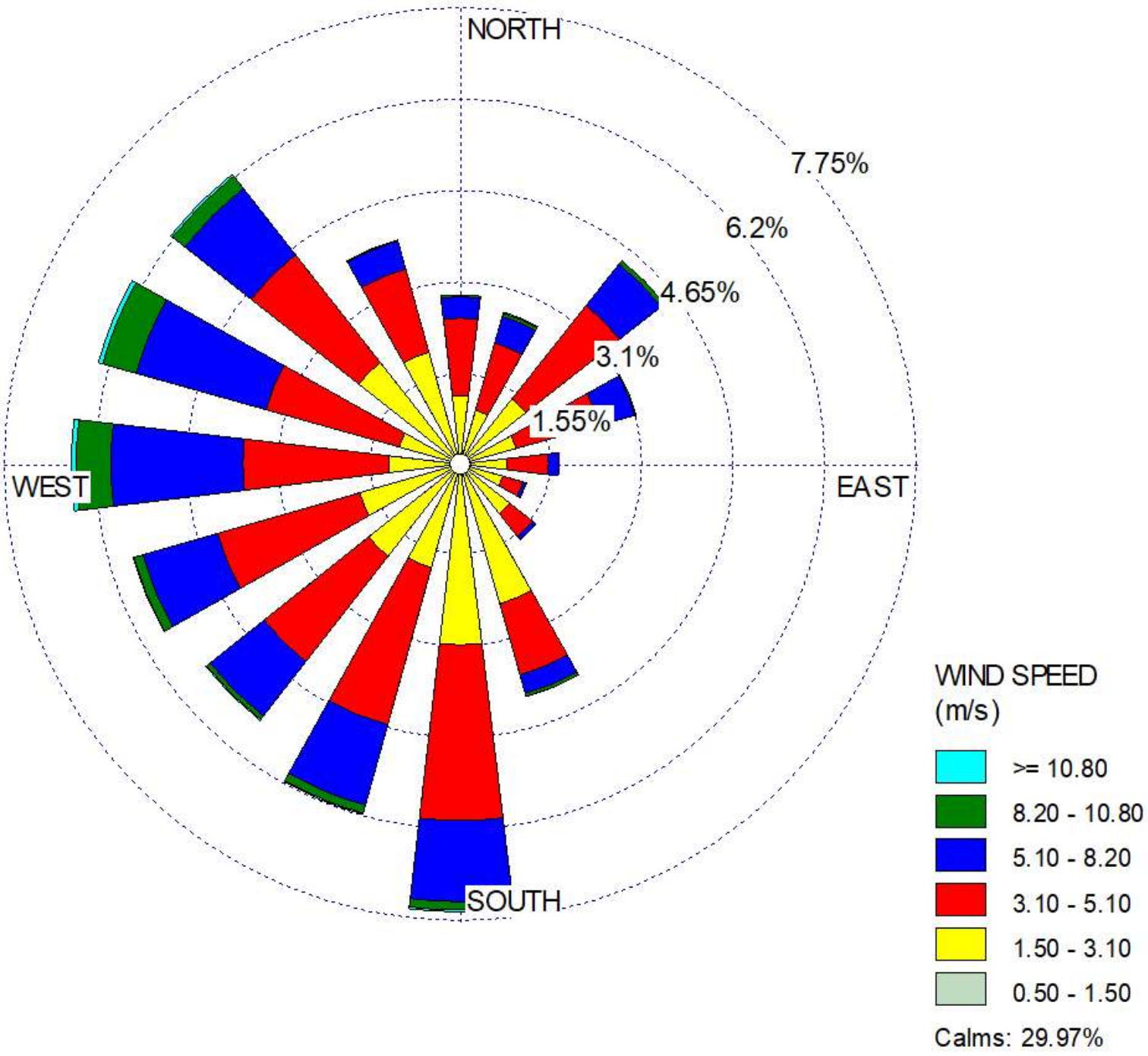


160 Grove Street Franklin, Massachusetts

Epsilon Associates Inc.

Figure 2

Distance to Nearest Residence



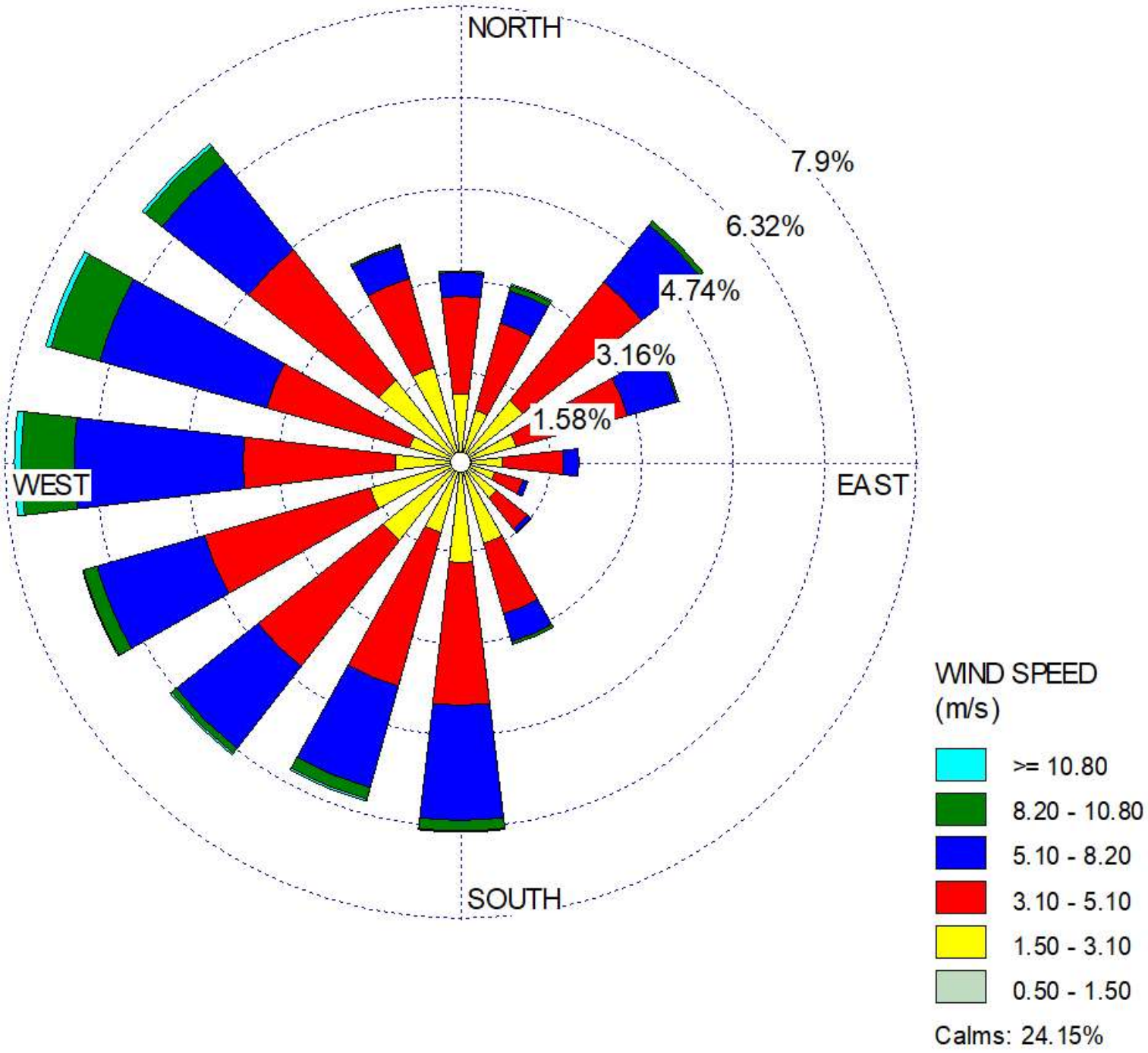
Cannabis Cultivation Facility, Franklin, MA

Epsilon ASSOCIATES INC.

Figure 3

24-hour Wind Rose

Norwood Memorial Airport, Norwood, MA 2015-2019



Cannabis Cultivation Facility, Franklin, MA

Epsilon ASSOCIATES INC.

Figure 4

Daytime Only (6am to 6pm) Wind Rose

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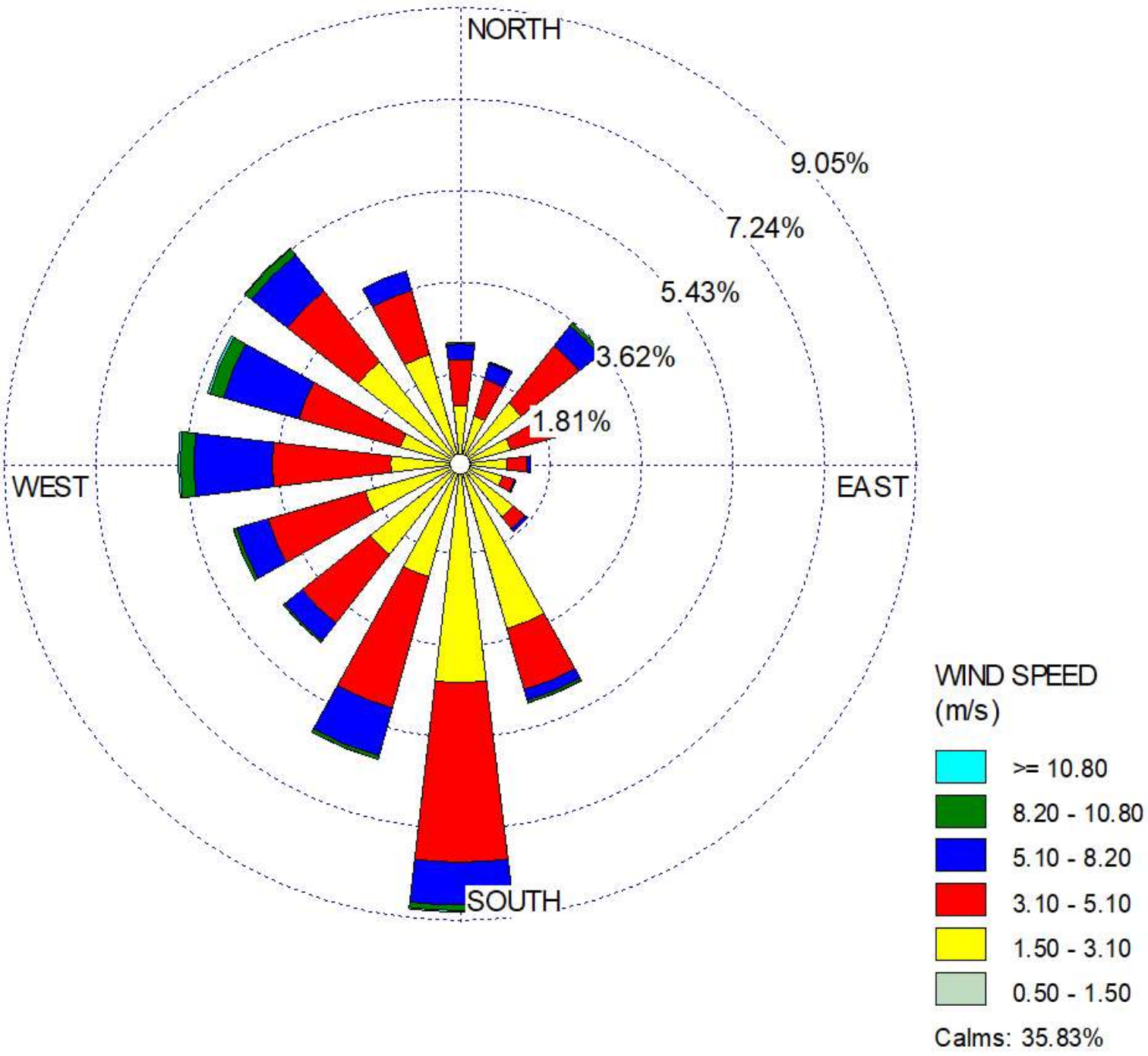


Epsilon ASSOCIATES INC.

Figure 5

Nighttime Only (6pm to 6am) Wind Rose

Norwood Memorial Airport, Norwood, MA 2015-2019

hennep

MEMORANDUM

TO: The Franklin Planning Board (the "**Board**")
FROM: Hennep Cultivation, LLC (the "**Applicant**)")
DATE: July 2, 2020
RE: **Response to Odor Mitigation Questions**
Special Permit and Site Plan Review Application
PROPERTY: 160 Grove Street

Honorable Member of the Planning Board,

We have prepared this memorandum in response to comments received during the June 1, 2020 Board meeting relating to the odor mitigation and control measures in connection with the proposed marijuana cultivation and product manufacturing facility located at 160 Grove Street, Franklin MA 02038.

- Other odor mitigation systems in Massachusetts in use and similar to the Applicant's proposed system:
    - BASK, Inc., a licensed marijuana cultivator (MCN282211) and operator at the AmeriCann facility located at 7 Campanelli Drive, Freetown, MA 02702.
    - Video of site visit and sniff test showing FogCo system in use https://drive.google.com/file/d/1fB2aK8Tu3OmlIo17C03rcGkD5rnPTVI6/view?usp=sharing
- Neutralizer Specifications:
    - Consumption ratio is 500:1 injection ratio, or .008 gallons per minute (GPM).
    - Neutralizer volume usage with all fans running is approximately .47 gallons per hour (GPH), or 3.7 gallons per day (GPD).
    - Storage of neutralizer chemical will typically be three-to-five 55-gallon drums; applicant can provide containment curbs for spill safety for 275-gallon reservoir
- FogCo Specifications:
    - 30" diameter fog ring mounted on each exhaust fan with 10 nozzles per fog ring.
    - Back-up system consists of extra pumps and solenoids to use as spare parts for expeditious repair.
    - FogCo system will not freeze; designed for use in Northeast climate.
        - See attached data sheet on heat trace system
    - Alarms: The Applicant is still researching availability and efficacy of odor detection alarm systems.
        - The Applicant will receive real-time alerts regarding power outages or failure of select equipment and/or systems.

        - The generator is on standby and, in the event of a power outage, will power the FogCo system without requiring any human intervention.
- Power Loss:
    - As referenced above, the FogCo system will be powered by emergency backup generator system**.**
- Wind Study:
    - A wind study was conducted by Epsilon as part of their March 13, 2020 report for this project.
        - See attached excerpts from Epsilon report**.**
        - Full report was submitted to the Board.

Land Planning Inc

June 17, 2020

Anthony Padula, Chairman
Franklin Planning Board
355 East Central Street
Franklin, MA 02038

Re: Hennep Cultivation – Response to May 28, 2020 Peer Review

Dear Mr. Padula:

Land Planning, Inc. has received the peer review prepared by BETA Group, Inc., dated May 28, 2020. In response to BETA's remaining concerns, we have revised the plans and documents as needed, and provide additional information and comments as follows: (the original comments have been included in italics)

> *G7. Provide top and bottom elevations for all retaining walls. PLT: The retaining wall elevations and details will be shown on a revised set of plans. Please note that the Applicant proposes fencing along all proposed retaining walls. Moreover, all retaining walls require building permits, which will address the heights and structural requirements.* ***BETA2: Issue remains outstanding.*** *LPI: General details and elevations of the 3 proposed retaining walls have been added to sheet 16 of the plans. The specifics of the structural design and details will be provided by others as part of the building permit application for the retaining walls.* ***BETA3: Information provided. BETA notes that due to height of the walls (>10 feet) structural design and permitting through the building department will be required prior to construction.***

The necessary information will be provided to the Building Department with the application for the required Building Permit.

> *P10. Provide ramps to the sidewalk at each shared aisle from accessible spaces. PLT: Additional sidewalk ramps will be added to the next revised set of plans.* ***BETA2: Issue remains outstanding.*** *LPI: The sidewalk adjacent to the accessible parking has been lowered to be flush with the adjacent pavement. Ramps at each access aisle will not be required.* ***BETA3: Provide bollards or car stops to prevent vehicles from encroaching onto sidewalk and provide protection to pedestrians.***

Wheel stops have been added to all parking spaces immediately adjacent to a sidewalk, building wall, or retaining wall.

> *ER1. Provide an estimate of the total earth removal from the site. PLT: The earthworks calculations will be updated to determine if there is a net cut/removal from the site.* ***BETA2: Issue remains outstanding.*** *LPI: The earthworks analysis has not been completed at this time. The cut/fill volumes will be provided at a later date.* ***BETA3: Issue remains outstanding.***

A summary of the estimated earthwork has been provided on Sheet 3 of the plans. The site requires a net cut of 27,496 yd^3.

C1. The Bylaw does not include any provisions for the installation of cape cod berm. Revise berm to be vertical granite or reinforced concrete curbing adjacent to parking areas. Granite curb is required within the Grove Street right-of-way. BETA defers to the preference of the Board for the use of vertical or slant curbing along access driveways and the radius at Grove Street. PLT: Additional notes regarding curbing materials will be added to the next revised set of plan. A vertical granite curbing detail will be added to the plan. ***BETA2: Issue remains outstanding.*** *LPI: A vertical granite curb detail has been added to the detail sheet for the roundings adjacent to Grove Street. The remaining curbing on the site will be reinforced concrete. The linewidths have been adjusted on the plans and additional labels provided.* ***BETA3: Vertical granite and reinforced concrete curb provided. Final plans should indicate that concrete shall be precast. Clarify if curb is proposed along the sidewalk adjacent to parking spaces (26 and 3) at the southeast corner of the building. BETA also notes there appears to be no barrier between the building and the 17 proposed spaces on the west side of the building and the 15 spaces proposed along the east side of the building. Consider providing curb, bollards, or car stops.***

Additional clarifications have been made on the plans regarding the proposed curbing. Wheel stops have been added to all parking spaces immediately adjacent to a sidewalk, building wall, or retaining wall.

S6. Provide a photometric plan for proposed lighting §185-31.1.C.(3)(l). In consideration of the proposed use, lighting should at a minimum conform with the Illuminating Engineer Society's "Lighting for Parking Facilities" and have sufficient illuminance around the building perimeter for security. PLT: The Applicant is consulting with a photometric consultant for the selection of building and pole mounted fixtures. ***BETA2: Issue remains outstanding.*** *LPI: A photometric plan has been provided with the revised plans.* ***BETA3: Photometric plan provided. Indicate units for depicted illuminance levels and evaluate if spillage onto adjacent industrial properties can be reduced or eliminated. Also, although spillage onto Grove Street may be considered beneficial for roadway safety, the designer should confirm that the anticipated illuminance is not excessive compared to typical Town roadway lighting.***

The lighting levels will be reviewed as suggested and a revised photometric plan will be provided as needed.

S9. Provide sight line information at the proposed entrance/exit in accordance with §185-21.C.(7)(c) §185-31.1.C.(3)(t). BETA notes that the existing tree line and topography restrict sight distance to the north of the site. PLT: The available sight distance will be added to further revised plans. The Applicant expects some improvement to the existing sight distance as a result of clearing and grading adjacent to Grove Street. ***BETA2: Issue remains outstanding.*** *LPI: A Traffic Assessment report has been prepared by Ron Müller & Associates and has been included with the submittal of revised documents. The outstanding issues are addressed within the report.* ***BETA3: Sight line information provided indicating that minimum stopping sight distances can be provided at the intersection of the site driveway and Grove Street. Based on the information provided in the traffic report, the proponent should evaluate relocating or raising the existing private sign (Doering Equipment) located to the south to increase sight distance above the required minimum for stopping sight distance and to bring greater conformity to the desired intersection sight distance, particularly if the sign is located within the Town right-of-way. The traffic report also notes that grading and clearing is required to provide the minimum stopping sight distance to the north; however, site plans do not appear to indicate any grading with the Town right-of-way. BETA recommends the proponent work with the Town to perform grading within the right-of-way to increase sight distance to the north.***

The applicant will provide updated information to the Board regarding the southerly abutter's sign that is obstructing the sight line.

Revisions to the proposed grading between the front parking lot and the Grove Street curb have been made to maximize the sight distance available north of the driveway.

