CITY OF MARLBOROUGH MEETING POSTING

RECEIVED
CITY CLERK'S OFFICE
CITY OF MARLBOROUGH
2024 JAN 18 PM 3:22

Meeting: **Planning Board**
Date: January 22, 2024
Time: 7:00 PM
Location: Memorial Hall, 3rd Floor, City Hall, 140 Main Street, Marlborough, MA 01752

This meeting of the Planning Board will be held in Memorial Hall on Monday, January 22, 2024, at 7:00 PM.

PUBLIC ATTENDANCE IS PERMITED

Agenda Items to be Addressed:

Draft Meeting Minutes

A. January 8, 2024

2. **Chair's Business (None)**

3. **Approval Not Required (None)**

4. **Public Hearings (None)**

5. **Subdivision Progress Reports (None)**

6. **Preliminary/Open Space/Limited Development Subdivision**
   A. Open Space Definitive Subdivision Application, Stow Road, Map and Parcels 8-164, 8-163, and 20-150A
      Name of Applicant: Kendall Homes, Inc. (P.O. Box 766, Southborough, MA 01772)
      Name of Owner: McCabe Family Irrevocable Trust & Judith McCabe (6 Erie Drive, Hudson, MA 01749)
      Name of Surveyor: Connorstone Engineering, Inc. (10 Southwest Cutoff, Northborough, MA 01532)
      i. Flowchart
      ii. Extension Request
      iii. Plan Set Revised: December 20, 2023

7. **Definitive Subdivision (None)**

8. **Signs (None)**

9. **Correspondence (None)**

10. **Unfinished Business**
    A. Working Group
       i. Northeast Porous Paving Presentation
       ii. Northeast Porous Paving supporting documents

11. **Calendar Updates (None)**

12. **Public Notices of other Cities & Towns (None)**

THE LISTING OF TOPICS THAT THE CHAIR REASONABLY ANTICIPATES WILL BE DISCUSSED AT THE MEETING IS NOT INTENDED AS A GUARANTEE OF THE TOPICS THAT WILL HAVE BEEN DISCUSSED. NOT ALL TOPICS LISTED MAY IN FACT BE DISCUSSED, AND OTHER TOPICS NOT LISTED MAY ALSO BE BROUGHT UP FOR DISCUSSION TO THE EXTENT PERMITTED BY LAW.

1A

MINUTES
MARLBOROUGH PLANNING BOARD
MARLBOROUGH, MA 01752

Call to Order **January 8, 2024**

The Meeting of the Marlborough Planning Board was called to order at 7:00 pm in Memorial Hall, 3rd Floor City Hall, 140 Main Street, Marlborough, MA. Members present: Sean Fay, James Fortin, Patrick Hughes, Dillon LaForce, George LaVenture, and Chris Russ. Meeting support provided by City Engineer, Thomas DiPersio. Members Absent: Barbara Fenby.

Mr. Russ was voted Acting Clerk and opened the organizational meeting.

Mr. Russ opened the nominations for the Planning Board Clerk. Mr. Russ nominated Mr. George LaVenture, seconded by Mr. Fay. There were no additional nominations. On a motion by Mr. Russ, seconded by Mr. Fay the board voted to elect Mr. George LaVenture, as Clerk of the Marlborough Planning Board for the year 2024. Yea: Fay, Fortin, Hughes, LaForce, LaVenture, and Russ. Nay: 0. Motion carried. 6-0.

Mr. Russ opened the nominations for the Planning Board Chairperson. Mr. LaVenture nominated Mr. Sean Fay, seconded by Mr. Russ. There were no additional nominations. On a motion by Mr. LaVenture, seconded by Mr. Russ, the board voted to elect Mr. Sean Fay as Chairperson of the Marlborough Planning Board for the year 2024. Yea: Fay, Fortin, Hughes, LaForce, LaVenture, and Russ. Nay: 0. Motion carried. 6-0.

1. **Draft Meeting Minutes**
   A. December 18, 2023
      On a motion by Mr. LaVenture, seconded by Mr. Russ, the Board voted to accept and file the December 18, 2023, meeting minutes with minor corrections. Yea: Fay, Fortin, Hughes, LaForce, LaVenture, and Russ. Nay: 0. Motion carried. 6-0.

2. **Chair's Business**
   A. City Council's draft schedule
      The Board reviewed the draft schedule.
      On a motion by Mr. LaVenture, seconded by Mr. Russ, the Board voted to adopt the meeting schedule as drafted. Yea: Fay, Fortin, Hughes, LaForce, LaVenture, and Russ. Nay: 0. Motion carried. 6-0.

3. **Approval Not Required (None)**

4. **Public Hearings (None)**

5. **Subdivision Progress Reports (None)**

6. **Preliminary/Open Space/Limited Development Subdivision**
   A. Open Space Definitive Subdivision Application, Stow Road, Map and Parcels 8-164, 8-163, and 20-150A
      Name of Applicant: Kendall Homes, Inc. (P.O. Box 766, Southborough, MA 01772)
      Name of Owner: McCabe Family Irrevocable Trust & Judith McCabe
      (6 Erie Drive, Hudson, MA 01749)
      Name of Surveyor: Connorstone Engineering, Inc. (10 Southwest Cutoff, Northborough, MA 01532)
      i. Flowchart
      ii. Correspondence from Assistant City Solicitor, Jeremy McManus
      Mr. LaVenture read the January 4, 2023, correspondence into the record.

DRAFT

On a motion by Mr. Russ, seconded by Mr. LaVenture, the Board voted to accept and file the correspondence. Yea: Fay, Fortin, Hughes, LaForce, LaVenture, and Russ. Nay: 0. Motion carried. 6-0.

The Board discussed their ability to monitor the expiration date of the bond and Mr. Fay explained if/when developers request an extension, the Board will require proof that the bond is still in force and if a bond expires in theory the City is notified, but argued the Board is generally not notified.

Mr. Fay addressed concerns on the soil management for ANR lot 1 and ask if the developer is working with the Board of Health on this. Dan Burger (Connolly Burger, P.C.) said yes and explained the soil management for this lot is on the Board of Health's January 16, 2024, agenda. Mr. Fay asked Mr. Burger to update the Board after the Board of Health meeting and he agreed.

iii. Draft Certificate of Vote
iv. Draft Covenant

The Board reviewed the certificate of vote and covenant and discussed the following concerns:

- Which lot to retain under item 9 on the covenant;
- Add an additional waiver for the vegetated cul-de-sac on the plans, certificate of vote and covenant;
- Plan revision dates, November 10, 2023, and December 20, 2023*, need to be added to both the certificate of vote and the covenant;
- Add an additional condition (H) Planting Plan to the certificate of vote;

  * An additional revision date once cul-de-sac wavier is included on plans.

Mr. Burger reviewed language from Mr. McManus's letter and discussed other forms of surety, he explained instead of having the covenant and retaining one of the lots, his client would prefer to put up a cash bond which would allow buyers to have more flexibility. He then questioned if this should be tabled until the next meeting so everyone could discuss the option of not doing the covenant.

Mr. Fay explained the Board has always had a covenant even if the process was to go immediately to a cash security. Mr. DiPersio explained the requirement for retaining a lot is separate from the construction bonds that secures the construction of the roadway. Separate from the typical bond, the retaining of the lot was put in the rules and regulations to enforce the developers completion of acceptance process.

Mr. LaVenture explained there are two separate guarantees: one under section G, for the performance and construction completion; and one under section L, for street acceptance. Both allow for either bond, cash bond, some combination or covenant. He explained traditionally the Board has worked under the covenant for the performance guarantee.

Mr. Fay argued the Board asks the City Engineer to set the amount for the bond once the covenant is in place. The covenant first, then the bond and the lot release. Mr. Burger asked, even though the rules allow for just the cash bond, it's the Board's practice to not do just the cash bond? Mr. Fay said yes, and explained the Board wants the covenant in place before the bond is put into place.

The Board reviewed the subdivision rules and regulations and Mr. LaVenture read a portion of section L.1.(a) Cash deposit or bond. – "The subdivider shall either file a proper bond or a deposit of money or negotiable securities in an amount determined by the Planning Board to be equal to the value of one buildable lot in the subdivision."

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The Board concluded the bond under section G, is the Board's general guarantee and the bond under section L, is for street acceptance.

Mr. Burger asked if the Board would agree to proceed under subsection A and explained he would be open to suggestions on how to establish the value of the lot and reminded the Board that it would be a cash bond and asked how to proceed procedurally under subsection A.

Mr. Fay explained the next step would be to get the certificate of vote and covenant in final form, request another extension on the vote and to pick up the discussion on the bonding options at the January 22, 2024, meeting. Mr. Burger agreed to keep in touch and to update the Board after the Board of Health meeting.

The Board discussed getting the Legal Departments procedural guidance on appraising the lot(s) value. Which would be used for the bond estimate. Mr. Fay argued the Board needs to be very specific on what the Board is asking and suggested the following:

- If the Board/City accepted cash instead of one of the lots being held as security, how does the Board value that lot under section L.1.(a).
- Ask the solicitor to review the changes provided by Mr. Burger addressing the following:
    - Add an additional waiver for the vegetated cul-de-sac on the plans, certificate of vote and covenant;
    - Add plan revision dates, November 10, 2023, and December 20, 2023, to the certificate of vote and the covenant *additional date may be required once cul-de-sac waiver has been incorporated;
    - Add an additional condition (H) Planting Plan to the certificate of vote.

Mr. Burger and Mr. DiPersio agreed to work on the cul-de-sac waiver language prior to the referral to the Legal Department.

Mr. Fay explained the goal would be to submit everything in final form to the City Solicitor at the next meeting and to have a final vote at the February 12, 2024, meeting.

The Board discussed and reviewed the procedures under the street acceptance and the construction guarantee. Mr. Burger explained his concern is, if they sign the covenant, they would lock themselves into complying with section L.1.(b) which requires a lot be held. Mr. Fay explained once the covenant is in place, and the Board agrees on the amount for the bond and the bond is posted, then the lot is released from the covenant.

Mr. DiPersio explained if they choose to go with a cash bond for the street acceptance surety, the language under section 9 in the covenant can be revised in accordance with that. Instead of referencing said lot number, it would reference the cash bond. Mr. Fay suggest language "released from the requirements of Section L upon deposits of the cash bond".

On a motion by Mr. LaVenture, second by Mr. Russ, the Board voted to refer 547 Stow Road to the Legal Department for review addressing the following questions/revisions:

- If the Board/City accepted cash instead of one of the lots being held as security, how does the Board value that lot under section L.1.(a).
- Ask the solicitor to review the changes provided by Mr. Burger addressing the following:

- Add an additional waiver for the vegetated cul-de-sac on the plans, certificate of vote and covenant;
- Add plan revision dates, November 10, 2023, and December 20, 2023, to the certificate of vote and the covenant *additional date may be required once cul-de-sac waiver has been incorporated;
- Add an additional condition (H) Planting Plan to the certificate of vote;

Yea: Fay, Fortin, Hughes, LaForce, LaVenture, and Russ. Nay: 0. Motion carried. 6-0.

7. Definitive Subdivision (None)

8. Signs (None)

9. Correspondence (None)

10. Unfinished Business

A. Working Group

Mr. LaVenture update the Board and explained the Working Group met on January 3, 2024, with two partners from Northeast Porous Paving via Teams. He explained we are waiting for additional information and once everything is compiled it would be presented at a future meeting.

Mr. Fay explained he was brainstorming on how it would be nice to have three options for developers and went over some examples. Larger surface areas, where it would be 3X the cost of the usual material, that provides this amount of drainage with a scale. The most expensive would only be used on driveways. Having in place a few different technologies that the Board can ask for depending on the situation.

Mr. LaVenture explained once the Board sees the presentation, there will be a better understanding on how it has specific applications and that it is not best suited for roadway use. Mainly it will be used in part, not in whole, for parking areas, etc.

11. Calendar Updates (None)

12. Public Notices of other Cities & Towns (None)

On a motion by Mr. Hughes, seconded by Mr. LaForce, the Board voted to adjourn the meeting. Yea: Fay, Fortin, Hughes, LaForce, LaVenture, and Russ. Nay: 0. Motion carried. 6-0.

Respectfully submitted,

/kml

George LaVenture/Clerk

DRAFT

Marlborough Planning Board

Procedure for Definitive Plans
Stow Road, 8-164, 8-163, and 20-150A, Marlborough, MA 01752

[ ] Step 1 — Application filed at the
[X] Planning Board Office
[X] Board of Health Office
[X] City Clerk's Office

① Preliminary plan filed?
[X] Yes
[ ] No

Date: August 16, 2023

[ ] Step 2 — Application complete? — No → Return application to the applicant

Date: _____

Yes

[ ] Step 3 — Put on next Planning Board Agenda - date of meeting: August 21, 2023

[ ] Step 4 — Applicant presents plan to the Planning Board. Planning Board refers the plan to Engineering for review and sets date for public hearing - ① 90/135 day clock starts ending: November 19, 2023 ②

Date: August 21, 2023

Extension Granted through January 30, 2024

[ ] Step 5 — Public hearing advertised ③ date of public hearing: September 11, 2023

[ ] Step 6 — Public hearing held, Engineering comments to the Planning Boad, along with the Board of Health and any other Departments as requested ④

[ ] Step 7 — Revisions requested? — Yes → Applicant's Engineer provides revised plans to the Planning Board

Date: October 23, 2023

No

[ ] Step 8 — Public hearing closed, Planning Board takes action on any waiver requests and to approve, modify and approve, or deny the plan

Date: November 13, 2023

Board Action: _____

[ ] Step 9 — Planning Board notifieds the City Clerk and applicant of decision by certified mail

[ ] Step 10 — If plan approved, Planning Board receives sercurity from the applicant for the construction of ways and installation of municipal services and for the acceptance of the roadway as a public way

[ ] Step 11 — Planning Board endorses the plan following expiration of 20-day appeal period

①If preliminary plan was filed, clock = 90 days
If no prelminary plan was filed, clock = 135 days
Note: For non-residental subdivisons, Preliminary plan is required

② For Planning Board to take final action by approving, modifying and approving, or disapproving plan.

③ By publication in a newspaper of general circulation in the City once in each of two successive weeks, first publication being not less than 14 days before the day of the public hearing, and by mailing a copy of such advertisment to the applicant and to abuters who appear on the most recent tax list.

④ Planning Board may not take final action on definitive plan until after public hearing and after receving report of Board of Health (or lapse of 45 days after plan is filed without report from Board of Health).

CONNOLLY BURGER, P.C.
ATTORNEYS & COUNSELORS AT LAW
74 MAIN STREET
MARLBOROUGH, MASSACHUSETTS 01752

JOSEPH J. CONNOLLY
DANIEL J. BURGER

TELEPHONE (508) 485-4488
TELEFAX (508) 624-4110

January 18, 2024

Marlborough Planning Board
140 Main Street
Marlborough, MA 01752

Re: Request for Extension – Open Space Definitive Subdivision Application
Stow Road, Marlborough, MA

Dear Ms. LeBold:

On behalf of the Applicant, Kendall Homes, Inc., please accept this letter as a request for an extension through February 26, 2024, of the approval of the open space definitive subdivision application related to the subdivision off of Stow Road.

If you have any questions, please do not hesitate to contact me.

Sincerely,
CONNOLLY BURGER, P.C.

Daniel J. Burger, Esq.

[13953]

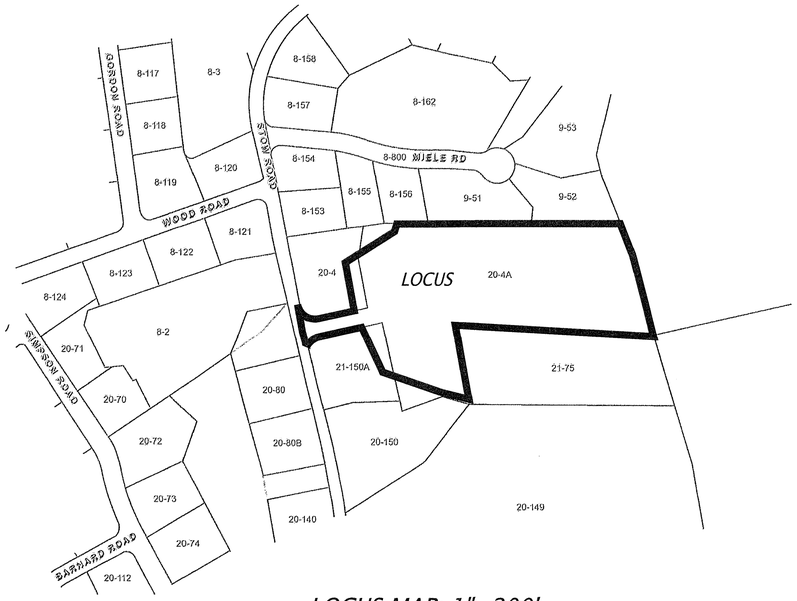
DEFINITIVE SUBDIVISION PLAN

OF

"STOW ROAD SUBDIVISION"

IN

MARLBOROUGH, MASSACHUSETTS



LOCUS MAP: 1"=200'

MA COORDINATE SYSTEM

PROJECT SUMMARY:

1. TOTAL AREA OF ORIGINAL TRACT SHOWN ON THIS PLAN EXCLUDING ANR LOTS = 277,772 S.F.
   - A. AREA IN SUBDIVISION LOTS S1–3, OPEN SPACE = 257,023 S.F.
   - B. AREA IN STREET = 20,749 S.F.
   - C. AREA IN EASEMENTS = 55,058 S.F.
   - D. AREA RESERVED FOR PARKS, SCHOOLS, ETC. = 0 S.F.

