



#18-16 MCD Special Permit  
Hillsboro & 15th, LLC & 5050 Properties, LLC  
1,3,5, 7 Flint Road & 34 Tomahawk Road  
Map 69 Parcels 340 through 347





APR 11 2016 PM 12:57

Catherine Flanagan Stover, Town Clerk  
Town of Nantucket - 16 Broad Street  
Nantucket, MA 02554 [townclerk@nantucket.net](mailto:townclerk@nantucket.net)  
508-228-7217 Fax: 508-325-5313  
Home: 508-228-7841

# Nantucket Planning Board

## Application for a Special Permit

Date: April 11, 2016

File #: 17-16

Name of development: \_\_\_\_\_

Owner(s) name(s): HILLSBORO & 15th, LLC, and 5050 PROPERTIES, LLC, both Utah limited liability companies

Mailing address: c/o Cohen and Cohen Law PC, BO Box 786, Nantucket MA 02554

Phone number: 508-228-0337 Fax number: 508-228-0970 E-mail: Steven@cohenlegal.net

Applicant's name: same

Mailing address: \_\_\_\_\_

Phone number: \_\_\_\_\_ Fax number: \_\_\_\_\_ E-mail: \_\_\_\_\_

Engineer / surveyor's name: Don Bracken, Bracken Engineering Inc.

Mailing address: 19 Old South Road, Nantucket, MA 02554

Phone number: 508-325-0044 Fax number: 508-833-2282 E-mail: Don@BrackenEng.com

Location of lot(s): 1, 3, 5 and 7 Flint Road, and 28, 30, 32 and 34 Tomahawk Road

Street address \_\_\_\_\_

Tax Assessors Map 69 Parcel 340-347

Nantucket Registry of Deed: Plan Book \_\_\_\_\_ and Page \_\_\_\_\_ **OR**

Plan File # Lots 192-199 **OR** Land Court Plan # 26984-8 at Certificate # 150091

Size of parcel: 41,424+/-SF sq. ft. Zoning District: CI (RC-2 freeze)

Special Permit sought: (check one)

- Cluster subdivision
- Commercial WECS
- Driveway Access/Curb Cut Special Permit
- Harbor Overlay District (HOD)
- Major Commercial Development (MCD)

- Multi-family Special Permit
- Moorlands Management District Subdivision or Construction (MMD)
- NEHOD (Neighborhood Employee Housing Overlay District)
- MRD (Major Residential Development)
- MIPOD (Mid-Island Planned Overlay District)
- Other Uses Requiring a Special Permit (specify all uses and *Nantucket Code* sections)

Section see addendum	Description

Specify all associated Zoning Code relief sought:

Section see addendum	Description

*Only the zoning relief expressly requested above will be considered as part of this application.*

If applying for a Major Commercial Development, specify how the application will comply with Section 139-11 (J) of the *Zoning Code of the Town of Nantucket*, also known as the Town's Affordable Housing Effort:  
see addendum

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Planning Board filing fee due: \$ 250 + 123.31 (\$6.49x19 to Pitney Bowes)

Engineering Inspection Escrow Deposit due: \$ \_\_\_\_\_

I/ we hereby certify that the applicant(s) cited above have been authorized by me/ us to file a Special Permit application with the Planning Board on property that I/ we own.

Nantucket Planning and Land Use Services ▪ 2 Fairgrounds Road ▪ Nantucket ▪ MA ▪ 02554 ▪ (508) 325-7587

\_\_\_\_\_

Owner(s)' Signature(s)

*Steven Cohen*

Applicant's Signature

*Steven Cohen as authorized attorney for owner/applicant*

I/we \_\_\_\_\_, the undersigned, hereby authorize \_\_\_\_\_ to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

\_\_\_\_\_

Owner(s)' signature(s)

**Check List:**

- Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- Completed application form entitled "Application to the Planning Board for a Special Permit"
- Application fee of \$250.00 payable to Town of Nantucket
- Abutters fee of \$6.11 per abutters payable to Pitney Bowes Reserved Funds
- Four (4) sets of mailing labels with each abutter's name and address
  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- Completed application form
- Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)

### MCD Special Permit Addendum

**HILLSBORO & 15<sup>th</sup>, LLC**, a Utah limited liability company with a mailing address of 1245 East Brickyard Road, Suite 70, Salt Lake City, Utah 84106, and **5050 PROPERTIES, LLC**, a Utah limited liability company, of 786 East Redford Drive, Provo, Utah 84604, apply to the Nantucket Planning Board for a Special Permit for a Major Commercial Development at **1, 3, 5 and 7 Flint Road, and 28, 30, 32 and 34 Tomahawk Road**, Nantucket, Massachusetts (Locus). Said land is shown as Lots 196, 197, 198, 199, 195, 194, 193 and 192, respectively, on Land Court Plan No. 26984-8, filed at the Nantucket Registry District of the Land Court. See Certificate of Title 150091 for the Owner's/Applicant's title.

The locus is in the Commercial Industrial (CI) Zoning District, but is part of a Coffin Subdivision, which is subject to a "zoning freeze" at the Residential Commercial 2 (RC-2) Zoning District, which expires on October 15, 2017.

The locus is vacant. The locus is comprised of eight vacant lots, totaling approximately 41,424+/-SF. Each lot is at or over the 5,000 SF of lot area required in the RC-2 district and less than the 15,000 SF of lot area required in the CI district, but the Locus is well over both. Each Lot also complies with the 40 feet of frontage required in the RC-2 district and the locus complies with the 75 feet of frontage required in the CI district.

The Applicant proposed to construct a self-storage facility. The facility is proposed to be comprised of two buildings. The structures are proposed as close as 8.6 feet +/- from the eastern side lot line, where the CI zone requires 10 foot side and rear setbacks but RC-2 requires only 5 feet.

The primary building is proposed as a structure with a footprint of approximately 17,378+/-SF. A secondary building of is proposed as a structure with a foot print of approximately 3,203 +/-SF. The locus is proposed with a Ground Cover Ratio of 49.9% where 50% is allowed.

The locus is proposed to have mixed commercial and residential use, as allow. The primary building is proposed to have two basement levels and three levels above grade, with a total of 82,457+/-SF of self-storage Gross Floor Area and an office space of about 954+/-SF. The secondary building is proposed to have one level of self-storage with a Gross Floor Area of about 3,203+/-SF. The two buildings are proposed to have a total of about 691+/- storage units, of various sizes, with a Gross Floor Area of about 86,614+/-SF. The secondary building is proposed to have one second story dwelling, a two bedroom apartment for employee housing.

The proposed commercial use requires 31 parking spaces and the apartment requires 2 parking space, for a total of 33 parking spaces. The Applicant proposes to provide 6 designated parking spaces and up to 13 overflow over-flow parallel spaces between the two buildings. The Applicant notes that there is very limited traffic associated with such facilities.

The locus is proposed to have an open area ratio of 27.8% where 30% is required. Applicant seeks a waiver based on the industrial nature of the area.

Plans for storm water, drainage, erosion control, lighting, parking, access, surface material, grading, utilities, and similar are attached. The locus will be connected to Town water, Town sewer, and utilities already existing in the road and will contain no overhead wires. Lighting will comply with the Nantucket zoning by-law.

Waste will be kept in a screened dumpster with daily off-site disposal by staff or a commercial service at peak seasons and as needed in the off seasons.

The facility is proposed to have 3 or less employees at peak operation. NRTA passes will be provided to employees.

A bike rack for employees and customers will be provided on site. The property is near the end of the Old South Road Bike Path.

Emergency vehicle road access is available entirely on paved roads and on three sides of the property.

The facility is proposed with hours of 7AM to 7PM, with no exterior activities (except loading or unloading). The facility is strictly for dead storage of nonhazardous materials. No other commercial activities will take place from the facility and no hazardous materials will be stored therein.

Applicant seeks an MCD Special Permit with relief and waivers pursuant to the following sections of the Nantucket Zoning By-law:

- 1) Section 139-7A for interior and exterior storage or warehousing (allowed in CI, but requires a Special Permit in RC-2).
- 2) Section 139-11G for waiver of the open space requirement.
- 3) Sections 139-11I and 16A to reduce the setback and/or use the 5 foot side/rear yard setback of RC-2 (instead of 10 foot from CI).
- 4) Section 11J to waive inclusionary housing.
- 5) Section 139-18 for waiver of the off-street parking requirement.
- 6) Section 139-19 for waiver of screening and driveways.
- 7) Section 139-20.1 for waiver of driveway access.
- 8) Section 139-23 to waive Site Plan, Traffic Study, Drainage, Storm Water Runoff, Landscaping, and other such reviews and requirements, to the extent applicable.

Additionally, the Applicant proposes to build the facility in phases and specifically requests the ability construct the primary building, the secondary commercial building, and the employee apartment separately from each other, and to build less than authorized. Further the Applicant seeks release from the MCD in File 04-84 to the extent necessary.

**EROSION CONTROL NOTES:**

**PROTECTION OF NATURAL FEATURES**

DUE REGARD SHALL BE SHOWN FOR ALL NATURAL FEATURES, SUCH AS TREES, WATER COURSES, SCENIC POINTS AND SENSITIVE AREAS. EXISTING TREES NEAR CONSTRUCTION TO BE PROTECTED WITH SNOW FENCING OR CONTRACTOR FENCING.

**MINIMIZE SITE DISTURBANCE**

DURING THE CONSTRUCTION OF THE ROADWAY AND DRAINAGE SYSTEM, DISTURBANCE TO THE SITE SHALL BE MINIMIZED. CONSTRUCTION EQUIPMENT AND TRUCKS MUST STAY WITHIN THE AREAS OF PROPOSED WORK AS SHOWN ON THE APPROVED PLAN.

**TEMPORARY STABILIZATION**

TEMPORARY SURFACES SHOULD BE STABILIZED AS SOON AS ACTIVE GRADING IS SUSPENDED, REGARDLESS OF THE TIME OF YEAR. DISTURBED AREAS SHOULD BE RE-VEGETATED EARLY ENOUGH IN THE FALL THAT GOOD COVER IS ESTABLISHED BEFORE COLD WEATHER COMES.

TEMPORARY VEGETATION, MULCHING, OR OTHER PROTECTIVE MEASURES MUST BE PROVIDED FOR AREAS THAT WILL BE EXPOSED FOR ONE OR MORE MONTHS. THESE TEMPORARY MEASURES MUST BE APPLIED IMMEDIATELY AFTER DISRUPTION. TEMPORARY MEASURES INCLUDE: SEEDING WITH RYE GRASS OR OTHER ANNUAL GRASSES, JUTE NETTING, SPREADING STRAW MULCH, AND ANY OTHER METHOD ACCEPTABLE TO THE BOARD. IF A DISTURBED AREA WILL BE EXPOSED FOR GREATER THAN ONE YEAR, PERMANENT GRASSES OR OTHER APPROVED COVER MUST BE INSTALLED. IN DISTURBED AREAS, IF THE SURFACE MATERIAL IS NOT SUITABLE FOR THE GROWING OF SEED, A MINIMUM OF 4 INCHES OF LOAM WILL BE REQUIRED.

**PERMANENT STABILIZATION**

STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. WOOD CHIPS AND MULCHES WILL NOT GENERALLY BE PERMITTED.

AREAS WHERE THE HORIZONTAL DISTURBANCE IS LESS THAN EIGHT FEET MAY BE TREATED WITH A PERENNIAL GRASS MIXTURE OR SOD. A MINIMUM OF FOUR (4) INCHES OF LOAM IS REQUIRED FOR AREAS THAT WILL BE SEED. THE LOAM MUST BE RAKED AND FREE OF ROOTS, STONES, AND TWIGS.