WR2. Clarify if there will be any storage or disposal (i.e. directed to septic) of toxic or hazardous materials, fertilizers, pesticides, process chemicals, or fuel oil on the site to verify compliance with §185-22.B. §185-40.D.(1)(a) and (d). PLT: No exterior storage of materials is proposed. The Applicant will provide additional information on any interior storage of materials. Moreover, all interior storage will be within the head-house, outside of the Water Resource District. ***BETA2: Issue remains outstanding.*** *LPI: The applicant will provide additional information.* ***BETA3: BETA recommends for the applicant discuss this issue with the Board.***

The applicant will provide all information necessary to satisfy any concerns the Board may have regarding material storage.

Land Planning, Inc. has received the review prepared by the Town Engineer, Michael Maglio, P.E., dated June 1, 2020. In response to Mr. Magio's concerns, we have revised the plans and documents as needed, and provide additional information and comments as follows: (the original comments have been included in italics)

1. The proposed warehouse will have its own septic system and will be connected to town water for fire protection and domestic use for the office only, plant irrigation will be provided through a separate well. Piping from the proposed irrigation well to the building should be shown on the plan.

The proposed piping between the well and the building has been shown on the revised plans.

2. The applicant is proposing modifications to the existing Grove St turn lane striping to accommodate turning movements into the site.

No response to this statement is required.

3. One of the test pits (TP-5) for the stormwater basin indicates a potentially lower than anticipated infiltration rate due to loamy sand. The existing onsite soils should be evaluated during construction to confirm the design criteria of the system.

The applicant is amenable to a condition of approval that would require additional soil testing as suggested by the Town Engineer.

4. The infiltration chambers are shown with a bottom elevation and associated piping inverts at 262.00 on the profile and an elevation of 262.50 on the detail and in the drainage model. These differences should be addressed on the final plans.

The conflicting elevations within the plans have been corrected.

5. Consideration should be given to possible replacing the existing 12" corrugated metal pipe that crosses the access roadway at STA 8+00 depending on its condition, age, and expected longevity. The design calls for two retaining walls to be constructed over this drain line.

The existing 12" culvert connecting wetlands "B" and "C" is a heavy gauge helically corrugated steel pipe with a galvanized finish. The culvert appears to be in good condition with some minor surface corrosion where the outlet contacts the soil at the waterline. See photo below:

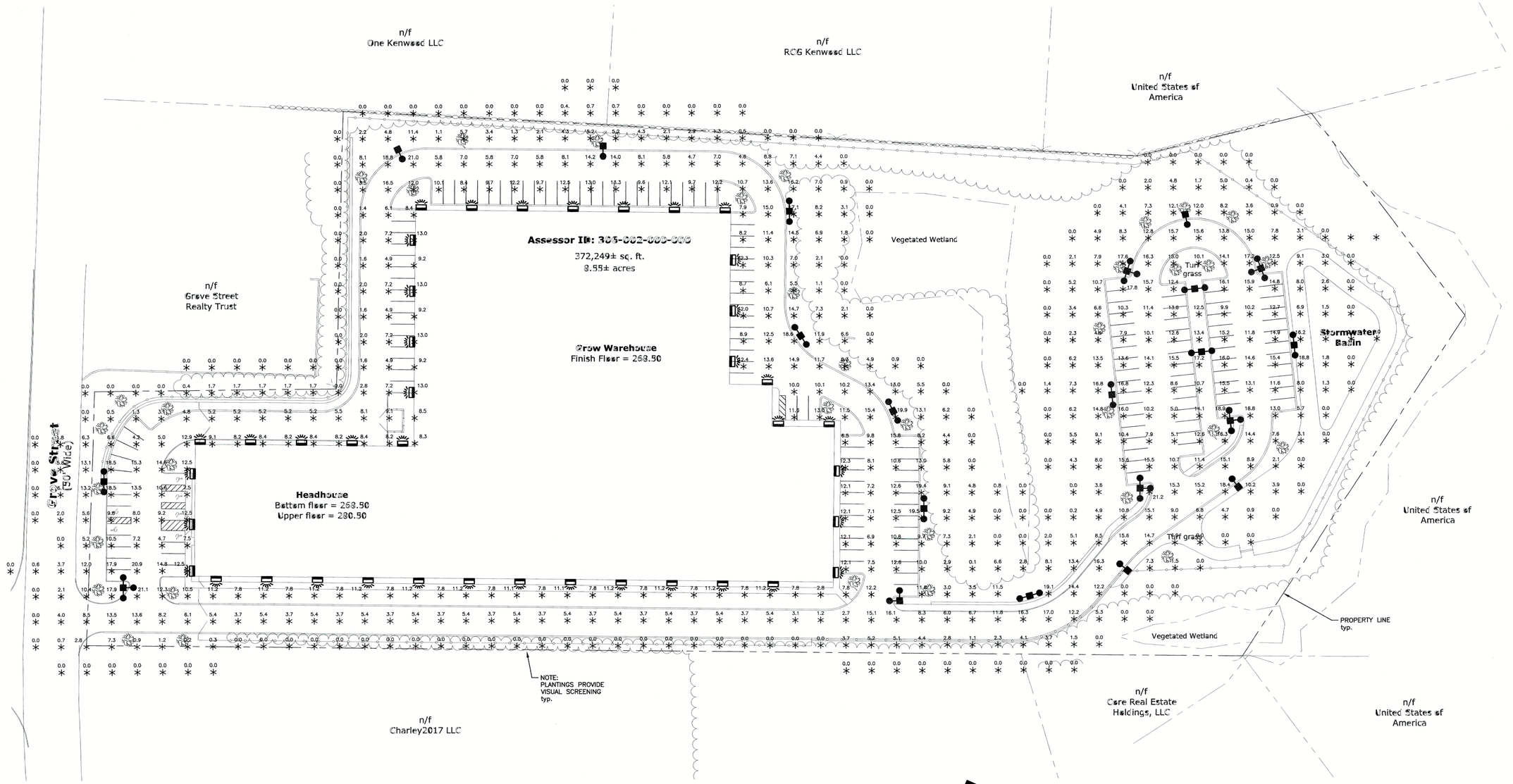
6. The detail for the proposed level spreader shows it applied to the end of a pipe however the plans show it as the overflow device for the proposed stormwater basin. The detail should be revised to correspond to the proposed use.

The detail of the level spreader has been changed to reflect its use at the end of the depression where FE-2 is located. The concrete lip at the stormwater basin spillway is detailed within the Stormwater Basin Cross Section.

Please contact our office if you have any questions or require additional information.

Sincerely,
Land Planning, Inc.

Norman G. Hill, P.E., P.L.S.
President



1 / E0.1 SITE LIGHTING/PHOTOMETRICS PLAN

SCALE: 1"= 40'-0"

NORTH

SITE LIGHTING FIXTURE LEGEND

WALL PACK; LED; HIGH INTENSITY; NOM. 55W; MVOLT DRIVER – 277V ANTICIPATED; 50% CUTOFF ACRYLIC LENS TYPE; PHOTOCELL; BRONZE; APPROXIMATE MOUNTING HEIGHT – 10'-0" ABOVE FINISH GRADE.

SINGLE-HEAD, POLE-MOUNT DRIVEWAY & PARKING LOT TYPE; LED ARRAY, FLAT PANEL "COBRA" STYLE; NOM. 150W; MVOLT DRIVER – 277 ANTICIPATED; CUTOFF ILLUMINATION PATTERN; 20 FEET, SQUARE, ANODIZED ALUMINUM BRONZE POLE ASSEMBLY WITH ADJUSTABLE FOCUS ARM & TENON; CONCRETE ELEVATED BASE BY GENERAL TRADES.

OR

DUAL-HEAD, POLE-MOUNT DRIVEWAY & PARKING LOT TYPE; LED ARRAYS, FLAT PANEL "COBRA" STYLE; (2) ILLUMINATORS; NOM. 150W; MVOLT DRIVERS – 277 ANTICIPATED; CUTOFF ILLUMINATION PATTERN; 20 FEET, SQUARE, ANODIZED ALUMINUM BRONZE POLE ASSEMBLY WITH ADJUSTABLE FOCUS ARMS & TENONS; CONCRETE ELEVATED BASE BY GENERAL TRADES.

THREE-HEAD, POLE-MOUNT DRIVEWAY & PARKING LOT TYPE; LED ARRAYS, FLAT PANEL "COBRA" STYLE; (3) ILLUMINATORS; NOM. 150W; MVOLT DRIVERS – 277 ANTICIPATED; CUTOFF ILLUMINATION PATTERN; 20 FEET, SQUARE, ANODIZED ALUMINUM BRONZE POLE ASSEMBLY WITH ADJUSTABLE FOCUS ARMS & TENONS; CONCRETE ELEVATED BASE BY GENERAL TRADES.

SITE LIGHTING DESIGN CODE COMPLIANCE NOTES

1. RECOMMENDED SECURITY LIGHT LEVEL PER LIGHTING FOR PARKING FACILITIES, (AS PUBLISHED BY ILLUMINATING ENGINEER SOCIETY), AROUND A BUILDING PERIMETER IS 6 FOOTCANDLES (60 LUX) AT 5'-0" ABOVE FINISHED GRADE. THE ANTICIPATED MINIMUM ILLUMINATION LEVEL IMMEDIATELY NEXT TO THE BUILDING IS PROJECTED TO BE 7.5FC WHICH CAN BE NOTICED ON THE WEST SIDE.
2. UPWARD LIGHT POLLUTION SHALL BE MITIGATED BY INSTALLATION OF "CUTOFF" TYPE FIXTURES --- BOTH FOR BULDING-MOUNTED WALL PACKS AND POLE-MOUNTED FLAT PANEL LED COBRA-STYLE ILLUMINATORS.
3. LIGHT SPILLAGE ONTO ADJACENT PROPERTIES IS FOCUSED TO BE LIMITED TO MOST NEARLY 0.0FC – WITH FEW MINIMALISTIC EXCEPTIONS;
   A. BY PRIMARY UTILIZATION OF BUILDING-MOUNTED WALL PACKS.
   B. DUE TO POSITIONING OF VISUAL SHIELDING PLANTINGS APPROPRIATELY SITUATED BEYOND SITE SECURITY FENCES.
4. A SINGLE-POLE, THREE-ILLUMINATOR AND A SINGLE-POLE, TWO ILLUMINATOR ARRANGEMENT OF LIGHT FIXTURES SUITABLY PLACED ON THE ROAD SIDE OF THE WEST PARKING AREA ARE PRESENTED TO:
   A. EFFECT ADEQUATE FACILITY ENTRY IDENTIFICATION AND VISUAL TRAFFIC CONTROL.
   B. TO NOT CAUSE DISTRACTIVE GLARE OR BRIGHTNESS FOR VEHICLES ON GROVE STREET CONSISTENT WITH LOCAL MUNICIPAL (TOWN) ROADWAY LIGHTING PREFERENCES AND TENDENCIES.

EXPECTED FOOTCANDLE LEVELS ARE INDICATED THROUGHOUT THE PLAN TO SHOW RESULTS OF HOW ALL FACTORS REALISTICALLY AFFECT YIELD.

SITE LIGHTING QUALIFICATION NOTES

A. LIGHT LEVEL ESTIMATES ARE PROJECTED WIT THE FOLLOWING CRITERIA:
   1. GRIDDED READING POINTS ARE ESTABLISHED USING DIMENSIONAL CONSIDERATION OF ±20'-0" IN BOTH DIRECTIONS.
   2. ANTICIPATED PERFORMANCE IS FOCUSED ON AN APPROXIMATE PHYSICAL HEIGHT OF ±5'-0" ABOVE FINISHED GRADE IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY STANDARD.
   3. NIGHTTIME EXPECTED CONDITIONS ARE TOTAL DARKNESS WITH NO REFLECTANCE FACTORS SUCH AS PAVING TYPE, SIDEWALKS AND ADJACENT BUILDING MATERIAL OR OBSTRUCTIONS.

B. ACTUAL LIGHT LEVEL YIELD SHALL BE DEPENDENT ON THE SPECIFICALLY INSTALLED FIXTURE MANUFACTURER'S PERFORMANCE CAPABILITIES AS AFFECTED BY TYPES OF LAMPS AND LENSES; AND FILED-VERIFIABLE MOUNTING POSITIONS AND ELEVATIONS.

C. PURPOSE FOR PRESENTATION OF LIGHT LEVEL PROJECTIONS IS SOLELY INTENDED TO VALIDATE OBJECTIVE OF MINIMUM SAFE ILLUMINATION FOR PEDESTRIAN AND VEHICLE TRAFFIC; AND PROOF OF AVOIDING POLLUTION ONTO NEIGHBORING PROPERTIES.

Engel Architects
1854 Lincoln Highway East
Lancaster, PA 17602
(717)392-8021, fax 392-7140

Growing Facility
for
HENNEP
160 Grove Street
Franklin, MA

SEAL

COMMONWEALTH OF MASSACHUSETTS – ELVIN R. ENGEL – No. 30107 – LANCASTER, PA – REGISTERED ARCHITECT

7/2/2020

PROJECT NO.
18161

MANAGED BY
B. MOUL

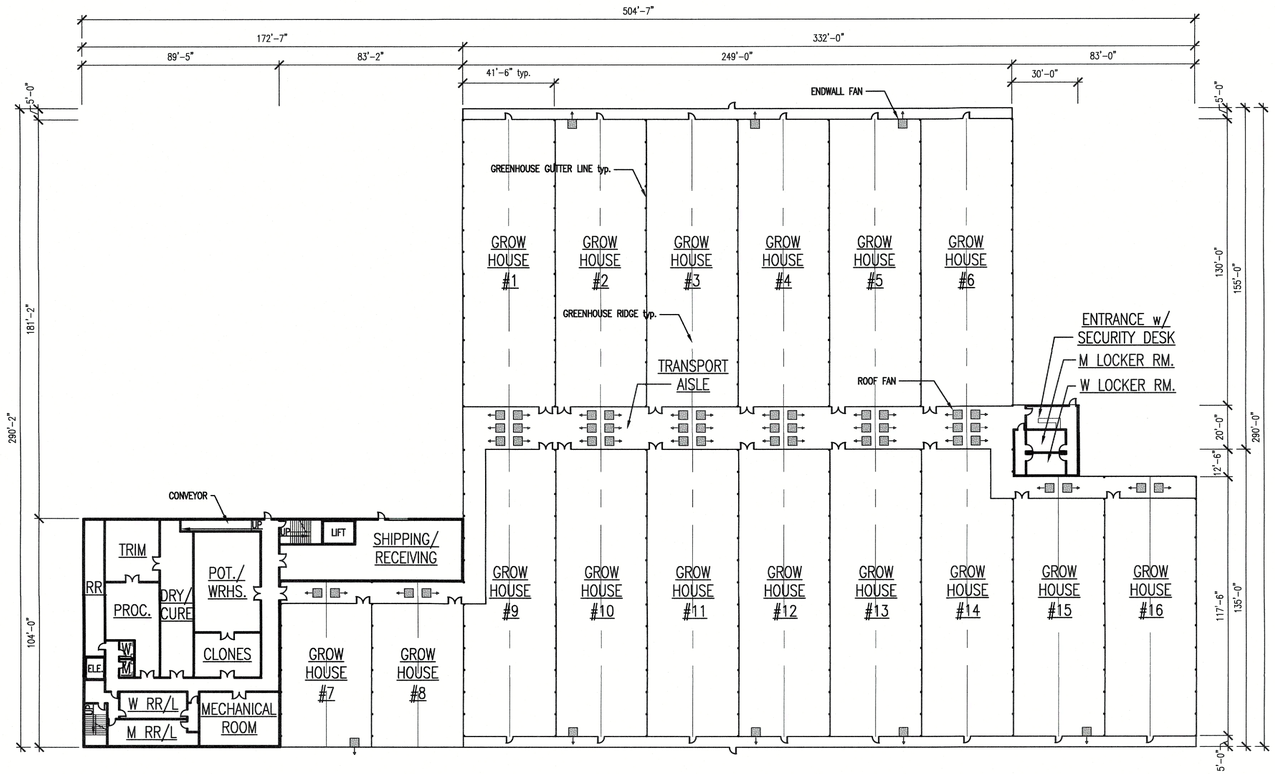
DRAWN BY
L. SWEIGART

REVISIONS
7/2/20 – PER SITE DEVELOPMENT REVIEW COMMENTS

DATE
MAY 13, 2020

DRAWING TITLE
SITE LIGHTING/ PHOTOMETRICS PLAN

SHEET NO.
E0.1



1 / A1.1.1 GREENHOUSE FLOOR PLAN

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

NORTH

Engel Architects, LLC
1854 Lincoln Highway East
Lancaster, PA 17602
(717)392-8021, fax 392-7140

Growing Facility
for
HENNEP

SEAL

ALVIN H. ENGEL
REGISTERED ARCHITECT
No. 30107
LANCASTER,
COMMONWEALTH OF MASSACHUSETTS

7/2/2020

PROJECT NO.
18161

MANAGED BY
E. ENGEL

DRAWN BY
D. ENGEL

REVISIONS

DATE
JUNE 26, 2020

DRAWING TITLE
G.H. FLOOR PLAN

SHEET NO.
A1.1.1

BriskHeat® Corporation

English

SpeedTrace Extreme

Pre-Assembled Self-Regulating Heating Cable

Instruction Manual

⚠	Read and understand this manual before operating or servicing this heating cable. Failure to understand how to safely operate these heating cables could result in an accident causing serious injury or death. These heating cables should only be operated by qualified personnel.

TABLE OF CONTENTS

INTRODUCTION

Thank you for purchasing a BriskHeat® SpeedTrace Extreme Pre-Assembled Self-Regulating Heating Cable. Your heating cable is designed to provide a long and efficient service life with function, reliability, and safety in mind. For additional information or other BriskHeat® products, please contact BriskHeat® at1-800-848-7673 (toll free, U.S. / Canada) or 614-294-3376.

SAVE THESE INSTRUCTIONS!
Additional copies of this manual are available upon request.

SAFETY ALERT SYMBOL

The symbol above is used to call your attention to instructions concerning your personal safety. It points out important safety precautions. It means **"ATTENTION! Become Alert! Your Personal Safety is involved!"** Read the message that follows and be alert to the possibility of personal injury or death.

⚠ DANGER
Immediate hazards which **WILL** result in severe personal injury or death.

⚠ WARNING
Hazards or unsafe practices that **COULD** result in severe personal injury or death.

⚠ CAUTION
Hazards or unsafe practices that **COULD** result in minor personal injury or property damage.

IMPORTANT SAFETY INSTRUCTIONS

⚠ DANGER

A person who has not read and understood all operating Instructions is not qualified to operate this product.

⚠ DANGER

- Do not immerse heater in liquid.
- Keep volatile or combustible material away from heater when in use.
- Use heater only in approved locations.
- Keep sharp metal objects away from heater.

Failure to observe these warnings may result in electric shock, risk of fire, and personal injury.

⚠ WARNING

End-User Must Comply to the Following:

- Only qualified personnel are allowed to connect electrical wiring.
- Disconnect all supply power at the source before making any power connections.
- All electrical wiring must follow local electrical codes.
- The person who performs the final installation / wiring must be qualified for this work.
- The end-user is responsible for providing a suitable disconnecting device.
- The end-user is responsible for providing a suitable electrical protection device. It is highly recommended that a ground fault circuit breaker is used.

Failure to observe these warnings may result in personal injury or damage to the heater.

Agency Approvals

ETL Listed c US
Intertek

⚠ CAUTION

- Never handle the heating cable while it is in operation; always disconnect the heating cable from the power source and allow to cool prior to handling.
- Inspect heating cable before use.
- If spillage of foreign matter onto heater occurs, disconnect from power source and clean after heating cable has been allowed to cool.
- Fasten heating cable to pipes using approved methods only.
- Do not repair damaged or faulty heating cable.
- Do not crush or apply severe physical stress on heating cable or cord assembly.
- Unplug heating cable when not in use.
- Do not use for other applications.