   TOTAL AREA OF SUBDIVISION =277,772 S.F.
2. STREETS:
   - A. ROAD STA. 0+00 TO STA. 2+89.55 = 289.55 L.F.
3. EASEMENTS:
   - MUNICIPAL SEWER EASEMENTS = 9,905 S.F.
   - MUNICIPAL DRAIN EASEMENTS = 2,560 S.F.
   - MUNICIPAL UTILITY EASEMENTS = 10,834 S.F.
   - MUNICIPAL FLOWAGE EASEMENTS = 26,625 S.F.
   - MUNICIPAL LANDSCAPE EASEMENTS = 3,375 S.F.
   - PRIVATE SEWER EASEMENTS = 1,759 S.F.

OPEN SPACE SUMMARY:

CLUSTER SUBDIVISION SITE AREA = 277,772 S.F. (6.38 ± Acres)
OPEN SPACE REQUIRED = 40% (111,109 S.F.)
OPEN SPACE PROVIDED = 45.7% (126,905 S.F.)
OPEN SPACE UPLAND = 109,517 S.F.
WETLANDS ON SITE = 30,346 S.F. (10.95% OF SITE AREA)
WETLANDS ALLOWED TOWARDS REQUIRED OPEN SPACE
(30,346 S.F. x 10.95% = 3,323 S.F.)
REQUIRED OPEN SPACE PROVIDED (109,517+3,323) = 112,840 S.F.

LIST OF REQUESTED WAIVERS:

1. SUBDIVISION RULES AND REGULATIONS SECTION A676–7 – ADEQUATE ACCESS – WAIVER TO ALLOW ACCESS OFF STOW ROAD HAVING A PAVED WIDTH LESS THAN 22 FEET.

2. SUBDIVISION RULES AND REGULATIONS SECTION A676–24.B(2)(b) – WIDTH OF ROADWAYS – WAIVER TO ALLOW A PAVED ROADWAY WIDTH OF 26 FEET (28 FEET REQUIRED).

APPROVAL UNDER THE SUBDIVISION CONTROL LAW, IS REQUIRED.

MARLBOROUGH PLANNING BOARD

_____

_____

_____

_____

_____

_____

_____

DATE: _____

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED IN CONFORMANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

12/20/23

VAROUJAN H. HAGOPIAN, P.L.S. 49665

COMMONWEALTH OF MASSACHUSETTS
VAROUJAN H. HAGOPIAN
No. 49665
PROFESSIONAL LAND SURVEYOR

THIS PLAN APPROVED SUBJECT TO COVENANT CONDITIONS SET FORTH IN A COVENANT EXECUTED BY _____ DATED _____ AND TO BE RECORDED HEREWITH.

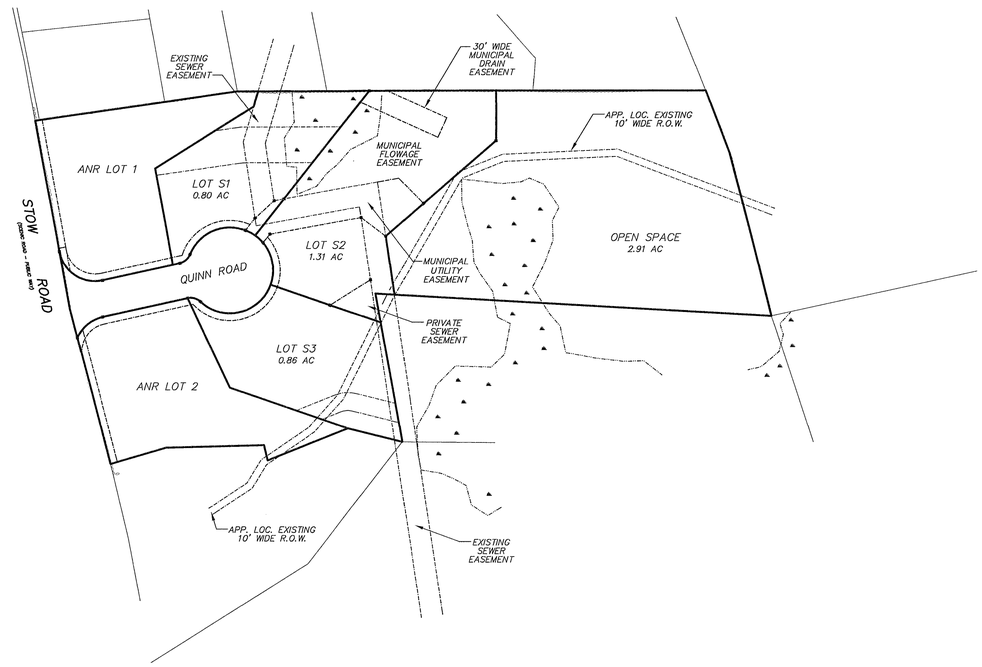
I, _____ CLERK OF THE CITY OF MARLBOROUGH RECEIVED AND RECORDED APPROVAL FROM THE PLANNING BOARD OF THIS PLAN ON _____ AND NO APPEAL WAS TAKEN FOR TWENTY (20) DAYS THEREAFTER.

REFERENCES:

TOWN ASSESSOR MAP 8, PARCELS 163, 164
TOWN ASSESSOR MAP 20, PARCELS 150A

DEED BOOK 66136, PAGE 582 – McCABE FAMILY IRR. TRUST
DEED BOOK 78814, PAGE 590 – JUDITH McCABE

PLAN NUMBER 765 OF 1966
PLAN NUMBER 1021 OF 1993
PLAN NUMBER 455 OF 1998
PLAN NUMBER 902 OF 1998
PLAN NUMBER 946 OF 2000
PLAN NUMBER 326 OF 2022
SOUTH MIDDLESEX REGISTRY OF DEEDS



INDEX MAP: 1"=100'

PLAN SUMMARY

DESCRIPTION	SHEET
LOCUS / INDEX PLAN	1
PLAN OF LAND	2
CONSTRUCTION DRAWINGS	1-8

GRAPHIC SCALE: 1"=100'

0 50 75 100 150 200 300 400 500 FEET

0 10 20 30 40 50 75 100 125 150 METERS

ZONED: RURAL RESIDENCE RR
AREA = 43,560 sf
FRONTAGE = 180 feet
SETBACKS: FRONT = 40 feet
SIDE = 25 feet
REAR = 50 feet

ZONED: RURAL RESIDENCE RR
OPEN SPACE DEVELOPMENT
AREA = 20,000 sf
FRONTAGE = 70 feet
LOT WIDTH AT FRONT SETBACK = 90'
SETBACKS: FRONT = 25 feet
SIDE = 15 feet
REAR = 25 feet

OWNERS:

McCABE FAMILY IRREVOCABLE TRUST
AND
JUDITH MELLO McCABE

APPLICANT:

KENDALL HOMES
P.O. BOX 766
SOUTHBOROUGH, MA 01772

CONNORSTONE ENGINEERING INC.
CIVIL ENGINEERS AND LAND SURVEYORS
10 SOUTHWEST CUTOFF, SUITE 7
NORTHBOROUGH, MASSACHUSETTS 01532
PHONE: 508-393-9727 FAX: 508-393-5242

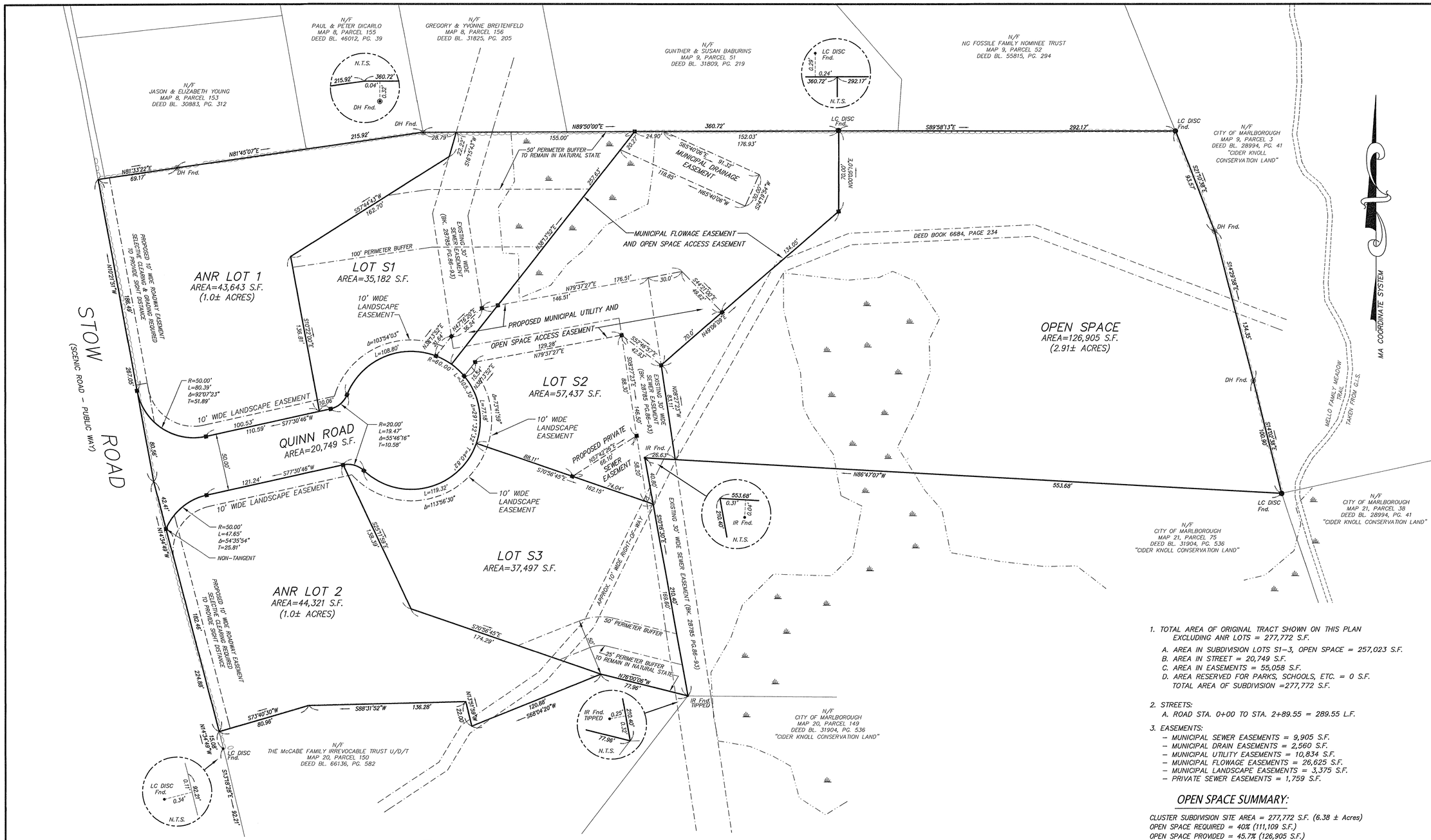
"DEFINITIVE PLAN"
LOCUS/COVER SHEET
FOR
STOW ROAD SUBDIVISION
MARLBOROUGH, MA

REVISED:	DESCRIPTION:
12/20/2023	REVISED CUL-DE-SAC
11/10/2023	DPW REVIEW COMMENTS
10/18/2023	DPW REVIEW COMMENTS

DRAWN BY: REM | CHECK BY: VHH

DATE: AUGUST 3, 2023

SCALE: 1"=40' | SHEET 1 OF 2.



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P.O. BOX 766
SOUTHBOROUGH, MA 01772

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   D. AREA RESERVED FOR PARKS, SCHOOLS, ETC. = 0 S.F.
   TOTAL AREA OF SUBDIVISION =277,772 S.F.

2. STREETS:
   A. ROAD STA. 0+00 TO STA. 2+89.55 = 289.55 L.F.

3. EASEMENTS:
   - MUNICIPAL SEWER EASEMENTS = 9,905 S.F.
   - MUNICIPAL DRAIN EASEMENTS = 2,560 S.F.
   - MUNICIPAL UTILITY EASEMENTS = 10,834 S.F.
   - MUNICIPAL FLOWAGE EASEMENTS = 26,625 S.F.
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REQUIRED OPEN SPACE PROVIDED (109,517+3,323) = 112,840 S.F.

MONUMENTS

- SBDH Fnd. — STONE BOUND W. DRILL HOLE FOUND
- SB Fnd. — STONE BOUND FOUND
- IP Fnd. — IRON PIPE FOUND
- LC DISC — LAND COURT DISK FOUND
- DH Fnd. — DRILL HOLE FOUND
- ■ = PROPOSED GRANITE BOUNDS TO BE SET.

GRAPHIC SCALE: 1"=40'

0 10 20 30 40 50 75 100 150 200 FEET
0 5 10 15 20 30 40 50 60 METERS

CONNORSTONE ENGINEERING INC.
CIVIL ENGINEERS AND LAND SURVEYORS
10 SOUTHWEST CUTOFF, SUITE 7
NORTHBOROUGH, MASSACHUSETTS 01532
PHONE: 508-393-9727 FAX: 508-393-5242

"DEFINITIVE PLAN"
FOR
STOW ROAD SUBDIVISION
IN
MARLBOROUGH, MA

12/20/2023	REVISED CUL-DE-SAC
11/10/2023	DPW REVIEW COMMENTS
10/18/2023	DPW REVIEW COMMENTS
REVISED:	DESCRIPTION:
DRAWN BY: REM	CHECK BY: VHH
DATE: AUGUST 3, 2023	
SCALE: 1"=40'	SHEET 2 OF 2.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW, IS REQUIRED.
MARLBOROUGH PLANNING BOARD

_____
_____
_____
_____
_____
_____
_____
_____

DATE: _____

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED IN CONFORMANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

VAROUJAN H. HAGOPIAN, P.L.S. 49665

COMMONWEALTH OF MASSACHUSETTS
VAROUJAN H. HAGOPIAN
No. 49665
PROFESSIONAL LAND SURVEYOR

THIS PLAN APPROVED SUBJECT TO COVENANT CONDITIONS SET FORTH IN A COVENANT EXECUTED BY _____ DATED _____ AND TO BE RECORDED HEREWITH.

I, _____ CLERK OF THE CITY OF MARLBOROUGH RECEIVED AND RECORDED APPROVAL FROM THE PLANNING BOARD OF THIS PLAN ON _____ AND NO APPEAL WAS TAKEN FOR TWENTY (20) DAYS THEREAFTER.

REFERENCES:

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TOWN ASSESSOR MAP 20, PARCELS 150A

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SOUTH MIDDLESEX REGISTRY OF DEEDS

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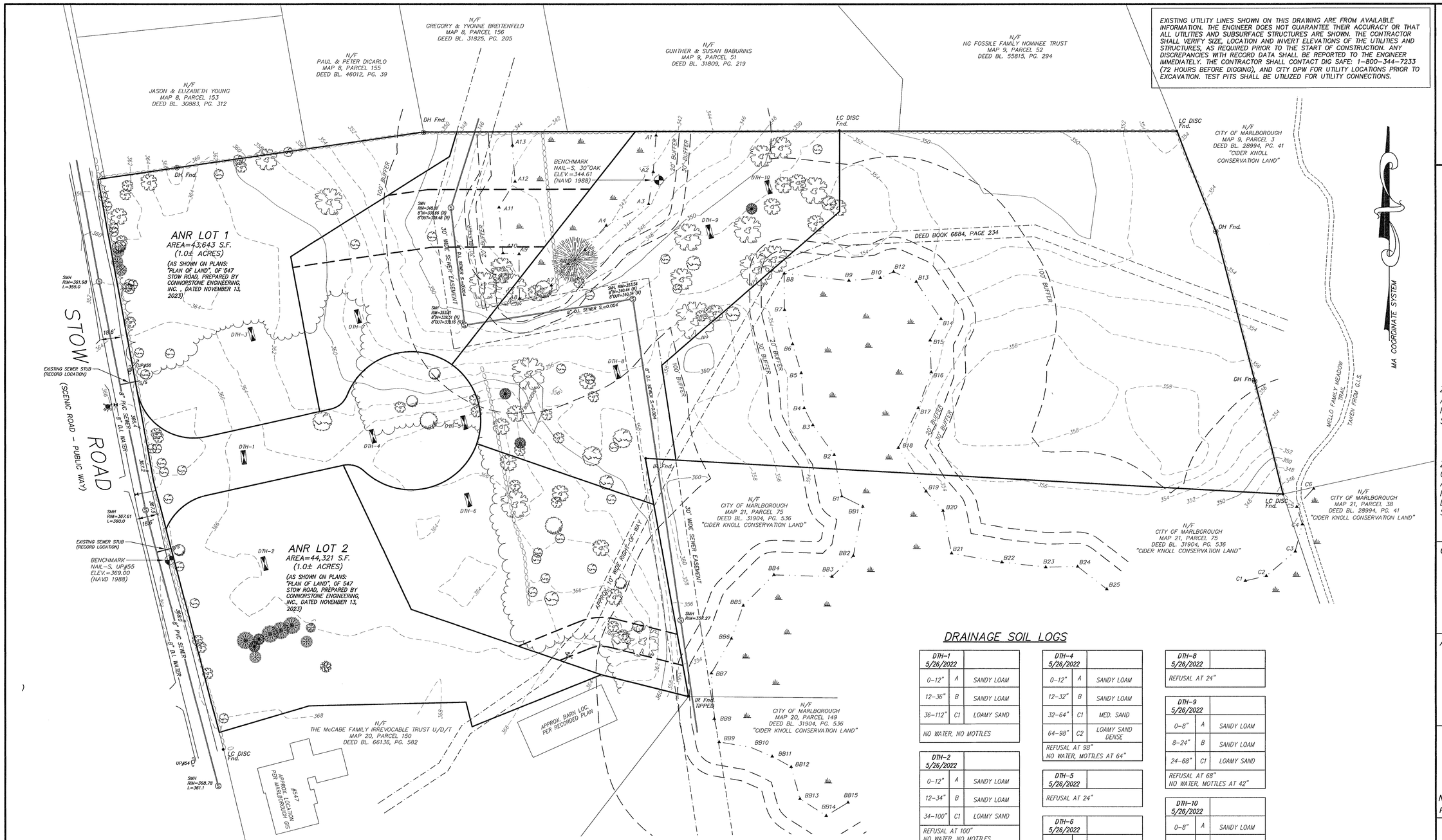
1. SUBDIVISION RULES AND REGULATIONS SECTION A676-7 – ADEQUATE ACCESS – WAIVER TO ALLOW ACCESS OFF STOW ROAD HAVING A PAVED WIDTH LESS THAN 22 FEET.

