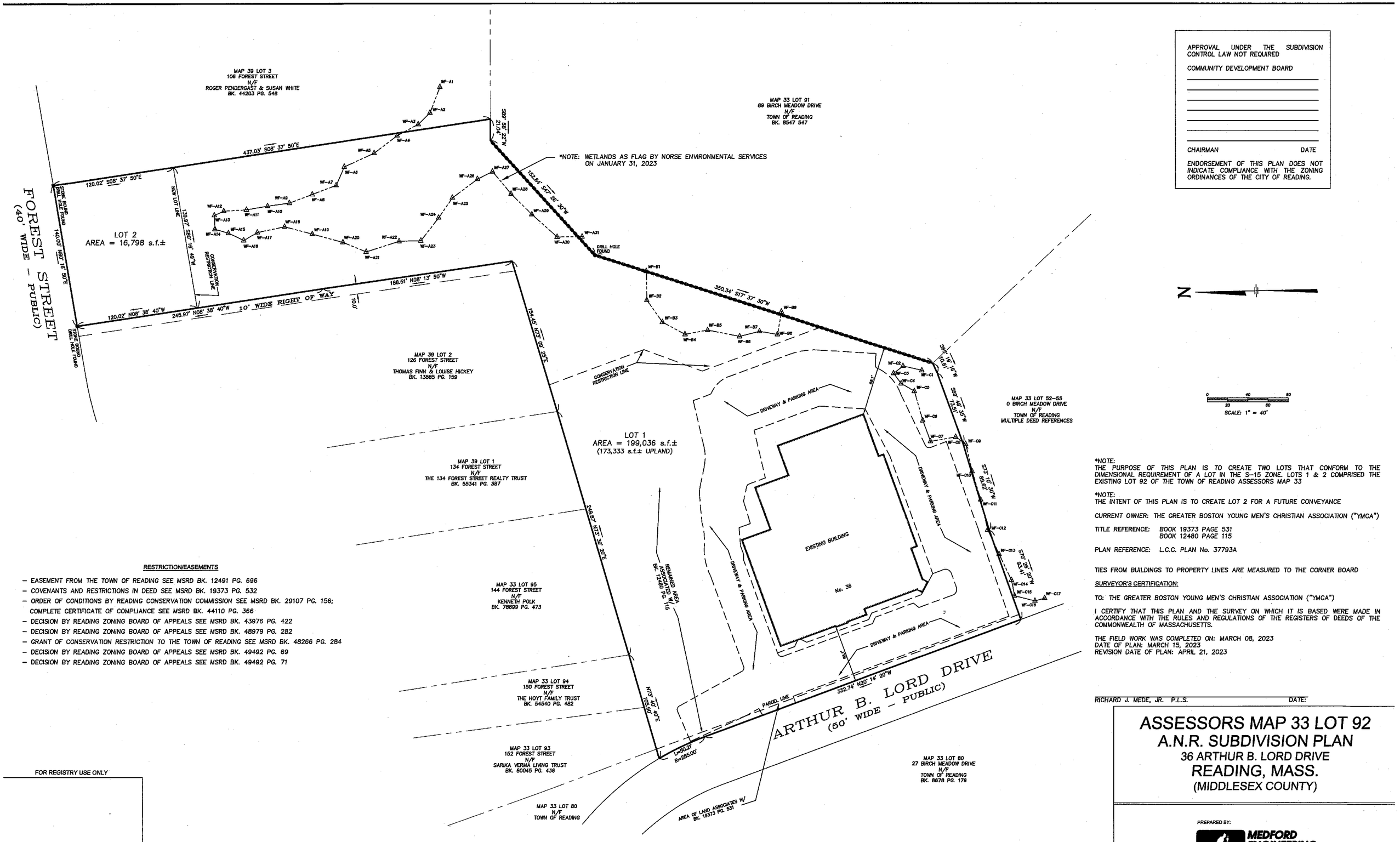

APPROVAL UNDER THE SUBDIVISION CONTROL LAW NOT REQUIRED

COMMUNITY DEVELOPMENT BOARD

CHAIRMAN DATE

ENDORSEMENT OF THIS PLAN DOES NOT INDICATE COMPLIANCE WITH THE ZONING ORDINANCES OF THE CITY OF READING.

*NOTE:
THE PURPOSE OF THIS PLAN IS TO CREATE TWO LOTS THAT CONFORM TO THE DIMENSIONAL REQUIREMENT OF A LOT IN THE S-15 ZONE. LOTS 1 & 2 COMPRISED THE EXISTING LOT 92 OF THE TOWN OF READING ASSESSORS MAP 33

*NOTE:
THE INTENT OF THIS PLAN IS TO CREATE LOT 2 FOR A FUTURE CONVEYANCE

CURRENT OWNER: THE GREATER BOSTON YOUNG MEN'S CHRISTIAN ASSOCIATION ("YMCA")

TITLE REFERENCE: BOOK 19373 PAGE 531
BOOK 12480 PAGE 115

PLAN REFERENCE: L.C.C. PLAN No. 37793A

TIES FROM BUILDINGS TO PROPERTY LINES ARE MEASURED TO THE CORNER BOARD

SURVEYOR'S CERTIFICATION:

TO: THE GREATER BOSTON YOUNG MEN'S CHRISTIAN ASSOCIATION ("YMCA")

I CERTIFY THAT THIS PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

THE FIELD WORK WAS COMPLETED ON: MARCH 08, 2023
DATE OF PLAN: MARCH 15, 2023
REVISION DATE OF PLAN: APRIL 21, 2023

RICHARD J. MEDE, JR. P.L.S. DATE:

RESTRICTION/EASEMENTS

- EASEMENT FROM THE TOWN OF READING SEE MSRD BK. 12491 PG. 696
- COVENANTS AND RESTRICTIONS IN DEED SEE MSRD BK. 19373 PG. 532
- ORDER OF CONDITIONS BY READING CONSERVATION COMMISSION SEE MSRD BK. 29107 PG. 156; COMPLETE CERTIFICATE OF COMPLIANCE SEE MSRD BK. 44110 PG. 366
- DECISION BY READING ZONING BOARD OF APPEALS SEE MSRD BK. 43976 PG. 422
- DECISION BY READING ZONING BOARD OF APPEALS SEE MSRD BK. 48979 PG. 282
- GRANT OF CONSERVATION RESTRICTION TO THE TOWN OF READING SEE MSRD BK. 48266 PG. 284
- DECISION BY READING ZONING BOARD OF APPEALS SEE MSRD BK. 49492 PG. 69
- DECISION BY READING ZONING BOARD OF APPEALS SEE MSRD BK. 49492 PG. 71

CURRENT ZONE: S-15

	REQUIRED ONE FAMILY	EXISTING LOT	PROPOSED LOT 1	PROPOSED LOT 2
AREA	15,000 s.f.	215,834 s.f.	199,036 s.f.±	16,798 s.f.±
FRONTAGE	100.00'	382.95' (ARTHUR B LORD DRIVE) 140.00' (FOREST STREET)	382.95'	140.00'
LOT WIDTH	60.00'	369.5'	369.5'	139.97'
UPLAND AREA	12,000 s.f.	173,333 s.f.	173,333 s.f.	16,798 s.f.

FOR REGISTRY USE ONLY

ASSESSORS MAP 33 LOT 92
A.N.R. SUBDIVISION PLAN
36 ARTHUR B. LORD DRIVE
READING, MASS.
(MIDDLESEX COUNTY)

PREPARED BY:
MEDFORD ENGINEERING & SURVEY
ANGELO R. VENEZIANO ASSOCIATES
15 HALL STREET, MEDFORD, MA 02155
781-396-4455 fax: 781-396-8052

SHEET 2 OF 2

FIELD	DRAW	CALC.	CHECK	FILE No.
DN	JTE	JTE	RJM	21817

21817.DWG
REV: APRIL 21, 2023
DATE: MARCH 15, 2023

LOCUS MAP - SCALE: 1" = 100'

APPROVAL UNDER THE SUBDIVISION CONTROL LAW NOT REQUIRED

COMMUNITY DEVELOPMENT BOARD

_____

_____

_____

_____

_____

_____

CHAIRMAN DATE

ENDORSEMENT OF THIS PLAN DOES NOT INDICATE COMPLIANCE WITH THE ZONING ORDINANCES OF THE CITY OF READING.

N

*NOTE:
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CURRENT OWNER: THE GREATER BOSTON YOUNG MEN'S CHRISTIAN ASSOCIATION ("YMCA")

TITLE REFERENCE: BOOK 19373 PAGE 531
BOOK 12480 PAGE 115

PLAN REFERENCE: L.C.C. PLAN No. 37793A

TIES FROM BUILDINGS TO PROPERTY LINES ARE MEASURED TO THE CORNER BOARD

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TO: THE GREATER BOSTON YOUNG MEN'S CHRISTIAN ASSOCIATION ("YMCA")

I CERTIFY THAT THIS PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

THE FIELD WORK WAS COMPLETED ON: MARCH 08, 2023
DATE OF PLAN: MARCH 15, 2023

RICHARD J. MEDE, JR. P.L.S. DATE: 03/15/2023

COMMONWEALTH OF MASSACHUSETTS
Richard J Mede Jr
NO. 36854
REGISTERED PROFESSIONAL LAND SURVEYOR

FOR REGISTRY USE ONLY

ASSESSORS MAP 33 LOT 92
A.N.R. SUBDIVISION PLAN
36 ARTHUR B. LORD DRIVE
READING, MASS.
(MIDDLESEX COUNTY)

PREPARED BY:
MEDFORD ENGINEERING & SURVEY
ANGELO B. VENEZIANO ASSOCIATES
15 HALL STREET, MEDFORD, MA 02155
781-396-4466 fax: 781-396-8052

SHEET 1 OF 2

FIELD	DRAW	CALC.	CHECK	FILE No.
DN	JTE	JTE	RJM	21817

21817.DWG DATE: MARCH 15, 2023

LOT DATA:

	EX. LOT AREA (S.F.)	EX. LOT FRONTAGE (FEET)	PROP. LOT AREA (S.F.)	PROP. LOT FRONTAGE (FEET)
#5 LILAH	20,002 *	149.01	20,002 *	188.63
#17 LILAH	20,001 *	232.95	20,001 *	193.33

* ENTIRE AREA IS UPLAND AREA

GENERAL NOTES:

1. THIS PLAN DOES NOT SHOW ANY UNRECORDED OR UNWRITTEN EASEMENTS WHICH MAY EXIST. A REASONABLE AND DILIGENT ATTEMPT HAS BEEN MADE TO OBSERVE ANY APPARENT, VISIBLE USES OF THE LAND; HOWEVER, THIS DOES NOT CONSTITUTE A GUARANTEE THAT NO SUCH EASEMENTS EXIST.
2. PARCEL A & PARCEL B ARE NOT TO BE CONSIDERED BUILDABLE LOTS.
3. PARCEL A IS TO BE CONVEYED TO LOT 16.
4. PARCEL B IS TO BE CONVEYED TO LOT 17.

ZONING BOARD DECISIONS:

THERE ARE NO KNOWN VARIANCES OR SPECIAL PERMITS THAT HAVE BEEN GRANTED BY THE READING ZONING BOARD OF APPEALS FOR THESE PROPERTIES.

LEGEND:

SBDH	STONE BOUND WITH DRILL HOLE
FND	FOUND
S.F.	SQUARE FEET
EX.	EXISTING
VGC	VERTICAL GRANITE CURB

FOR REGISTRY OF DEEDS USE ONLY

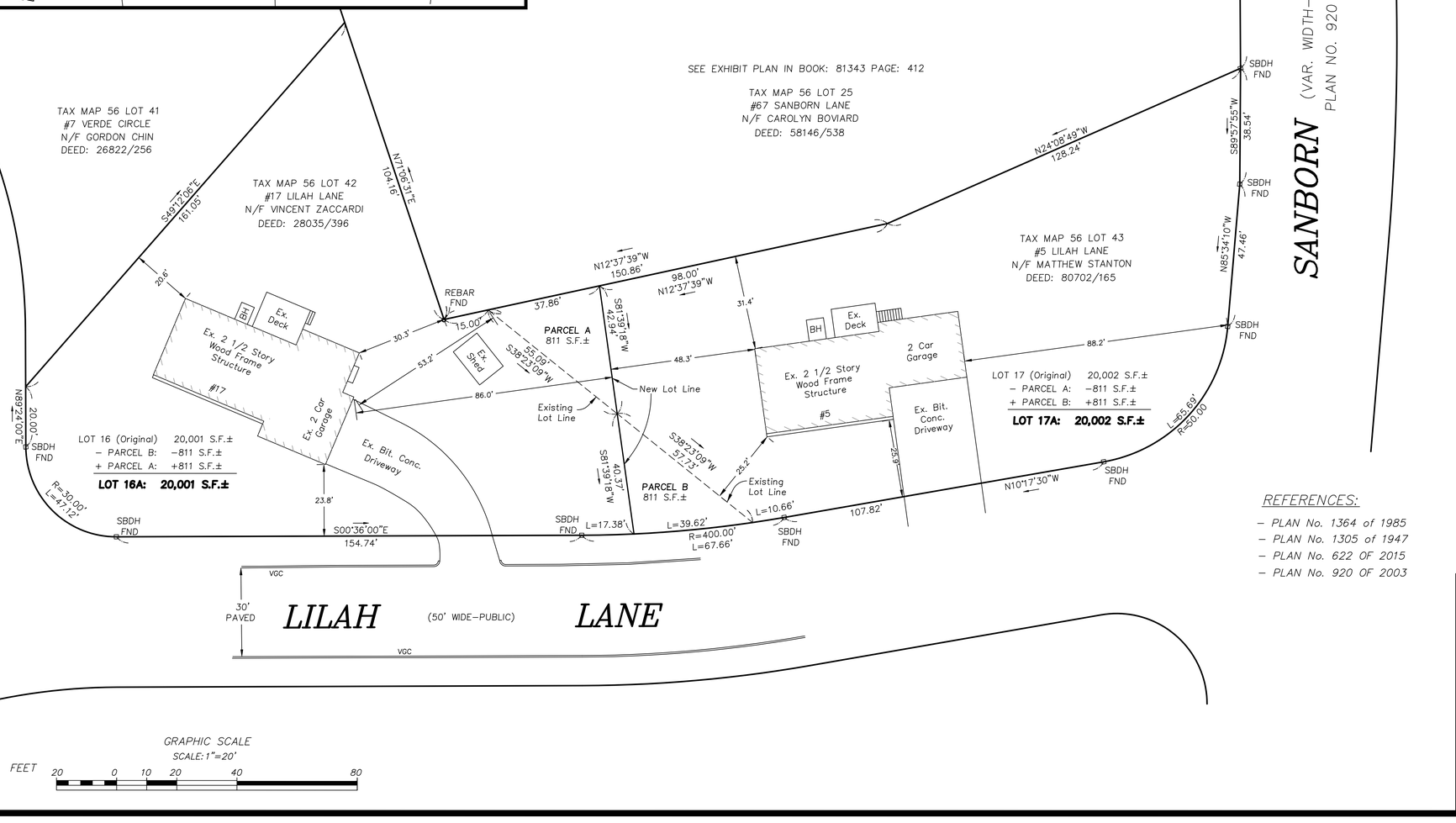
I DECLARE, TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF, THAT THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

JOHN D. SULLIVAN III, P.E. — DATE
LICENSE #: 41586

READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION APPROVAL UNDER THE SUBDIVISION CONTROL LAW NOT REQUIRED

APPROVED _____, 20__

NO DETERMINATION OF COMPLIANCE WITH ZONING REGULATIONS HAS BEEN MADE OR IS INTENDED.



REFERENCES:

- PLAN No. 1364 of 1985
- PLAN No. 1305 of 1947
- PLAN No. 622 OF 2015
- PLAN No. 920 OF 2003

ZONING INFORMATION:

ZONING DISTRICT: S-20
MIN. LOT AREA : 20,000 S.F.
MIN. LOT FRONTAGE : 120 FEET

MIN. BUILDING SETBACKS:
FRONT : 20 FEET
SIDE : 15 FEET
REAR : 20 FEET

5 & 17 LILAH LANE

PLAN OF LAND
LOCATED IN
READING, MASSACHUSETTS
(MIDDLESEX COUNTY)

PREPARED FOR
VINCENT ZACCARDI

SCALE: 1"= 20' DATE: MAY 1, 2023

PREPARED BY

SULLIVAN ENGINEERING GROUP, LLC
P.O. BOX 2004
WOBURN, MA 01888
(781) 854-8644

SHEET No. 1 OF 1

Town of Reading
16 Lowell Street
Reading, MA 01867

Andrew MacNichol
Community Development Director
Phone: 781.942-6670
Fax: 781.942-9071
Website: www.readingma.gov

December 12, 2022

Downtown Smart Growth District (DSGD) Plan Review
M.G.L. Chapter 40R
DECISION

Project: 25 Haven Street
Applicant: 25 Haven Street, LLC

To the Town Clerk:
This is to certify that, at a public hearing of the Community Planning and Development Commission opened on June 13, 2022, continued to November 7, 2022, December 12, 2022 and closed on XXX by a motion duly made and seconded, it was voted:

"We, the Reading Community Planning and Development Commission, upon request from 25 Haven Street, LLC, under Section 10.5 of the Zoning Bylaws of the Town of Reading, and MGL Chapter 40R, to consider the application for 40R Development Plan Review to construct a 4-story mixed-use building with 12 housing units, and approximately 3,850 square feet of interior commercial space with 16 at-grade parking spaces, at 25 Haven Street (Assessors Map 16, Lot 309) – as shown on the architectural plans prepared by O'Sullivan Architects, Inc. and the site plans prepared by Hayes Engineering, Inc., and listed below – do hereby vote XXX, to _____the 40R Development Plan, inclusive of the listed waivers, subject to the Findings and Conditions below."

Materials Submitted:
The following materials were submitted into the public record:

a) Certified List of Abutters, dated 4/19/22;
b) DSGD Development Application Form, Project Narrative and Requested Waivers, dated 5/2/22;
c) Legal Notice, published in the Daily Times Chronicle on 5/25/22 and 6/1/22, and posted with the Town Clerk on 5/25/22;
d) Civil Engineering Plan Set for 25 Haven Street Proposed 40R Development, Reading, MA, prepared by Hayes Engineering, Inc., and prepared for 25 Haven Street, LLC., consisting of:
    a. Sheet C-1: Index Plan, dated 11/22/22;
    b. Sheet C-2: Existing Conditions Plan, 11/22/22;
    c. Sheet C-3: Demolition and Relocation Plan, dated 11/22/22;
    d. Sheet C-4: Site Layout Plan, dated 11/22/22;
    e. Sheet C-5: Grading and Drainage Plan, dated 11/22/22;
    f. Sheet C-6: Utility Plan, dated 11/22/22;

g. Sheet C-7: Details Sheet, dated 11/22/22;
h. Sheet C-8: Details Sheet, dated 11/22/22;

e) Architectural Plan Set for 25 Haven Street Redevelopment, Reading, MA, prepared by O'Sullivan Architects, Inc., and prepared for 25 Haven Street, LLC, consisting of:
   a. Sheet A0.01: Project Data, originally dated 4/29/22, most recently revised 11/28/22;
   b. Sheet A0.02: Schematic Landscape Layout Plan, originally dated 4/29/22, most recently revised 11/28/22;
   c. Sheet A0.03: Shadow Studies, originally dated 4/29/22, most recently revised 11/28/22;
   d. Sheet A0.04: Layout and Photometric Plan, originally dated 4/29/22, most recently revised 11/28/22;
   e. Sheet A1.01: Ground Floor Plan, originally dated 4/29/22, most recently revised 11/28/22;
   f. Sheet A1.02: Second Floor Plan, originally dated 4/29/22, most recently revised 11/28/22;
   g. Sheet A1.03: Third Floor Plan, originally dated 4/29/22, most recently revised 11/28/22;
   h. Sheet A1.04: Fourth Floor Plan, originally dated 4/29/22, most recently revised 11/28/22;
   i. Sheet A1.05: Roof Level Plan, originally dated 4/29/22, most recently revised 11/28/22;
   j. Sheet A3.01: Elevations Front and Rear, originally dated 4/29/22, most recently revised 11/28/22;
   k. Sheet A3.02: Elevations Left and Right, originally dated 4/29/22, most recently revised 11/28/22;
   l. Sheet A3.10: Perspectives, originally dated 4/29/22, most recently revised 11/28/22;
   m. Sheet A3.11: Perspectives, originally dated 4/29/22, most recently revised 11/28/22;
   n. Sheet A3.12: Perspectives, originally dated 4/29/22, most recently revised 11/28/22;
f) Sheet A4.01: Sections, originally dated 4/29/22, most recently revised 11/28/22;
g) Stormwater Management Report: 25 Haven Street Mixed-Use Development in Reading, MA, dated 11/22/22;
h) Transportation Impact Assessment, 25 Haven Street Mixed-Use Development, prepared by Vanasse & Associates, Inc., dated October 2020;
i) Staff Input:
   a. Email from Reading Fire Department Captain Nelson, dated 11/30/22;
   b. Memo from Town Engineer, dated XXX;
j) Abutter Input:
   a. Email from Ilene Bornstein, dated 5/31/22;
   b. Email from Jonathan Barnes, dated 11/3/22;
   c. Email from Jonathan Barnes, dated 11/30/22;
   d. Email from Samantha Couture, dated 12/2/22;
k) Draft Decision, dated 12/12/22.

General Findings:

1) Zoning: The site is located within the underlying Business-B Zoning District and the Downtown Smart Growth District (DSGD) / 40R Overlay District. Sites and areas located to the north, south, east and west are also located in the Business-B and DSGD Zoning Districts.

   The site is considered a Transitional Area (directly abutting a lot containing single-family dwelling).

   →Therefore, Section 10 of the Design Guidelines applies to this redevelopment.

Commented [MJ1]: Look for language in DG re: RHC review/approval

"7.2.5 Existing building facades with architectural significance are to be incorporated into new construction wherever feasible. Protected buildings can be changed only with the approval of the Reading Historical Commission."

2) Overview: The land totals 18,935 square feet in area and maintains ~186.78 linear feet of frontage along Haven Street to the north and ~119.51 linear feet of frontage along Green Street to the south. The site is abutted by: Haven Street to the north; both a single-family dwelling and a one-story commercial building to the east; Green Street to the south, and; a two-story commercial building to the west.

   The existing site contains a vacant ~7,953 square-foot, single-story commercial structure and associated parking. It was formerly a Reading Municipal Light Department building, and subsequently owned and occupied by a series of convenience stores, the most recent of which was Rite Aid (which was then bought by Walgreens). The site contains one curb cut along Haven Street and another curb cut along Green Street.

   The Applicant proposes to redevelop the site into a Mixed-Use 40R Development including twelve (12) residential dwelling units. The project is proposed as homeownership units, and is under the unit threshold so does not require any deed-restricted affordable units. It will also include a total of ~3,850 square-feet of interior commercial space on the first-floor, with an 875 square-foot commercial patio area, and sixteen (16) associated parking spaces located at-grade. All sixteen (16) parking spaces are located in an at-grade parking lot; seven (7) of the spaces are located under the building roof line and the remaining nine (9) spaces are fully exposed to the elements. The parking lot is accessed by a 26-foot wide two-way driveway on Green Street.

   The Applicant is seeking Development Plan approval from the CPDC under Section 10.5 of the Reading Zoning Bylaw and the Downtown Smart Growth District Design Standards & Guidelines, pursuant to M.G.L. Chapter 40R.

3) Historic: The existing building is listed on the local Reading Historical Inventory and is subject to a demolition delay. On July 28, 2021 the Reading Historical Commission (RHC) voted to impose a demolition delay on the property for up to six (6) months. On January 28, 2022 the demolition delay elapsed and was lifted.

4) Setbacks and Dimensional Requirements: The proposed building will have a 2' front yard setback from the northern lot line (Haven Street); a 10' side yard setback from the western lot line (adjacent to 1 Haven Street); a minimum 16' side yard setback from the eastern property line (adjacent to 51 Haven Street and 12 Green Street); and a minimum 25' rear yard setback from Green Street.

   Building Height: For structures with flat roofs, 'height' is defined in Section 2.0 of the Reading Zoning Bylaw as "*The vertical distance from the average grade around the perimeter of a building to the top of a flat roof, including any parapet…*" Height is not defined separately or differently for 40R projects within ZBL Section 10.5, and mixed-use 40R projects are allowed a maximum height of 45' unless a height waiver can be justified.

   Design of a flat roof with a metal roof coping is utilized. The elevator penthouse and mechanical units are proposed to be located on the roof and be setback and/or screened from view.

Section 10.4.1 of the Design Guidelines requires the following: "*building height shall be measured from the pre-development site grade."* The maximum building height, to the parapet, based off of the pre-development site grade, is 44'. While not accounting towards maximum height requirements it should be noted that the elevator penthouse measures X' in height and the stairwell measures X' in height bringing maximum building height to X'.

Commented [MJ2]: Does it extend above the roofline?

Building Step-backs:

Lot Coverage: The lot totals ~18,935 square-feet of area, 8,994 square feet will be covered by the building, resulting in a 47.5% Lot Coverage calculation. Including associated parking, which is exempt under the definition, total impervious area calculates to 13,070 square feet (69%).

5) Interior/Exterior Space: The proposed project will comprise +/-30,009 net enclosed square feet, as follows: +/-8,637 (1st floor); +/-8,416 (2nd floor); +/-8,416 (3rd floor); +/-4,540 (4th floor); and +/-0 (roof). The first-floor/garage level includes seven (7) parking spaces dedicated the residential use, along with a residential lobby, a parking lot lobby, a trash room, a water room, an electrical room, the elevator, an elevator machine room, two stairwells, and the commercial spaces.

Commented [MA3]: Garage storage areas and bike parking accommodations? More utility space needed?

Commercial Space #1 shall include 2,388 gross floor area of interior space as well as an adjacent 875 gross floor area private outdoor patio space. Commercial Space #2 shall include 1,461 gross floor area of interior space. Each commercial space will have a separate and individual entrance off of Haven Street. Commercial Space #1 shall also have exterior access through the eastern public path and Commercial Space #2 shall be provided a secondary access through the rear lobby/parking area.

Two (2) one-bedroom units and ten (10) two-bedroom units are proposed, for a total of twelve (12) units. One-bedroom units average 764.5 net square feet, and two-bedroom units average 1,463 net square feet.

All residential units shall be provided with private balconies or access to private outdoor patios. Sizes of each varies in both width and length but are a minimum of 7' x 10'. There is also a shared residential terrace on the 4th floor that totals 730 net square feet. There are no enclosed areas on the roof and there will be no public access to such.

6) Roof: Mechanical units located on the roof shall be placed so that they are not viewable from the street level or abutting residential properties. The elevator shaft is approximately X' tall.

7) Parking: The project provides 16 parking spaces, which is 1 space more than required and results in a 1.33 spaces/unit ratio. Seven (7) of the parking spaces will be covered by the building while the other nine (9) parking spaces will be fully exposed to the elements. All of the spaces are dimensioned at 9' x 18', and one (1) space within the garage will be ADA accessible. The parking lot is accessed via a 26' two-way drive on Green Street and maintains a 26' wide two-way drive aisle. All parking spaces shall be designed and future proofed for use of Electric Vehicle Charging Stations.

The curb cut on Haven Street will be closed and two (2) on-street parking spaces will be added. The existing curb cut on Green Street will be relocated to the west and will result in the net loss of XXX parking spaces.

Commercial Parking: The site is within 300' of a municipal lot (Brande Court) and is exempt from providing off-street commercial parking. Also, as the proposed commercial spaces are expected to be occupied by retail and/or restaurant uses, zero (0) off-street parking spaces are required per Reading Zoning Bylaw Section 10.5.8:

> **10.5.8.1 Off-Street Parking**
> **Off-street parking shall be provided to meet the following minimum requirements:**
>
> **Retail or Restaurant** **0 spaces**

Loading / Deliveries: **Front door and on-street deliveries are not allowed to occur on Haven Street or Green Street.** Loading is proposed to occur within the outdoor parking and includes access to the trash room. A __' x __' temporary loading zone is shown utilizing the parking aisle in front of the covered parking spaces near the entry lobby and trash room. A drive aisle of 12'-14' shall remain if a truck is utilizing the loading zone. Commercial loading and deliveries will occur during off-peak traffic hours and the size and nature of the commercial space is expected to be served by box trucks and vans, and not trailer trucks. Commercial deliveries shall be provided access to the commercial area from within the garage. The same is expected for both residential move-ins/outs, which shall be managed and scheduled by the property management company.

Bicycle Parking: none proposed.

8) Sidewalk Improvements: The existing sidewalk will be replaced with new concrete sidewalk and vertical granite curbing to match existing. Sidewalk shall be extended down Haven Street along the property's entire frontage. Vertical Granite Curbing shall also be utilized around the outdoor parking area.

9) Traffic Flow and Volume: A Transportation Impact and Access (TIA) study was completed for the project by Vanasse Associates, Inc.

   The TIA concludes with the following information/recommendations:

   -

10) Drainage and Grading: The existing site is relatively flat in grade and is nearly 100% impervious area due to the existing building and its associated parking. Redevelopment will incorporate Best Management Practices (BMP's) and Low Impact Design (LID) strategies and result in a net loss of 1,200 square feet of impervious area. LID measures include an infiltration system that mimics the natural runoff rate as the existing conditions.

    The site will be graded in a manner to avoid puddling on the premises and to promote positive sheet flow away from the building. All surface runoff from the site will be collected in the closed drainage system so that there is no direct discharge to the surface of any abutting land.

Commented [MA4]: Is this the expectation?

Commented [MA5R4]: What is height clearance in garage? Can trucks of all sizes be accommodated?

Commented [MJ6]: The trash room doors open into a parking space – how will this work if there is a car parked there?

Also, re: the temporary loading space needs to be dimensioned – If delivery access to Commercial Space #1 is proposed via the back door, then I'd think the truck would pull all the way in to the end of the drive aisle. How does it impact/impeded use of residential spaces?

Commented [MA7]: This may be difficult when allowing entry and exit.

Commented [MA8]: Plans do not indicate any upgrades to sidewalk?

Stormwater runoff will be mitigated through the on-site infiltration system. The system will be designed to capture the 100-year storm event.

Roof and surface runoff will be captured and directed to the underground retention system prior to discharging into the municipal system. Stormwater treatment will be collected by deep-sump basin with an oil water separator. This provides enhanced pollutant removal from the stormwater by separating out Total Suspended Solids (TSS) and floatable oil/grease.

A final stormwater system long-term Operations and Maintenance Plan has been prepared. The Plan details measures to be taken by the property owner to ensure long-term sustainability of the system, which shall be conditioned below. The Plan includes, but is not limited to, schedules for inspections and maintenance, estimated costs of maintenance, safety measures, and responsible entity. A separate construction phase BMP plan has been drafted and shall followed throughout permitting.

11) Utilities: All utilities will be removed and re-connected through both Haven Street and Green Street as applicable. The existing sewer line will be cut and capped at the main within the right-of-way and shall be replaced with a PVC pipe. An oil water separator will be provided within the garage level and connected to the sewer line. An existing drain line through the property will be replaced with a new ductile iron drain and be relocated within the right-of-way. The domestic water service and a new fire service will be tapped from the water main within Haven Street. Electric, telephone and fiber optic services will be extended from Green Street. Natural gas will also be extended from the main on Haven Street and will be coordinated with the utility company. A grease trap shall also be provided for the commercial uses and will be located to align with future restaurant/kitchen location(s). All proposed utilities will be underground.

12) Lighting: A series of exterior lighting fixtures on the building's façade and within the exterior parking area is proposed. All exterior lighting shall be designed to be Dark Sky compliant and mitigate impacts to abutting residential properties; limited up-lighting is allowed in accordance with Design Guidelines Section 8.4.6.

13) Property Management: The property is proposed to be managed by a property management company.

14) Transformer: An electric utility plan shall be submitted and approved by RMLD. The transformer shall be located along Green Street and be screened from the street.

15) Wetlands / Floodplain: There are no wetland resource areas or buffers on or near the site, and the site is not within a 100-year floodplain.

16) Landscaping: Eleven (11) new trees are proposed on site – four (4) of which are to be street trees within the sidewalk along Haven Street. A series of additional shrubs and plantings is proposed along the site's property line. A pocket park will be developed in the southeast corner of the site and include a series of plantings and seating areas.

17) Trash Management: Trash and recycle bins shall be located within the garage. Trash is to be managed by a private entity. Language detailing how trash and recycling will be managed on-

Commented [MA9]: Is this true?

site, including but not limited to schedule of pick-up days and times, and logistics for trash truck access to the site shall be described within the property management documents. Trash management for both the residential and retail uses shall be managed separately, as is practicable.

18) Signage: No building signage is approved herein. Any future signage shall require the submittal of a Sign Permit Application and shall comply with Section 8.0 of the Zoning Bylaw and Section 9.0 of the Downtown Smart Growth District Design Guidelines.

Findings pursuant to DSGD Design Standards & Guidelines:

7. Building Design Standards

7.1 Massing

7.1.1 Front Façade Setback – Over 60% of the Haven Street façade is setback at 2' and the space between is designed to better activate the pedestrian entries. Additional active uses (i.e. outdoor commercial patio) and landscape is proposed along the front setback.

7.1.2 Building Step-Back Requirements – The building maintains a 25'-28'5" step-back at the fourth-floor level along the front façade. The same fourth-floor level also maintains a 12'7" step-back on the western façade. The step-backs are maintained for the entirety of the fourth-floor level.

7.1.3 Mixed-Use Building Proportions – The building's commercial space is provided horizontal brick work and large glass paned windows. Residential floors above are provided projecting bays, composite vertical panels, and balconies to differentiate from the retail uses below.

7.1.4 Special Function Space Differentiation – Not applicable to the current proposal; however, the Applicant is encouraged to think about community place-making events when approaching commercial tenants.

7.2 Appearance

7.2.1 Defined Proportions – The project uses projecting bays, balconies, a composite paneling system of different colors and a flat rooftop design to define different levels of the façade.

7.2.2 Horizontal and Vertical Elements – Horizontal elements such as brick masonry, trim, and large framed windows are combined with vertical projecting bays, at different levels. Materials shall be submitted to CPDC for review.

7.2.3 Continuous Façade Elements – Façade elements and materials are used continuously around the façade.

7.2.4 Rooftop Mechanical Setbacks – Mechanical units on the rooftop level are setback so as to not be visible from the pedestrian level.

7.2.5 Incorporation of Existing Significant Building Facades – The building form adapts in scale and texture to create continuity with abutting properties.

7.2.6 Franchise Architecture – Distinctive building design that is trademarked or identified with a particular chain or corporation and is generic in nature, is not allowed in the DSGD – the Applicant shall be aware of this when recruiting tenants.

7.3 Entries

7.3.1 Articulation – Commercial spaces are provided along Haven Street and are articulated through masonry design, signage, and recessed entries. The residential entry on Haven Street is flush with the rest of the building.

7.3.2 Retail and Commercial Entry Transparency – Commercial space is designed to activate Haven Street. Commercial spaces have large glass window panels for visibility.

7.3.3 Integrated Lighting & Signage – Exterior lighting has been designed around the entire perimeter of the building. Lighting shall activate entry ways and the commercial patio and illuminate the rear parking area.

7.3.4 Upper Floor Entries – The entry to upper floor residential areas shall be made distinct upon entering through the residential lobby on Haven Street.

7.4 Fenestration

7.4.1 Commercial Horizontality & Residential Verticality – Commercial spaces are designed with over 60% of their façade length being glass window panels. Residential portions of the building have windows designed with a 2/6 muntin grid to balance verticality and horizontality.

7.4.2 Glazing – Commercial spaces are designed with over 60% of their façade length being glass window panels. Retail or restaurant uses were stated as intended tenants to provide activation of the areas and limit tint of the windows.

7.4.3 Overhanging Awnings or Canopies – Not applicable to application.

7.5 Materials

7.5.1 Exterior Finishes – A combination of horizontal brick veneer and vertical composite paneling of different colors with aluminum finishing is used on building façades.

7.5.2 Prohibited Materials – Not Applicable.

7.5.3 Changes in Materials – The first-floor will consist of a brick masonry to transition from the sidewalk to the building structure. Commercial spaces will utilize large windows inserted into the masonry storefronts. Residential spaces and entries above will differentiate themselves by utilizing the composite paneling, aluminum balconies and finishing. Recessed and projecting bays shall utilize different colors of the composite paneling. The fourth-floor will also utilize a different color of composite material than the levels below. Materials shall be submitted to CPDC for review.

7.5.4 Continuity of Materials – Façade elements and materials are used continuously around the façade.

7.5.5 Blank Facades Not Permitted –

8. Site Design Standards

8.1 Sidewalks

8.1.1 Sidewalk Continuity – The existing curb cut on Haven Street will be removed and replaced with sidewalk. The existing curb cut on Green Street will be relocated to the west and sidewalk shall be provided in its space.

8.1.2 Pedestrian Amenities – The project will provide an 875 gross square foot commercial patio along Haven Street and a separate public pocket park along Green Street. A public path will connect Green Street and Haven Street.

8.1.3 Usable Open Spaces – The open space will be programmed dependent on commercial uses, but will most likely be used for pedestrian-centric

activities such as dining and seating. A public path and pocket park shall connect Green Street and Haven Street.

8.1.4 Pedestrian Improvements – Improvements to adjacent crosswalks, curbing and sidewalks may be requested by the Town Engineer.

8.2 Driveways and Parking

8.2.1 Sidewalk Continuity – The existing sidewalk will be removed and replaced. The curb cut on Haven Street will be replaced with sidewalk while the Green Street curb cut will be relocated and replaced with sidewalk.

8.2.2 Parking Lots – The parking shall be located at the rear of the building structure and concealed from public view through landscape and screening. The entry and exit of such will be provided off of Green Street.

8.2.3 Parking Lots Behind Buildings – The ground level parking shall be screened by landscape. The parking area will be accessed through Green Street.

8.2.4 Below-grade Parking – Not Applicable to application.

8.2.5 Parking Lot Screening – The ground level parking will be screened through landscape and plantings.

8.2.6 Shared Parking – Shared use of parking between residential and commercial tenants will be encouraged. If the parking area is not fully utilized by residents the Applicant shall look to allow commercial employees or patrons parking access/use. Ride sharing services will be encouraged.

8.2.7 Pedestrian & Vehicular Safety – Future recommendations of the Traffic Impact Assessment shall be considered and discussed with the Town's Parking Traffic and Transportation Task Force (PTTTF).

8.3 Landscaping

8.3.1 Street Trees – Four (4) street trees shall be planted along Haven Street.

8.3.2 Retail Frontages – The final location of street trees shall be determined by the Tree Warden and shall not impede visibility of commercial areas or signage.

8.3.3 Parking Areas – The parking area will be screened through a series of plantings along the rear and side lot lines.

8.3.4 Public Open Spaces – The project will provide an 875 gross square foot commercial patio along Haven Street and a separate public pocket park along Green Street. A public path will connect Green Street and Haven Street.

8.3.5 Native Species – Final determination of street tree species shall be determined by the Tree Warden.

8.3.6 Preservation of Healthy 6" Caliper Trees – When feasible, healthy existing trees with a minimum 6" caliper and large canopy shall be preserved.

8.4 Lighting

8.4.1 Articulation of Building Uses & Entries – The project will incorporate lighting along the street level façade that will identify major commercial and residential entry ways. Any upper level lighting shall be Dark Sky compliant and designed to mitigate impact to residential abutters.

8.4.2 Coordination w/Town's Street Lighting & Trees – All proposed lighting will be coordinated with the Town's street lighting and street trees.

8.4.3 Light Spillover – Lighting at upper-level terraced areas shall be designed to minimize impact to abutting properties.

8.4.4 Public Safety – All lighting for public safety shall be added to the plans.

8.4.5 Sign Lighting – No signage proposed or approved herein.
8.4.6 Dark Sky Standards – All upper floor lighting shall comply with dark sky standards.

8.5 Utility Areas and Utilities

8.5.1 Location – The trash area will be provided access to/from the rear parking area. The trash area will be situated near garage entry. Mechanical units will be located on the roof and will not be visible from the street. Utility meter locations?
8.5.2 Screening – All rooftop mechanicals will be setback so they are not viewable from street level.
8.5.3 Shared Utility Areas – Not Applicable.
8.5.4 Aboveground Utilities Not Permitted – All utilities will be underground.
8.5.5 Underground Utilities Required – All utilities will be underground.

8.6 Drainage and Storm Water Management

8.6.1 BMP/LID Strategies – Roof and surface runoff will be captured and directed to the underground retention system prior to discharging into the municipal system. The project will not create new untreated discharge of stormwater runoff.
8.6.2 System Elements – Stormwater will be collected through a deep sump basin equipped with a separator to enhance treatment.
8.6.3 Operations & Maintenance Plan – A long term O&M Plan has been provided.
8.6.4 On-site Recharge – On-site recharge has been provided.
8.6.5 Pervious Paving – Not Applicable to application.
8.6.6 Site Grading – As existing, the site is proposed to remain relatively flat.

9. Signage Design Standards – No building signage has been proposed or approved herein.

10. Additional Considerations for District Edges & Transitional Areas

10.3 Applicability – The site is designated as a Transitional Area as it abuts an existing two-family structure to the east.

10.5 Design Considerations for Transitional Areas

10.5.1 Abutting Historic Structures – Not Applicable to application.
10.5.2 Density of Project away from Residential Use – The building structure is setback 16' from the eastern lot line where it abuts an existing commercial structure. Where the lot abuts the existing two-family structure to the east no structures are proposed and parking shall not directly face the structure. The parking lot is screened through a public path and series of landscape plantings.
10.5.3 Engage Existing Residential Fabric – Inviting landscape and residential amenities (i.e. pocket park, balconies) are used to engage the residential fabric of Green Street.
10.5.4 Screen for Residential Privacy – A series of landscape plantings and public amenities (i.e. path and pocket park) will screen the parking area.
10.5.5 Shadow Study – A shadow study has been provided.

10.5.6 Noise Mitigation – Mechanical units located on the roof shall be placed so that they are not heard from the street level or abutting residential properties.

Waivers pursuant to Section 10.5.12 and DSGD Design Standards & Guidelines:

Upon request of the Applicant, the Commission, in the interests of design flexibility and overall project quality, and upon a finding of consistency of such variation with the overall purpose and objectives of the DSGD and the Reading Master Plan, or if it finds that such waiver will allow the project to achieve the density, affordability, mix of uses and/or physical character allowed. The Commission shall take into consideration the following items when considering a waiver:

1. High performance energy efficient buildings and construction methods.
2. Projects with publicly accessible open space.
3. Projects that include retail and restaurants located on street level.
4. A demonstrated shared parking initiative that makes efficient use of land and existing parking supply.
5. The preservation or rehabilitation of historic properties or other buildings considered significant to the Town.

The Applicant has requested the following waivers from ZBL Section 10.5:

1. **Density:** *to allow a density of 27.9 units/acre where 20 units/acre is permitted by right.* The Applicant stated this will allow the development to be economically viable and notes that the Floor Area Ratio (FAR) of 1.58 is below the maximum of 2.80 allowed.

The CPDC voted XXX to _____ the requested waivers.

Conditions:

General:

1) **Public Health, Safety and Welfare:** If, at any time, the site becomes a nuisance to public health, safety or welfare (i.e., traffic spillover, excessive noise, unreasonable site illumination beyond the hours of operation, etc.) – as shall be evidenced by substantiated complaints to the Police Department or Public Services Office – the Applicant/Owner shall agree to work with staff to rectify the problem. Should the situation warrant it, an additional Site Plan Review by the CPDC may be required.
2) **Utilities**: All utilities, structures, frames and covers shall meet the Town of Reading standards. The electric utility plan is subject to approval by the Reading Municipal Light Department (RMLD).
3) **MS4 Permit**: The project shall comply with the most recent MS4 permit.
4) **Lighting:** The Applicant shall ensure that any proposed lighting is not occluded by the street trees along the frontage, and does not compete with existing street lighting. The Applicant shall submit specifications for each type of lighting fixture to the Community Development Director for approval.
5) **Limitations / Future Uses:** The 40R Development Plan Decision herein does not include approval for any future uses or site renovations that may – on their own merits and design – trigger the requirements of 40R plan review, or site plan review, and/or require a special permit. Pursuant to Section 10.5 of the Zoning Bylaw the following uses are permitted by

Commented [MA10]: Anything needed for historic review and input? Look at Chronice/Gould/Postmark

right within the proposed commercial spaces: office, retail, restaurant, institutional and consumer services.

6) **Commercial Spaces:** It is strongly recommended that the Applicant prep the commercial space(s) with utility connections, grease traps, etc. in anticipation of future tenants.
7) **Engineering Concerns:** In general, throughout the project, the Applicant shall work with the Town Engineer to address any outstanding comments in the memos to the Community Development Director dated XXX.
8) **Shared Parking:** The Applicant is encouraged to engage in conversations with nearby property owners regarding shared parking, and to partner with Zip Car and other shared services if possible, and to provide electric vehicle charging stations. If and when progress on shared parking is made, the Applicant shall provide more information about these amenities, and indicate which area(s) of the garage are intended for them and how they will be managed.
9) **Storage Areas:** The Applicant is encouraged to consider adding supplemental storage areas for tenants to the building if possible.
10) **Community Place-making / Creative Economy:** When approaching potential commercial tenants, the Applicant is encouraged to think about community place-making events, and/or dividing the space into smaller units that are affordable to creative economy tenants.
11) **Historic:** If possible, the Applicant shall salvage some bricks/tiles from the existing building and replicate the pattern on an accent wall in the exhibit gallery, and shall consider mimicking the existing art deco design elements in the new building's signage design.

Commented [MA11]: Can Applicant confirm such would be included in residential lobby in building not preserved?

Prior to the Issuance of Building Permits and Prior to the Start of Construction:

1) **The Applicant shall make the following plan changes, and shall submit two (2) full size (24x36) copies of the revised plans to the Community Development Director:**
2) **Other Permits:** The Owner/Applicant is responsible for obtaining all other requirements and permits including but not limited to, utility connections, sewer, water, curb cut, street opening and Jackie's Law excavation permits from the Engineering Department (prior to excavation), and Board of Health approvals.
3) **Pre-Construction Meeting:** The Owner/Applicant and contractors shall coordinate with the Community Development Director to schedule a pre-construction meeting with Town staff prior to applying for demolition and/or building permits, in order to review these conditions and any and all final construction sequencing, details and plans for this project.
4) **Construction Management Plan / Contractor Parking:** The Applicant shall submit a Construction Management Plan which includes provisions for off-site parking.
5) **Construction Documents & Fire Safety:** Full construction documents must be submitted and approved by the Fire Department at 80% design. A building permit shall not be issued until the Fire Department has approved the plans.
6) **Master Box:** The Applicant shall coordinate with the Fire Department on the requirement for a Master Box tied that is to be tied to the fire alarm system.
7) **Materials:** No colors have been approved herein. The Applicant shall return to the Commission with samples of proposed materials and colors to be used on the building prior to installation.

During Construction:

1) **Construction Hours:** Construction shall be limited to the hours stated in Section 8.9.8 "Construction Hours" of the Reading General Bylaws and said hours shall be posted in a conspicuous place at the entrance prior to any work on the site.
2) **Construction Activities:** Construction activities shall be conducted in a workmanlike manner at all times. Blowing dust or debris shall be controlled by the Applicant through stabilization, wetting down, and proper storage and disposal methods, subject to the approval of the Health Agent or designee. The Applicant shall ensure that the abutting local streets are kept clear of dirt and debris, which may accumulate as a result of construction activities for the Project. Documentation shall be provided demonstrating ongoing pest management control, subject to the approval of and administration by the Health Agent.
3) **Construction Management Plan / Contractor Parking:** Site operations shall comply with the aforementioned Construction Management Plan at all times. Contractors shall park in the locations designated and provided for within the CMP.
4) **Site Inspections:** Town staff or their designee shall have reasonable access to inspect the site to determine compliance with this Decision.
5) **Bond:** The Applicant/Owner shall furnish a bond for the final As-Built plans prior to the issuance of the final certificate of occupancy. The bond amount shall be determined by the Town Engineer consistent with the reasonable costs associated with a third party performing the work. The bond shall be returned once the requirements of this condition are met.
6) **Scaffolding:** The scaffolding at the property lines shall be completely screened 100% of the time to maintain privacy and prevent materials/debris from falling/blowing or otherwise dropping onto the abutting properties.