**TEMPORARY SEDIMENT CONTROL FOR DRAINAGE**

TEMPORARY SEDIMENT CONTROLS MAYBE REQUIRED FOR UNPAVED ROADS, PAVED ROADS WHERE CURBING HAS NOT BEEN INSTALLED, DRAINAGE INLETS, AND DRAINAGE OUTFALLS. TEMPORARY SEDIMENT CONTROLS ALSO MAYBE REQUIRED FOR ALL UNPAVED DRIVEWAYS AND DISTURBED LOTS THAT SLOPE TOWARD THE ROAD. TEMPORARY SEDIMENT CONTROL DEVICES MAY INCLUDE: SILT FENCES, FILTER STRIPS, STAKED HAYBALES, SILT TRAPS, SEDIMENT BASINS, AND CRUSHED ROCK BERMS. TEMPORARY SEDIMENT CONTROL DEVICES MUST BE PLACED ALONG ROAD SIDES WHERE RUNOFF MAY OCCUR AND AROUND STORM DRAIN INLETS AND OUTFALLS. THE PLANNING BOARD MAY REQUIRE A SPECIFIC TYPE OF TEMPORARY SEDIMENT CONTROLS. ALL SEDIMENTS MUST BE REMOVED FROM THE ROADWAY AND OTHER COLLECTION AREAS ON A REGULAR BASIS.

**DUST CONTROL**

DUST CONTROL IS REQUIRED TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED AREAS TO PREVENT OFF-SITE DAMAGE.

1. TEMPORARY STABILIZATION METHODS AS NOTED ABOVE SHALL BE INSTITUTED TO LIMIT THE AMOUNT OF EXPOSED AREAS.
2. EXPOSED SURFACES SHALL BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.
3. STONE SHALL BE UTILIZED TO COVER SURFACES IN HEAVY TRAFFIC AREAS IF NECESSARY IN CONJUNCTION WITH WATERING.

**RESPONSIBILITY**

THE DEVELOPER IS RESPONSIBLE FOR PREVENTING ALL EROSION AND THE BUILD-UP OF SEDIMENT WITHIN THE AREAS DISTURBED. EROSION CONTROL MEASURES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND REPLACED AND REPAIRED AS NEEDED.

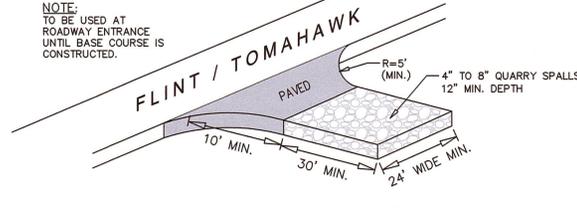
**TRACKING PAD NOTES:**

FILTER CLOTH - SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM SHOULD BE PERMITTED.

MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANING OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

NOTE: TO BE USED AT ROADWAY ENTRANCE UNTIL BASE COURSE IS CONSTRUCTED.



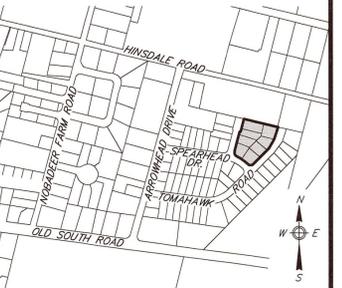
**CONSTRUCTION ENTRANCE TRACKING PAD DETAIL**

NOT TO SCALE

**PROJECT NOTES:**

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. 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.
4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTITUTE EROSION CONTROL MEASURES. SEE EROSION CONTROL NOTES.
5. 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 CONTACT DIG SAFE AT LEAST 72 HOURS PRIOR TO THE START OF CONSTRUCTION. DIG SAFE TELEPHONE NUMBER IS 1-800-322-4844.
6. 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.
7. THE WANNACOMET WATER DEPARTMENT SHALL BE NOTIFIED PRIOR TO ANY WORK ON THE WATER SYSTEM.
8. ALL AREAS TO BE PLANTED WITH GRASS SHALL BE TREATED WITH 100 POUNDS OF GROUND LIMESTONE PER 1000 S.F. OF AREA PLANTED. ALL AREAS TO BE PLANTED WITH GRASS SHALL BE FERTILIZED WITH 10-10-10 AT THE RATE OF 1,000 POUNDS PER ACRE OR AS REQUIRED BY SOIL TEST. 40% OF THE NITROGEN SHALL BE IN ORGANIC FORM.
9. ALL LANDSCAPED AREAS TO BE LOAMED & SEEDED UNLESS OTHERWISE NOTED.
10. UNLESS OTHERWISE SPECIFIED ALL WORK IS TO CONFORM TO THE LATEST MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS REGULATIONS.

**Locus Map** Scale: 1" = 500'



**Notes**

1. LOCUS: #1, #3, #5 & #7 FLINT ROAD #28, #30, #32 & #34 TOMAHAWK ROAD MAP 69 PARCELS 340 thru 347
2. OWNER: KENNETH C. COFFIN, INC. P.O. BOX 90 SIACONSET, MA 02564
3. APPLICANT: NANTUCKET & TOMAHAWK, LLC 786 E. REDFORD ROAD PROVO, UT 84604
4. DEED REF: CERT #11346
5. PLAN REF: LCC #26984-8 (LOTS 192 thru 199)
6. ZONING FREEZE: DOC #133482 (RC-2 ZONE)
7. LOCUS DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP No. 25019C-0093-G dated 06/09/2014.
8. LOCUS DOES NOT FALL WITHIN THE NATURAL HERITAGE and ENDANGERED SPECIES PROGRAM (NHESP) AREAS OF ESTIMATED HABITATS OF RARE WILDLIFE and PRIORITY HABITATS OF RARE SPECIES.

**LEGEND**

- - - - -100- - - - - EXISTING CONTOUR
- 100x0 EXISTING SPOT SHOT
- - - - -w- - - - - EXISTING WATER LINE
- - - - -s- - - - - EXISTING SEWER LINE
- - - - -d- - - - - EXISTING DRAINAGE LINE
- ⊙ EXISTING DRAIN MANHOLE
- ⊕ EXISTING CATCH BASIN
- ⊙ EXISTING WATER SERVICE
- ⊙ EXISTING SEWER SERVICE
- ⊙ EXISTING ELECTRIC BOXES
- ⊙ EXISTING STREET TREE
- - - - -x- - - - - EXISTING EDGE OF LAWN
- - - - -x- - - - - PROPOSED SILT FENCE
- PROPOSED SILT SACK

ZONE: C(RC-2\*)

	REQUIRED*
LOT AREA:	5,000 s.f.
FRONT YARD:	40'
SIDE/REAR YARD:	10'
GROUND COVER:	50% (MAX)
OPEN AREA:	30% (MIN.)

\* SEE ZONING FREEZE (RC-2 ZONE IN DOC #133482)

Prepared By:

**BRACKEN ENGINEERING, INC.**

49 HERRING POND ROAD BUZZARDS BAY, MA 02532 (tel) 508.833.0070 (fax) 508.833.2282

19 OLD SOUTH ROAD NANTUCKET, MA 02554 (tel) 508.325.0044 (fax) 508.325.0044 www.brackeneng.com

**EXISTING CONDITIONS AND EROSION CONTROL PLAN IN NANTUCKET, MASSACHUSETTS**

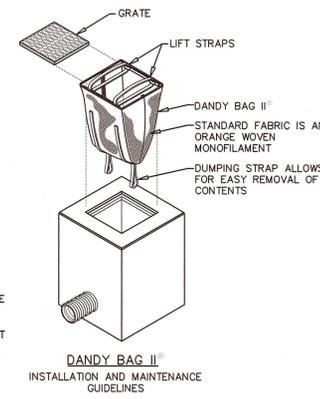
Prepared For:

**NANTUCKET & TOMAHAWK, LLC**

#1, #3, #5 and #7 FLINT ROAD #28, #30, #32 and #34 TOMAHAWK ROAD MAP 69 PARCELS 340 THROUGH 347

No.	Date	Revision Description	By
-	-	-	-
-	-	-	-
-	-	-	-

Date: APRIL 8, 2016 Drawn: RMM/BEI Checked: DFB/AMG Sheet: 1 of 4



**INSTALLATION:**

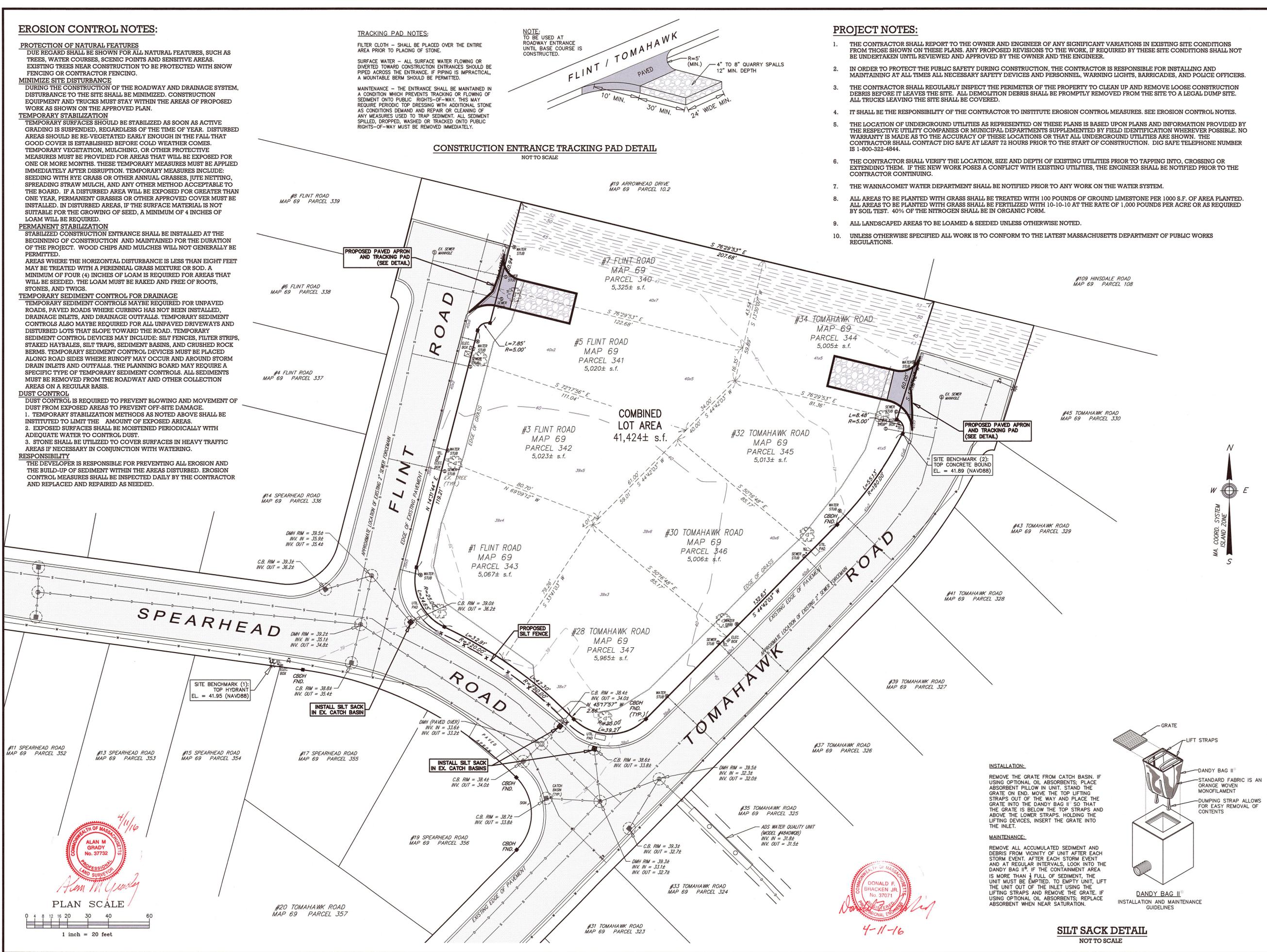
REMOVE THE GRATE FROM CATCH BASIN, IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND THE GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO THE DANDY BAG II SO THAT THE GRATE IS BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING DEVICES, INSERT THE GRATE INTO THE INLET.