2. SUBDIVISION RULES AND REGULATIONS SECTION A676-24.B(2)(b) – WIDTH OF ROADWAYS – WAIVER TO ALLOW A PAVED ROADWAY WIDTH OF 26 FEET (28 FEET REQUIRED).

EXISTING UTILITY LINES SHOWN ON THIS DRAWING ARE FROM AVAILABLE INFORMATION. THE ENGINEER DOES NOT GUARANTEE THEIR ACCURACY OR THAT ALL UTILITIES AND SUBSURFACE STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL VERIFY SIZE, LOCATION AND INVERT ELEVATIONS OF THE UTILITIES AND STRUCTURES, AS REQUIRED PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES WITH RECORD DATA SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY. THE CONTRACTOR SHALL CONTACT DIG SAFE: 1-800-344-7233 (72 HOURS BEFORE DIGGING), AND CITY DPW FOR UTILITY LOCATIONS PRIOR TO EXCAVATION. TEST PITS SHALL BE UTILIZED FOR UTILITY CONNECTIONS.



ZONED: RURAL RESIDENCE RR
AREA = 43,560 sf
FRONTAGE = 180 feet
SETBACKS: FRONT = 40 feet
SIDE = 25 feet
REAR = 50 feet

ZONED: RURAL RESIDENCE RR
OPEN SPACE DEVELOPMENT
AREA = 20,000 sf
FRONTAGE = 70 feet
LOT WIDTH AT FRONT SETBACK = 90'
SETBACKS: FRONT = 25 feet
SIDE = 15 feet
REAR = 25 feet

OWNERS:
McCABE FAMILY REVOCABLE TRUST
AND
JUDITH MELLO McCABE

APPLICANT:
KENDALL HOMES
P.O. BOX 766
SOUTHBOROUGH, MA 01772

CONNORSTONE ENGINEERING INC.
CIVIL ENGINEERS AND LAND SURVEYORS
10 SOUTHWEST CUTOFF, SUITE 7
NORTHBOROUGH, MASSACHUSETTS 01532
PHONE: 508-393-9727 FAX: 508-393-5242

"DEFINITIVE PLAN"
EXISTING CONDITIONS PLAN
FOR
STOW ROAD SUBDIVISION
MARLBOROUGH, MA

DRAINAGE SOIL LOGS

DTH-1 5/26/2022		
0-12"	A	SANDY LOAM
12-36"	B	SANDY LOAM
36-112"	C1	LOAMY SAND
NO WATER, NO MOTTLES		

DTH-2 5/26/2022		
0-12"	A	SANDY LOAM
12-34"	B	SANDY LOAM
34-100"	C1	LOAMY SAND
REFUSAL AT 100" NO WATER, NO MOTTLES		

DTH-3 5/26/2022		
0-12"	A	SANDY LOAM
12-30"	B	SANDY LOAM
30-60"	C1	MED. SAND
60-124"	C2	LOAMY SAND DENSE
NO WATER, MOTTLES AT 60"		

DTH-4 5/26/2022		
0-12"	A	SANDY LOAM
12-32"	B	SANDY LOAM
32-64"	C1	MED. SAND
64-98"	C2	LOAMY SAND DENSE
REFUSAL AT 98" NO WATER, MOTTLES AT 64"		

DTH-5 5/26/2022	
REFUSAL AT 24"	

DTH-6 5/26/2022		
0-12"	A	SANDY LOAM
12-32"	B	SANDY LOAM
34-78"	C1	LOAMY SAND
REFUSAL AT 78" NO WATER, NO MOTTLES		

DTH-7 5/26/2022	
REFUSAL AT 36"	

DTH-8 5/26/2022	
REFUSAL AT 24"	

DTH-9 5/26/2022		
0-8"	A	SANDY LOAM
8-24"	B	SANDY LOAM
24-68"	C1	LOAMY SAND
REFUSAL AT 68" NO WATER, MOTTLES AT 42"		

DTH-10 5/26/2022		
0-8"	A	SANDY LOAM
8-24"	B	SANDY LOAM
24-72"	C1	LOAMY SAND
REFUSAL AT 72" NO WATER, MOTTLES AT 42"		

LEGEND

- DRAIN MAN HOLE
- DRAINAGE LINE
- CATCH BASIN
- SEWER LINE
- SEWER MAN HOLE
- BITUMINOUS CURBING
- EDGE OF PAVEMENT
- GUARD RAIL
- APPROX. WATERLINE
- HYDRANT
- WATERGATE
- APPROX. GAS LINE
- GAS GATE
- UTILITY POLE & GUY WIRE
- CHAIN LINK FENCE
- LIGHTPOST
- HANDICAP SPACE
- ELECTRIC TRANSFORMER
- SIGN
- VERTICAL BENCHMARK
- DECIDUOUS TREE >8"
- CONIFEROUS TREE >8"
- TREELINE
- SPOT GRADE
- WETLAND LINE
- TELEPHONE MAN HOLE
- SS-2 SOIL SAMPLE LOCATION

MONUMENTS

- SBDH Fnd. STONE BOUND W. DRILL HOLE FOUND
- SB Fnd. STONE BOUND FOUND
- IP Fnd. IRON PIPE FOUND

TREE LEGEND

- MAPLE
- OAK
- PINE
- APPLE
- CEDAR
- SPRUCE
- DECIDUOUS (UNKNOWN SPECIES)

SOIL LEGEND

NRCS SOIL MAPPING:
ONSITE SOILS MAPPED AS 'CHARLTON-HOLLIS-ROCK OUTCROP COMPLEX, MAP UNIT SYMBOL 103B, HYDROLOGIC SOIL GROUP A.

APPROVAL UNDER THE SUBDIVISION CONTROL LAW, IS REQUIRED.

MARLBOROUGH PLANNING BOARD

_____

DATE: _____

OPEN SPACE DEVELOPMENT

CLUSTER SITE AREA = 277,772 S.F. (6.37 ± Acres)
OPEN SPACE REQUIRED = 40% (111,109 S.F.)
OPEN SPACE PROVIDED = 45.7% (126,905 S.F.)
OPEN SPACE UPLAND = 109,517 S.F.
WETLANDS ON SITE = 30,346 S.F. (10.95% OF SITE AREA)
WETLANDS ALLOWED TOWARDS REQUIRED OPEN SPACE
(30,346 S.F. x 10.95% = 3,323 S.F.)
REQUIRED OPEN SPACE PROVIDED (109,517+3,323) = 112,840 S.F.

I, _____ CLERK OF THE CITY OF MARLBOROUGH RECEIVED AND RECORDED APPROVAL FROM THE PLANNING BOARD OF THIS PLAN ON _____ AND NO APPEAL WAS TAKEN FOR TWENTY (20) DAYS THEREAFTER.

GRAPHIC SCALE: 1"=40'

0 10 20 30 40 50 75 100 150 200 FEET
0 5 10 15 20 30 40 50 60 METERS

COMMONWEALTH OF MASSACHUSETTS
VITO COLONNA No. 47635
PROFESSIONAL ENGINEER
12.20.23

12/20/2023	REVISED CUL-DE-SAC
11/10/2023	DPW REVIEW COMMENTS
10/18/2023	DPW REVIEW COMMENTS
REVISED:	DESCRIPTION:
DRAWN BY: REM	CHECK BY: VC
DATE: AUGUST 3, 2023	
SCALE: 1"=40'	SHEET 1 OF 8

ZONED: RURAL RESIDENCE RR
AREA = 43,560 sf
FRONTAGE = 180 feet
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KENDALL HOMES
P.O. BOX 766
SOUTHBOROUGH, MA 01772

APPROVAL UNDER THE
SUBDIVISION CONTROL LAW,
IS REQUIRED.
MARLBOROUGH PLANNING BOARD

_____

_____

_____

_____

_____

_____

DATE: _____

I, _____ CLERK OF THE CITY OF MARLBOROUGH RECEIVED AND RECORDED APPROVAL FROM THE PLANNING BOARD OF THIS PLAN ON _____ AND NO APPEAL WAS TAKEN FOR TWENTY (20) DAYS THEREAFTER.

CONNORSTONE
ENGINEERING INC.
CIVIL ENGINEERS AND LAND SURVEYORS
10 SOUTHWEST CUTOFF, SUITE 7
NORTHBOROUGH, MASSACHUSETTS 01532
PHONE: 508-393-9727 FAX: 508-393-5242

"DEFINITIVE PLAN"
TREE PRESERVATION AND
PROTECTION PLAN
STOW ROAD SUBDIVISION
MARLBOROUGH, MA

12/20/2023	REVISED CUL-DE-SAC
11/10/2023	DPW REVIEW COMMENTS
10/18/2023	DPW REVIEW COMMENTS
REVISED:	DESCRIPTION:
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COMMONWEALTH OF MASSACHUSETTS
VITO COLONNA
No. 47635
PROFESSIONAL ENGINEER
12-20-23

LEGEND

- DRAIN MAN HOLE
- DRAINAGE LINE
- CATCH BASIN
- SEWER LINE
- SEWER MAN HOLE
- BITUMINOUS CURBING
- EDGE OF PAVEMENT
- GUARD RAIL
- APPROX. WATERLINE
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- SOIL SAMPLE LOCATION

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SOIL LEGEND

NRCS SOIL MAPPING:
ONSITE SOILS MAPPED AS
'CHARLTON-HOLLIS-ROCK OUTCROP
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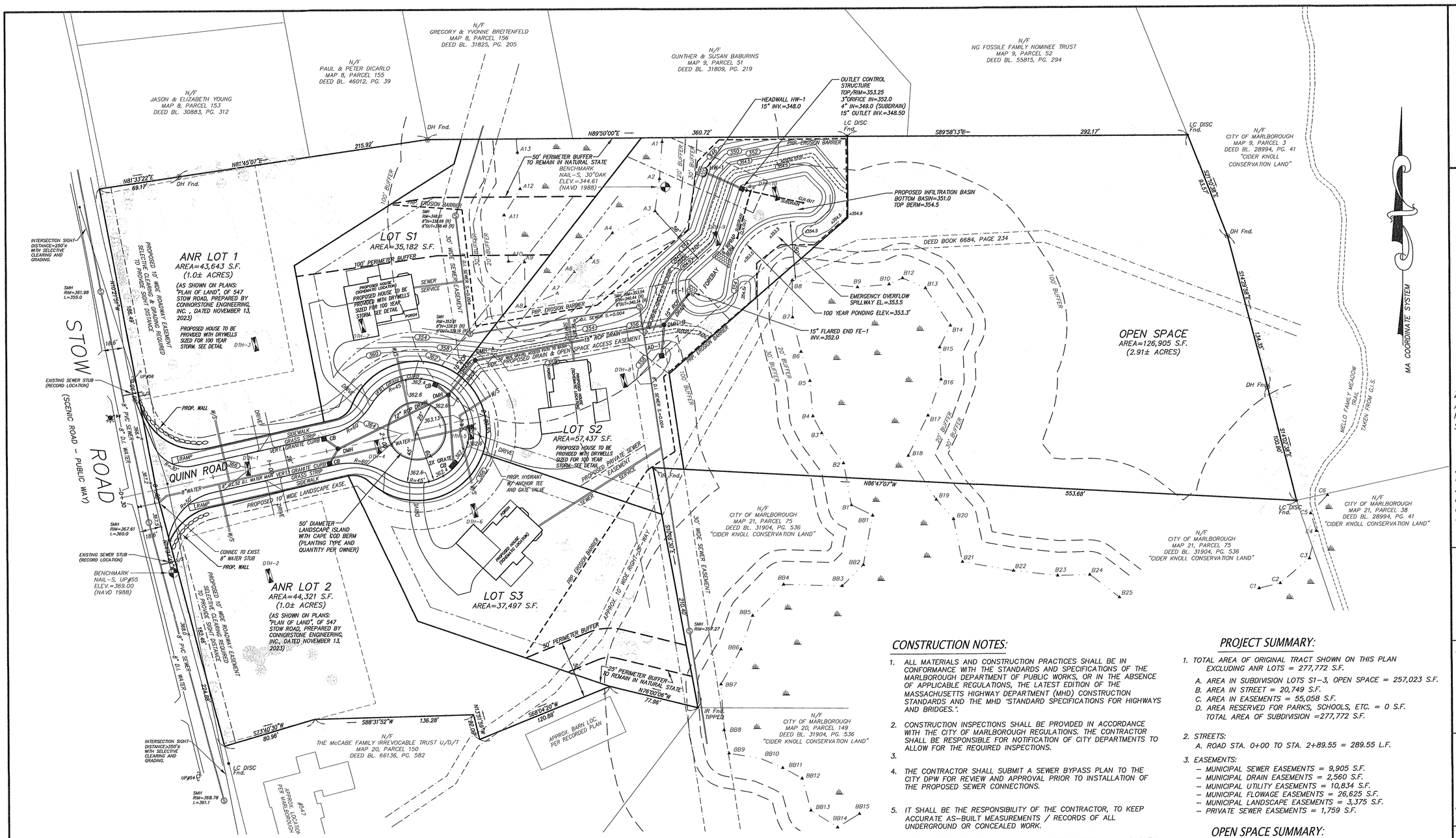
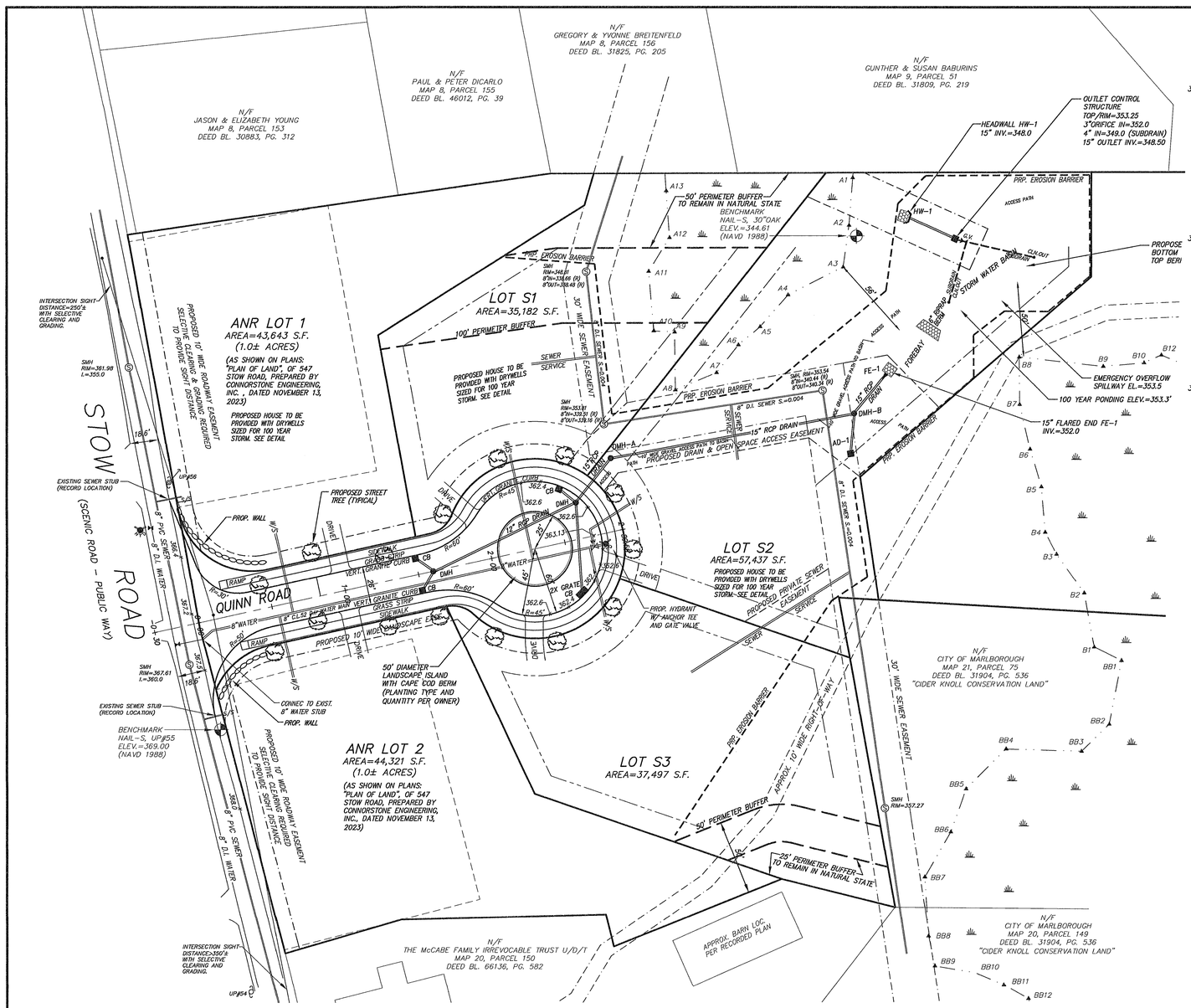
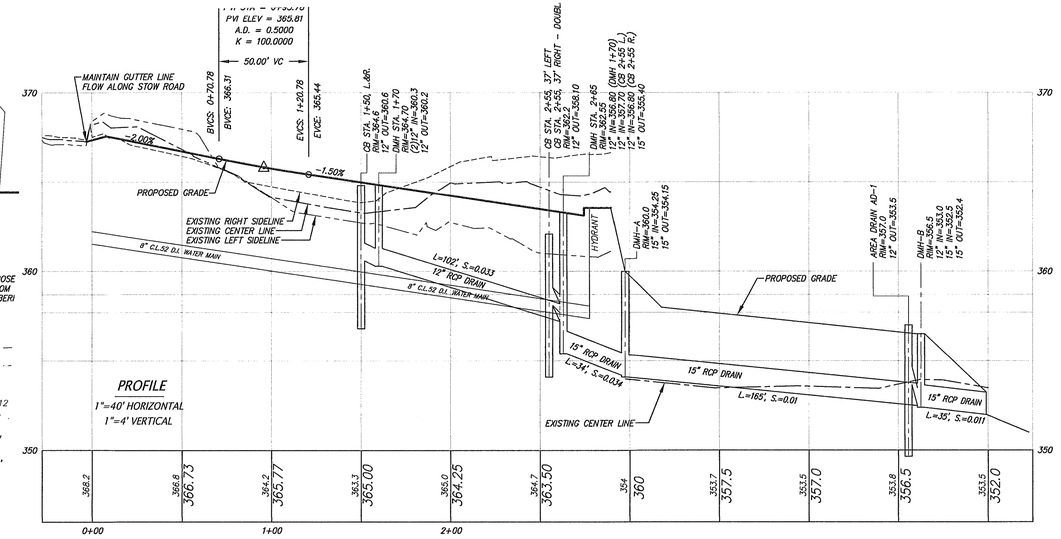
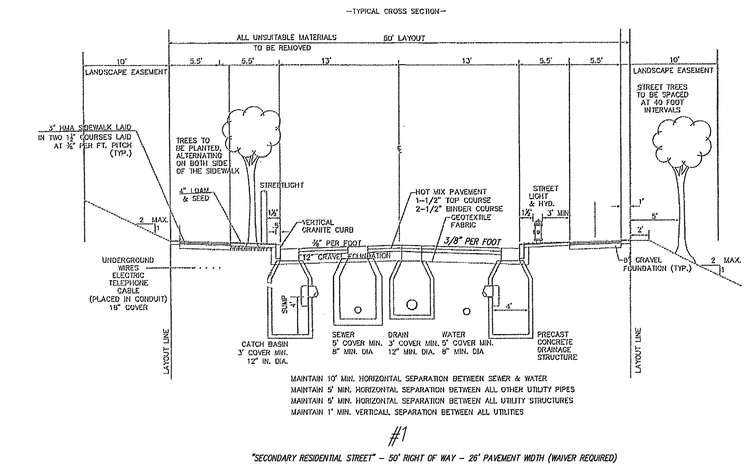