Prior to Vertical Construction:

1) **Covered Parking As-Built:** The Applicant shall provide, to the Building Commissioner and Community Development Director, an as-built of the foundation and covered parking area, that shows an overlay of the location and size of structural columns, fire/building/energy code requirements, and dimensioned parking striping, proving that the parking as approved can work. If the parking cannot work as approved, the Applicant shall return to CPDC for an amendment prior to starting vertical construction.

Prior to the Issuance of a Certificate of Occupancy:

1) **Architecture:** The building façade on each elevation (north, south, east, and west) shall be substantially as indicated on the approved architectural plans and elevations.
2) **Stormwater O&M Plan**: An Operations and Maintenance Plan for the stormwater system shall be provided to the Town Engineer.
3) **Property Management Documents**: A copy of the finalized Property Management Documents shall be submitted to the Community Development Director for review and approval, and shall contain the following language:

a. **Fire Safety**: Language ensuring fire safety by prohibiting gas/propane grills on balconies, etc.

b. **Delivery Vehicles & Times:** Language prohibiting commercial deliveries along Haven Street and Green Street, and prohibiting commercial deliveries to the commercial space between 10:00 PM and 5:00 AM.

c. **Management of Move-ins & Move-outs:** Language regarding management of move-ins and move-outs by the on-site property manager, specifically with regards to the size of moving vehicles allowed and the timing and use of the parking area.

d. **Drainage System Maintenance**: Language that requires the property management company to adhere to the requirements of the O&M Plan.

e. **Trash Removal:** Language detailing how trash and recycling will be managed on-site, including but not limited to schedule of pick-up days and times, and logistics for trash truck access to the site. Trash management for both the residential and retail uses shall be managed separately, as is practicable.

f. **Snow Removal:** Language detailing how snow will be managed and removed from the property, including the roof and uncovered parking area, and that snow storage shall not impact sight lines for vehicular traffic.

g. **Site Lighting:** Language that commercial lighting (including signage) shall be programmed to shut off at the close of business each day.

h. **Pedestrian Path:** Language outlining responsibility for maintaining the public path through the site, especially during inclement weather, to keep it clear of debris, trash, and snow/ice at all times.

i. **Conditions for Ongoing Maintenance after Occupancy:** Language that the property management company shall adhere to the "Conditions for Ongoing Maintenance after Occupancy" as are stated herein below.

4) **Rooftop Mechanicals:** All rooftop mechanicals shall be set back from building facades and appropriately screened from view.

5) **Pedestrian Improvements:** Improvements along Haven Street, Green Street, and abutting rights-of-way, as deemed necessary or advantageous to the Town Engineer and Community Development Director, to adjacent crosswalks, curbing and sidewalks, shall be installed at the Applicant's expense in accordance with Town standards.

6) **Streetscape Design:** The Applicant shall coordinate with the Engineering, Planning, Economic Development, and other staff departments as needed, on the final streetscape design for the Haven Street frontage and Green Street as needed. Design utilizing the Lower Haven streetscape concepts provided by the Town shall be incorporated. The Applicant shall work with Town Staff on the need for potential public easements for a portion of the sidewalk, which shall support the Lower Haven streetscape concepts.

7) **Parking Striping**: All parking spaces shall be striped in accordance with the approved plans. Dimensions shall be measured from centerline to centerline.

8) **I/I Fee:** The Applicant is subject to the required Inflow/Infiltration Fee as the proposed sewer flow usage will be greater than historical usage. The Fee is calculated as twice the flow times $4.00.

9) **Street Trees:** The Applicant shall work with the Tree Warden to locate the street trees along Haven Street to an appropriate location. Both the species and location shall be approved by the Town Tree Warden.

10) **Lighting**: All exterior building and site lighting shall comply with the dark sky initiatives (light shall shine down only) with the light source being fully shielded (with cutoff shields) so that little to no light or glare spills onto abutting properties. Spec sheets of proposed lighting fixtures shall be submitted to the Community Development Director for review and approval.

11) **Easements**: Necessary easements for the pedestrian pathway(s), streetscape and/or other shall be drafted, approved and recorded. All easements, and agreements, as reviewed by the Community Development Director, Town Engineer and Town Counsel, shall be properly written and recorded.

Conditions for Ongoing Maintenance after Occupancy:

1) **Parking Utilization Data:** The Applicant shall provide reports to the Community Development Director indicating utilization of the on-site parking and shall work with Town staff to evaluate impacts and make any necessary modifications to the parking space management system described above, including the provision of EV charging infrastructure, Zip Car spaces, etc. if evidenced to be desired by tenants.

2) **Signage:** Prior to installation of any building or tenant signage, a Sign Permit Application and/or Master Signage Plan shall be submitted for review and approval.

3) **As-Built Plans:** Two full size paper copies and electronic AutoCAD final As-Built plans showing the building footprint, drainage systems and utility connections shall be submitted to the Community Development Director and Town Engineer to ensure compliance with this decision and other applicable Town standards. The bond held for this requirement will be returned to the Applicant once this condition has been fulfilled.

4) **Landscaping:** Landscaping on-site shall be maintained in a healthy condition in perpetuity. In the event that landscaping is damaged during snow removal operations, the property owner shall replace such landscaping during the next growing season.

5) **Lighting**: All exterior building and site lighting shall comply with the dark sky initiatives (light shall shine down only) with the light source being fully shielded (with cutoff shields) so that little to no light or glare spills onto abutting properties. Any exterior lighting that is required for security purposes may be illuminated by photocells and is not required to be extinguished at the close of business. All site and building lighting for commercial purposes, beyond what is needed for security purposes, shall be programmed to shut off at the close of business each day.

6) **Trash Removal:** All trash collection and disposal are the responsibility of the owner / property manager. The Applicant shall ensure daily that exterior areas of the site remain clear of debris, trash and any equipment used in connection with any commercial activities on site.

Plan Changes after Approval by the Commission:

Contemplated future changes to the plan approved herein shall be presented to the Community Development Director and the Building Inspector, or other relevant Town staff, for review prior to implementation of proposed changes.

10.5.13.1 Minor Plan Changes: After Plan Approval, an Applicant may apply to make minor changes in a Development Project involving minor utility or building orientation adjustments, or minor adjustments to parking or other site details that do not affect the overall build out or building envelope of the site, or provision of open space, number of housing units, or housing need or affordability features. Such minor changes must be submitted to the Commission on redlined prints of the approved plan, reflecting the proposed change, and on application forms provided by the Commission. The Commission may authorize such changes at any regularly scheduled meeting, without the need to hold a public hearing. The Commission shall set forth any decision to approve or deny such minor change by motion and written decision, and provide a copy to the Applicant for filing with the Town Clerk.

10.5.13.2 Major Plan Changes: Those changes deemed by the Commission to constitute a major change in a Development Project because of the nature of the change in relation to the prior approved plan, or because such change cannot be appropriately characterized as a minor change as described above, shall be processed by the Commission as a new application for Plan Approval pursuant to Section 10.5.

Appeal:

Any person aggrieved by this Decision of the CPDC may appeal to the appropriate court in accordance with the provisions of M.G.L. Ch. 40A Section 17, pursuant to M.G.L. Ch. 40R Section 11, within twenty (20) days after the date of filing of this Decision with the Town Clerk. Notice of any appeal with a copy of the complaint must also be filed with the Town Clerk within such twenty (20) days as provided in M.G.L. Ch. 40A Section 17.

This Decision and the relief, terms, restrictions and conditions contained herein shall run with the land and all subsequent owners shall benefit from and be bound by the relief, terms, restrictions and conditions contained herein.

Signed as to the accuracy of the vote as reflected in the minutes:

_____

Andrew MacNichol, Community Development Director Date

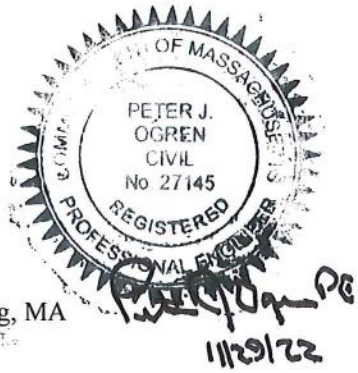
Cc: Applicant, Town Clerk, DRT Staff, planning file

HAYES ENGINEERING, INC.

Stormwater Management Report

25 Haven Street
Mixed-Use Development
Reading, Massachusetts

November 22, 2022



Prepared for: 25 Haven Street, LLC
25 Haven Street, Reading, MA

Prepared by: Hayes Engineering, Inc.
603 Salem Street, Wakefield, MA

Hayes Engineering, Inc.
Civil Engineers & Land Surveyors
603 Salem Street, Wakefield, MA 01880
(781) 246-2800 phone, (781) 246-7596 fax

Stormwater Management Report

- Introduction & Background
- Compliance with Massachusetts Stormwater Standards
  - Standard 1: No New Untreated Discharges
  - Standard 2: Peak Rate Attenuation
  - Standard 3: Recharge
  - Standard 4: Water Quality
  - Standard 5: LUHPPLs
  - Standard 6: Critical Areas
  - Standard 7: Redevelopment Projects
  - Standard 8: Construction Period Pollution Plan
  - Standard 9: Operation and Maintenance Plan
  - Standard 10: Prohibition of Illicit Discharges
- Construction Pollution Prevention Plan
- Long-term Pollution Prevention Plan
- Appendix A: HydroCAD Drainage Calculations
- Appendix B: NRCS Soil Mapping and Data
- Watershed Maps

Introduction and Background

The Site consists of approximately 18,935 square feet in land area in Reading, Massachusetts abutting Haven Street to the North, Green Street to the South and commercial business properties to the east and west. The site is currently developed and consists of a large parking area to the east and an approximately 7,953-sf building to the west. The parcel is almost wholly impervious and drains via surface runoff and a drainage system to the existing drainage system within High Street. Site topography generally slopes to the south towards Green Street, with a small portion sloping towards a catch basin on Haven Street that then flows to a Green Streets catch basin and out to the High Street drainage system.

The Project consists of the construction of a proposed 4-story, 12-unit residential multi-family building with two commercial spaces at ground level, as well as associated parking and utilities. The Project, as proposed, represents a redevelopment project and results in a net of 1,200-sf. of impervious surface.

This Storm Water Management Report evaluates the Project's hydrologic impacts and compliance with the Massachusetts Stormwater Management Standards as identified in the Massachusetts Stormwater Handbook (MSH) for the proposed improvements described above.

Methodology

This study evaluates the Site hydrology in accordance with the National Resource Conservation Service (NRCS), formerly the Soil Conservation Service (SCS), methodology outlined in Technical Release 55 and Technical Release 20. Precipitation volumes are summarized in Table 1, below:

Table 1: Design Storm Events
NOAA, Atlas 14, Volume 10, Version 3 – Reading, Massachusetts

Recurrence Interval	Precipitation
2-year, 24-hour	3.31-inches
10-year, 24-hour	5.22-inches
25-year, 24-hour	6.41-inches
100-year, 24-hour	8.24-inches

Modelling was performed using HydroCAD™ software and model parameters based on pre- and post-development hydrologic soil group, land cover conditions, and topography.

Analysis

The selected design point of comparison for this analysis is the catch basin on Green Street that leads to the drainage system on High Street. Peak rates of runoff were evaluated in both the existing and proposed conditions using the cumulative rainfall depths for the 2, 10, 25 and 100-year, Type III, 24-hour storm events as identified above. As previously stated, the Project is a redevelopment project and reduces impervious surfaces at the Site.

Compliance with Stormwater Management Standards

Standard 1: No New Untreated Discharges

The Project, as proposed, will not create new untreated discharges of stormwater runoff. The project reduces impervious surface coverage at the site and collects the entire parking lot with a deep sump catch basin equipped with a ADS Barracuda Separator to enhance stormwater treatment.

Standard 2: Peak Rate Attenuation

The Project, as proposed, does not increase peak rate of runoff in 2, 10, 25 and 100-year, Type III, 24-hour storm events to the selected design point. HydroCAD™ calculations accompany this report as Appendix A. The following table summarizes the calculated peak rate of runoff to the Design Point for the project in the existing and proposed conditions:

Table 2: Peak Rate of Runoff
Tributary to Broadway Street

Storm Event	Existing Condition Peak Rate of Discharge	Proposed Condition Peak Rate of Discharge
2-year, 24-hour, Type III (3.31-inches)	1.14 cfs	0.38 cfs
10-year, 24-hour, Type III (5.22-inches)	1.97 cfs	0.74 cfs
25-year, 24-hour, Type III (6.41-inches)	2.49 cfs	0.99 cfs
100-year, 24-hour, Type III (8.24-inches)	3.28 cfs	1.39 cfs

Standard 3: Recharge

The Natural Resource Conservation Service (NRCS) does not classify the soil at the site, other than noting that it is "Urban Land." However, adjacent soils are representative of Hydrologic Soil Group (HSG) "A" which was selected for this analysis (see Appendix A – Soil Maps). The site is a redevelopment project and subject to this standard to the maximum extent practicable. The reduction in impervious surfaces will decrease the volume of surficial runoff, resulting in increased infiltration from the site. Runoff volumes in the existing and proposed conditions are summarized in Table 3, below:

Table 3: Volume of Runoff
Tributary to Broadway Street

Storm Event	Existing Condition Runoff Volume	Proposed Condition Runoff Volume
2-year, 24-hour, Type III (3.31-inches)	3,693 cf	1,419 cf
10-year, 24-hour, Type III (5.22-inches)	6,568 cf	2,647 cf
25-year, 24-hour, Type III (6.41-inches)	8,395 cf	3,483 cf
100-year, 24-hour, Type III (8.24-inches)	11,230 cf	5,182 cf

Standard 4: Water Quality

The Project is classified as a redevelopment project under the MSH and is required to meet the water quality standard to the maximum extent practicable. Stormwater runoff from the site is collected by deep-sump basin with an ADS Barracuda S4 swirl particle separator sized to provide a presumptive TSS removal rate of 80-percent to improve stormwater quality prior to discharge. Sizing calculations for the swirl particle separator accompany this report as Appendix C.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

The Project is not associated with a LUHPPL. Standard 5 is not applicable to this project.

Standard 6: Critical Areas

The Site is not tributary to an Outstanding Resource Water (ORW) or other Critical Areas.

Standard 7: Projects Subject to the Standards only to the maximum extent practicable

The Project is a redevelopment and has been designed to meet the applicable Standards to the maximum extent practicable.

Standard 8: Construction Period Pollution Prevention & Sedimentation Control

A construction period pollution prevention plan accompanies this report. The Project is also subject to a NPDES Construction General Permit. A SWPPP will be submitted prior to the commencement of construction activities.

Standard 9: Operations and Maintenance Plan

A post-construction Operation and Maintenance Plan (Long-Term Pollution Prevention Plan) accompanies this report.

Standard 10: Prohibition of Illicit Discharges

The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges. An illicit discharge statement is also included in the plan.

Construction Period Pollution Prevention Plan

Project Name: Mixed-Use Development
25 Haven Street
Reading, Massachusetts

Owner's Name: 25 Haven Street, LLC

Applicant's Name: 25 Haven Street, LLC

Party Responsible for Maintenance: 25 Haven Street, LLC

Project Description:

The Applicant seeks to construct a 4-story, 12-unit multi-family residential building with 2 ground level commercial spaces, and associated parking and utilities.

Erosion and Sedimentation Control Measures During Construction Activities:

Storm Drain Inlet Protection

A temporary storm inlet protection filter will be placed in all catch basin units. The purpose of the filter is to prevent the inflow of sediment into the closed drainage system(s). The filters shall remain in place until a permanent vegetative cover is established and the transport of sediment is no longer visibly apparent. The filter shall be inspected and maintained on a weekly basis and after significant storm events. Significant storm events are those having greater than one-quarter (1/4) inch of precipitation in a 24-hour period.

Surface Stabilization

The surface of all disturbed areas shall be stabilized during and after construction. Temporary measures shall be taken during construction to prevent erosion and sedimentation. No construction sediment shall be allowed to enter infiltration areas. All disturbed slopes shall be stabilized with a permanent vegetative cover. Some or all of the following measures can be used on the Project as conditions may warrant:

- Temporary Seeding
- Temporary Mulching
- Placement of Hay
- Placement of Geo-Synthetic Fabrics
- Hydroseeding
- Permanent Seeding
- Placement of Sod

Surface and Subsurface Infiltration Facilities

No construction period runoff should be directed toward infiltration facilities. The performance of these facilities shall be checked weekly and after significant storm events throughout construction.

INSPECTION SCHEDULE and EVALUATION CHECKLIST

To be completed weekly and within 24-hours of significant rainfall events (greater than 1/4-inches in a 24-hour period).

Inspector's Name: _____ Date: _____

Qualifications: _____

_____

Days since last rainfall: _____ days Amount of last rainfall: _____inches

Stabilization Measures

Sub-Catchment	Date of Last Disturbance	Date of Next Disturbance	Stabilized (Yes or No)	Stabilized With:	Condition

Stabilization required: _____

_____

_____

_____

_____

_____

To be performed by: _____ on or before: _____

PERIMETER CONTROLS

Date of Inspection: _____

Stabilized Construction Entrance:

Location	Does much sediment get tracked onto roadway? (Yes or No)	Is gravel clean or full of sediment?	Is all traffic using the entrance to access/exit the site? (Yes or No)	Is the culvert beneath the entrance working? (Yes or No)

Maintenance required for stabilized construction entrance: _____

_____

_____

To be performed by: _____ on or before: _____

Other Best Management Practices:

BMP	In use? (Yes or No)	Maintenance Required? (Yes or No)	Describe location of Problem(s), if any.

Maintenance required: _____

_____

_____

To be performed by: _____ on or before: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature: _____ Date: _____

Long-Term Pollution Prevention Plan

Project Name: Mixed-Use Development
25 Haven Street
Reading, Massachusetts

Owner's Name: 25 Haven Street, LLC

Applicant's Name: 25 Haven Street, LLC

Party Responsible for Maintenance: 25 Haven Street, LLC

Project Description:

The Applicant seeks to construct a 4-story, 12-unit multi-family residential building with 2 ground level commercial spaces, and associated parking and utilities.

Acknowledgement: _____ Date: _____

Post-Construction Inspection and Maintenance Measures:

Erosion Control

Sedimentation caused from erosion of soils can adversely affect the performance of the storm water management system. The site should be inspected annually for areas that are barren and/or showing signs of erosion and should be stabilized through immediate re-vegetation.

Debris and Litter Removal

Litter and other debris may collect in storm water best management practices (BMPs), potentially causing clogging of facilities. All debris and litter shall be removed as necessary, at a minimum of four (4) times per year in the spring, summer, fall and winter.

Deep Sump Catch Basin

In accordance with Volume 2, Chapter 2 of the MassDEP Storm Water Handbook as summarized below:
Inspect or clean deep sump catch basins at least four (4) times per year and at the end of the foliage and snow-removal seasons. Sediments must also be removed four (4) times per year or whenever the depth of deposits is greater than or equal to one-half (1/2) the depth from the invert of the lowest pipe in the basin to the bottom of the basin (the sump). If handling runoff from land uses with higher potential pollutant loads (LUHPPLs) or discharging near or to a critical area, more frequent cleaning may be necessary.

Deep sump catch basins should be cleaned with vacuum trucks only. Clamshell buckets shall not be used to clean hooded catch basins. Vacuum trucks remove more sediment and supernatant, and are less likely to snap the hood within the deep sump basin.

Always consider the safety of the staff cleaning deep sump catch basins. Cleaning a deep sump catch basin within a road with active traffic or even within a parking lot is dangerous, and a police detail may be necessary to safeguard workers.

Although catch basin debris often contains concentrations of oil and hazardous materials such as petroleum hydrocarbons and metals, MassDEP classifies them as solid waste. Unless there is evidence that they have been contaminated by a spill or other means, MassDEP does not routinely require catch basin cleanings to be tested before disposal. Contaminated catch basin cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

In the absence of evidence of contamination, catch basin cleanings may be taken to a landfill or other facility permitted by MassDEP to accept solid waste, without any prior approval by MassDEP. However, some landfills require catch basin cleanings to be tested before they are accepted.

With prior MassDEP approval, catch basin cleanings may be used as grading and shaping materials at landfills undergoing closure (see Revised Guidelines for Determining Closure Activities at Inactive Unlined Landfill Sites) or as daily cover at active landfills. MassDEP also encourages the beneficial reuse of catch basin cleanings whenever possible. A Beneficial Reuse Determination is required for such use.

MassDEP regulations prohibit landfills from accepting materials that contain free-draining liquids. One way to remove liquids is to use a hydraulic lift truck during cleaning operations so that the material can be decanted at the site. After loading material from several catch basins into a truck, elevate the truck so that any free-draining liquid can flow back into the structure. If there is no free water in the truck, the material may be deemed to be sufficiently dry. Otherwise the catch basin cleanings must undergo a Paint Filter Liquids Test. Go to www. Mass.gov/dep/ recycle/laws/cafacts.doc for information on all of the MassDEP requirements pertaining to the disposal of catch basin cleanings.

ADS Barracuda S4 Swirl Particle Separator[1]

One of the advantages of the Barracuda is the ease of maintenance. Like any system that collects pollutants, the Barracuda must be maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The systems were designed to minimize the volume of water removed during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash. There is no confined space entry necessary for inspection or maintenance.

[1] Taken from ADS Barracuda Maintenance Guide, July 2017

The entire maintenance procedure typically takes from 2 to 4 hours, depending on the size of the system, the captured material, and the capacity of the vacuum truck.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

Inspection and Cleaning Cycle

Periodic inspection is needed to determine the need for and frequency of maintenance. You should begin inspecting as soon as construction is complete and thereafter on an annual basis. Typically, the system needs to be cleaned every 1-3 years.

Excessive oils, fuels or sediments may reduce the maintenance cycle. Periodic inspection is important.

Determining When to Clean

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it contacts the top of the captured sediment and mark that spot on the rod. Then push the probe through to the bottom of the sump and mark that spot to determine sediment depth.

Maintenance should occur when the sediment has reached the levels indicated in the Storage Capacity Chart.

Model	Manhole Diameter	Treatment Chamber Capacity	Standard Sediment Capacity (20" depth)	NJDEP Sediment Capacity (50% of standard depth)
S3	36"	212 gallons	0.44 cubic yards	0.22 cubic yards
S4	48"	564 gallons	0.78 cubic yards	0.39 cubic yards
S5	60"	881 gallons	1.21 cubic yards	0.61 cubic yards
S6	72"	1269 gallons	1.75 cubic yards	0.88 cubic yards
S8	96"	3835 gallons	3.10 cubic yards	1.55 cubic yards
S10	120"	7496 gallons	4.85 cubic yards	2.43 cubic yards

Maintenance Instructions

1. Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the bowl assembly visible from the surface. You'll access this area through the 10" diameter access cylinder.
2. Use a vacuum truck or other similar equipment to remove all water, debris, oils and sediment. See figure 1.
3. Use a high pressure hose to clean the manhole of all the remaining sediment and debris. Then, use the vacuum truck to remove the water.
4. Fill the cleaned manhole with water until the level reaches the invert of the outlet pipe.
5. Replace the manhole cover.
6. Dispose of the polluted water, oils, sediment, and trash at an approved facility.

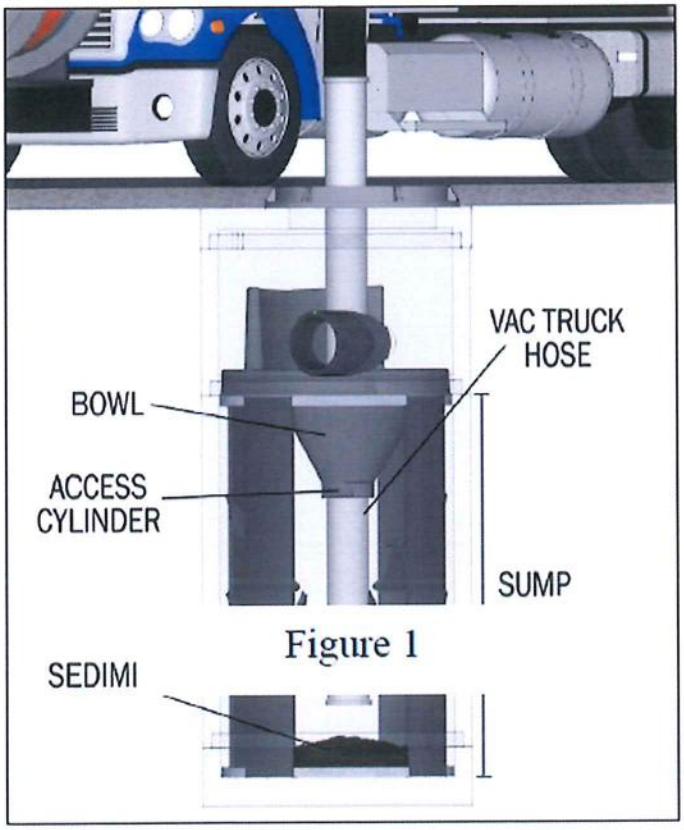


Figure 1

Good Housekeeping Practices:

Provisions for storing paints, cleaners, automotive waste and other potentially hazardous household waste products inside or under cover:

- All materials stored on-site shall be in a neat, orderly manner in their appropriate containers with original manufacturer's label(s);
- Only store enough material as needed; whenever possible, all of a product shall be used prior to disposing of container;

- Manufacturer, federal, state and local recommendations for proper use and disposal shall be followed.

Vehicle Washing Controls:

- Use commercial car washes whenever possible. Car washes treat and/or recycle wash water;
- Cars shall be washed on gravel, grass or other permeable surfaces to allow filtration to occur;
- Use biodegradable soaps only;
- Use hose nozzles that automatically turn off when unattended.

Routine Inspection and Maintenance of Storm Water BMPs

- Previously addressed.

Spill Prevention and Response Plans

- Spill control practices shall be in conformance with the guidelines set forth in the National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan (SWPPP).

Maintenance of Lawns, Gardens and Other Landscaped Areas:

- Grass shall not be cut shorter than two (2) to three (3) inches and mulch clipping should be left on lawns as a natural fertilizer;
- Use low volume water approaches for irrigation such as drip-type or sprinkler systems. Water plants only when needed to enhance root growth and avoid runoff problems;
- Mulch shall be used wherever practicable. Mulch helps retain water and prevents erosion.

Storage and Use of Fertilizers, Herbicides and Pesticides:

- Fertilizers shall be applied in the minimum amounts recommended by the manufacturer. Once applied, fertilizer shall be worked into the soil to limit exposure to storm water. Storage will be in covered areas only. Contents of partially used bags shall be transferred into sealable plastic containers to avoid spills;
- Do not fertilize before or during rain events;
- Consider the use of organic fertilizers;
- Pesticides shall be applied only when necessary and only in the minimum amounts recommended by the manufacturer.

Pet Waste Management

- Scoop up and seal pet waste in plastic bags. Dispose of in garbage.

Solid Waste Management

- All solid waste shall be disposed of or recycled in accordance with all federal, state and local regulations.

List of Emergency Contacts for Plan Implementation

To be determined by Owner.

Illicit Discharges

As required by Standard 10 of the Massachusetts Stormwater Standards, I, the undersigned, being the authorized owner/responsible party of the above referenced property do hereby certify that no illicit discharges exist on the site and that the stormwater management system, as shown on the above referenced plan, does not contain or permit any illicit discharges to enter the stormwater management system. Furthermore, discharges from interior building drains or plumbing within the buildings are prohibited.

Illicit discharges do not include discharges from the following activities or facilities: firefighting, water line flushing, landscape irrigation, uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated water from swimming pools, water used for street washing and water used to clean residential buildings without detergents.

The pollution prevention plan measures in this project to prevent illicit discharges to the stormwater management system, include wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease, include:

1. Identifying the responsible personnel for the implementation of an effective Illicit Discharge Detection and Elimination [IDDE] program.
2. Identify potential sources of Illicit Discharges.
3. Implement the Spill Prevention and Control Plan contained in the property Stormwater Pollution Prevention Plan [SWPPP].

Further, I certify that the stormwater management system ass shown on the referenced plan will be maintained in accordance with the conditions of the Long-Term Pollution Prevention Plan.

_____ _____

Signature Date

POST-CONSTRUCTION
OPERATION AND MAINTENANCE LOG

Inspector's Name: _____ Date: _____
Qualifications: _____
_____

Inspection Type: ☐ Routine ☐ Spill ☐ Other: _____
☐ Post-Rainfall (Precipitation in Inches: _____)

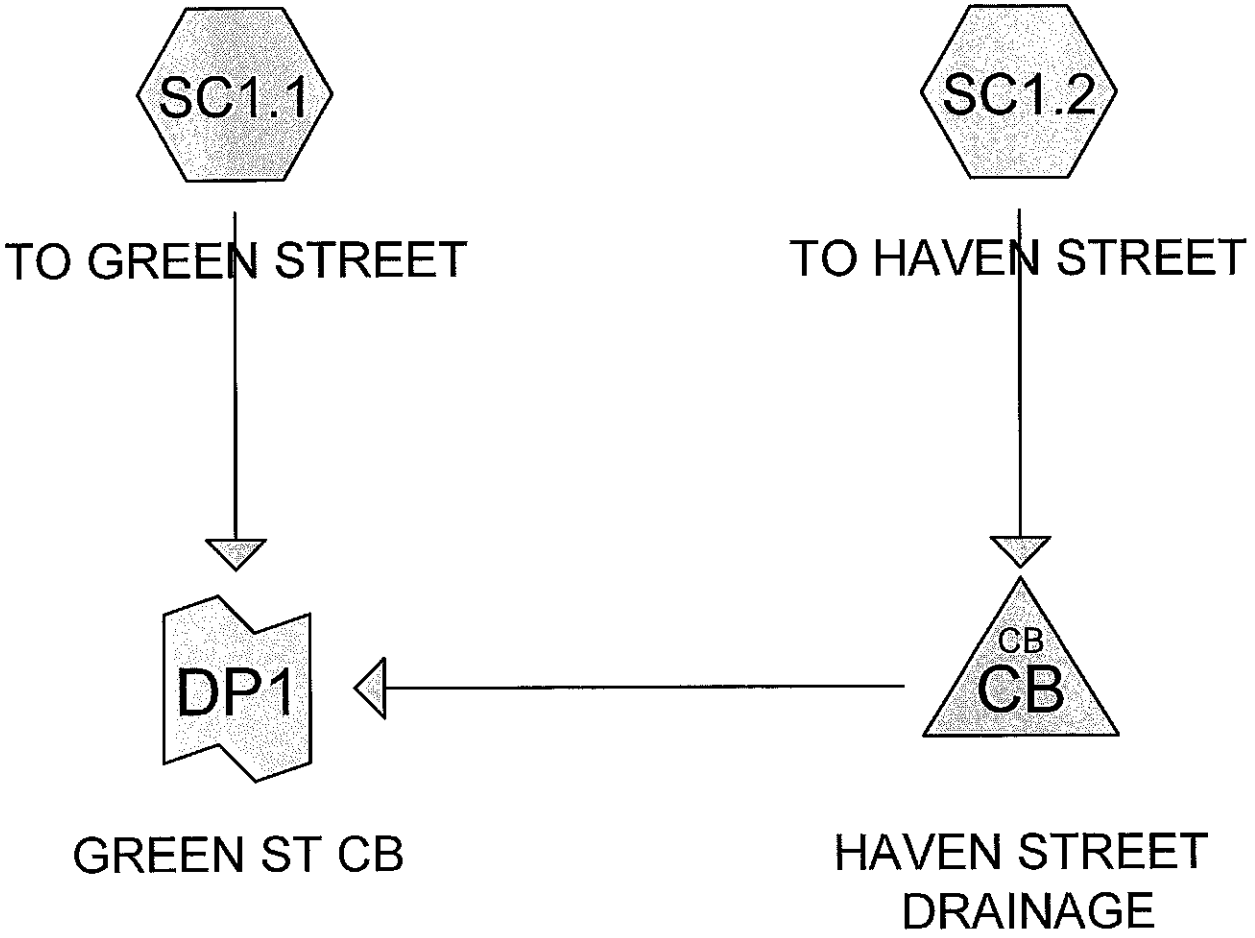
BMP	Frequency	Date Last Performed	Comments
Litter and Debris Removal	After Significant Rain Events		
Deep Sump Catch Basin	Inspect four (4) times per year Maintenance as necessary		
Vegetated Areas	Inspect as necessary for erosion		

Notes: _____
_____
_____
_____
_____
_____

Appendix A:

HydroCAD™ Calculations

EXISTING RUNOFF



Subcat Reach Pond Link

Routing Diagram for EXISTING REA0149
Prepared by {enter your company name here}, Printed 11/23/2022

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 Year	Type III 24-hr		Default	24.00	1	3.31	2
2	10 Year	Type III 24-hr		Default	24.00	1	5.22	2
3	25 Year	Type III 24-hr		Default	24.00	1	6.41	2
4	100 Year	Type III 24-hr		Default	24.00	1	8.24	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
2,301	39	>75% Grass cover, Good, HSG A (SC1.1, SC1.2)
913	98	Concrete, HSG A (SC1.1, SC1.2)
15	68	Crushed Stone, Poor, HSG A (SC1.1)
7,748	98	Paved parking, HSG A (SC1.1, SC1.2)
7,953	98	Unconnected roofs, HSG A (SC1.1)
18,930	**91**	**TOTAL AREA**

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SC1.1: TO GREEN STREET Runoff Area=16,070 sf 90.02% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=92 Runoff=1.01 cfs 3,288 cf

Subcatchment SC1.2: TO HAVEN STREET Runoff Area=2,860 sf 75.07% Impervious Runoff Depth=1.70"
Tc=6.0 min CN=83 Runoff=0.13 cfs 405 cf

Pond CB: HAVEN STREET DRAINAGE Peak Elev=102.41' Inflow=0.13 cfs 405 cf
6.0" Round Culvert n=0.013 L=156.0' S=0.0053 '/' Outflow=0.13 cfs 405 cf

Link DP1: GREEN ST CB Inflow=1.14 cfs 3,693 cf
Primary=1.14 cfs 3,693 cf

Total Runoff Area = 18,930 sf Runoff Volume = 3,693 cf Average Runoff Depth = 2.34"
12.23% Pervious = 2,316 sf 87.77% Impervious = 16,614 sf

Summary for Subcatchment SC1.1: TO GREEN STREET

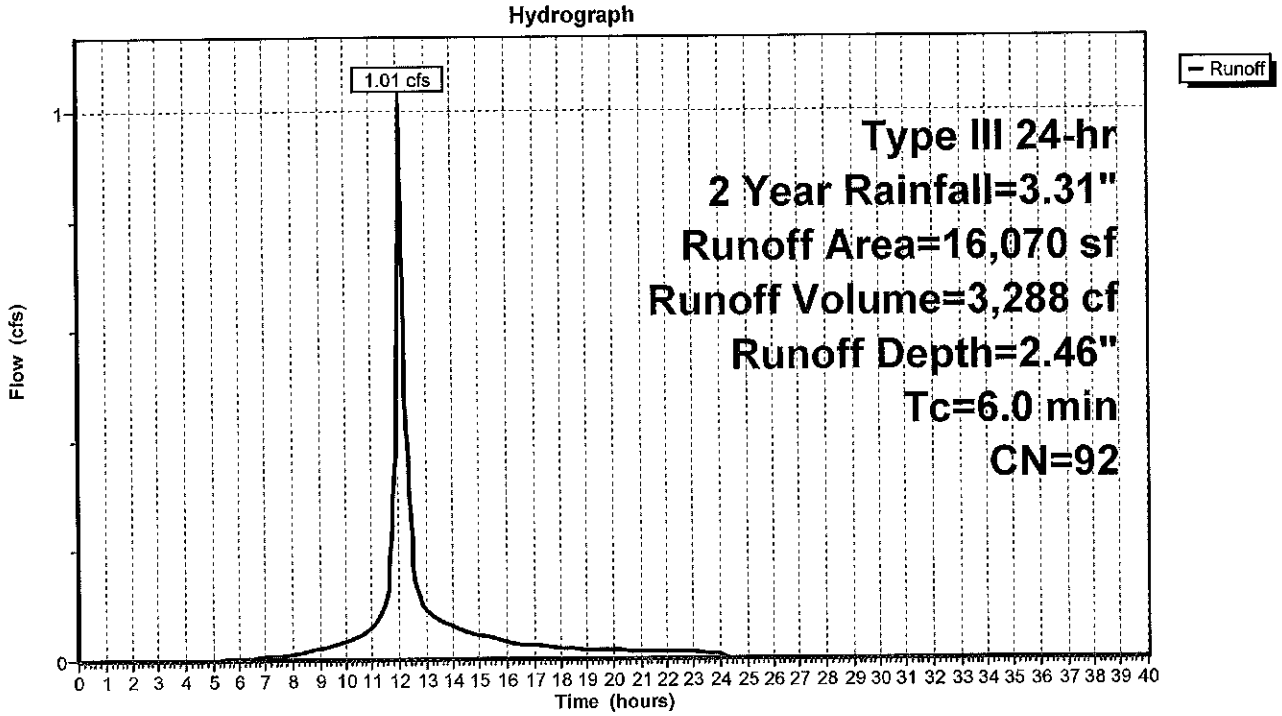
Runoff = 1.01 cfs @ 12.09 hrs, Volume= 3,288 cf, Depth= 2.46"
Routed to Link DP1 : GREEN ST CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.31"

	Area (sf)	CN	Description
	1,588	39	>75% Grass cover, Good, HSG A
*	5,839	98	Paved parking, HSG A
*	675	98	Concrete, HSG A
*	15	68	Crushed Stone, Poor, HSG A
*	7,953	98	Unconnected roofs, HSG A
	16,070	92	Weighted Average
	1,603		9.98% Pervious Area
	14,467		90.02% Impervious Area
	7,953		54.97% Unconnected

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

Subcatchment SC1.1: TO GREEN STREET



Summary for Subcatchment SC1.2: TO HAVEN STREET

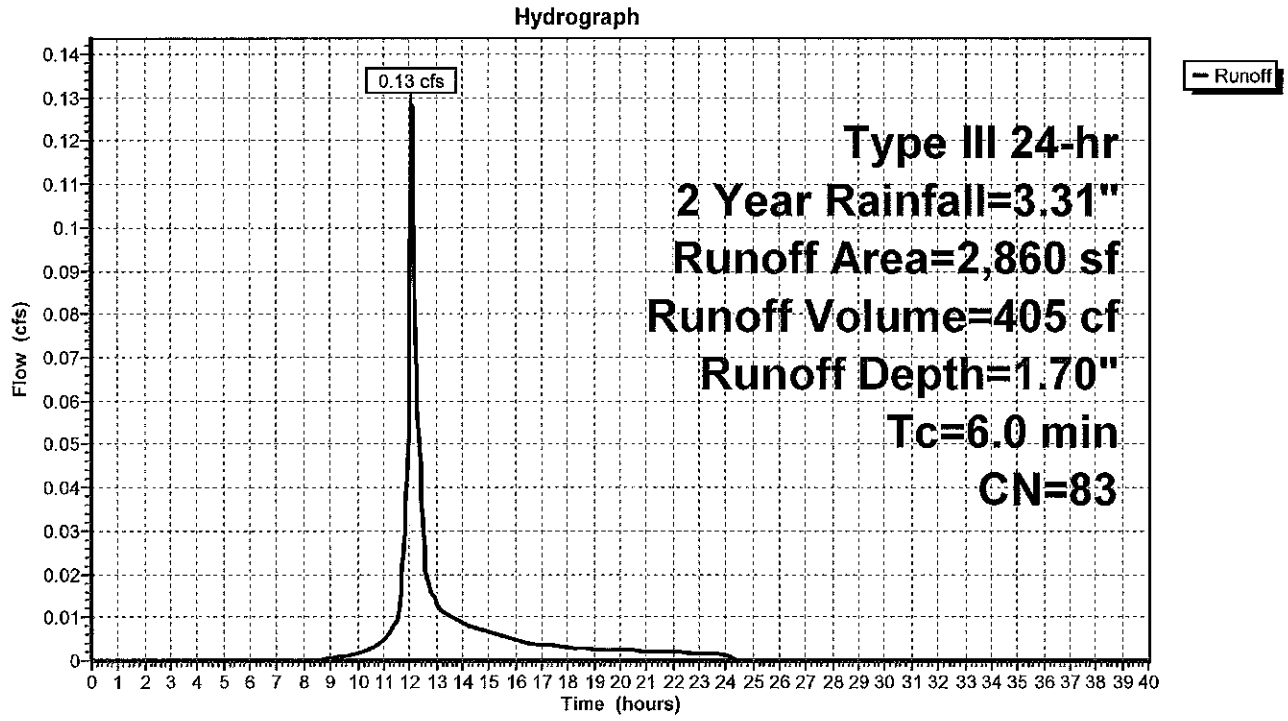
Runoff = 0.13 cfs @ 12.09 hrs, Volume= 405 cf, Depth= 1.70"
Routed to Pond CB : HAVEN STREET DRAINAGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.31"

	Area (sf)	CN	Description
	713	39	>75% Grass cover, Good, HSG A
*	1,909	98	Paved parking, HSG A
*	238	98	Concrete, HSG A
	2,860	83	Weighted Average
	713		24.93% Pervious Area
	2,147		75.07% Impervious Area

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

Subcatchment SC1.2: TO HAVEN STREET



Summary for Pond CB: HAVEN STREET DRAINAGE

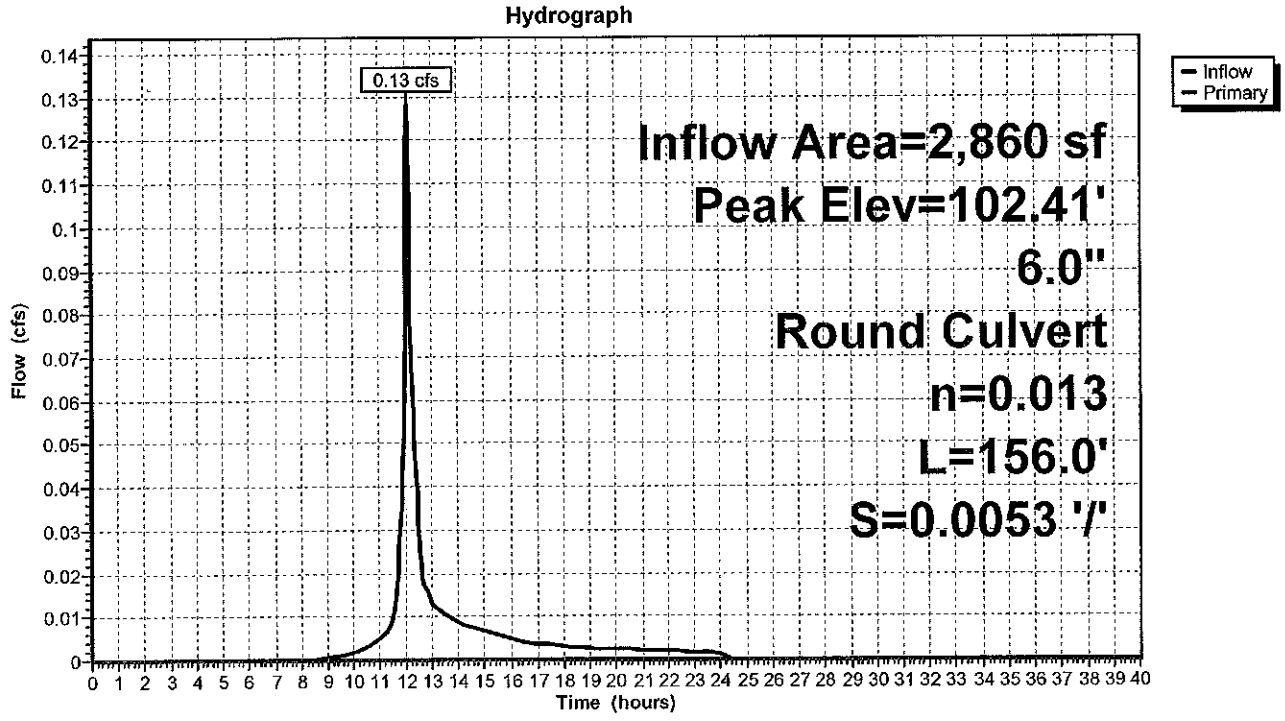
Inflow Area = 2,860 sf, 75.07% Impervious, Inflow Depth = 1.70" for 2 Year event
Inflow = 0.13 cfs @ 12.09 hrs, Volume= 405 cf
Outflow = 0.13 cfs @ 12.09 hrs, Volume= 405 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.09 hrs, Volume= 405 cf
Routed to Link DP1 : GREEN ST CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 102.41' @ 12.09 hrs
Flood Elev= 104.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.15'	**6.0" Round Culvert** L= 156.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.15' / 101.33' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.13 cfs @ 12.09 hrs HW=102.41' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.13 cfs @ 1.82 fps)

Pond CB: HAVEN STREET DRAINAGE

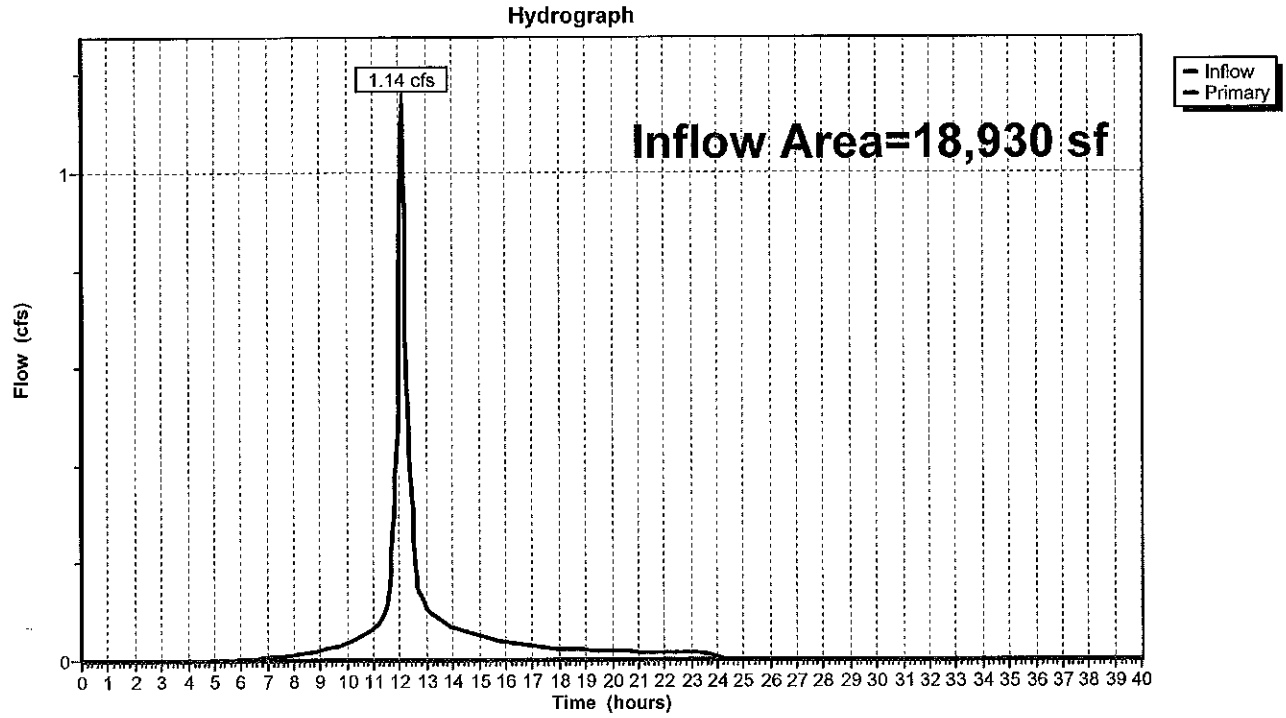


Summary for Link DP1: GREEN ST CB

Inflow Area = 18,930 sf, 87.77% Impervious, Inflow Depth = 2.34" for 2 Year event
Inflow = 1.14 cfs @ 12.09 hrs, Volume= 3,693 cf
Primary = 1.14 cfs @ 12.09 hrs, Volume= 3,693 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link DP1: GREEN ST CB