**MAINTENANCE:**

REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF UNIT AFTER EACH STORM EVENT. AFTER EACH STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE DANDY BAG II. IF THE CONTAINMENT AREA IS MORE THAN 1/4 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED. TO EMPTY UNIT, LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE. IF USING OPTIONAL OIL ABSORBENTS; REPLACE ABSORBENT WHEN NEAR SATURATION.

**SILT SACK DETAIL**

NOT TO SCALE



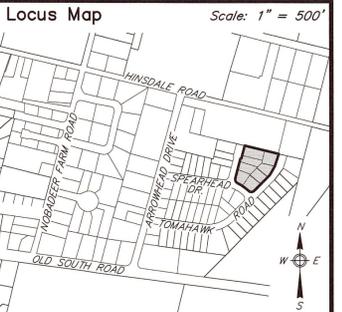
PROFESSIONAL SEAL OF DONALD F. BRACKEN JR. No. 37071

PROFESSIONAL SEAL OF ALAN M. GRADY No. 37732

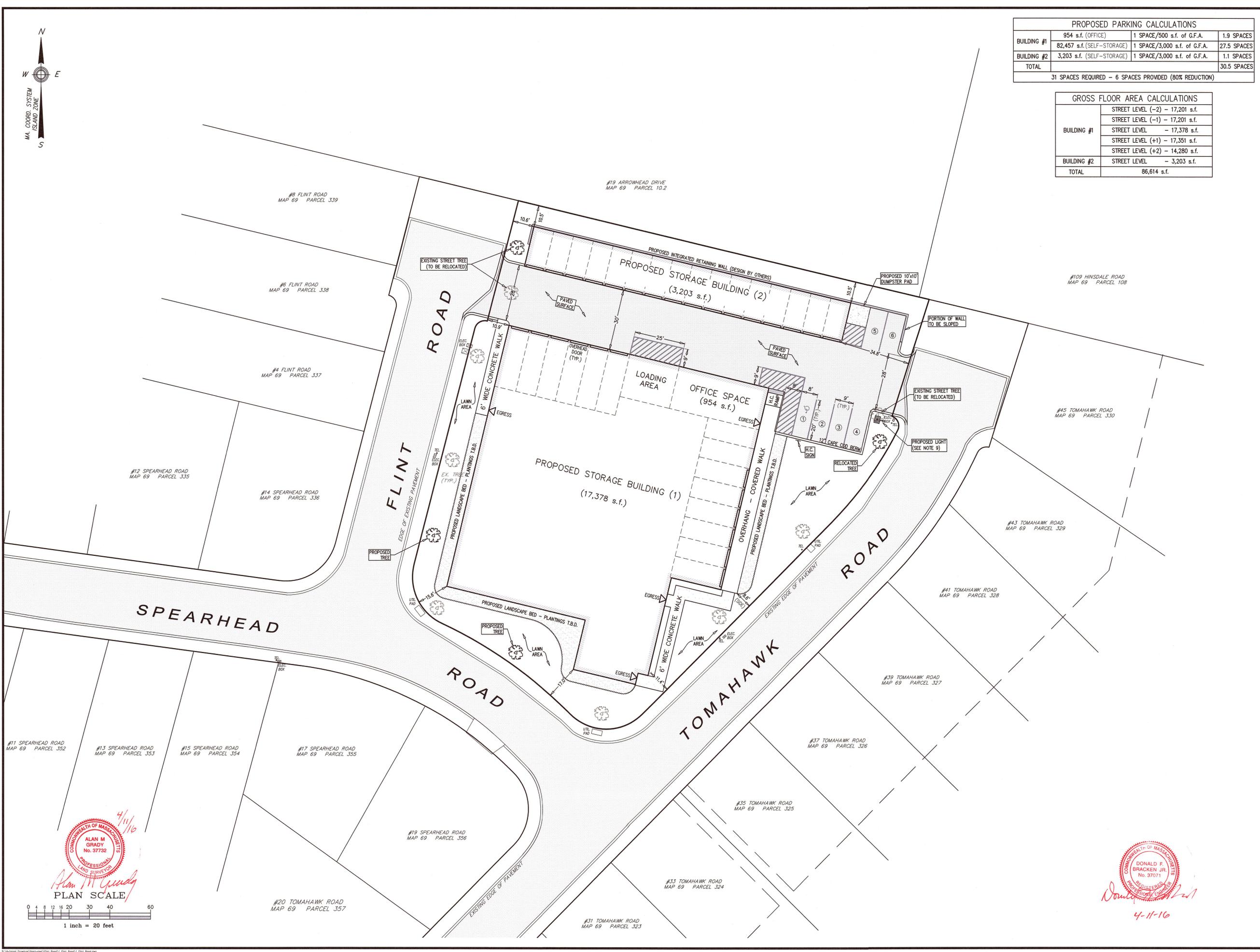


PROPOSED PARKING CALCULATIONS			
BUILDING #1	954 s.f. (OFFICE)	1 SPACE/500 s.f. of G.F.A.	1.9 SPACES
	82,457 s.f. (SELF-STORAGE)	1 SPACE/3,000 s.f. of G.F.A.	27.5 SPACES
BUILDING #2	3,203 s.f. (SELF-STORAGE)	1 SPACE/3,000 s.f. of G.F.A.	1.1 SPACES
TOTAL			30.5 SPACES
31 SPACES REQUIRED - 6 SPACES PROVIDED (80% REDUCTION)			

GROSS FLOOR AREA CALCULATIONS	
	STREET LEVEL (-2) - 17,201 s.f.
	STREET LEVEL (-1) - 17,201 s.f.
	STREET LEVEL - 17,378 s.f.
	STREET LEVEL (+1) - 17,351 s.f.
	STREET LEVEL (+2) - 14,280 s.f.
BUILDING #1	
BUILDING #2	STREET LEVEL - 3,203 s.f.
TOTAL	86,614 s.f.



- Notes**
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  - ZONING FREEZE: DOC #133482 (RC-2 ZONE)
  - LOCUS DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP No. 25019C-0093-G dated 06/09/2014.
  - LOCUS DOES NOT FALL WITHIN THE NATURAL HERITAGE and ENDANGERED SPECIES PROGRAM (NHESP) AREAS OF ESTIMATED HABITATS OF RARE WILDLIFE and PRIORITY HABITATS OF RARE SPECIES.



ZONE: C(RC-2*)	REQUIRED*	PROPOSED
LOT AREA:	5,000 s.f.	41,424± s.f.
FRONTAGE:	40'	>40'
FRONT YARD:	10'	10.6'
SIDE/REAR YARD:	5'	8.6'
GROUND COVER:	50% (MAX)	49.9%
OPEN AREA:	30% (MIN.)	27.8%

\* SEE ZONING FREEZE (RC-2 ZONE IN DOC #133482)

Prepared By:

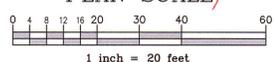
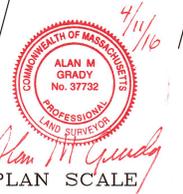
**BRACKEN ENGINEERING, INC.**

49 HERRING POND ROAD BUZZARDS BAY, MA 02532  
 (tel) 508.833.0070 (fax) 508.833.2282

19 OLD SOUTH ROAD NANTUCKET, MA 02554  
 (tel) 508.326.0044 www.brackenneng.com

**PROPOSED LAYOUT and LANDSCAPING PLAN IN NANTUCKET, MASSACHUSETTS**

Prepared For:  
**NANTUCKET & TOMAHAWK, LLC**  
 #1, #3, #5 and #7 FLINT ROAD #28, #30, #32 and #34 TOMAHAWK ROAD MAP 69 PARCELS 340 THROUGH 347

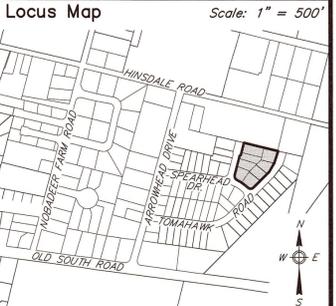


No.	Date	Revision	Description	By
-	-	-	-	-

Date: APRIL 8, 2016 Drawn: RMM/BEI Checked: DFB/AMG Sheet: 2 of 4



DRAINAGE SCHEDULE	
NOTES:	
1. ALL DRAINAGE PIPES SHALL BE CONSTRUCTED OF ADS HDPE PIPE UNLESS OTHERWISE SPECIFIED	
2. ALL DRAINAGE PIPES SHALL BE 10 INCHES IN DIAMETER AND SET WITH A MINIMUM SLOPE OF S=0.01 FT/FT UNLESS OTHERWISE NOTED HEREON.	
DMH 1	CB 1 (w/ 4' SUMP)
RIM.....	40.7
INV A (OUT:WQ 1).....	36.8
INV B (IN:CB 1).....	36.9
INV C (IN:CB 2).....	36.9
DMH 2	CB 2 (w/ 4' SUMP)
RIM.....	41.0
INV A (OUT:SWMA 1).....	36.3
INV B (IN:ROOF).....	36.4
WQ 1	CB 3 (w/ 4' SUMP)
RIM.....	41.0
INV A (OUT:SWMA 1).....	35.7
INV B (IN:DMH 1).....	36.0
INV C (IN:CB 3).....	36.0



- Notes**
- LOCUS: #1, #3, #5 & #7 FLINT ROAD #28, #30, #32 & #34 TOMAHAWK ROAD MAP 69 PARCELS 340 thru 347
  - OWNER: KENNETH C. COFFIN, INC. P.O. BOX 90 SIASCONSET, MA 02564
  - APPLICANT: NANTUCKET & TOMAHAWK, LLC 786 E. REDFORD ROAD PROVO, UT 84604
  - DEED REF: CERT #11346
  - PLAN REF: LCC #26984-8 (LOTS 192 thru 199)
  - ZONING FREEZE: DOC #133482 (RC-2 ZONE)
  - LOCUS DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP No. 25019C-0093-G dated 06/09/2014.
  - LOCUS DOES NOT FALL WITHIN THE NATURAL HERITAGE and ENDANGERED SPECIES PROGRAM (NHESP) AREAS OF ESTIMATED HABITATS OF RARE WILDLIFE and PRIORITY HABITATS OF RARE SPECIES.