N/F
GREGORY & YVONNE BREITENFELD
MAP 8, PARCEL 156
DEED BL. 31825, PG. 205
N/F
PAUL & PETER DICARLO
MAP 8, PARCEL 155
DEED BL. 46012, PG. 39
N/F
JASON & ELIZABETH YOUNG
MAP 8, PARCEL 153
DEED BL. 30883, PG. 312
N/F
GUNTHER & SUSAN BABURINS
MAP 9, PARCEL 51
DEED BL. 31809, PG. 219
N/F
NC FOSSILE FAMILY NOMINEE TRUST
MAP 9, PARCEL 52
DEED BL. 55815, PG. 294
N/F
CITY OF MARLBOROUGH
MAP 9, PARCEL 3
DEED BL. 28994, PG. 41
"CIDER KNOLL CONSERVATION LAND"
N/F
CITY OF MARLBOROUGH
MAP 21, PARCEL 38
DEED BL. 28994, PG. 41
"CIDER KNOLL CONSERVATION LAND"
N/F
CITY OF MARLBOROUGH
MAP 21, PARCEL 75
DEED BL. 31904, PG. 536
"CIDER KNOLL CONSERVATION LAND"
N/F
THE McCABE FAMILY IRREVOCABLE TRUST U/D/T
MAP 20, PARCEL 150
DEED BL. 66136, PG. 582
N/F
CITY OF MARLBOROUGH
MAP 20, PARCEL 149
DEED BL. 31904, PG. 536
"CIDER KNOLL CONSERVATION LAND"
STOW ROAD
(SCENIC ROAD – PUBLIC WAY)
QUINN ROAD
ANR LOT 1
AREA=43,643 S.F.
(1.0± ACRES)
(AS SHOWN ON PLANS: "PLAN OF LAND", OF 547 STOW ROAD, PREPARED BY CONNORSTONE ENGINEERING, INC., DATED NOVEMBER 13, 2023)
PROPOSED HOUSE TO BE PROVIDED WITH DRYWELLS SIZED FOR 100 YEAR STORM. SEE DETAIL
ANR LOT 2
AREA=44,321 S.F.
(1.0± ACRES)
(AS SHOWN ON PLANS: "PLAN OF LAND", OF 547 STOW ROAD, PREPARED BY CONNORSTONE ENGINEERING, INC., DATED NOVEMBER 13, 2023)
LOT S1
AREA=35,182 S.F.
LOT S2
AREA=57,437 S.F.
PROPOSED HOUSE TO BE PROVIDED WITH DRYWELLS SIZED FOR 100 YEAR STORM. SEE DETAIL
LOT S3
AREA=37,497 S.F.
OPEN SPACE
AREA=126,905 S.F.
(2.91± ACRES)
50' PERIMETER BUFFER – TO REMAIN IN NATURAL STATE
BENCHMARK
NAIL-S, 30"OAK
ELEV.=344.61
(NAVD 1988)
OUTLET CONTROL STRUCTURE
TOP/RIM=353.25
3"ORIFICE IN=352.0
4" IN=349.0 (SUBDRAIN)
15" OUTLET INV.=348.50
HEADWALL HW-1
15" INV.=348.0
PROPOSED INFILTRATION BASIN
BOTTOM BASIN=351.0
TOP BERM=354.5
EMERGENCY OVERFLOW SPILLWAY EL.=353.3'
100 YEAR PONDING ELEV.=353.3'
15" FLARED END FE-1
INV.=352.0
DEED BOOK 6684, PAGE 234
MA COORDINATE SYSTEM
MELLO FAMILY MEADOW TRAIL TAKEN FROM G.I.S.
50' DIAMETER LANDSCAPE ISLAND WITH CAPE COD BERM (PLANTING TYPE AND QUANTITY PER OWNER)
PROPOSED 10' WIDE LANDSCAPE EASE.
PROPOSED 10' WIDE ROADWAY EASEMENT SELECTIVE CLEARING & GRADING REQUIRED TO PROVIDE SIGHT DISTANCE
INTERSECTION SIGHT DISTANCE=250' WITH SELECTIVE CLEARING AND GRADING
EXISTING SEWER STUB (RECORD LOCATION)
CONNEC TO EXIST. 8" WATER STUB
PROP. WALL
PROP. HYDRANT W/ ANCHOR TEE AND GATE VALVE
PROPOSED PRIVATE SEWER EASEMENT
30' WIDE SEWER EASEMENT
APPROX. 10' WIDE RIGHT-OF-WAY
25' PERIMETER BUFFER – TO REMAIN IN NATURAL STATE
APPROX. BARN LOC. PER RECORDED PLAN
APPROX. LOCATION PER MARLBOROUGH #547
S73°40'30"W
80.96'
S88°31'52"W
136.28'
S68°04'20"W
120.88'
N78°00'06"W
77.96'
N86°47'07"W
553.68'
S89°58'13"E
292.17'
N89°50'00"E
360.72'
N81°33'22"E
69.17'
N81°45'07"E
215.92'
S17°20'36"E
93.57'
S17°22'36"E
100.06'
S14°29'58"E
134.35'
210.20'
N13°35'59"W
26.28'
N10°12'14"W
186.49'
S10°04'24"W
182.46'
S10°04'24"W
122.88'
N17°17'17"W
186.6'
N17°17'17"W
186.6'
N17°17'17"W
186.6







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"DEFINITIVE PLAN"
ROADWAY PLAN AND PROFILE
FOR
STOW ROAD SUBDIVISION
MARLBOROUGH, MA

12/20/2023	REVISED CUL-DE-SAC
11/10/2023	DPW REVIEW COMMENTS
10/18/2023	DPW REVIEW COMMENTS
REVISED:	DESCRIPTION:
DRAWN BY: REM	CHECK BY: VC
DATE: AUGUST 3, 2023	
SCALE: 1"=40'	SHEET 4 OF 8

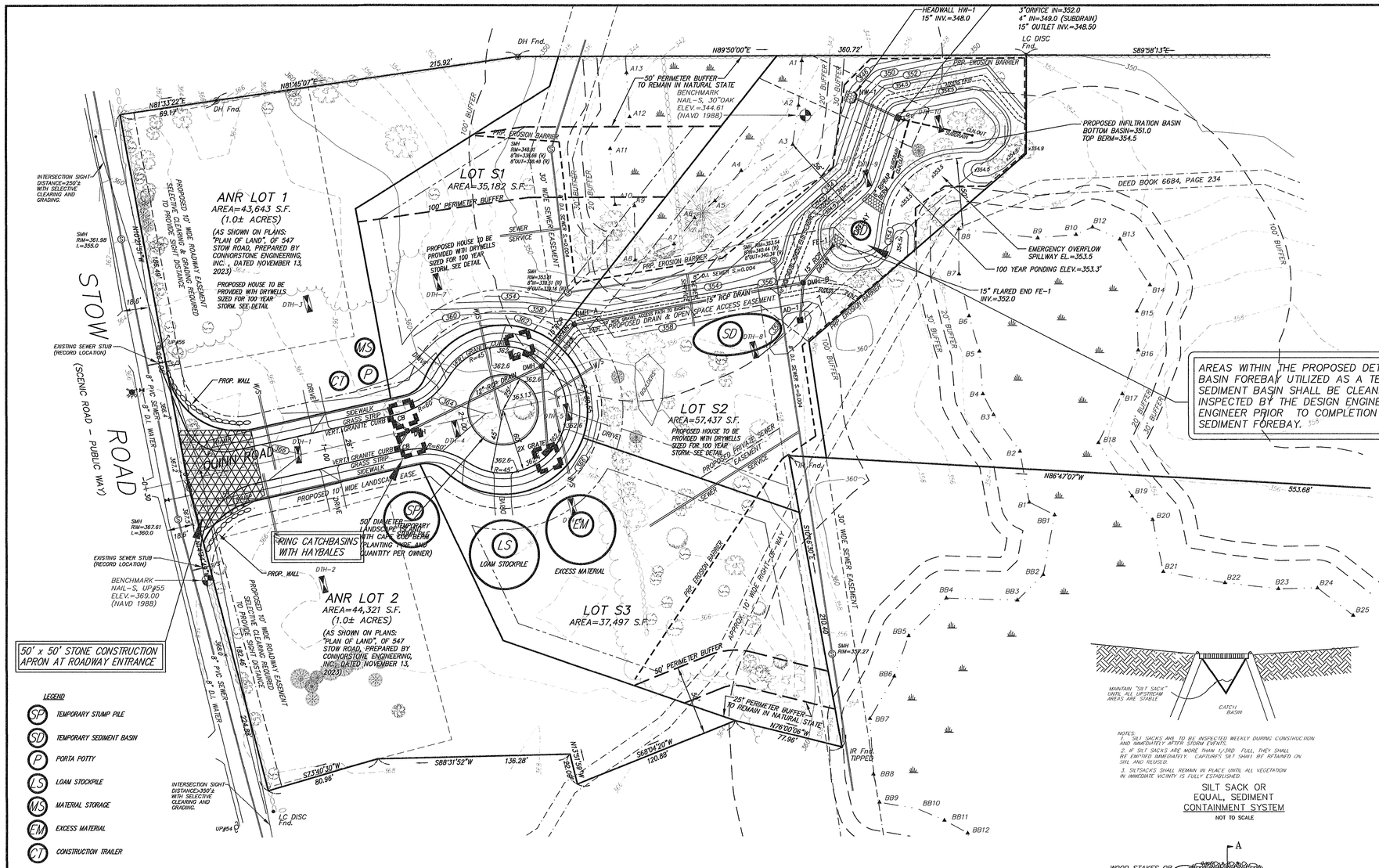
COMMONWEALTH OF MASSACHUSETTS
VITO COLONNA
No. 47635
PROFESSIONAL ENGINEER
12-20-23

GRAPHIC SCALE: 1"=40'
0 10 20 30 40 50 75 100 150 200 FEET
0 5 10 15 20 30 40 50 60 METERS

APPROVAL UNDER THE SUBDIVISION CONTROL LAW, IS REQUIRED.
MARLBOROUGH PLANNING BOARD

DATE: _____

I, _____ CLERK OF THE CITY OF MARLBOROUGH RECEIVED AND RECORDED APPROVAL FROM THE PLANNING BOARD OF THIS PLAN ON _____ AND NO APPEAL WAS TAKEN FOR TWENTY (20) DAYS THEREAFTER.



PHASING

SITE DEVELOPMENT SHALL BE SEQUENCED SO THAT THE ENTIRE SITE IS NOT STRIPPED OPEN AT THE SAME TIME. DISTURBED AREAS SHALL BE STABILIZED AS SOON AS POSSIBLE.

1. CUT TREES WHERE REQUIRED.
2. INSTALL EROSION CONTROLS
3. CONSTRUCT TEMPORARY SEDIMENT BASINS.
4. STRIP AND STOCKPILE SOILS FROM ROADWAY.
5. ROUGH GRADE ROADWAY
6. INSTALL DRAINAGE, SILT SACKS IN CATCH BASINS.
7. INSTALL REMAINING UNDERGROUND UTILITIES.
8. CONSTRUCT SIDEWALK AND ROAD TO BINDER.
9. LOAM AND SEED.
10. WHEN SITE IS STABILIZED, CONVERT TEMPORARY SEDIMENT BASIN TO INFILTRATION BASIN.
   A. REMOVE AND DISPOSE OF ACCUMULATED SEDIMENT.
   B. REMOVE SEDIMENT RISER.
   C. CONSTRUCT FOREBAY.
   D. INSTALL RIPRAP IN BASIN.
   E. GRADE BOTTOM OF INFILTRATION BASIN

NOISE ABATEMENT: ALL EQUPMENT USED ON THE SITE SHALL BE EQUIPPED WITH MUFFLERS AND/OR OTHER NOISE CONTROLLING DEVICES AS REQUIRED BY STATE AND LOCAL REGULATIONS.

BLASTING: IF REQUIRED, BLASTING SHALL BE CONDUCTED IN ACCORDANCE WITH ALL LOCAL, FEDERAL AND STATE REGULATIONS, INCLUDING 527 CMR 13.

AREAS WITHIN THE PROPOSED DETENTION BASIN FOREBAY UTILIZED AS A TEMPORARY SEDIMENT BASIN SHALL BE CLEANED OUT AND INSPECTED BY THE DESIGN ENGINEER AND CITY ENGINEER PRIOR TO COMPLETION OF THE SEDIMENT FOREBAY.

EROSION AND SEDIMENTATION CONTROL NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE APPROVED PLANS, ORDER OF CONDITION ISSUED BY THE MARLBOROUGH CONSERVATION COMMISSION, AND THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP).

2. PRIOR TO INITIATING CONSTRUCTION, ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND DETAIL DRAWINGS.

3. THIS PLAN DEPICTS THE MINIMUM REQUIRED SEDIMENTATION AND EROSION CONTOLS. THE CONTRACTOR SHALL EMPLOY ADDITIONAL SEDIMENTATION AND EROSION CONTROL MEASURES AS NECESSITATED BY SITE CONDITIONS, OR AS DIRECTED BY THE OWNER, THE OWNER'S REPRESENTATIVE, OR THE CONSERVATION COMMISSION TO ENSURE PROTECTION OF ALL WETLAND RESOURCES AND CONTROL SEDIMENT TRANSPORT. IF SEDIMENTATION PLUMES OCCUR, THE CONTRACTOR SHALL STOP WORK AND INSTALL ADDITIONAL SEDIMENTATION CONTROL DEVICES IMMEDIATELY TO PREVENT FURTHER SEDIMENTATION.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY AND PERMANENT SEDIMENTATION AND EROSION CONTROLS UNTIL WORK IS COMPLETE AND ALL AREAS HAVE BEEN PERMANENTLY STABILIZED. AT SUCH TIME THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SEDIMENTATION AND EROSION CONTROL MEASURES.

5. THE CONTRACTOR SHALL INSPECT SEDIMENTATION AND EROSION CONTROLS ON A DAILY BASIS AND IMMEDIATELY AFTER EACH RAINFALL; REPAIRS SHALL BE MADE BY THE END OF THE WORKING DAY. ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR WHEN THE VOLUME REACHES 1/4 TO 1/2 THE HEIGHT OF SILT FENCE OR SEDIMENT TRAP, OR AS DIRECTED BY THE LOCAL AUTHORITY.

6. SOIL STOCKPILES SHALL BE STABILIZED TO PREVENT EROSION, AND A PERIMETER SEDIMENT CONTROL SYSTEM SHALL BE INSTALLED. NO MATERIALS SUBJECT TO EROSION SHALL BE STOCKPILED OVERNIGHT WITHIN 100 FEET OF A WETLAND UNLESS COVERED.