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SC1.1: TO GREEN STREET Runoff Area=16,070 sf 90.02% Impervious Runoff Depth=4.30"
Tc=6.0 min CN=92 Runoff=1.72 cfs 5,764 cf

Subcatchment SC1.2: TO HAVEN STREET Runoff Area=2,860 sf 75.07% Impervious Runoff Depth=3.37"
Tc=6.0 min CN=83 Runoff=0.25 cfs 804 cf

Pond CB: HAVEN STREET DRAINAGE Peak Elev=102.53' Inflow=0.25 cfs 804 cf
6.0" Round Culvert n=0.013 L=156.0' S=0.0053 '/' Outflow=0.25 cfs 804 cf

Link DP1: GREEN ST CB Inflow=1.97 cfs 6,568 cf
Primary=1.97 cfs 6,568 cf

Total Runoff Area = 18,930 sf Runoff Volume = 6,568 cf Average Runoff Depth = 4.16"
12.23% Pervious = 2,316 sf 87.77% Impervious = 16,614 sf

Summary for Subcatchment SC1.1: TO GREEN STREET

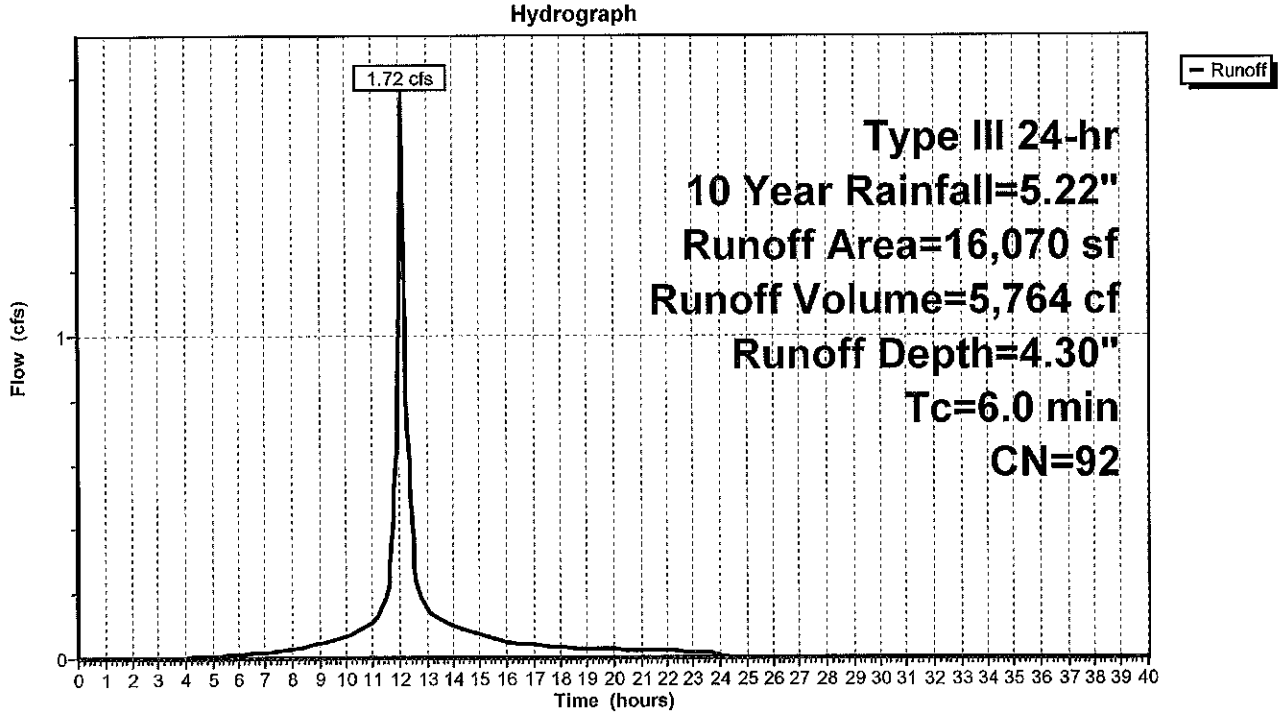
Runoff = 1.72 cfs @ 12.09 hrs, Volume= 5,764 cf, Depth= 4.30"
Routed to Link DP1 : GREEN ST CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=5.22"

	Area (sf)	CN	Description
	1,588	39	>75% Grass cover, Good, HSG A
*	5,839	98	Paved parking, HSG A
*	675	98	Concrete, HSG A
*	15	68	Crushed Stone, Poor, HSG A
*	7,953	98	Unconnected roofs, HSG A
	16,070	92	Weighted Average
	1,603		9.98% Pervious Area
	14,467		90.02% Impervious Area
	7,953		54.97% Unconnected

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

Subcatchment SC1.1: TO GREEN STREET



Summary for Subcatchment SC1.2: TO HAVEN STREET

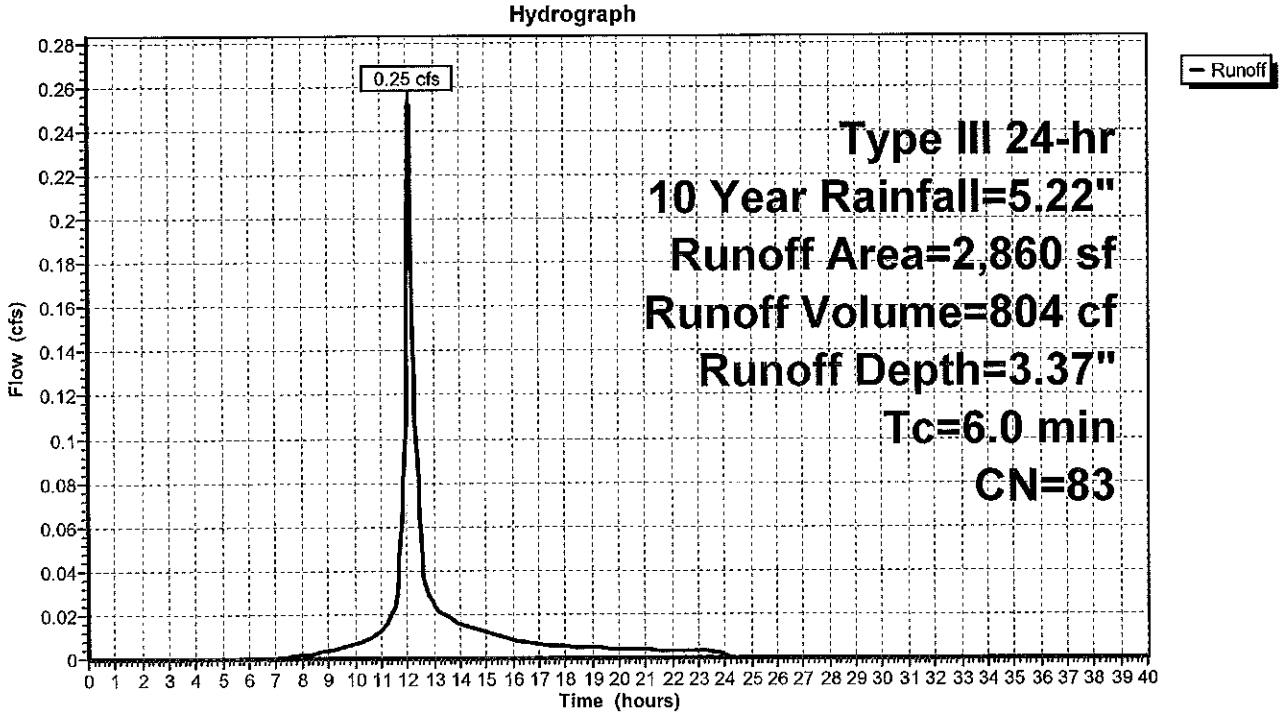
Runoff = 0.25 cfs @ 12.09 hrs, Volume= 804 cf, Depth= 3.37"
Routed to Pond CB : HAVEN STREET DRAINAGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=5.22"

	Area (sf)	CN	Description
	713	39	>75% Grass cover, Good, HSG A
*	1,909	98	Paved parking, HSG A
*	238	98	Concrete, HSG A
	2,860	83	Weighted Average
	713		24.93% Pervious Area
	2,147		75.07% Impervious Area

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

Subcatchment SC1.2: TO HAVEN STREET



Summary for Pond CB: HAVEN STREET DRAINAGE

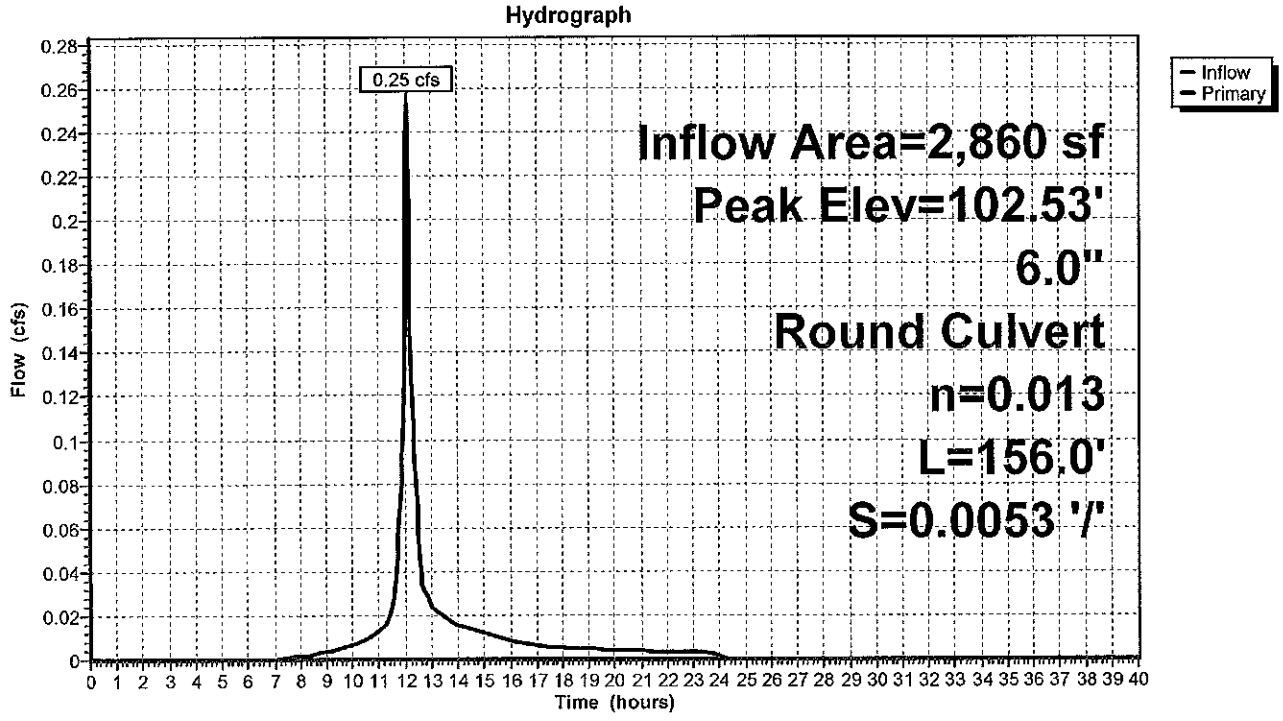
Inflow Area = 2,860 sf, 75.07% Impervious, Inflow Depth = 3.37" for 10 Year event
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 804 cf
Outflow = 0.25 cfs @ 12.09 hrs, Volume= 804 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.25 cfs @ 12.09 hrs, Volume= 804 cf
Routed to Link DP1 : GREEN ST CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 102.53' @ 12.09 hrs
Flood Elev= 104.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.15'	**6.0" Round Culvert** L= 156.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.15' / 101.33' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.25 cfs @ 12.09 hrs HW=102.53' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.25 cfs @ 2.16 fps)

Pond CB: HAVEN STREET DRAINAGE

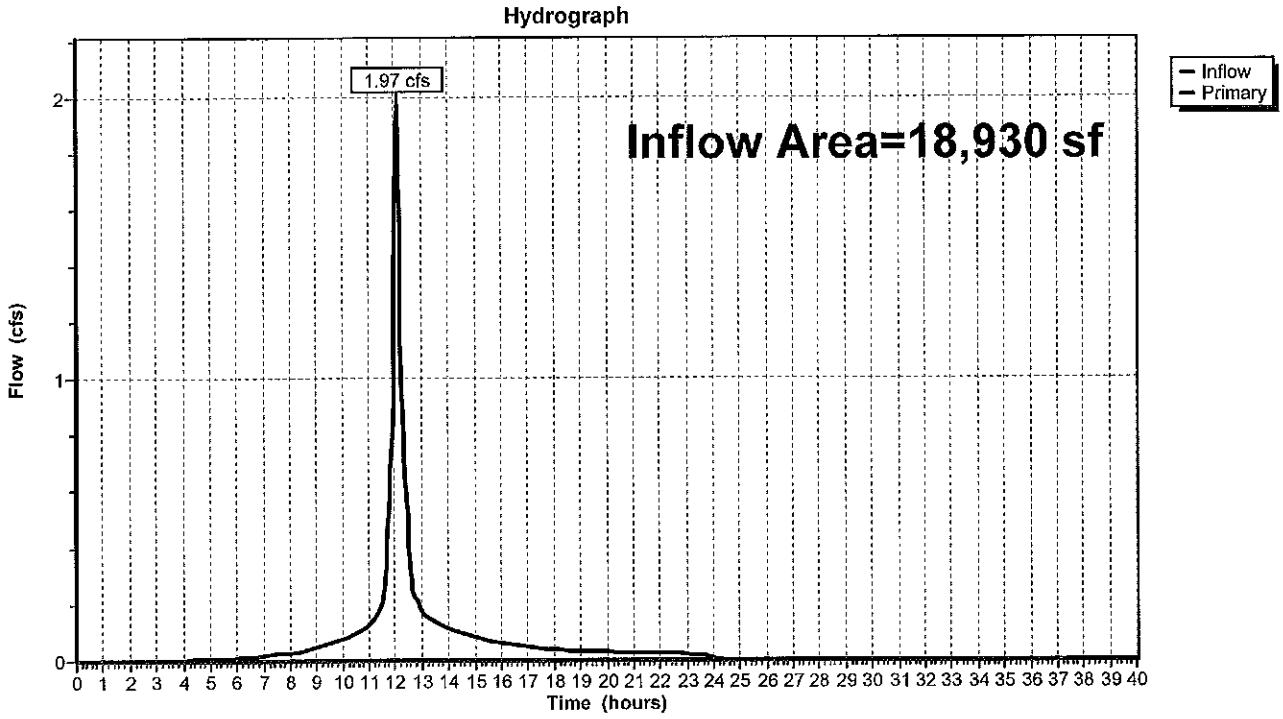


Summary for Link DP1: GREEN ST CB

Inflow Area = 18,930 sf, 87.77% Impervious, Inflow Depth = 4.16" for 10 Year event
Inflow = 1.97 cfs @ 12.09 hrs, Volume= 6,568 cf
Primary = 1.97 cfs @ 12.09 hrs, Volume= 6,568 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link DP1: GREEN ST CB



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SC1.1: TO GREEN STREET Runoff Area=16,070 sf 90.02% Impervious Runoff Depth=5.47"
Tc=6.0 min CN=92 Runoff=2.16 cfs 7,329 cf

Subcatchment SC1.2: TO HAVEN STREET Runoff Area=2,860 sf 75.07% Impervious Runoff Depth=4.47"
Tc=6.0 min CN=83 Runoff=0.33 cfs 1,066 cf

Pond CB: HAVEN STREET DRAINAGE Peak Elev=102.61' Inflow=0.33 cfs 1,066 cf
6.0" Round Culvert n=0.013 L=156.0' S=0.0053 '/' Outflow=0.33 cfs 1,066 cf

Link DP1: GREEN ST CB Inflow=2.49 cfs 8,395 cf
Primary=2.49 cfs 8,395 cf

Total Runoff Area = 18,930 sf Runoff Volume = 8,395 cf Average Runoff Depth = 5.32"
12.23% Pervious = 2,316 sf 87.77% Impervious = 16,614 sf

Summary for Subcatchment SC1.1: TO GREEN STREET

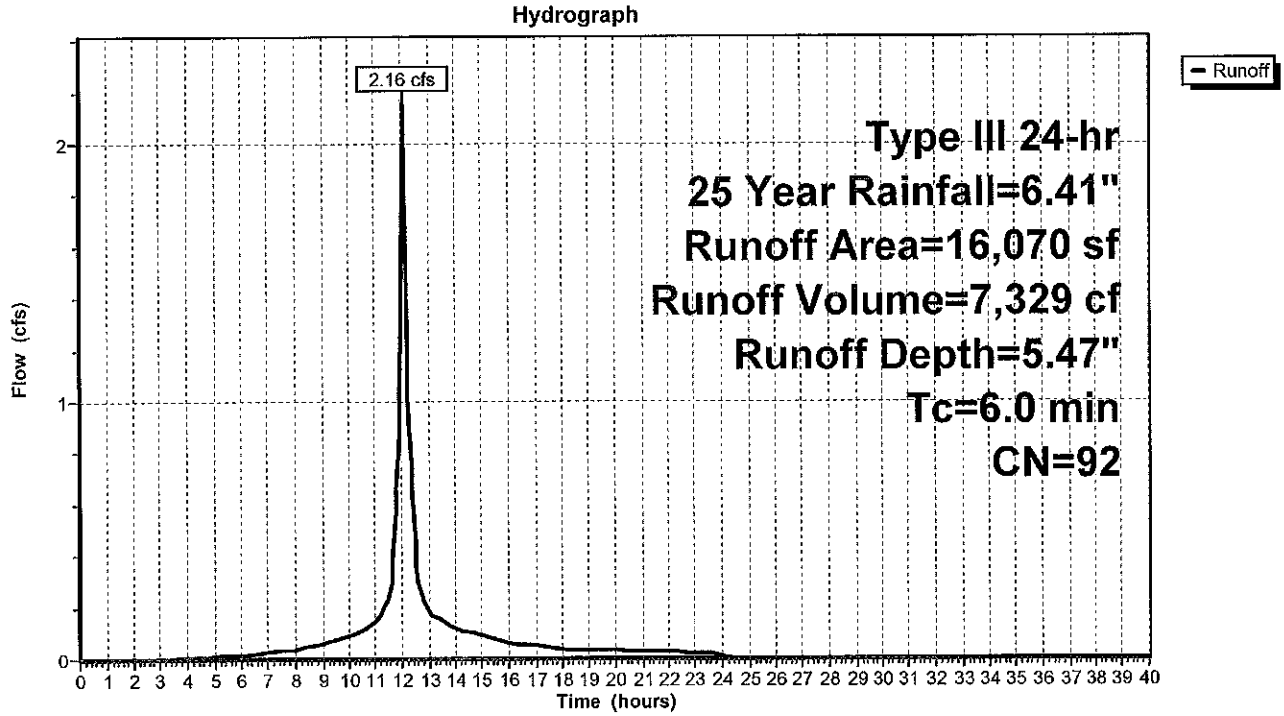
Runoff = 2.16 cfs @ 12.09 hrs, Volume= 7,329 cf, Depth= 5.47"
Routed to Link DP1 : GREEN ST CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=6.41"

	Area (sf)	CN	Description
	1,588	39	>75% Grass cover, Good, HSG A
*	5,839	98	Paved parking, HSG A
*	675	98	Concrete, HSG A
*	15	68	Crushed Stone, Poor, HSG A
*	7,953	98	Unconnected roofs, HSG A
	16,070	92	Weighted Average
	1,603		9.98% Pervious Area
	14,467		90.02% Impervious Area
	7,953		54.97% Unconnected

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

Subcatchment SC1.1: TO GREEN STREET



Summary for Subcatchment SC1.2: TO HAVEN STREET

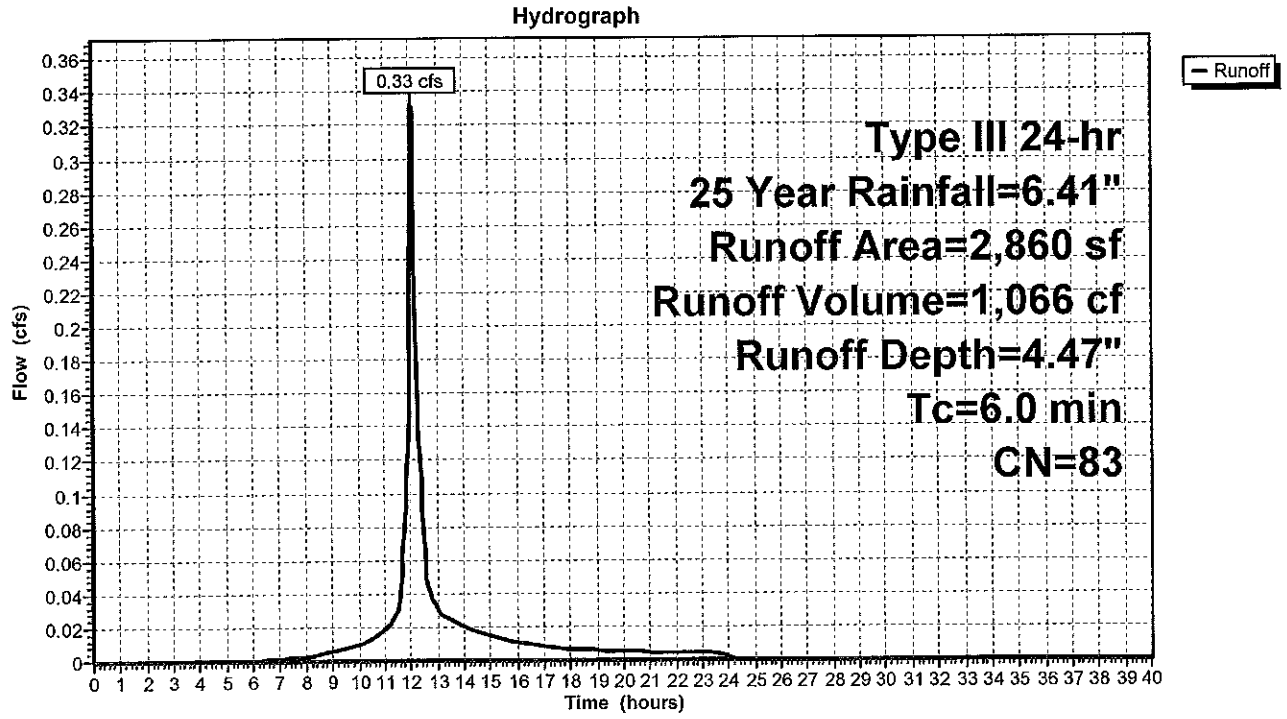
Runoff = 0.33 cfs @ 12.09 hrs, Volume= 1,066 cf, Depth= 4.47"
Routed to Pond CB : HAVEN STREET DRAINAGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=6.41"

	Area (sf)	CN	Description
	713	39	>75% Grass cover, Good, HSG A
*	1,909	98	Paved parking, HSG A
*	238	98	Concrete, HSG A
	2,860	83	Weighted Average
	713		24.93% Pervious Area
	2,147		75.07% Impervious Area

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

Subcatchment SC1.2: TO HAVEN STREET



Summary for Pond CB: HAVEN STREET DRAINAGE

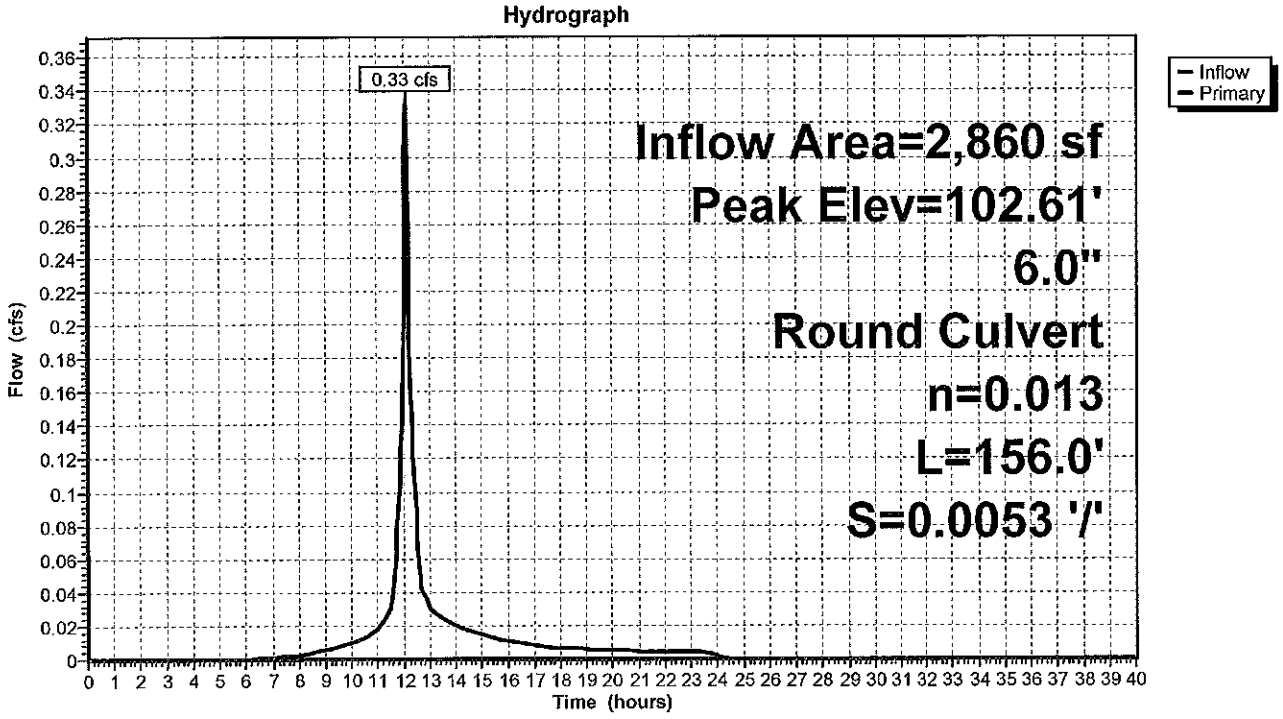
Inflow Area = 2,860 sf, 75.07% Impervious, Inflow Depth = 4.47" for 25 Year event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 1,066 cf
Outflow = 0.33 cfs @ 12.09 hrs, Volume= 1,066 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.09 hrs, Volume= 1,066 cf
Routed to Link DP1 : GREEN ST CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 102.61' @ 12.09 hrs
Flood Elev= 104.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.15'	**6.0" Round Culvert** L= 156.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.15' / 101.33' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.32 cfs @ 12.09 hrs HW=102.60' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.32 cfs @ 2.29 fps)

Pond CB: HAVEN STREET DRAINAGE

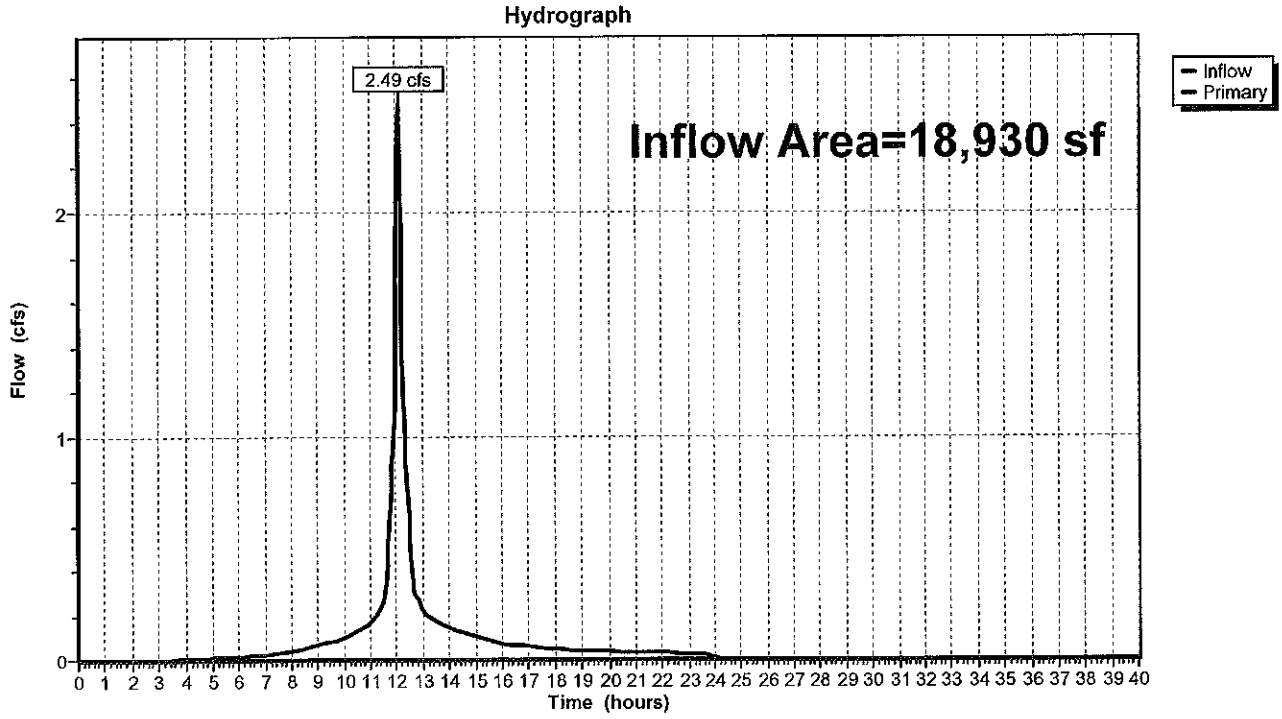


Summary for Link DP1: GREEN ST CB

Inflow Area = 18,930 sf, 87.77% Impervious, Inflow Depth = 5.32" for 25 Year event
Inflow = 2.49 cfs @ 12.09 hrs, Volume= 8,395 cf
Primary = 2.49 cfs @ 12.09 hrs, Volume= 8,395 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link DP1: GREEN ST CB



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SC1.1: TO GREEN STREET Runoff Area=16,070 sf 90.02% Impervious Runoff Depth=7.28"
Tc=6.0 min CN=92 Runoff=2.83 cfs 9,751 cf

Subcatchment SC1.2: TO HAVEN STREET Runoff Area=2,860 sf 75.07% Impervious Runoff Depth=6.21"
Tc=6.0 min CN=83 Runoff=0.45 cfs 1,479 cf

Pond CB: HAVEN STREET DRAINAGE Peak Elev=102.96' Inflow=0.45 cfs 1,479 cf
6.0" Round Culvert n=0.013 L=156.0' S=0.0053 '/' Outflow=0.45 cfs 1,479 cf

Link DP1: GREEN ST CB Inflow=3.28 cfs 11,230 cf
Primary=3.28 cfs 11,230 cf

Total Runoff Area = 18,930 sf Runoff Volume = 11,230 cf Average Runoff Depth = 7.12"
12.23% Pervious = 2,316 sf 87.77% Impervious = 16,614 sf

Summary for Subcatchment SC1.1: TO GREEN STREET

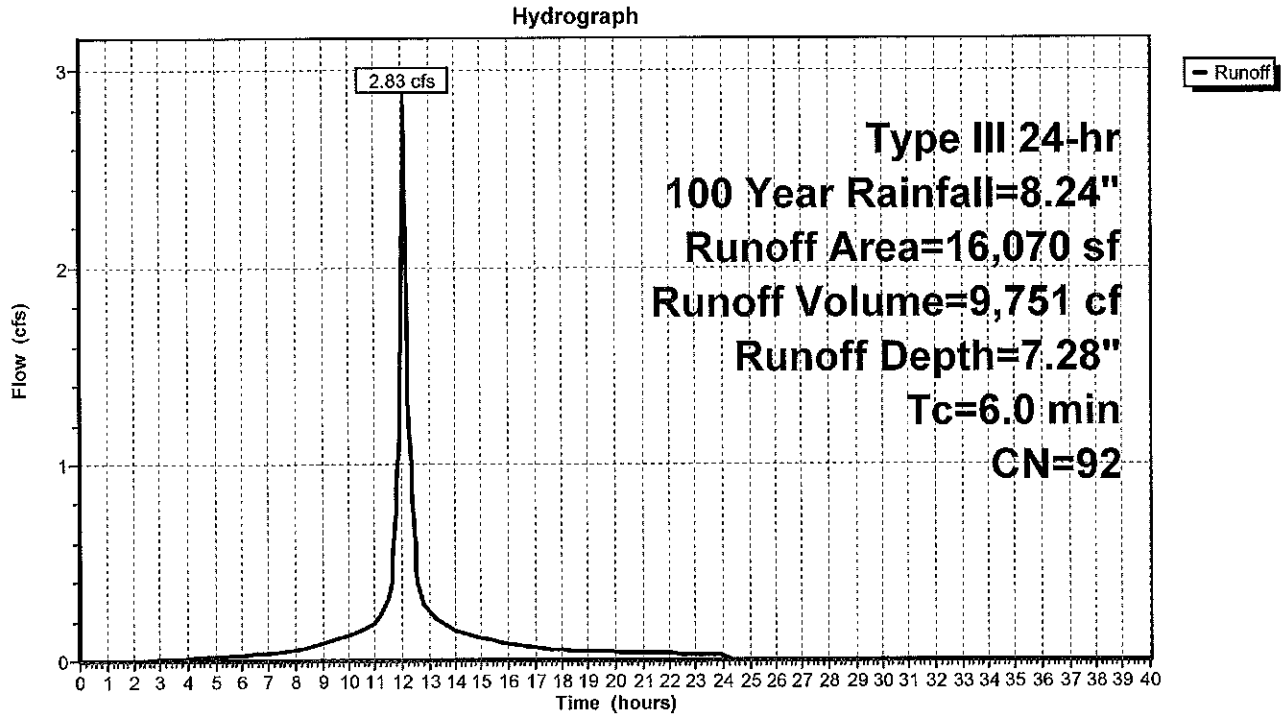
Runoff = 2.83 cfs @ 12.09 hrs, Volume= 9,751 cf, Depth= 7.28"
Routed to Link DP1 : GREEN ST CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Rainfall=8.24"

	Area (sf)	CN	Description
	1,588	39	>75% Grass cover, Good, HSG A
*	5,839	98	Paved parking, HSG A
*	675	98	Concrete, HSG A
*	15	68	Crushed Stone, Poor, HSG A
*	7,953	98	Unconnected roofs, HSG A
	16,070	92	Weighted Average
	1,603		9.98% Pervious Area
	14,467		90.02% Impervious Area
	7,953		54.97% Unconnected

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

Subcatchment SC1.1: TO GREEN STREET



Summary for Subcatchment SC1.2: TO HAVEN STREET

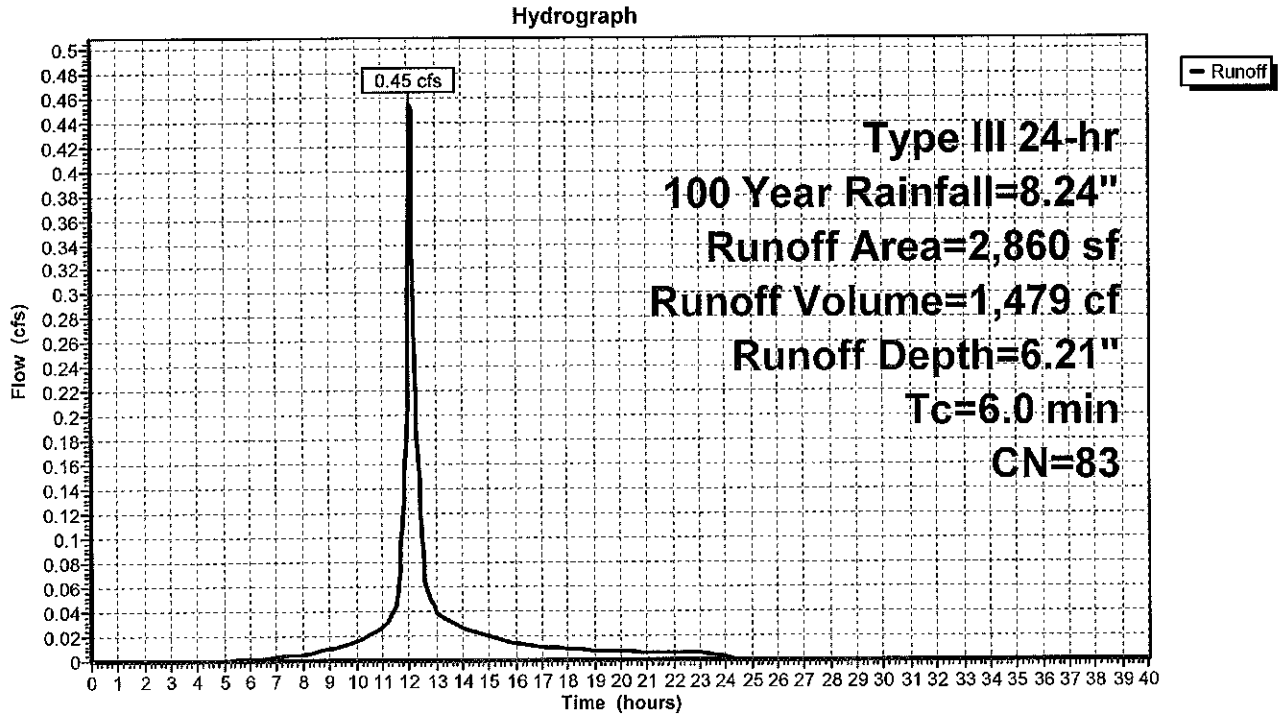
Runoff = 0.45 cfs @ 12.09 hrs, Volume= 1,479 cf, Depth= 6.21"
Routed to Pond CB : HAVEN STREET DRAINAGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Rainfall=8.24"

	Area (sf)	CN	Description
	713	39	>75% Grass cover, Good, HSG A
*	1,909	98	Paved parking, HSG A
*	238	98	Concrete, HSG A
	2,860	83	Weighted Average
	713		24.93% Pervious Area
	2,147		75.07% Impervious Area

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

Subcatchment SC1.2: TO HAVEN STREET



Summary for Pond CB: HAVEN STREET DRAINAGE

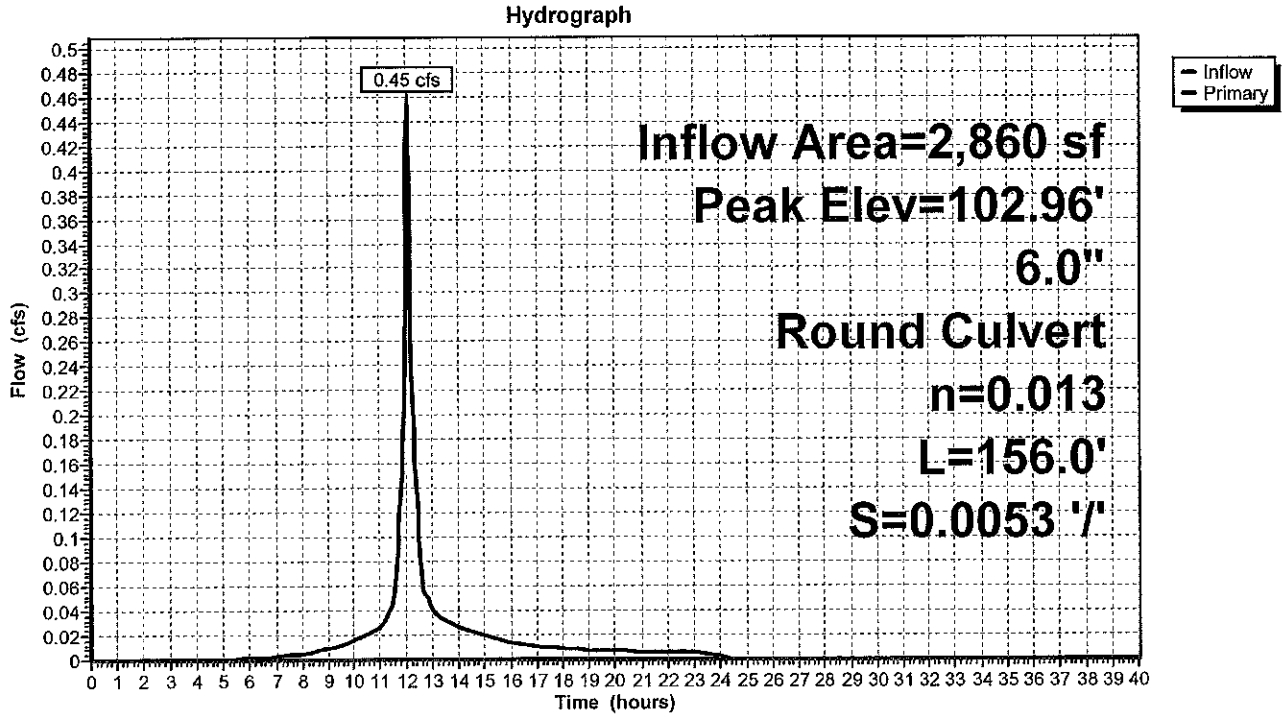
Inflow Area = 2,860 sf, 75.07% Impervious, Inflow Depth = 6.21" for 100 Year event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 1,479 cf
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 1,479 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.09 hrs, Volume= 1,479 cf
Routed to Link DP1 : GREEN ST CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 102.96' @ 12.10 hrs
Flood Elev= 104.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.15'	**6.0" Round Culvert** L= 156.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.15' / 101.33' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.44 cfs @ 12.09 hrs HW=102.91' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.44 cfs @ 2.24 fps)

Pond CB: HAVEN STREET DRAINAGE

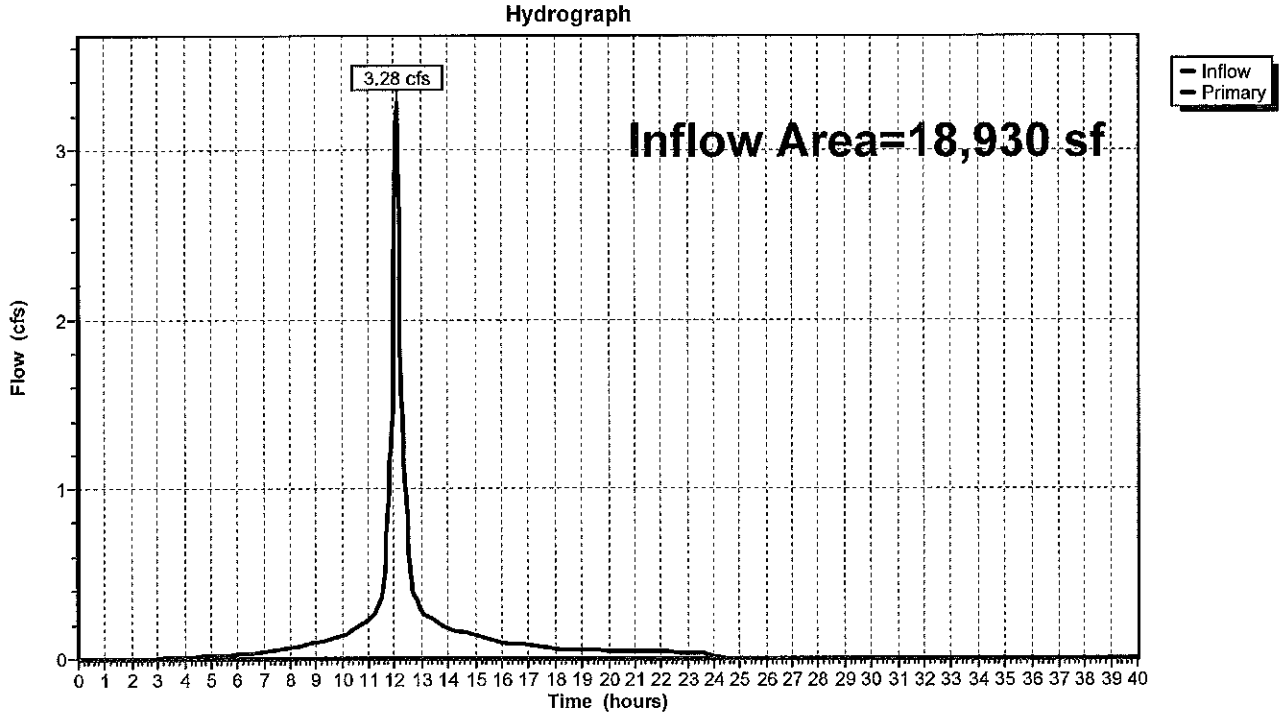


Summary for Link DP1: GREEN ST CB

Inflow Area = 18,930 sf, 87.77% Impervious, Inflow Depth = 7.12" for 100 Year event
Inflow = 3.28 cfs @ 12.09 hrs, Volume= 11,230 cf
Primary = 3.28 cfs @ 12.09 hrs, Volume= 11,230 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link DP1: GREEN ST CB



Events for Subcatchment SC1.1: TO GREEN STREET

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 Year	3.31	1.01	3,288	2.46
10 Year	5.22	1.72	5,764	4.30
25 Year	6.41	2.16	7,329	5.47
100 Year	**8.24**	**2.83**	**9,751**	**7.28**

Events for Subcatchment SC1.2: TO HAVEN STREET

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 Year	3.31	0.13	405	1.70
10 Year	5.22	0.25	804	3.37
25 Year	6.41	0.33	1,066	4.47
100 Year	**8.24**	**0.45**	**1,479**	**6.21**

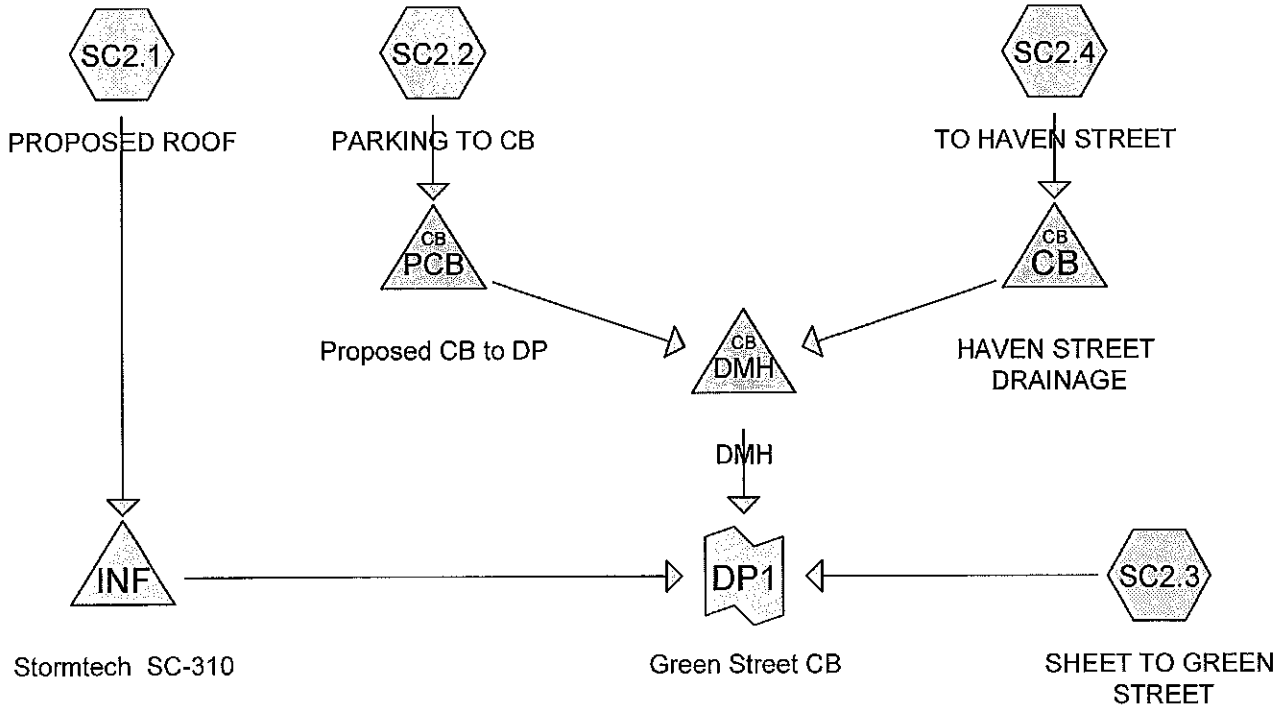
Events for Pond CB: HAVEN STREET DRAINAGE