**LEGEND**

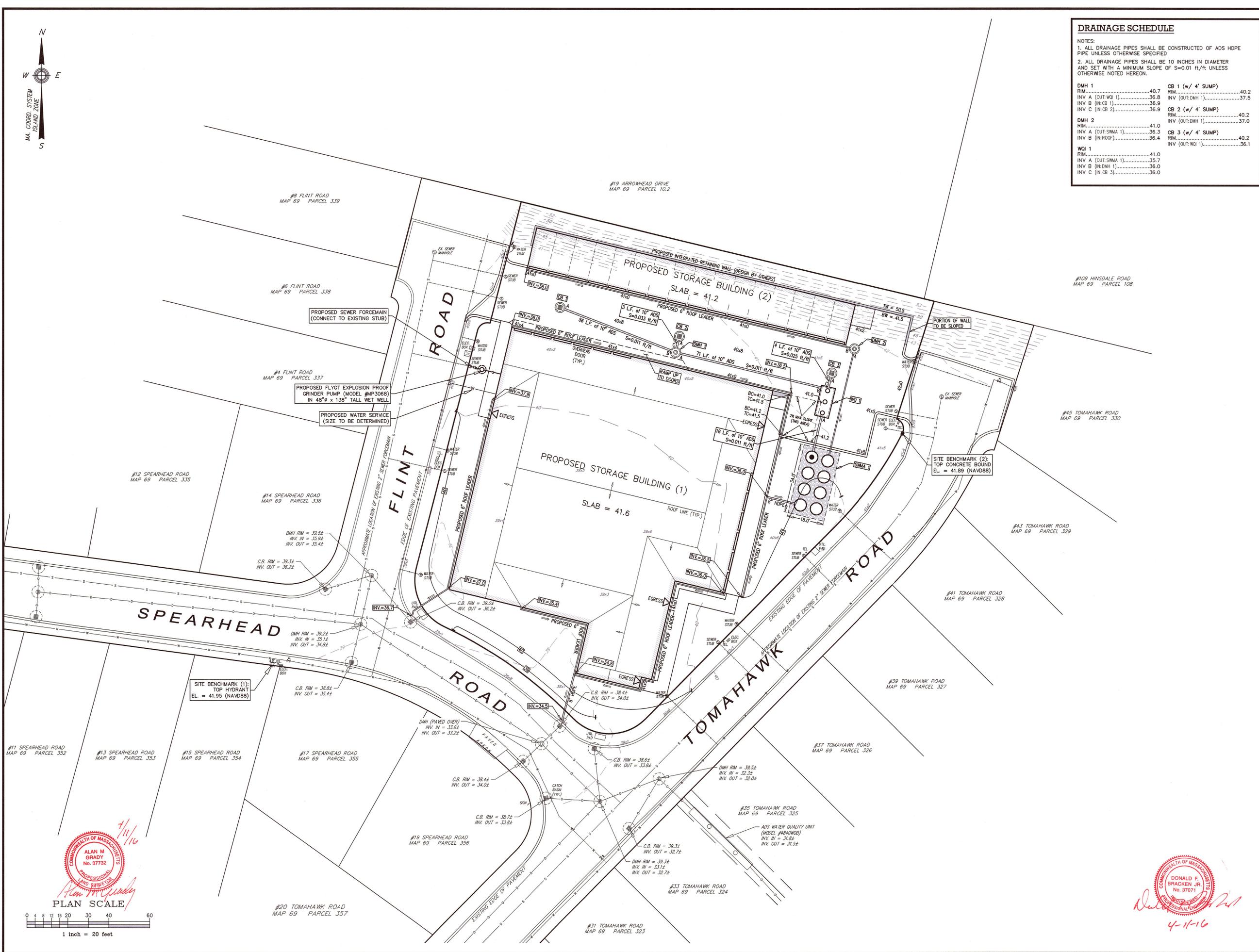
---100---	EXISTING CONTOUR
100x0	EXISTING SPOT SHOT
—W—	EXISTING WATER LINE
—S—	EXISTING SEWER LINE
—D—	EXISTING DRAINAGE LINE
⊙	EXISTING DRAIN MANHOLE
⊕	EXISTING CATCH BASIN
⊙	EXISTING WATER SERVICE
⊙	EXISTING SEWER SERVICE
⊕	EXISTING ELECTRIC BOXES
—	PROPOSED DRAIN LINE
—	PROPOSED ROOF LEADER
⊙	PROPOSED CATCH BASIN
⊙	PROPOSED DRAIN MANHOLE
—S—	PROPOSED SEWER SERVICE
—FM—	PROPOSED SEWER FORCEMAIN
—W—	PROPOSED WATER SERVICE
—90.0	PROPOSED CONTOUR
90.0	PROPOSED SPOT ELEVATION

Prepared By:  
**BRACKEN ENGINEERING, INC.**  
 49 HERRING POND ROAD BUZZARDS BAY, MA 02532  
 (tel) 508.833.0070 (fax) 508.833.2282  
 19 OLD SOUTH ROAD NANTUCKET, MA 02554  
 (tel) 508.325.0044 (www.brackeneng.com)

**GRADING, DRAINAGE & UTILITIES PLAN IN NANTUCKET, MASSACHUSETTS**  
 Prepared For:  
**NANTUCKET & TOMAHAWK, LLC**  
 #1, #3, #5 and #7 FLINT ROAD #28, #30, #32 and #34 TOMAHAWK ROAD MAP 69 PARCELS 340 THROUGH 347

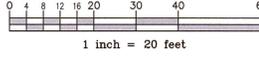
No.	Date	Revision Description	By

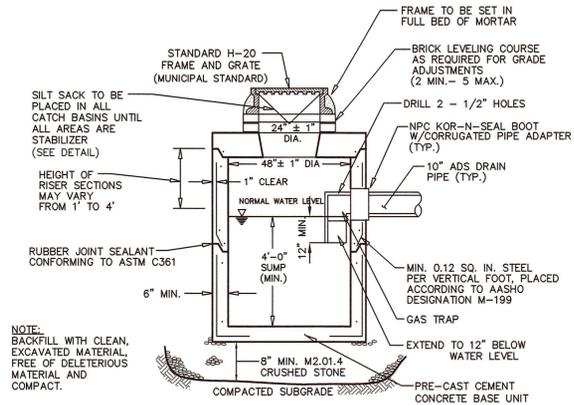
Date: APRIL 8, 2016 Drawn: RMM/BEI Checked: DFB/AMG Sheet: 3 of 4



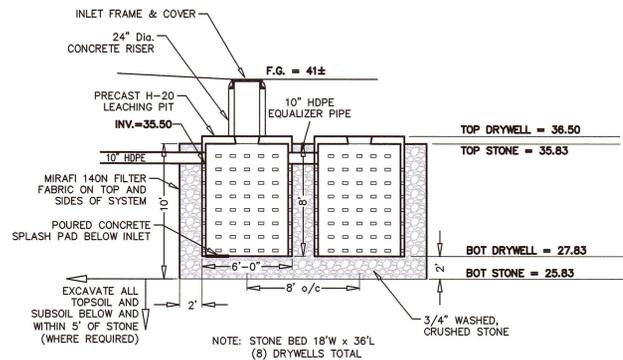
7/11/16  
 ALAN M. GRADY  
 No. 37732  
 PROFESSIONAL ENGINEER  
 AND SURVEYOR  
 Commonwealth of Massachusetts

4-11-16  
 DONALD F. BRACKEN JR.  
 No. 3707  
 PROFESSIONAL ENGINEER  
 Commonwealth of Massachusetts





**PRE-CAST SHALLOW CONCRETE CATCH BASIN**  
NOT TO SCALE



**STORMWATER MANAGEMENT AREA DETAIL**  
NOT TO SCALE

- NOTES:**
- FOUNDATION:** WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL AS DEFINED IN ASTM D2321, "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS," LATEST EDITION; AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.
  - BEDDING:** SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100-600mm) AND 42"-48" (1050-1200mm) CORRUGATED POLYETHYLENE PIPE (CPEP); 6" (150mm) FOR 30"-36" (750-900mm) CPEP.
  - HAUNCHING AND INITIAL BACKFILL:** SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
  - UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

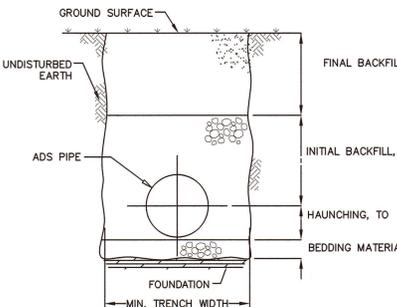
NOMINAL Ø	MIN. RECOMMENDED TRENCH WIDTH
4 (100)	21 (530)
6 (150)	23 (580)
8 (200)	25 (630)
10 (250)	28 (710)
12 (300)	31 (790)
15 (375)	34 (860)
18 (450)	39 (990)
24 (600)	48 (1220)
30 (750)	66 (1680)
36 (900)	78 (1980)
42 (1050)	83 (2110)
48 (1200)	89 (2260)
60 (1500)	102 (2590)

- MINIMUM COVER:** MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TAKEN FROM THE TOP OF PIPE TO THE GROUND SURFACE.

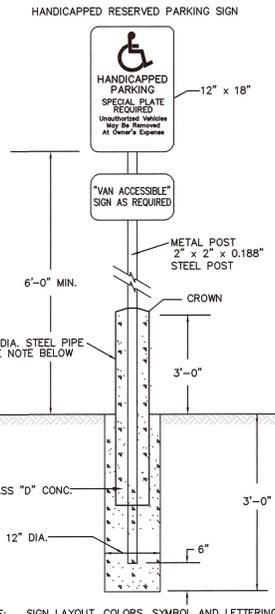
SURFACE LIVE LOADING CONDITION	MINIMUM RECOMMENDED COVER, in. (mm)
H25 (FLEXIBLE PAVEMENT)	12 (300)
H25 (RIGID PAVEMENT)	12 (300)
E80 RAILWAY HEAVY CONSTRUCTION	24 (610)
	48 (1220)

**A.D.S. PIPE INSTALLATION NOTES**  
NO SCALE

**NOTE:** BACKFILL WITH CLEAN, EXCAVATED MATERIAL, FREE OF DELETERIOUS MATERIAL AND COMPACT.

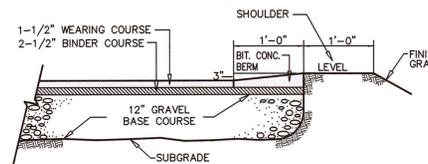


**TYPICAL TRENCH CROSS-SECTION**  
NOT TO SCALE

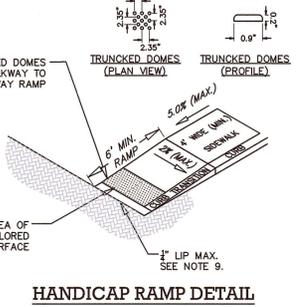


**HANDICAP PARKING DETAIL**  
NOT TO SCALE

**HANDICAP PARKING SIGN**  
NOT TO SCALE

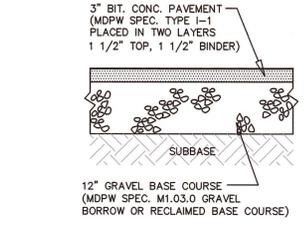


**CAPE COD BERM**  
NOT TO SCALE

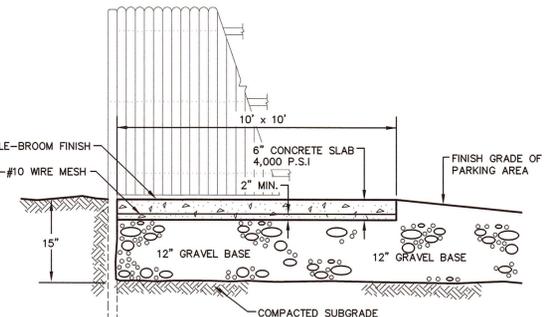


**HANDICAP RAMP DETAIL**  
NOT TO SCALE

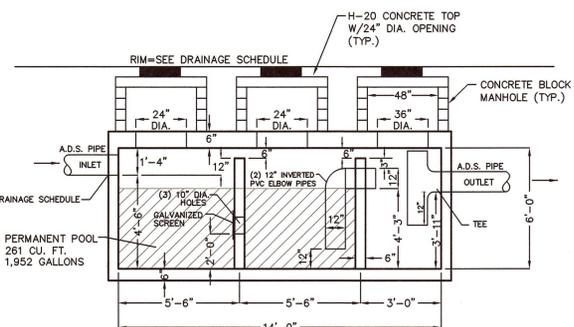
- NOTES:**
- THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5% (1.0% MIN.).
  - THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMP SHALL BE 5%.
  - THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMP SHALL BE 8.33%.
  - A MINIMUM DISTANCE OF 3' CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN THE ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
  - CURB TREATMENT VARIES. SEE PLANS FOR CURB TYPE.
  - RAMP, CURB, AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
  - TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
  - WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200'.
  - ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWING TO BE INSTALLED AND SET FLUSH.
  - DETECTABLE WARNINGS SHALL CONTRAST VISUALLY AND AUDIBLY WITH ADJOINING SURFACES.