7. DISTURBED AREAS SHALL BE STABILIZED BY LOAMING AND SEEDING, OR BY ANOTHER APPROVED METHOD, AS SOON AS POSSIBLE AFTER THE FINISHED GRADE HAS BEEN MET. DISTURBED AREAS WITH SLOPES 3:1 (H:V) OR GREATER SHALL BE COVERED WITH LOAM AND STABILIZED WITH HYDROSEED AND SOIL TACKIFIER. IF FINAL GRADING DOES NOT OCCUR DURING THE GROWING SEASON, THESE AREAS SHALL BE MULCHED WITH HAY SECURED.

8. DEWATERING OPERATIONS, IF REQUIRED, SHALL DISCHARGE ONTO STABILIZED AREAS, AND ALL DISCHARGE WATER IS TO PASS THROUGH SEDIMENTATION CONTROL DEVICES TO PREVENT IMPACTS UPON WATER BODIES, BORDERING VEGETATED WETLANDS, DRAINAGE SYSTEMS AND ABUTTING PROPERTIES. AT A MINIMUM ALL DISCHARGES SHALL BE INTERCEPTED BY HAYBALE CORRAL AND HAYBALE CHECK DAMS SPACED 10' APART.

9. STAKED WATTLES AND SILT FENCE SHALL BE INSTALLED ALONG THE EDGE OF PROPOSED DEVELOPMENT OR AS INDICATED ON THE PLANS. ADDITIONAL WATTLES AND SILT FENCE SHALL BE LOCATED AS CONDITIONS WARRANT, AND IN SOME AREAS STRUCTURES MAY HAVE TO BE DUPLICATED AT REGULAR INTERVALS.

10. STREET SWEEPING IN THE VICINITY OF THE PROJECT AREA SHALL BE PERFORMED AS NEEDED UNTIL THE PROJECT LIMITS HAVE BEEN STABILIZED. ALL SEDIMENT TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE SWEPT AT THE END OF EACH WORKING DAY.

11. ALL EXISTING AND PROPOSED DRAINAGE SYSTEM INLETS, WHICH MAY RECEIVE STORMWATER FLOW FROM DISTURBED AREAS, SHALL BE PROVIDED WITH SILT SACKS. THE CONTRACTOR SHALL MAINTAIN THESE DEVICES PER THE MANUFACTURERS RECOMMENDATIONS UNTIL ALL WORK IS COMPLETED AND ALL AREAS HAVE BEEN ADEQUATELY STABILIZED.

12. DUST CONTROL MEASURES SHALL BE IMPLEMENTED AND MAINTAINED PROPERLY THROUGHOUT DRY WEATHER PERIODS UNTIL ALL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED. METHODS FOR DUST CONTROL SHALL INCLUDE WATER SPRINKLING AND/OR OTHER METHODS APPROVED BY THE ENGINEER.

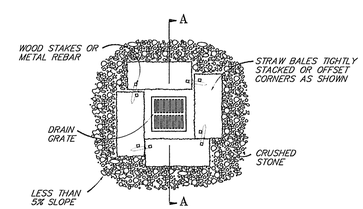
13. ALL VEHICLES SHALL ENTER AND EXIT THE SIT VIA THE STABILIZED CONSTRUCTION ENTRANCE CONSISTING OF CRUSHED STONE TO A DEPTH OF 6" FOR THE FIRST 50 FEET FROM EXISTING PAVED STREETS. IF THE SITE CONDITIONS ARE SUCH THAT THE GRAVEL PAD DOES NOT REMOVE THE MAJORITY OF THE MUD AND DEBRIS, THEN THE TIRES SHALL BE WASHED BEFORE ANY VEHICLES ENTER ADJACENT ROADWAYS. ALL WATER USED FOR TIRE WASHING SHALL BE COLLECTED AND TREATED PRIOR TO ENTERING THE DRAINAGE SYSTEM. THE CONTRACTOR SHALL INSPECT THE CONSTRUCTION ENTRANCE DAILY AND AFTER HEAVY USE.

14. RISER PIPES SHALL BE INSTALLED IN DETENTION BASIN OUTLET STRUCTURES TO ENSURE PROPER SETTLING OF DRAINAGE PRIOR TO DISCHARGE, UNTIL THE SITE HAS BEEN PROPERLY STABILIZED, AS DETERMINED BY THE CITY ENGINEER.

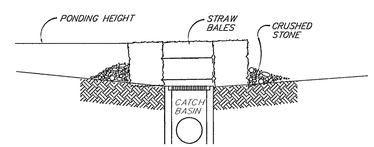
NOTES:
1. SILT SACKS ARE TO BE INSPECTED WEEKLY DURING CONSTRUCTION AND IMMEDIATELY AFTER STORM EVENTS.
2. IF SILT SACKS ARE MORE THAN 1/3RD FULL, THEY SHALL BE EMPTIED IMMEDIATELY. CAPTURED SILT SHALL BE RETAINED ON SITE AND REUSED.
3. SILTSACKS SHALL REMAIN IN PLACE UNTIL ALL VEGETATION IN IMMEDIATE VICINITY IS FULLY ESTABLISHED.

SILT SACK OR EQUAL, SEDIMENT CONTAINMENT SYSTEM

NOT TO SCALE



PLAN VIEW



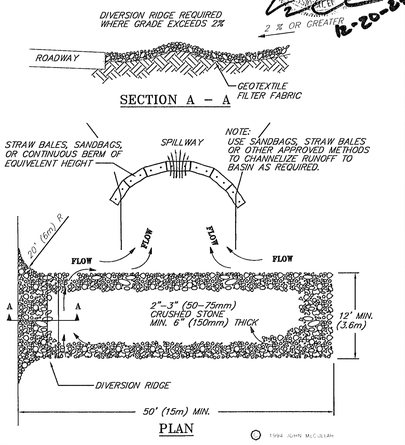
SECTION A-A

NOTES:
1. SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)

PLACE BALES WITH ENDS TIGHTLY ABUTING. STONE BACKFILL WILL PREVENT EROSION OR FLOW AROUND THE BALES.

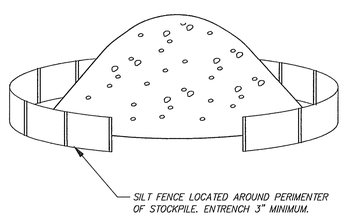
STRAW BALE/GRAVEL SEDIMENT BARRIER AT CATCH BASINS

NOT TO SCALE



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.
4. STONE APRON SHALL BE REPLACED AS DEPOSITED SOILS BUILD UP.

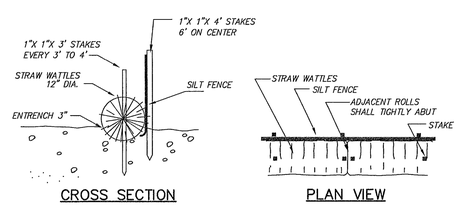
TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT



NOTES:
1. NO MATERIALS SUBJECT TO EROSION SHALL BE STOCKPILED OVERNIGHT WITHIN 100 FEET OF A WETLAND UNLESS COVERED.
2. STOCKPILES SHALL BE LOCATED ON DRY STABLE AREAS.
3. STOCKPILE TO REMAIN FOR EXTENDED PERIODS SHALL BE STABILIZED WITH A TEMPORARY SEED MIXTURE.
4. PROVIDE SAFETY FENCING AROUND STOCKPILES OVER 10' IN HEIGHT OR OTHERWISE RESTRICT SITE ACCESS.

SOIL STOCKPILE DETAIL

NOT TO SCALE



CROSS SECTION PLAN VIEW

NOTES:
1. STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3" DEEP. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.
2. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFATURERS RECOMMENDATIONS.

EROSION BARRIER

NOT TO SCALE

APPROVAL UNDER THE SUBDIVISION CONTROL LAW, IS REQUIRED.

MARLBOROUGH PLANNING BOARD

_____

_____

_____

_____

_____

_____

_____

DATE: _____

I, _____ CLERK OF THE CITY OF MARLBOROUGH RECEIVED AND RECORDED APPROVAL FROM THE PLANNING BOARD OF THIS PLAN ON _____ AND NO APPEAL WAS TAKEN FOR TWENTY (20) DAYS THEREAFTER.

GRAPHIC SCALE: 1"=40'

0 10 20 30 40 50 75 100 150 200 FEET

0 5 10 15 20 30 40 50 60 METERS

COMMONWEALTH OF MASSACHUSETTS
VITO COLONNA
No. 47635
PROFESSIONAL ENGINEER
12-20-23

OWNERS:

McCABE FAMILY REVOCABLE TRUST

AND

JUDITH MELLO McCABE

APPLICANT:

KENDALL HOMES

P.O. BOX 766

SOUTHBOROUGH, MA 01772

CONNORSTONE ENGINEERING INC.

CIVIL ENGINEERS AND LAND SURVEYORS

10 SOUTHWEST CUTOFF, SUITE 7

NORTHBOROUGH, MASSACHUSETTS 01532

PHONE: 508-393-9727 FAX: 508-393-5242

"DEFINITIVE PLAN"

EROSION CONTROL PLAN

FOR

STOW ROAD SUBDIVISION

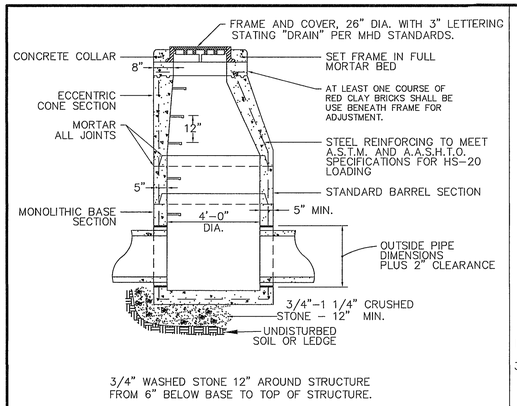
MARLBOROUGH, MA

REVISED:	DESCRIPTION:
12/20/2023	REVISED CUL-DE-SAC
11/10/2023	DPW REVIEW COMMENTS
10/18/2023	DPW REVIEW COMMENTS

DRAWN BY: REM CHECK BY: VC

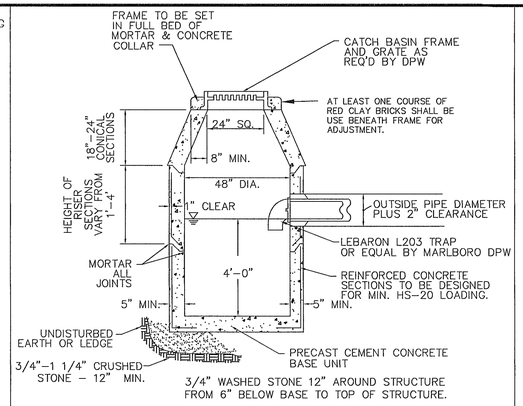
DATE: AUGUST 3, 2023

SCALE: 1"=40' SHEET 5 OF 8



PRECAST CONCRETE DRAIN MANHOLE

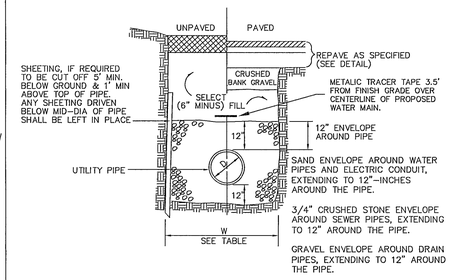
NOT TO SCALE



PRECAST CONCRETE CATCH BASIN

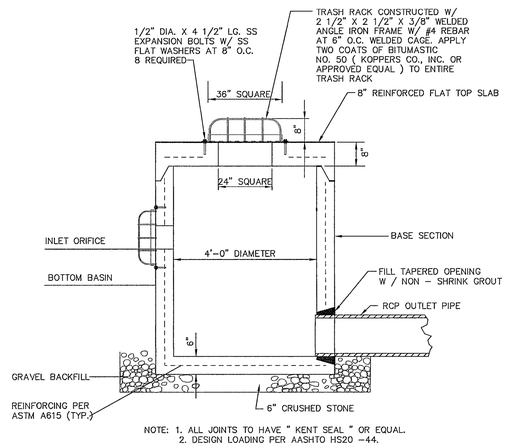
NOT TO SCALE

TRENCH WIDTH (W)		
D DIAMETER OF PIPE	W UNSHEETED	W SHEETED
TO 12"	3'	4'
14" TO 24"	4'	5'
30" TO 36"	5'	6'



TYPICAL TRENCH SECTION

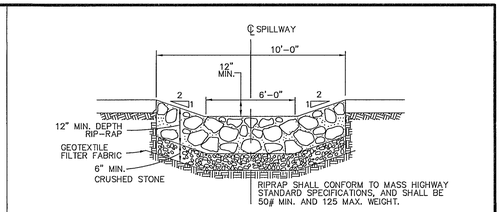
NOT TO SCALE



NOTE: 1. ALL JOINTS TO HAVE " KENT SEAL " OR EQUAL.
2. DESIGN LOADING PER AASHTO HS20 -44.

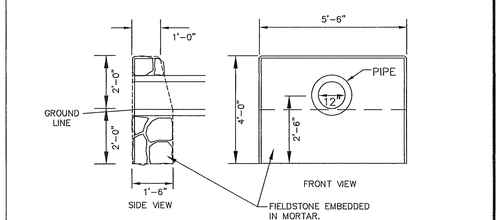
4'x4' PRECAST CONCRETE MANHOLE OUTLET STRUCTURE

NOT TO SCALE



EMERGENCY SPILLWAY DETAIL

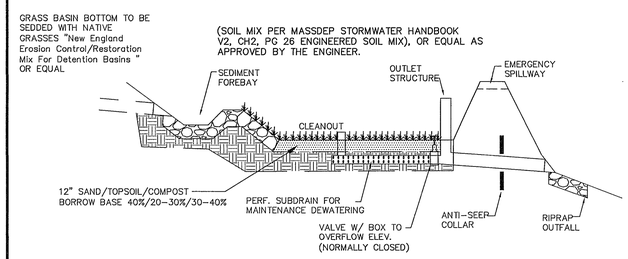
NOT TO SCALE



NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.

TYPICAL STONE MASONRY HEADWALL

NOT TO SCALE

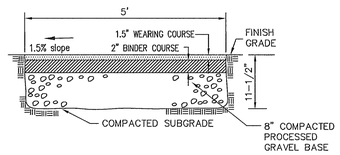


EXCAVATE A MINIMUM 6 INCHES IN TO NATURAL "C" LAYER, AND REMOVE ANY UNSUITABLE MATERIALS BELOW OR AROUND THE SYSTEM. ANY REPLACEMENT FILL REQUIRED SHALL BE CLEAN FREE DRAINING FILL WITH LESS THAN 5% PASSING THE #200 SIEVE (TITLE 5 FILL MEETS THIS REQUIREMENT)

BOTTOM OF EXCAVATION TO BE WITNESSED AND APPROVED BY DESIGN ENGINEER PRIOR TO BACKFILL.

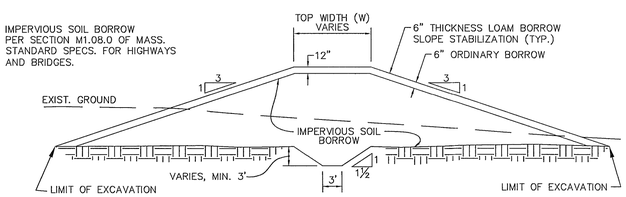
TYPICAL INFILTRATION BASIN SECTION

NOT TO SCALE



BITUMINOUS CONCRETE WALK

NOT TO SCALE

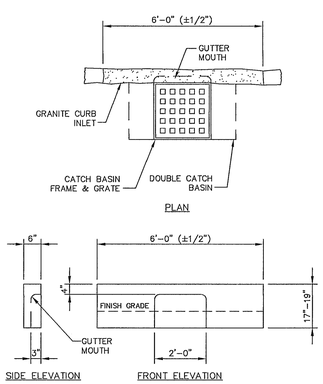


DETENTION BASIN TO BE DESIGNED AND INSPECTED BY A LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER AND STAMPED CERTIFICATION OF PROPER DESIGN AND INSPECTION SHALL BE PROVIDED TO THE CITY ENGINEER AFTER INSTALLATION AND PRIOR TO AS-BUILTS BEING APPROVED.

EMERGENCY OVERFLOW SPILLWAY TO BE MADE OF RIPRAP (SEE DETAIL)

TYPICAL DIKE SECTION

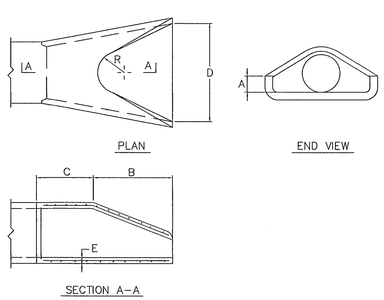
NOT TO SCALE



GRANITE CURB INLET

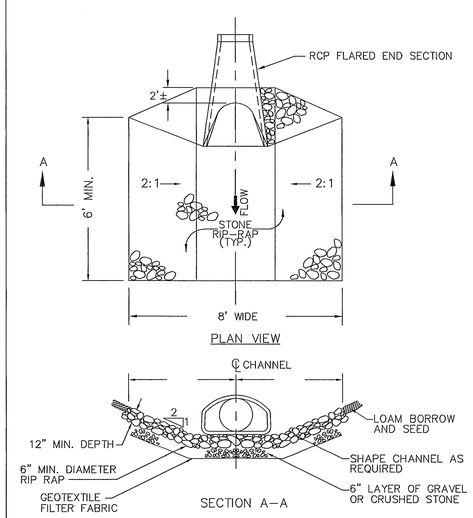
NOT TO SCALE

DIA.	A	B	C	D	E	R
12"	4"	2'-0"	4'-0 7/8"	2'-0"	2"	9"
15"	6"	2'-3"	3'-10"	2'-6"	2 1/4"	11"
18"	9"	2'-3"	3'-10"	3'-0"	2 1/2"	12"
24"	9 1/2"	3'-7 1/2"	2'-6"	4'-0"	3"	14"
30"	12"	4'-6"	1'-7 3/4"	5'-0"	3 1/2"	15"
36"	15"	5'-3"	2'-10 3/4"	6'-0"	4"	20"
42"	21"	5'-3"	2'-11"	6'-6"	4 1/2"	22"
48"	24"	6'-0"	2'-2"	7'-0"	5"	22"
54"	27"	5'-5"	2'-11"	7'-6"	5 1/2"	24"
60"	30"	5'-0"	3'-3"	8'-0"	6"	24"



STANDARD CONCRETE FLARED ENDS

NOT TO SCALE



RIP-RAP APRON

NOT TO SCALE

APPROVAL UNDER THE SUBDIVISION CONTROL LAW, IS REQUIRED.