Failure to observe these warnings may result in personal injury or damage to the heater.

BriskHeat® Corporation
SpeedTrace Extreme Self-Regulating Heating Cable

⚠ WARNING

Read and understand this entire manual before operating this heating cable.

SUMMARY OF OPERATION

1. BriskHeat® SpeedTrace Extreme Heating Cables are designed for freeze protection on metal and plastic pipes.
2. Suitable for indoor or outdoor use.
3. Easy-to-install: pre-assembled with power cord and plug. (230V models have bare wire leads).
4. Safe to overlap and insulate.
5. Automatically adjusts heat output based on surface and ambient temperature.
6. No temperature controller is required.

DESCRIPTION

SpeedTrace Extreme pre-assembled, self-regulating heating cables are designed for commercial metal and plastic pipe freeze protection.

SpeedTrace Extreme heating cables are available in 6, 12, 24, 50, 75, and 100 foot lengths, and each comes assembled with a 30-inch power cord and plug. (230V models have bare wire leads).

KIT CONTENTS

1. SpeedTrace Extreme pre-assembled, self-regulating heating cable.
2. Electrical tracing pipe labels.

Additional items required, but not supplied for pipe applications

Adhesive tape, select from fiberglass or aluminum:

- Fiberglass tape, PSAT36A, 0.5 in wide, 36 yards long.
- Aluminum tape, AAT260, 2.0 in wide, 60 yards long.

Insulation:

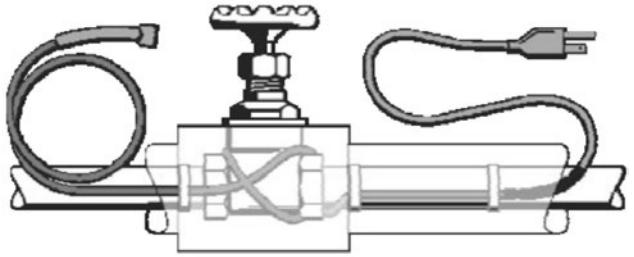
- INSUL-LOCK DS Flexible Closed Cell Pipe Insulation.

⚠ WARNING

Fire and shock hazard. This product is an electrical device that must be installed correctly to ensure proper operation and to prevent shock or fire. Read these important warnings and carefully follow all the installation instructions.

- To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with the requirements of BriskHeat and national electrical codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection.
- For pipe freeze protection applications, use only fire-resistant insulation materials such as preformed foam or fiberglass.
- Do not damage the heating cable and power cord or plug. Remove any damaged cables from service immediately.
- Do not use any wire or metal clamps to attach the cable to the pipe. Use tape (1/2 inch wide to 2 inch wide) or plastic cable ties.
- Leave these installation instructions with the user for future reference.
- De-energize all power circuits before installation or servicing.
- The conductive layer of this heating device must be connected to a suitable grounding terminal.

PIPE FREEZE PROTECTION



General requirements for pipe freeze protection:

- SpeedTrace Extreme heating cables may be used on metal and plastic water pipes, but not on flexible vinyl tubing, (such as garden hoses).
- SpeedTrace Extreme heating cables are not intended for use inside any pipes, for freeze protection of liquids other than water, or for use in classified hazardous locations.
- Install with a minimum of ½" fire-resistant, waterproof thermal insulation.
- Never use on any pipes that may exceed 150°F (65°C).
- Extension cord may not be used for permanent installations. For temporary installations consult local electrical and fire codes.

GENERAL INSTRUCTIONS

- Install only in accessible locations; do not install behind walls or where the cable would be hidden.
- Do not run the heating cable through walls, ceilings, or floors.
- Connect only to ground-fault protected outlets that have been installed in accordance with all prevailing national and local codes and standards and are protected from rain and other water.

ELECTRICAL CODES

Articles 422, 426 and 427 of the National Electrical Code (NEC), and Part 1, Section 62 of the Canadian Electrical Code (CEC) govern the installation of SpeedTrace Extreme heating cable for pipe freeze protection and must be followed.

Important: For the BriskHeat® SpeedTrace Extreme heating cable warranty to be valid, you must comply with all the requirements outlined in these guidelines.

All thermal and design information provided here is based upon a standard installation with heating cable fastened to an insulated pipe. For any other application or method of installation, please contact BriskHeat® at 1-800-848-7673 (U.S. / Canada), or 1-614-294-3376 (worldwide).

CABLE SELECTION

Use the tables below to select the correct heating cable. Add 1ft (30cm) to your pipe length for each valve or spigot on your pipe system.

The charts assume the lowest outside temper-thick waterproof, fire-resistant thermal insulation. (preformed foam). For protection to -20°F (-29°C), use 1" (25mm) thick insulation.

Table 1 Metal Pipes

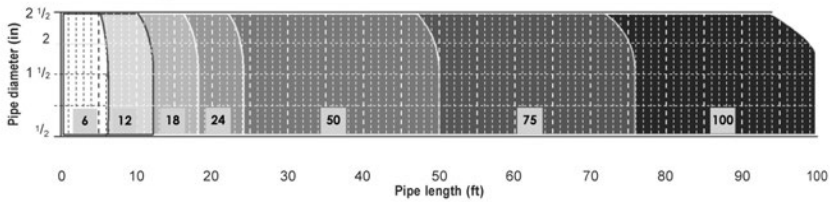
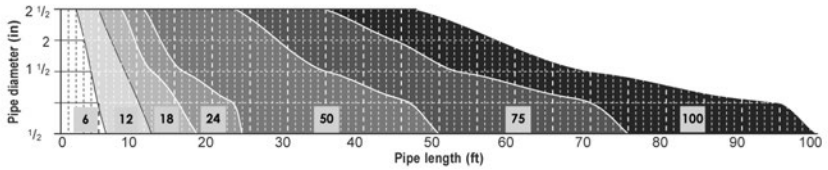


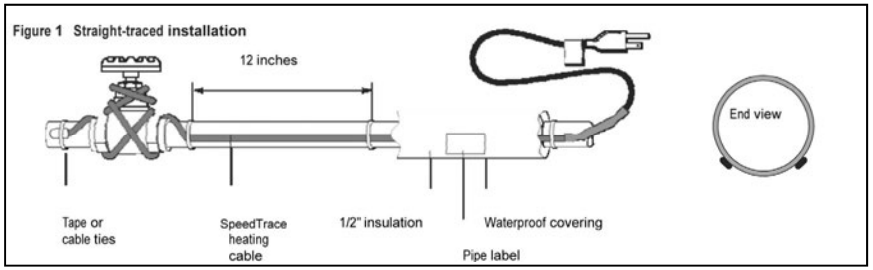
Table 2 Plastic Pipes

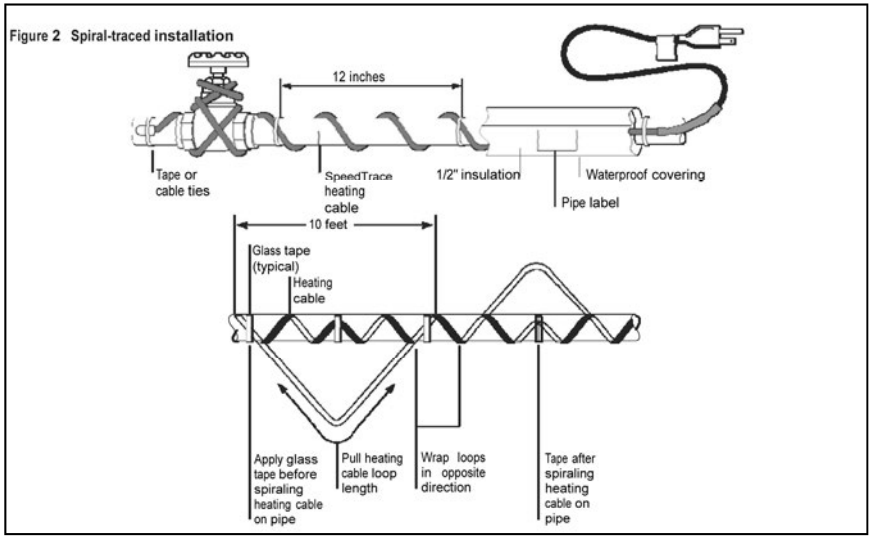


Add 1 foot to the pipe length for each valve or spigot on your pipe system. If cable selected is longer than the pipe, spiral it evenly along the entire pipe.

Important: All thermal and design information provided here is based upon a standard installation. For any other application or method of installation, please contact BriskHeat® at 1-800-848-7673 (U.S. / Canada), or 1-614-294-3376 (worldwide).

HEATING CABLE INSTALLATION





1. Prepare for installation

- Store the heating cable in a clean, dry place.
- Complete piping pressure test.
- Prior to installing the cable, remove any sharp surfaces on the pipe that might damage the heating cable.
- Review the SpeedTrace Extreme heating cable design and compare to materials received to verify that you have the proper SpeedTrace Extreme heating cable.
- Walk the system and plan the routing of the SpeedTrace Extreme heating cable on the pipe.
- 230V models only: Install approved electrical plug device suitable for 208-277VAC prior to installation of heating cable.

2. Position and attach heating cable to pipe

- Be sure all piping to be traced is dry.
- Install heating cable, using straight tracing Figure 1, or spiraling Figure 2.

Figure 3 Insulation

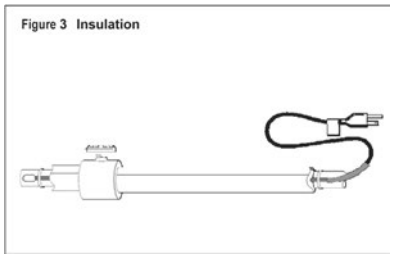
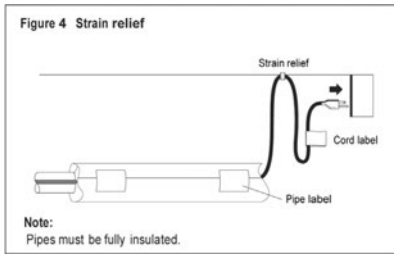


Figure 4 Strain relief



- For straight tracing, install the heating cable on a lower half of the pipe; for example, in the 4 o'clock or 8 o'clock position.
- Be sure to install the additional heating cable required for valves, flanges, etc. as shown in Figures 1 and 2.
- When the design calls for spiraling, begin by suspending a loop every 10 feet as shown in Figure 2. To determine the loop length, divide the SpeedTrace Extreme heating cable length by your pipe length and multiply by 10. For example, if you are using a 50 ft. SpeedTrace Extreme heating cable on a 40 foot pipe, leave a 12 foot loop of heating cable at every 10 foot section of pipe. Grasp the loop in its center and wrap it around the pipe. Even out the distance between spirals by sliding the wraps along the pipe. Use recommended fiberglass or aluminum adhesive tape to secure the center of the loop to the pipe.
- Fasten SpeedTrace Extreme heating cable to the pipe at 1- foot intervals using PSAT36A fiberglass tape or AAT260 aluminum tape. Do not use vinyl electrical tape, duct tape, metal bands, or wire.
- If excess cable remains at the end of the pipe, double it back along the pipe.

3. Check the installation

- Prior to installing thermal insulation make sure the heating cable is free of mechanical damage (from cuts, clamps, etc.) and thermal damage (from solder, overheating etc.).

4. Install thermal insulation

- A reliable SpeedTrace Extreme heating cable system depends on properly installed and dry, weatherproofed thermal insulation like the INSUL-LOCK DS Flexible Closed Cell Pipe Insulation.
- Ensure that at least ½" of preformed foam or equivalent thermal insulation is used and that all piping, including valves, joints, and wall penetrations, has been fully insulated as shown in Figure 3.
- For protection to -20°F (-29°C), use 1" (25mm) thick insulation.
- Install the insulation on the piping as soon as possible to minimize the potential for mechanical damage after installation.
- Be sure the SpeedTrace Extreme heating cable label is visible on the outside of the thermal insulation.

5. Finishing the installation

- To prevent damage to the heating cable or cord, secure the power cord (cold lead) with a plastic cable tie, glass cloth tape, or duct tape as shown in Figure 4.
- Electrical tracing labels indicating the presence of electric pipe heating cable are included with the heating cable. Attach the supplied "Electrical Tracing" labels on the outer surface of the pipe insulation at an interval of one label for every 10 ft (3 m) of pipe to indicate the presence of the SpeedTrace Extreme heating cable.

6. Starting the system

- BriskHeat® recommends that the system be tested per the "Cable testing and maintenance" section below.
- Plug the heating cable into a ground-fault protected outlet.
- Check the circuit breaker to verify power to the cable.
- Standing water in the pipe should feel warm within an hour.

7. Ground fault protection

- BriskHeat® and national electrical codes require ground-fault equipment protection on each heating cable branch circuit.
- To reduce the risk of fire caused by damage or improper installation, circuit breakers or equivalent, with a 30-mA trip level, should be used. Alternative designs providing comparable levels of ground-fault protection may also be acceptable. For technical assistance, please contact BriskHeat at 1-800-848-7673 (U.S. / Canada), or 1-614-294-3376 (worldwide).

⚠ WARNING

- Conditions of maintenance and supervision ensure that only qualified persons service the installed systems.
- Continued circuit operation is necessary for safe operation of equipment.

CABLE TESTING AND MAINTENANCE

- Using a 2500-Vdc megohmmeter, check the insulation resistance between both of the rectangular (power) prongs on the plug and the round (ground) prong after installing the heating cable. Minimum reading should be 1000 megohms.
- Record the original values for each circuit, and compare subsequent readings taken during regular maintenance schedules to the original values.
- If the readings fall below 1000 megohms, replace the SpeedTrace Extreme heating cable with a new unit. Do not attempt to repair the unit.

⚠ WARNING

Fire and shock hazard. Damaged heating cable can cause electrical shock, arcing, and fire. Do not attempt to repair or energize damaged heating cable. Remove it at once and replace with a new length.

PRODUCT SPECIFICATIONS

Cable (120V)	Cable (230V)	Cable Length (feet)	Min. power output at 50°F (10°C) on pipe (watts)	Nominal power output at 32°F (0°C) in ice and snow (watts)
FFSL81-6	**FFSL82-6**	6	48	96
FFSL81-12	**FFSL82-12**	12	96	192
FFSL81-18	**FFSL82-18**	18	144	288
FFSL81-24	**FFSL82-24**	24	192	384
FFSL81-50	**FFSL82-50**	50	400	800
FFSL81-75	**FFSL82-75**	75	600	1,200
FFSL81-100	**FFSL82-100**	100	800	1,600

General Specifications for all FFSL8 Products

Nominal cable width (in)	0.42
Nominal cable thickness (in)	0.22
Heating cable bus wire gauge (AWG)	16
Cold lead length (in)	30
Voltage rating (120V)	110-120
Voltage rating (230V)	208-277
Plug rating (amps)	15
Circuit breaker sizing minimum (amps)	15
Max. exposure temperature	150°F (65°C)
Electrical classification	Nonhazardous areas only
Exposure to chemicals	None
Watts/foot at 50°F (10°C)	8
Watts/foot at 32°F (0°C) in ice and snow	16
Outer Jacket Type	Moisture and flame resistant thermoplastic elastomer

TROUBLESHOOTING GUIDE

Please read this guide prior to contacting BriskHeat®. This guide is designed to answer the most commonly asked questions. If you are unable to identify the problem or need additional assistance, please contact your local distributor/ representative or us at **1-800-848-7673, 614-294-3376,** or **bhtsales1@briskheat.com.**

PROBLEM	SOLUTION(S)
Entire heating cable does not heat	Verify heater is connected to proper voltage. Check to see if there is a resistance reading (not an open circuit) in heater using an ohm meter.
Portion of heating cable does not heat	Examine unheated cable for damage.
Circuit breaker is tripping	Validate that the circuit breaker is capable of handling the amp requirement of heater. Examine heater and cord for any damage.

WARRANTY INFORMATION

BriskHeat warrants to the original purchaser of this product for the period of eighteen (18) months from date of shipment or twelve (12) months from date of installation, whichever comes first. BriskHeat's obligation and the exclusive remedy under this warranty shall be limited to the repair or replacement, at BriskHeat's option, of any parts of the product which may prove defective under prescribed use and service following BriskHeat's examination, is determined by BriskHeat to be defective. The complete details of the warranty can be found online at www.briskheat.com or by contacting us at 1-800-848-7673 (toll free, U.S. / Canada) or 1-614-294-3376 (Worldwide).

BriskHeat® Corporation

4800 Hilton Corporate Dr. Columbus, OH 43232
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BriskHeat® Corporation

Spanish (Español)

SpeedTrace Extreme

Cable calefactor autorregulable preensamblado

Manual de instrucciones

⚠	Antes de operar o realizar mantenimiento de este cable calefactor, lea y comprenda este manual. Si no logra entender cómo operar con seguridad estos cables calefactores, se podría producir un accidente que cause lesiones graves o la muerte. Estos cables calefactores solo deben ser utilizados por personal cualificado.

ÍNDICE

INTRODUCCIÓN

Gracias por comprar un cable calefactor autorregulable y preensamblado SpeedTrace Extreme de BriskHeat® . Su cable calefactor se ha diseñado para proporcionar una larga y eficiente vida de servicio, con aspectos como funcionamiento, fiabilidad y seguridad en mente. Para obtener información adicional o información sobre otros productos de BriskHeat®, le recomendamos que se ponga en contacto con BriskHeat® en el teléfono 1-800-848-7673 (línea gratuita, EE.UU./ Canadá) o 614-294-3376.

¡CONSERVE ESTAS INSTRUCCIONES!
Existen copias adicionales de este manual si lo solicita.

SÍMBOLO DE ALERTA DE SEGURIDAD

El símbolo de arriba se usa para que preste atención a instrucciones que conciernen a la seguridad personal. Indica precauciones importantes relativas a la seguridad. Significa "**¡ATENCIÓN! ¡Esté alerta! ¡Su seguridad personal está en riesgo!"** Lea el mensaje que sigue y esté alerta a la posibilidad de lesiones personales o riesgo de muerte.

⚠ PELIGRO

Peligros inmediatos que **RESULTARÁN** en lesiones personales o muerte.

⚠ ADVERTENCIA

Peligros o prácticas no seguras que **PODRÍAN** resultar en lesiones personales graves o muerte.

⚠ PRECAUCIÓN

Peligros o prácticas no seguras que **PODRÍAN** resultar en lesiones personales leves o daños a la propiedad.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

⚠ PELIGRO

Una persona que no haya leído y comprendido todas las instrucciones de instalación no está cualificada para instalar el producto.

⚠ PELIGRO

- No sumerja el calentador en líquido.
- Mantenga material volátil o combustible lejos del calefactor cuando se está utilizando.
- Utilice el calentador solamente en los lugares aprobados
- Mantenga los objetos metálicos afilados lejos del calentador.

No respetar estas advertencias puede resultar en descarga eléctrica, riesgo de incendio y lesiones personales.

⚠ ADVERTENCIA

Usuario final debe cumplir lo El siguiente:

- Solamente personal cualificado está autorizado para conectar los cables eléctricos.
- Antes de realizar cualquier conexión de alimentación eléctrica, desconecte toda la energía eléctrica desde su fuente.
- Todo el cableado eléctrico debe cumplir las normativas eléctricas locales.
- La persona que realice la instalación/cableado finales debe estar cualificada para dicho trabajo.
- El usuario final es responsable de proporcionar un dispositivo de desconexión adecuado.
- El usuario final es responsable de proporcionar un dispositivo de protección eléctrica adecuado. Se recomienda encarecidamente utilizar un interruptor de circuito para fallos de toma a tierra.

No prestar atención a estas advertencias puede resultar en lesiones personales o daños al cable calefactor.