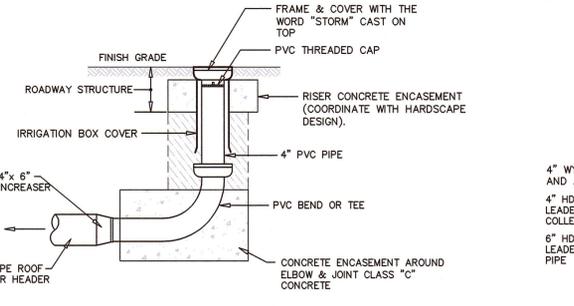
**PARKING AREA PAVEMENT SECTION**  
NOT TO SCALE



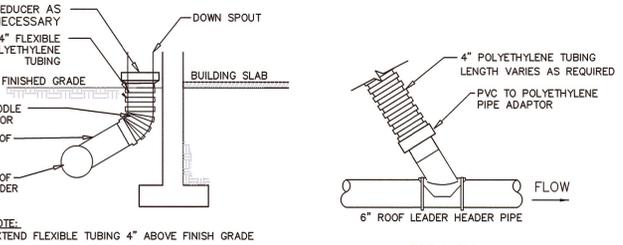
**CONCRETE PAD and FENCE FOR TRASH CONTAINER**  
NOT TO SCALE



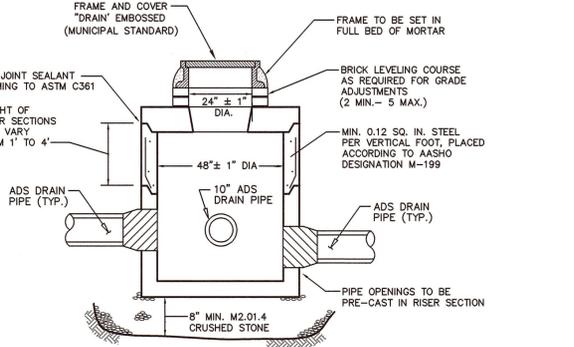
**3,500 GALLON SEPTIC TANK**  
**3 CHAMBER WATER QUALITY INLET**  
NOT TO SCALE



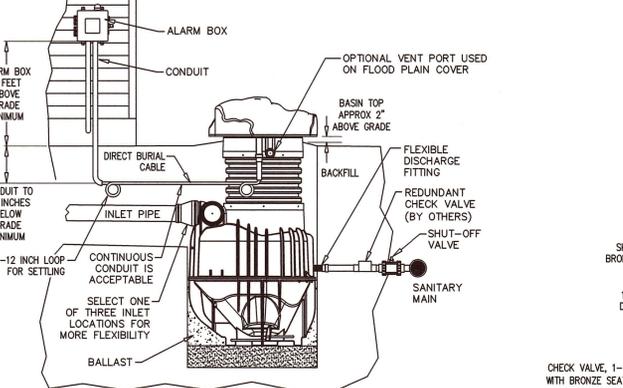
**CLEANOUT FOR ROOF DRAIN**  
NOT TO SCALE



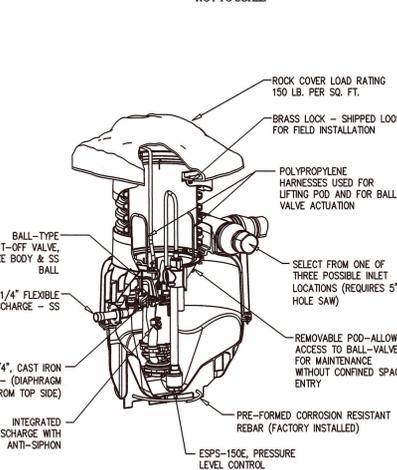
**BUILDING ROOF DRAIN CONNECTION DETAIL**  
NOT TO SCALE



**PRE-CAST CONCRETE DRAIN MANHOLE**  
NOT TO SCALE



**ELEVATION VIEW OF INSTALLATION/COMPONENTS**  
NOT TO SCALE



**SIMPLEX, EcoTRAN SYSTEM, OGP**  
NOT TO SCALE

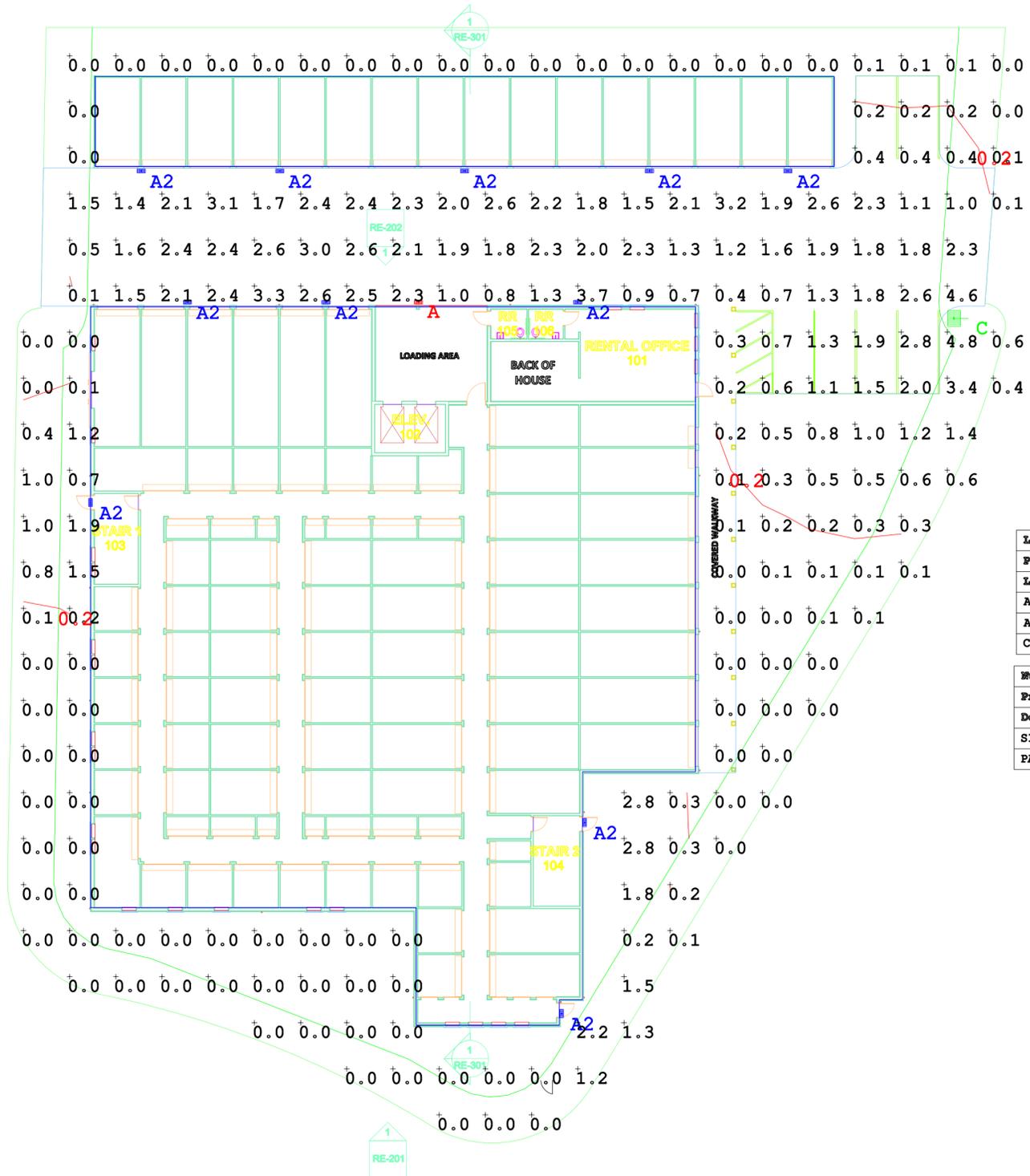
Prepared By:  
**BRACKEN ENGINEERING, INC.**  
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19 OLD SOUTH ROAD NANTUCKET, MA 02554  
(tel) 508.325.0044 (www.brackeneng.com)

**CONSTRUCTION DETAILS IN NANTUCKET, MASSACHUSETTS**  
Prepared For:  
**NANTUCKET & TOMAHAWK, LLC**  
#1, #3, #5 and #7 FLINT ROAD  
#28, #30, #32 and #34 TOMAHAWK ROAD  
MAP 69 PARCELS 340 THROUGH 347

No.	Date	Revision	Description	By
1	APRIL 8, 2016			RMM/BEI

Checked: DFB/AMG  
Sheet: 4 of 4

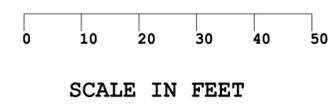
Project:  
**TURNKEY SELF  
STORAGE  
PROJECT**



Luminaire Schedule					
Project: Project_1					
Label	Symbol	Qty	Description	Lum. Lumens	LLF
A	[Symbol]	1	22WT LED VISOR WALLPACK - VISOR22U1 @ 15' AFG	1686	0.900
A2	[Symbol]	11	19WT LED VISOR WALLPACK - VISOR22U1 @ 8' AFG	1355	0.900
C	[Symbol]	1	250WT PS METAL HALIDE - FULL CUTOFF-FRWD/THRW W/BLS - FFM825-M @ 25' POLE HGT	8578	0.700

Numeric Summary						
Project: Project_1						
Description	Units	Avg	Max	Min	Avg/Min	Max/Min
SITE @ GRADE	Fc	0.83	4.8	0.0	N.A.	N.A.
PARKING LOT @ GRADE	Fc	1.86	3.7	0.2	9.30	18.50

PHOTOMETRIC LIGHTING PLAN



NOTES:  
THIS LIGHTING DESIGN IS BASED ON INFORMATION PROVIDED BY OTHERS. ACTUAL RESULTS MAY DIFFER FROM DESIGN, DUE TO INACCURATE, ADDITIONAL OR MISSING CRITICAL SITE INFORMATION THAT IS PERTINATE TO THIS DESIGN. SIMKAR CORPORATION OR CEW LIGHTING IS NOT RESPONSIBLE FOR DIFFERENCES IN DESIGN VERSUS ACTUAL PERFORMANCE BASED ON THIS SITE INFORMATION.  
ILLUMINANCE VALUES SHOWN ARE CALCULATED FROM THE LUMINAIRE LABORTORY TEST DATA LISTED. LABORATORY TEST ARE MADE UNDER OPTIMUM CONDITIONS, WITH LAMP OUTPUT AT RATED VALUE AND IN ACCORDANCE WITH ILLUMINATING ENGINEERING STANDARDS.

Scale:  
AS SHOWN

Date:  
4-6-16

Project#  
turnkey1.agi

Drawn By:  
D.A.O.