MARLBOROUGH PLANNING BOARD

_____

_____

_____

_____

_____

_____

_____

DATE: _____

COMMONWEALTH OF MASSACHUSETTS
VITO COLONNA
No. 47635
PROFESSIONAL ENGINEER
10-20-23

I, _____ CLERK OF THE CITY OF MARLBOROUGH RECEIVED AND RECORDED APPROVAL FROM THE PLANNING BOARD OF THIS PLAN ON _____ AND NO APPEAL WAS TAKEN FOR TWENTY (20) DAYS THEREAFTER.

OWNERS:

McCABE FAMILY REVOCABLE TRUST

AND

JUDITH MELLO McCABE

APPLICANT:

KENDALL HOMES

P.O. BOX 766

SOUTHBOROUGH, MA 01772

CONNORSTONE ENGINEERING INC.

CIVIL ENGINEERS AND LAND SURVEYORS

10 SOUTHWEST CUTOFF, SUITE 7

NORTHBOROUGH, MASSACHUSETTS 01532

PHONE: 508-393-9727 FAX: 508-393-5242

CONSTRUCTION DETAILS

STOW ROAD SUBDIVISION

IN

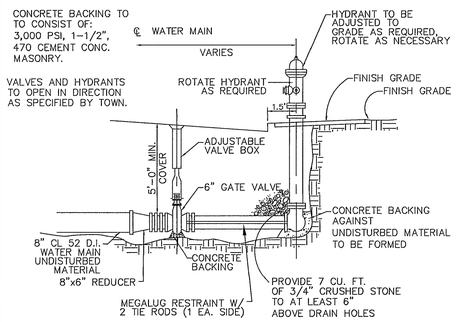
MARLBOROUGH, MA

REVISED:	DESCRIPTION:
11/10/2023	DPW REVIEW COMMENTS
10/18/2023	DPW REVIEW COMMENTS

DRAWN BY: REM | CHECK BY: VC

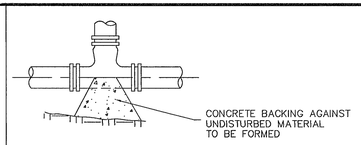
DATE: AUGUST 3, 2023

SCALE: 1"=40' | SHEET 6 OF 8

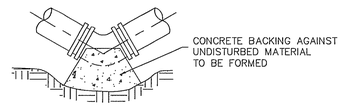


NOTE: POLYETHYLENE BARRIER REQUIRED BETWEEN PIPEFITTINGS AND CONCRETE.

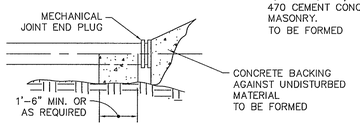
TYPICAL HYDRANT AND VALVE DETAIL
NOT TO SCALE
RESTRAINED JOINT HYDRANT TEE



TYPICAL TEE
NOT TO SCALE



TYPICAL BEND
NOT TO SCALE



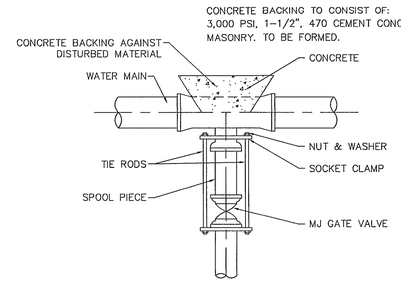
TYPICAL PLUG
NOT TO SCALE

CONCRETE BACKING TO TO CONSIST OF: 3,000 PSI, 1-1/2", 470 CEMENT CONC. MASONRY. TO BE FORMED

TABLE OF BEARING AREAS IN SQUARE FEET AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS			
SIZE OF MAIN (IN.)	45° BEND	TEES & PLUGS	22 1/2° BEND
8" OR LESS	8	10	8
10" & 12"	22	16	13

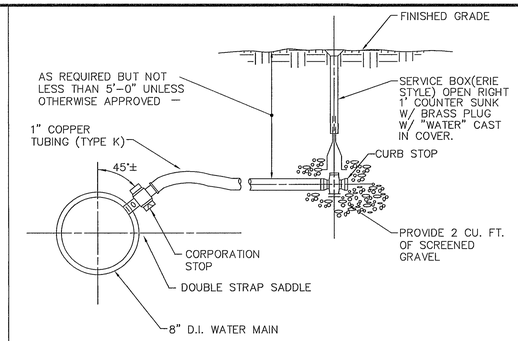
NOTE: POLYETHYLENE BARRIER REQUIRED BETWEEN PIPEFITTINGS AND CONCRETE.

CONCRETE BACKING FOR WATER PIPE

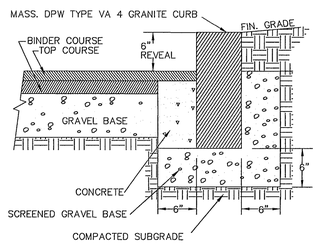


NOTE: POLYETHYLENE BARRIER REQUIRED BETWEEN PIPEFITTINGS AND CONCRETE.

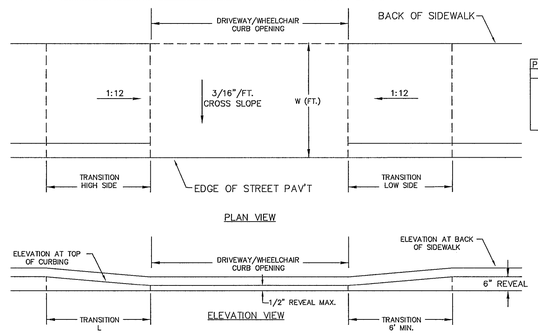
TYPICAL VALVE CONNECTION
RESTRAINED JOINT TEE
NOT TO SCALE



TYPICAL PERMANENT SERVICE CONNECTION
NOT TO SCALE

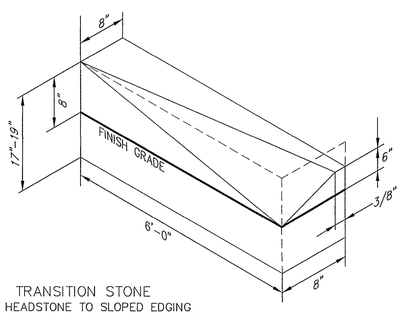


VERTICAL GRANITE CURB
NOT TO SCALE

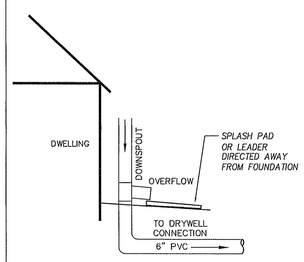


PROFILE GRADE		
%	G	L
0	0	6'
1	.01	7'
2	.02	8'
3	.03	9.5'
4	.04	11.5'
5	.05	15'

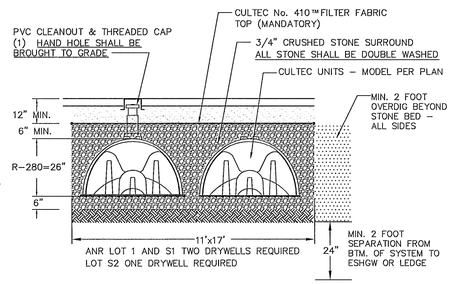
DRIVEWAY/WHEELCHAIR CURB OPENINGS
NOT TO SCALE



TRANSITION STONE
DCB HEADSTONE TO SLOPED EDGING
NOT TO SCALE



ROOF GUTTER
CONNECTION SCHEMATIC
NOT TO SCALE



REMOVE TOP/SUBSOIL BELOW DRYWELL, EXCAVATE AT LEAST 6 INCHES INTO THE 'C' LAYER, AND PROVIDE MINIMUM 2 FOOT OVERDIG ON ALL SIDES. ANY FILL REQUIRED BELOW THE BOTTOM OF STONE SHALL BE FREE-DRAINING CLEAN SAND PER TOWN REQUIREMENTS.

DRYWELL DETAIL
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
VITO COLONNA
No. 47635
PROFESSIONAL ENGINEER
12-20-23

APPROVAL UNDER THE SUBDIVISION CONTROL LAW, IS REQUIRED.
MARLBOROUGH PLANNING BOARD

DATE: _____

I, _____ CLERK OF THE CITY OF MARLBOROUGH RECEIVED AND RECORDED APPROVAL FROM THE PLANNING BOARD OF THIS PLAN ON _____ AND NO APPEAL WAS TAKEN FOR TWENTY (20) DAYS THEREAFTER.

OWNERS:
McCABE FAMILY REVOCABLE TRUST
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P.O. BOX 766
SOUTHBOROUGH, MA 01772

CONNORSTONE ENGINEERING INC.
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10 SOUTHWEST CUTOFF, SUITE 7
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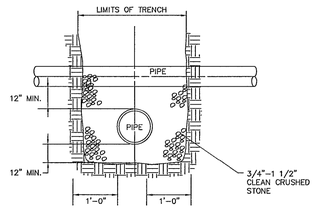
PHONE: 508-393-9727 FAX: 508-393-5242

CONSTRUCTION DETAILS

STOW ROAD SUBDIVISION
IN
MARLBOROUGH, MA

REVISED:	DESCRIPTION:
12/20/2023	REVISED CUL-DE-SAC
11/10/2023	DPW REVIEW COMMENTS
10/18/2023	DPW REVIEW COMMENTS

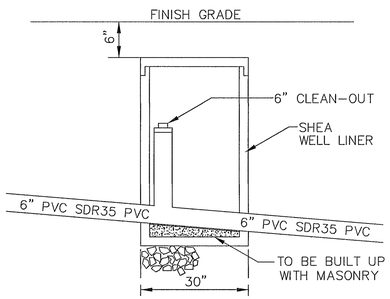
DRAWN BY: REM | CHECK BY: VC
DATE: AUGUST 3, 2023
SCALE: 1"=40' | SHEET 7 OF 8



UTILITY CROSSING DETAIL

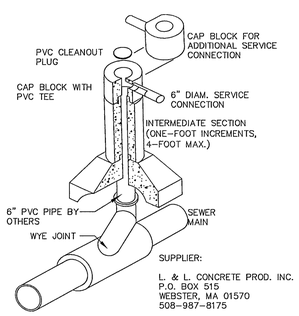
NOT TO SCALE

NOTE: FOR WATER AND SEWER CROSSINGS MAINTAIN 18 INCHES OF SEPARATION BETWEEN PIPES. LAY PIPES SUCH THAT CONNECTION JOINTS ARE 10 FEET EITHER SIDE OF THE CROSSING. ALL WATER PIPES LAID OVER SEWER PIPES.



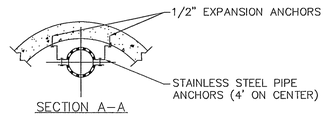
SEWER CLEANOUT

NOT TO SCALE

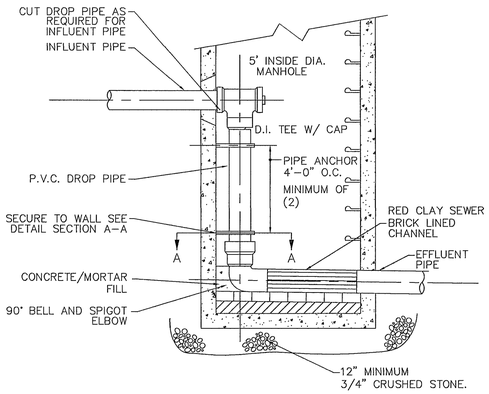


SEWER CHIMNEY

NOT TO SCALE

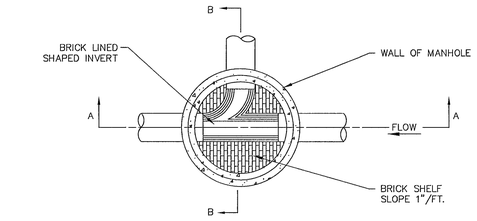


SECTION A-A

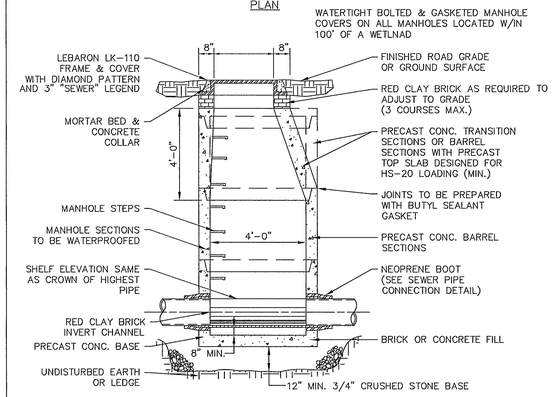


INSIDE DROP CONNECTION

NOT TO SCALE



PLAN

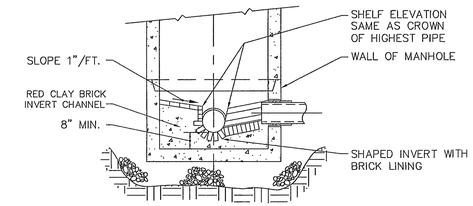


SECTION A-A

TYPICAL PRECAST SEWER MANHOLE

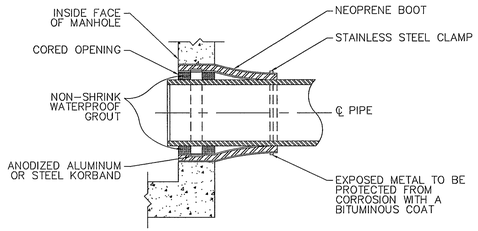
WITH PRECAST BASE

NOT TO SCALE



SECTION B-B

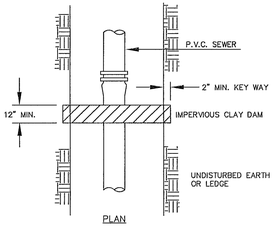
NOT TO SCALE



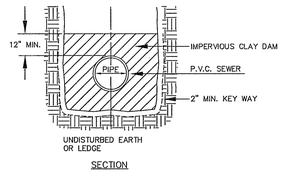
SEWER PIPE CONNECTION DETAIL

USING NEOPRENE BOOT IN CORED HOLE

NOT TO SCALE



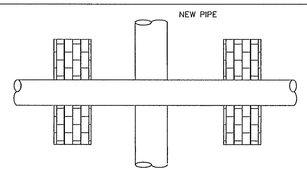
PLAN



SECTION

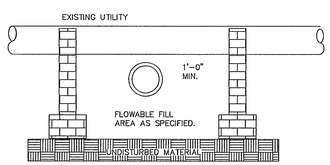
PIPE TRENCH DAM DETAIL

NOT TO SCALE

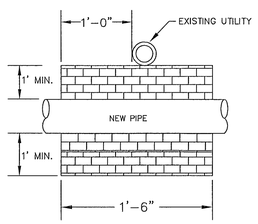


PLAN

NOTE: BRIDGING CONSTRUCTED OF RED CLAY BRICK.



SECTION B-B



SECTION A-A

UTILITY CROSSING

NOT TO SCALE

APPROVAL UNDER THE SUBDIVISION CONTROL LAW, IS REQUIRED.

MARLBOROUGH PLANNING BOARD

_____

_____

_____

_____

_____

_____

_____

DATE: _____

I, _____ CLERK OF THE CITY OF MARLBOROUGH RECEIVED AND RECORDED APPROVAL FROM THE PLANNING BOARD OF THIS PLAN ON _____ AND NO APPEAL WAS TAKEN FOR TWENTY (20) DAYS THEREAFTER.

OWNERS:

McCABE FAMILY REVOCABLE TRUST

AND

JUDITH MELLO McCABE

APPLICANT:

KENDALL HOMES

P.O. BOX 766

SOUTHBOROUGH, MA 01772

CONNORSTONE ENGINEERING INC.

CIVIL ENGINEERS AND LAND SURVEYORS

10 SOUTHWEST CUTOFF, SUITE 7

NORTHBOROUGH, MASSACHUSETTS 01532

PHONE: 508-393-9727 FAX: 508-393-5242

CONSTRUCTION DETAILS

STOW ROAD SUBDIVISION

IN

MARLBOROUGH, MA

REVISED:	DESCRIPTION:
11/10/2023	DPW REVIEW COMMENTS
10/18/2023	DPW REVIEW COMMENTS

DRAWN BY: REM	CHECK BY: VC
DATE: AUGUST 3, 2023	
SCALE: 1"=40'	SHEET 8 OF 8.

Sustainable Porous Paving Solutions

Serving Municipal, Commercial and Residential Customers
across Maine, New Hampshire and Massachusetts

Visit or Contact Northeast Porous Paving;

Website - www.northeastporouspaving.com

Email – inquiries@northeastporouspaving.com

Porous Paving - The Basics

- Onsite management of rainwater using porous paving solutions reduces offsite runoff and can automatically achieve pollutant load reduction while recharging and replenishing groundwater.

- Porous paving can often be more cost effective avoiding costly drainage infrastructure such as pipes, manholes and proprietary treatment devices.

- Porous paving solutions including, porous asphalt, porous concrete, porous pavers and grasscrete.