Aprobaciones de agencias

ETL Listed c US Intertek

⚠ PRECAUCIÓN

- Nunca manipule el cable calefactor mientras está funcionando; desconecte siempre el cable calefactor de su fuente de suministro eléctrico y deje que se enfríe antes de manipularlo.
- Inspeccione el cable calefactor antes de usarlo.
- Si se produce alguna salpicadura de materia extraña sobre el calentador, desconéctelo de la fuente eléctrica y límpielo después de que el cable calefactor se haya enfriado.
- Sujete el cable calefactor a los tubos utilizando solamente los métodos aprobados.
- No repare un cable calefactor que esté dañado o defectuoso.
- No aplaste ni aplique una presión física excesiva sobre el cable calefactor o conjunto de cables.
- Desenchufe el cable calefactor cuando no se esté utilizando.
- No lo utilice para ninguna otra aplicación.

No prestar atención a estas advertencias puede resultar en lesiones personales o daños al cable calefactor.

BriskHeat® Corporation
Cable calefactor SpeedTrace Extreme

⚠ ADVERTENCIA

Antes de utilizar este cable calefactor, lea y comprenda el manual entero.

RESUMEN DE FUNCIONAMIENTO

1. Los cables calefactores SpeedTrace Extreme de BriskHeat® están diseñados para la protección contra congelación de tubos metálicos y de plástico.
2. Adecuado para uso en interiores y exteriors.
3. Fácil de instalar: viene preensamblado con cable de alimentación y conector. (Los modelos de 230 V tienen simples conductores de hilos).
4. Se puede traslapar y aislar con seguridad.
5. Ajusta automáticamente la potencia de calentamiento en función de la superficie y temperatura ambiental.
6. No se necesita ningún controlador de temperatura.

DESCRIPCIÓN

Los cables calefactores autorregulables y preensamblados SpeedTrace Extreme están diseñados para proteger contra congelación los tubos comerciales de metal y de plástico.

Los cables calefactores SpeedTrace Extreme están disponibles en longitudes de 1,8 m, 3,6 m, 7,2 m, 15,2 m, 22,8 m y 30,4 m; y cada uno de ellos viene en conjunto preensamblado de cable de alimentación de 30 pulgadas y conector. (Los modelos de 230 V tienen simples conductores de hilos).

CONTENIDO DEL KIT

1. Cable calefactor autorregulable y preensamblado SpeedTrace Extreme.
2. Etiquetas para tubos de seguimiento eléctrico.

Elementos adicionales necesarios, pero no suministrados, para aplicaciones con tubos

Cinta adhesiva; seleccione entre fibra de vidrio o aluminio:

- Cinta de fibra de vidrio, PSAT36A, 12,7 mm de anchura, 32,7 m de longitude.
- Cinta de aluminio, AAT260, 50,8 mm de anchura, 54,6 m de longitude.

Aislamiento:

- Aislamiento de tubo flexible de celda cerrada INSUL-LOCK DS.

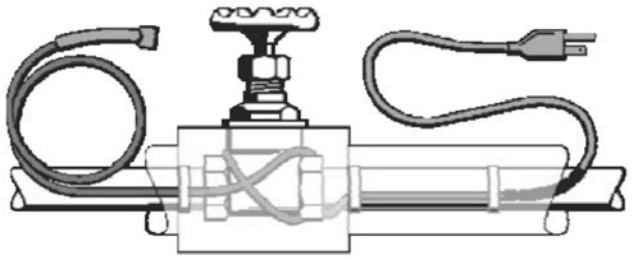
⚠ADVERTENCIA

Peligro de incendio y descarga eléctrica. Este producto es un aparato eléctrico que debe instalarse correctamente para garantizar su funcionamiento apropiado y para prevenir descargas eléctricas o incendio. Lea estas advertencias importantes y siga atentamente todas las instrucciones de instalación.

- Para minimizar el peligro de incendio como consecuencia de la formación continua de un arco eléctrico si se daña o se instala incorrectamente el cable calefactor, y para cumplir los requisitos de BriskHeat y las normativas eléctricas nacionales, se debe utilizar protección de equipo contra fallos de toma a tierra en el circuito de derivación de cada cable calefactor. La formación de arco eléctrico no puede evitarse mediante protección de circuitos convencional.
- Para aplicaciones de protección contra congelación de tubos, utilice solamente materiales de aislamiento resistente al fuego como, por ejemplo, espuma previamente modelada o fibra de vidrio.
- Procure no dañar el cable calefactor y el cable de alimentación o conector. Cualquier cable dañado debe ser retirado del servicio inmediatamente.
- No utilice abrazaderas de alambre o de metal para sujetar el cable al tubo. Utilice cinta (de una anchura entre 1/2 y 2 pulgadas) o abrazaderas de plástico para cables.
- Deje estas instrucciones de instalación a disposición del usuario para referencia en el futuro.
- Antes de realizar la instalación o cualquier servicio de reparación o mantenimiento, desactive la corriente de todos los circuitos eléctricos.
- La capa conductora de este dispositivo de calentamiento debe estar conectada a una toma a tierra adecuada.

BriskHeat® Corporation
Cable calefactor SpeedTrace Extreme

PROTECCIÓN CONTRA CONGELACIÓN DEL TUBO



Requisitos generales de protección contra congelación del tubo:

- Los cables calefactores SpeedTrace Extreme pueden utilizarse con tuberías de agua metálicas o de plástico, pero no con tubos flexibles de vinilo (por ejemplo, mangueras de jardín).
- Los cables calefactores SpeedTrace Extreme no están diseñados para utilizarse en el interior de tubos ni para protección contra congelación de líquidos que no sean agua, y tampoco para utilizarse en ubicaciones clasificadas como peligrosas.
- Instálelo con un mínimo de aislamiento térmico hermético y resistente al fuego de ½".
- Nunca lo utilice en tubos que puedan superar la temperatura de 150 °F (65 °C).
- La extensión eléctrica no se puede utilizar para instalaciones permanentes. Para instalaciones temporales consultar los códigos eléctricos y de incendio locales.

INSTRUCCIONES GENERALES

- Haga la instalación solamente en ubicaciones accesibles; no lo instale detrás de paredes ni de forma que el cable quede oculto.
- No haga pasar el cable calefactor a través de paredes, techos o suelos.
- Conéctelo solamente a enchufes que tengan protección contra fallos de toma a tierra, que hayan sido instalados de conformidad con todos los códigos y normas nacionales y locales y que estén protegidos de la lluvia y otros efectos del agua.

CÓDIGOS ELÉCTRICOS

Deberán acatarse los artículos 422,426 y 427 del Código nacional eléctrico (NEC) y la Parte 1, Sección 62 del Código eléctrico canadiense (CEC) que regulan la instalación del cable calefactor SpeedTrace Extreme para protección contra la congelación de los tubos.

Importante: Para que la garantía del cable calefactor SpeedTrace Extreme de BriskHeat® sea válida, deberá cumplir todos los requisitos que se describen en estas directrices.

Toda la información térmica y de diseño que aquí se proporciona, está basada en una instalación estándar con el cable calefactor sujeto firmemente a una tubería dotada de aislamiento. Para cualquier otra aplicación o método de instalación, póngase en contacto con BriskHeat® llamando al teléfono 1-800-848-7673 (EE. UU. / Canadá), o 1-614-294-3376 (resto del mundo).

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SELECCIÓN DE CABLES

Utilice las tablas siguientes para seleccionar el cable calefactor correcto. Añada 30 cm a la longitud del tubo por cada válvula o espita que haya en su sistema de tuberías.

En los gráficos se da por sentado que se utiliza el menor grosor de aislamiento térmico exterior, hermético y resistente al fuego (espuma premodelada). Para protección hasta -20°F (-29 °C), utilice aislamiento de 1” (25mm) de grosor.

Importante: Toda la información térmica y de diseño que aquí se proporciona, está basada en una instalación estándar. Para cualquier otra aplicación o método de instalación, póngase en contacto con BriskHeat® llamando al teléfono 1-800-848-7673 (EE. UU. / Canadá), o 1-614-294-3376 (resto del mundo).

Tabla 1 Tubos de metal

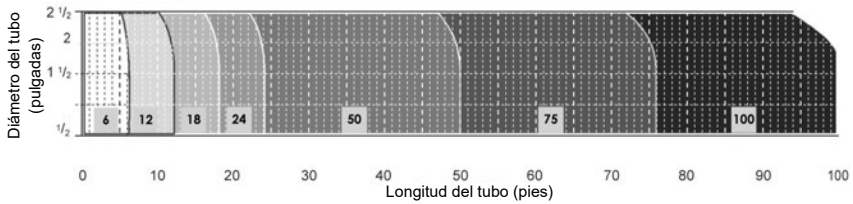
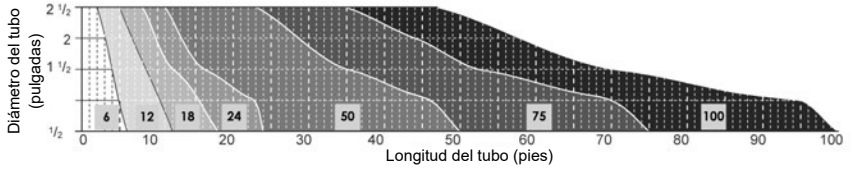


Tabla 2 Tubos de plástico



Añada 30 cm a la longitud del tubo por cada válvula o espita que haya en su sistema de tuberías. Si el cable seleccionado es más largo que la tubería, enróllelo en espiral uniformemente a lo largo de toda la tubería.

INSTALACIÓN DEL CABLE CALEFACTOR

Figura 1 Instalación de trazado recto

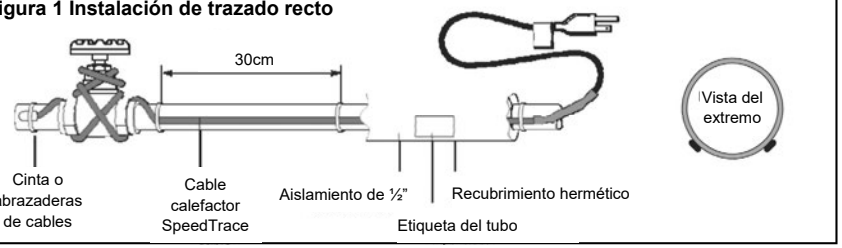
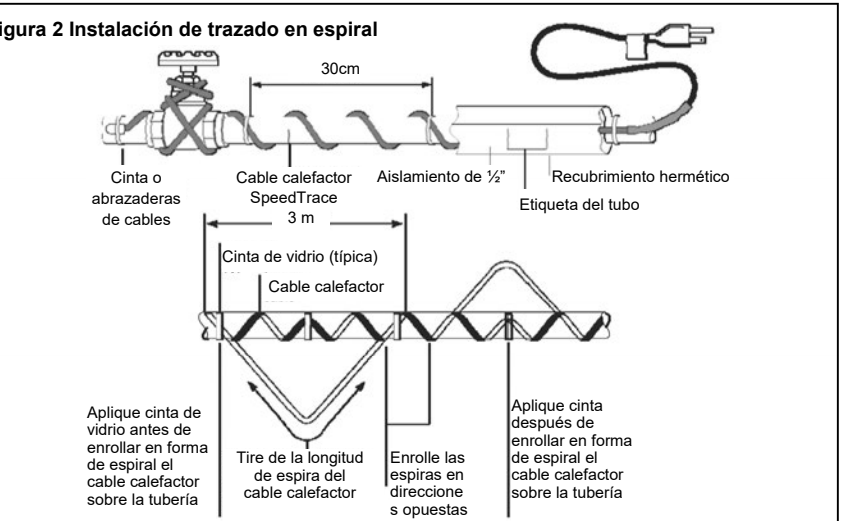


Figura 2 Instalación de trazado en espiral



1. Prepárese para la instalación

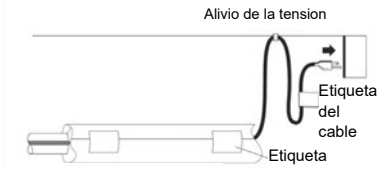
- Guarde el cable calefactor en un lugar limpio y seco.
- Prueba completa de presión de las tuberías.
- Antes de instalar el cable, retire cualquier superficie afilada que podría dañar el cable calefactor.
- Examine el diseño del cable calefactor SpeedTrace Extreme y compare los materiales que ha recibido para verificar que tiene el cable calefactor SpeedTrace Extreme adecuado.
- Haga un recorrido por el sistema y planifique el encaminamiento del cable calefactor SpeedTrace Extreme sobre la tubería.
- Para modelos de 230 V solamente: instale el dispositivo conector eléctrico aprobado para 208-277 V CA antes de instalar el cable calefactor.

2. Coloque en posición y sujete el cable calefactor a la tubería

- Asegúrese de que todas las tuberías que se van a rastrear están secas.
- Instale el cable calefactor utilizando la Figura 1 de trazado recto, o la figura 2 de trazado en espiral.

Figura 3 Aislamiento

Figura 4 Alivio de la tensión



Nota: los tubos deben estar completamente aislados.

- Para el trazado recto, instale el cable calefactor sobre la mitad inferior de la tubería; por ejemplo, en la posición de las 4 en punto o de las 8 en punto.
- Asegúrese de instalar el cable calefactor adicional necesario para las válvulas, bridas, etc., como se muestra en las figuras 1 y 2.
- Cuando el diseño exige un trazado en espiral, comience suspendiendo una espira cada 3 metros, como se muestra en la Figura 2. Para determinar la longitud de la espira, divida la longitud del cable calefactor SpeedTrace Extreme entre la longitud de su tubería y multiplíquelo por 10. Por ejemplo, si está utilizando un cable calefactor SpeedTrace Extreme de 15 metros sobre una tubería de 12 metros, deje una espira de 3,6 m de cable calefactor en cada sección de 3 m de tubería. Agarre la espira por el centro y enróllela alrededor de la tubería. Iguale la distancia entre espiras deslizando las partes enrolladas a lo largo de la tubería. Utilice la cinta adhesiva recomendada, de fibra de vidrio o de aluminio, para fijar el centro de la espira a la tubería.
- Sujete firmemente el cable calefactor SpeedTrace Extreme a la tubería en intervalos de 30 cm utilizando cinta de fibra de vidrio PSAT36A o cinta de aluminio AAT260. No utilice cinta de vinilo para aplicaciones eléctricas, ni cinta adhesiva de embalaje, bandas de metal ni alambre.
- Si queda cable sobrante al final de la tubería, encamínelo de vuelta a lo largo de la tubería.

3. Compruebe la instalación

- Antes de instalar el aislamiento térmico, asegúrese de que el cable calefactor no tenga ningún daño o desperfecto de origen mecánico (debido a cortes, pinzamientos, etc.) ni daño térmico (de soldadura, sobrecalentamiento, etc.).

4. Instale el aislamiento térmico

- La fiabilidad de un sistema de cable calefactor SpeedTrace Extreme depende de un aislamiento térmico hermético, correctamente instalado y seco, como el aislamiento de tuberías flexible y de celda cerrada INSUL-LOCK DS.
- Asegúrese de usar espuma premodelada o un aislamiento térmico equivalente de ½" y que todas las tuberías, incluidas válvulas, juntas y penetraciones en paredes, hayan sido completamente aisladas, tal y como se muestra en la Figura 3.
- Para protección hasta -20°F (-29°C), utilice aislamiento de 1" (25mm) de grosor.
- Instale el aislamiento en la tubería tan pronto como sea posible para minimizar la posibilidad de daños de origen mecánico después de la instalación.
- Asegúrese de que el cable calefactor SpeedTrace Extreme sea visible en la parte exterior del aislamiento térmico.

5. Finalización de la instalación

- Para prevenir daños al cable calefactor, sujete el cable de alimentación (conductor frío) con una abrazadera de plástico para cables, una cinta de tejido para cables o cinta de embalaje, tal y como se muestra en la Figura 4.
- Las etiquetas de rastreo eléctrico que indican la presencia de cable calefactor de tuberías se incluyen con el cable calefactor. Fije las etiquetas de «rastreo eléctrico» sobre la superficie exterior del aislamiento de tubería, a intervalos de una etiqueta cada 3 metros de tubería para indicar la presencia del cable calefactor SpeedTrace Extreme.

6. Arranque del sistema

- BriskHeat® recomienda que se someta al sistema a prueba, conforme a la sección "Pruebas y mantenimiento del cable" que aparece más adelante.
- Conecte el cable calefactor a una toma de corriente de con protección ante fallos de toma a tierra.
- Compruebe el interruptor de circuito para verificar si llega corriente al cable.
- El agua existente en la tubería debería sentirse tibia en una hora.

7. Protección contra fallos de toma a tierra

- BriskHeat® y los códigos eléctricos nacionales exigen que haya una protección contra fallos de toma a tierra en el circuito de derivación de cada cable calefactor.
- Para reducir el riesgo de incendios derivados de desperfectos o de una instalación inapropiada, se deben utilizar interruptores de circuito o algo equivalente, con un nivel de desconexión de 30 mA. También son aceptables diseños alternativos que proporcionen niveles comparables de protección contra fallos de toma a tierra. Para obtener asistencia técnica, póngase en contacto con BriskHeat en el teléfono 1-800-848-7673 (EE. UU. / Canadá), o 1-614-294-3376 (resto del mundo).

⚠ADVERTENCIA

- Las condiciones de mantenimiento y supervisión garantizan que solamente personas cualificadas realicen trabajos de reparación o mantenimiento en los sistemas instalados.
- Para el funcionamiento del equipo en condiciones de seguridad es necesario el continuo funcionamiento del circuito.

PRUEBAS Y MANTENIMIENTO DE CABLES

- Utilizando un ohmímetro de 2500 V CC, compruebe la resistencia del aislamiento entre ambas clavijas rectangulares (de alimentación) en el conector y la clavija redonda (tierra) después de instalar el cable calefactor. La lectura mínima debería ser de 1000 megaohmios.
- Anote los valores originales de cada circuito y compare las lecturas subsiguientes que se tomen durante los intervalos de mantenimiento periódicos con los valores originales.
- Si las lecturas caen por debajo de 1000 megaohmios, sustituya el cable calefactor SpeedTrace Extreme por una nueva unidad. No intente reparar la unidad.

⚠ADVERTENCIA

Peligro de incendio y descarga eléctrica. Un cable calefactor dañado puede causar descarga eléctrica, arco eléctrico e incendio. No intente reparar ni energizar un cable calefactor dañado. Retírelo de inmediato y sustitúyalo por uno nuevo.

ESPECIFICACIONES DEL PRODUCTO

Cable (120V)	Cable (230V)	Longitud del cable (m)	Mínima potencia de salida a 50 °F (10 °C) en la tubería (vatios)	Potencia de salida nominal a 32 °F (0 °C) en hielo y nieve (vatios)
FFSL81-6	**FFSL82-6**	1,8	48	96
FFSL81-12	**FFSL82-12**	3,6	96	192
FFSL81-18	**FFSL82-18**	5,4	144	288
FFSL81-24	**FFSL82-24**	7,3	192	384
FFSL81-50	**FFSL82-50**	15	400	800
FFSL81-75	**FFSL82-75**	22,8	600	1,200
FFSL81-100	**FFSL82-100**	30,4	800	1,600

Especificaciones generales para todos los productos FFSL8

Anchura nominal del cable (mm)	10,6
Grosor nominal del cable (mm)	5,6
Calibre del conductor de la barra colectora del cable calefactor (AWG)	16
Longitud del conductor frío (m)	0,76
Tensión nominal (120V)	110-120
Tensión nominal (230V)	208-277
Corriente nominal del conector (amperios)	15
Calibración de interruptor de circuito, mínima (amperios)	15
Máxima temperatura de exposición	65 °C (150 °F)
Clasificación eléctrica	Solamente ubicaciones no peligrosas
Exposición a productos químicos	Ninguna
Vatios/pie a 50 °F (10 °C)	8
Vatios/pie a 32 °F (0 °C) en hielo y nieve	16
Tipo de funda exterior	Elastómero termoplástico resistente a la humedad y a las llamas

BriskHeat® Corporation
Cable calefactor SpeedTrace Extreme

GUÍA PARA SOLUCIÓN DE PROBLEMAS

Por favor, lea esta guía antes de ponerse en contacto con BriskHeat®. Esta guía está diseñada para responder a las preguntas más comunes. Si no puede identificar el problema o necesita asistencia adicional, póngase en contacto con su distribuidor local de BriskHeat® o con nosotros utilizando la línea gratuita 1-800-848-7673 (EE. UU. / Canadá solamente) o 614-294-3376 o por correo electrónico a **bhtsales1@briskheat.com.**

PROBLEMA	SOLUCIÓN
El conjunto del cable calefactor no calienta	Verifique que el calentador está conectado a la tensión adecuada. Compruebe si hay una lectura de resistencia (no un circuito abierto) en el calentador utilizando un ohmímetro.
Una parte del cable calefactor no calienta	Examine el cable no calentado por si estuviera dañado.
El interruptor de circuito se está desconectando	Confirme que el interruptor de circuito es capaz de soportar los requisitos de amperaje del calentador. Examine el calentador y el cable por si estuvieran dañados.