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2 Year	0.13	0.13	102.41	**0**
10 Year	0.25	0.25	102.53	0
25 Year	0.33	0.33	102.61	0
100 Year	**0.45**	**0.45**	**102.96**	0

Events for Link DP1: GREEN ST CB

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 Year	1.14	1.14	**0.00**
10 Year	1.97	1.97	0.00
25 Year	2.49	2.49	0.00
100 Year	**3.28**	**3.28**	0.00

PROPOSED RUNOFF



Subcat Reach Pond Link

Routing Diagram for PROPOSED REA0149
Prepared by {enter your company name here}, Printed 11/23/2022

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 Year	Type III 24-hr		Default	24.00	1	3.31	2
2	10 Year	Type III 24-hr		Default	24.00	1	5.22	2
3	25 Year	Type III 24-hr		Default	24.00	1	6.41	2
4	100 Year	Type III 24-hr		Default	24.00	1	8.24	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
3,523	39	>75% Grass cover, Good, HSG A (SC2.3, SC2.4)
2,493	98	Concrete, HSG A (SC2.2, SC2.3, SC2.4)
4,315	98	Paved parking, HSG A (SC2.2)
8,600	98	Unconnected roofs, HSG A (SC2.1)
18,931	**87**	**TOTAL AREA**

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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SC2.1: PROPOSED ROOF Runoff Area=8,600 sf 100.00% Impervious Runoff Depth=3.08"
Tc=6.0 min CN=98 Runoff=0.62 cfs 2,205 cf

Subcatchment SC2.2: PARKING TO CB Runoff Area=4,532 sf 100.00% Impervious Runoff Depth=3.08"
Tc=6.0 min CN=98 Runoff=0.33 cfs 1,162 cf

Subcatchment SC2.3: SHEET TO GREEN Runoff Area=5,283 sf 39.18% Impervious Runoff Depth=0.53"
Tc=6.0 min CN=62 Runoff=0.05 cfs 233 cf

Subcatchment SC2.4: TO HAVEN STREET Runoff Area=516 sf 39.92% Impervious Runoff Depth=0.57"
Tc=6.0 min CN=63 Runoff=0.01 cfs 24 cf

Pond CB: HAVEN STREET DRAINAGE Peak Elev=102.20' Inflow=0.01 cfs 24 cf
6.0" Round Culvert n=0.011 L=174.0' S=0.0053 '/' Outflow=0.01 cfs 24 cf

Pond DMH: DMH Peak Elev=101.41' Inflow=0.33 cfs 1,187 cf
8.0" Round Culvert n=0.011 L=89.0' S=0.0053 '/' Outflow=0.33 cfs 1,187 cf

Pond INF: Stormtech SC-310 Peak Elev=101.51' Storage=253 cf Inflow=0.62 cfs 2,205 cf
Discarded=0.23 cfs 2,218 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 2,218 cf

Pond PCB: Proposed CB to DP Peak Elev=101.48' Inflow=0.33 cfs 1,162 cf
8.0" Round Culvert n=0.011 L=1.0' S=0.0000 '/' Outflow=0.33 cfs 1,162 cf

Link DP1: Green Street CB Inflow=0.38 cfs 1,419 cf
Primary=0.38 cfs 1,419 cf

Total Runoff Area = 18,931 sf Runoff Volume = 3,625 cf Average Runoff Depth = 2.30"
18.61% Pervious = 3,523 sf 81.39% Impervious = 15,408 sf

Summary for Subcatchment SC2.1: PROPOSED ROOF

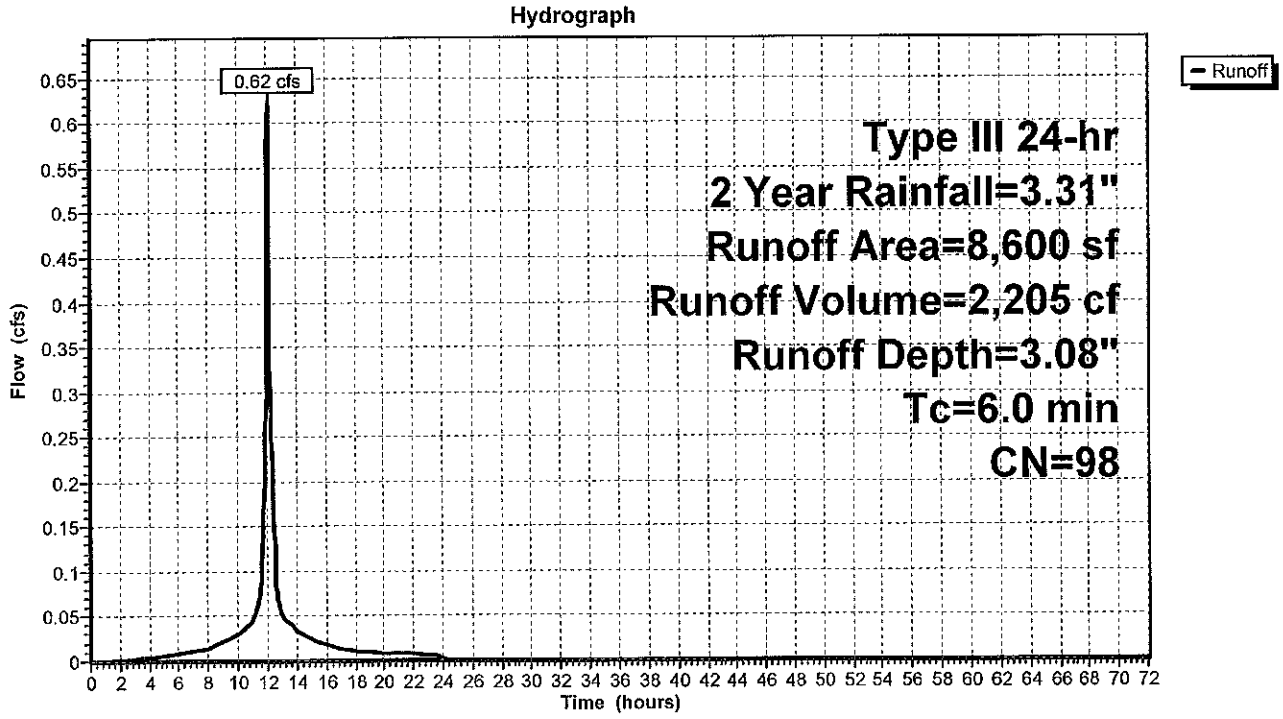
Runoff = 0.62 cfs @ 12.09 hrs, Volume= 2,205 cf, Depth= 3.08"
Routed to Pond INF : Stormtech SC-310

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 2 Year Rainfall=3.31"

	Area (sf)	CN	Description
*	8,600	98	Unconnected roofs, HSG A
	8,600		100.00% Impervious Area
	8,600		100.00% Unconnected

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

Subcatchment SC2.1: PROPOSED ROOF



Summary for Subcatchment SC2.2: PARKING TO CB

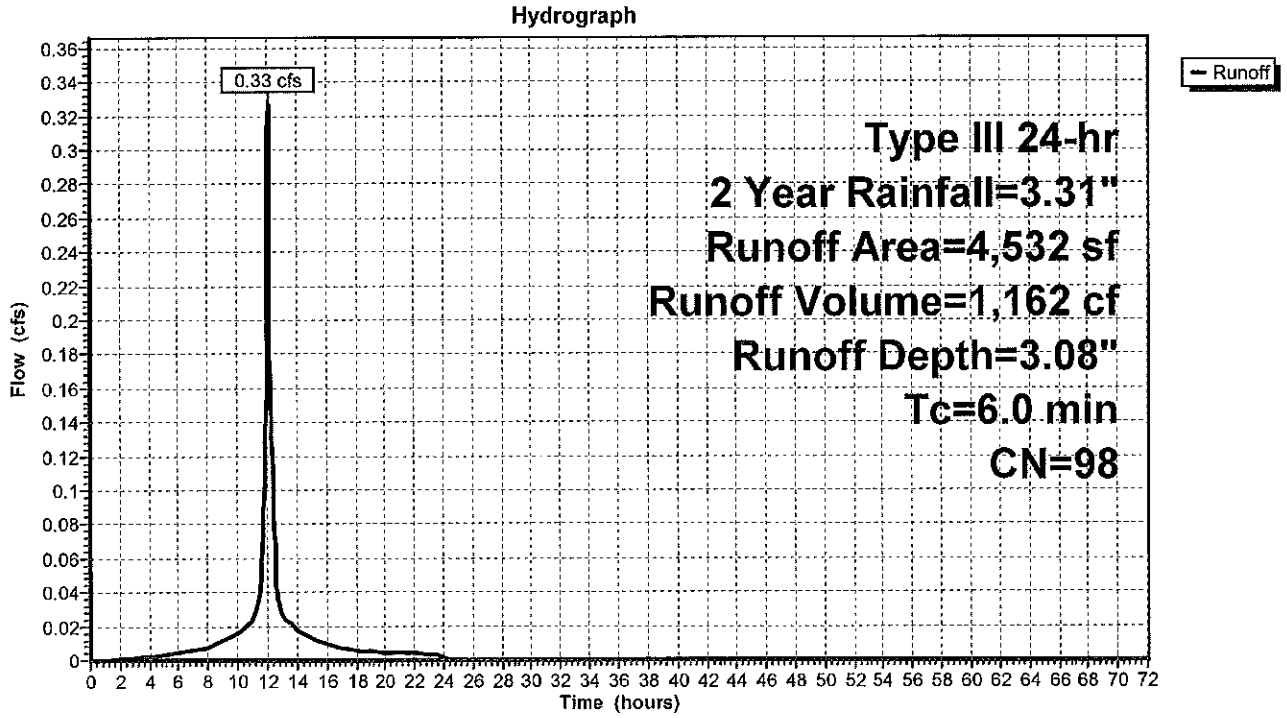
Runoff = 0.33 cfs @ 12.09 hrs, Volume= 1,162 cf, Depth= 3.08"
Routed to Pond PCB : Proposed CB to DP

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 2 Year Rainfall=3.31"

	Area (sf)	CN	Description
*	4,315	98	Paved parking, HSG A
*	217	98	Concrete, HSG A
	4,532	98	Weighted Average
	4,532		100.00% Impervious Area

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

Subcatchment SC2.2: PARKING TO CB



Summary for Subcatchment SC2.3: SHEET TO GREEN STREET

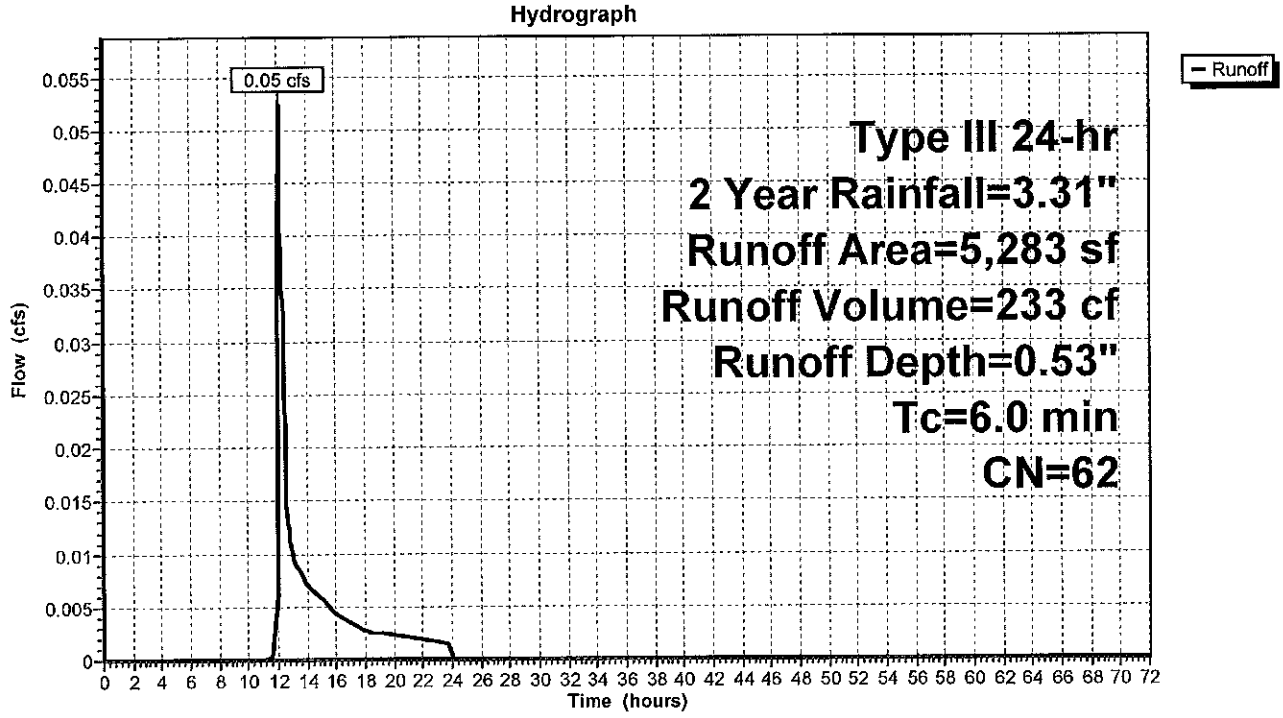
Runoff = 0.05 cfs @ 12.12 hrs, Volume= 233 cf, Depth= 0.53"
Routed to Link DP1 : Green Street CB

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 2 Year Rainfall=3.31"

	Area (sf)	CN	Description
	3,213	39	>75% Grass cover, Good, HSG A
*	2,070	98	Concrete, HSG A
	5,283	62	Weighted Average
	3,213		60.82% Pervious Area
	2,070		39.18% Impervious Area

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

Subcatchment SC2.3: SHEET TO GREEN STREET



Summary for Subcatchment SC2.4: TO HAVEN STREET

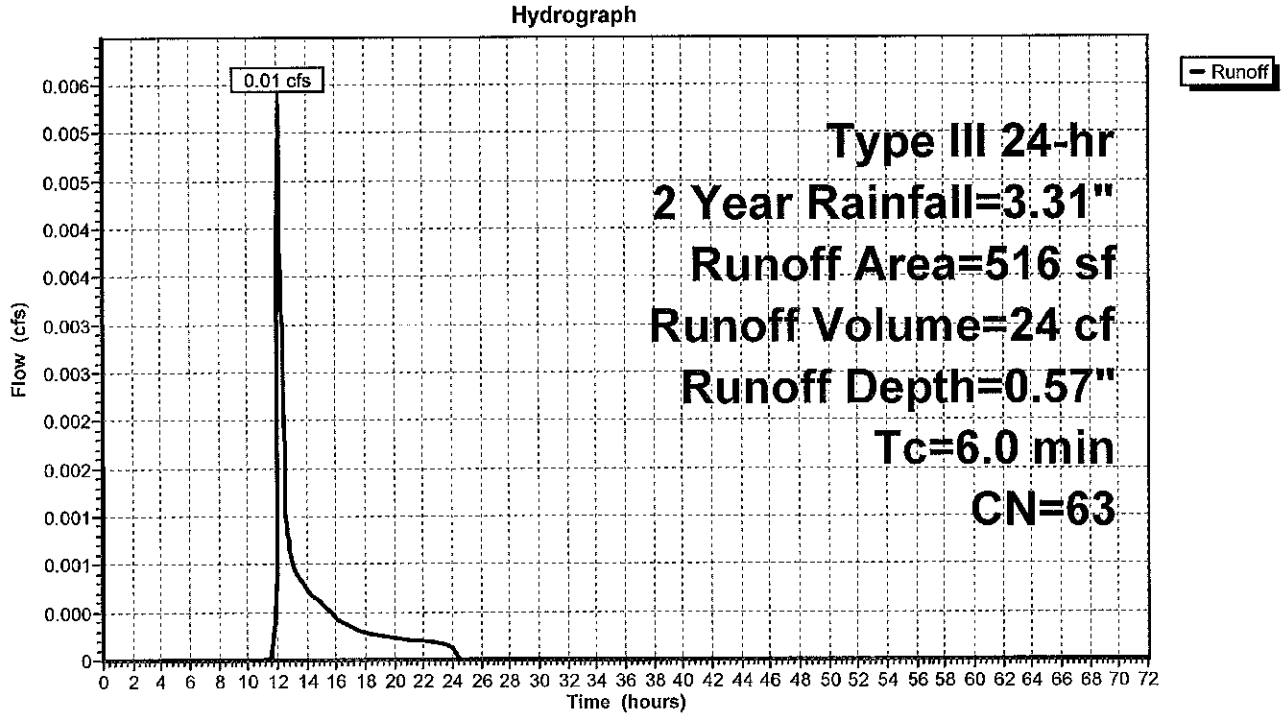
Runoff = 0.01 cfs @ 12.12 hrs, Volume= 24 cf, Depth= 0.57"
Routed to Pond CB : HAVEN STREET DRAINAGE

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 2 Year Rainfall=3.31"

	Area (sf)	CN	Description
	310	39	>75% Grass cover, Good, HSG A
*	206	98	Concrete, HSG A
	516	63	Weighted Average
	310		60.08% Pervious Area
	206		39.92% Impervious Area

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

Subcatchment SC2.4: TO HAVEN STREET



Summary for Pond CB: HAVEN STREET DRAINAGE

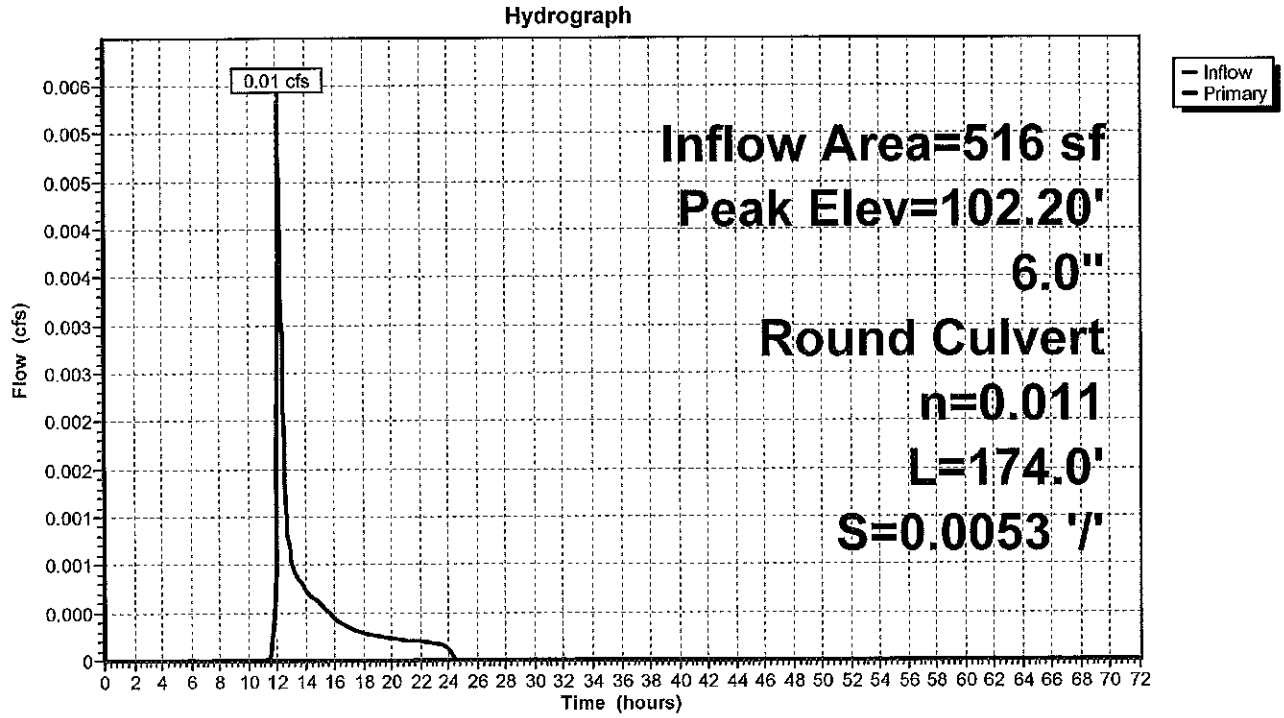
Inflow Area = 516 sf, 39.92% Impervious, Inflow Depth = 0.57" for 2 Year event
Inflow = 0.01 cfs @ 12.12 hrs, Volume= 24 cf
Outflow = 0.01 cfs @ 12.12 hrs, Volume= 24 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 12.12 hrs, Volume= 24 cf
Routed to Pond DMH : DMH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 102.20' @ 12.12 hrs
Flood Elev= 104.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.15'	**6.0" Round Culvert** L= 174.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.15' / 101.22' S= 0.0053 '/' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

Primary OutFlow Max=0.01 cfs @ 12.12 hrs HW=102.20' TW=101.39' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.01 cfs @ 0.78 fps)

Pond CB: HAVEN STREET DRAINAGE



Summary for Pond DMH: DMH

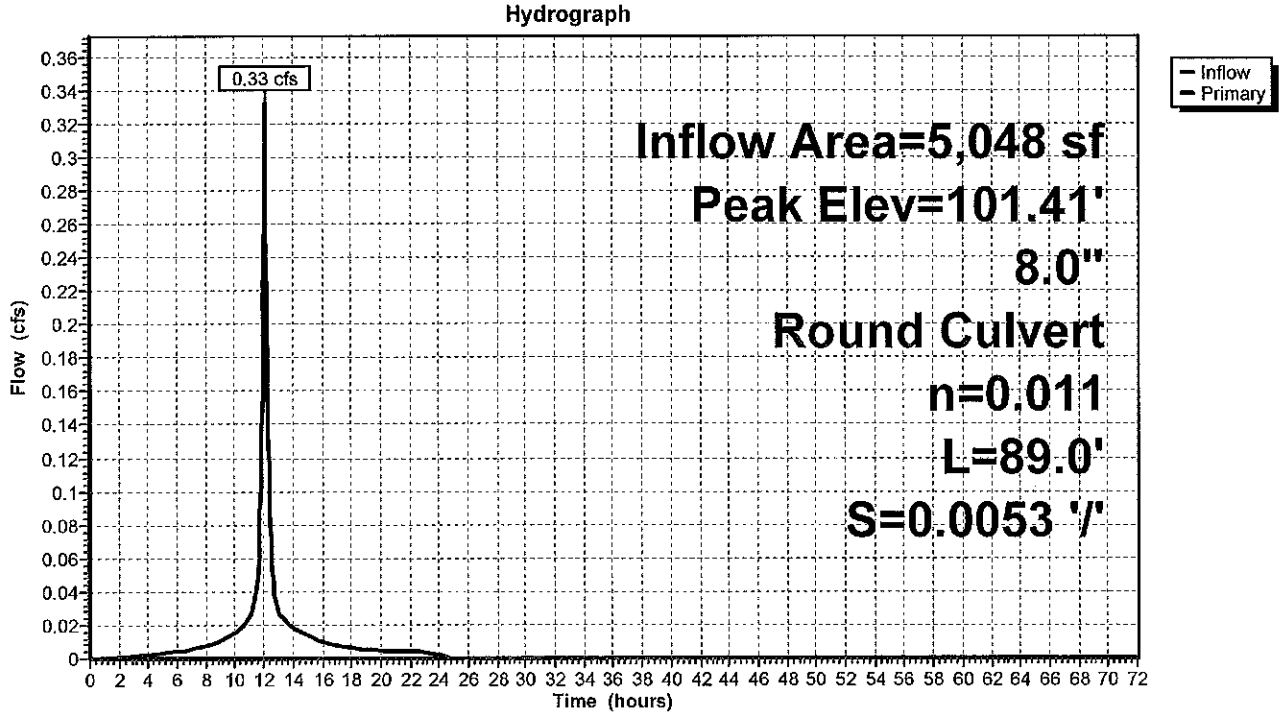
Inflow Area = 5,048 sf, 93.86% Impervious, Inflow Depth = 2.82" for 2 Year event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 1,187 cf
Outflow = 0.33 cfs @ 12.09 hrs, Volume= 1,187 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.09 hrs, Volume= 1,187 cf
Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 101.41' @ 12.09 hrs
Flood Elev= 105.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.05'	**8.0" Round Culvert** L= 89.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.05' / 100.58' S= 0.0053 '/' Cc= 0.900 n= 0.011, Flow Area= 0.35 sf

Primary OutFlow Max=0.32 cfs @ 12.09 hrs HW=101.40' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.32 cfs @ 2.50 fps)

Pond DMH: DMH



Summary for Pond INF: Stormtech SC-310

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=110)

Inflow Area = 8,600 sf,100.00% Impervious, Inflow Depth = 3.08" for 2 Year event
Inflow = 0.62 cfs @ 12.09 hrs, Volume= 2,205 cf
Outflow = 0.23 cfs @ 12.00 hrs, Volume= 2,218 cf, Atten= 62%, Lag= 0.0 min
Discarded = 0.23 cfs @ 12.00 hrs, Volume= 2,218 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 101.51' @ 12.33 hrs Surf.Area= 1,222 sf Storage= 253 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.5 min (760.2 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	101.00'	875 cf	**18.17'W x 67.28'L x 2.33'H Field A** 2,852 cf Overall - 663 cf Embedded = 2,189 cf x 40.0% Voids
#2A	101.50'	663 cf	**ADS_StormTech SC-310 +Cap** x 45 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 45 Chambers in 5 Rows
		1,539 cf	Total Available Storage

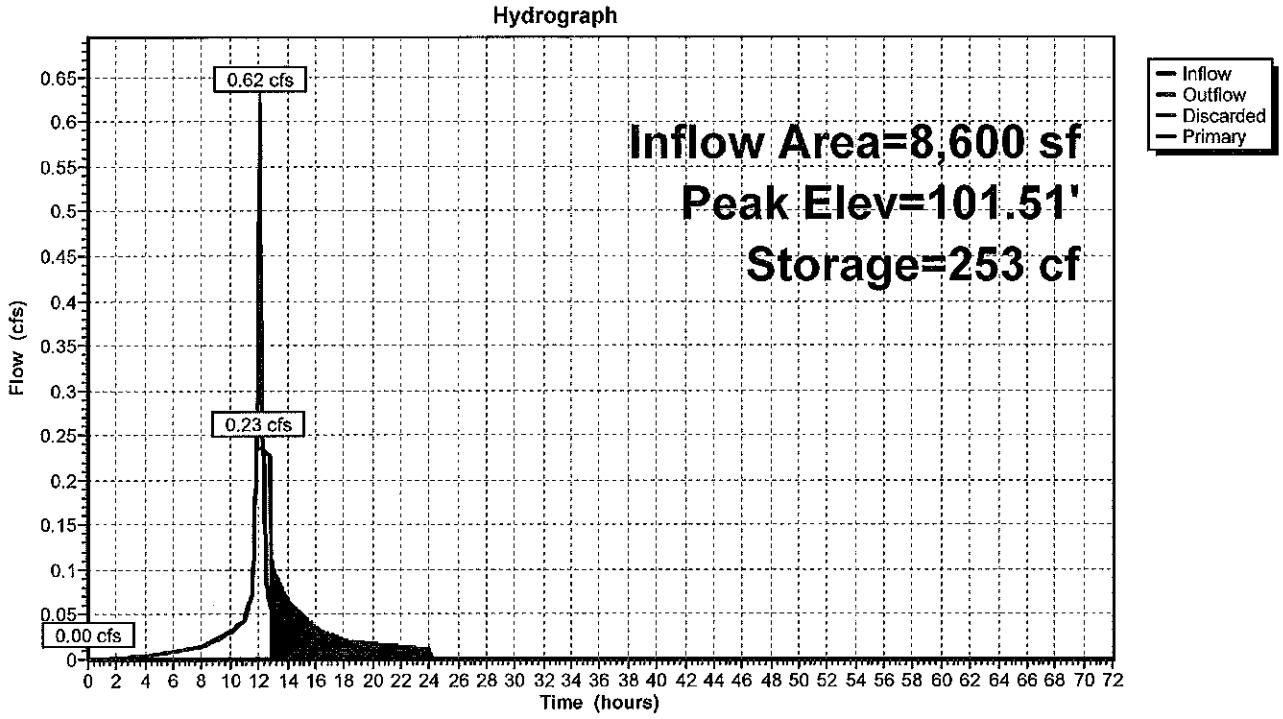
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	101.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	102.50'	**6.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.50' / 101.05' S= 0.0558 '/' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

Discarded OutFlow Max=0.23 cfs @ 12.00 hrs HW=101.06' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=101.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

Pond INF: Stormtech SC-310



Summary for Pond PCB: Proposed CB to DP

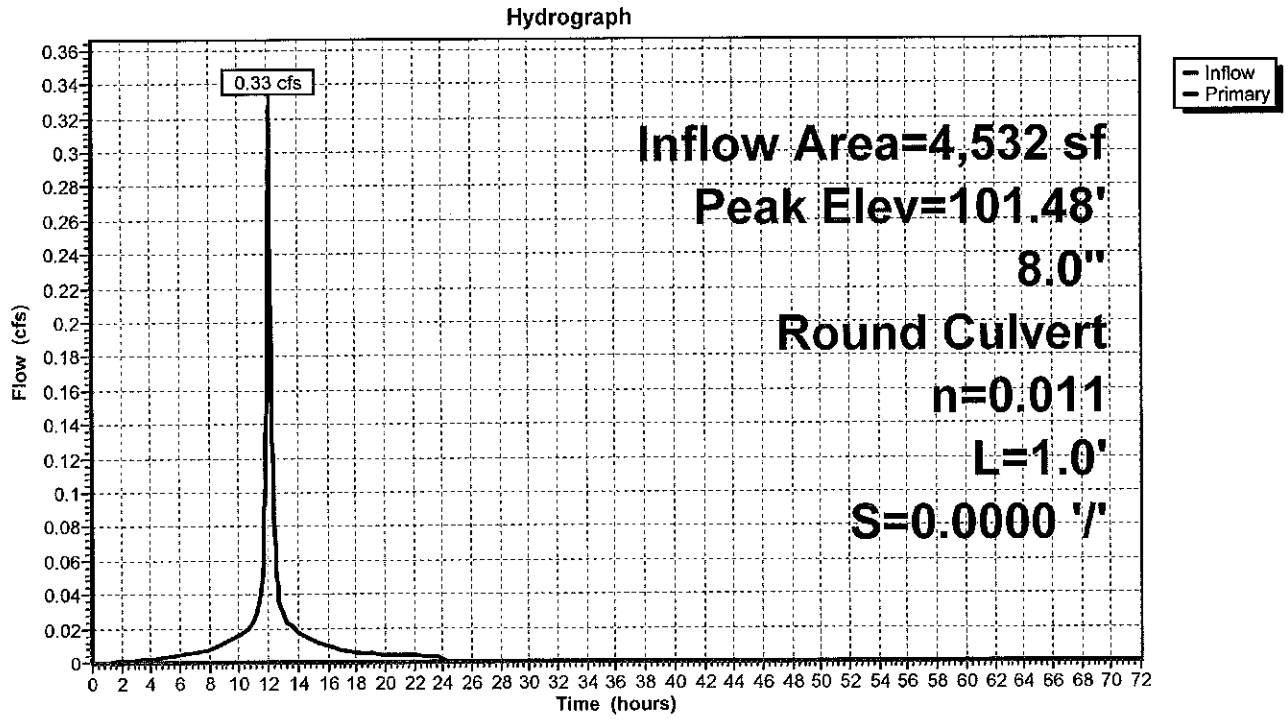
Inflow Area = 4,532 sf,100.00% Impervious, Inflow Depth = 3.08" for 2 Year event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 1,162 cf
Outflow = 0.33 cfs @ 12.09 hrs, Volume= 1,162 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.09 hrs, Volume= 1,162 cf
Routed to Pond DMH : DMH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 101.48' @ 12.11 hrs
Flood Elev= 104.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.05'	**8.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.05' / 101.05' S= 0.0000 '/' Cc= 0.900 n= 0.011, Flow Area= 0.35 sf

Primary OutFlow Max=0.28 cfs @ 12.09 hrs HW=101.47' TW=101.40' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 0.28 cfs @ 1.69 fps)

Pond PCB: Proposed CB to DP

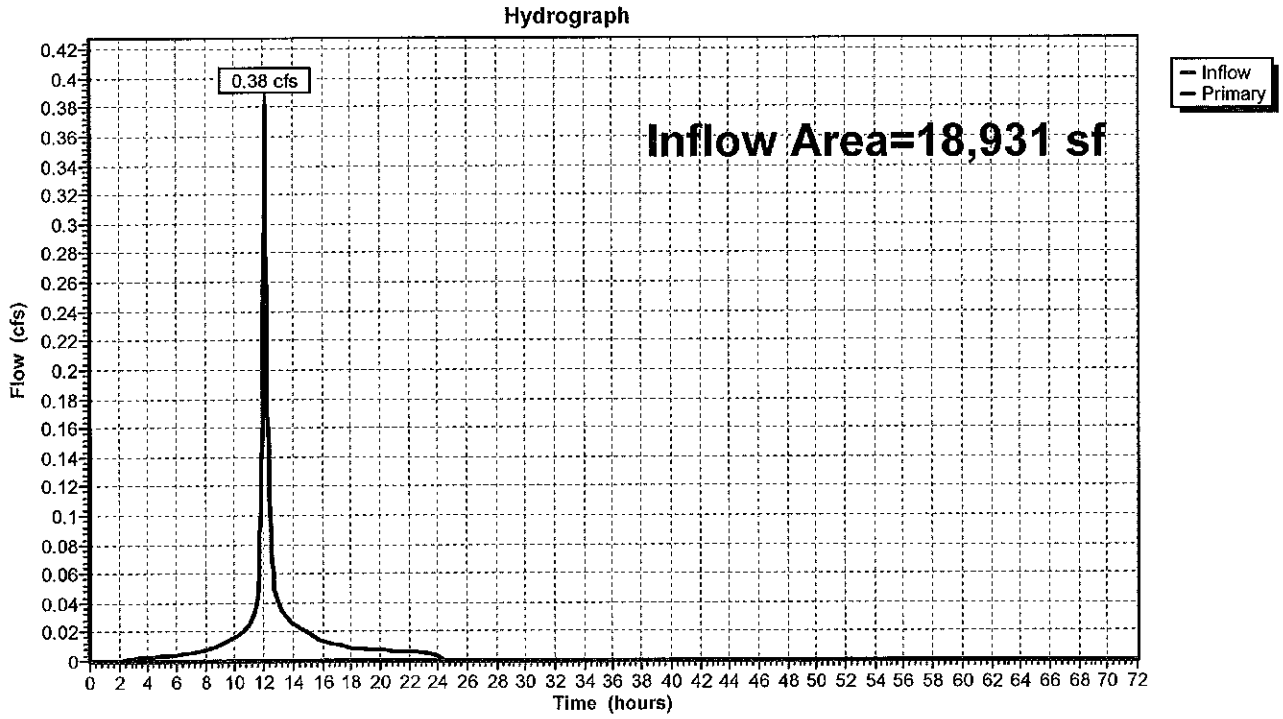


Summary for Link DP1: Green Street CB

Inflow Area = 18,931 sf, 81.39% Impervious, Inflow Depth = 0.90" for 2 Year event
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 1,419 cf
Primary = 0.38 cfs @ 12.09 hrs, Volume= 1,419 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link DP1: Green Street CB



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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SC2.1: PROPOSED ROOF Runoff Area=8,600 sf 100.00% Impervious Runoff Depth=4.98"
Tc=6.0 min CN=98 Runoff=0.98 cfs 3,571 cf

Subcatchment SC2.2: PARKING TO CB Runoff Area=4,532 sf 100.00% Impervious Runoff Depth=4.98"
Tc=6.0 min CN=98 Runoff=0.52 cfs 1,882 cf

Subcatchment SC2.3: SHEET TO GREEN Runoff Area=5,283 sf 39.18% Impervious Runoff Depth=1.58"
Tc=6.0 min CN=62 Runoff=0.21 cfs 694 cf

Subcatchment SC2.4: TO HAVEN STREET Runoff Area=516 sf 39.92% Impervious Runoff Depth=1.65"
Tc=6.0 min CN=63 Runoff=0.02 cfs 71 cf

Pond CB: HAVEN STREET DRAINAGE Peak Elev=102.25' Inflow=0.02 cfs 71 cf
6.0" Round Culvert n=0.011 L=174.0' S=0.0053 '/' Outflow=0.02 cfs 71 cf

Pond DMH: DMH Peak Elev=101.53' Inflow=0.54 cfs 1,953 cf
8.0" Round Culvert n=0.011 L=89.0' S=0.0053 '/' Outflow=0.54 cfs 1,953 cf

Pond INF: Stormtech SC-310 Peak Elev=102.00' Storage=701 cf Inflow=0.98 cfs 3,571 cf
Discarded=0.23 cfs 3,573 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 3,573 cf

Pond PCB: Proposed CB to DP Peak Elev=101.62' Inflow=0.52 cfs 1,882 cf
8.0" Round Culvert n=0.011 L=1.0' S=0.0000 '/' Outflow=0.52 cfs 1,882 cf

Link DP1: Green Street CB Inflow=0.74 cfs 2,647 cf
Primary=0.74 cfs 2,647 cf

Total Runoff Area = 18,931 sf Runoff Volume = 6,218 cf Average Runoff Depth = 3.94"
18.61% Pervious = 3,523 sf 81.39% Impervious = 15,408 sf

Summary for Subcatchment SC2.1: PROPOSED ROOF

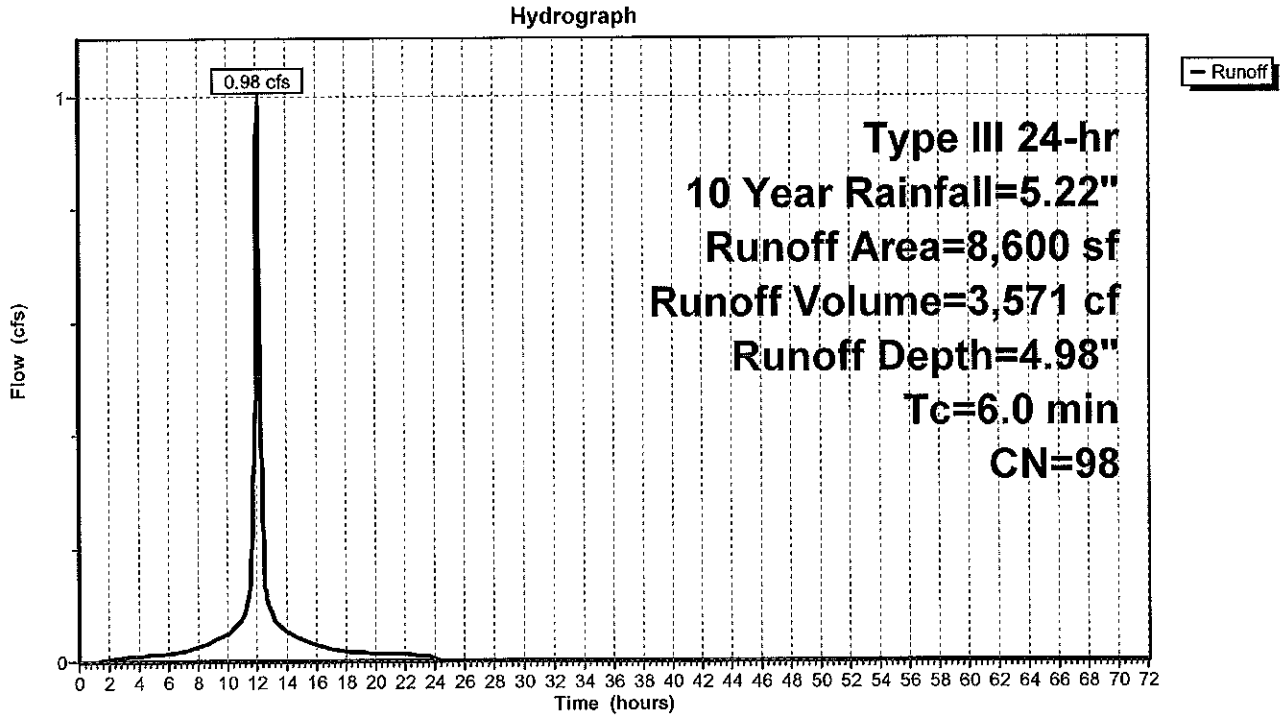
Runoff = 0.98 cfs @ 12.09 hrs, Volume= 3,571 cf, Depth= 4.98"
Routed to Pond INF : Stormtech SC-310

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 10 Year Rainfall=5.22"

	Area (sf)	CN	Description
*	8,600	98	Unconnected roofs, HSG A
	8,600		100.00% Impervious Area
	8,600		100.00% Unconnected

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

Subcatchment SC2.1: PROPOSED ROOF



Summary for Subcatchment SC2.2: PARKING TO CB

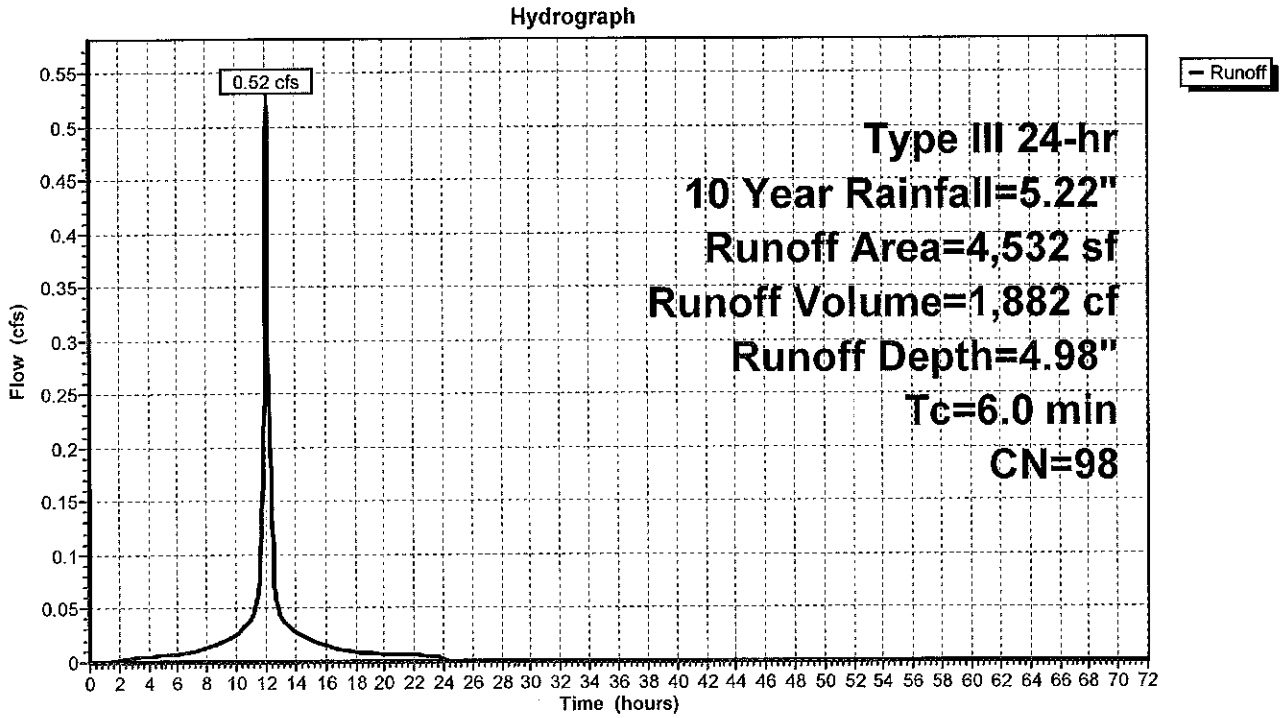
Runoff = 0.52 cfs @ 12.09 hrs, Volume= 1,882 cf, Depth= 4.98"
Routed to Pond PCB : Proposed CB to DP

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 10 Year Rainfall=5.22"

	Area (sf)	CN	Description
*	4,315	98	Paved parking, HSG A
*	217	98	Concrete, HSG A
	4,532	98	Weighted Average
	4,532		100.00% Impervious Area

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

Subcatchment SC2.2: PARKING TO CB



Summary for Subcatchment SC2.3: SHEET TO GREEN STREET

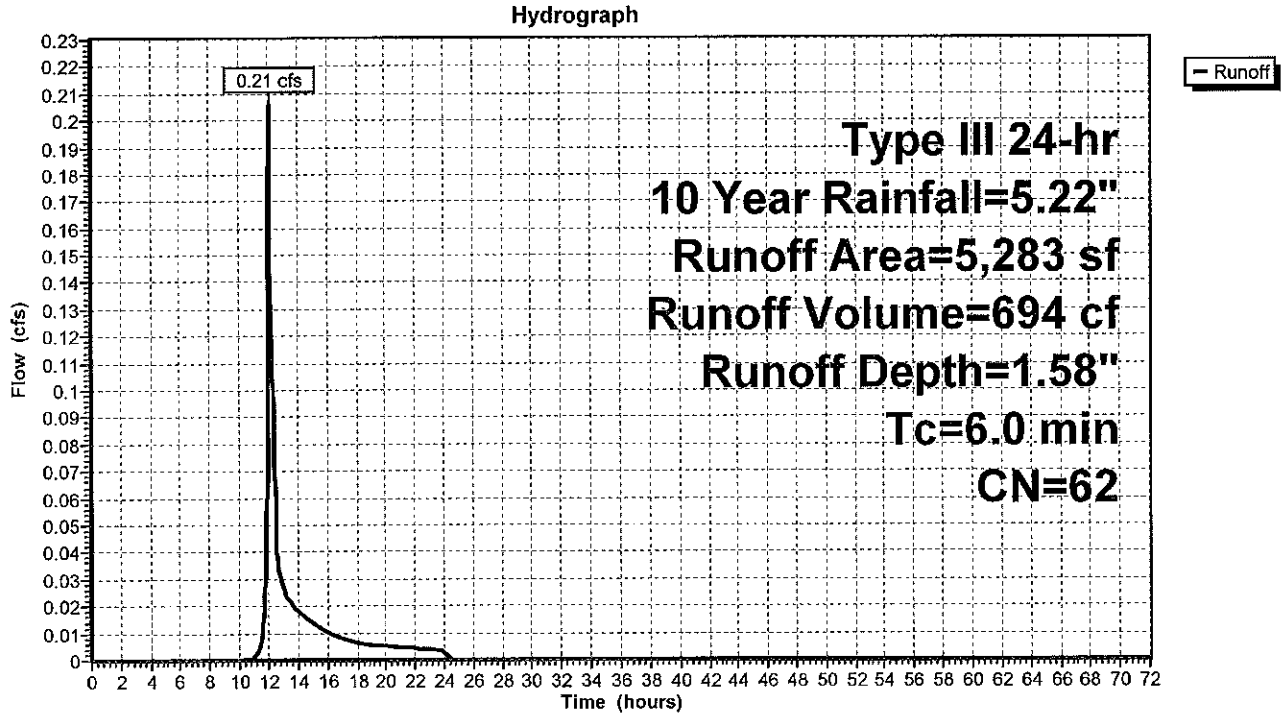
Runoff = 0.21 cfs @ 12.10 hrs, Volume= 694 cf, Depth= 1.58"
Routed to Link DP1 : Green Street CB

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 10 Year Rainfall=5.22"

	Area (sf)	CN	Description
	3,213	39	>75% Grass cover, Good, HSG A
*	2,070	98	Concrete, HSG A
	5,283	62	Weighted Average
	3,213		60.82% Pervious Area
	2,070		39.18% Impervious Area