Porous Paving— Key Design Considerations

- Perk rate of the paving system
- Perk rate of the sub-base and soil
- Loadings – vehicular or pedestrian
- Risk of clogging or blinding over
- Maintenance
- Freeze thaw cycles and winter plowing
- Cracking and heaving
- Cost – capital and whole life

What is Flexible Porous Paving?

+

+

=

- Flexible Porous Paving, is a flexible, high-capacity porous paving system made from recycled tires and crushed aggregate mixed with a moisture cured urethane binder.
- Highly porous, conveys 40 gpm per sq. ft.
- Reduces stormwater runoff and replenishes groundwater
- Solves erosion and washout problems
- Reduces maintenance costs
- Reduces liability
- Supports sustainability goals by using 1 tire for every 3 sq. ft. of Flexible Porous Paving installed.

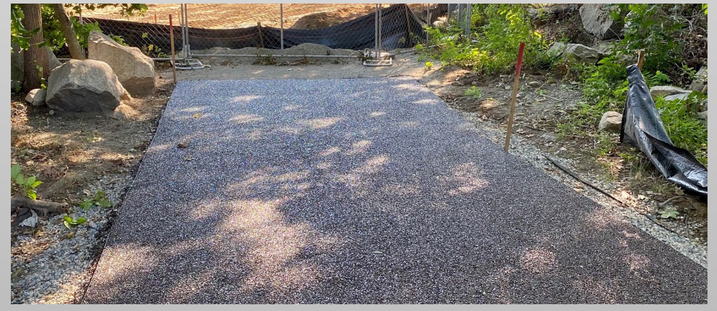
Example Applications

Sidewalks

Drainage Strips

Healing Gardens

Tree Surrounds



Trails

Median Strips

Mixed on Site and Poured in Place

- 50lb. bag of tire crumb + 50lb. bag of crushed aggregate + urethane binder will cover 12 -15 sq. ft. to a depth of 1 ½” to 2”.
- Smaller projects are typically mixed by hand in a trough for larger projects a 2 cubic yard mortar mixer is used.
- 4-6 person crew can typically install 15-20 tree surrounds or 1,500 -2,000 sq. ft. of sidewalk or trail per day.

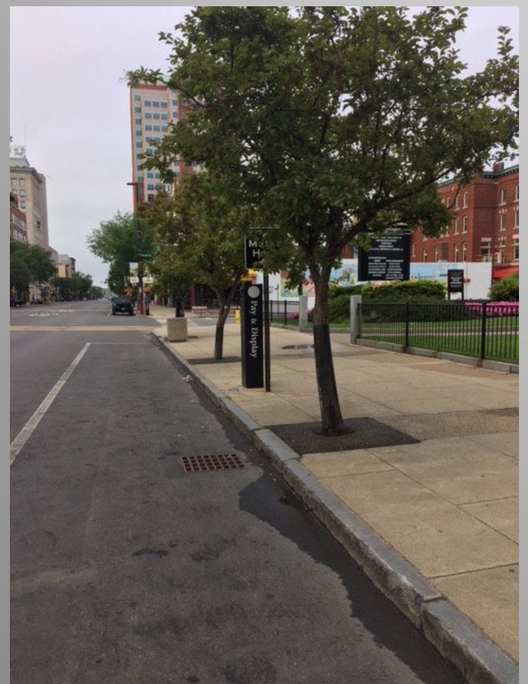
Mixed on site and installed by Northeast Porous Paving

Applications - Tree Surrounds

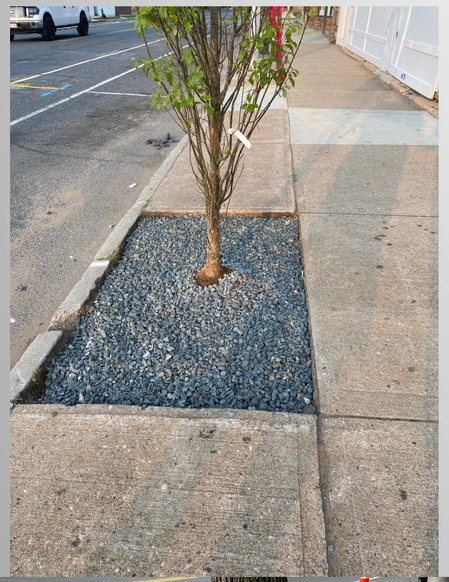
- Reduces trip hazards and liability costs.
- Reduces routine maintenance associated with removing cigarette butts and unsightly trash.
- Puts an end to the need and annual cost of replacing washed out mulch.
- Promotes healthier trees.

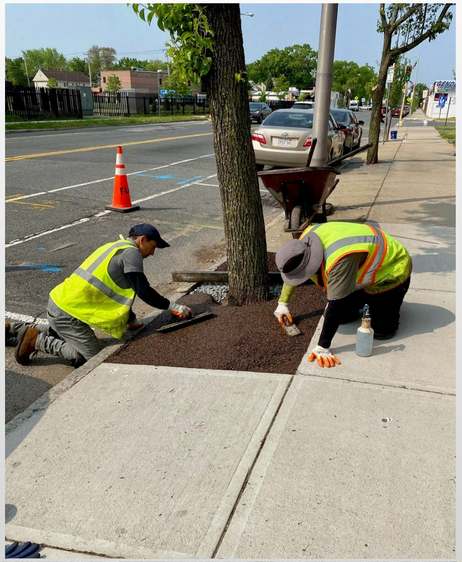
City of Portland, ME – Old Port, Before and After - 2016

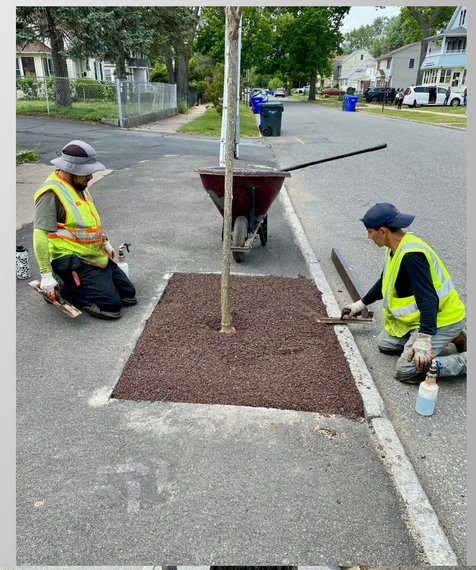
City of Manchester, NH – Elm Street, Over 100 Tree Surrounds –2017

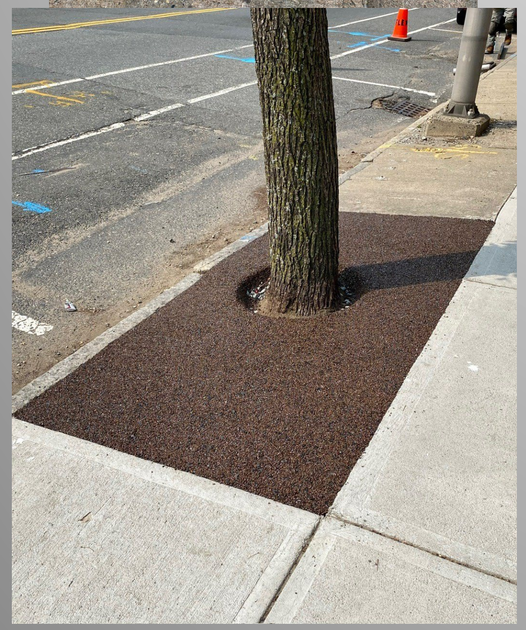


City of Springfield, MA - Page Blvd, 25 Trees, May 2023







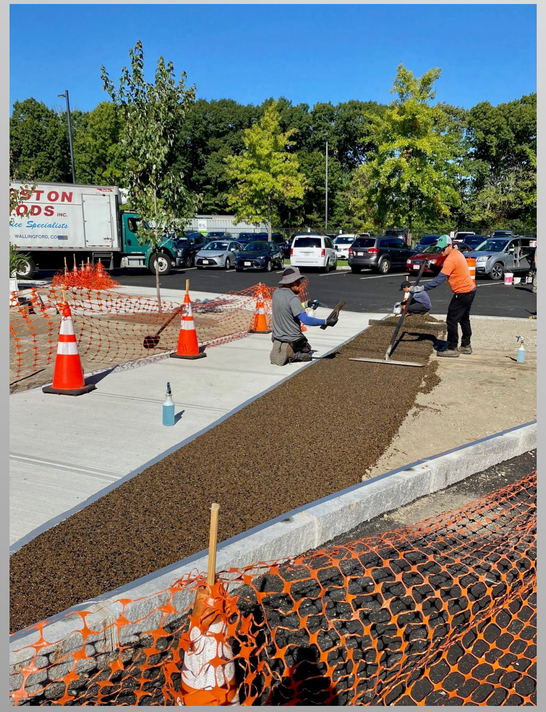


Applications - Sidewalks
Lower Main Street Bridgton, ME

- 3,900 sq ft of Flexible Porous Paving.
- Color – Granite
- Installed - June 2021
- Installation time - 2 days

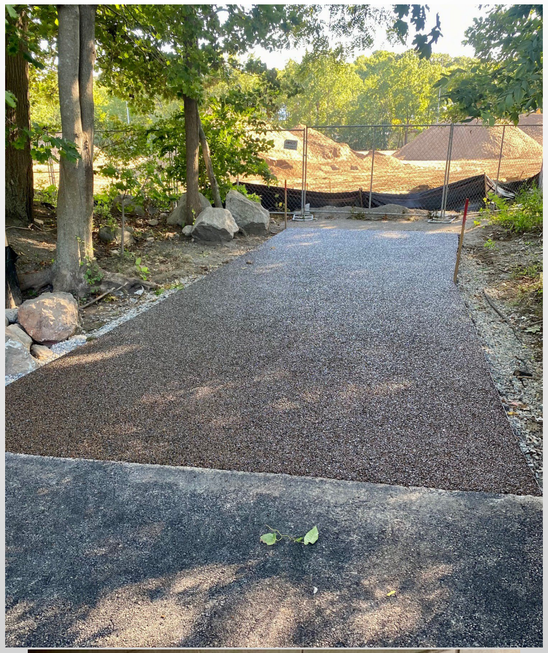
Applications - Schools
Huckleberry Hill ES, Lynnfield MA

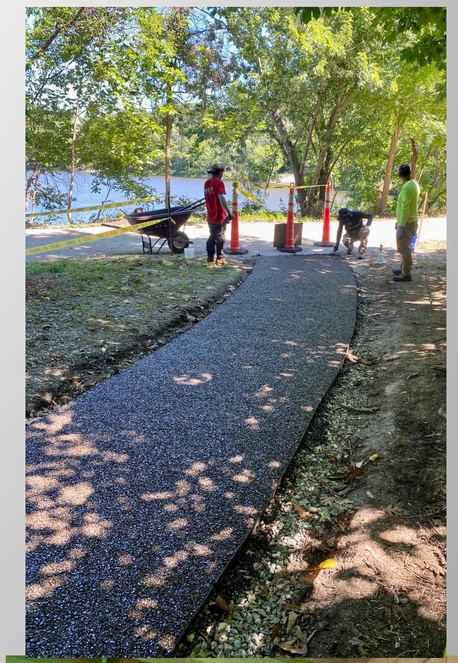
- School Entrance - Bus drop off.
- 1150 sq ft of Flexible Porous Paving.
- Color – Cypress Brown.
- Installed - September 2022.
- Installation time - One day.

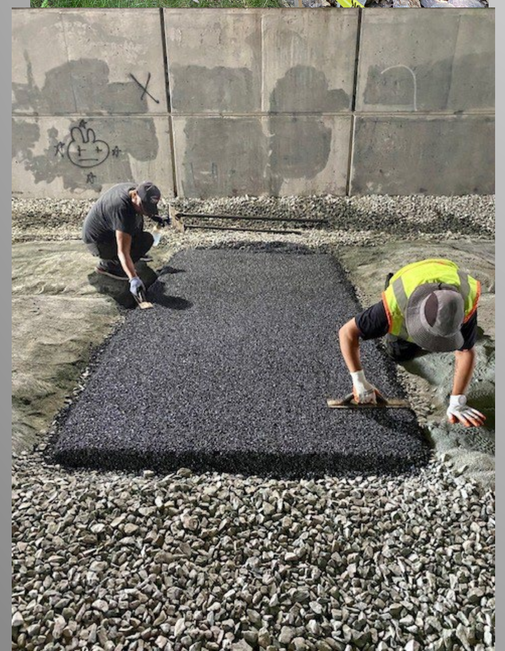


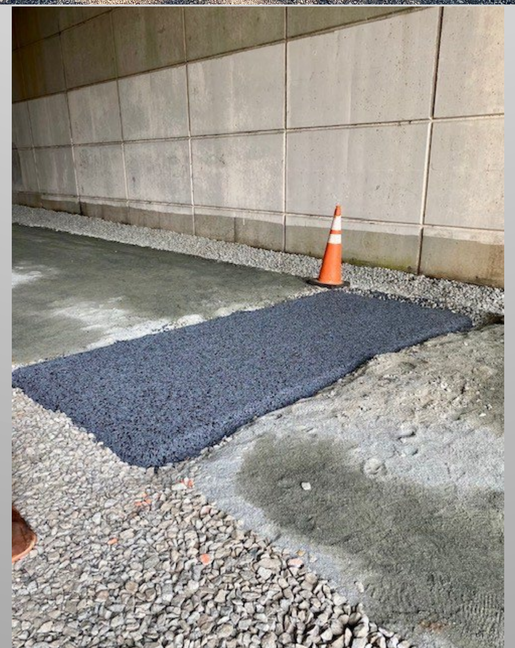
Applications - Sport Facilities, Lynnfield MA and Hospitals, Manchester, NH

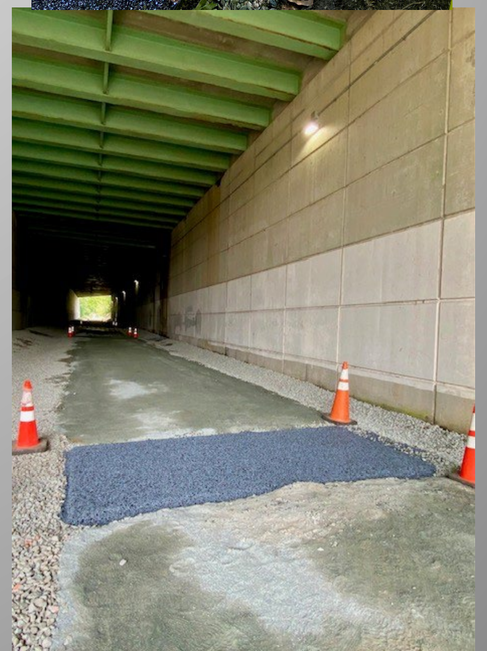
Applications - Trails and Pathways Arlington and Peabody ,MA











Recommended Maintenance

- Spring sweeping, vacuuming or blower to remove leaves, dirt and debris.
- Inspect the surface.
- Over roll with a fresh coat of urethane binder to maintain the integrity of the surface every 3-5 years depending on use and application.

Does it work? Yes it Does!

Flexible Porous Paving - Summary

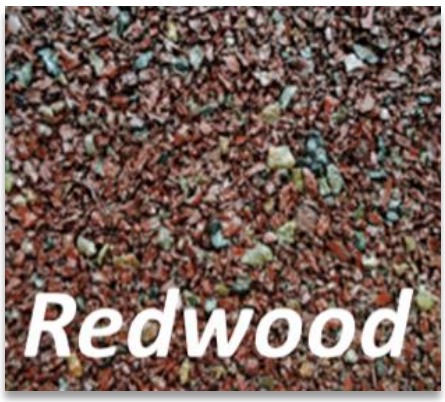
- An innovative permeable paving solution for managing stormwater.
- Incorporates recycled tires.
- A highly porous, flexible, non-slip and non-cracking surface.
- Wide range of applications such as; trails, paths, sidewalks, median strips tree surrounds, hospitals, healing gardens and schools.

Tree Surrounds:

- Reduces trip hazards and liability costs.
- Reduces routine maintenance associated with removing cigarette butts and unsightly trash.
- Puts an end to the need and annual cost of replacing washed out mulch.
- Promotes healthier trees.

Flexible Porous Paving - Standard Colors

Flexible Porous Paving is available in six standard colors. The standard colors are selected to reflect native earth tones of the region. Standard colors can be mixed and blended and custom colors are available on request. Please call **207 450 6228** for details. The standard color pallet is shown below:



Sales 207 450 6228 E-mail – Inquiries@northeastporouspaving.com Installation 207-450-6053

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Sub-Base Preparation for Flexible Porous Paving

The effectiveness and durability of the Flexible Porous Paving system installed by Northeast Porous Paving is dependent on the characteristics of the underlying soils and the quality of the sub-base prep work.

Underlying Soils

The Engineer of Record will typically identify the existing soil type, evaluate characteristics, and establish the suitability of the underlying soils for infiltration during the initial site assessment. They may even arrange a test boring and complete an infiltration test to confirm the infiltration rate of the underlying soil. Clay soils and high-water tables can make infiltration impractical.

Sub-Base

The sub-base serves two important functions, firstly it acts as a foundation for the Flexible Porous Paving surface and secondly it acts as a “reservoir” distributing and holding stormwater in the void spaces until the underlying soil has the hydraulic capacity to infiltrate the water flowing through the porous paving.

Geotextile fabric may be specified by the Engineer of Record and installed to separate the soil and the sub-base stone.

For the sub-base ASTM 57 (1/2” to 1”) crushed stone or aggregate is the most commonly used material. The sub-base stone should be clean, angular and well compacted. As Flexible Porous Paving is normally installed in pedestrian and light traffic areas (i.e. golf carts) the recommended depth of the stone sub base will be 3-4 inches. The top of the sub-base should be level and should 1½” – 2” below finish grade.