INFORMACIÓN SOBRE LA GARANTÍA

BriskHeat concede una garantía al comprador original durante un periodo de dieciocho (18) meses desde la fecha del envío o doce (12) meses desde la fecha de instalación, la que llegue antes. La obligación y remedio exclusivo de BriskHeat, sujetos a esta garantía, estarán limitados a la reparación o sustitución, a discreción de BriskHeat, de cualquier pieza del producto que se haya demostrado estar defectuosa en las condiciones de uso y servicio establecidas, después de una inspección realizada por BriskHeat y de que BriskHeat haya determinado que está defectuosa. Los detalles completos de la garantía están disponibles en línea en www.briskheat.com o poniéndose en contacto con nosotros en el teléfono 1-800-848-7673 (línea gratuita, En EE. UU. / Canadá), o 1-614-294-3376 (resto del mundo).

BriskHeat® Corporation

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Fax: 614-294-3807
Correo electrónico: bhtsales1@briskheat.com

BriskHeat® Corporation

French (Français)

SpeedTrace Extreme

Câble chauffant autorégulant Pré-assemblé

Manuel d'instructions

⚠	Lissez et assimilez ce document avant d'utiliser ou d'intervenir sur ce câble chauffant. Ne pas savoir comment utiliser sans risque ces câbles chauffants peut entraîner un accident, cause possible de blessure ou même de mort. Ces câbles chauffants ne doivent être utilisés que par du personnel qualifié.

TABLE DES MATIÈRES

INTRODUCTION

Merci d'avoir acheté un câble chauffant autorégulé pré-assemblé SpeedTrace Extreme de BriskHeat®. Votre câble chauffant est conçu pour fournir une longue durée de service efficace, avec fonctionnalité, fiabilité et sécurité à l'esprit. Pour plus d'informations, ou pour d'autres produits de BriskHeat®, veuillez nous contacter au 1-800-848-7673 (appel sans frais des USA et du Canada) ou au 614-294-3376.

CONSERVER CES INSTRUCTIONS !
Des exemplaires supplémentaires de ce manuel sont disponibles sur demande.

⚠

SYMBOLE D'AVERTISSEMENT DE SÉCURITÉ

Le symbole ci-dessus est utilisé pour attirer votre attention sur des instructions concernant votre sécurité personnelle. Il souligne des consignes de sécurité importantes. Il signifie **« ATTENTION ! Restez vigilant ! Il en va de votre sécurité ! »** Lisez le message qui suit et soyez vigilant quant aux risques de blessures corporelles graves ou mortelles.

⚠ DANGER

Indique des dangers immédiats qui **ENTRAINERONT** des blessures graves, voire mortelles.

⚠ AVERTISSEMENT

Indique des dangers ou des pratiques dangereuses **POUVANT ENTRAÎNER** des blessures graves ou mortelles.

⚠ ATTENTION

Indique des dangers ou des pratiques dangereuses **POUVANT ENTRAÎNER** des blessures graves ou mortelles.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

⚠ DANGER

Une personne qui n'a pas lu et assimilé toutes les instructions d'utilisation n'est pas qualifiée pour faire fonctionner ce produit.

Homologations

cETLus Intertek

⚠ DANGER

- N'immergez pas un élément chauffant dans un liquide.
- Gardez les matières combustibles ou volatiles à distance de l'élément chauffant pendant son utilisation.
- N'utilisez un élément chauffant que dans des endroits approuvés.
- Gardez les objets métalliques tranchants à l'écart de l'élément chauffant.

Le non-respect de ces avertissements peut entraîner un choc électrique, un risque d'incendie et des blessures corporelles.

⚠ ATTENTION

- Ne manipulez jamais le câble chauffant quand il est en fonctionnement. Débranchez-le toujours de sa source d'alimentation et laissez-le refroidir avant de le toucher.
- Inspectez le câble chauffant avant de vous en servir.
- Si un déversement de matière se produit sur ces éléments chauffants, débranchez-les de leur source d'alimentation et nettoyez-les après leur refroidissement.
- Fixez le câble chauffant aux tuyaux en n'utilisant que des méthodes approuvées.
- N'essayez pas de réparer des câbles chauffants endommagés ou présentant un dysfonctionnement.
- N'écrasez pas et n'appliquez pas de contrainte physique sévère au câble chauffant ou à son cordon.
- Débranchez le câble chauffant quand il n'est pas en utilisation.
- Ne l'utilisez pas pour une autre application.

À défaut d'observation de ces mises en garde il y a un risque de blessure corporelle ou de dommages au câble chauffant.

⚠ AVERTISSEMENT

L'utilisateur final doit respecter les règles suivantes :

- Seulement du personnel qualifié a le droit d'effectuer le câblage électrique.
- Débranchez le secteur en amont avant de réaliser des connexions électriques quelconques.
- Tout câblage électrique doit respecter les normes électriques locales.
- La personne qui réalise l'installation / le câblage final doit être qualifié pour cette tâche.
- L'utilisateur final est responsable de la fourniture d'un dispositif de coupure d'alimentation électrique adéquat.
- L'utilisateur final est responsable de la fourniture d'un dispositif de protection électrique adéquat. Il est fortement recommandé d'utiliser un disjoncteur différentiel.

À défaut d'observation de ces mises en garde il y a un risque de blessure corporelle ou de dommages à l'élément chauffant.

BriskHeat® Corporation
Câble chauffant autorégulé pré-assemblé
SpeedTrace Extreme

⚠ AVERTISSEMENT

Lisez et assimilez tout le contenu du manuel avant de faire fonctionner ce câble chauffant.

RÉSUMÉ DU FONCTIONNEMENT

1. Les câbles SpeedTrace Extreme de BriskHeat® sont conçus pour une protection contre le gel sur des tuyaux en métal ou en plastique.
2. Ils peuvent s'utiliser à l'intérieur ou à l'extérieur.
3. Ils sont faciles à installer : Pré-assemblés avec cordon. (Modèles 230V ont des fils conducteurs nus).
4. Ils se recouvrent et s'isolent sans risque.
5. Ils ajustent automatiquement la puissance de chauffe en fonction de la surface et de la température ambiante.
6. Ils ne nécessitent pas de contrôleur de temperature.

DESCRIPTION

Les câbles chauffants autorégulés pré-assemblés sont conçus pour protéger du gel la tuyauterie commerciale en métal et en plastique.

Ils sont disponibles dans des longueurs de 6, 12, 24, 50, 75 et 100 pieds (de 1,8 à 30 mètres), chacun arrive assemblé avec un cordon d'alimentation de 30 pouces (76 cm) muni d'une fiche. (Modèles 230V ont des fils conducteurs nus).

CONTENU DU KIT

1. Câble chauffant pré-assemblé à autorégulation SpeedTrace Extreme.
2. Étiquettes de repérage électrique pour tuyaux.

Articles additionnels nécessaires, mais non fournis, pour les applications sur tuyaux

Bande adhésive, à choisir entre fibre de verre et aluminium :

- Bande de fibre de verre, PSAT36A, un demi pouce de large, 36 verges de long (12,7 mm x 33 m).
- Bande d'aluminium, AAT260, deux pouces de large, 60 verges de long (50,8 mm x 54,8 m).

Isolation :

- Isolant pour tuyaux INSUL-LOCK DS, flexible à alvéoles fermées.

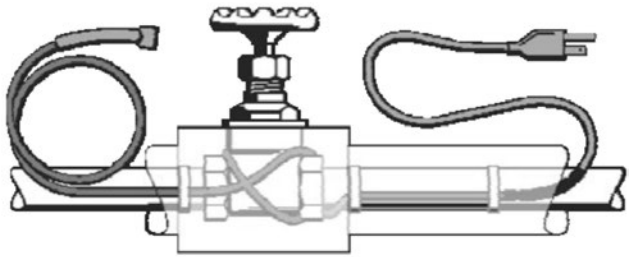
⚠ AVERTISSEMENT

Risque de départ d'incendie et de commotion électrique : Ce produit est un composant électrique qui doit être installé correctement pour assurer son bon fonctionnement et pour éviter une commotion électrique ou un départ d'incendie. Lisez ces avertissements importants et suivez soigneusement toutes les instructions d'installation.

- Pour minimiser le danger de feu provenant d'arcs électriques soutenus dans le câble chauffant endommagé ou mal installé, et pour satisfaire les exigences de BriskHeat® et des normes électriques nationales, une équipement de protection sur fuite à la terre doit être utilisé sur chaque branche de secteur alimentant des câbles chauffants. La production d'arcs électriques peut être stoppée par un circuit de protection conventionnel.
- Pour des applications de protection de tuyaux contre le gel, n'utilisez que des matériaux d'isolation résistant au feu, tels que de la mousse préformée ou de la fibre de verre.
- N'endommagez pas le câble chauffant ou son cordon et sa fiche d'alimentation. Mettez immédiatement hors service des câbles chauffants endommagés.
- N'utilisez ni fils ni attaches métalliques pour fixer le câble chauffant sur le tuyau. N'utilisez que de la bande autocollante (en largeur d'un demi à deux pouces) ou des attaches pour câbles en plastique.
- Laissez ces instructions d'installation à l'utilisateur comme référence ultérieure.
- Désactivez tous les circuits d'alimentation avant toute intervention d'installation ou de service.
- La couche conductrice de ce composant chauffant doit être connectée à une borne de terre convenable.

BriskHeat® Corporation
Câble chauffant autorégulé pré-assemblé
SpeedTrace Extreme

PROTECTION DE TUYAU CONTRE LE GEL



Exigences générales pour la protection de tuyaux contre le gel :

- Des câbles chauffants SpeedTrace Extreme peuvent s'utiliser sur des conduites d'eau en métal ou en plastique, mais pas sur des tubulures flexibles en vinyle (comme des tuyaux d'arrosage).
- Les tuyaux chauffants SpeedTrace Extreme ne sont pas prévus pour être utilisés à l'intérieur d'un tuyau quelconque, pour la protection contre le gel de liquides autres que de l'eau, ou pour être activés dans des endroits classés comme dangereux.
- Leur installation doit se faire avec au moins 1/2" (13mm) d'isolant thermique étanche et résistant au feu.
- Ne les utilisez jamais sur des conduites quelconques dont la température pourrait dépasser 150°F (65°C).
- Le cordon prolongateur ne doit pas être utilisé pour des installations permanentes. Pour les installations temporaires, consultez les codes de prévention électriques et incendie locaux.

INSTRUCTIONS GÉNÉRALES

- N'installez ces câbles chauffants que dans des lieux restant accessibles, ne les placez pas derrière des murs ou à un endroit où ils seraient cachés.
- Ne faites pas passer de câbles chauffants au travers de murs, plafonds ou planchers.
- Ne les branchez que sur des prises secteur avec protection contre défaut de terre, installées en conformité avec toutes les normes et réglementations nationales et locales en vigueur, avec une protection contre la pluie ou une autre exposition à de l'eau.

NORMES ÉLECTRIQUES

Les articles 422, 426 et 427 de la norme électrique américaine (NEC), et la Partie 1 / Section 62 de la norme électrique canadienne (CEC) régissent l'installation du câble chauffant SpeedTrace Extreme pour la protection de tuyau contre le gel, et sont à respecter.

Important : Pour que la garantie des SpeedTrace Extreme de BriskHeat® reste valide, vous devez satisfaire à toutes les exigences mentionnées dans ces recommandations.

Toutes les informations données ici concernant les aspects thermiques et de conception sont basées sur une installation standard, avec le câble chauffant fixé sur un tuyau isolé. Pour toute autre application ou méthode d'installation, veuillez contacter BriskHeat® au 1-800-848-7673 (USA / Canada), ou au 1-614-294-3376 (autres pays).

SÉLECTION DES CÂBLES

Utilisez les tableaux qui suivent pour choisir le câble chauffant qui convient. Ajoutez 1 pied (30 cm) à la longueur de tuyau pour toute vanne ou robinet dans votre système de tuyauterie.

Ces tableaux assument une isolation thermique extérieure, étanche et résistante au feu, de l'épaisseur minimale (mousse préformée). Pour une protection allant jusqu'à -20°F (-29°C), utilisez de l'isolant d'épaisseur 1" (25mm).

Tableau 1 – Tuyaux métalliques

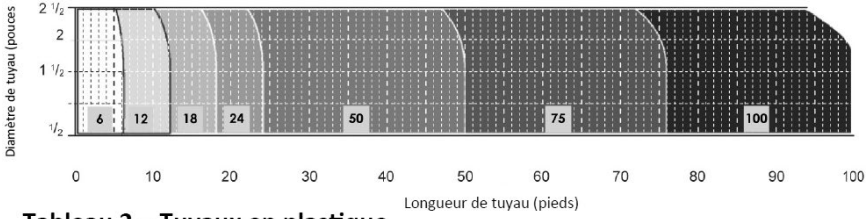
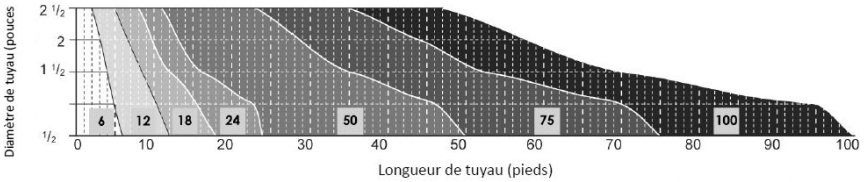


Tableau 2 – Tuyaux en plastique



Ajoutez 1 pied (30 cm) à la longueur de tuyau pour toute vanne ou robinet dans votre système de tuyauterie. Si un câble sélectionné est plus long que le tuyau, enroulez-le régulièrement en spirale tout le long du tuyau.

Important : Toutes les informations données ici concernant les aspects thermiques et de conception sont basées sur une installation standard. Pour toute autre application ou méthode d'installation, veuillez contacter BriskHeat® au 1-800-848-7673 (USA / Canada), ou au 1-614-294-3376 (autres pays).

BriskHeat® Corporation
Câble chauffant autorégulé pré-assemblé
SpeedTrace Extreme

INSTALLATION DE CÂBLE CHAUFFANT

Figure 1 – Installation en ligne droite

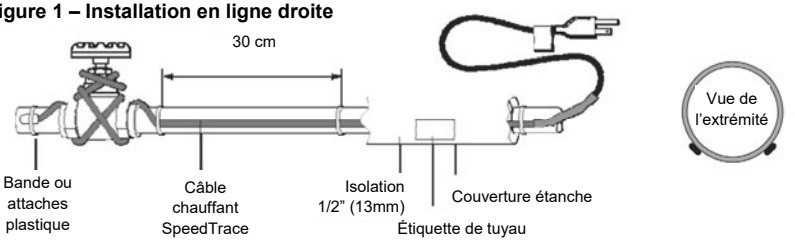
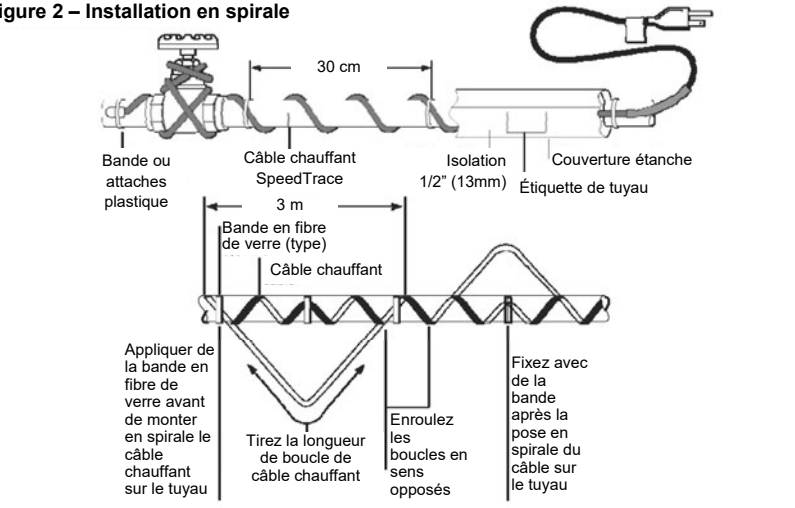


Figure 2 – Installation en spirale



1. Préparation de l'installation.

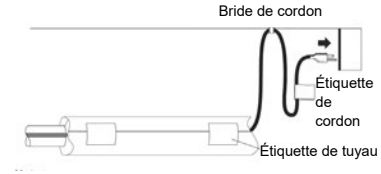
- Gardez le câble chauffant dans un endroit propre et sec.
- Effectuez le test en pression du tuyau.
- Avant d'installer le câble chauffant, éliminez toute partie coupante de la surface du tuyau qui pourrait l'endommager.
- Passez en revue la conception du câble chauffant SpeedTrace Extreme et comparez-la avec ce que vous avez reçu pour vous assurer que vous allez placer le bon câble.
- Parcourez le système et planifiez le passage du câble chauffant SpeedTrace Extreme le long du tuyau.
- Seulement pour le modèle 230V: installez une prise électrique adaptée pour 208-277 VAC avant d'installation du câble chauffant.

2. Positionnement et fixation du câble chauffant sur le tuyau.

- Assurez-vous que toute la partie de tuyau à équiper est sèche.
- Installez le câble chauffant, en utilisant la pose en ligne droite (Figure 1) ou spiralée (Figure 2).

Figure 3 – Isolation

Figure 4 – Bride de cordon



Remarque : Les tuyaux doivent être complètement isolés

- Pour de la pose en ligne droite, installez le câble chauffant sur la partie inférieure du tuyau, comme par exemple en position à 4 ou à 8 heures.
- Assurez-vous d'installer le supplément de câble chauffant nécessité par les vannes, brides, etc. comme c'est montré aux Figures 1 et 2.
- Quand la conception demande des spirales, commencez par suspendre une boucle tous les 10 pieds (3 m) comme c'est montré en Figure 2. Pour déterminer la longueur de boucle, divisez la longueur de câble chauffant SpeedTrace Extreme par la longueur de votre tuyau, et multipliez par 10. Par exemple si vous utilisez un câble chauffant SpeedTrace Extreme de 50 pieds sur un tuyau de 40 pieds, laissez une boucle de 12 pieds de câble chauffant toutes les sections de 10 pieds de tuyau. Prenez la boucle par son milieu et entourez-la sur le tuyau. Équilibrez la distance entre les spirales en faisant glisser ces entourages le long du tuyau. Utilisez de la bande recommandée en fibre de verre ou aluminium pour faire tenir le milieu de la boucle sur le tuyau.
- Fixez le câble chauffant SpeedTrace Extreme sur le tuyau à des intervalles de 1 pied (30 cm) en utilisant de la bande en fibre de verre (PSAT36A) ou en aluminium (AAT260). N'utilisez pas de bande en vinyle pour électricien, de ruban pour canalisations, de bandes métalliques ni de fils.
- S'il reste un excédent de câble en bout de tuyau, ramenez-le en sens inverse le long du tuyau.

3. Contrôle de l'installation.

- Avant d'installer une isolation thermique, assurez-vous que le câble chauffant est exempt de dommages mécaniques (coupures, pincements, etc.) ou thermiques (soudure, surchauffe, etc.).