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

Subcatchment SC2.3: SHEET TO GREEN STREET



Summary for Subcatchment SC2.4: TO HAVEN STREET

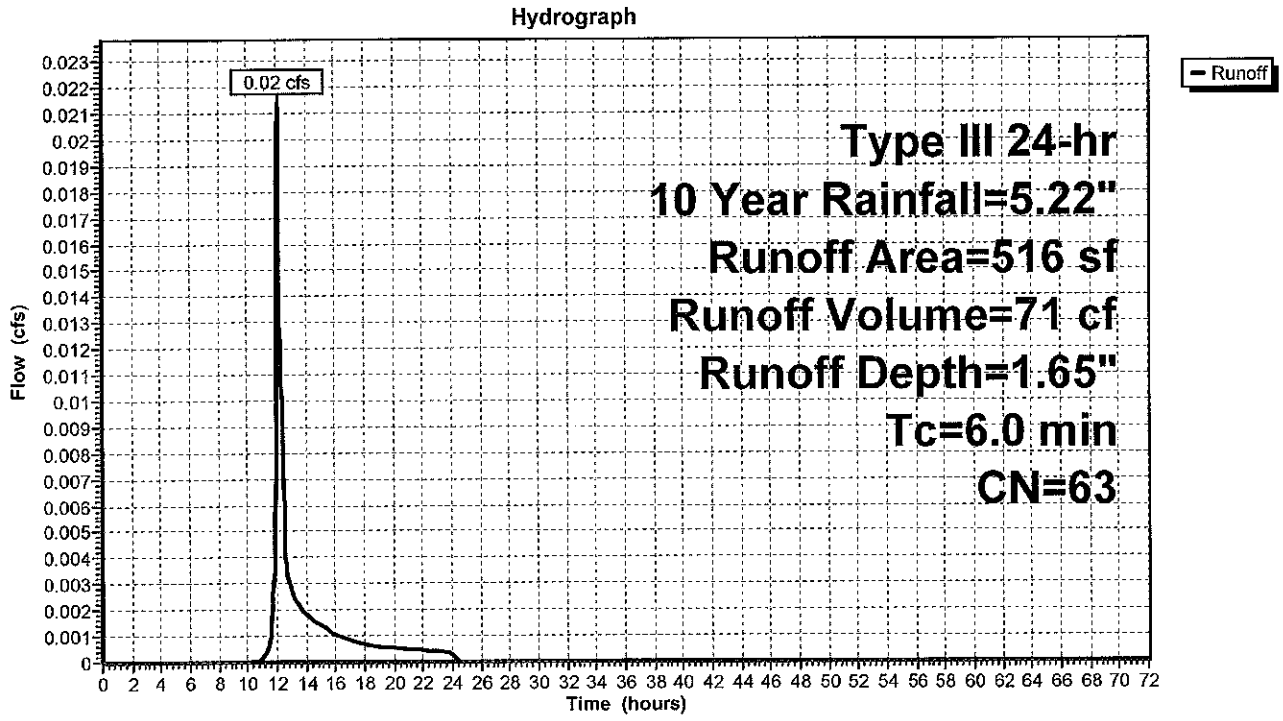
Runoff = 0.02 cfs @ 12.10 hrs, Volume= 71 cf, Depth= 1.65"
Routed to Pond CB : HAVEN STREET DRAINAGE

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 10 Year Rainfall=5.22"

	Area (sf)	CN	Description
	310	39	>75% Grass cover, Good, HSG A
*	206	98	Concrete, HSG A
	516	63	Weighted Average
	310		60.08% Pervious Area
	206		39.92% Impervious Area

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

Subcatchment SC2.4: TO HAVEN STREET



Summary for Pond CB: HAVEN STREET DRAINAGE

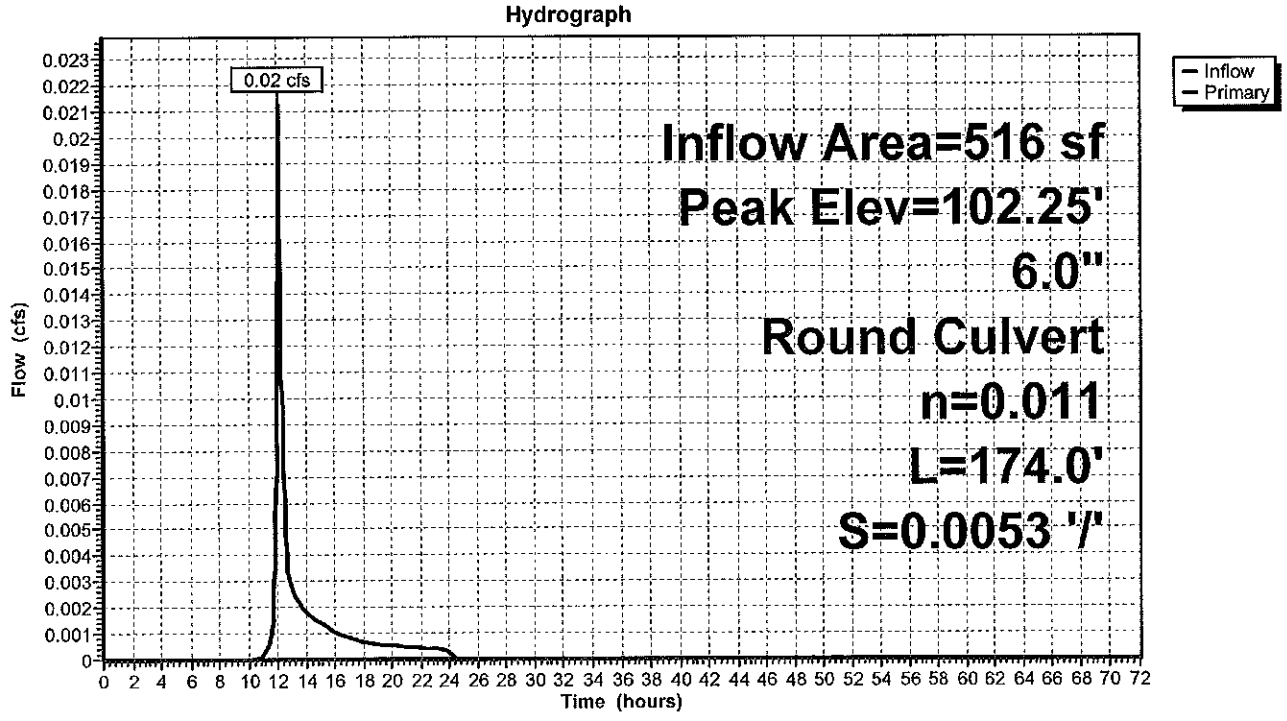
Inflow Area = 516 sf, 39.92% Impervious, Inflow Depth = 1.65" for 10 Year event
Inflow = 0.02 cfs @ 12.10 hrs, Volume= 71 cf
Outflow = 0.02 cfs @ 12.10 hrs, Volume= 71 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.10 hrs, Volume= 71 cf
Routed to Pond DMH : DMH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 102.25' @ 12.11 hrs
Flood Elev= 104.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.15'	**6.0" Round Culvert** L= 174.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.15' / 101.22' S= 0.0053 '/' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

Primary OutFlow Max=0.02 cfs @ 12.10 hrs HW=102.25' TW=101.52' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.02 cfs @ 1.11 fps)

Pond CB: HAVEN STREET DRAINAGE



Summary for Pond DMH: DMH

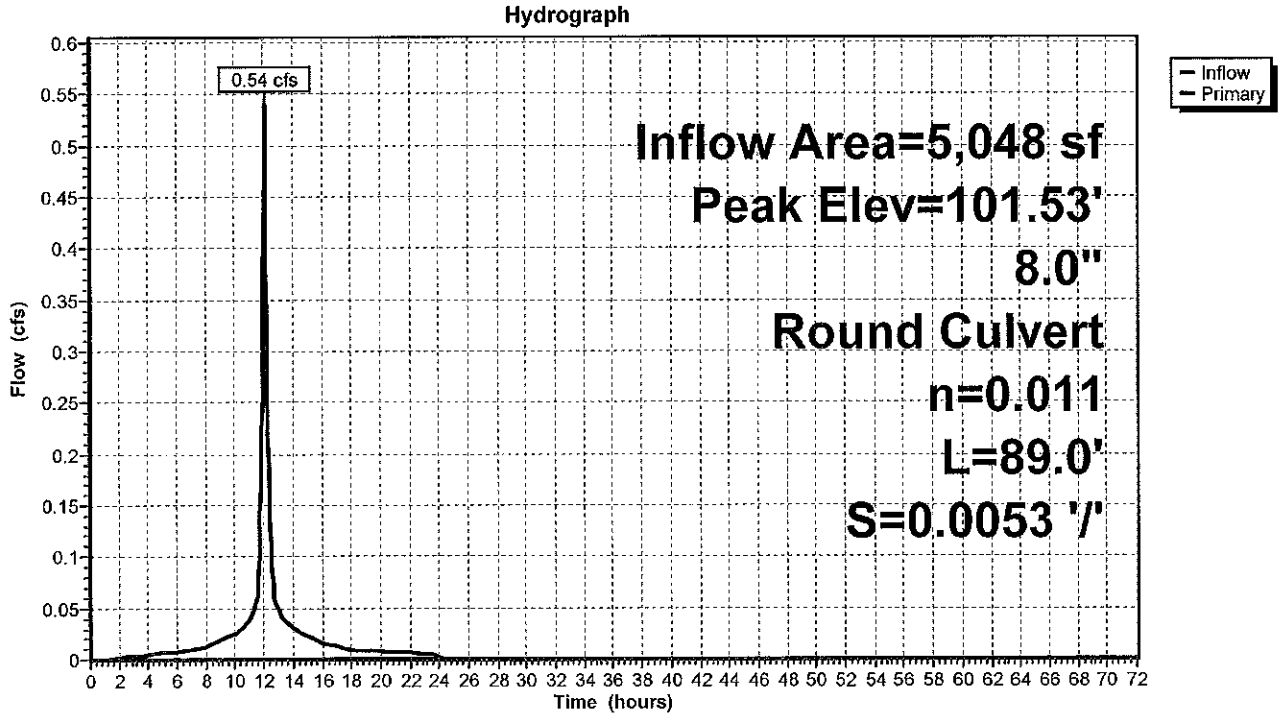
Inflow Area = 5,048 sf, 93.86% Impervious, Inflow Depth = 4.64" for 10 Year event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 1,953 cf
Outflow = 0.54 cfs @ 12.09 hrs, Volume= 1,953 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.09 hrs, Volume= 1,953 cf
Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 101.53' @ 12.09 hrs
Flood Elev= 105.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.05'	**8.0" Round Culvert** L= 89.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.05' / 100.58' S= 0.0053 '/' Cc= 0.900 n= 0.011, Flow Area= 0.35 sf

Primary OutFlow Max=0.53 cfs @ 12.09 hrs HW=101.52' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.53 cfs @ 2.81 fps)

Pond DMH: DMH



Summary for Pond INF: Stormtech SC-310

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=102)

Inflow Area = 8,600 sf,100.00% Impervious, Inflow Depth = 4.98" for 10 Year event
Inflow = 0.98 cfs @ 12.09 hrs, Volume= 3,571 cf
Outflow = 0.23 cfs @ 11.80 hrs, Volume= 3,573 cf, Atten= 76%, Lag= 0.0 min
Discarded = 0.23 cfs @ 11.80 hrs, Volume= 3,573 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 102.00' @ 12.47 hrs Surf.Area= 1,222 sf Storage= 701 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 13.7 min (761.0 - 747.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	101.00'	875 cf	**18.17'W x 67.28'L x 2.33'H Field A** 2,852 cf Overall - 663 cf Embedded = 2,189 cf x 40.0% Voids
#2A	101.50'	663 cf	**ADS_StormTech SC-310 +Cap** x 45 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 45 Chambers in 5 Rows
		1,539 cf	Total Available Storage

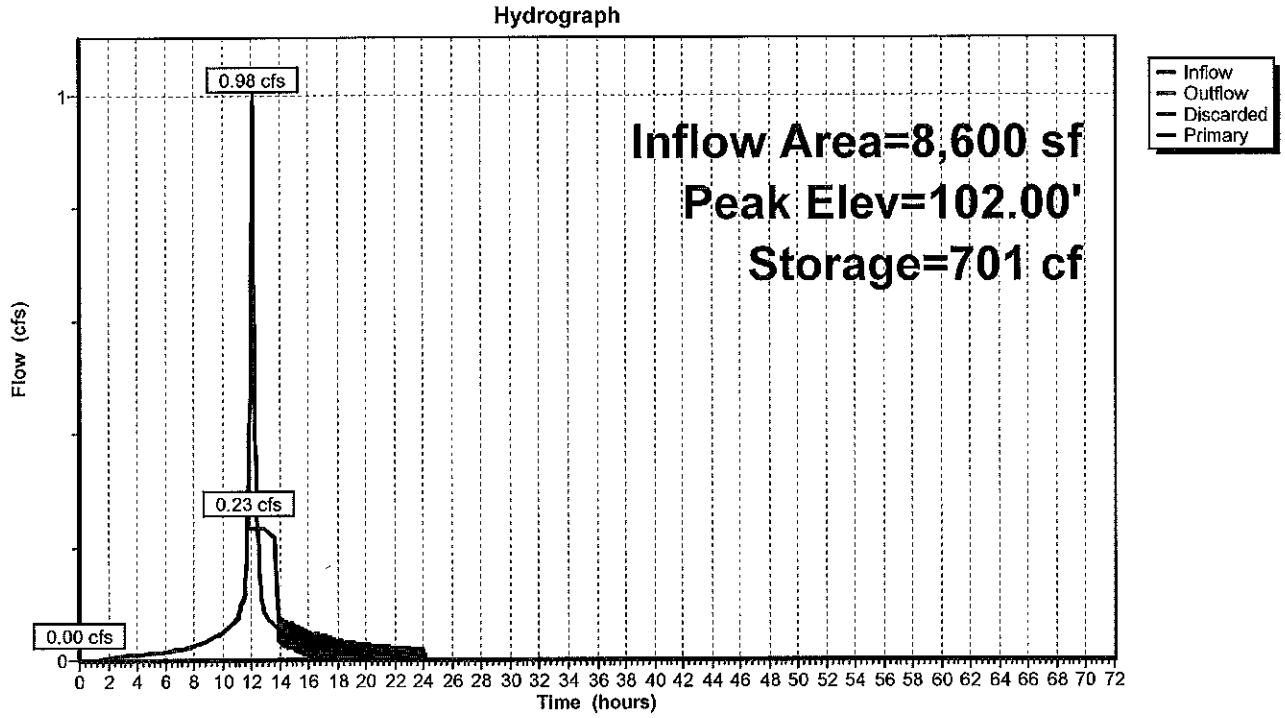
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	101.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	102.50'	**6.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.50' / 101.05' S= 0.0558 '/' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

Discarded OutFlow Max=0.23 cfs @ 11.80 hrs HW=101.03' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=101.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

Pond INF: Stormtech SC-310



Summary for Pond PCB: Proposed CB to DP

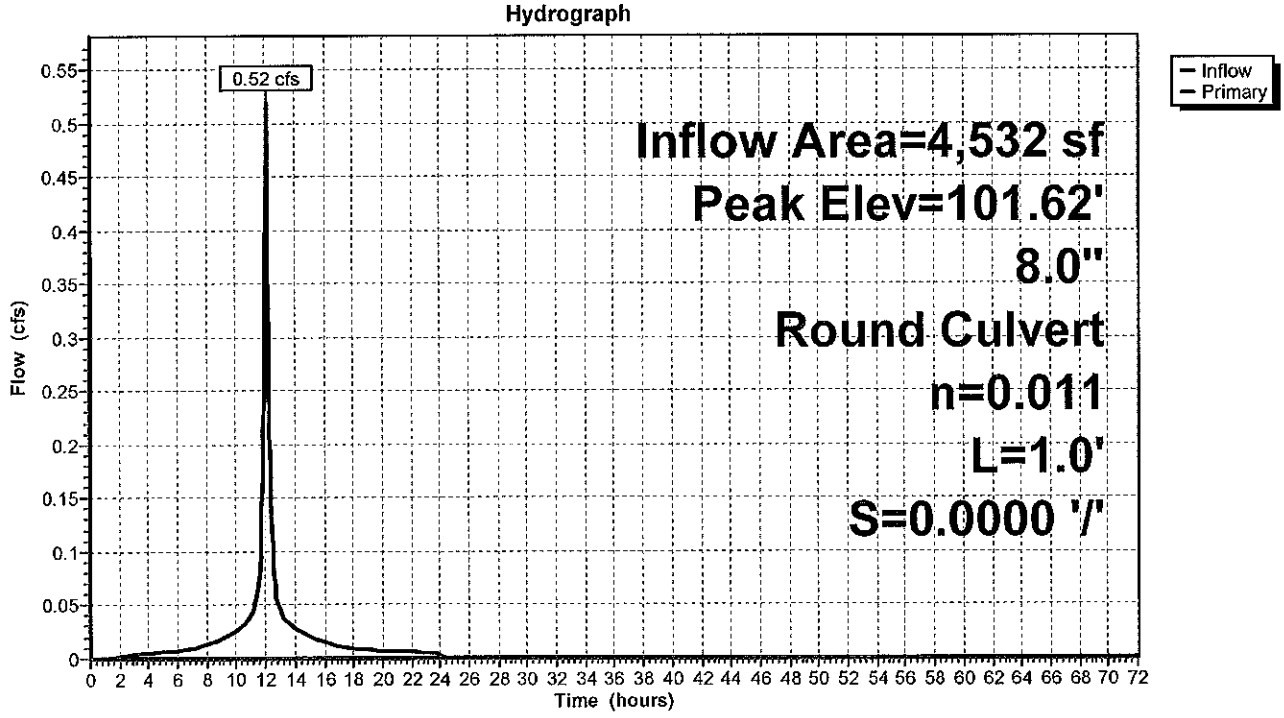
Inflow Area = 4,532 sf,100.00% Impervious, Inflow Depth = 4.98" for 10 Year event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 1,882 cf
Outflow = 0.52 cfs @ 12.09 hrs, Volume= 1,882 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.09 hrs, Volume= 1,882 cf
Routed to Pond DMH : DMH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 101.62' @ 12.11 hrs
Flood Elev= 104.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.05'	**8.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.05' / 101.05' S= 0.0000 '/' Cc= 0.900 n= 0.011, Flow Area= 0.35 sf

Primary OutFlow Max=0.43 cfs @ 12.09 hrs HW=101.60' TW=101.52' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.43 cfs @ 1.87 fps)

Pond PCB: Proposed CB to DP

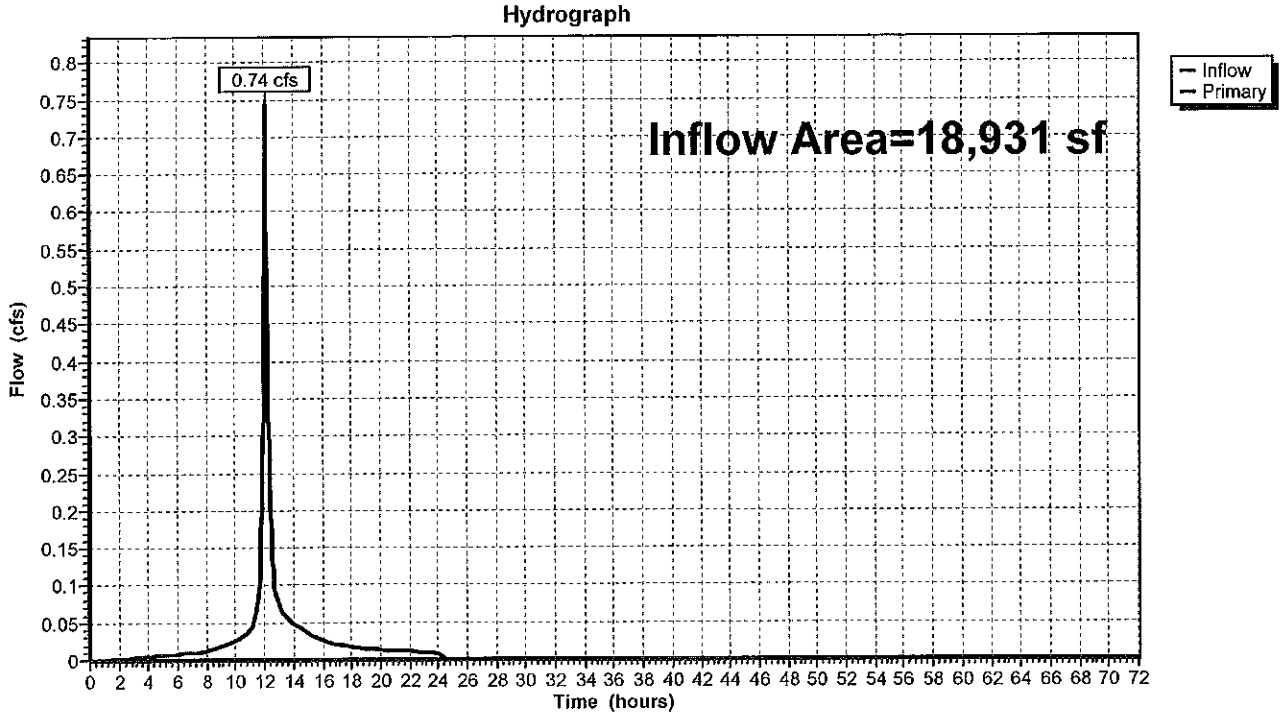


Summary for Link DP1: Green Street CB

Inflow Area = 18,931 sf, 81.39% Impervious, Inflow Depth = 1.68" for 10 Year event
Inflow = 0.74 cfs @ 12.09 hrs, Volume= 2,647 cf
Primary = 0.74 cfs @ 12.09 hrs, Volume= 2,647 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link DP1: Green Street CB



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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SC2.1: PROPOSED ROOF Runoff Area=8,600 sf 100.00% Impervious Runoff Depth=6.17"
Tc=6.0 min CN=98 Runoff=1.21 cfs 4,423 cf

Subcatchment SC2.2: PARKING TO CB Runoff Area=4,532 sf 100.00% Impervious Runoff Depth=6.17"
Tc=6.0 min CN=98 Runoff=0.64 cfs 2,331 cf

Subcatchment SC2.3: SHEET TO GREEN Runoff Area=5,283 sf 39.18% Impervious Runoff Depth=2.38"
Tc=6.0 min CN=62 Runoff=0.32 cfs 1,046 cf

Subcatchment SC2.4: TO HAVEN STREET Runoff Area=516 sf 39.92% Impervious Runoff Depth=2.47"
Tc=6.0 min CN=63 Runoff=0.03 cfs 106 cf

Pond CB: HAVEN STREET DRAINAGE Peak Elev=102.28' Inflow=0.03 cfs 106 cf
6.0" Round Culvert n=0.011 L=174.0' S=0.0053 '/' Outflow=0.03 cfs 106 cf

Pond DMH: DMH Peak Elev=101.60' Inflow=0.67 cfs 2,437 cf
8.0" Round Culvert n=0.011 L=89.0' S=0.0053 '/' Outflow=0.67 cfs 2,437 cf

Pond INF: Stormtech SC-310 Peak Elev=102.38' Storage=1,019 cf Inflow=1.21 cfs 4,423 cf
Discarded=0.23 cfs 4,433 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 4,433 cf

Pond PCB: Proposed CB to DP Peak Elev=101.72' Inflow=0.64 cfs 2,331 cf
8.0" Round Culvert n=0.011 L=1.0' S=0.0000 '/' Outflow=0.64 cfs 2,331 cf

Link DP1: Green Street CB Inflow=0.99 cfs 3,483 cf
Primary=0.99 cfs 3,483 cf

Total Runoff Area = 18,931 sf Runoff Volume = 7,906 cf Average Runoff Depth = 5.01"
18.61% Pervious = 3,523 sf 81.39% Impervious = 15,408 sf

Summary for Subcatchment SC2.1: PROPOSED ROOF

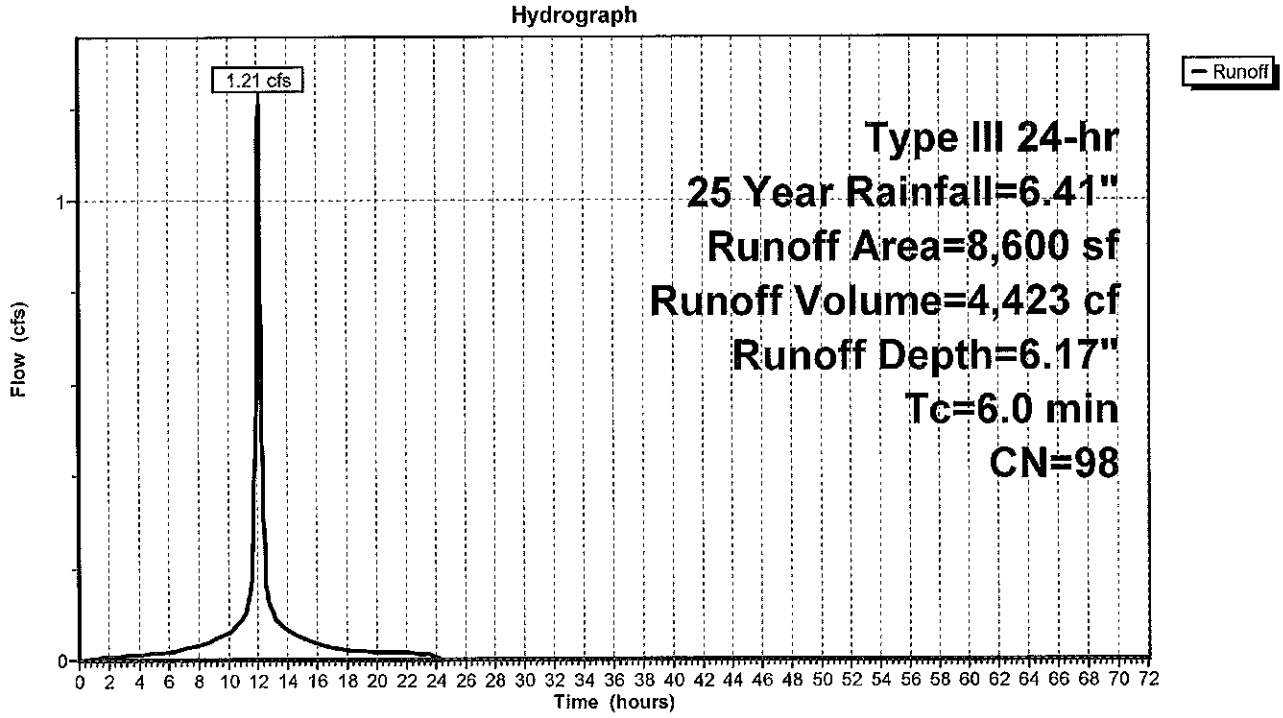
Runoff = 1.21 cfs @ 12.09 hrs, Volume= 4,423 cf, Depth= 6.17"
Routed to Pond INF : Stormtech SC-310

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 25 Year Rainfall=6.41"

	Area (sf)	CN	Description
*	8,600	98	Unconnected roofs, HSG A
	8,600		100.00% Impervious Area
	8,600		100.00% Unconnected

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

Subcatchment SC2.1: PROPOSED ROOF



Summary for Subcatchment SC2.2: PARKING TO CB

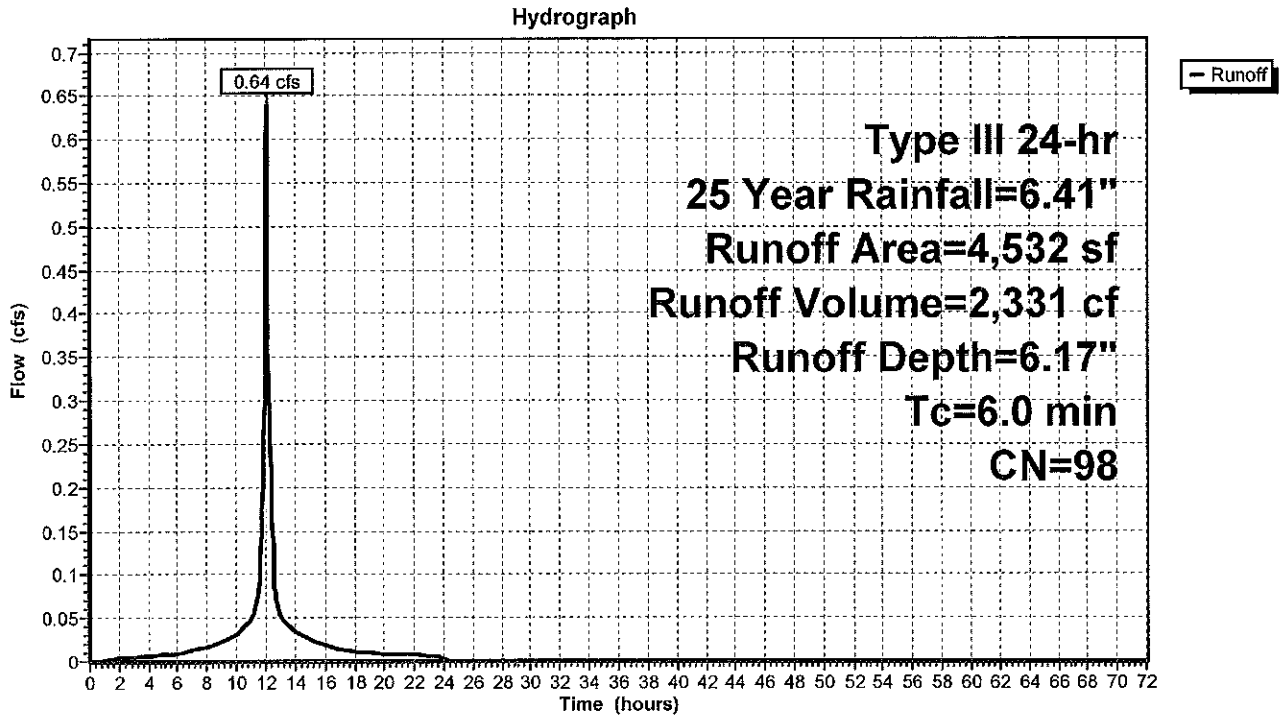
Runoff = 0.64 cfs @ 12.09 hrs, Volume= 2,331 cf, Depth= 6.17"
Routed to Pond PCB : Proposed CB to DP

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 25 Year Rainfall=6.41"

	Area (sf)	CN	Description
*	4,315	98	Paved parking, HSG A
*	217	98	Concrete, HSG A
	4,532	98	Weighted Average
	4,532		100.00% Impervious Area

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

Subcatchment SC2.2: PARKING TO CB



Summary for Subcatchment SC2.3: SHEET TO GREEN STREET

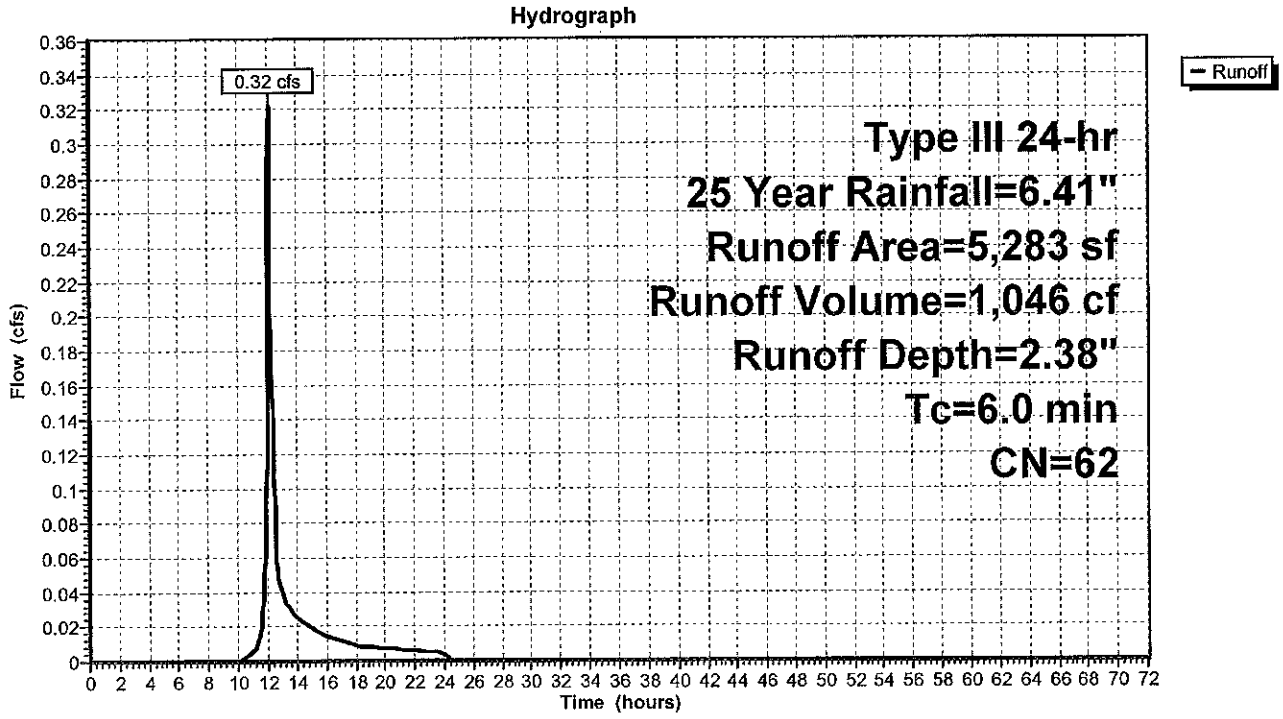
Runoff = 0.32 cfs @ 12.10 hrs, Volume= 1,046 cf, Depth= 2.38"
Routed to Link DP1 : Green Street CB

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 25 Year Rainfall=6.41"

	Area (sf)	CN	Description
	3,213	39	>75% Grass cover, Good, HSG A
*	2,070	98	Concrete, HSG A
	5,283	62	Weighted Average
	3,213		60.82% Pervious Area
	2,070		39.18% Impervious Area

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

Subcatchment SC2.3: SHEET TO GREEN STREET



Summary for Subcatchment SC2.4: TO HAVEN STREET

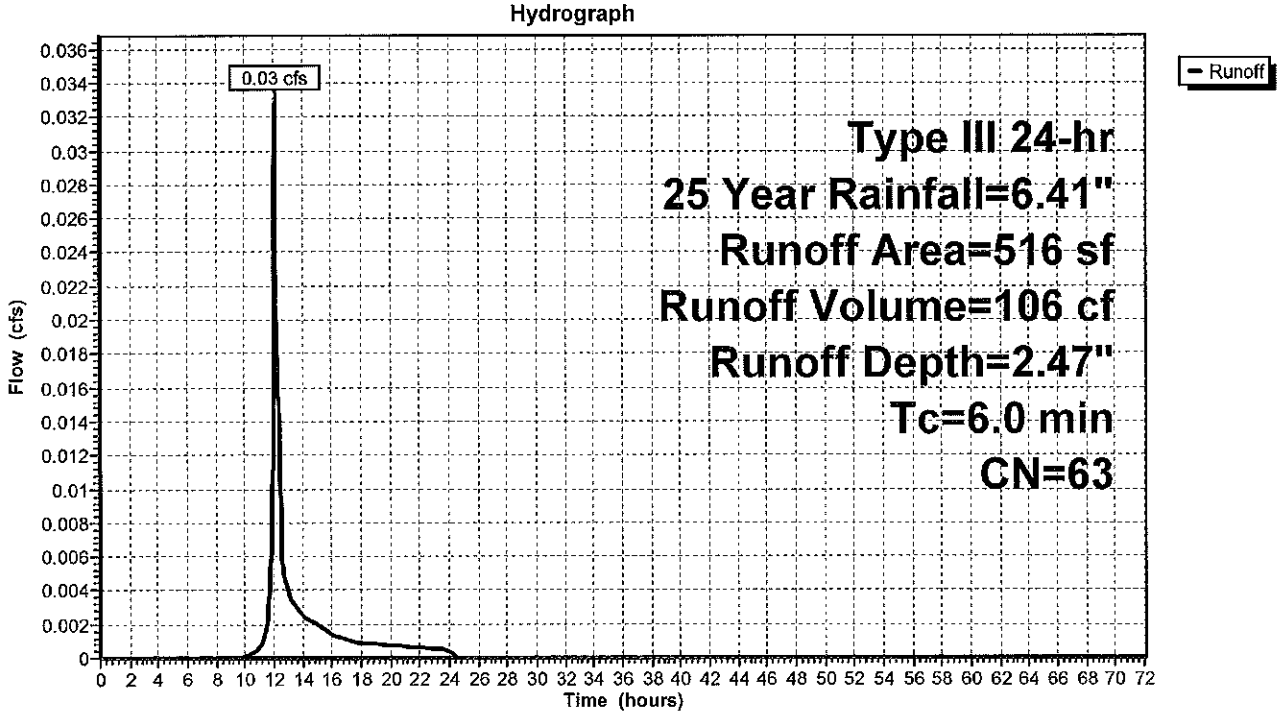
Runoff = 0.03 cfs @ 12.10 hrs, Volume= 106 cf, Depth= 2.47"
Routed to Pond CB : HAVEN STREET DRAINAGE

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 25 Year Rainfall=6.41"

	Area (sf)	CN	Description
	310	39	>75% Grass cover, Good, HSG A
*	206	98	Concrete, HSG A
	516	63	Weighted Average
	310		60.08% Pervious Area
	206		39.92% Impervious Area

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

Subcatchment SC2.4: TO HAVEN STREET



Summary for Pond CB: HAVEN STREET DRAINAGE

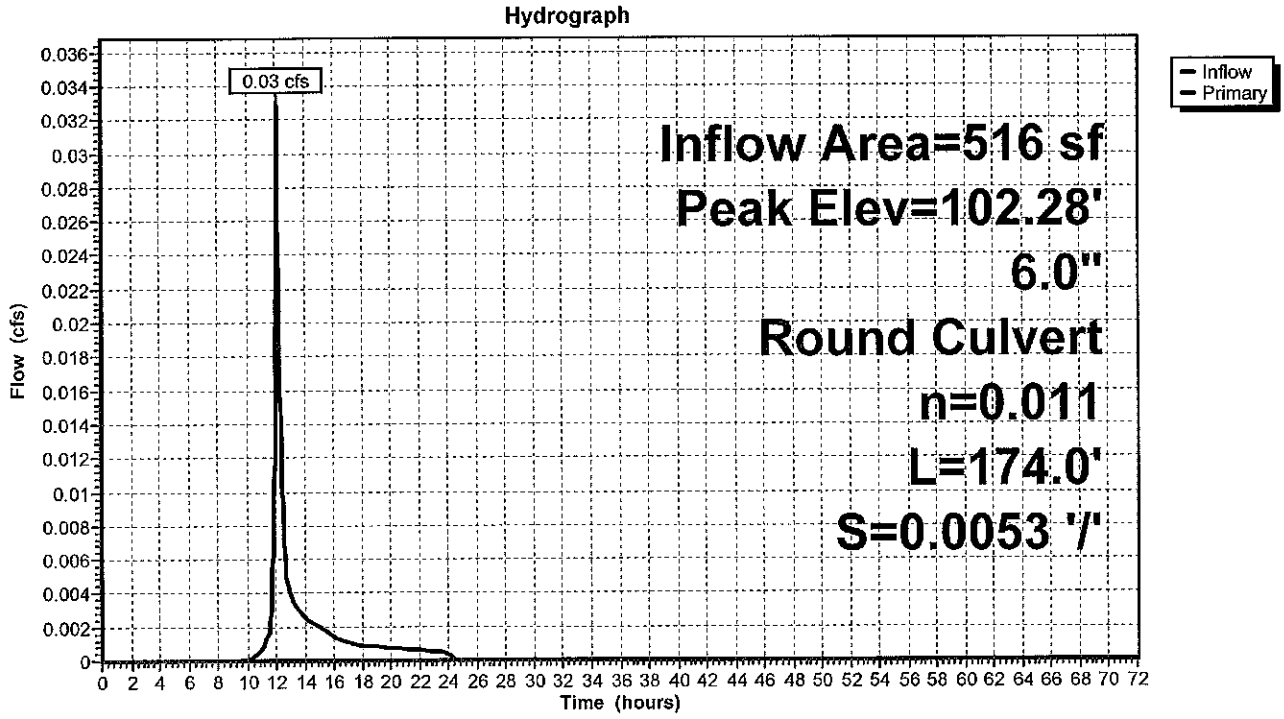
Inflow Area = 516 sf, 39.92% Impervious, Inflow Depth = 2.47" for 25 Year event
Inflow = 0.03 cfs @ 12.10 hrs, Volume= 106 cf
Outflow = 0.03 cfs @ 12.10 hrs, Volume= 106 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.03 cfs @ 12.10 hrs, Volume= 106 cf
Routed to Pond DMH : DMH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 102.28' @ 12.10 hrs
Flood Elev= 104.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.15'	**6.0" Round Culvert** L= 174.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.15' / 101.22' S= 0.0053 '/' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

Primary OutFlow Max=0.03 cfs @ 12.10 hrs HW=102.28' TW=101.59' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.03 cfs @ 1.23 fps)

Pond CB: HAVEN STREET DRAINAGE



Summary for Pond DMH: DMH

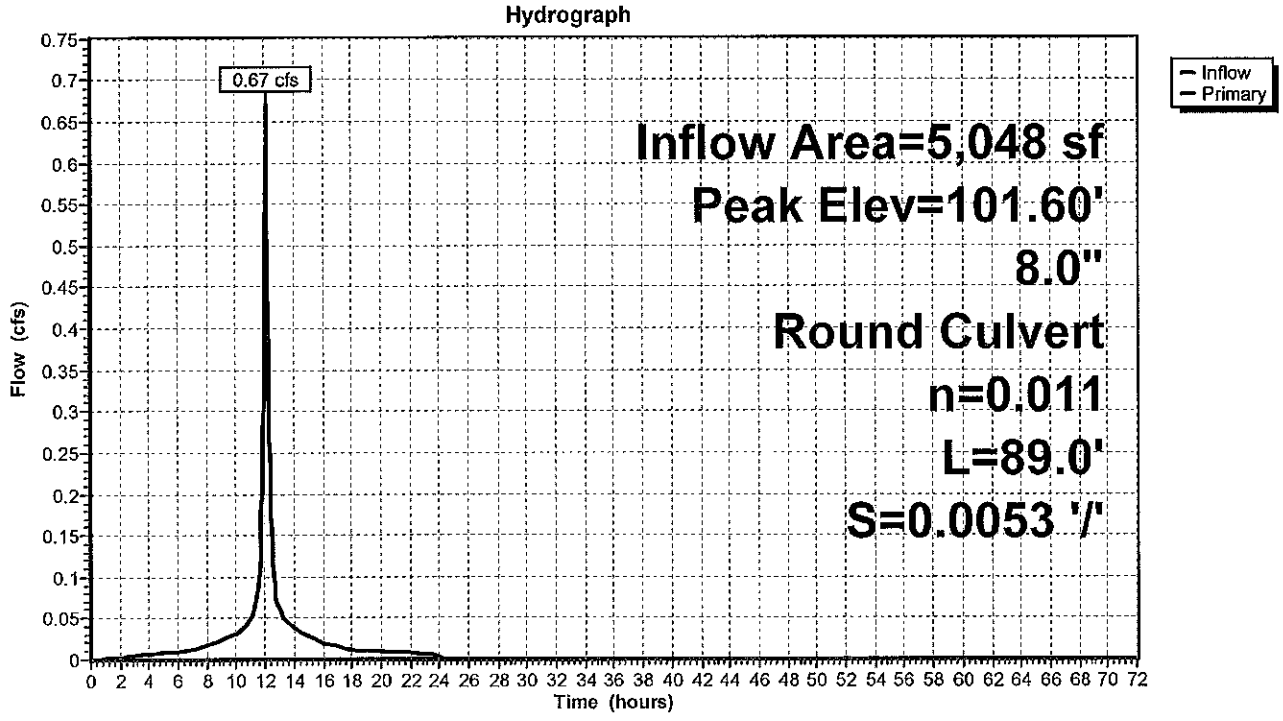
Inflow Area = 5,048 sf, 93.86% Impervious, Inflow Depth = 5.79" for 25 Year event
Inflow = 0.67 cfs @ 12.09 hrs, Volume= 2,437 cf
Outflow = 0.67 cfs @ 12.09 hrs, Volume= 2,437 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 12.09 hrs, Volume= 2,437 cf
Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 101.60' @ 12.09 hrs
Flood Elev= 105.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.05'	**8.0" Round Culvert** L= 89.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.05' / 100.58' S= 0.0053 '/' Cc= 0.900 n= 0.011, Flow Area= 0.35 sf

Primary OutFlow Max=0.65 cfs @ 12.09 hrs HW=101.59' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.65 cfs @ 2.95 fps)

Pond DMH: DMH



Summary for Pond INF: Stormtech SC-310

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=95)

Inflow Area = 8,600 sf,100.00% Impervious, Inflow Depth = 6.17" for 25 Year event
Inflow = 1.21 cfs @ 12.09 hrs, Volume= 4,423 cf
Outflow = 0.23 cfs @ 11.75 hrs, Volume= 4,433 cf, Atten= 81%, Lag= 0.0 min
Discarded = 0.23 cfs @ 11.75 hrs, Volume= 4,433 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 102.38' @ 12.52 hrs Surf.Area= 1,222 sf Storage= 1,019 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 21.7 min (765.8 - 744.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	101.00'	875 cf	**18.17'W x 67.28'L x 2.33'H Field A** 2,852 cf Overall - 663 cf Embedded = 2,189 cf x 40.0% Voids
#2A	101.50'	663 cf	**ADS_StormTech SC-310 +Cap** x 45 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 45 Chambers in 5 Rows
		1,539 cf	Total Available Storage

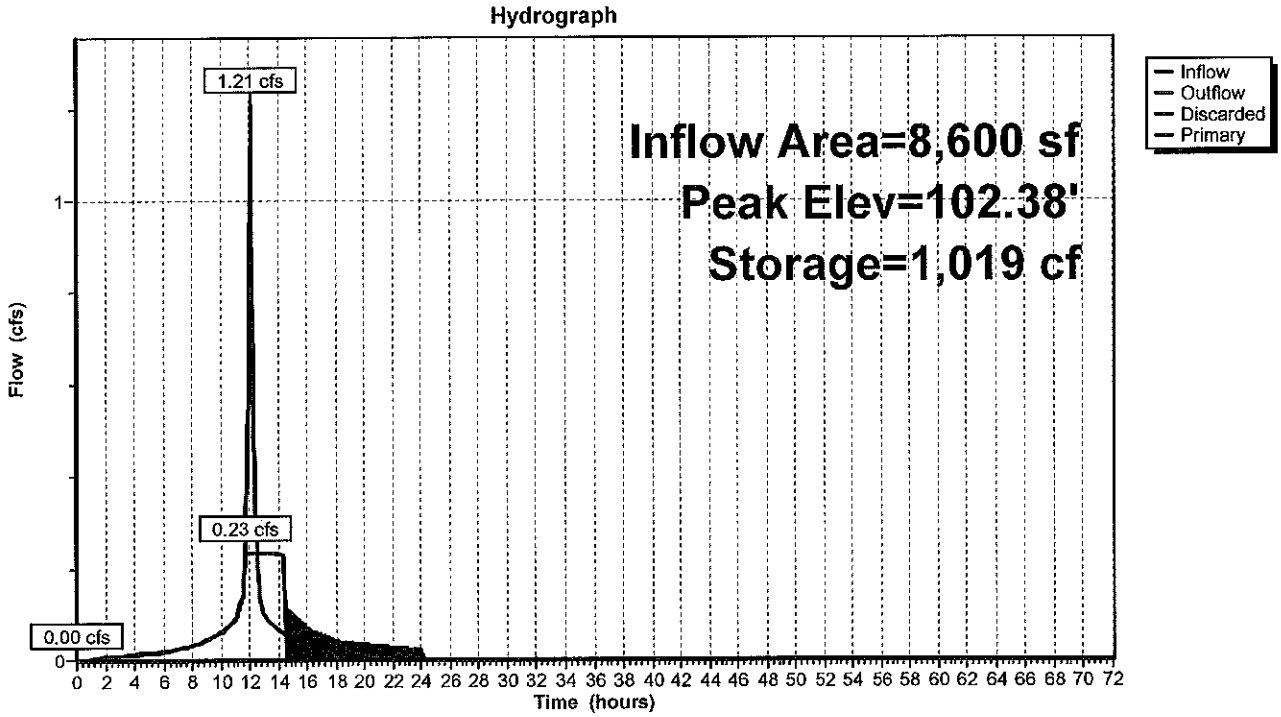
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	101.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	102.50'	**6.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.50' / 101.05' S= 0.0558 '/' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