Structural, monolithic geo cellular blocks can also be used in specific situations as an alternative to traditional crushed stone.

Tree Wells

When preparing to install Flexible Porous Paving to replace existing tree grates or bark mulch the first job will be to remove the existing grate and frame or bark mulch taking care not to damage the tree trunk or the tree roots. The City Arborist may also require air spading to loosen compacted soil prior to placing the crushed stone sub-base.

The concrete, brick or granite curbing surrounding the tree well should be inspected and repaired as necessary prior to installation of the sub-base and the Flexible Porous Paving. Wherever possible the new Flexible Porous Paving surface will be installed level and flat so as not to create a sidewalk tripping hazard. When installing around older mature trees this may not

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always be possible and the Northeast Porous Paving crew will assess the best possible option based on the particular location.

Edge Strips for Paths

For trails, walkways, golf course paths and patio applications a steel angle edging strip may be specified and used to provide an attractive clean edge and to establish a border between the porous paving surface and the adjacent landscaping or lawn. If a steel edging strip is not used then the Flexible Porous Paving will typically be finished with a 45° chamfered edge.

Curing Time

Flexible Porous Paving will normally cure and be fit for use within 12-24 hours of installation depending on the ambient temperature. Newly installed areas should be protected with cones and caution tape to prevent pedestrians from walking on the installed material before it has fully cured.

Below are examples of prep work for tree wells, sidewalks and walkways prepared and ready for installation of the Flexible Porous Paving surface:

All site preparation and sub-base prep work must be completed in accordance with the specifications prior to Northeast Porous Paving arriving on site to install the Flexible Porous Paving. If there are any questions regarding prep work please contact Northeast Porous Paving installation support (207 450 6053) for consultation and advice.

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Flexible Porous Paving Specifications

Section ____

1. GENERAL

   1.1. The Flexible Porous Paving shall be made from recycled passenger tire crumb and crushed stone bound together by a urethane binding agent as supplied and installed by Northeast Porous Paving. Website link - www.northeastporouspaving.com.
   1.2. All components, materials and compounds shall be sourced and manufactured in the USA.

2. SUBMITTALS

   2.1. At the request of the engineer of record the manufacturer shall submit;
      2.1.1. A sample that reflects the characteristics and color of the material to be installed at the project location. The sample, upon approval, shall be maintained as the standard of minimum quality for the proposed surfacing and paving work required for the project.
      2.1.2. Examples of similar projects, completed in the last 5 years, that are within 150 miles of the current project location. Examples will include project description, square footage installed, photographs and references.

3. INSTALLATION

   3.1. The manufacturer shall;
      3.1.1. Furnish all labor, materials, tools, equipment, and incidentals required to install the Flexible Porous Paving.
      3.1.2. Submit to the owner a current Certificate of Insurance prior to commencing work at the project site.
      3.1.3. Provide an adequate number of skilled workers who are trained and experienced with installing Flexible Porous Paving and are familiar with the specified contract requirements and the methods needed for its installation.
      3.1.4. Install the Flexible Porous Paving to the depth and width as described in the project specifications and shown on the contract drawings over the crushed stone aggregate base provided by others.
      3.1.5. Reduce the risk of damage to the Flexible Porous Paving surface by not allowing track vehicles (metal or rubber), forklifts (warehouse-variable reach), main lifts (booms or scissors), and/or dumpsters or roll-off containers on the Flexible Porous Paving either during or following installation. Any explicit or implied warranty is voided through failure to comply with this section.
      3.1.6. The owner or general contractor will provide cones and tape off the area following installation to prevent damage to the Flexible Porous Paving surface while curing.

4. PRODUCTS

   4.1. Crushed Stone Sub-Base;
      4.1.1. For load bearing applications Flexible Porous Paving shall be installed over a minimum of 4" of compacted crushed stone aggregate to a density of 95% minimum.
      4.1.2. The sizing of the stone and base soil will directly represent the desired "Curve Number" (percolation rate) required.

   4.2. Flexible Porous Paving.
      4.2.1. The total area to be surfaced with Flexible Porous Paving shall be ????? square feet.
      4.2.2. Flexible Porous Paving shall be mixed and installed in accordance with the manufacturers written instructions to an average depth of 1.5"-2.0" over the crushed

stone aggregate sub-base.

4.2.3. The Flexible Porous Paving shall be Black / Cypress / Redwood / Bark Brown / Green in color.

4.2.4. The Flexible Porous Paving shall be mixed with a moisture cured urethane binding agent based on MDI Polyether Polyols and shall be free of extender oils to prevent leaching over time. Binders that use extender oils will not be acceptable.

4.2.5. The Flexible Porous Paving shall be cured and fit for use within 12-24 hours depending on ambient temperature.

5. PROJECT CONDITIONS

5.1. The manufacturer shall provide appropriate and adequate protection to adjacent areas including but not limited to:

5.1.1. Protection of adjacent workspace from splashing of Flexible Porous Paving materials.

5.1.2. Remove all stains from exposed surfaces of paving, structures, and grounds.

5.1.3. Remove all waste materials and trash.

5.1.4. Provide suitable protection to assure no damage or disturbance to existing improvements or vegetation before starting work and maintain protection throughout the course of the work.

5.1.5. Restore and repair areas, at no additional cost to the owner, that have been damaged as a result of installing the Flexible Porous Paving, including existing paving on or adjacent to the site, to their original condition or repair as directed to the satisfaction of the Owner's Representative.

6. WEATHER

6.1. Flexible Porous Paving urethane binder is engineered and selected based on the geographical location of the project and climate expectations during installation. The manufacturer will select and provide the appropriate binder for each installation.

6.2. Flexible Porous Paving shall not be installed when the ambient air temperature in the shade near the installation site is above 110° F or below 50° F. Temperatures below 50° F can extend the curing time and would fall outside of normal "use ready in 24 hours" guidelines.

6.3. The urethane binder shall be stored between 59°- 77° F and used within 6 months of delivery.

6.4. The Manufacturer shall not pave on days when rain is forecast, unless a change in the weather results in favorable paving conditions as determined by the Owner's Representative.

6.5. In the event of rain on days prior to installation, the sub base must be dry and not contain any standing water.

7. WARRANTY

7.1. The Flexible Porous Paving shall have a material warranty of 12 months from the date of installation.

7.2. The Warranty shall be issued on completion of the installation and final inspection.

Routine Maintenance Recommendations

Flexible Porous Paving installations are designed to operate and function trouble free with only minimal routine maintenance over the lifetime of the product. The frequency and scope of the routine maintenance required will be dependent on the application and project location. The key objective will be to keep the surface clean and clear of debris to maintain the hydraulic conveyance capacity of Flexible Porous Paving over time as well as maintaining the integrity and aesthetic appeal of the surface.

Prior to undertaking annual routine maintenance of Flexible Porous Paving it is recommended that an inspection be completed to evaluate the condition of the surface. The following are suggested annual maintenance inspection points:

- Inspect the surface for evidence of sediment deposition, organic debris, staining or ponding.
- Inspect the structural integrity of the surface, looking for signs of surface deterioration, such as raveling, slumping, cracking, etc. Contact Northeast Porous Paving to schedule replacement or repair affected areas, as necessary.
- Inspect any contributing drainage area for controllable sources of trash, debris, sediments and pollutants. Develop a plan to limit or if possible eliminate such sources.

The first recommendation for maintaining sidewalks, paths, trials, walkways and tree wells is to remove any sediment and debris by blowing off with a leaf blower, light sweeping or vacuuming at a frequency consistent with the use and solids loadings encountered. In regions where large quantities of sediment may accumulate following winter sanding operations, cleaning the surface with a vacuum may be appropriate in the Spring. If a vacuum sweeper is used, rotating brooms or water spray should be disabled, since spraying may lead to subsurface clogging and mechanical brushing may cause surface abrasion. Cleaned sections may then be tested by pouring water from a five-gallon bucket or spraying with a hose pipe to ensure full hydraulic conveyance capacity has been restored.

Between 3-5 years following installation the surface may require an over roll with urethane binder to maintain the appearance and integrity of the surface. Please contact Northeast Porous Paving for consultation and advice. Northeast Porous Paving offers its customers long-term maintenance programs and extended warranty plans for details call **207 450 6053**.

Installation & Maintenance 207-450-6053 E-mail – Inquiries@northeastporouspaving.com

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Schools

Northeast Porous Paving offers schools, colleges and universities an alternative to traditional paving materials for landscaping, sidewalks, paths and walkways.

Flexible Porous Paving is a strong, durable, cost effective porous paving system made from recycled car tires and crushed rock aggregate held together with a urethane binder.

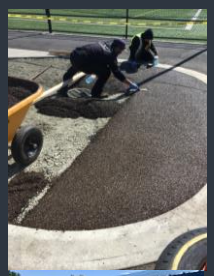
It is an advanced sustainable paving system that reduces maintenance and the high perk rate allows stormwater to infiltrate quickly into the ground reducing ponding and benefiting the environment.

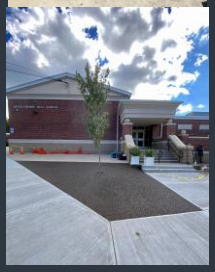
Sustainable Porous Paving Solutions for your School, College or University Campus

Problem – Several of the landscaped areas at the High School, Elementary School and Middle School in Lynnfield, MA were covered with bark mulch or crushed stone. The bark mulch washed out after rain events and plantings were damaged as a result of students walking across the areas. Mulch required frequent and costly maintenance and a better more permanent solution was required.

Solution – Flexible Porous Paving was selected to replace the bark mulch and stone. The mulch was removed and the areas prepped with 3-4" of crushed stone aggregate. The skilled installation team then installed Flexible Porous Paving by hand to an average depth of 1½"-2" to match the existing finish grade.

Result – From concession stand landscaping, to tree wells and baseball dugouts, Flexible Porous Paving has been successfully used at the three main school facilities in Lynnfield, MA. Cypress Brown was the standard color installed at all locations and to date 1,300 tires have been used and saved from landfill. Annual maintenance associated with bark mulch replacement has been eliminated.





Contact **Sales 207 450 6228** **Installation 207-450-6063** **inquiries@northeastporouspaving.com**

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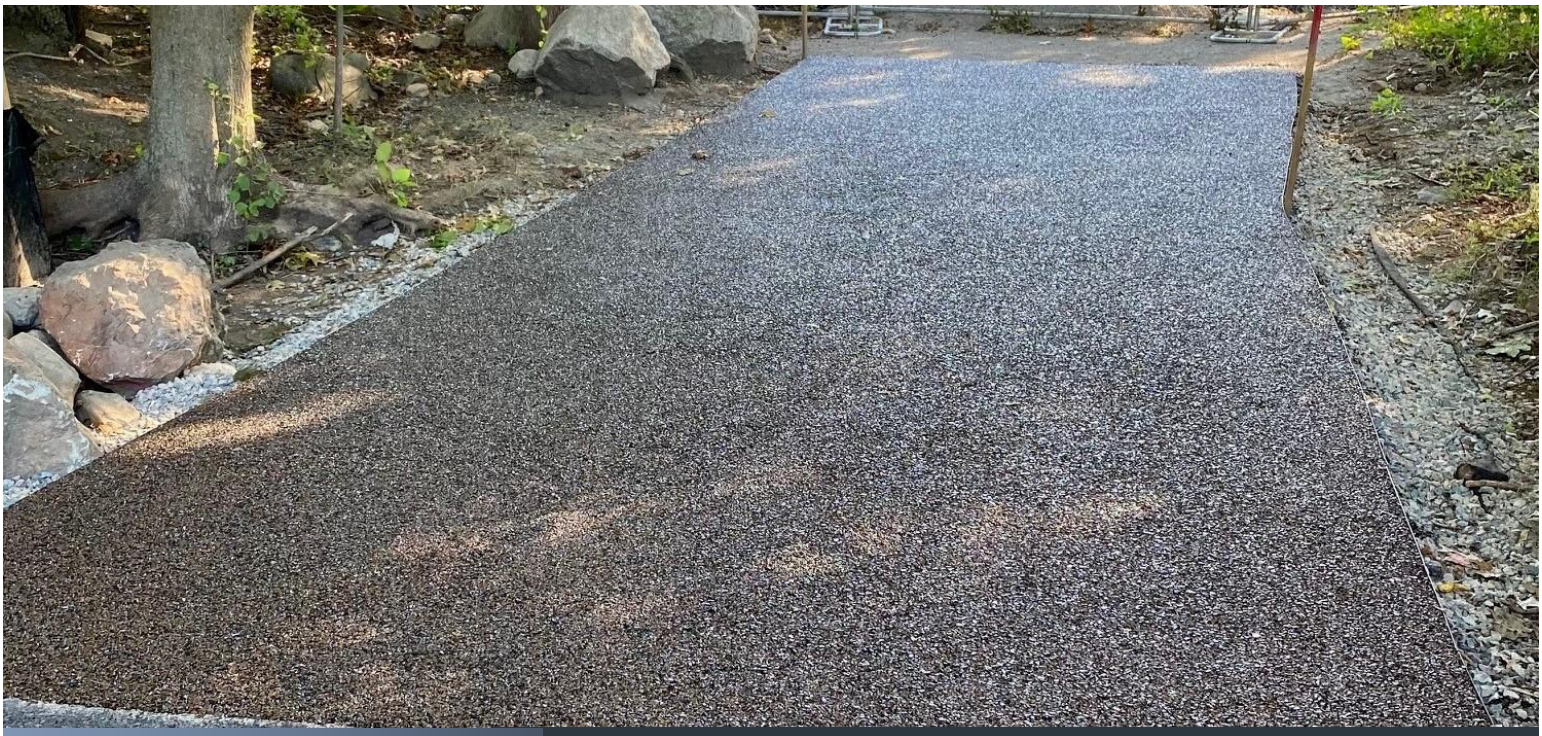
Trails and Sidewalks



Northeast Porous Paving offers an alternative option to traditional paving materials for trails, sidewalks and footpaths.

Flexible Porous Paving is a strong, durable, cost effective porous paving system made from recycled car tires and crushed rock aggregate held together with a urethane binder.

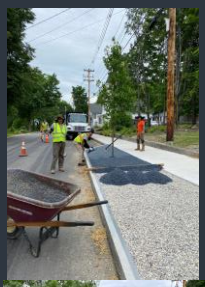
It is an advanced sustainable paving system that reduces maintenance, ponding, washout and liability risks. The high perk rate allows stormwater to rapidly infiltrate, recharging groundwater and benefitting the environment.

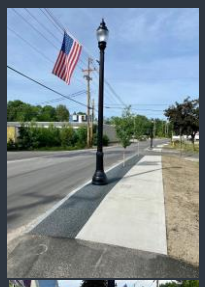
Sustainable Porous Paving Solutions for Trails, Sidewalks, Footpaths and Walkways

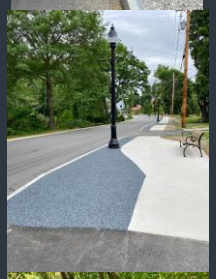
Problem – Traditional paving materials such asphalt, concrete, block pavers and brick used for pedestrian trails, sidewalks and footpaths are not typically porous and often lift, buckle and heave creating tripping hazards and a need for recurring maintenance.

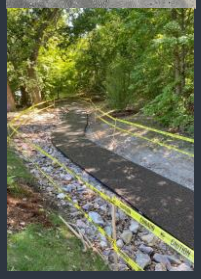
Solution – Flexible Porous Paving is an ideal solution to this perennial problem. Firstly, the areas is prepped with 3-4” of crushed stone aggregate. Our skilled installation team then mix and install Flexible Porous Paving by hand to an average depth of 1½”-2” to match the existing finish grade.

Result – Flexible Porous Paving provides a durable surface that is comfortable to walk on and is more resistant to lifting and buckling when compared to traditional paving materials. The high perk rate allows water to infiltrate quickly into the ground reducing the risk of ponding on the surface. The high perk rate can also mean it is not always necessary to pave the entire surface with Flexible Porous Paving. Photos to the right show a “hybrid” paving project. To reduce costs Flexible Porous Paving was installed in a strip along the granite curb with traditional concrete to the rear.









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Tree Wells

Northeast Porous Paving offers municipalities, commercial developers and residential property owners a sustainable solution for tree wells.

Flexible Porous Paving is a strong, durable, cost effective system made from recycled car tires mixed with a crushed rock aggregate held together with a urethane binder. The product offers many advantages when compared to traditional cast iron tree grates, bricks, pavers or mulch.

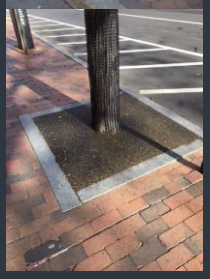
It protects trees and reduces pedestrian tripping hazards while providing an optimal method for infiltrating and directing stormwater runoff to the tree roots and benefiting the environment.

Sustainable Porous Paving Solutions for your Next Streetscape Improvement Project

Problem – Over time tree grates lift and create trip hazards and they also collect trash. Trip hazards can also occur when concrete and bricks settle, lift and heave. Bark mulch in tree wells washes out, migrates, and needs to be frequently replenished increasing maintenance costs.

Solution – Remove tree grates, concrete, pavers and mulch and replace with Flexible Porous Paving. The tree wells are cleared, air spade if necessary, and prepped with 3-4" of crushed aggregate. Northeast Porous Paving's skilled crew mix and install the Flexible Porous Paving by hand to a depth of 1½" -2" to match the existing finish grade.

Result – 100's of Flexible Porous Paving tree wells have been successfully installed across New England. Flexible Porous Paving has become the preferred environmentally friendly solution for fixing tree wells and for many other applications such as sidewalks, trails, paths and streetscape improvement projects.



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