4. Installation d'une isolation thermique

- Un système avec câbles chauffants SpeedTrace Extreme sera stable grâce à une bonne installation d'isolation thermique résistant aux intempéries, comme de l'isolant pour tuyau flexible à cellules fermées INSUL-LOCK DS.
- Assurez-vous qu'au moins 1/2" (13mm) de mousse préformée ou d'isolant thermique équivalent soit utilisé, et que toute la tuyauterie, incluant les vannes, joints et pénétrations murales, soit complètement isolée comme c'est montré en Figure 3.
- Pour une protection allant jusqu'à -20°F (-29°C), utilisez de l'isolant d'épaisseur 1" (25 mm).
- Installez cette isolation sur la tuyauterie dès que possible pour minimiser les dommages mécaniques potentiels après l'installation des câbles chauffants.
- Assurez-vous que l'étiquette de câble chauffant SpeedTrace Extreme reste bien visible à l'extérieur de l'isolation thermique posée.

BriskHeat® Corporation
Câble chauffant autorégulé pré-assemblé
SpeedTrace Extreme

5. Achèvement de l'installation.

- Pour éviter d'endommager le câble chauffant ou son cordon, fixez le cordon d'alimentation (extrémité froide) avec une attache pour câble en plastique, de la bande en fibre de verre ou de la bande pour conduite, comme c'est montré en Figure 4.
- Des étiquettes de traçage électrique indiquant la présence d'un câble chauffant électrique pour tuyau sont incluses avec le câble chauffant. Fixez ces étiquettes de traçage électrique fournies sur la surface externe de l'isolation thermique, avec un intervalle de 10 pieds (3 m) de tuyau, pour indiquer la présence de câbles de chauffage SpeedTrace Extreme.

6. Démarrage du système.

- BriskHeat® recommande que le système soit testé en suivant les indications de la section Test et entretien des câbles qui suit.
- Branchez le câble chauffant dans une prise secteur avec protection à la terre.
- Contrôlez au niveau du disjoncteur l'envoi du secteur vers le câble chauffant.
- L'eau stationnaire dans le tuyau devrait être réchauffée au bout avant qu'une heure ne s'écoule.

7. Protection contre défaut de terre :

- BriskHeat® et les normes électriques américaines exigent une protection par équipement pour défaut de terre sur chaque branche de circuit secteur alimentant des câbles chauffants.
- Pour réduire le risque d'un départ d'incendie suite à des dommages ou à une mauvaise installation, il faut utiliser des disjoncteurs différentiels déclenchant à 30 mA, ou l'équivalence. Des dispositifs procurant un niveau équivalent de protection contre défauts de terre sont également acceptables. Pour de l'assistance technique, veuillez contacter BriskHeat® au 1-800-848-7673 (USA / Canada), ou au 1-614-294-3376 (autres pays).

⚠ AVERTISSEMENT

- Les conditions des entretiens et de la supervision font que seules des personnes de service qualifiées peuvent intervenir sur les systèmes installés.
- Un fonctionnement de circuit en continu est nécessaire pour la sûreté et la bonne marche de l'équipement.

TEST ET ENTRETIEN DES CÂBLES

- En utilisant un mégohmmètre de 2 500 V CC, contrôlez la résistance d'isolement entre les deux broches rectangulaires de la fiche d'alimentation et la broche ronde de terre, après l'installation du câble chauffant. La mesure doit faire au moins 1 000 MΩ.
- Enregistrez ces valeurs d'isolement d'origine, et comparez avec les mesure suivantes prises durant les entretiens périodiques planifiés.
- Si les valeurs d'isolement descendent sous 1 000 MΩ, remplacez le câble chauffant SpeedTrace Extreme concerné par un neuf. N'essayez pas de le réparer.

⚠ AVERTISSEMENT

Risque de départ d'incendie et de commotion électrique : Un câble chauffant endommagé peut provoquer une commotion électrique, produire des arcs électriques ou provoquer un départ de feu. N'essayez pas de réparer ou d'activer un câble chauffant endommagé. nlevez-le immédiatement et remplacez-le par un câble chauffant neuf de longueur appropriée.

SPÉCIFICATIONS DU PRODUIT

Câble (120V)	Câble (230V)	Longueur de câble (m)	Puissance de chauffe minimale à 50 °F (10 °C) sur tuyau (watts)	Puissance de chauffe minimale à 32 °F (0 °C) dans glace et neige (watts)
FFSL81-6	**FFSL82-6**	1,8	48	96
FFSL81-12	**FFSL82-12**	3,6	96	192
FFSL81-18	**FFSL82-18**	5,4	144	288
FFSL81-24	**FFSL82-24**	7,3	192	384
FFSL81-50	**FFSL82-50**	15	400	800
FFSL81-75	**FFSL82-75**	22,8	600	1,200
FFSL81-100	**FFSL82-100**	30,4	800	1,600

Spécifications générales pour tous les produits FFSL8

Largeur de câble nominale (mm)	10,6
Épaisseur de câble nominale (mm)	5,6
Calibre de fil du câble (AWG)	16
Longueur d'extrémité froide (m)	0,76
Tension secteur nominale (120 volts)	110-120
Tension secteur nominale (230 volts)	208-277
Spécification de fiche (ampères)	15
Calibre minimal de disjoncteur (ampères)	15
Température maximale d'exposition	65 °C (150 °F)
Classification électrique	En zones non dangereuses seulement
Exposition aux produits chimiques	Aucune
Watts/pied à 50 °F (10 °C)	8
Watts/pied à 32 °F (0 °C) dans glace et neige	16
Type de gaine extérieure	Élastomère thermoplastique résistant au feu et à l'humidité

BriskHeat® Corporation
Câble chauffant autorégulé pré-assemblé
SpeedTrace Extreme

GUIDE DE DÉPANNAGE

Veuillez bien lire ce guide avant de contacter BriskHeat®. Il a été conçu pour répondre aux questions les plus fréquentes. Si vous n'arrivez pas à identifier le problème ou avez besoin d'une assistance supplémentaire, veuillez nous appeler au 1-800-848-7673 (USA / Canada), au 614-614-294-3376 (reste du monde), ou contactez-nous sur **bhtsales1@briskheat.com.**

PROBLÈME	SOLUTION(S)
L'ensemble du câble chauffant ne chauffe pas	Vérifiez que l'élément chauffant est branché sur la tension secteur adéquate. Contrôlez pour savoir s'il y a une lecture de résistance à l'ohmmètre (donc pas de circuit ouvert).
Une partie du câble chauffant ne chauffe pas	Examinez la partie déficiente pour déceler un éventuel dommage.
Un disjoncteur a déclenché	Validez le fait que le disjoncteur peut supporter l'ampérage tiré par l'élément chauffant. Examinez l'élément chauffant et son cordon pour des dommages éventuels.

INFORMATIONS SUR LA GARANTIE

BriskHeat® garantit ce produit pour son acheteur d'origine pendant une période de dix-huit (18) mois à partir de sa date d'expédition, ou de douze (12) mois à partir de sa date d'installation (la première de ces deux échéances). L'obligation de BriskHeat®, qui constitue l'unique remède dans le cadre de cette garantie, se limite à la réparation ou au remplacement, au choix exclusif de BriskHeat®, de toutes les pièces du produit prouvées défectueuses dans le contexte d'une utilisation prescrite et d'un service suivant l'examen de BriskHeat®, qui détermine qu'il y a bien une défaillance. Les détails complets de la garantie peuvent se trouver en ligne sur le site www.briskheat.com, ou en nous contactant au 1-800-848-7673 (appel sans frais pour USA / Canada) ou au 1-614-294-3376 reste du monde).

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BriskHeat® Corporation

German (Deutsch)

SpeedTrace Extreme

Vormontiertes selbst regelndes Heizkabel

Bedienungshandbuch

⚠	Lesen und verstehen Sie dieses Handbuch, bevor Sie die Heizung installieren. Mangelndes Verständnis für die sichere Installation dieser Heizung kann zu einem Unfall mit schweren Verletzungen oder zum Tod führen. Diese Heizung darf nur von qualifiziertem Personal bedient werden.

INHALTSVERZEICHNIS

EINFÜHRUNG

Vielen Dank, dass Sie sich für den Kauf eines BriskHeat® SpeedTrace selbst regelndem Heizkabel entschieden haben. Ihr Heizkabel wurde entwickelt, um eine effiziente Lebensdauer unter Berücksichtigung von Funktion und Zuverlässigkeit zu schaffen. Für weitere Informationen oder über andere BriskHeat® Produkte wenden Sie sich bitte an BriskHeat® 1-800-848-7673 (gebührenfrei, USA / Kanada) oder +1 614-294-3376.

BEWAHREN SIE DIESE BEDIENUNGSANLEITUNG AUF.
Zusätzliche Exemplare dieser Anleitung sind auf Anfrage erhältlich.

SICHERHEITSWARNSYMBOL

Das obige Symbol wird verwendet, um Ihre Aufmerksamkeit auf Anweisungen zu richten, die Ihrer Sicherheit dienen. Es weist auf wichtige Sicherheitshinweise hin und bedeutet: **ACHTUNG! Aufpassen! Ihre persönliche Sicherheit ist gefährdet!** Lesen Sie die nachfolgende Mitteilung und seien Sie wachsam, um die Möglichkeit von Verletzungen oder den Tod zu vermeiden.

⚠ GEFAHR

Unmittelbare Gefahrenquelle, die zu schweren Verletzungen oder den Tod führen **WIRD.**

⚠ WARNUNG

Gefahren oder unsichere Praktiken, die zu schweren Verletzungen führen **KÖNNEN.**

⚠VORSICHT

Gefahren oder gefährliche Verhaltensweisen, die zu leichten Verletzungen oder Sachschaden führen **KÖNNEN.**

WICHTIGE SICHERHEITSHINWEISE

⚠ GEFAHR

Eine Person, die diese Installationsanweisungen nicht gelesen und nicht verstanden hat, ist für die Installation dieses Produkts nicht qualifiziert.

Behördliche Zulassungen

c ETL us Listed
Intertek

⚠ GEFAHR

- Tauchen Sie die Heizung nicht in Flüssigkeiten.
- Halten Sie flüchtige oder brennbare Stoffe von der Heizung entfernt, wenn sie im Einsatz ist.
- Verwenden Sie die Heizung nur an zugelassenen Stellen.
- Halten Sie scharfe Metallgegenstände von der Heizung entfernt.

Nichtbeachtung dieser Warnhinweise kann zu einem elektrischen Schlag, Brandgefahr und/oder Verletzungen führen.

⚠ WARNUNG

Der Endbenutzer muss folgende Anforderungen erfüllen:

- Nur qualifiziertes Personal darf die elektrische Verdrahtung anschließen.
- Unterbrechen Sie die Versorgungsspannung an der Quelle, bevor Sie Stromanschlüsse vornehmen.
- Die Verkabelung muss den lokalen Elektrovorschriften entsprechen.
- Die Person, welche die endgültige Installation / Verdrahtung ausführt, muss für diese Arbeit qualifiziert sein.
- Der Endbenutzer ist für die Bereitstellung eines geeigneten Trennschalters verantwortlich.
- Der Endbenutzer ist für die Bereitstellung einer geeigneten Trenneinrichtung verantwortlich. Die Installation eines Fehlerstromschutzschalters wird dringend empfohlen.

Die Nichtbeachtung dieser Warnhinweise kann zu Verletzungen oder Schäden am Heizkabel führen.

⚠VORSICHT

- Handhaben Sie das Heizkabel nie, während es in Betrieb ist. Trennen Sie das Heizkabel von der Stromquelle und lassen Sie es vor der Handhabung abkühlen.
- Kontrollieren Sie das Heizkabel vor dem Gebrauch.
- Wenn Verunreinigungen durch Fremdkörper an dem Heizkabel auftreten, trennen Sie es von der Stromquelle und säubern Sie das Heizkabel nach dem Abkühlen.
- Befestigen Sie das Heizkabel am Rohr nur unter Verwendung erprobter Verfahren.
- Reparieren Sie keine beschädigten oder fehlerhaften Heizkabel.
- Wenden Sie keine schwere Belastung an dem Heizkabel oder Netzkabel an und zerquetschen Sie es nicht.
- Ziehen Sie den Netzstecker, wenn das Kabel nicht in Gebrauch ist.
- Verwenden Sie es nicht für andere Anwendungen.

Die Nichtbeachtung dieser Warnhinweise kann zu Verletzungen oder Schäden am Heizkabel führen.

⚠ WARNUNG

Lesen und verstehen Sie vor der Inbetriebnahme dieses Heizkabels das gesamte Handbuch.

ÜBERSICHT ÜBER DIE ANWENDUNG

1. BriskHeat® SpeedTrace-Heizkabel sind für den Frostschutz von Metall- und Kunststoffrohren konzipiert.
2. Geeignet für Innen- und Außenbereiche.
3. Leichte Installation: vormontiert mit Netzkabel. (230V Modelle werden nur mit Aderendhülsen und ohne Stecker geliefert).
4. Sicher zu überlappen und zu isolieren.
5. Automatische Einstellung der Wärmeleistung basierend auf Oberfläche und Umgebungstemperatur.
6. Keine Temperaturregelung erforderlich.

BESCHREIBUNG

SpeedTrace sind vormontierte selbstregelnde Heizkabel, die für den Frostschutz an kommerziellen Metall- und Kunststoffrohren ausgelegt sind.

SpeedTrace-Heizkabel stehen in Längen von 6, 12, 24, 50, 75 und 100 Fuß (1,8, 3,6, 7,3, 15,3, 22,8, 30,5 m) zur Verfügung. Jedes Kabel ist mit einem 7,6 m Netzkabel versehen. (230V Modelle werden nur mit Aderendhülsen und ohne Stecker geliefert).

KIT-INHALTE

1. Vormontiertes selbstregelndes SpeedTrace-Heizkabel.
2. Begleitheizungsetikett.

Zusätzliche benötigte Artikel, die aber nicht für die Rohranwendungen geliefert wurden

Glasfaserverstärktes Klebeband oder Aluminiumband:

- Glasfaserverstärktes Band, PSAT36A, 13 mm breit, 33 m lang.
- Aluminiumband, AAT260, 50 mm breit, 55 m lang.

Dämmung:

- INSUL-LOCK DS, flexible Rohrdämmung.

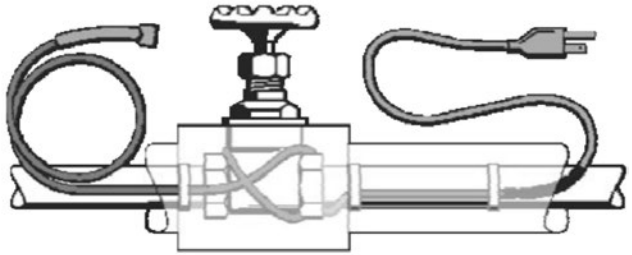
⚠ WARNUNG

Brand- und Stromschlaggefahr. Dieses Produkt ist ein elektrisches Gerät, das korrekt installiert werden muss, um den ordnungsgemäßen Betrieb zu gewährleisten und um einen Stromschlag oder einen Brand zu verhindern. Lesen Sie diese wichtigen Warnhinweise und befolgen Sie die Installationsanweisungen.

- Um die Gefahr von Feuer durch anhaltende elektrische Lichtbogenbildung zu minimieren, wenn das Heizungskabel beschädigt oder nicht ordnungsgemäß installiert ist, und um den Anforderungen von BriskHeat® und nationalen Vorschriften zu entsprechen, müssen FI-Schutzschalter an jeder Heizkabel-Verzweigungsschaltung vorgesehen werden. Lichtbogenbildung kann durch konventionellen Leitungsschutz nicht gestoppt werden.
- Für Rohrfrostschutz-Anwendungen nur feuerfeste Dämmstoffe, wie vorgeformten Schaumstoff oder Glasfaser verwenden.
- Beschädigen Sie nicht das Heizkabel, das Netzkabel oder den Netzstecker. Setzen Sie jedes beschädigte Kabel außer Betrieb.
- Verwenden Sie keinen Draht oder Metallklammern, um das Kabel an dem Rohr zu befestigen. Verwenden Sie ein Band (13 bis 50 mm breit) oder Kunststoffkabelbinder.
- Lassen Sie diese Einbauanleitung bei dem Benutzer für zukünftige Bezugnahme.
- Machen Sie alle Stromkreise stromlos vor der Installation oder Wartung.
- Die leitfähige Schicht dieses Heizgeräts muss an einem geeigneten Erdungsanschluss angeschlossen werden.

BriskHeat® Corporation
SpeedTrace selbstregeldes Heizkabel

ROHRFROSTSCHUTZ



Allgemeine Anforderungen an den Rohrfrostschutz:

- SpeedTrace-Heizkabel können auf Metall- und Kunststoffwasserrohren verwendet werden, aber nicht auf flexiblen Vinyl Schläuchen, wie Gartenschläuche.
- SpeedTrace-Heizkabel sind nicht für den Einsatz innerhalb irgendwelcher Rohrleitungen, für den Frostschutz anderer Flüssigkeiten als Wasser oder für den Einsatz in explosionsgefährdeten Bereichen vorgesehen.
- Mit einem Minimum von 13 mm feuer- und wasserfester Wärmedämmung installieren.
- Niemals an irgendwelchen Rohren verwenden, die 65 °C überschreiten.
- Verlängerungskabel dürfen nicht für feste Installationen verwendet werden. Bei vorübergehenden Installationen sind die örtlichen Elektro- und Brandschutzvorschriften zu beachten.

ALLGEMEINE ANWEISUNGEN

- Nur an zugänglichen Stellen; nicht hinter Mauern oder wo das Kabel versteckt ist installieren
- Das Heizkabel nicht durch Wände, Decken oder Böden führen.
- Schließen Sie nur an Steckdosen an, die mit FI-Schutzschalter versehen sind und die in Übereinstimmung mit allen geltenden nationalen und örtlichen Vorschriften und Normen installiert wurden und vor Regen oder Wasser geschützt sind.

ELEKTROSTECHNISCHE VORSCHRIFTEN

Die Artikel 422, 426 und 427 des National Electrical Code (NEC) und Teil 1, Abschnitt 62 des Canadian Electrical Code (CEC) welche die Installation von SpeedTrace-Heizkabel für Rohrfrostschutz regeln, sind zu beachten.

Wichtig: Für die Gültigkeit der BriskHeat® SpeedTrace-Heizkabel Garantie müssen alle Anforderungen dieser Richtlinien erfüllt sein.

Alle hier angegebenen thermischen und Design-Informationen basieren auf einer Standard-Installation eines Heizkabels, das an einem isolierten Rohr befestigt ist. Für alle anderen Anwendungen oder Installationsarten wenden Sie sich bitte an BriskHeat® 1-800-848-7673 (USA / Kanada) oder 1-614-294-3376 (weltweit).

KABELAUSWAHL

Verwenden Sie ZUR Auswahl des richtigen Heizkabels die folgenden Tabellen. Addieren Sie 30 cm zu der Rohrlänge für jedes Ventil oder Zapfhahn am Rohrleitungssystem.

Die Diagramme berücksichtigen die geringste wasser- und feuerfeste Wärmedämmung (vorgeformter Schaumstoff). Für den Schutz bis zu –29 °C (20 °F) verwenden Sie eine 25 mm dicke Dämmung.