Email:  
doneal@simkar.com

Sheet Size:  
C

# STORMWATER REPORT

PREPARED FOR

**Nantucket & Tomahawk, LLC**

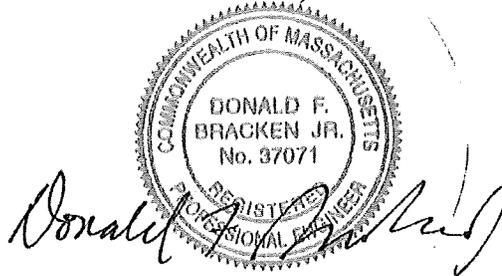
FOR

**#1, #3, #5, #7 Flint Road  
#28, #30, #32, #34 Tomahawk Road  
Nantucket, MA**

**Map 69 Parcels 340 through 347**

PREPARED BY

**BRACKEN ENGINEERING, INC.  
19 OLD SOUTH ROAD  
NANTUCKET, MA 02554**



**Donald F. Bracken, Jr., P.E.  
April 8, 2016**

## **OBJECTIVE**

To design a stormwater management system for a new self-storage facility including parking and driveway areas will be paved.

## **EXISTING CONDITIONS**

The site is currently vacant and cleared and located in a commercial subdivision. The site has frontage and access from Flint Road and Tomahawk Road which are paved roads.

USGS soil mapping for this site indicate Evesboro sand which drains very well and has a low runoff potential.

A preliminary Geotechnical Report included test borings on site and in the area of drainage disposal system. Soil descriptions include fine to medium sands and gravels. The site has been filled with these materials but is suitable for a subsurface drainage system.

## **PROPOSED CONDITIONS**

Runoff from the parking areas will be collected via deep sump catch basins and diverted through a water quality tank and into a subsurface infiltration system. A portion of the building's roof runoff will be collected via a gutter system and piped directly into the infiltration system.

The remaining roof runoff will be collected via a gutter system and connected to the subdivision's drainage system. Additional site runoff will also be directed into catch basins in the subdivision's drainage system. This runoff has been designed to not exceed the allowable runoff of 50% of a developed commercial site within the subdivision.

## **HYDROLOGIC MODELING**

To estimate what runoff would be generated under proposed watershed conditions and to determine the capacity of the infiltration system, a mathematical model of the watersheds was prepared. The model utilized the standard engineering practices based on the National Engineering Handbook, Section 4, Hydrology (NEH-4), and the Soil Conservation Services (SCS)

Technical Release 20 (TR-20), Urban Hydrology for Small Watersheds. The system was analyzed using the rainfall data for the twenty-five (25) year, 24 hour duration storm frequencies as required in the "Rules and Regulations Governing the Subdivision of Land" for Nantucket. The precipitation was based on the Natural Resources Conservation Service Maps, revised in 1986.

The "TR-20" program calculates the runoff based on the rainfall and watershed characteristics, and produces a runoff hydrograph, (a runoff rate versus time curve). The stage-storage-discharge curves for a specific infiltration area are used to compute an outflow hydrograph by hydraulically routing an inflow hydrograph through the infiltration area. This procedure calculates the relationship of the inflow hydrograph with the characteristics of the infiltration area to determine the outflow, stage, and storage capacity of the infiltration area for a given time during the specified storm event.

To assist in the analysis, the Stormwater Modeling System utilized was Hydrocad®. This program is largely based on hydrologic techniques developed by the Natural Resource Conservation Service, combined with other hydrologic and hydraulic calculations.

## **CONCLUSION**

The drainage system has been designed to adequately handle the 25 year storm event in accordance with the Town's standards. The runoff from the site that will be discharged directly into the street drainage system will not exceed the allowable of 50% of the developed lot area and will actually result in a substantial reduction in allowable flow.

The following is a comparison of allowed and proposed runoff:

Allowable peak flow: 2.40 cubic feet per second (cfs)

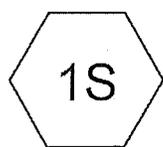
Proposed peak flow: 1.33 cfs

Reduction: 46%

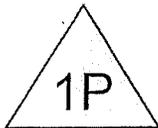
Allowable volume: 7,667 cubic feet (cf)

Proposed Volume: 4,181 cf

Reduction: 45%



1 Flint Rd



SWMA 1



Proposed Flow Offsite



Allowable Flow Offsite  
(50% of Developed Lot Area)



Routing Diagram for 1 Flint Road - PostDev  
Prepared by Bracken Engineering, Inc., Printed 4/11/2016  
HydroCAD® 10.00 s/n 03102 © 2013 HydroCAD Software Solutions LLC

**1 Flint Road - PostDev**

Prepared by Bracken Engineering, Inc.  
HydroCAD® 10.00 s/n 03102 © 2013 HydroCAD Software Solutions LLC

1 Flint Road  
Type III 24-hr C - 25 YR Rainfall=5.70"

Printed 4/11/2016

Page 2

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: 1 Flint Rd** Runoff Area=19,587 sf 100.00% Impervious Runoff Depth=5.46"  
Tc=5.0 min CN=98 Runoff=2.53 cfs 0.205 af

**Subcatchment 2S: Proposed Flow Offsite** Runoff Area=21,829 sf 47.10% Impervious Runoff Depth=2.31"  
Tc=5.0 min CN=67 Runoff=1.33 cfs 0.096 af

**Subcatchment 3S: Allowable Flow Offsite** Runoff Area=20,712 sf 85.00% Impervious Runoff Depth=4.45"  
Tc=5.0 min CN=89 Runoff=2.40 cfs 0.176 af

**Pond 1P: SWMA 1** Peak Elev=35.37' Storage=3,241 cf Inflow=2.53 cfs 0.205 af  
Outflow=0.31 cfs 0.205 af

**Total Runoff Area = 1.426 ac Runoff Volume = 0.477 af Average Runoff Depth = 4.01"**  
**23.59% Pervious = 0.336 ac 76.41% Impervious = 1.090 ac**

**1 Flint Road - PostDev**

Prepared by Bracken Engineering, Inc.

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1 Flint Road  
Type III 24-hr C - 25 YR Rainfall=5.70"

Printed 4/11/2016

Page 3

**Summary for Subcatchment 1S: 1 Flint Rd**

Runoff = 2.53 cfs @ 12.07 hrs, Volume= 0.205 af, Depth= 5.46"

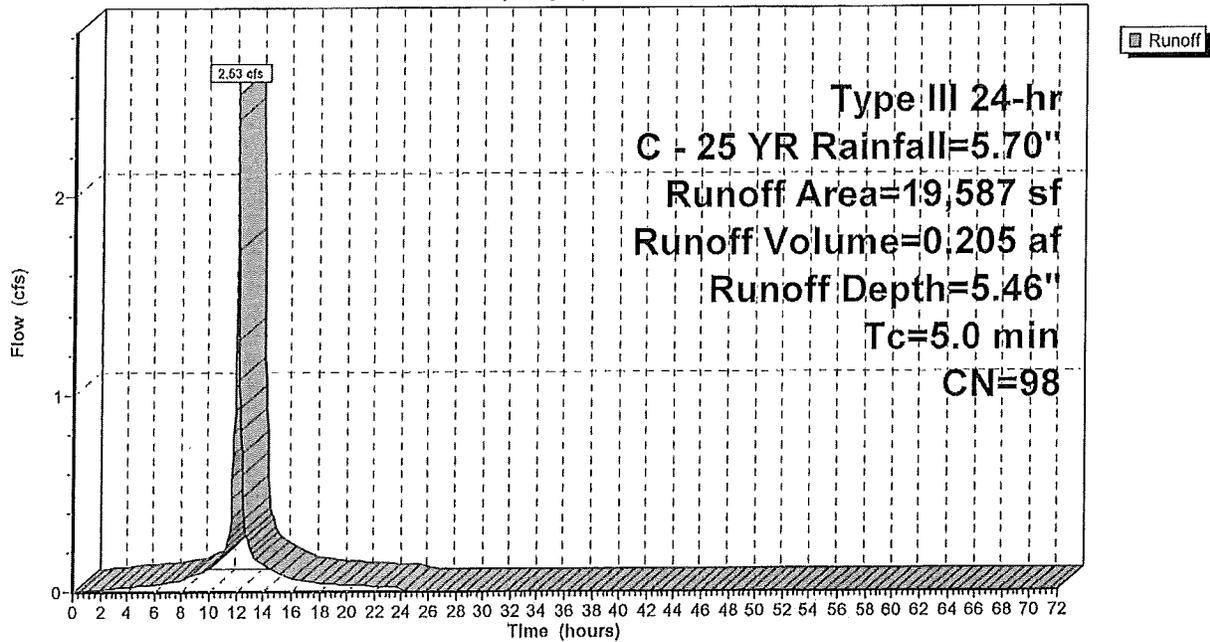
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Type III 24-hr C - 25 YR Rainfall=5.70"

Area (sf)	CN	Description
7,313	98	Paved roads w/curbs & sewers, HSG A
12,274	98	Roofs, HSG A
19,587	98	Weighted Average
19,587		100.00% Impervious Area

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

**Subcatchment 1S: 1 Flint Rd**

Hydrograph



**1 Flint Road - PostDev**

Prepared by Bracken Engineering, Inc.  
 HydroCAD® 10.00 s/n 03102 © 2013 HydroCAD Software Solutions LLC

1 Flint Road  
 Type III 24-hr C - 25 YR Rainfall=5.70"

Printed 4/11/2016  
 Page 4

**Summary for Subcatchment 2S: Proposed Flow Offsite**

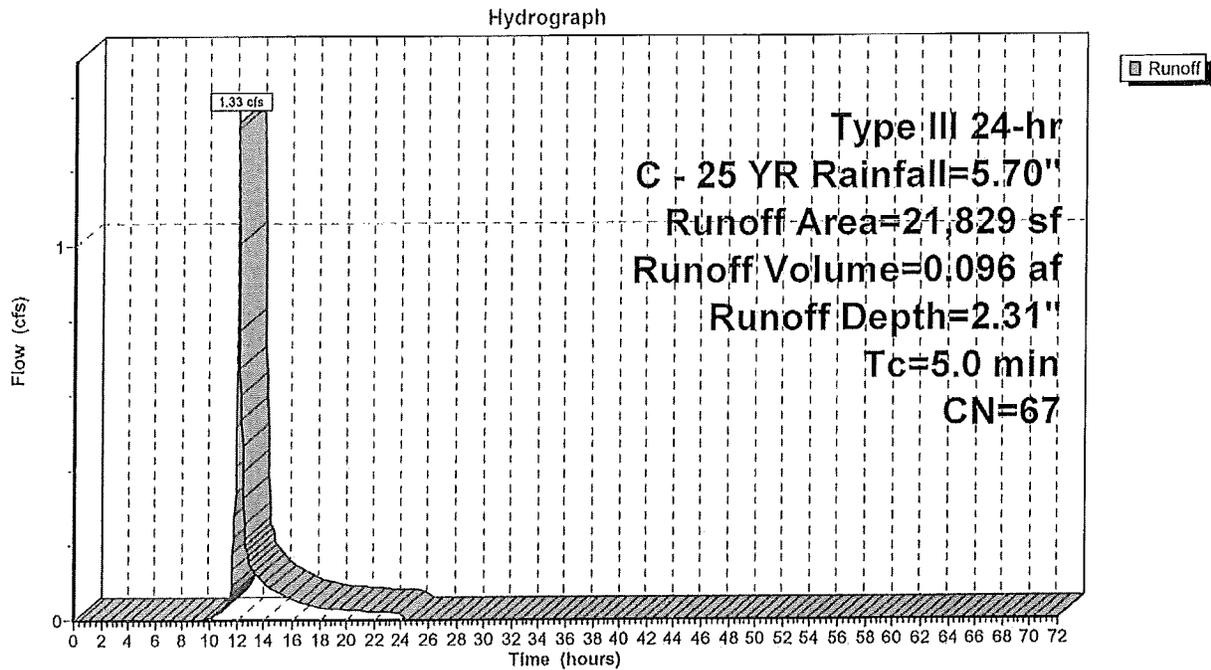
Runoff = 1.33 cfs @ 12.08 hrs, Volume= 0.096 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr C - 25 YR Rainfall=5.70"

Area (sf)	CN	Description
1,148	98	Paved parking, HSG A
11,548	39	>75% Grass cover, Good, HSG A
* 9,133	98	Roof
21,829	67	Weighted Average
11,548		52.90% Pervious Area
10,281		47.10% Impervious Area

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

**Subcatchment 2S: Proposed Flow Offsite**



**1 Flint Road - PostDev**

Prepared by Bracken Engineering, Inc.