Discarded OutFlow Max=0.23 cfs @ 11.75 hrs HW=101.03' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=101.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

Pond INF: Stormtech SC-310



Summary for Pond PCB: Proposed CB to DP

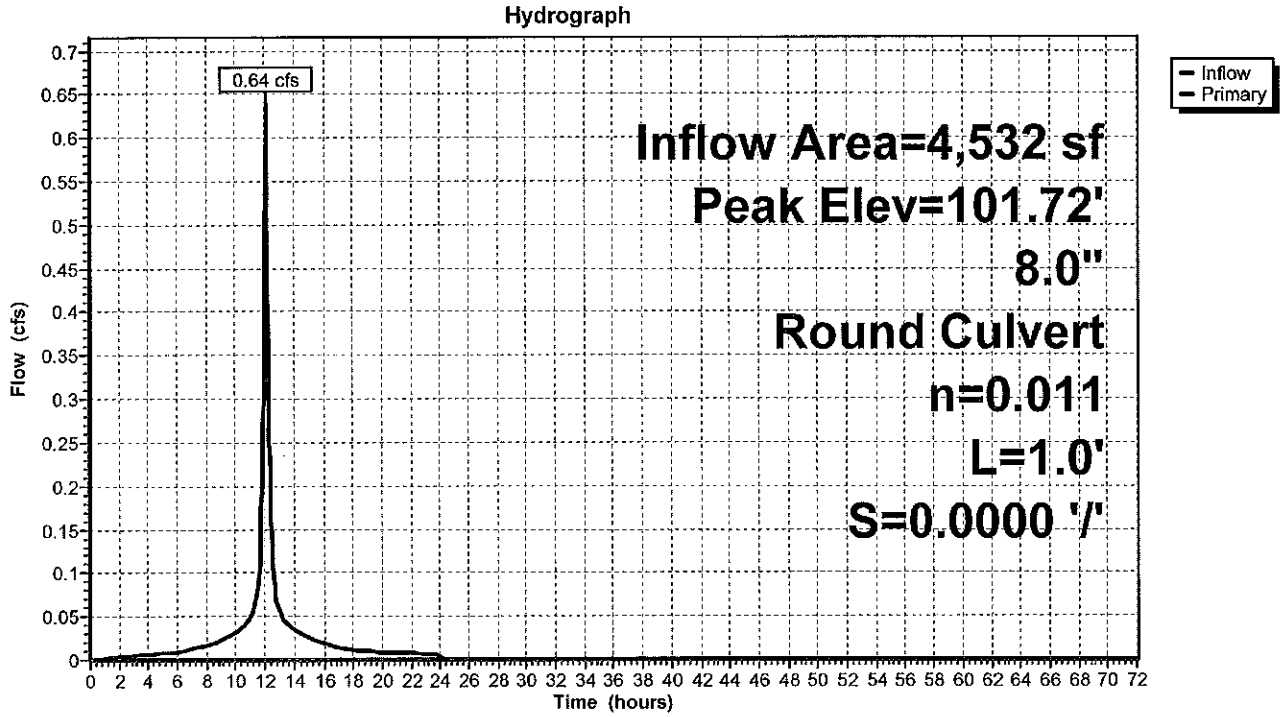
Inflow Area = 4,532 sf,100.00% Impervious, Inflow Depth = 6.17" for 25 Year event
Inflow = 0.64 cfs @ 12.09 hrs, Volume= 2,331 cf
Outflow = 0.64 cfs @ 12.09 hrs, Volume= 2,331 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.09 hrs, Volume= 2,331 cf
Routed to Pond DMH : DMH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 101.72' @ 12.11 hrs
Flood Elev= 104.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.05'	**8.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.05' / 101.05' S= 0.0000 '/' Cc= 0.900 n= 0.011, Flow Area= 0.35 sf

Primary OutFlow Max=0.53 cfs @ 12.09 hrs HW=101.69' TW=101.59' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.53 cfs @ 1.53 fps)

Pond PCB: Proposed CB to DP

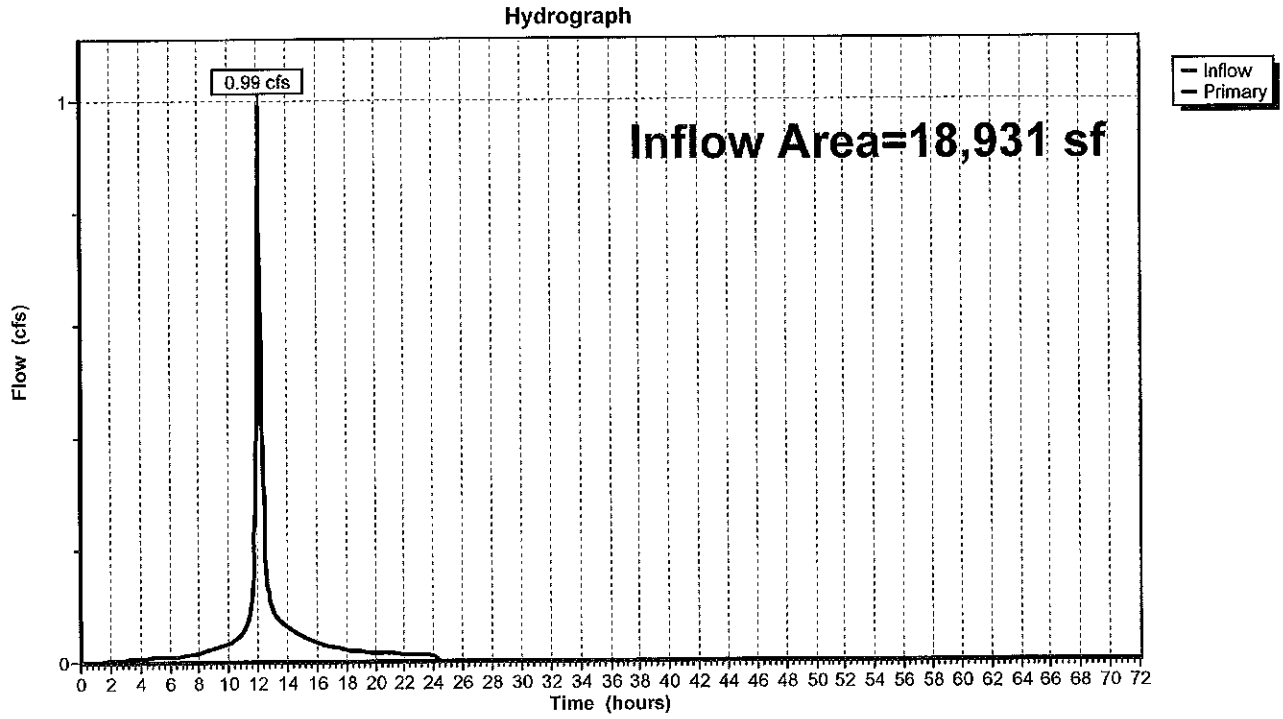


Summary for Link DP1: Green Street CB

Inflow Area = 18,931 sf, 81.39% Impervious, Inflow Depth = 2.21" for 25 Year event
Inflow = 0.99 cfs @ 12.09 hrs, Volume= 3,483 cf
Primary = 0.99 cfs @ 12.09 hrs, Volume= 3,483 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link DP1: Green Street CB



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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SC2.1: PROPOSED ROOF Runoff Area=8,600 sf 100.00% Impervious Runoff Depth=8.00"
Tc=6.0 min CN=98 Runoff=1.56 cfs 5,733 cf

Subcatchment SC2.2: PARKING TO CB Runoff Area=4,532 sf 100.00% Impervious Runoff Depth=8.00"
Tc=6.0 min CN=98 Runoff=0.82 cfs 3,021 cf

Subcatchment SC2.3: SHEET TO GREEN Runoff Area=5,283 sf 39.18% Impervious Runoff Depth=3.74"
Tc=6.0 min CN=62 Runoff=0.52 cfs 1,648 cf

Subcatchment SC2.4: TO HAVEN STREET Runoff Area=516 sf 39.92% Impervious Runoff Depth=3.86"
Tc=6.0 min CN=63 Runoff=0.05 cfs 166 cf

Pond CB: HAVEN STREET DRAINAGE Peak Elev=102.32' Inflow=0.05 cfs 166 cf
6.0" Round Culvert n=0.011 L=174.0' S=0.0053 '/' Outflow=0.05 cfs 166 cf

Pond DMH: DMH Peak Elev=101.71' Inflow=0.87 cfs 3,187 cf
8.0" Round Culvert n=0.011 L=89.0' S=0.0053 '/' Outflow=0.87 cfs 3,187 cf

Pond INF: Stormtech SC-310 Peak Elev=102.85' Storage=1,304 cf Inflow=1.56 cfs 5,733 cf
Discarded=0.23 cfs 5,394 cf Primary=0.30 cfs 347 cf Outflow=0.53 cfs 5,742 cf

Pond PCB: Proposed CB to DP Peak Elev=101.92' Inflow=0.82 cfs 3,021 cf
8.0" Round Culvert n=0.011 L=1.0' S=0.0000 '/' Outflow=0.82 cfs 3,021 cf

Link DP1: Green Street CB Inflow=1.39 cfs 5,182 cf
Primary=1.39 cfs 5,182 cf

Total Runoff Area = 18,931 sf Runoff Volume = 10,569 cf Average Runoff Depth = 6.70"
18.61% Pervious = 3,523 sf 81.39% Impervious = 15,408 sf

Summary for Subcatchment SC2.1: PROPOSED ROOF

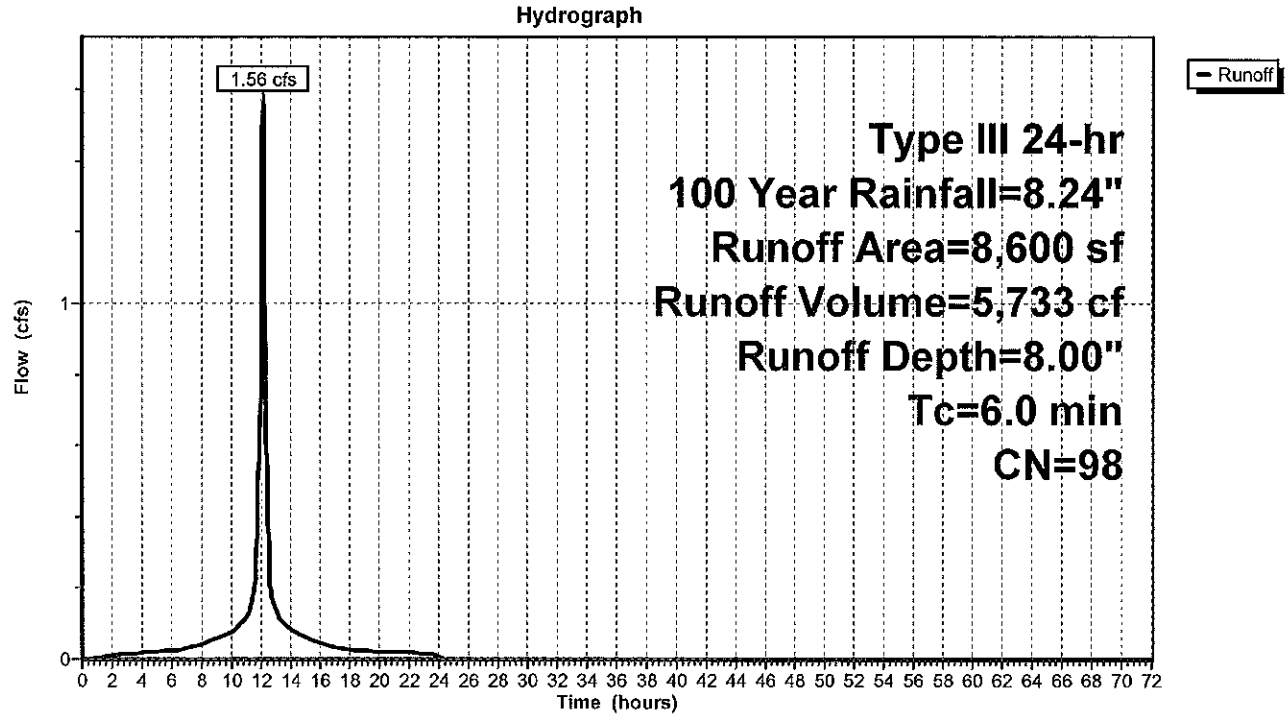
Runoff = 1.56 cfs @ 12.09 hrs, Volume= 5,733 cf, Depth= 8.00"
Routed to Pond INF : Stormtech SC-310

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 100 Year Rainfall=8.24"

	Area (sf)	CN	Description
*	8,600	98	Unconnected roofs, HSG A
	8,600		100.00% Impervious Area
	8,600		100.00% Unconnected

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

Subcatchment SC2.1: PROPOSED ROOF



Summary for Subcatchment SC2.2: PARKING TO CB

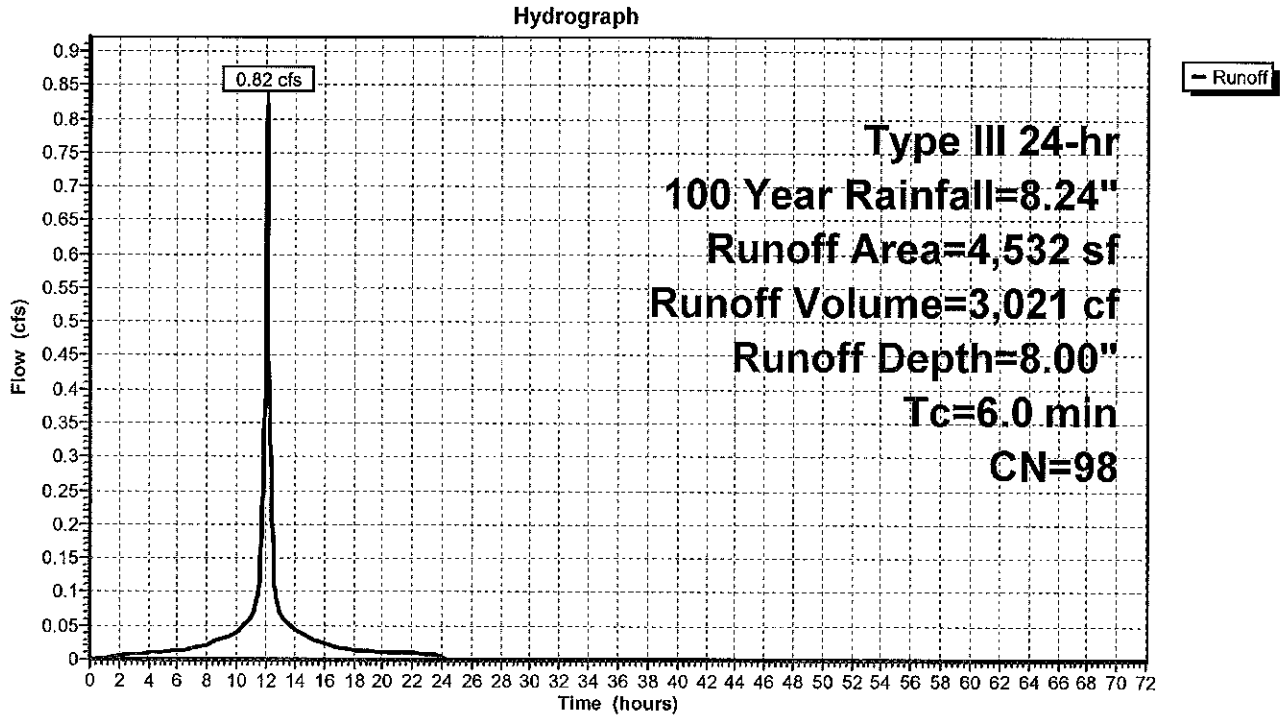
Runoff = 0.82 cfs @ 12.09 hrs, Volume= 3,021 cf, Depth= 8.00"
Routed to Pond PCB : Proposed CB to DP

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 100 Year Rainfall=8.24"

	Area (sf)	CN	Description
*	4,315	98	Paved parking, HSG A
*	217	98	Concrete, HSG A
	4,532	98	Weighted Average
	4,532		100.00% Impervious Area

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

Subcatchment SC2.2: PARKING TO CB



Summary for Subcatchment SC2.3: SHEET TO GREEN STREET

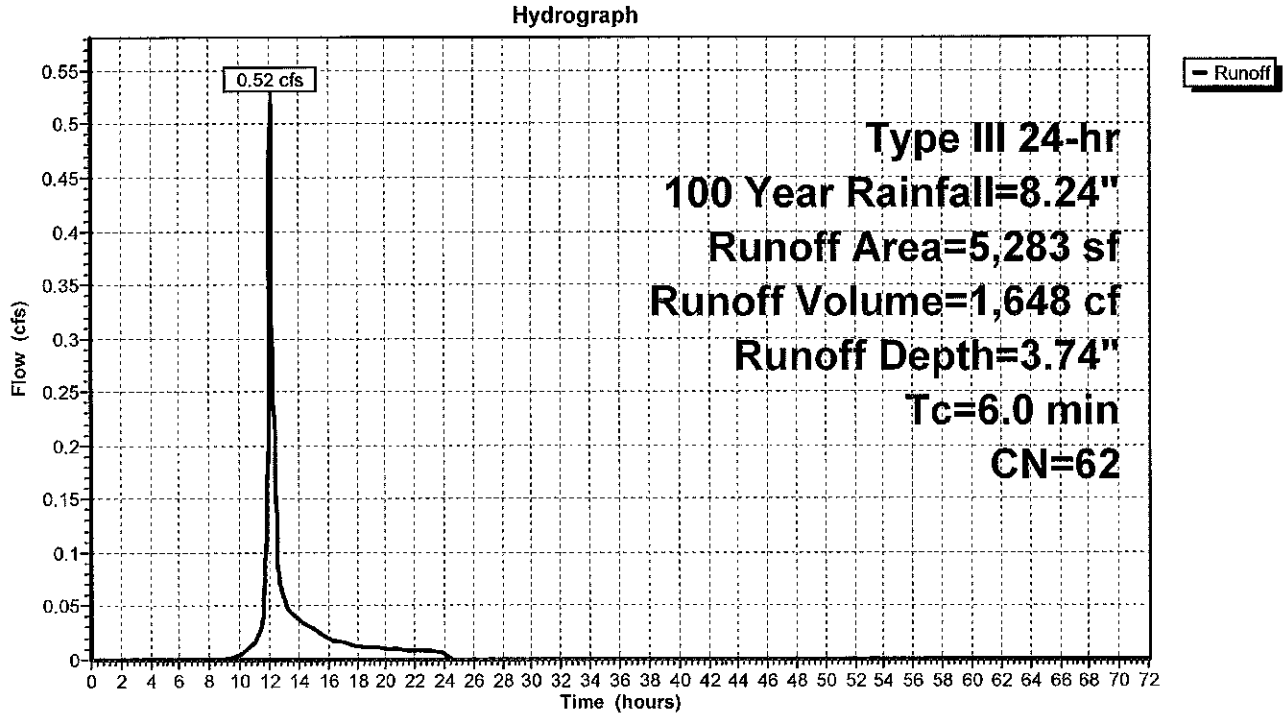
Runoff = 0.52 cfs @ 12.10 hrs, Volume= 1,648 cf, Depth= 3.74"
Routed to Link DP1 : Green Street CB

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 100 Year Rainfall=8.24"

	Area (sf)	CN	Description
	3,213	39	>75% Grass cover, Good, HSG A
*	2,070	98	Concrete, HSG A
	5,283	62	Weighted Average
	3,213		60.82% Pervious Area
	2,070		39.18% Impervious Area

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

Subcatchment SC2.3: SHEET TO GREEN STREET



Summary for Subcatchment SC2.4: TO HAVEN STREET

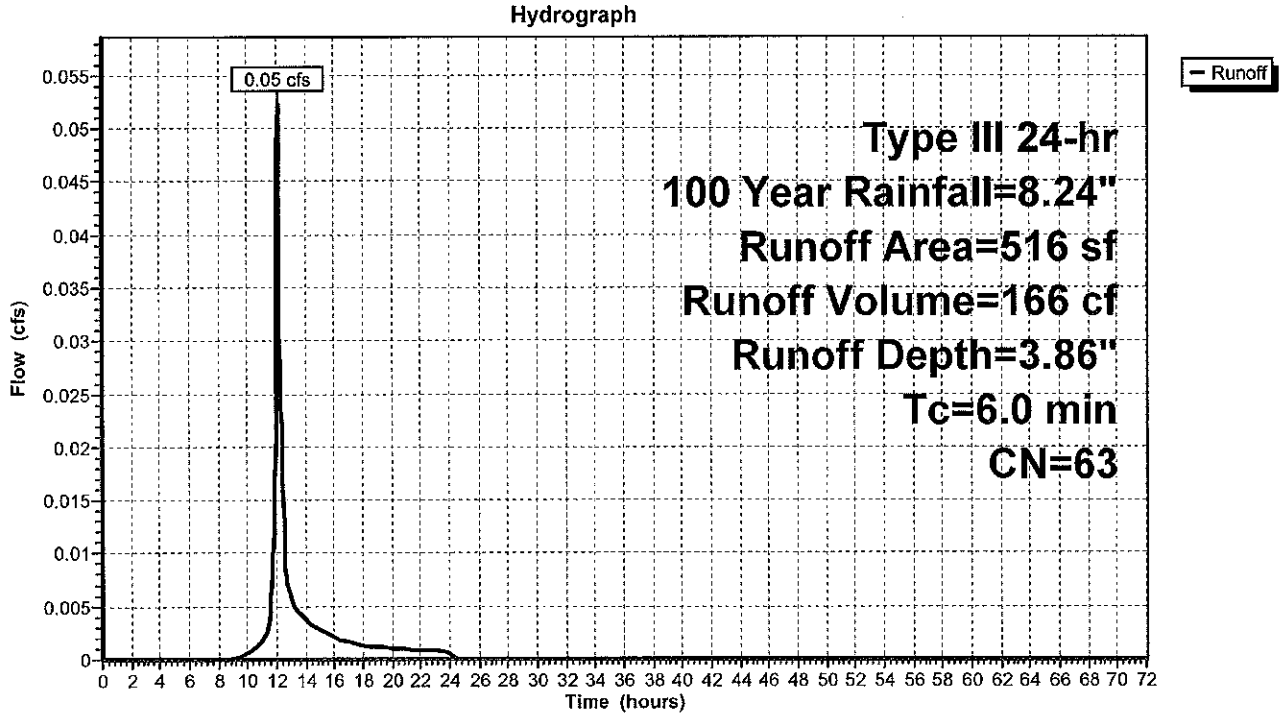
Runoff = 0.05 cfs @ 12.09 hrs, Volume= 166 cf, Depth= 3.86"
Routed to Pond CB : HAVEN STREET DRAINAGE

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 100 Year Rainfall=8.24"

	Area (sf)	CN	Description
	310	39	>75% Grass cover, Good, HSG A
*	206	98	Concrete, HSG A
	516	63	Weighted Average
	310		60.08% Pervious Area
	206		39.92% Impervious Area

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

Subcatchment SC2.4: TO HAVEN STREET



Summary for Pond CB: HAVEN STREET DRAINAGE

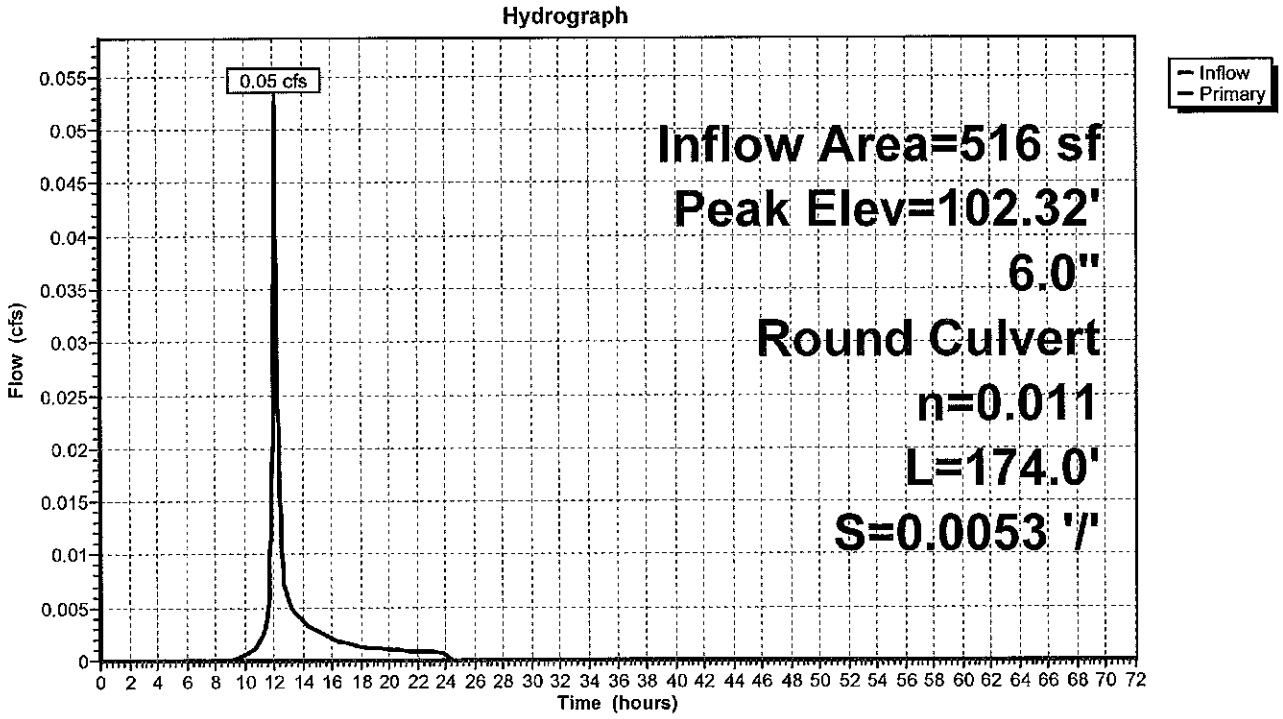
Inflow Area = 516 sf, 39.92% Impervious, Inflow Depth = 3.86" for 100 Year event
Inflow = 0.05 cfs @ 12.09 hrs, Volume= 166 cf
Outflow = 0.05 cfs @ 12.09 hrs, Volume= 166 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.05 cfs @ 12.09 hrs, Volume= 166 cf
Routed to Pond DMH : DMH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 102.32' @ 12.10 hrs
Flood Elev= 104.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.15'	**6.0" Round Culvert** L= 174.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.15' / 101.22' S= 0.0053 '/' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

Primary OutFlow Max=0.05 cfs @ 12.09 hrs HW=102.31' TW=101.70' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.05 cfs @ 1.34 fps)

Pond CB: HAVEN STREET DRAINAGE



Summary for Pond DMH: DMH

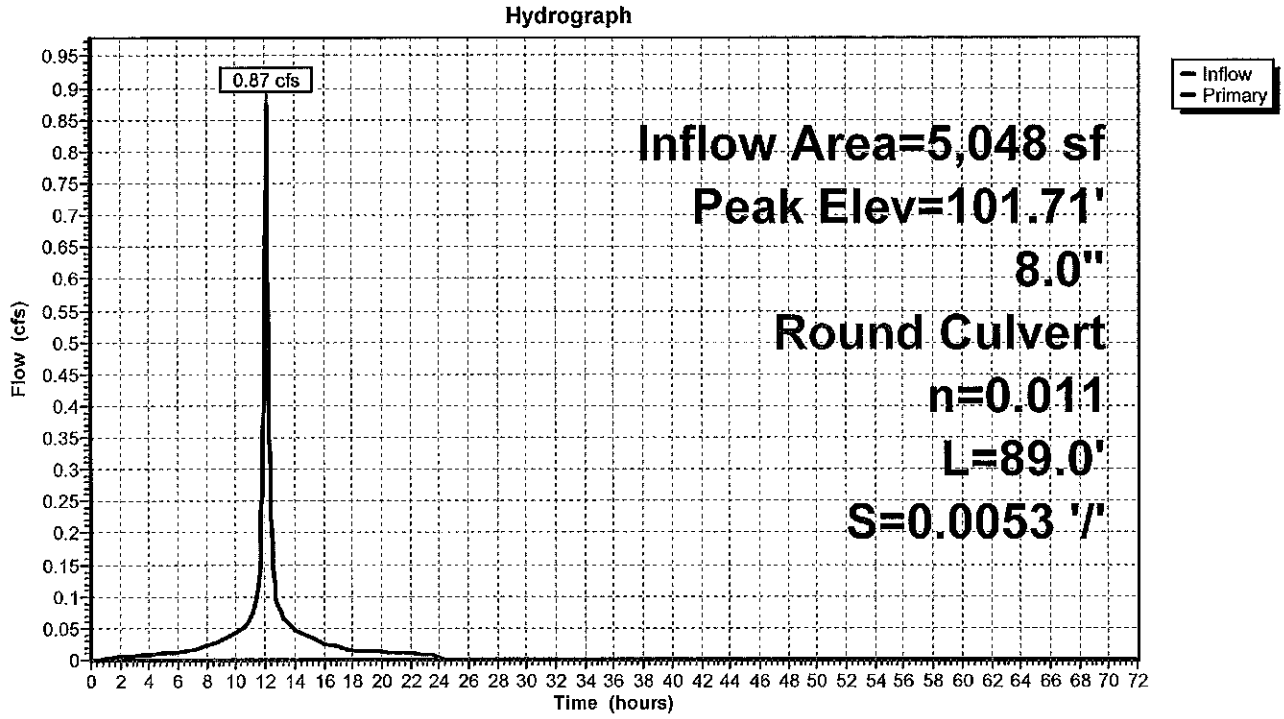
Inflow Area = 5,048 sf, 93.86% Impervious, Inflow Depth = 7.58" for 100 Year event
Inflow = 0.87 cfs @ 12.09 hrs, Volume= 3,187 cf
Outflow = 0.87 cfs @ 12.09 hrs, Volume= 3,187 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.09 hrs, Volume= 3,187 cf
Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 101.71' @ 12.09 hrs
Flood Elev= 105.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.05'	**8.0" Round Culvert** L= 89.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.05' / 100.58' S= 0.0053 '/' Cc= 0.900 n= 0.011, Flow Area= 0.35 sf

Primary OutFlow Max=0.85 cfs @ 12.09 hrs HW=101.70' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.85 cfs @ 3.12 fps)

Pond DMH: DMH



Summary for Pond INF: Stormtech SC-310

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=89)

Inflow Area = 8,600 sf,100.00% Impervious, Inflow Depth = 8.00" for 100 Year event
Inflow = 1.56 cfs @ 12.09 hrs, Volume= 5,733 cf
Outflow = 0.53 cfs @ 12.37 hrs, Volume= 5,742 cf, Atten= 66%, Lag= 16.7 min
Discarded = 0.23 cfs @ 11.70 hrs, Volume= 5,394 cf
Primary = 0.30 cfs @ 12.37 hrs, Volume= 347 cf
Routed to Link DP1 : Green Street CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 102.85' @ 12.37 hrs Surf.Area= 1,222 sf Storage= 1,304 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 25.3 min (766.1 - 740.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	101.00'	875 cf	**18.17'W x 67.28'L x 2.33'H Field A** 2,852 cf Overall - 663 cf Embedded = 2,189 cf x 40.0% Voids
#2A	101.50'	663 cf	**ADS_StormTech SC-310 +Cap** x 45 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 45 Chambers in 5 Rows
		1,539 cf	Total Available Storage

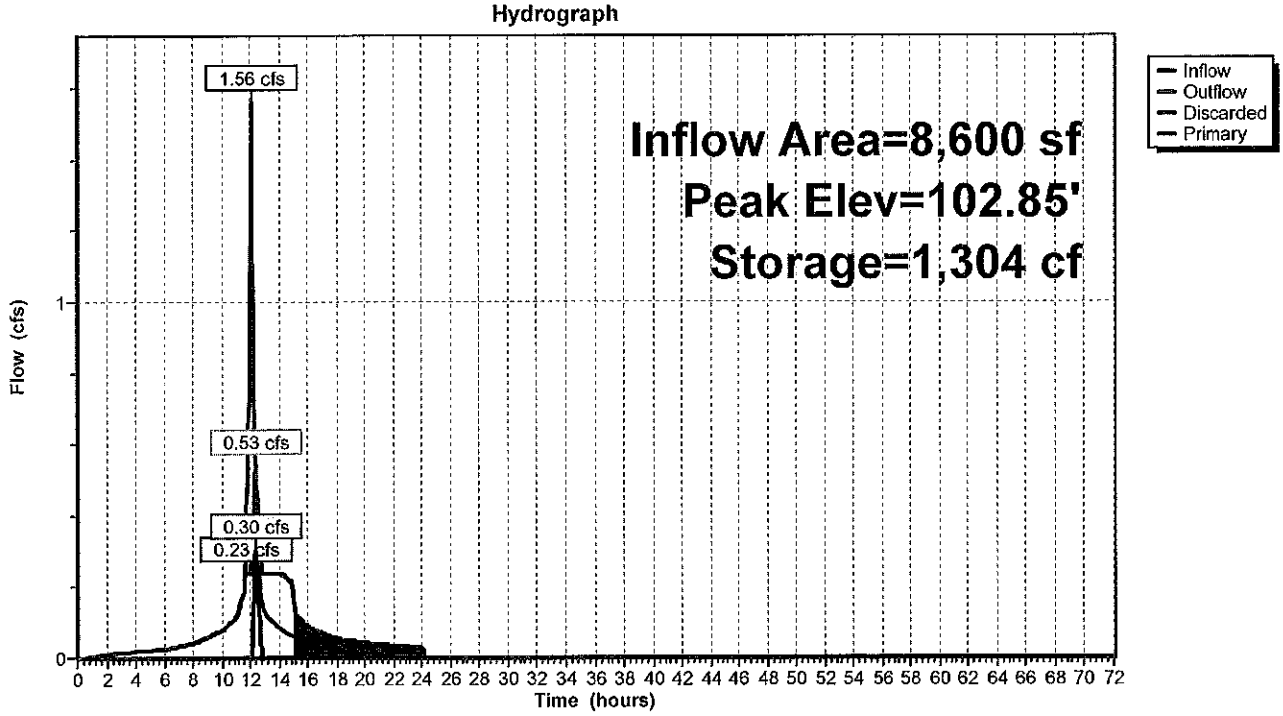
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	101.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	102.50'	**6.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.50' / 101.05' S= 0.0558 '/' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

Discarded OutFlow Max=0.23 cfs @ 11.70 hrs HW=101.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.30 cfs @ 12.37 hrs HW=102.85' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Inlet Controls 0.30 cfs @ 2.01 fps)

Pond INF: Stormtech SC-310



Summary for Pond PCB: Proposed CB to DP

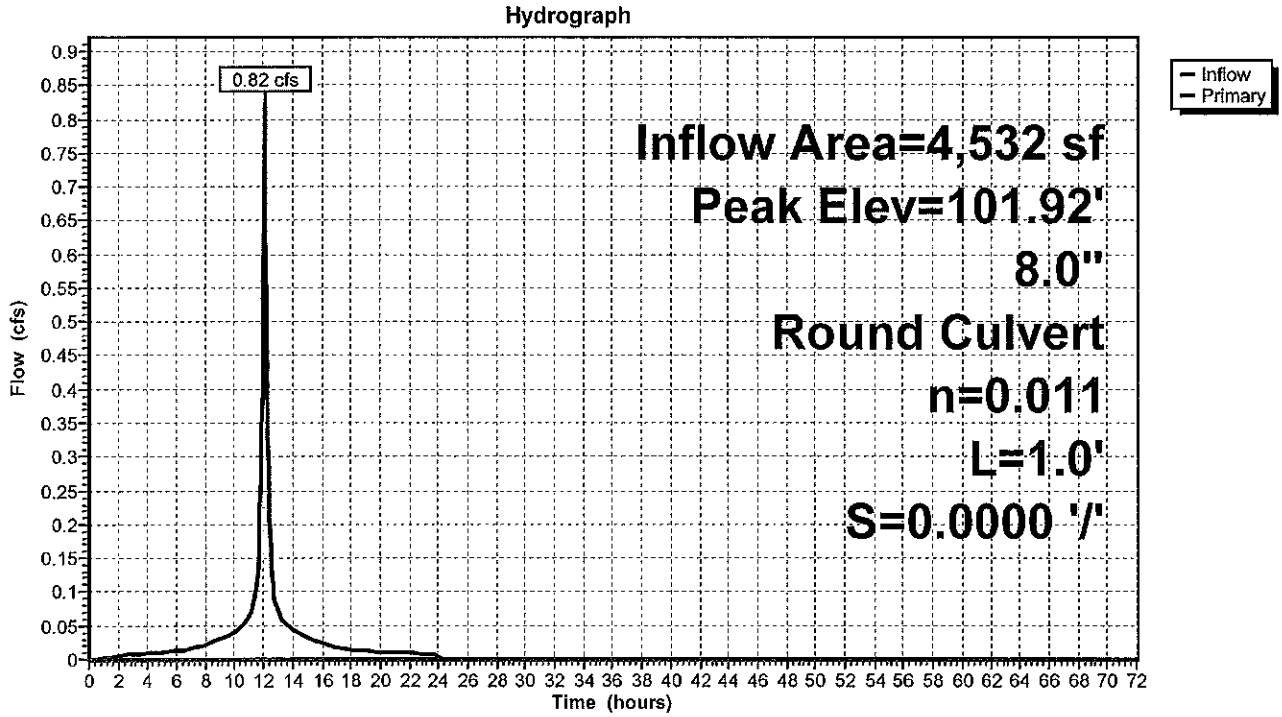
Inflow Area = 4,532 sf,100.00% Impervious, Inflow Depth = 8.00" for 100 Year event
Inflow = 0.82 cfs @ 12.09 hrs, Volume= 3,021 cf
Outflow = 0.82 cfs @ 12.09 hrs, Volume= 3,021 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 12.09 hrs, Volume= 3,021 cf
Routed to Pond DMH : DMH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 101.92' @ 12.11 hrs
Flood Elev= 104.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.05'	**8.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.05' / 101.05' S= 0.0000 '/' Cc= 0.900 n= 0.011, Flow Area= 0.35 sf

Primary OutFlow Max=0.68 cfs @ 12.09 hrs HW=101.86' TW=101.70' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.68 cfs @ 1.96 fps)

Pond PCB: Proposed CB to DP

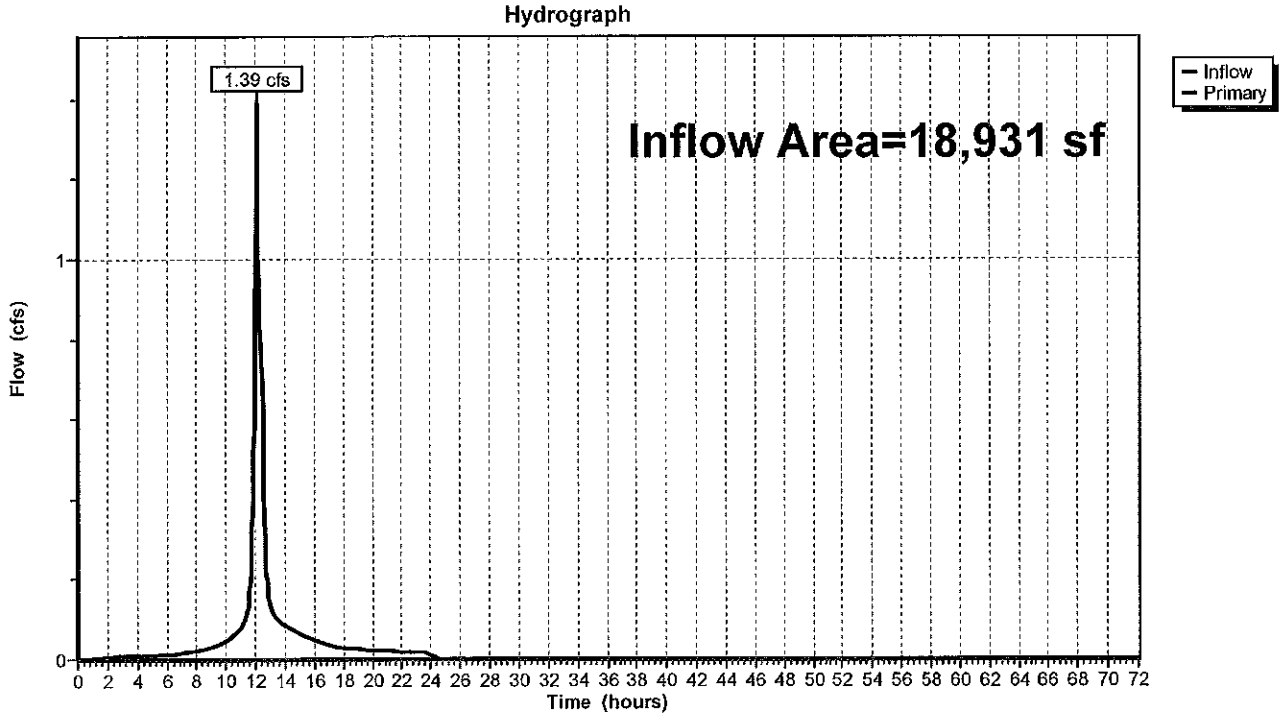


Summary for Link DP1: Green Street CB

Inflow Area = 18,931 sf, 81.39% Impervious, Inflow Depth = 3.29" for 100 Year event
Inflow = 1.39 cfs @ 12.09 hrs, Volume= 5,182 cf
Primary = 1.39 cfs @ 12.09 hrs, Volume= 5,182 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link DP1: Green Street CB



Events for Subcatchment SC2.1: PROPOSED ROOF

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 Year	3.31	0.62	2,205	3.08
10 Year	5.22	0.98	3,571	4.98
25 Year	6.41	1.21	4,423	6.17
100 Year	**8.24**	**1.56**	**5,733**	**8.00**

Events for Subcatchment SC2.2: PARKING TO CB

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 Year	3.31	0.33	1,162	3.08
10 Year	5.22	0.52	1,882	4.98
25 Year	6.41	0.64	2,331	6.17
100 Year	**8.24**	**0.82**	**3,021**	**8.00**

Events for Subcatchment SC2.3: SHEET TO GREEN STREET

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 Year	3.31	0.05	233	0.53
10 Year	5.22	0.21	694	1.58
25 Year	6.41	0.32	1,046	2.38
100 Year	**8.24**	**0.52**	**1,648**	**3.74**

Events for Subcatchment SC2.4: TO HAVEN STREET

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 Year	3.31	0.01	24	0.57
10 Year	5.22	0.02	71	1.65
25 Year	6.41	0.03	106	2.47
100 Year	**8.24**	**0.05**	**166**	**3.86**

Events for Pond CB: HAVEN STREET DRAINAGE

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2 Year	0.01	0.01	102.20	**0**
10 Year	0.02	0.02	102.25	0
25 Year	0.03	0.03	102.28	0
100 Year	**0.05**	**0.05**	**102.32**	0

Events for Pond DMH: DMH

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2 Year	0.33	0.33	101.41	**0**
10 Year	0.54	0.54	101.53	0
25 Year	0.67	0.67	101.60	0
100 Year	**0.87**	**0.87**	**101.71**	0

Events for Pond INF: Stormtech SC-310

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2 Year	0.62	0.23	**0.23**	0.00	101.51	253
10 Year	0.98	0.23	0.23	0.00	102.00	701
25 Year	1.21	0.23	0.23	0.00	102.38	1,019
100 Year	**1.56**	**0.53**	0.23	**0.30**	**102.85**	**1,304**

Events for Pond PCB: Proposed CB to DP

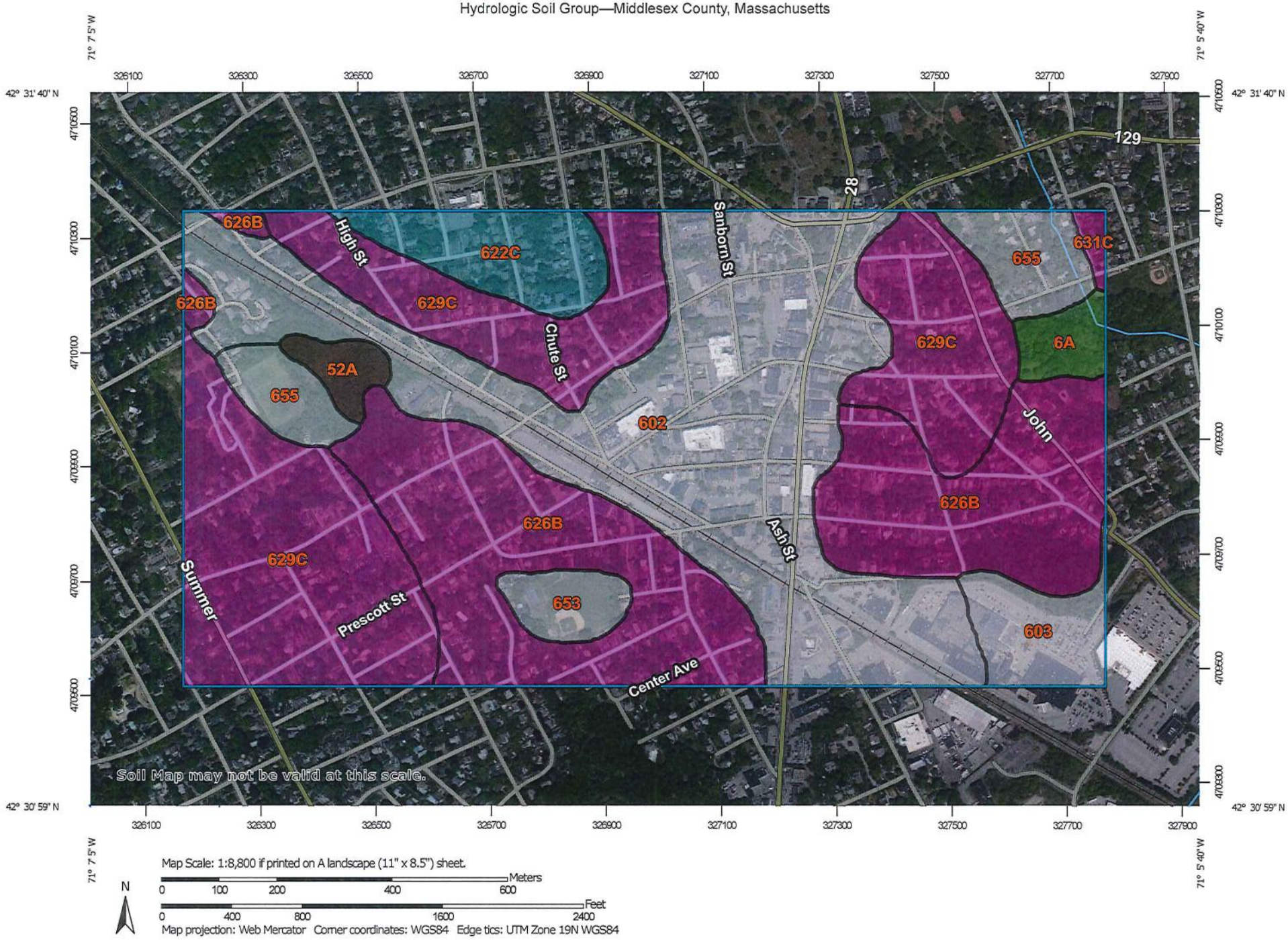
Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2 Year	0.33	0.33	101.48	**0**
10 Year	0.52	0.52	101.62	0
25 Year	0.64	0.64	101.72	0
100 Year	**0.82**	**0.82**	**101.92**	0

Events for Link DP1: Green Street CB

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 Year	0.38	0.38	**0.00**
10 Year	0.74	0.74	0.00
25 Year	0.99	0.99	0.00
100 Year	**1.39**	**1.39**	0.00

Appendix B:

NRCS Soil Maps



Map Scale: 1:8,800 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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:
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: Middlesex County, Massachusetts
Survey Area Data: Version 22, Sep 9, 2022

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
6A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	A/D	4.7	1.4%
52A	Freetown muck, 0 to 1 percent slopes	B/D	3.8	1.2%
602	Urban land		100.8	30.5%
603	Urban land, wet substratum		10.3	3.1%
622C	Paxton-Urban land complex, 3 to 15 percent slopes	C	13.9	4.2%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	84.0	25.4%
629C	Canton-Charlton-Urban land complex, 3 to 15 percent slopes	A	91.1	27.6%
631C	Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky	A	1.3	0.4%
653	Udorthents, sandy		5.8	1.8%
655	Udorthents, wet substratum		14.9	4.5%
Totals for Area of Interest			330.8	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix C:

Water Quality Flow Calculations

Hayes Engineering, Inc
603 Salem Street
Wakefield, MA 01880
Tel: (781) 246-2800
Fax: (781) 246-7596

Water Quality Flow Calculation Worksheet

Refer to File No. REA-0419

For First ½-inch of Runoff WQV:

Impervious Surfaces to Proprietary Treatment Device:

Catchment	Time of Conc. (hours)	Impervious Area (acres)	Impervious Area (sq. mi.)
2.1	0.100	0.197	
2.2	0.100	0.104	
2.3	0.100	0.048	
2.4	0.100	0.005	
Σ		0.354	0.000553125

Time of Concentration:

Longest Catchment Tc: 0.10 q_u from Figure 2, attached: 752 csm/in

Water Quality Flow (WQF):

$$Q_{0.5} = (q_u)(A)(WQV)$$

Where:

$Q_{0.5}$ = peak flow rate associated with the first ½-inch of runoff;

q_u = the unit peak discharge, in cubic feet per second per square mile per inch;

A = impervious surface in drainage area, in square miles;

WQV = water quality volume, in inches (0.5 inches)

$$Q_{0.5} = \left(752\frac{csm}{in}\right)(0.000553125\ sq.\ mi.)(0.5")$$

$$Q_{0.5} = 0.21\ cfs$$

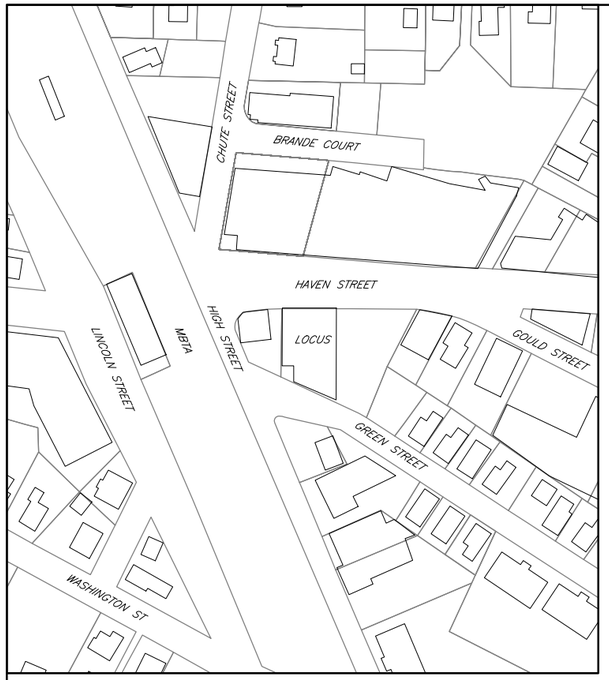
Water Quality Flow Calculation
25 Haven Street
Reading, MA
November 22, 2022

Figure 2: For First ½-inch of Runoff, Table of qu values for Ia/P Curve = 0.0.058, listed by tc, for Type III Storm Distribution

Tc (Hours)	qu (csm/in)	Tc (Hours)	qu (csm/in)	Tc (Hours)	qu (csm/in)	Tc (Hours)	qu (csm/in)
0.01	821	1.8	246	5.3	116	8.8	77
0.03	821	1.9	238	5.4	115	8.9	76
0.05	813	2	230	5.5	113	9	76
0.067	794	2.1	223	5.6	112	9.1	75
0.083	773	2.2	217	5.7	110	9.2	74
0.1	752	2.3	211	5.8	109	9.3	74
0.116	733	2.4	205	5.9	107	9.4	73
0.133	713	2.5	200	6	106	9.5	72
0.15	694	2.6	194	6.1	104	9.6	72
0.167	677	2.7	190	6.2	103	9.7	71
0.183	662	2.8	185	6.3	102	9.8	70
0.2	646	2.9	181	6.4	100	9.9	70
0.217	632	3	176	6.5	99	10	69
0.233	619	3.1	173	6.6	98		
0.25	606	3.2	169	6.7	97		
0.3	572	3.3	165	6.8	96		
0.333	552	3.4	162	6.9	94		
0.35	542	3.5	158	7	93		
0.4	516	3.6	155	7.1	92		
0.416	508	3.7	152	7.2	91		
0.5	472	3.8	149	7.3	90		
0.583	443	3.9	147	7.4	89		
0.6	437	4	144	7.5	88		
0.667	417	4.1	141	7.6	87		
0.7	408	4.2	139	7.7	86		
0.8	383	4.3	136	7.8	85		
0.9	361	4.4	134	7.9	84		
1	342	4.5	132	8	84		
1.1	325	4.6	130	8.1	83		
1.2	311	4.7	128	8.2	82		
1.3	297	4.8	126	8.3	81		
1.4	285	4.9	124	8.4	80		
1.5	274	5	122	8.5	79		
1.6	264	5.1	120	8.6	79		
1.7	254	5.2	118	8.7	78		

Appendix D:

Watershed Plans



LOCUS MAP:
(1"=100')
STRUCTURES AND BOUNDARIES COMPILED FROM MASSMAPPER GIS INFORMATION

NOTES:

1. THIS PLAN IS BASED ON AN ACTUAL ON-THE-GROUND FIELD SURVEY CONDUCTED BY HAYES ENGINEERING, INC. ON MARCH 4, 2022.
2. THE ELEVATIONS DEPICTED HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) BASED UPON MACORS REAL-TIME NETWORK NAD 83 (2011) (EPOCH 2010.00) DATUM USING GEOID 12B FOR ORTHOMETRIC HEIGHTS.
3. THIS PROPERTY DOES NOT LIES WITHIN A FLOOD HAZARD AREA (ZONE A OR V) AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 25017C0313E; EFFECTIVE DATE: 06/04/2010

HAVEN STREET

SC1.1 LOT A
AREA=18,935±S.F.