Tabelle 1: Metallrohre

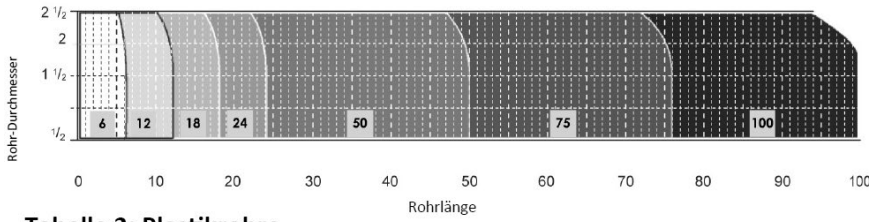
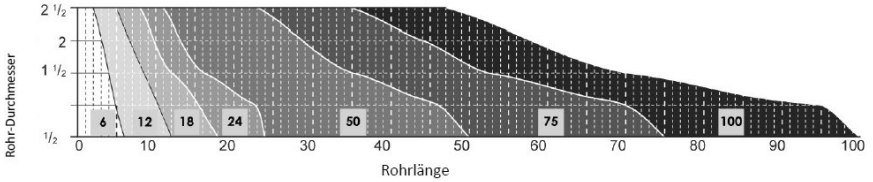


Tabelle 2: Plastikrohre



Addieren Sie für jedes Ventil und jeden Ablasshahn an Ihrem Rohrsystem zu der Rohrlänge 30 cm. Wenn das gewählte Kabel länger als das Rohr ist, legen Sie es in Spirale entlang dem gesamten Rohr.

Wichtig: Alle hier angegebenen thermischen und Design-Informationen basieren auf der Standard-Installation eines Heizkabels. Für alle anderen Anwendungen oder Installationsarten wenden Sie sich bitte an BriskHeat® 1-800-848-7673 (USA / Kanada) oder 1-614-294-3376 (weltweit).

HEIZKABELINSTALLATION

Abbildung 1: Installation in geradem Verlauf

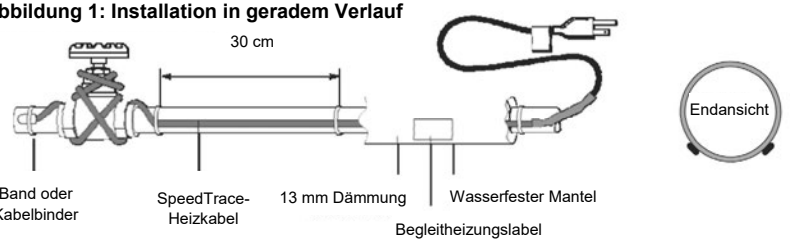
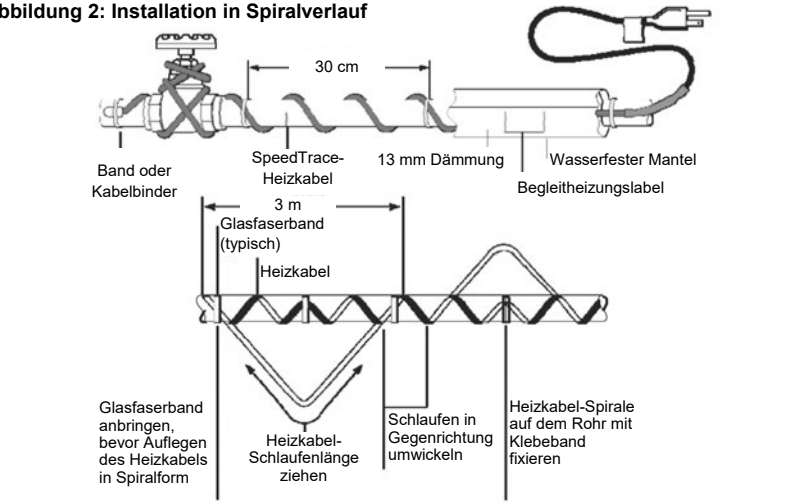


Abbildung 2: Installation in Spiralverlauf



1. Vorbereitung der Installation

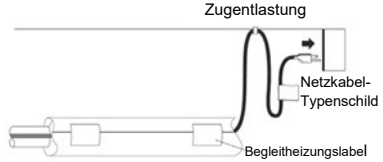
- Lagern Sie das Kabel an einem sauberen trockenen Platz.
- Nehmen Sie die Rohrleitungsdruckprüfung vor.
- Vor der Installation des Kabels, entfernen Sie alle scharfen Oberflächen auf dem Rohr, welche das Heizkabel beschädigen könnten.
- Überprüfen Sie die vorgesehene Ausführung des SpeedTrace-Heizkabels und vergleichen Sie sie mit dem erhaltenen Material, um sicherzustellen, dass Sie das richtige SpeedTrace-Heizkabel haben.
- Begehen Sie das System und planen Sie den Verlauf des SpeedTrace-Heizkabels am Rohr.
- Nur bei 230-V-Modellen: Installieren Sie am Heizkabel vor der Installation einen für 208-277 VAC zugelassenen Stecker.

2. Positionieren und befestigen Sie das Heizkabel am Rohr

- Überzeugen Sie sich, dass der gesamte Rohrverlauf trocken ist.
- Installieren Sie das Heizkabel und verwenden Sie entweder den geraden (Abb. 1) oder den Spiralverlauf (Abb. 2).

Abbildung 3: Wärmedämmung

Abbildung 4: Zugentlastung



Hinweis: Rohre müssen vollständig isoliert sein

- Für den geraden Verlauf installieren Sie das Heizkabel auf der unteren Hälfte des Rohrs; beispielsweise in der 4-Uhr oder 8-Uhr-Position.
- Achten Sie darauf, die für Ventile, Flansche usw. benötigte zusätzliche Heizkabellänge zu installieren, wie in Abb. 1 und 2 dargestellt.
- Wenn das Design einen Spiralverlauf fordert, beginnen Sie mit einer frei hängenden Schleife alle 3 m wie in Abb. 2 gezeigt. Um die Schleifenlänge zu bestimmen, dividieren Sie die Länge des SpeedTrace -Heizkabels durch die Rohrlänge und multiplizieren Sie mit 10. Wenn Sie zum Beispiel ein 15 m Heizkabel an ein 12 m Rohr anlegen, sehen Sie eine 3,7 m Schleife für jeden 3 m Rohrabschnitt vor. Greifen Sie die Schleife in der Mitte und legen sie diese um das Rohr. Gleichen Sie die Abstände zwischen Spiralen durch Verschieben der Umwicklungen entlang des Rohres aus. Verwenden Sie das empfohlene Glasfaser- oder Aluminiumklebeband und sichern Sie damit die Mitte der Schleife auf dem Rohr.
- Befestigen Sie das SpeedTrace-Heizkabel auf dem Rohr in 30 cm Abständen mit PSAT36A Glasfaserband oder AAT260 Aluminiumband. Verwenden Sie kein Vinyl-Isolierband, keine Klebebänder, Metallbänder und keinen Draht.
- Wenn überschüssiges Kabel am Ende des Rohres verbleibt, legen Sie es verdoppelnd zurück entlang des Rohres.

3. Prüfen der Installation

- Vor der Installation von Wärmeisolierung ist sicherzustellen, dass das Heizkabel frei von mechanischen Beschädigungen (von Schnitten, Klemmen etc.) und thermischen Schäden durch Löten, Überhitzung etc. ist.

4. Installation der Wärmedämmung

- Die Zuverlässigkeit eines SpeedTrace-Heizkabel-Systems hängt ab von ordnungsgemäß installierter, trockener und wetterfester Wärmedämmung wie INSUL-LOCK DS flexible Rohrisolierung mit geschlossenen Zellen.
- Stellen Sie sicher, dass mindestens 13 mm starker vorgeformter Schaumstoff oder gleichwertige Wärmeisolierung verwendet wird und dass die gesamte Rohrleitung einschließlich Ventile, Gelenke und Wanddurchführungen wie in Abb. 3 gezeigt vollständig isoliert ist.
- Für den Schutz bis zu –29 °C (20 °F) verwenden Sie eine 25 mm dicke Dämmung.
- Installieren Sie so bald wie möglich die Dämmung an der Rohrleitung, um das Potenzial für mechanische Beschädigungen nach der Installation zu minimieren.
- Achten Sie darauf, das SpeedTrace-Heizkabel-Begleitheizungsetikett auf der Außenseite der Wärmedämmung sichtbar ist.

5. Installation abschließen

- Um eine Beschädigung des Heiz- oder Netzkabels zu vermeiden, sichern Sie das Netzkabel (Kaltleiter) mit einem Kunststoff-Kabelbinder, Glasgewebeband oder Klebeband, wie in Abb. 4 dargestellt.
- Begleitheizungsetiketten zur Anzeige des Vorhandensein eines elektrischen Rohrheizkabels sind im Lieferumfang des Heizkabels enthalten. Bringen Sie die mitgelieferten Begleitheizungsetiketten auf der äußeren Oberfläche der Rohrisolierung im Abstand zwischen den Etiketten von 3 m an, um das Vorhandensein des SpeedTrace-Heizkabels anzuzeigen.

6. Inbetriebnahme des Systems

- BriskHeat® empfiehlt, dass das System gemäß dem Abschnitt "Kabeltest und Wartung" weiter unten geprüft wird.
- Schließen Sie das Heizkabel an eine durch FI-Schutzschalter geschützte Steckdose an.
- Überprüfen Sie den Trennschalter, um die Stromversorgung des Kabels zu verifizieren.
- Stehendes Wasser im Rohr sollte sich innerhalb einer Stunde erwärmen.

7. Erdschlussschutz

- BriskHeat® und nationale Vorschriften erfordern Erdschluss-Geräteschutz in jedem Heizkabelstromkreis.
- Um die Brandgefahr durch Beschädigung oder unsachgemäße Installation zu reduzieren, sollten Fehlerstromschutzschalter mit einem 30-mA-Auslösepegel verwendet werden. Alternative Designs mit vergleichbarer Höhe des Erdschlussschutzes können auch akzeptiert werden. Für technische Unterstützung wenden Sie sich bitte telefonisch an BriskHeat® 1-800-848-7673 (USA / Kanada) oder 1-614-294-3376 (weltweit).

⚠ WARNUNG

- Bedingungen für Wartung und Überwachung fordern, dass nur qualifizierte Personen Dienstleistungen an den installierten Systemen vornehmen.
- Unterbrechungsfreie Funktion ist für den sicheren Betrieb des Gerätes notwendig.

KABELTEST UND WARTUNG

- Überprüfen Sie mit einem 2500-VDC Megaohmmeter den Isolationswiderstand zwischen dem jeweiligen Stromversorgungsanschluss des Netzsteckers und dem Schutzleiter. Der minimale Messwert sollte 1000 Megaohm betragen.
- Notieren Sie die ursprünglichen Messwerte von jedem Stromkreis und vergleichen Sie damit nachfolgende Messwerte während der regulären Wartungseinsätze mit den ursprünglichen Werten.
- Wenn die Messwerte unter 1000 Megaohm fallen, ersetzen Sie das SpeedTrace- Heizkabel mit einem neuen Kabel und versuchen Sie nicht das Kabel zu reparieren.

⚠ WARNUNG

Brand- und Stromschlaggefahr. Beschädigte Heizkabel können einen elektrischen Schlag, Lichtbogenbildung und Brand verursachen. Versuchen Sie nicht ein beschädigtes Heizkabel zu reparieren oder zu bestromen. Entfernen Sie es sofort und ersetzen Sie es durch ein neues Kabel.

TECHNISCHE PRODUKTDATEN

Kabel (120V)	Kabel (230V)	Kabel-Länge in m	Minimale Leistungs-abgabe an das Rohr (Watt) bei 10 °C	Nominale Leistungs-abgabe bei 0 °C in Eis und Schnee (Watt)
FFSL81-6	**FFSL82-6**	1,8	48	96
FFSL81-12	**FFSL82-12**	3,6	96	192
FFSL81-18	**FFSL82-18**	5,4	144	288
FFSL81-24	**FFSL82-24**	7,3	192	384
FFSL81-50	**FFSL82-50**	15	400	800
FFSL81-75	**FFSL82-75**	22,8	600	1,200
FFSL81-100	**FFSL82-100**	30,4	800	1,600

Allgemeine technische Daten für alle FFSL8-Produkte

Nominale Kabelbreite (mm)	10,6
Nominale Kabeldicke (mm)	5,6
Heizkabelbus-Drahtstärke (AWG)	16
Kaltkabellänge (m)	0,76
Spannungsauslegung (120V)	110-120
Spannungsauslegung (230V)	208-277
Steckerauslegung (A)	15
Trennschalterauslegung min. (A)	15
Max. Aussetzungstemperatur	65 °C (150 °F)
Elektrische Klassifizierung	Nur Nicht– EX-Bereiche
Verwendung in Verbindung mit Chemikalien	Keine
Watt/30 cm bei 10 °C (50 °F)	8
Watt/30 cm bei 0 °C (32 °F) in Eis und Schnee	16
Außenmantel	Feuchtigkeits- und feuerfestes Thermoplastik- Elastomer

BriskHeat® Corporation
SpeedTrace selbstregeldes Heizkabel

ANLEITUNG ZUR FEHLERBEHEBUNG

Bitte lesen Sie diese Anleitung, bevor Sie BriskHeat® kontaktieren. Diese Anleitung beantwortet die am häufigsten gestellten Fragen. Wenn Sie nicht in der Lage sind, das Problem zu identifizieren oder weitere Hilfe benötigen, wenden Sie sich bitte an Ihren lokalen Vertriebspartner von BriskHeat® oder kontaktieren Sie uns gebührenfrei an +1-800-848-7673 (nur USA / Kanada) oder +1 614-294-3376 (weltweit) oder per E-Mail an **bhtsales1@briskheat.com.**

PROBLEM	LÖSUNG(EN)
Das gesamte Heizkabel erwärmt sich nicht.	Stellen Sie sicher, dass die Heizung an eine ordnungsgemäße Spannung angeschlossen ist. Überprüfen Sie mit einem Ohmmeter ob Widerstandsmesswert (keine Stromkreisunterbrechung) in der Heizung vorliegt.
Ein Teil des Heizkabels erwärmt sich nicht.	Untersuchen Sie den ungeheizten Teil des Kabels auf Beschädigungen.
Schutzschalter löst aus	Überprüfen Sie, ob der Schaltungsunterbrecher für die Stromanforderung der Heizung geeignet ist. Untersuchen Sie die Heizung und das Kabel auf Beschädigungen.

GARANTIEINFORMATION

BriskHeat® garantiert dem ursprünglichen Käufer dieses Produkts für den Zeitraum von achtzehn (18) Monaten ab Versanddatum oder zwölf (12) Monaten ab Installationsdatum, je nachdem, was zuerst eintritt. Die Verpflichtung von BriskHeat® und das ausschließliche Rechtsmittel gemäß dieser Garantie ist nach Wahl von BriskHeat® auf die Reparatur oder den Ersatz für jegliche Teile des Produkts beschränkt, die sich unter vorgeschriebenen Verwendung und Wartung gemäß Prüfung durch BriskHeat® als defekt erweisen und nachdem die Mängel durch BriskHeat® festgestellt wurden. Die vollständigen Einzelheiten dieser Garantie erfahren Sie im Internet unter www.briskheat.com oder indem Sie uns kontaktieren unter +1-800-848-7673 (gebührenfrei in U.S.A. und Kanada) oder unter +1-614-294-3376 (weltweit).

BriskHeat® Corporation

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Email: bhtsales1@briskheat.com

BriskHeat® Corporation

Italian (Italiano)

SpeedTrace Extreme

Cavo scaldante pre-assemblato, autoregolante

Manuale di istruzioni

⚠	Leggere e comprendere questo manuale prima di utiliz-zare o effettuare la manutenzione di questo cavo scaldante. La mancata comprensione del modo di utiliz-zare in sicurezza questo riscaldatore potrebbe causare incidenti conducendo a lesioni gravi o mortali.

SOMMARIO

INTRODUZIONE

Grazie per aver acquistato un cavo scaldante pre-assemblato autoregolante BriskHeat® SpeedTrace Extreme. Il cavo scaldante è progettato per fornire una vita lunga ed efficiente, avendo ben chiare in mente i principi della funzionalità, affidabilità e sicurezza. Per ulteriori informazioni o altri prodotti BriskHeat®, si prega di contattare BriskHeat® a 1-800-848-7673 (numero verde, Stati Uniti/Canada) o 614-294-3376.

CONSERVARE QUESTE ISTRUZIONI!
Ulteriori copie di questo manuale sono disponibili su richiesta.

SIMBOLO DI PERICOLO

Il simbolo di cui sopra è utilizzato per richiamare la vostra attenzione alle istruzioni per la sicurezza personale. Tale simbolo rileva importanti precauzioni di sicurezza. Significa **"ATTENZIONE! Sia attento! La sicurezza personale è coinvolta! "** Leggere il messaggio che segue e fare attenzione alla possibilità di lesioni personali o di morte.

⚠ PERICOLO

Rischi immediati che **CAUSERANNO** gravi lesioni personali o la morte.

⚠ AVVERTIMENTO

Pericoli o pratiche non sicure che **POTREBBERO CAUSARE** gravi lesioni personali.

⚠ ATTENZIONE

Pericoli o pratiche non sicure che **POTREBBERO CAUSARE** gravi lesioni personali.

IMPORTANTI ISTRUZIONI DI SICUREZZA

⚠ PERICOLO

La persona che non ha letto e compreso tutte le istruzioni di installazione non è qualificata per poter installare questo prodotto.

Approvazioni Agenzia

c ETL us Listed
Intertek

⚠ PERICOLO

- Do not immerse heater in liquid.
- Non immergere il riscaldatore nel liquido.
- Tenere il materiale volatile o combustibile lontano dal riscaldatore durante l'uso.
- Utilizzare il riscaldatore solo in luoghi approvati.
- Tenere gli oggetti metallici appuntiti lontano dal riscaldatore.

La mancata osservanza di queste avvertenze può provocare scosse elettriche, rischio di incendio e lesioni personali.

⚠ ATTENZIONE

- Non maneggiare il riscaldatore mentre è in funzione; staccare sempre il riscaldatore dalla presa di corrente e lasciarlo raffreddare prima di maneggiarlo.
- Ispezionare il cavo scaldante prima dell'uso.
- In caso di fuoriuscita di sostanze estranee sul riscaldatore, togliere l'alimentazione elettrica e pulire dopo aver consentito al cavo scaldante di raffreddarsi.
- Fissare il riscaldatore al dispositivo con metodi approvati.
- Non riparare il cavo scaldante danneggiato o difettoso.
- Non schiacciare o applicare stress fisico forte sul cavo scaldante o gruppo cavo.
- Staccare il cavo scaldante quando non in uso.
- Non usare per altre applicazioni.

La mancata osservanza di queste avvertenze può causare lesioni personali o danni al riscaldatore.

⚠ AVVERTIMENTO

L'utente finale deve rispettare le seguenti:

- Solo il personale qualificato è autorizzato a collegare i cavi elettrici.
- Prima di effettuare i collegamenti elettrici, scollegare tutti i cavi di alimentazione dalla fonte elettrica.
- Tutti i collegamenti elettrici devono seguire le norme elettriche locali.
- La persona che esegue l'installazione/il cablaggio finale deve essere qualificata per questo lavoro.
- L'utente finale è responsabile di fornire un dispositivo di sezionamento adatto.
- L'utente finale è responsabile di fornire un dispositivo di protezione elettrica adeguato. Si consiglia vivamente di usare un interruttore guasto a terra.

La mancata osservanza di queste avvertenze può provocare lesioni personali o danni al riscaldatore.

BriskHeat® Corporation
Cavo scaldante autoregolante
SpeedTrace Extreme

⚠ AVVERTIMENTO

Leggere e comprendere l'intero manuale prima di utilizzare questo cavo scaldante.

PRINCIPI DI FUNZIONAMENTO

1. I cavi scaldanti BriskHeat® SpeedTrace Extreme sono progettati per la protezione antigelo su tubi in metallo e plastic.
2. Adatto per uso interno o esterno.
3. Facile da installare: pre-assemblato con cavo di alimentazione e la spina. (I modelli 230 V hanno cavi scoperti).
4. Sicuro a sovrapposizione e isolamento.
5. Regola automaticamente la potenza termica in base alla superficie e alla temperatura ambiente.
6. Non è necessario alcun regolatore di temperatura.

DESCRIZIONE

I cavi scaldanti autoregolanti pre-assemblati SpeedTrace Extreme sono progettati per la protezione antigelo delle tubature commerciali in metallo e plastica.