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1 Flint Road  
Type III 24-hr C - 25 YR Rainfall=5.70"

Printed 4/11/2016

Page 5

**Summary for Subcatchment 3S: Allowable Flow Offsite (50% of Developed Lot Area)**

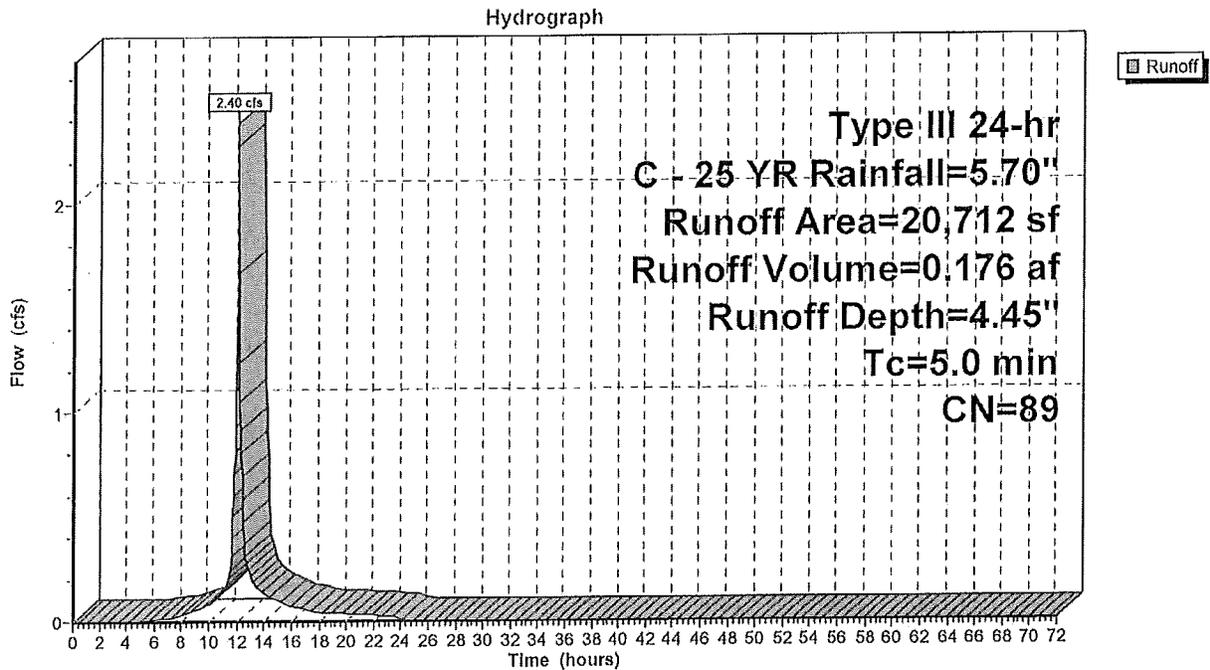
Runoff = 2.40 cfs @ 12.07 hrs, Volume= 0.176 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Type III 24-hr C - 25 YR Rainfall=5.70"

Area (sf)	CN	Description
20,712	89	Urban commercial, 85% imp, HSG A
3,107		15.00% Pervious Area
17,605		85.00% Impervious Area

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

**Subcatchment 3S: Allowable Flow Offsite (50% of Developed Lot Area)**



**1 Flint Road - PostDev**

Prepared by Bracken Engineering, Inc.

HydroCAD® 10.00 s/n 03102 © 2013 HydroCAD Software Solutions LLC

1 Flint Road  
Type III 24-hr C - 25 YR Rainfall=5.70"

Printed 4/11/2016

Page 6

**Summary for Pond 1P: SWMA 1**

Inflow Area = 0.450 ac, 100.00% Impervious, Inflow Depth = 5.46" for C - 25 YR event  
 Inflow = 2.53 cfs @ 12.07 hrs, Volume= 0.205 af  
 Outflow = 0.31 cfs @ 12.62 hrs, Volume= 0.205 af, Atten= 88%, Lag= 33.1 min  
 Discarded = 0.31 cfs @ 12.62 hrs, Volume= 0.205 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 35.37' @ 12.62 hrs Surf.Area= 612 sf Storage= 3,241 cf

Plug-Flow detention time= 91.2 min calculated for 0.205 af (100% of inflow)  
 Center-of-Mass det. time= 91.2 min ( 836.2 - 745.0 )

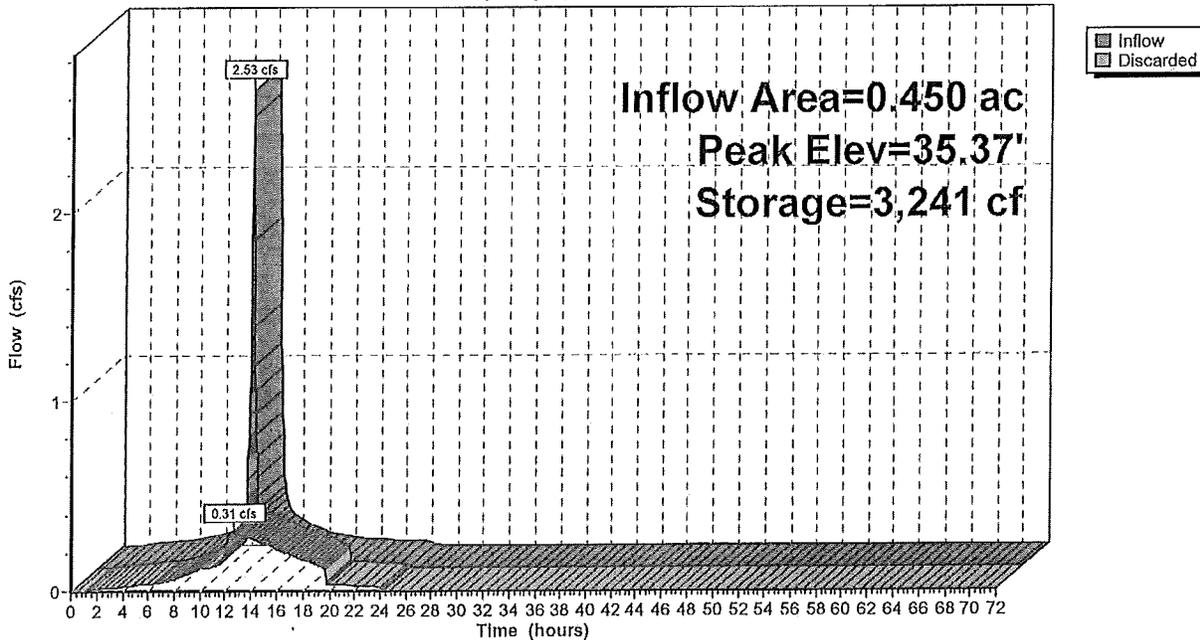
Volume	Invert	Avail.Storage	Storage Description
#1	25.83'	1,599 cf	18.00'W x 34.00'L x 10.00'H Prismatic 6,120 cf Overall - 2,124 cf Embedded = 3,996 cf x 40.0% Voids
#2	27.83'	1,810 cf	6.00'D x 8.00'H Vertical Cone/Cylinder x 8 Inside #1 2,124 cf Overall - 3.0" Wall Thickness = 1,810 cf
		3,408 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.83'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.31 cfs @ 12.62 hrs HW=35.37' (Free Discharge)  
 ↑ 1=Exfiltration (Exfiltration Controls 0.31 cfs)

**Pond 1P: SWMA 1**

Hydrograph



## OPERATION & MAINTENANCE PLAN

### Stormwater Management Systems

#1, #3, #5, and #7 Flint Road

#28, #30, #32, and #34 Tomahawk Road

Nantucket, Massachusetts

Dated: April 8, 2016

The Stormwater Management System employs Best Management Practices (BMPs) as set forth in the revised Massachusetts Stormwater Standards and Massachusetts structural BMPs, including this Operation and Maintenance Plan, to reduce the types and concentrations of contaminants contained within stormwater runoff. Structural BMPs that are part of the system and include deep sump catch basins, water quality tanks, and underground recharge structures. The stormwater management systems are designed to remove a total minimum of 89% TSS prior to outfalls in accordance with the Massachusetts Stormwater Standards. The drainage system will function to both remove contaminants and recharge the groundwater.

This Operation and Maintenance Plan is intended to identify the party or parties responsible for operation and maintenance of the drainage systems and to set forth a schedule and tasks for inspections and maintenance.

#### **Responsibility for Operation and Maintenance:**

The applicant for this project is Nantucket & Tomahawk, LLC. The applicant, their designated representative, or future owners of the property shall be responsible for the continuous operation and maintenance of the systems or shall enter into an agreement with a qualified maintenance contractor to conduct the work.

The contractor shall have demonstrated capabilities in sediment removal, cleaning and maintenance of drainage structures, and shall have the equipment to physically remove the accumulated sediments and the ability to repair the structural components of the systems.

#### **Maintenance Schedule and Tasks:**

***Pavement Sweeping-*** Routine maintenance of the system shall consist of sweeping the parking lot pavement surface with a motorized sweeper a minimum of four times total per year, including two times during the spring following the last snow melt to remove sands and other debris, and four times during the late fall, or as necessary.

***Deep Sump Catch Basin -*** The proposed catch basin is to be a minimum of four feet in diameter and equipped with a four foot deep sump to trap sediments and any debris/trash. The pipe inlets shall be

hooded to prevent floating debris and oils from entering the subsurface drainage conveyance system. The actual removal of sediments, trash, and associated pollutants only occurs when the deep sumps are cleaned out; therefore, frequent maintenance is required. The more frequent the cleaning, the less likely sediments will be re-suspended and subsequently discharged. In addition, frequent cleaning also results in more volume available for future storms and enhances overall performance.

In areas of high sediment loading, deep sumps should be inspected and cleaned as necessary, particularly after every major storm event. The recommended inspection frequency is every three months, and cleaning two to three times per year. Disposal of accumulated sediment and trash is to be in accordance with applicable local, state, and federal guidelines and regulations.

***Water Quality Tank-*** The water quality tank shall be inspected after every major storm, but at least every month and cleaned if necessary. Tank should be cleaned twice a year and access is available via the frame and covers to grade. Remove accumulated sediment and debris from the chambers and dispose at an approved off-site location. Maintenance of the upstream drainage systems BMPs, the catch basins, will reduce the possibility of debris and sediment accumulating in the chambers.