SC1.2

HAVEN STREET TRUST
REGISTRY BOOK 1333/110
LOT B ON LCC 6068B
MAP 16 LOT 314
#1 HAVEN STREET

55 HAVEN STREET REALTY TRUST
DEED BOOK 17048 PAGE 480
PLAN BOOK 221 OF 1956
MAP 16 LOT 307
#51 HAVEN STREET

55 HAVEN STREET REALTY TRUST
DEED BOOK 17048 PAGE 496
MAP 16 LOT 308
#12 GREEN STREET

HIGH STREET

GREEN STREET

DP

LEGEND:

104	MINOR CONTOUR
105	MAJOR CONTOUR
X	FENCE
W	WATER LINE
	WATER GATE
	WATER SHUTOFF
S	SEWER LINE
S	SEWER MANHOLE
D	DRAIN LINE
D	DRAIN MANHOLE
	CATCH BASINS
G	GAS LINE
	GAS GATE
E	ELECTRIC LINE
OHW	OVERHEAD WIRE
E	ELECTRIC MANHOLE
EHH	ELECTRIC HANDHOLE
	UTILITY POLE
	LIGHTPOLE
DHF	DRILL HOLE FOUND
SBDHF	STONE BOUND DRILL HOLE FOUND
IRF/IPF	IRON ROD/PIPE FOUND
	DECIDUOUS TREE
	BOLLARD
MW	MONITORING WELL
3'H	3 FEET HIGH
BB	BITUMINOUS BERM
BIT.	BITUMINOUS
CI	CAST IRON
CLF	CHAINLINK FENCE
CONC.	CONCRETE
DI	DUCTILE IRON
EOP	EDGE OF PAVEMENT
UGE	UNDERGROUND ELECTRIC
VGC	VERTICAL GRANITE CURB
W	PROPOSED WATER LINE
S	PROPOSED SEWER LINE
S	PROPOSED GREASE TRAP
	PROPOSED CATCH BASIN
D	PROPOSED DRAIN LINE
D	PROPOSED DRAIN MANHOLE
OHW	PROPOSED OVERHEAD WIRE
	PROPOSED UTILITY POLE
104.51	PROPOSED SPOT ELEVATION
2.0%	PROPOSED FLOW
PGC	PROPOSED GRANITE CURB
PROP.	PROPOSED

Prepared For:

25 HAVEN STREET, LLC
25 HAVEN STREET
READING, MASSACHUSETTS
REGISTRY BOOK 1557/74
ASSESSORS MAP 16 LOT 309

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
Wakefield, MA 01880
Ph: 781.246.2800
Fax: 781.246.7596
www.hayeseng.com

Design By: JG
Drawn By: xxx
Checked By: PJO
Project File: xxx
Comp. No: REA175

- [x] Issued For Permit
- [ ] Issued For Review
- [ ] Issued For Bid
- [ ] Issued For Construction
- [x] Not For Construction

No.	Revision	Date
1		
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Date: November 22, 2022

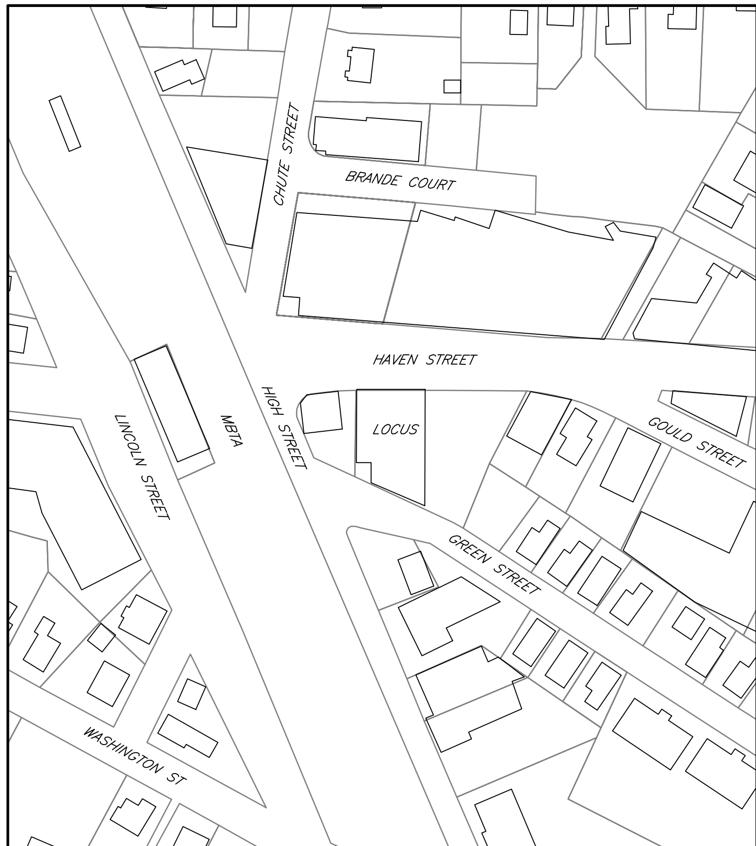
Drawing Title:

EXISTING WATERSHED
25 HAVEN STREET
READING, MASS.

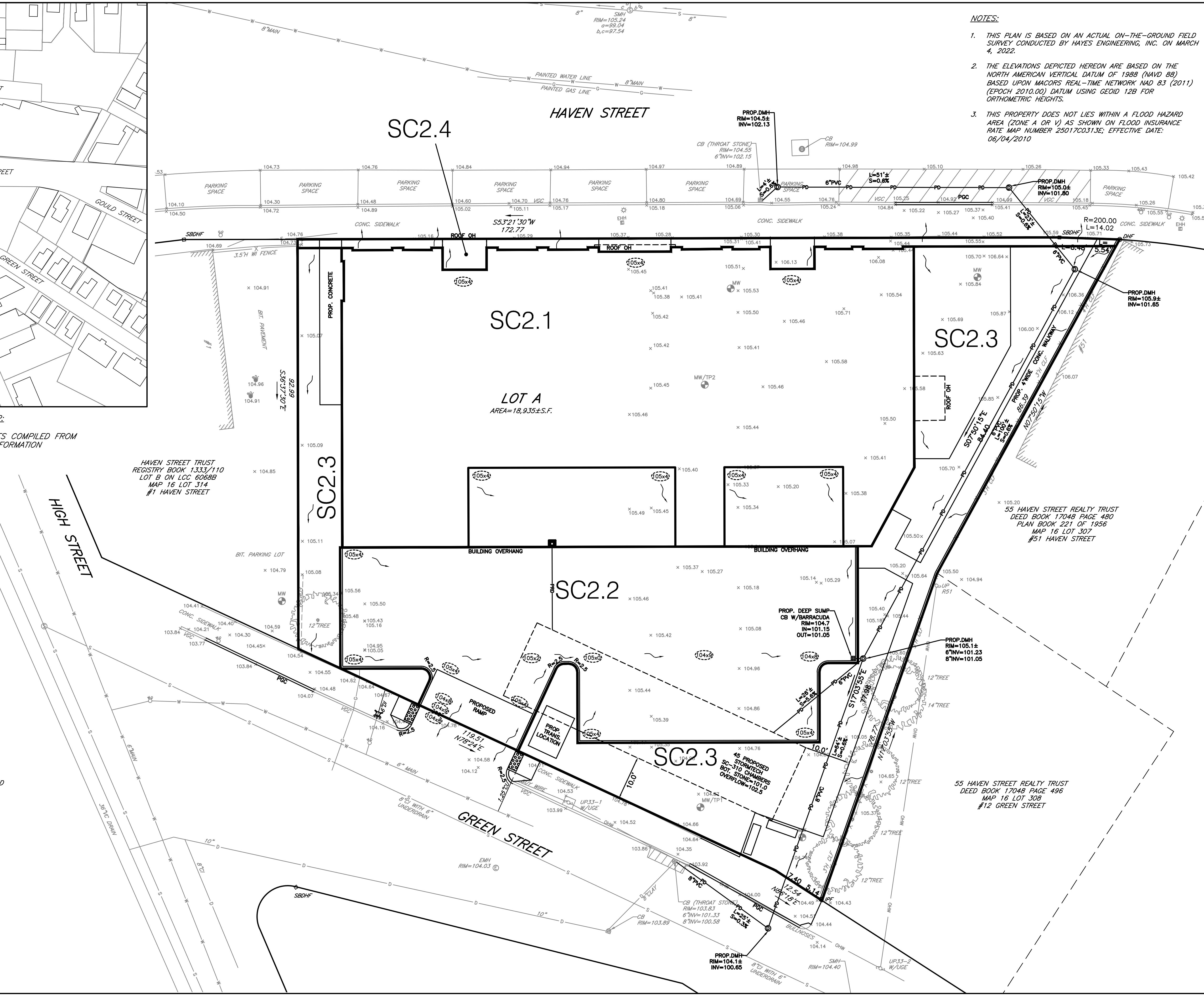
Drawing No.:

SW

SHEET 1 OF 2



LOCUS MAP:
(1"=100')
STRUCTURES AND BOUNDARIES COMPILED FROM MASSMAPPER GIS INFORMATION



HAVEN STREET
HIGH STREET
GREEN STREET
SC2.1
SC2.2
SC2.3
SC2.4
LOT A
AREA=18,935±S.F.
S53°21'30"W 172.77
PROP. DMH RIM=104.5± INV=102.13
PROP. DMH RIM=105.0± INV=101.80
PROP. DMH RIM=105.9± INV=101.65
PROP. DMH RIM=105.1± 6"INV=101.23 8"INV=101.05
PROP. DMH RIM=104.1± INV=100.65
PROP. DEEP SUMP CB W/BARRACUDA RIM=104.7 IN=101.15 OUT=101.05
45 PROPOSED STORMTECH SC-310 CHAMBERS BOT. STONE=101.0 OVERFLOW=102.5
PROPOSED RAMP
PROP. TRANS. LOCATION
BUILDING OVERHANG
PROP. CONCRETE
PROP. 4' WIDE CONC WALKWAY
HAVEN STREET TRUST REGISTRY BOOK 1333/110 LOT B ON LCC 6068B MAP 16 LOT 314 #1 HAVEN STREET
55 HAVEN STREET REALTY TRUST DEED BOOK 17048 PAGE 480 PLAN BOOK 221 OF 1956 MAP 16 LOT 307 #51 HAVEN STREET
55 HAVEN STREET REALTY TRUST DEED BOOK 17048 PAGE 496 MAP 16 LOT 308 #12 GREEN STREET
Grid North MSPCS

NOTES:

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3. THIS PROPERTY DOES NOT LIES WITHIN A FLOOD HAZARD AREA (ZONE A OR V) AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 25017C0313E; EFFECTIVE DATE: 06/04/2010

LEGEND:

MINOR CONTOUR
MAJOR CONTOUR
FENCE
WATER LINE
WATER GATE
WATER SHUTOFF
SEWER LINE
SEWER MANHOLE
DRAIN LINE
DRAIN MANHOLE
CATCH BASINS
GAS LINE
GAS GATE
ELECTRIC LINE
OVERHEAD WIRE
ELECTRIC MANHOLE
ELECTRIC HANDHOLE
UTILITY POLE
LIGHTPOLE
DHF — DRILL HOLE FOUND
SBDHF — STONE BOUND DRILL HOLE FOUND
IRF/IPF — IRON ROD/PIPE FOUND
DECIDUOUS TREE
BOLLARD
MONITORING WELL
3'H — 3 FEET HIGH
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CONC. — CONCRETE
DI — DUCTILE IRON
EOP — EDGE OF PAVEMENT
UGE — UNDERGROUND ELECTRIC
VGC — VERTICAL GRANITE CURB
PROPOSED WATER LINE
PROPOSED SEWER LINE
PROPOSED GREASE TRAP
PROPOSED CATCH BASIN
PROPOSED DRAIN LINE
PROPOSED DRAIN MANHOLE
PROPOSED OVERHEAD WIRE
PROPOSED UTILITY POLE
PROPOSED SPOT ELEVATION
2.0% — PROPOSED FLOW
PGC — PROPOSED GRANITE CURB
PROP. — PROPOSED

Prepared For:
25 HAVEN STREET, LLC
25 HAVEN STREET
READING, MASSACHUSETTS
REGISTRY BOOK 1557/74
ASSESSORS MAP 16 LOT 309

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No.	Revision	Date
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Date: November 22, 2022

Drawing Title:
PROPOSED WATERSHED
25 HAVEN STREET
READING, MASS.

Drawing No.:
SW

SHEET 2 OF 2

Town of Reading
Engineering Division

Memo

To: Andrew MacNichol, Community Development Director

From: Ryan A. Percival, P.E., Town Engineer;

CC: Community Planning and Development Commission;

Date: December 8, 2022

Re: Proposed 25 Haven Street Mixed-Use Development

Materials reviewed:

- Civil Engineering Site Plan Review and Special Permit Set entitled; "25 Haven Street Mixed-Use Development", 25 Haven Street Reading, Massachusetts; prepared by Hayes Engineering, Inc.; dated November 22, 2022
- Stormwater Management Report; prepared by Hayes Engineering, Inc.; dated November 22, 2022

The Engineering Division has reviewed the proposed site application for the proposed project and offers the following comments:

- The property has a DEP Reportable Release, RTN #3-0013004
- Construction stone entrance shall be a minimum of 50' in length and noted on the plan.
- The stormwater management report utilizes the NOAA Atlas 14 rainfall data.
- Post-development runoff volumes and flows have been reduced for the 2, 10, 25 and 100-year storms.
- The Engineering Division will work with the engineer to coordinate the private drain connections to the Town's system, including location, size, and material. Upgrades may be needed to the Town's drainage system.
- Test pits were performed and indicate an Estimated Seasonal High Groundwater 96" below grade at elevation 98.5
- The stormwater report shall include Phosphorous removal calculations.
- Please clarify the vertical standpipe overflow, it's unclear what this is for and its function.
- Domestic water and fire service should come off Haven Street which is currently being replaced with a 12" CLDI pipe. The current design has the services off an unlined 6" water main.
- Fire flow test shall be performed.
- Sewer flow study shall be performed.
- Label size and type of all utilities
- The plan shall show the dimensions of the driveway opening, a maximum of 24' is allowed per the Select Board Policies.
- All electric utilities shall be underground
- The design consultant shall coordinate with the Engineering Division on the updated utility improvements on Haven Street. The plan shall be updated to reflect the new utility locations.
- ADA Accessible space shall be labeled as Van space
- Trench paving in the Town ROW shall meet Town Standards for this area.
- This site is subject to a Sewer I/I Connection Fee.
- An O&M document should be developed for maintenance and inspections of the above infrastructure as well as the infiltration system.
- All utilities shall be approved materials and installed in accordance with the Department of Public Works Standards.
- Engineering Division shall be notified 72 hours in advance to mark out Town utilities.
- All water, sewer, curb cut, street opening, and Jackie's Law excavation permits shall be obtained at the Engineering Division prior to any excavations.

- All site work shall be inspected by the Engineering Division. The Applicant/Owner's contractor shall submit a construction schedule of proposed work. All inspections shall be scheduled 48 hours in advance.
- An approved site as-built shall be submitted to the Engineering Division within 60 days of certificate of occupancy. The as-built shall be submitted in mylar and electronic ACAD format.

SITE PLAN REVIEW & SPECIAL PERMIT SET

25 HAVEN STREET
(MIXED-USE DEVELOPMENT)
Reading, MA

Grid North
MSPCS

Vicinity Map
Scale: 1"=200'±

RECORD OWNER:

25 HAVEN STREET, LLC
25 HAVEN STREET, READING, MASSACHUSETTS
-ASSESSORS MAP 16 LOT 309
-BOOK 1557 PAGE 74
-LOT B ON LCC 6084B

PLAN REFERENCES:

- *LCC 6084B*
- *LCC 19824A*
- *PLAN 221 OF 1956*

NOTES:

1. *THIS PLAN IS BASED ON AN ACTUAL ON-THE-GROUND FIELD SURVEY CONDUCTED BY HAYES ENGINEERING, INC. ON MARCH 4, 2022.*
2. *THE ELEVATIONS DEPICTED HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) BASED UPON MACORS REAL-TIME NETWORK NAD 83 (2011) (EPOCH 2010.00) DATUM USING GEOID 12B FOR ORTHOMETRIC HEIGHTS.*
3. *THIS PROPERTY DOES NOT LIES WITHIN A FLOOD HAZARD AREA (ZONE A OR V) AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 25017C0313E; EFFECTIVE DATE: 06/04/2010*

SHEET INDEX	
PLAN TITLE	
INDEX	C1
EXISTING CONDITION	C2
DEMO/RELOCATION	C3
SITE LAYOUT PLAN	C4
DRAINAGE AND GRADING	C5
UTILITIES	C6
DETAILS	C7
DETAILS	C8

REQUESTED WAIVERS AND VARIANCES:

ZONING BYLAW:

- SECTION 9.1.1.7 OFF-STREET LOADING REQUIREMENTS
- SECTION 10.5.6.1 RESIDENTIAL DENSITY ALLOWANCES

SITE PLAN REVIEW PROCEDURES:

- H9: OUTDOOR LIGHTING
- H11: SIGNAGE
- I4: LIMIT OF WORK DELINEATION
- J4: TELEPHONE AND CABLE
- Q: TRAFFIC STUDY

READING COMMUNITY PLANNING AND DEVELOPMENT COMMISSION

____
____
____
____
____

DATE: ______________________

Prepared For:

25 HAVEN STREET, LLC

25 HAVEN STREET
READING, MASSACHUSETTS
REGISTRY BOOK 1557/74
ASSESSORS MAP 16 LOT 309

Prepared By:

Hayes Engineering, Inc.
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No.	Revision	Date
1		
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9		
10		

Scale: 1"=200'
0' 100' 200' 400'

Date: November 22, 2022

Drawing Title:

INDEX PLAN
25 HAVEN STREET
MIXED-USE DEVELOPMENT
READING, MASS.

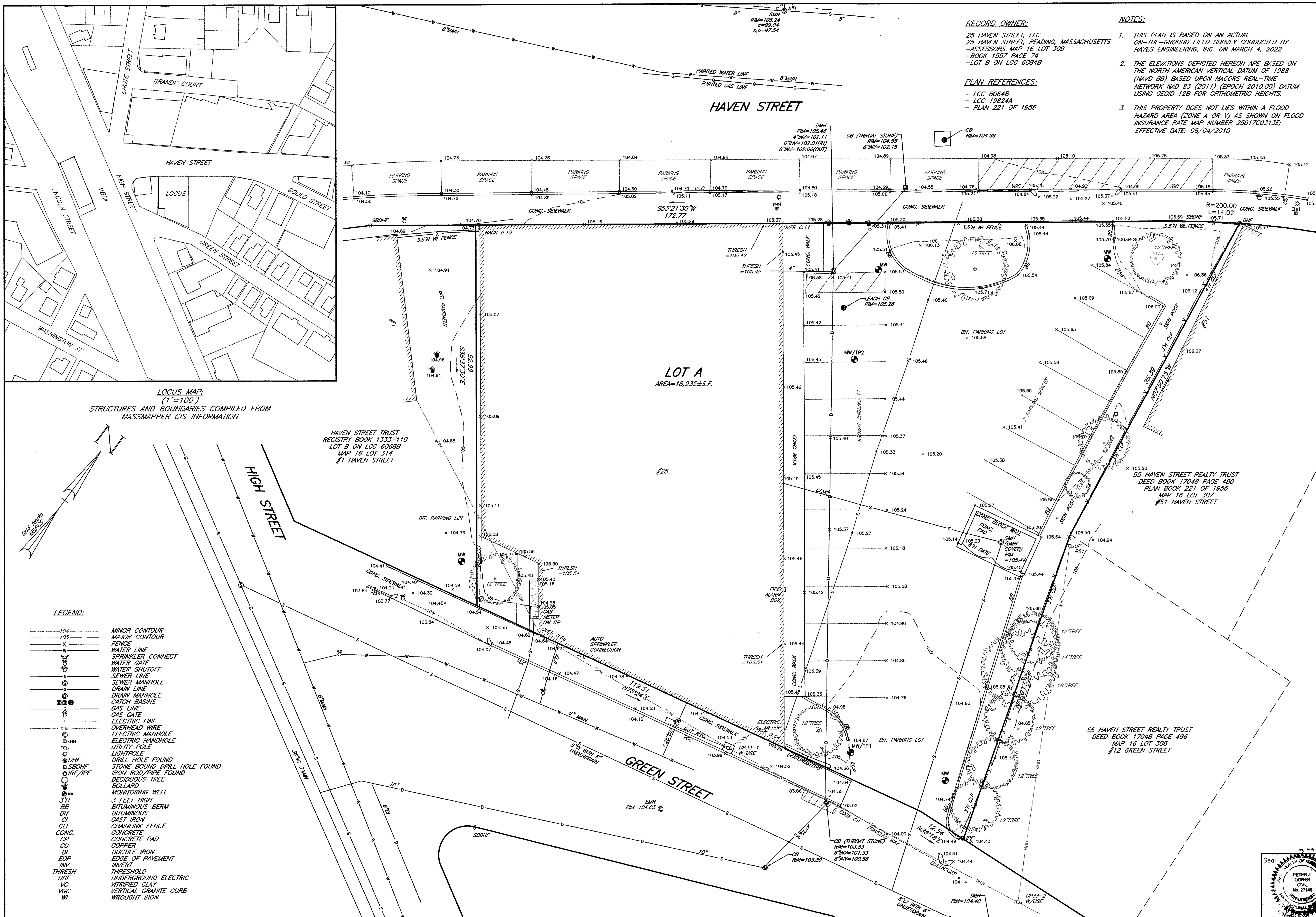
Seal

PETER J OGREN
#33804

Drawing No.:

C1

SHEET 1 OF 8



RECORD OWNER:

25 HAVEN STREET, LLC
25 HAVEN STREET, READING, MASSACHUSETTS
-ASSESSORS MAP 16 LOT 309
-BOOK 1557 PAGE 74
-LOT B ON LCC 6084B

PLAN REFERENCES:

- LCC 6084B
- LCC 19824A
- PLAN 221 OF 1956

NOTES:

1. THIS PLAN IS BASED ON AN ACTUAL ON-THE-GROUND FIELD SURVEY CONDUCTED BY HAYES ENGINEERING, INC. ON MARCH 4, 2022.
2. THE ELEVATIONS DEPICTED HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) BASED UPON MACORS REAL-TIME NETWORK NAD 83 (2011) (EPOCH 2010.00) DATUM USING GEOID 12B FOR ORTHOMETRIC HEIGHTS.
3. THIS PROPERTY DOES NOT LIES WITHIN A FLOOD HAZARD AREA (ZONE A OR V) AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 25017C0313E; EFFECTIVE DATE: 06/04/2010

LEGEND:

---104---	MINOR CONTOUR
---105---	MAJOR CONTOUR
—X—	FENCE
—W—	WATER LINE
	SPRINKLER CONNECT
	WATER GATE
	WATER SHUTOFF
—S—	SEWER LINE
	SEWER MANHOLE
—D—	DRAIN LINE
	DRAIN MANHOLE
	CATCH BASINS
—G—	GAS LINE
	GAS GATE
—E—	ELECTRIC LINE
—OHW—	OVERHEAD WIRE
	ELECTRIC MANHOLE
EHH	ELECTRIC HANDHOLE
	UTILITY POLE
	LIGHTPOLE
DHF	DRILL HOLE FOUND
SBDHF	STONE BOUND DRILL HOLE FOUND
IRF/IPF	IRON ROD/PIPE FOUND
	DECIDUOUS TREE
	BOLLARD
MW	MONITORING WELL
3'H	3 FEET HIGH
BB	BITUMINOUS BERM
BIT.	BITUMINOUS
CI	CAST IRON
CLF	CHAINLINK FENCE
CONC.	CONCRETE
CP	CONCRETE PAD
CU	COPPER
DI	DUCTILE IRON
EOP	EDGE OF PAVEMENT
INV	INVERT
THRESH	THRESHOLD
UGE	UNDERGROUND ELECTRIC
VC	VITRIFIED CLAY
VGC	VERTICAL GRANITE CURB
WI	WROUGHT IRON

Prepared For:

25 HAVEN STREET, LLC
25 HAVEN STREET
READING, MASSACHUSETTS
REGISTRY BOOK 1557/74
ASSESSORS MAP 16 LOT 309

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
Wakefield, MA 01880
Ph: 781.246.2800
Fax: 781.246.7596
www.hayeseng.com

Design By: JG
Drawn By: JG
Checked By: PJO
Project File: REA-0419
Comp. No: REA175

- [x] Issued For Permit
- [ ] Issued For Review
- [ ] Issued For Bid
- [ ] Issued For Construction
- [x] Not For Construction

No.	Revision	Date
1		
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Scale: 1"=10'

Date: November 22, 2022

Drawing Title:

EXISTING CONDITIONS PLAN
25 HAVEN STREET
MIXED-USE DEVELOPMENT
READING, MASS.

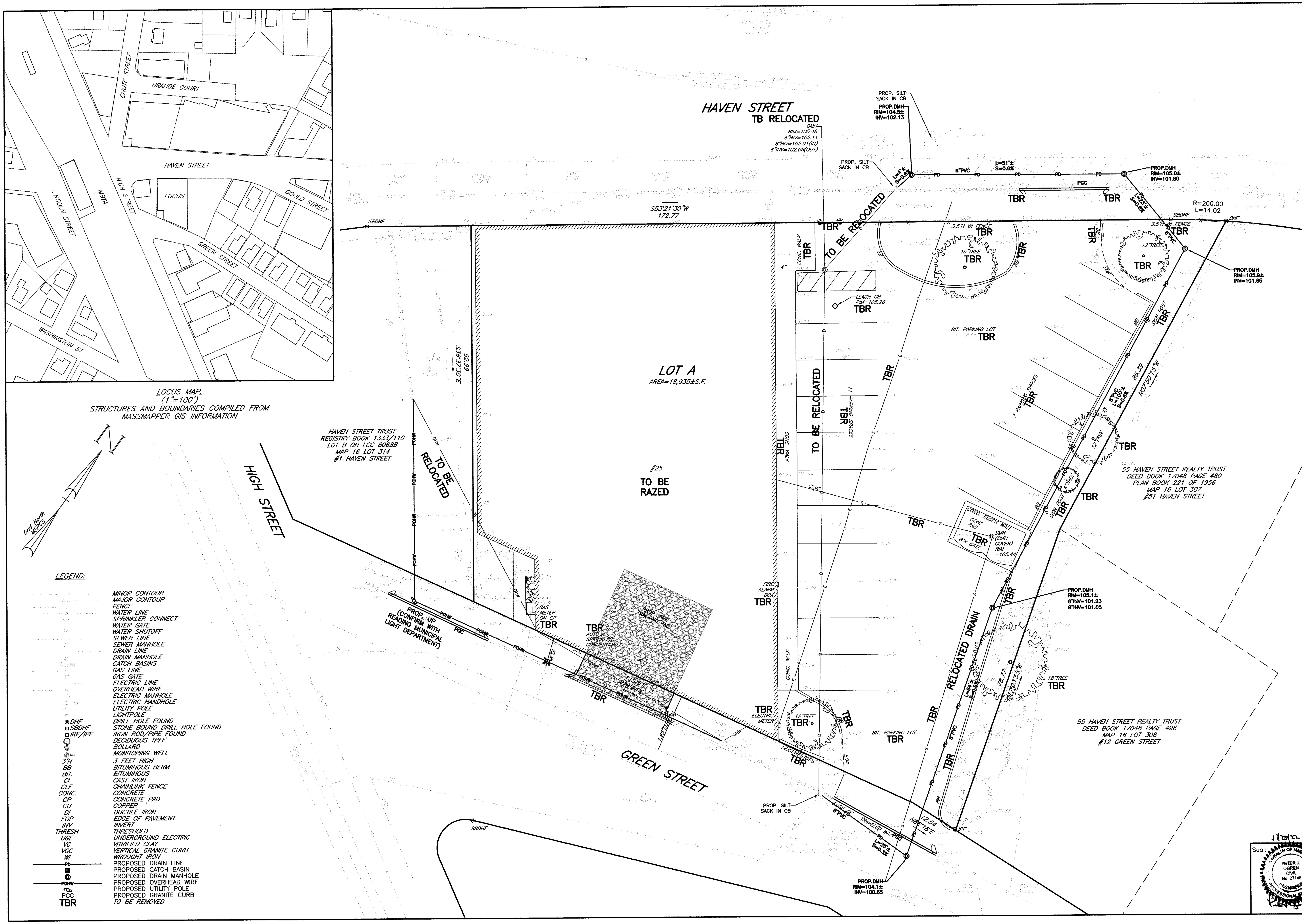
Seal:

PETER J. OGREN
CIVIL
No. 27145

Drawing No.:

C2

SHEET 2 OF 8


HAVEN STREET
TB RELOCATED
LOCUS MAP:
(1"=100')
STRUCTURES AND BOUNDARIES COMPILED FROM
MASSMAPPER GIS INFORMATION
CHUTE STREET
BRANDE COURT
HAVEN STREET
LOCUS
GOULD STREET
HIGH STREET
MBTA
LINCOLN STREET
GREEN STREET
WASHINGTON ST
Grid North
MSPCS
LOT A
AREA=18,935±S.F.
#25
TO BE
RAZED
HAVEN STREET TRUST
REGISTRY BOOK 1333/110
LOT B ON LCC 6068B
MAP 16 LOT 314
#1 HAVEN STREET
TO BE
RELOCATED
TO BE RELOCATED
RELOCATED DRAIN
S53°21'30"W
172.77
R=200.00
L=14.02
N07°50'15"W
86.39
78.77
55 HAVEN STREET REALTY TRUST
DEED BOOK 17048 PAGE 480
PLAN BOOK 221 OF 1956
MAP 16 LOT 307
#51 HAVEN STREET
55 HAVEN STREET REALTY TRUST
DEED BOOK 17048 PAGE 496
MAP 16 LOT 308
#12 GREEN STREET
BIT. PARKING LOT
11 PARKING SPACES
7 PARKING SPACES
PROP. UP
(CONFIRM WITH
READING MUNICIPAL
LIGHT DEPARTMENT)
PROP. TIRE TRACKING PAD
PROP.DMH
RIM=104.5±
INV=102.13
PROP.DMH
RIM=105.0±
INV=101.80
PROP.DMH
RIM=105.9±
INV=101.65
PROP.DMH
RIM=105.1±
6"INV=101.23
8"INV=101.05
PROP.DMH
RIM=104.1±
INV=100.65
PROP. SILT-
SACK IN CB
LEGEND:
MINOR CONTOUR
MAJOR CONTOUR
FENCE
WATER LINE
SPRINKLER CONNECT
WATER GATE
WATER SHUTOFF
SEWER LINE
SEWER MANHOLE
DRAIN LINE
DRAIN MANHOLE
CATCH BASINS
GAS LINE
GAS GATE
ELECTRIC LINE
OVERHEAD WIRE
ELECTRIC MANHOLE
ELECTRIC HANDHOLE
UTILITY POLE
LIGHTPOLE
DHF DRILL HOLE FOUND
SBDHF STONE BOUND DRILL HOLE FOUND
IRF/IPF IRON ROD/PIPE FOUND
DECIDUOUS TREE
BOLLARD
MW MONITORING WELL
3'H 3 FEET HIGH
BB BITUMINOUS BERM
BIT. BITUMINOUS
CI CAST IRON
CLF CHAINLINK FENCE
CONC. CONCRETE
CP CONCRETE PAD
CU COPPER
DI DUCTILE IRON
EOP EDGE OF PAVEMENT
INV INVERT
THRESH THRESHOLD
UGE UNDERGROUND ELECTRIC
VC VITRIFIED CLAY
VGC VERTICAL GRANITE CURB
WI WROUGHT IRON
PD PROPOSED DRAIN LINE
PROPOSED CATCH BASIN
PROPOSED DRAIN MANHOLE
POHW PROPOSED OVERHEAD WIRE
PROPOSED UTILITY POLE
PGC PROPOSED GRANITE CURB
TBR TO BE REMOVED

Prepared For:

25 HAVEN STREET, LLC

25 HAVEN STREET
READING, MASSACHUSETTS
REGISTRY BOOK 1557/74
ASSESSORS MAP 16 LOT 309

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
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Fax: 781.246.7596
www.hayeseng.com

Design By: JG
Drawn By: JG
Checked By: PJO
Project File: REA-0419
Comp. No: REA175

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No.	Revision	Date
1		
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Scale: 1"=10'
0' 5' 10' 20'

Date: November 22, 2022

Drawing Title:

DEMOLITION & RELOCATION PLAN
25 HAVEN STREET
MIXED-USE DEVELOPMENT
READING, MASS.

Seal:
PETER J. OGREN
CIVIL
No. 27145
REGISTERED PROFESSIONAL ENGINEER

Drawing No.:

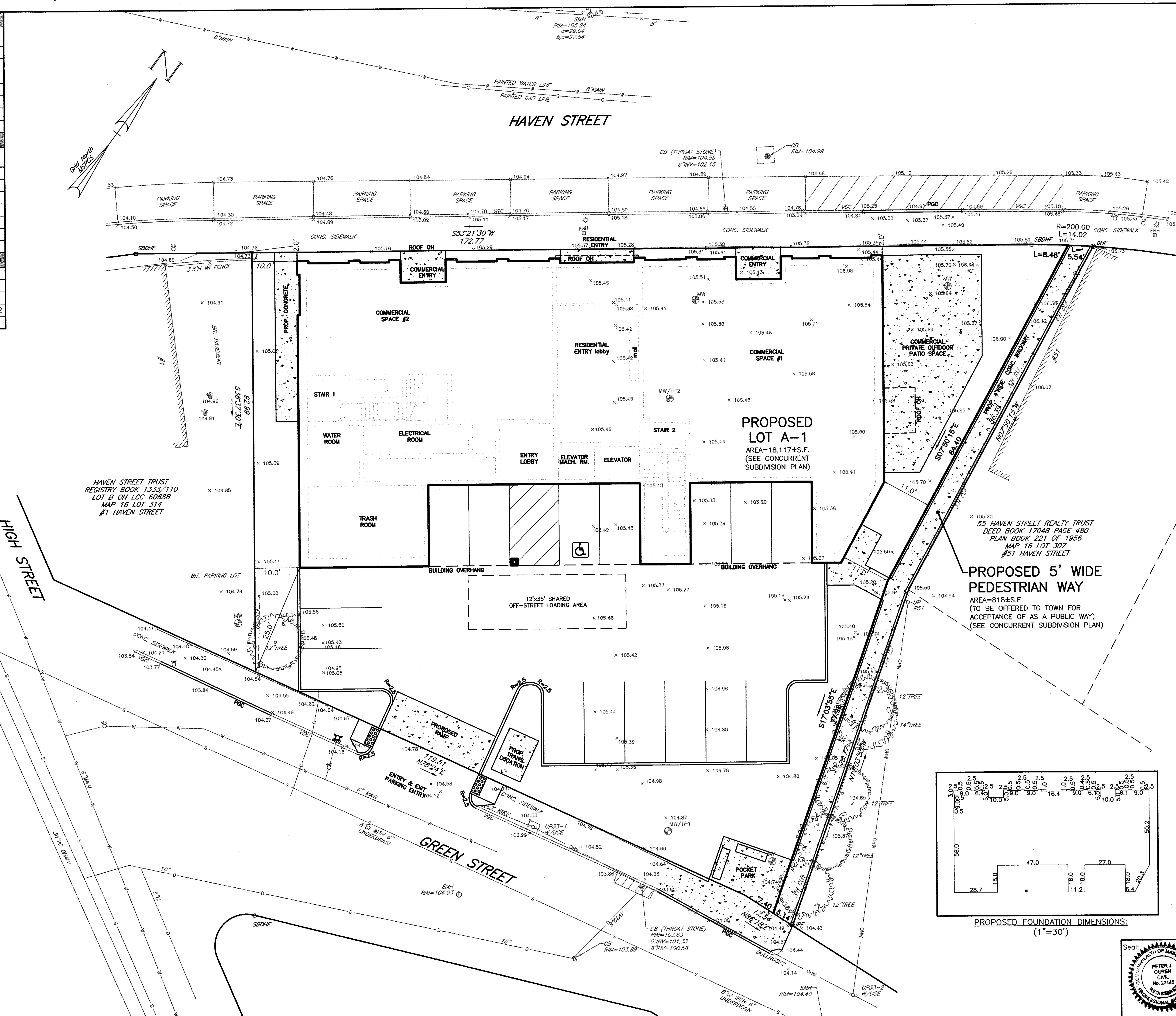
C3

SHEET 3 OF 8

ZONING TABLE: SECTION 10.5.6		
ZONE DSGD OVERLAY	MIXED USE WITH COMMERCIAL 1ST FLOOR	
DIMENSIONAL CONTROLS	REQUIRED/ALLOWED	EXISTING
FRONT YARD SETBACK	MIN 0 MAX 10	0
SIDE YARD SETBACK	0	1.0
REAR YARD SETBACK	0	0
MIN. FRONTAGE	50	181.25
MIN. LOT AREA	6,000	18,935
MAX. LOT COVERAGE (bldgs.)	N/A	47.5%

ZONING TABLE: SECTION 10.5.6		
ZONE DSGD OVERLAY	MIXED USE WITH COMMERCIAL 1ST FLOOR	
DIMENSIONAL CONTROLS	REQUIRED/ALLOWED	LOT A-1
FRONT YARD SETBACK	MIN 0 MAX 10	2.0
SIDE YARD SETBACK	0	10.0
REAR YARD SETBACK	0	25.0
MIN. FRONTAGE	50	181.25
MIN. LOT AREA	6,000	18,117
MAX. LOT COVERAGE (bldgs.)	N/A	47.5%

PARKING CALCULATIONS: SECTIONS 10.5.8.1 & 9.0
REQUIRED RETAIL/RESTAURANT: = 0 spaces
REQUIRED RESIDENTIAL UNITS: (1.25 per unit)*(12 units) = 15 spaces
TOTAL SPACES PROVIDED: (16) 9'x18' including 1 handicap van accessible
OFF-STREET LOADING REQUIRED: (1 SPACES PER 2,000S.F.)*(3,885S.F.)= 2
OFF-STREET LOADING PROVIDED: 1 space



LEGEND:

Symbol	Description
104	MINOR CONTOUR
105	MAJOR CONTOUR
X	FENCE
W	WATER LINE
	WATER GATE
	WATER SHUTOFF
S	SEWER LINE
	SEWER MANHOLE
D	DRAIN LINE
	DRAIN MANHOLE
	CATCH BASINS
G	GAS LINE
	GAS GATE
E	ELECTRIC LINE
OHW	OVERHEAD WIRE
	ELECTRIC MANHOLE
EHH	ELECTRIC HANDHOLE
	UTILITY POLE
	LIGHTPOLE
DHF	DRILL HOLE FOUND
SBDHF	STONE BOUND DRILL HOLE FOUND
IRF/IPF	IRON ROD/PIPE FOUND
	DECIDUOUS TREE
	BOLLARD
MW	MONITORING WELL
3'H	3 FEET HIGH
BB	BITUMINOUS BERM
BIT.	BITUMINOUS
CI	CAST IRON
CLF	CHAINLINK FENCE
CONC.	CONCRETE
DI	DUCTILE IRON
EOP	EDGE OF PAVEMENT
INV	INVERT
UGE	UNDERGROUND ELECTRIC
VGC	VERTICAL GRANITE CURB
PW	PROPOSED WATER LINE
PS	PROPOSED SEWER LINE
	PROPOSED GREASE TRAP
	PROPOSED CATCH BASIN
PD	PROPOSED DRAIN LINE
PRD	PROPOSED ROOF DRAIN LINE
	PROPOSED DRAIN MANHOLE
POHW	PROPOSED OVERHEAD WIRE
PE	PROPOSED ELECTRIC LINE
	PROPOSED UTILITY POLE
PG	PROPOSED GAS LINE
104x7	PROPOSED SPOT ELEVATION
	PROPOSED FLOW
PGC	PROPOSED GRANITE CURB
PROP.	PROPOSED

Prepared For:

25 HAVEN STREET, LLC
25 HAVEN STREET
READING, MASSACHUSETTS
REGISTRY BOOK 1557/74
ASSESSORS MAP 16 LOT 309

Prepared By:

Hayes Engineering, Inc.
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www.hayeseng.com

Design By: JG
Drawn By: JG
Checked By: PJO
Project File: REA-0419
Comp. No: REA175

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- [ ] Issued For Review
- [ ] Issued For Bid
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- [x] Not For Construction

No.	Revision	Date
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Scale: 1" = 10'
0' 5' 10' 20'

Date: November 22, 2022

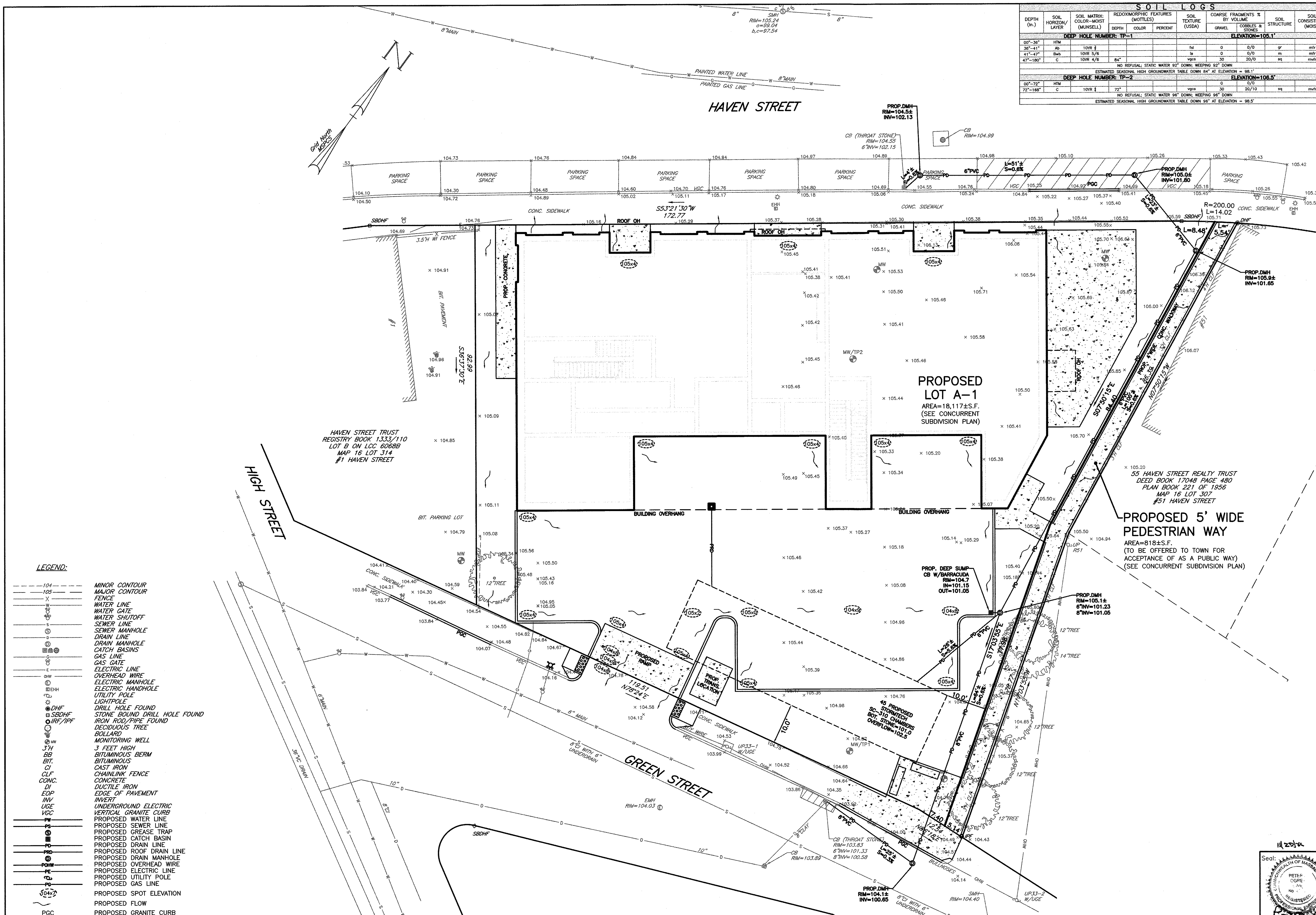
Drawing Title:

SITE LAYOUT PLAN
25 HAVEN STREET
MIXED-USE DEVELOPMENT
READING, MASS.