I cavi scaldanti SpeedTrace Extreme sono disponibili con le lunghezze di 6, 12, 24, 50, 75 e 100 piedi e vengono forniti assemblati con un cavo di alimentazione da 30 pollici e una spina. (I modelli 230 V hanno cavi scoperti).

CONTENUTI DEL KIT

1. Cavo scaldante pre-assemblato, autoregolante SpeedTrace Extreme.
2. Etichette tubazione tracciamento elettrico.

Ulteriori elementi necessari, ma non forniti per applicazioni di tubazioni

Nastro adesivo, selezionare vetroresina o alluminio:

- Nastro in fibra di vetro, PSAT36A, 0,5 di larghezza, lungo 36 iarde.
- Nastro di alluminio, AAT260, 2,0 di larghezza, lungo 60 iarde.

Isolamento:

- Isolamento di tubazioni flessibile a cellule chiuse INSUL-LOCK DS.

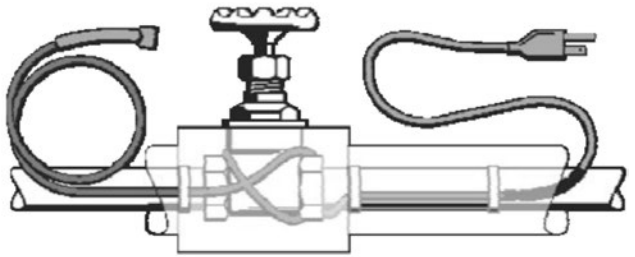
⚠ AVVERTIMENTO

Pericolo di incendio e scossa Questo prodotto è un dispositivo elettrico che deve essere installato correttamente per garantirne il corretto funzionamento e per evitare scosse o incendi. Leggere queste importanti avvertenze e seguire attentamente tutte le istruzioni di installazione.

- Per ridurre al minimo il pericolo di incendi da archi elettrici sostenuti nel caso il cavo scaldante fosse danneggiato o non correttamente installato e per rispettare i requisiti di BriskHeat® e le normative elettriche nazionali, deve essere utilizzata una protezione messa a terra per guasti su ogni circuito ramo del cavo scaldante. L'apparizione di archi non può essere fermata dalla protezione convenzionale del circuito.
- Per le applicazioni di protezione al congelamento delle tubazioni, utilizzare solo materiali isolanti resistenti al fuoco come la schiuma preformata o la fibra di vetro.
- Non danneggiare il cavo scaldante e il cavo di alimentazione o la spina. Rimuovere immediatamente i cavi danneggiati dal servizio.
- Non utilizzare fascette metalliche o filo in metallo per collegare il cavo al tubo. Utilizzare nastro (1/2 pollici - 2 pollici di larghezza) o fascette in plastica.
- Lasciare queste istruzioni di montaggio presso l'utente per riferimento futuro.
- Diseccitare tutti i circuiti di alimentazione prima di eseguire l'installazione o la manutenzione.
- Lo strato conduttivo di questo dispositivo di riscaldamento deve essere collegato ad un terminale di terra adatto.

BriskHeat® Corporation
Cavo scaldante autoregolante
SpeedTrace Extreme

PROTEZIONE DAL CONGELAMENTO DELLE TUBAZIONI



Requisiti generali per la protezione da congelamento della tubazione:

- I tubi scaldanti SpeedTrace Extreme, possono essere usati su tubazioni d'acqua in mettalo o plastica, ma non per tubazioni flessibili in vinile (tubi per giardino).
- I cavi scaldanti SpeedTrace Extreme non sono destinati per l'uso all'interno delle condotte, per la protezione dal congelamento dei liquidi diversi dall'acqua o per l'uso in ambienti classificati come pericolosi.
- Installare con un isolamento termico, impermeabile, resistente al fuoco di minimo di ½".
- Non utilizzare su tubi che possono superare i 150 °F (65 °C).
- Prolunga non può essere utilizzato per installazioni permanenti. Per installazioni temporanee consultare codici elettrici e antincendio locali.

INFORMAZIONI GENERALI

- Installare solo in luoghi accessibili; non installare dietro muri o in luoghi in cui il cavo potrebbe essere nascosto.
- Non far passare il cavo scaldante attraverso pareti, soffitti o pavimenti.
- Collegare solo a prese protetta da guasti con messa a terra, che sono state installate in conformità con i codici e le norme nazionali e locali vigneti e che sono protette dalla pioggia e altre fonti d'acqua.

CODICI ELETTRICI

Gli articoli 422, 426 e 427 del National Electrical Code (NEC) e Parte 1, Sezione 62 del Canadian Electrical Code (CEC) regolano l'installazione del cavo scaldante SpeedTrace Extreme per la protezione da congelamento delle tubazioni e devono essere rispettati.

Importante: Per la validità della garanzia del cavo scaldante BriskHeat ® SpeedTrace Extreme assicurare la conformità con tutti i requisiti indicati in queste linee guida.

Tutte le informazioni termiche e di progettazione fornite qui si basano su un'installazione standard del cavo scaldante fissato ad una tubazione isolata. Per qualsiasi altra applicazione o metodo di installazione, si prega di contattare BriskHeat® a 1-800-848-7673 (USA / Canada) o 1-614-294-3376 (tutto il mondo).

SELEZIONE DEL CAVO

Usare le tabelle di seguito per selezionare il cavo scaldante corretto. Aggiungere 1 piede alla lunghezza del tubo per ogni valvola o rubinetto sul vostro sistema di tubazioni.

I grafici assumono il più basso isolante termico, esterno impermeabile, con spessore temperato e resistente al fuoco. (schiuma preformata). Per la protezione a -20 °F (-29 °C), usare isolante di spesso di 1” (25mm).

Tabella 1 Tubi metallici

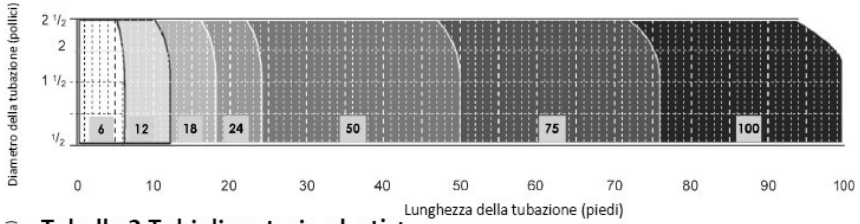
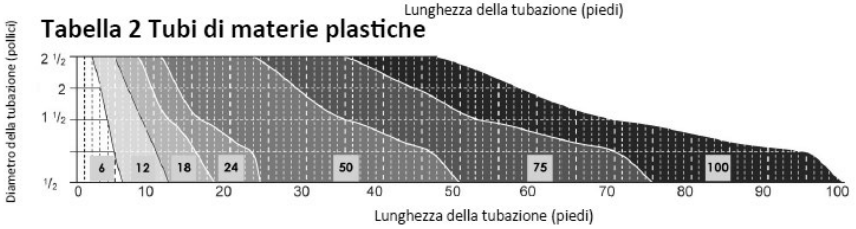


Tabella 2 Tubi di materie plastiche



Aggiungere 1 piede alla lunghezza del tubo per ogni valvola o rubinetto sul vostro sistema di tubazioni. Se il cavo selezionato è più lungo della tubazione, girarlo a spirale uniformemente lungo tutto il tubo.

Importante: Tutte le informazioni termiche e di progettazione fornite qui si basano su un'installazione standard. Per qualsiasi altra applicazione o metodo di installazione, si prega di contattare BriskHeat® a 1-800-848-7673 (USA / Canada), o 1-614-294-3376 (in tutto il mondo).

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SpeedTrace Extreme

INSTALLAZIONE DEL CAVO SCALDANTE

Figura 1 installazione instradamento dritto

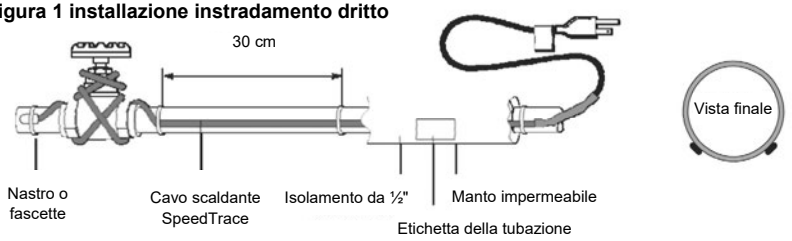
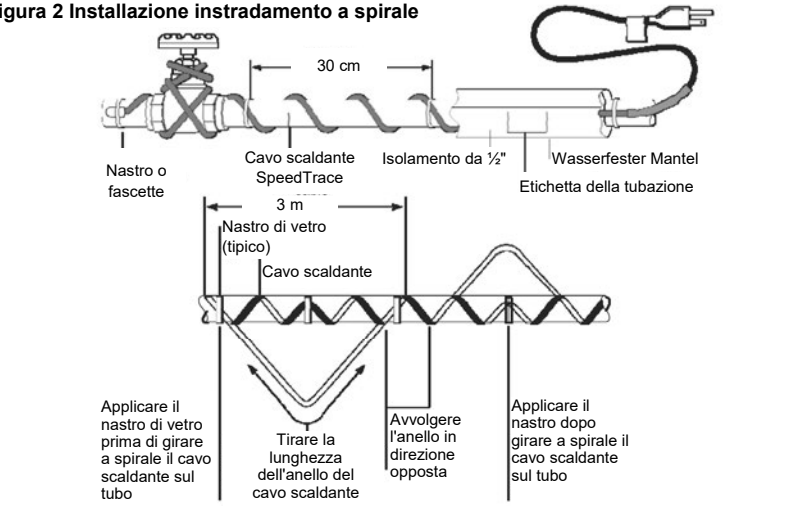


Figura 2 Installazione instradamento a spirale



1. Prepararsi per l'installazione

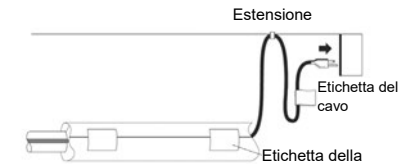
- Stoccare il cavo scaldante in un luogo asciutto e pulito.
- Prova completa della pressione nella tubazione.
- Prima di installare il cavo, rimuovere tutte le superfici taglienti sulla tubazione, che potrebbero d5anneggiare il cavo scaldante.
- Rivedere la progettazione del cavo scaldante SpeedTrace Extreme e confrontarla con il materiale ricevuto per verificare di avere il cavo scaldante SpeedTrace Extreme corretto.
- Ripercorrere le tubazioni e pianificare l'instradamento del cavo scaldante SpeedTrace Extreme sulla tubazione.
- Solo per i modelli 230 V: Prima dell'installazione del cavo scaldante, installare il dispositivo con spina elettrica approvata adatto per 208-277 V c.a.

2. Posizionare e collegare il cavo scaldante alla tubazione

- Assicurarsi che tutte le tubazioni da tracciare siano asciutte.
- Installare il cavo scaldante, utilizzando l'instradamento dritto come nella Figura 1 o a spirale come nella Figura 2.

Figura 3 Isolamento

Figura 4 Estensione



Nota: Le tubazioni devono essere completa-mente isolate.

- Per l'instradamento dritto, installare il cavo scaldante su una metà inferiore della tubazione; per esempio, nella posizione le ore 4 o le ore 8.
- Assicurarsi di installare il cavo scaldante supplementare necessario per valvole, flange, ecc come mostrato nelle Figure 1 e 2.
- Quando la progettazione richiede l'instradamento a spirale, cominciare sospendendo un anello ogni 10 piedi, come mostrato in Figura 2. Per determinare la lunghezza dell'anello, dividere la lunghezza del cavo scaldante SpeedTrace Extreme alla lunghezza della vostra tubazione e moltiplicare per 10. Ad esempio, se si utilizza un cavo scaldante SpeedTrace Extreme da 50 piedi su una tubazione di 40 piedi, lasciare un anello di 12 piedi di cavo scaldante su ciascuna sezione di 10 piedi della tubazione. Afferrare l'anello nel suo centro e avvolgerlo intorno alla tubazione. Livellare la distanza tra le spirali facendo scorrere le coperture lungo il tubo. Utilizzare nastro adesivo in vetroresina o alluminio raccomandati per fissare il centro dell'anello alla tubazione.
- Fissare il cavo scaldante SpeedTrace alla tubazione a intervalli di 1 piede con nastro in fibra di vetro PSAT36A o nastro di alluminio AAT260. Non usare nastro elettrico in vinile, nastro adesivo, fasce di metallo o filo.
- Se del cavo in eccesso rimane all'estremità della tubazione, raddoppiare indietro lungo la tubazione.

3. Controllare l'installazione

- Prima di installare l'isolamento termico assicurarsi che il cavo scaldante sia esente da danni meccanici (da tagli, morsetti, ecc) e da danni termici (da saldatura, surriscaldamento, ecc.).

4. Installare l'isolamento termico

- Un sistema di cavo scaldante SpeedTrace Extreme affidabile dipende dalla corretta installazione e l'isolamento termico, secco, impermeabile, come l'isolamento di tubazioni flessibile a cellule chiuse INSUL-LOCK DS.
- Garantire che almeno ½" di schiuma preformata o isolamento termico equivalente viene utilizzato e che tutte le tubazioni, comprese le valvole, giunti e penetrazioni nella parete, siano state completamente isolate come mostrato in Figura 3.
- Per la protezione a -20 °F (-29 °C), usare isolante di spesso di 1” (25mm).
- Installare l'isolamento sulla tubazione appena possibile per minimizzare il rischio di danni meccanici dopo l'installazione.
- Assicurarsi che l'etichetta cavo scaldante SpeedTrace Extreme sia visibile all'esterno dell'isolamento termico.

BriskHeat® Corporation
Cavo scaldante autoregolante
SpeedTrace Extreme

5. Completamento dell'installazione.

- Per evitare di danneggiare il cavo scaldante, fissare il cavo di alimentazione (cavo freddo) con una fascetta di plastica, nastro in fibra di vetro o nastro adesivo come mostrato in Figura 4.
- Le etichette di tracciamento elettrico che indicano la presenza del cavo scaldante sul tubo elettrico sono fornite insieme al cavo scaldante. Applicare le etichette fornite "Tracciamento elettrico" sulla superficie esterna dell'isolamento della tubazione ad un intervallo di una etichetta per ogni 10 piedi(3 m) di tubazione per indicare la presenza del cavo scaldante SpeedTrace Extreme.

6. Avvio del sistema.

- BriskHeat® raccomanda di sottoporre il sistema a test secondo la sezione "Test e manutenzione del cavo" di seguito.
- Collegare il cavo scaldante in una presa di corrente protetta messa a terra da
- Controllare l'interruttore di alimentazione per verificare se il cavo è alimentato.
- L'acqua stagnante nella tubazione dovrebbe riscaldarsi nel giro di un'ora.

7. Protezione messa a terra:

- BriskHeat® ed i codici elettrici nazionali richiedono una protezione messa a terra delle attrezzature su ogni circuito ramo del cavo scaldante.
- Per ridurre il rischio di incendio causato da danni o un'installazione non corretta, utilizzare interruttori o equivalenti, con un livello di scatto di 30 mA. Le progettazioni alternativi che forniscono livelli comparabili di protezione a guasto con messa a terra può anche essere accettabile. Per l'assistenza tecnica, si prega di contattare BriskHeat® a 1-800-848-7673 (Stati Uniti/Canada) o 1-614-294-3376 (tutto il mondo).

⚠ AVVERTIMENTO

- Le condizioni di manutenzione e controllo assicurano che solo le persone qualificate devono intervenire sui sistemi installati.
- Il funzionamento continuo del circuito è necessario per il funzionamento sicuro delle apparecchiature.

TEST E MANUTENZIONE DEL CAVO

- Utilizzando un megaohmetro 2500 V cc, controllare la resistenza di isolamento tra entrambi i poli rettangolari (di potenza) della spina ed il polo rotondo (massa) dopo l'installazione del cavo scaldante. Lettura minima dovrebbe essere 1000 megaohm.
- Registrare i valori originali per ogni circuito, e confrontare le successive letture effettuate durante i programmi di manutenzione regolari rispetto ai valori originali.
- Se le letture scendono al di sotto di 1000 megaohm, sostituire il cavo scaldante SpeedTrace con uno nuovo. Non tentare di riparare l'unità.

⚠ AVVERTIMENTO

Pericolo di incendio e scossa Il cavo scaldante danneggiato può causare scosse elettriche, archi elettrici ed incendi. Non tentare di riparare o energizzare un cavo scaldante danneggiato. Rimuovere in una sola volta e sostituirlo con uno nuovo.

SPECIFICHE DEL PRODOTTO

Cavo (120V)	Cavo (230V)	Lunghezza del cavo (m)	Potenza min. a 50 °F (10 °C) sulla tubazione (watt)	Potenza nominale a 32 °F (0 °C) in ghiaccio e neve (watt)
FFSL81-6	FFSL82-6	1,8	48	96
FFSL81-12	FFSL82-12	3,6	96	192
FFSL81-18	FFSL82-18	5,4	144	288
FFSL81-24	FFSL82-24	7,3	192	384
FFSL81-50	FFSL82-50	15	400	800
FFSL81-75	FFSL82-75	75	600	1,200
FFSL81-100	FFSL82-100	100	800	1,600

Specifiche generali per tutti i prodotti FFSL8

Larghezza nominale del cavo (in)	0,42
Spessore nominale del cavo (in)	0,22
Calibro bus cavo scaldante (AWG)	16
Lunghezza del cavo freddo (a)	30
Tensione nominale (120V)	110-120
Tensione nominale (230V)	208-277
Valore nominale presa (ampere)	15
Dimensionamento minimo dell'interruttore di circuito (ampere)	15
Temperatura massima di esposizione	150°F (65°C)
Classificazione elettrica	Solo in zone non pericolose
Esposizione a sostanze chimiche	Nessuna
Watt/piede a 50 °F (10 °C)	8
Watt/piede a 32 °F (0 °C) in ghiaccio e neve	16
Tipo rivestimento esterno	Elastomero termoplastico resistente ad umidità e fiamme

BriskHeat® Corporation
Cavo scaldante autoregolante
SpeedTrace Extreme

GUIDA ALLA RISOLUZIONE DEI PROBLEMI

Si prega di leggere questa guida prima di contattare la BriskHeat®. Questa guida è stata progettata per rispondere alle domande più frequenti. Se non si riesce a identificare il problema o si ha bisogno di ulteriore assistenza, si prega di contattare il distributore locale BriskHeat® o contattarci al numero verde (USA/Canada) 1-800-848-7673 o 614-294-3376 o **bhtsales1@briskheat.com.**

PROBLEMA	SOLUZIONE(I)
L'intero cavo scaldante non si riscalda	Verificare se il riscaldatore è collegato alla tensione corretta. Verificare se c'è una lettura di resistenza (non un circuito aperto) nel riscaldatore utilizzando un ohmmetro.
Porzione di cavo scaldante non si riscalda	Esaminare il cavo non riscaldato se presenta danni.
L'interruttore del circuito è scattato	Assicurarsi che l'interruttore del circuito sia in grado di gestire l'amperaggio richiesto del riscaldatore. Accertarsi che non ci siano danni al riscaldatore e al cavo.

INFORMAZIONI SULLA GARANZIA

BriskHeat assicura la garanzia di questo prodotto all'acquirente originale per il periodo di diciotto (18) mesi dalla data di spedizione o di dodici (12) mesi dalla data di installazione, a seconda di quale viene prima. L'obbligo di il rimedio esclusivo da parte di BriskHeat ai sensi della presente garanzia sono limitati alla riparazione o alla sostituzione, a discrezione di BriskHeat, di qualsiasi parte del prodotto che può rivelarsi difettosa in condizioni di uso e manutenzione conformi in seguito alla verifica da parte di BriskHeat e che è determinato difettosa da parte di BriskHeat. I dettagli completi della garanzia si possono trovare online all'indirizzo www.briskheat.com o contattandoci al numero 1-800-848-7673 (numero verde, Stati Uniti / Canada) o 1-614-294-3376 (tutto il mondo).

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