***Subsurface Infiltration Systems-*** The subsurface infiltration system shall be inspected twice a year to ensure that the chambers are clean of debris and sediment. Access is available via the frame and covers to grade. Remove accumulated sediment and debris from the chambers and dispose at an approved off-site location. Maintenance of the upstream drainage systems BMPs, the catch basins and water quality tank, will reduce the possibility of debris and sediment accumulating in the chambers.

**Operation & Maintenance Plan acknowledged/accepted**

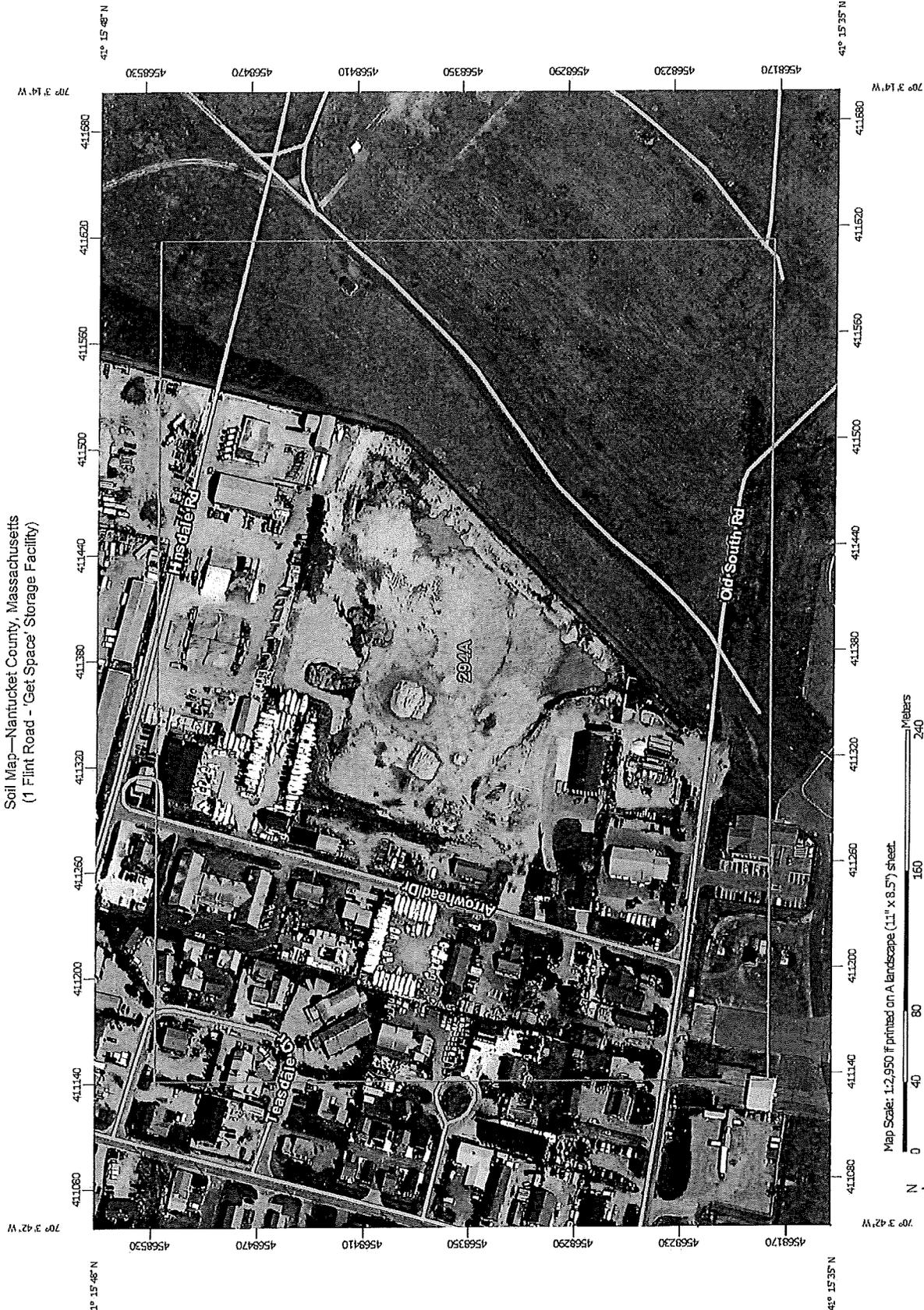
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Applicant: Nantucket & Tomahawk, LLC

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Date

Soil Map—Nantucket County, Massachusetts  
 (1 Flint Road - 'Get Space' Storage Facility)



Map Scale: 1:2,950 if printed on A landscape (11" x 8.5") sheet.



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



Web Soil Survey  
 National Cooperative Soil Survey

## MAP LEGEND

	Area of Interest (AOI)		Soil Area
	Soils		Stony Spot
	Soil Map Unit Polygons		Very Stony Spot
	Soil Map Unit Lines		Wet Spot
	Soil Map Unit Points		Other
	Special Point Features		Special Line Features
	Blowout		Water Features
	Borrow Pit		Streams and Canals
	Clay Spot		Transportation
	Closed Depression		Rails
	Gravel Pit		Interstate Highways
	Gravelly Spot		US Routes
	Landfill		Major Roads
	Lava Flow		Local Roads
	Marsh or swamp		Background
	Mine or Quarry		Aerial Photography
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Nantucket County, Massachusetts  
Survey Area Data: Version 12, Sep 19, 2014

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

Date(s) aerial images were photographed: Mar 30, 2011—Oct 8, 2011

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

### Map Unit Legend

Nantucket County, Massachusetts (MA019)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
294A	Evesboro sand, 0 to 3 percent slopes	41.1	100.0%
Totals for Area of Interest		41.1	100.0%













get\_space

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NANTUCKET & TOMANAWK, LLC

TURKEY STORAGE

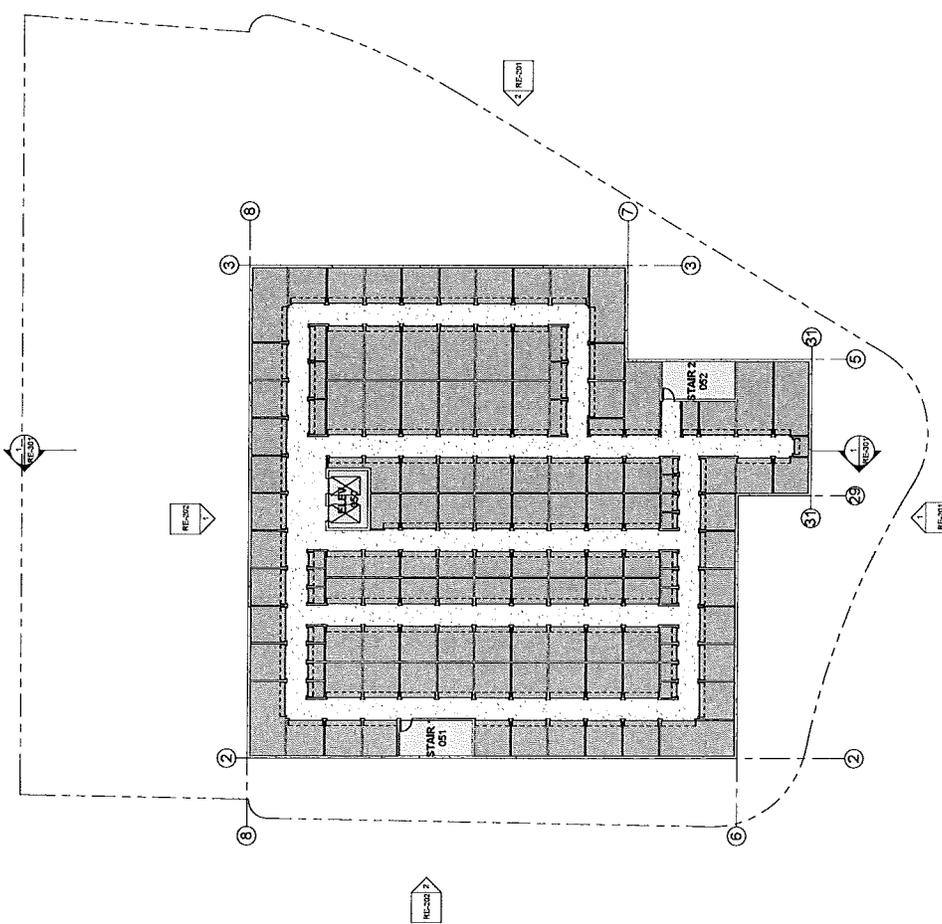
TOMANAWK ROAD, NANTUCKET, MA

No.	Description	Date

RE-120

STREET LEVEL - 3 PLAN

27" x 34" HARD 09  
1/4" = 1'-0"  
SCIENTIFIC DESIGN  
4/20/14 08:23 PM



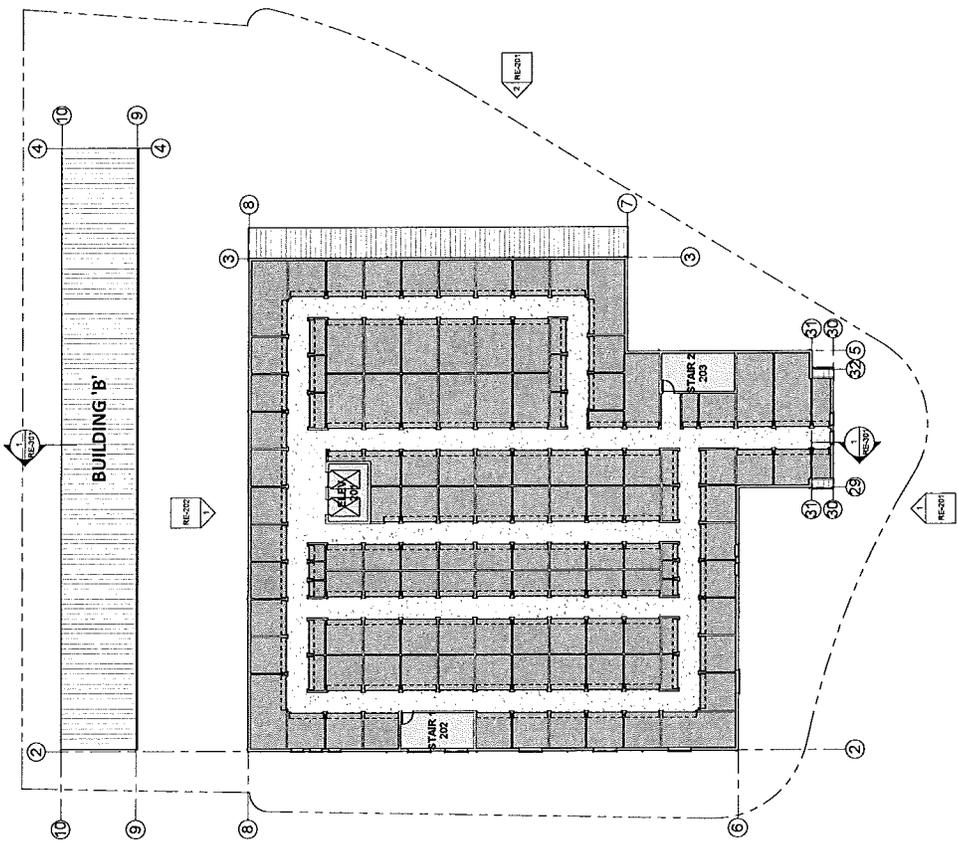
Below Grade 1



No.	Description	Date

RE-140

STREET LEVEL - 1 PLAN  
2" = 1/4" HOR H  
1/8" = 1'-0"  
SCHEMATIC DESIGN  
4/20/16 10:24 AM



Level 2  
above Grade