Seal: COMMONWEALTH OF MASSACHUSETTS PETER J. OGREN CIVIL No. 27145 REGISTERED PROFESSIONAL ENGINEER

Drawing No.: C4

SHEET 4 OF 8



SOIL LOGS

DEPTH (In.)	SOIL HORIZON/ LAYER	SOIL MATRIX: COLOR-MOIST (MUNSELL)	REDOXIMORPHIC FEATURES (MOTTLES)			SOIL TEXTURE (USDA)	COARSE FRAGMENTS % BY VOLUME		SOIL STRUCTURE	SOIL CONSISTENCE (MOIST)
			DEPTH	COLOR	PERCENT		GRAVEL	COBBLES & STONES		
DEEP HOLE NUMBER: TP-1						ELEVATION=105.1'				
00"-36"	HTM									
36"-41"	Ab	10YR 3/2				fsl	0	0/0	gr	mfr
41"-47"	Bwb	10YR 5/6				ls	0	0/0	m	mfr
47"-180"	C	10YR 4/6	84"			vgcs	30	20/0	sq	mvfr
NO REFUSAL; STATIC WATER 92" DOWN; WEEPING 92" DOWN										
ESTIMATED SEASONAL HIGH GROUNDWATER TABLE DOWN 84" AT ELEVATION = 98.1'										
DEEP HOLE NUMBER: TP-2						ELEVATION=106.5'				
00"-72"	HTM						0	0/0		
72"-168"	C	10YR 4/4	72"			vgcs	30	20/10	sq	mvfr
NO REFUSAL; STATIC WATER 96" DOWN; WEEPING 96" DOWN										
ESTIMATED SEASONAL HIGH GROUNDWATER TABLE DOWN 96" AT ELEVATION = 98.5'										

LEGEND:

MINOR CONTOUR
MAJOR CONTOUR
FENCE
WATER LINE
WATER GATE
WATER SHUTOFF
SEWER LINE
SEWER MANHOLE
DRAIN LINE
DRAIN MANHOLE
CATCH BASINS
GAS LINE
GAS GATE
ELECTRIC LINE
OVERHEAD WIRE
ELECTRIC MANHOLE
EHH ELECTRIC HANDHOLE
UTILITY POLE
LIGHTPOLE
DHF DRILL HOLE FOUND
SBDHF STONE BOUND DRILL HOLE FOUND
IRF/IPF IRON ROD/PIPE FOUND
DECIDUOUS TREE
BOLLARD
MW MONITORING WELL
3'H 3 FEET HIGH
BB BITUMINOUS BERM
BIT. BITUMINOUS
CI CAST IRON
CLF CHAINLINK FENCE
CONC. CONCRETE
DI DUCTILE IRON
EOP EDGE OF PAVEMENT
INV INVERT
UGE UNDERGROUND ELECTRIC
VGC VERTICAL GRANITE CURB
PW PROPOSED WATER LINE
PS PROPOSED SEWER LINE
PROPOSED GREASE TRAP
PROPOSED CATCH BASIN
PD PROPOSED DRAIN LINE
PRD PROPOSED ROOF DRAIN LINE
PROPOSED DRAIN MANHOLE
POHW PROPOSED OVERHEAD WIRE
PE PROPOSED ELECTRIC LINE
PROPOSED UTILITY POLE
PG PROPOSED GAS LINE
105x4 PROPOSED SPOT ELEVATION
PROPOSED FLOW
PGC PROPOSED GRANITE CURB
PROP. PROPOSED

Prepared For:
25 HAVEN STREET, LLC
25 HAVEN STREET
READING, MASSACHUSETTS
REGISTRY BOOK 1557/74
ASSESSORS MAP 16 LOT 309

Prepared By:
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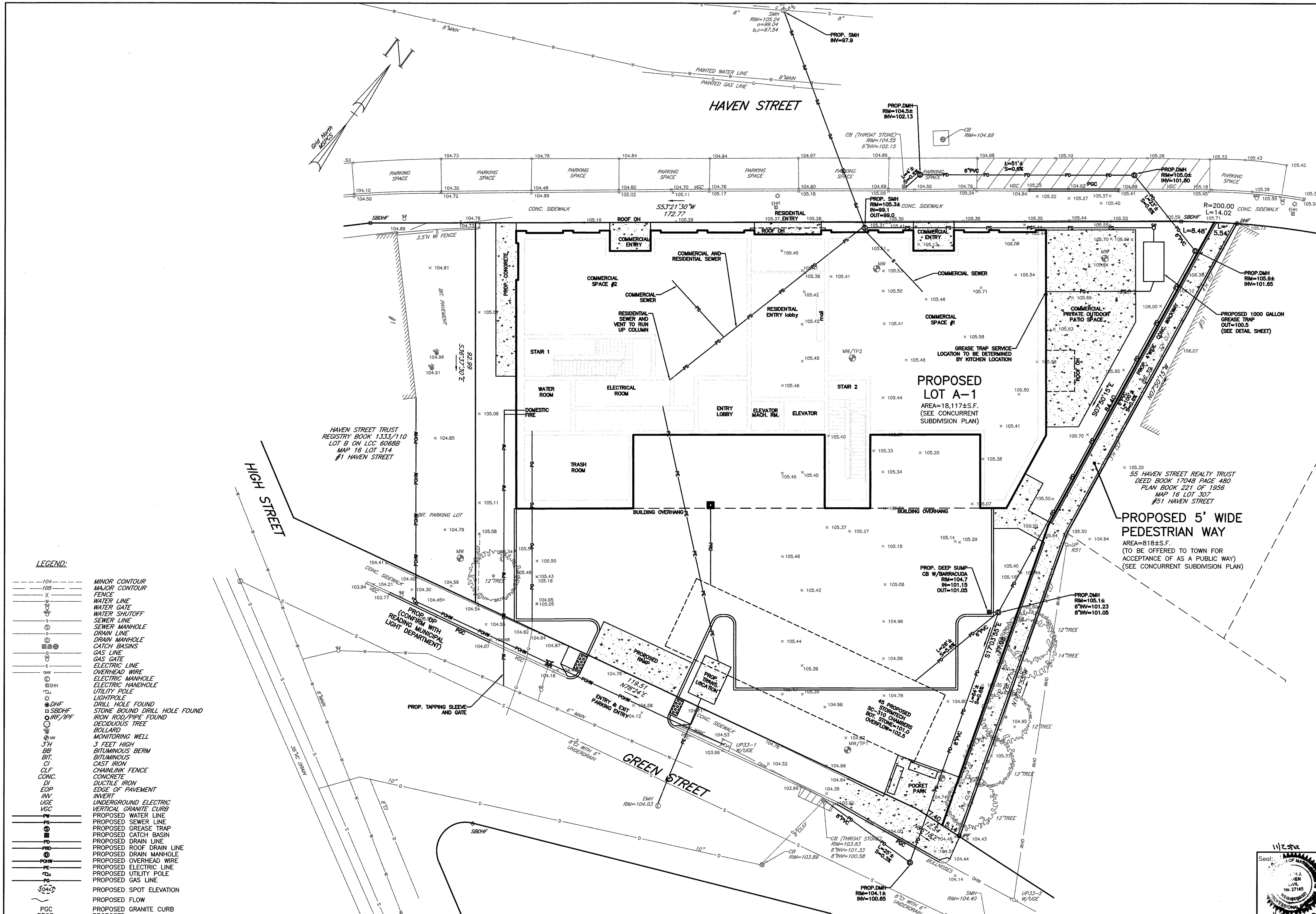
Scale: 1"=10'
Date: November 22, 2022

Drawing Title:
GRADING AND DRAINAGE PLAN 25 HAVEN STREET MIXED-USE DEVELOPMENT READING, MASS.

Seal: 11/22/22

Drawing No.: C5

SHEET 5 OF 8



LEGEND:

—104—	MINOR CONTOUR
—105—	MAJOR CONTOUR
—X—	FENCE
—W—	WATER LINE
WG	WATER GATE
WSO	WATER SHUTOFF
—S—	SEWER LINE
Ⓢ	SEWER MANHOLE
—D—	DRAIN LINE
Ⓓ	DRAIN MANHOLE
	CATCH BASINS
—G—	GAS LINE
GG	GAS GATE
—E—	ELECTRIC LINE
—OHW—	OVERHEAD WIRE
Ⓔ	ELECTRIC MANHOLE
EHH	ELECTRIC HANDHOLE
	UTILITY POLE
	LIGHTPOLE
DHF	DRILL HOLE FOUND
SBDHF	STONE BOUND DRILL HOLE FOUND
IRF/IPF	IRON ROD/PIPE FOUND
	DECIDUOUS TREE
	BOLLARD
MW	MONITORING WELL
3'H	3 FEET HIGH
BB	BITUMINOUS BERM
BIT.	BITUMINOUS
CI	CAST IRON
CLF	CHAINLINK FENCE
CONC.	CONCRETE
DI	DUCTILE IRON
EOP	EDGE OF PAVEMENT
INV	INVERT
UGE	UNDERGROUND ELECTRIC
VGC	VERTICAL GRANITE CURB
—PW—	PROPOSED WATER LINE
—PS—	PROPOSED SEWER LINE
	PROPOSED GREASE TRAP
	PROPOSED CATCH BASIN
—PD—	PROPOSED DRAIN LINE
—PRD—	PROPOSED ROOF DRAIN LINE
	PROPOSED DRAIN MANHOLE
—POHW—	PROPOSED OVERHEAD WIRE
—PE—	PROPOSED ELECTRIC LINE
	PROPOSED UTILITY POLE
—PG—	PROPOSED GAS LINE
104x7	PROPOSED SPOT ELEVATION
	PROPOSED FLOW
PGC	PROPOSED GRANITE CURB
PROP.	PROPOSED

Prepared For:

25 HAVEN STREET, LLC
25 HAVEN STREET
READING, MASSACHUSETTS
REGISTRY BOOK 1557/74
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No.	Revision	Date
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Scale: 1"=10'
0' 5' 10' 20'

Date: November 22, 2022

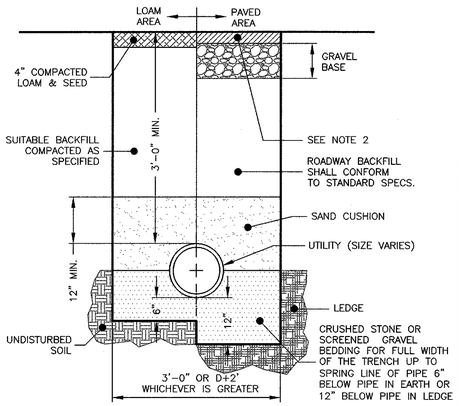
Drawing Title:

UTILITY PLAN
25 HAVEN STREET
MIXED-USE DEVELOPMENT
READING, MASS.

Seal: COMMONWEALTH OF MASSACHUSETTS, REGISTERED PROFESSIONAL ENGINEER, CIVIL, No. 27145
11/23/22

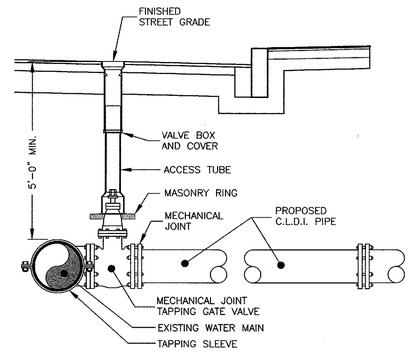
Drawing No.: C6

SHEET 6 OF 8



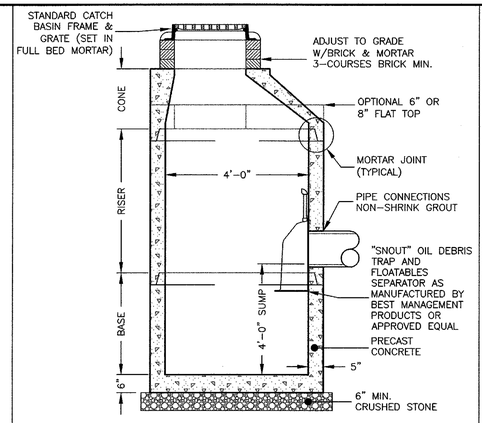
UTILITY TRENCH
NOT TO SCALE

NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.



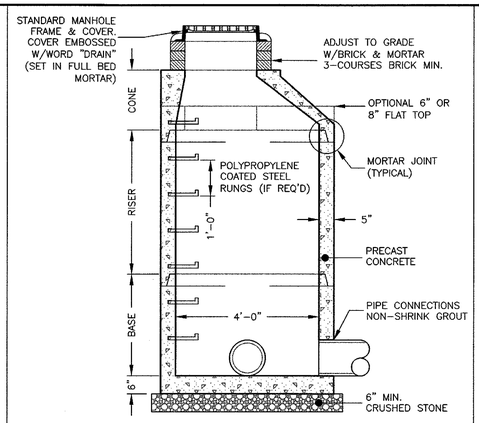
TAPPING SLEEVE & GATE
NOT TO SCALE

NOTES:
1. CONCRETE THRUST BLOCK TO BE USED ONLY WHERE IT WILL BEAR ON UNDISTURBED EARTH.
2. USE RESTRAINED JOINT FITTINGS OR TIE RODS WHERE CONCRETE THRUST BLOCK IS UNACCEPTABLE.
3. SIZE OF BLOCK OR MEGALUG TO BE DESIGNED FOR SPECIFIC CONDITIONS.



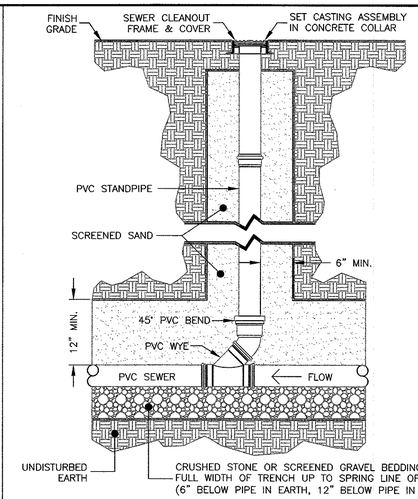
PRE-CAST CATCH BASIN
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."

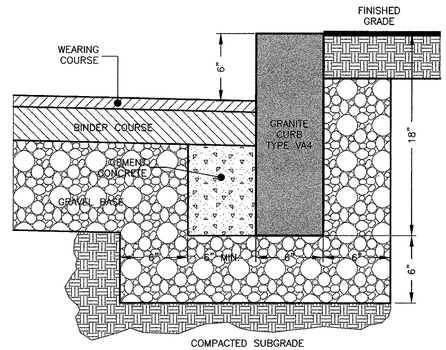


PRE-CAST DRAIN MANHOLE
NOT TO SCALE

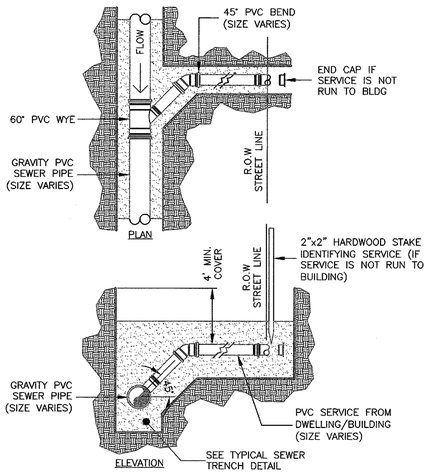
NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



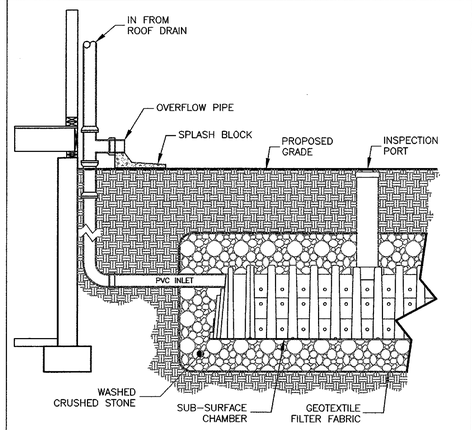
SEWER SERVICE CLEANOUT
NOT TO SCALE



VERTICAL GRANITE CURB
NOT TO SCALE

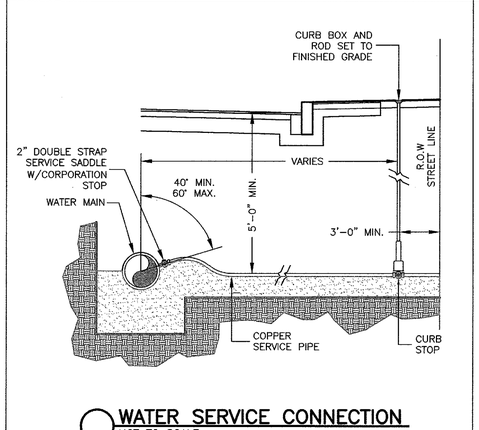


SEWER SERVICE CONNECTION
NOT TO SCALE



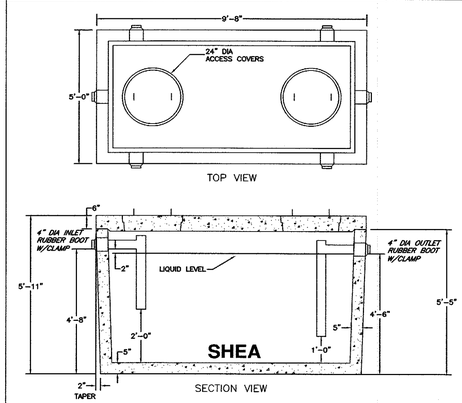
ROOF DRAIN TO SUB-SURFACE CHAMBER
NOT TO SCALE

NOTE:
1. CHAMBERS SHALL BE INSTALLED A MINIMUM OF 10' FROM STRUCTURE.



WATER SERVICE CONNECTION
NOT TO SCALE

NOTES:
1. CORPORATIONS 1-1/2" DIA. AND GREATER SHALL BE INSTALLED USING A TAPPING SADDLE AND SHELL CUTTER.
2. WHERE WATER SERVICE MUST CROSS SEWER MAIN, MAINTAIN A MINIMUM 18" CLEARANCE ABOVE THE SEWER MAIN WHILE MAINTAINING A DEPTH OF 5'-0" BELOW SURFACE. TO MAINTAIN 18" OF CLEARANCE FROM SEWER, THE 5'-0" DEPTH MAY BE REDUCED BY INSTALLING A 2" LAYER OF RIGID FOAM INSULATION ABOVE THE WATER SERVICE FOR EVERY FOOT THE DEPTH IS REDUCED.
3. ACTUAL SERVICE LOCATIONS WILL BE DETERMINED IN FIELD TO SAVE SPECIMEN TREES.

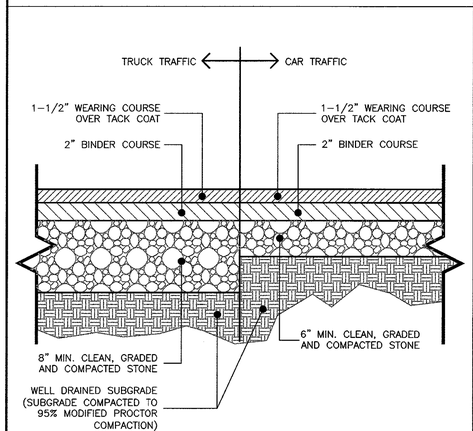


NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. CONSTRUCTION OF GREASE TRAPS CONFORMS WITH 310 CMR, SECTION 15.00 DEP TITLE 5 REGS.
3. ALL REINFORCEMENT PER ASTM C1227.
4. TEES AND BAFFLES SOLD SEPARATELY.
5. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.
6. DESIGNED FOR AASHTO HS-20 LOADING, 1 TO 5 FT COVER.

WEIGHT:
BOTTOM = 11,250#
10" TOP = 5,950#
6" TOP = 3,575#

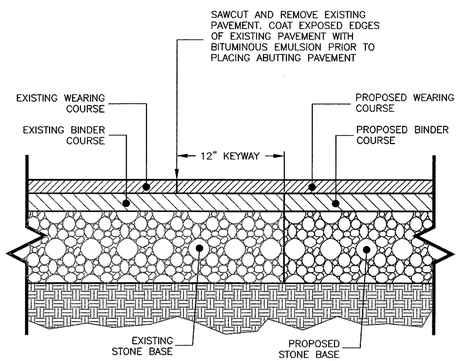
ITEM NO.		
M1000H	H-20 (6" TOP)	
M1000HT10	H-20 (10" TOP)	

1000 GALLON GREASE TRAP
NOT TO SCALE



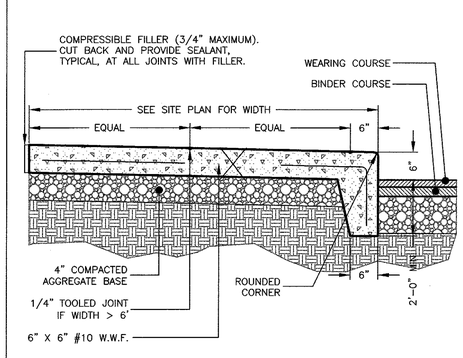
PAVEMENT SECTION
NOT TO SCALE

NOTE:
THIS PAVEMENT SECTION DETAIL REFLECTS MINIMUM REQUIREMENTS. ENGINEER TO DETERMINE DESIGN BASED ON GEOTECHNICAL DATA.

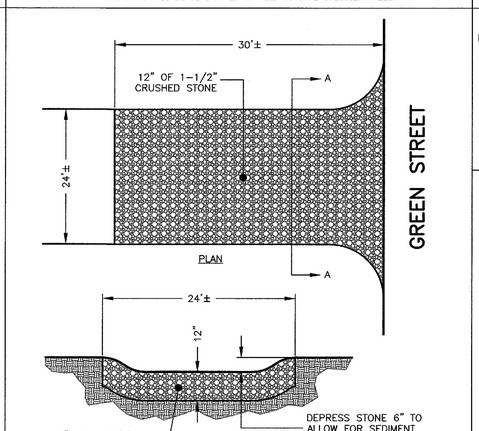


PAVEMENT KEYWAY
NOT TO SCALE

NOTE:
THIS PAVEMENT SECTION DETAIL REFLECTS MINIMUM REQUIREMENTS. ENGINEER TO DETERMINE DESIGN BASED ON GEOTECHNICAL DATA.

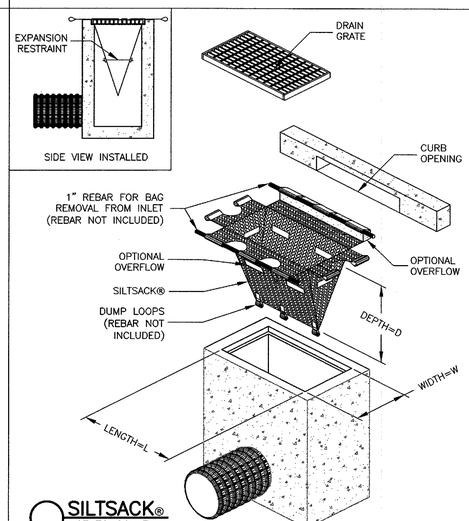


CONCRETE SIDEWALK (BUILDING PERIMETER)
NOT TO SCALE



TIRE TRACKING PAD
NOT TO SCALE

NOTE:
PROVIDE TRANSITION BETWEEN CONSTRUCTION ENTRANCE AND PUBLIC RIGHT-OF-WAY. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING OF SEDIMENT INTO PUBLIC RIGHT-OF-WAY



SILTSACK®
NOT TO SCALE

Prepared For:

25 HAVEN STREET, LLC

25 HAVEN STREET
READING, MASSACHUSETTS
REGISTRY BOOK 1557/74
ASSESSORS MAP 16 LOT 309

Prepared By:

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Drawn By: JG
Checked By: PJO
Project File: REA-0419
Comp. No: REA175

- [x] Issued For Permit
- [ ] Issued For Review
- [ ] Issued For Bid
- [ ] Issued For Construction
- [x] Not For Construction

No.	Revision	Date
10		
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Scale: NOT TO SCALE

DATE: NOVEMBER 22, 2022

Drawing Title:

DETAIL SHEET
25 HAVEN STREET
MIXED-USE DEVELOPMENT
READING, MASS.

Drawing No.:

C7

ADVANCED DRAINAGE SYSTEMS, INC.

SiteASSIST® StormTech FOR STORMTECH INSTRUCTIONS, DOWNLOAD THE INSTALLATION APP

SC-310 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-310.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE OR POLYETHYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418-16a (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2922 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310 SYSTEM

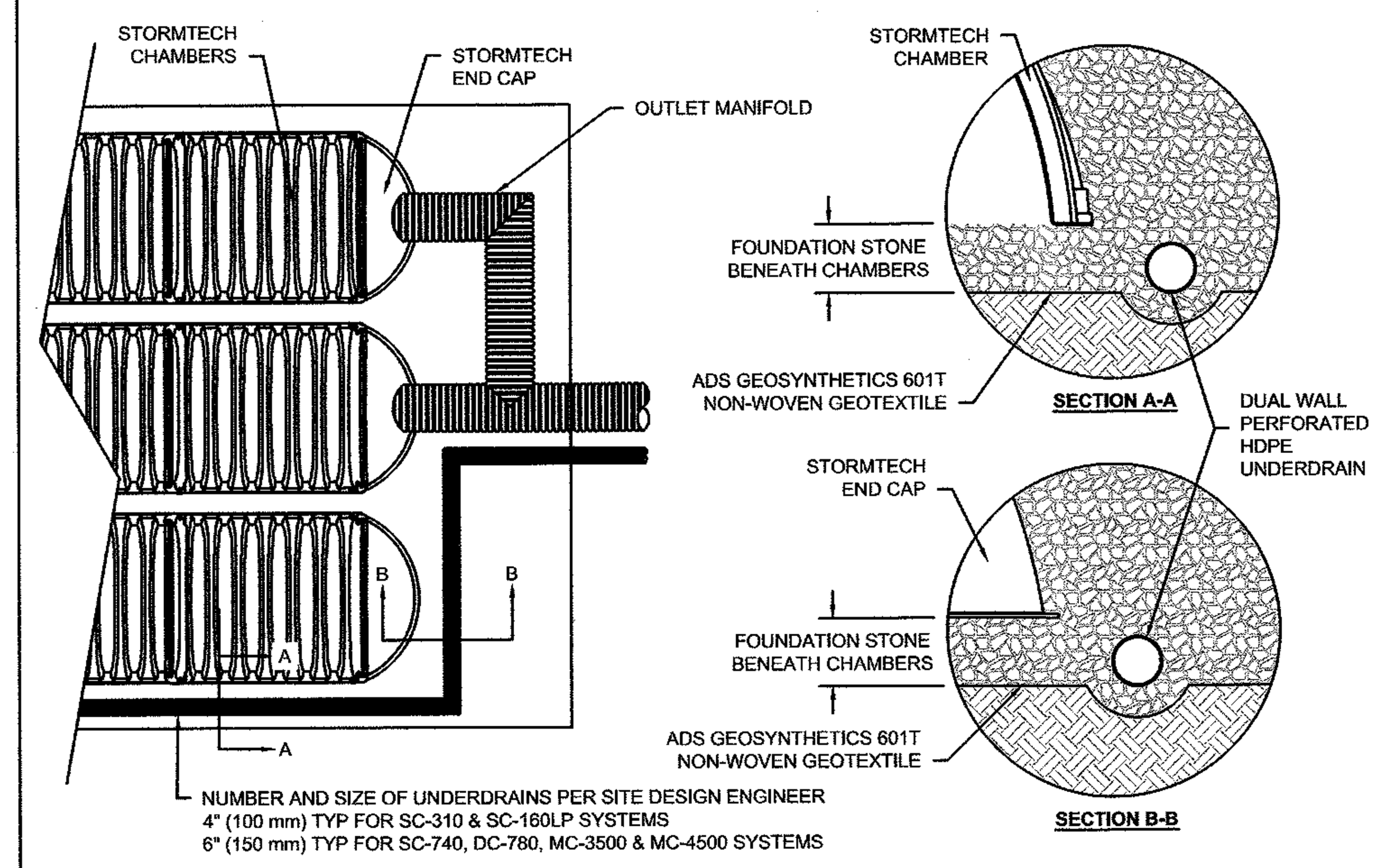
1. STORMTECH SC-310 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS.
   STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

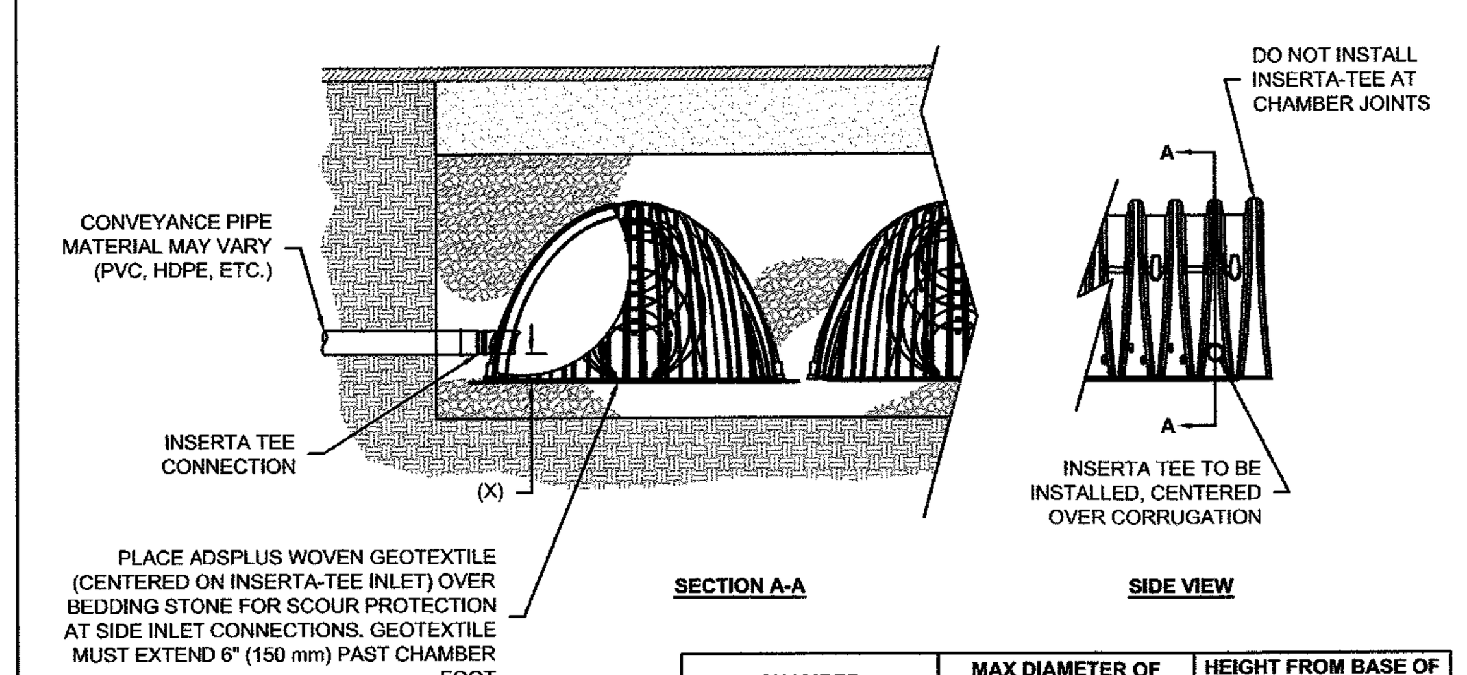
1. STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



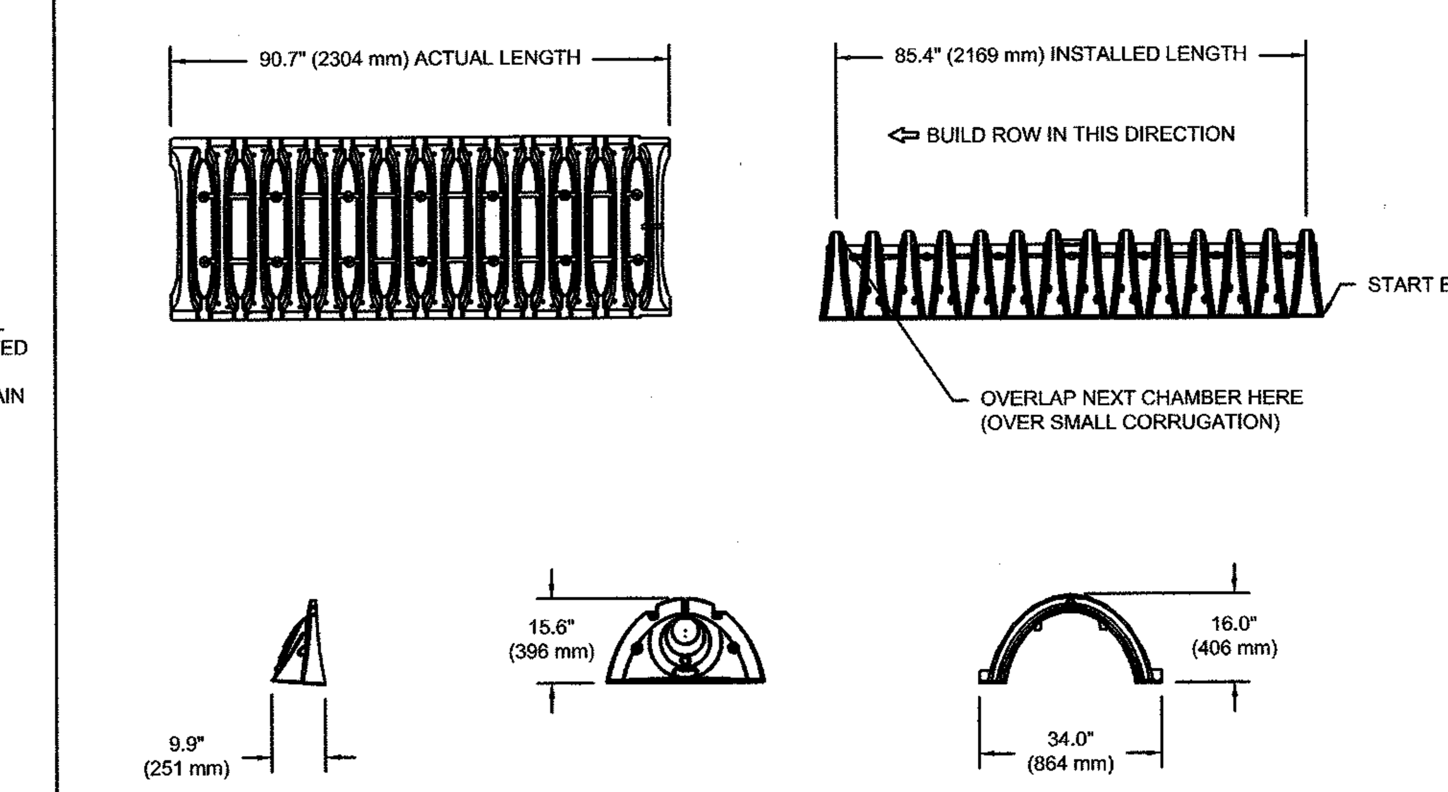
5 UNDERDRAIN DETAIL



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

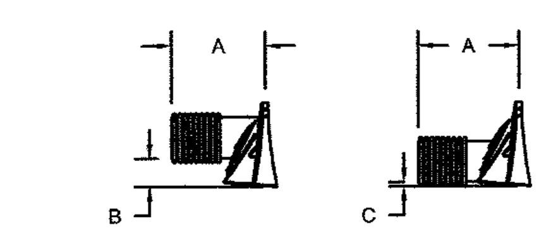
6 INSERTA-TEE SIDE INLET DETAIL



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	34.0" X 16.0" X 85.4"	(864 mm X 406 mm X 2169 mm)
CHAMBER STORAGE	14.7 CUBIC FEET	($0.42\ m^3$)
MINIMUM INSTALLED STORAGE*	31.0 CUBIC FEET	($0.88\ m^3$)
WEIGHT	35.0 lbs.	(16.8 kg)

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



PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "BR"
PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE CORED END CAPS END WITH "PC"

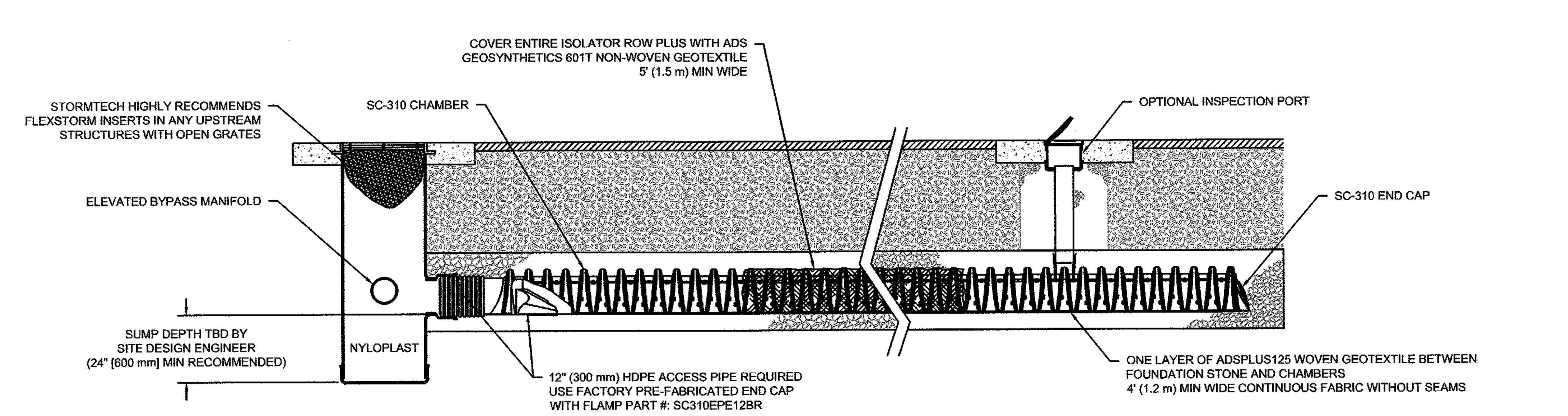
PART #	STUB	A	B	C
SC310EPE06T / SC310EPE06TPC	6" (150 mm)	9.6" (244 mm)	5.8" (147 mm)	—
SC310EPE06B / SC310EPE06BPC			—	0.5" (13 mm)
SC310EPE08T / SC310EPE08TPC	8" (200 mm)	11.9" (302 mm)	3.5" (89 mm)	—
SC310EPE08B / SC310EPE08BPC			—	0.6" (15 mm)
SC310EPE10T / SC310EPE10TPC	10" (250 mm)	12.7" (323 mm)	1.4" (36 mm)	—
SC310EPE10B / SC310EPE10BPC			—	0.7" (18 mm)
SC310EPE12B	12" (300 mm)	13.5" (343 mm)	—	0.9" (23 mm)
SC310EPE12BR	12" (300 mm)	13.5" (343 mm)	—	0.9" (23 mm)

ALL STUBS, EXCEPT FOR THE SC310EPE12B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

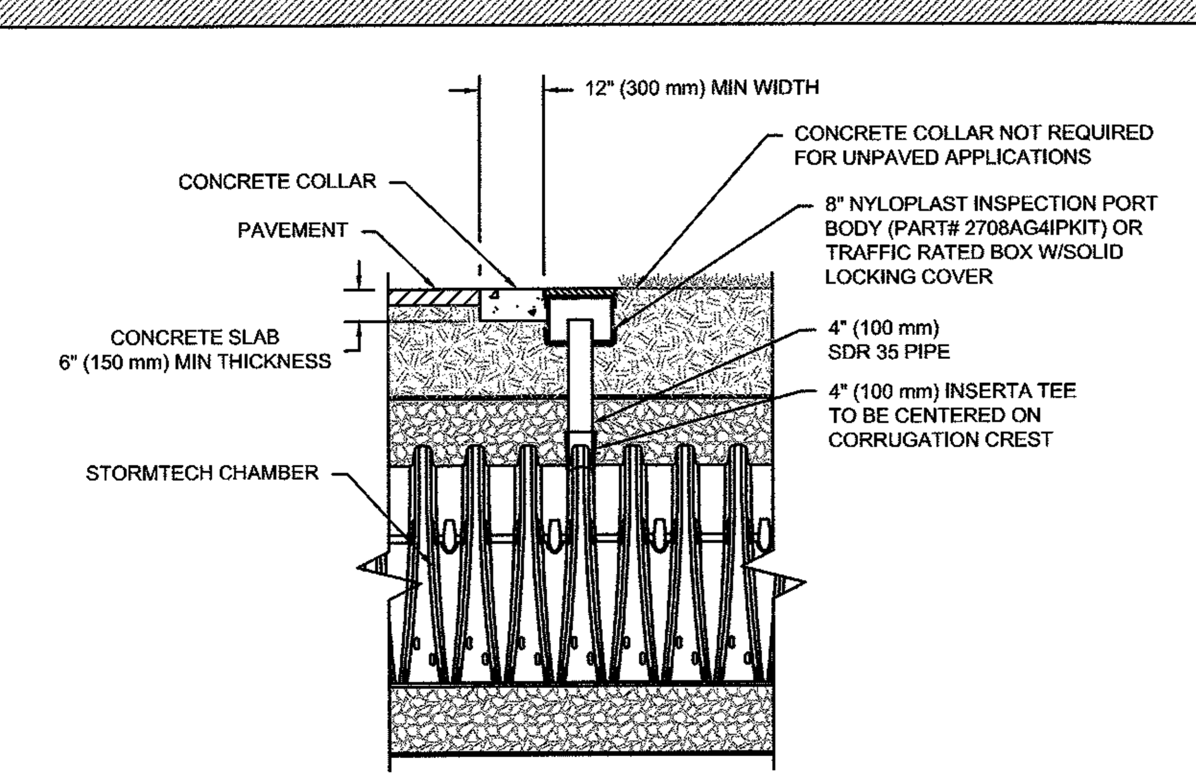
* FOR THE SC310EPE12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

2 SC-310 TECHNICAL SPECIFICATIONS



3 SC-310 ISOLATOR ROW PLUS DETAIL



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4 4" PVC INSPECTION PORT DETAIL (SC SERIES CHAMBER)

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

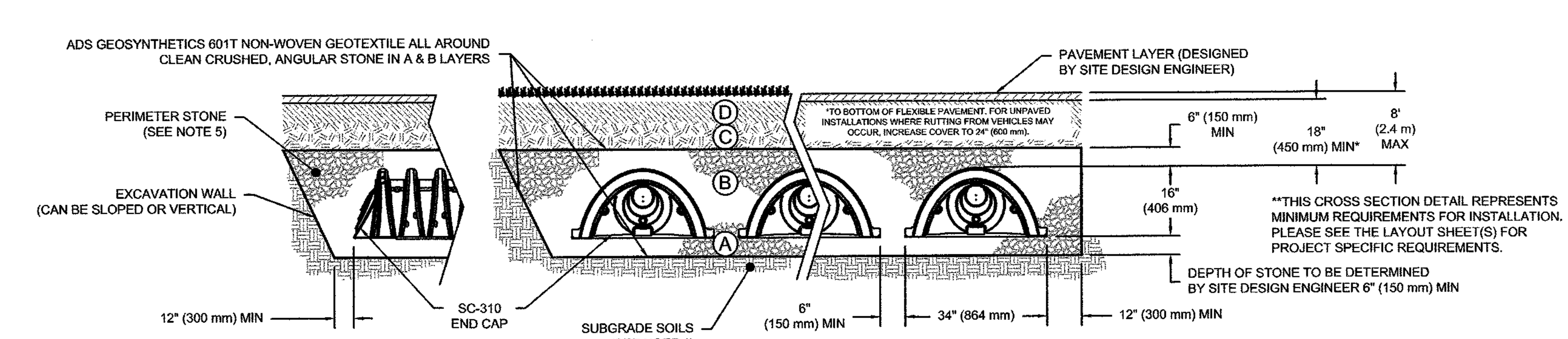
NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

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

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418-16a (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

1 SC-310 CROSS SECTION DETAIL

DRAWN: | REVIEWED: | REV: | DATE: | PROJECT NO: | NOT TO SCALE

SC-310 STANDARD DETAILS

4640 TRUEMAN BLVD HILLIARD, OH 43026

ADVANCED DRAINAGE SYSTEMS, INC.

SHEET

Prepared For:
25 HAVEN STREET, LLC
25 HAVEN STREET
READING, MASSACHUSETTS
REGISTRY BOOK 15577/4
ASSESSORS MAP 16 LOT 309

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Design By:
Drawn By:
Checked By:
Project File: REA-0419
Comp. No: REA175
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No.	Revision	Date
1		
2		
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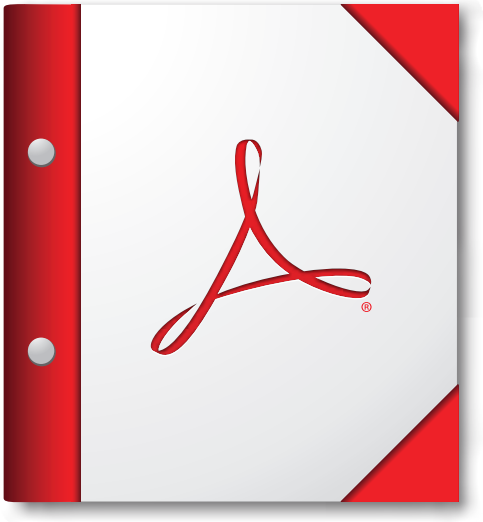
10		

Scale: NOT TO SCALE

DATE: NOVEMBER 22, 2022

Drawing Title:
DETAIL SHEET
25 HAVEN STREET
MIXED-USE DEVELOPMENT
READING, MASS.

Drawing No.:
C8



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O'SULLIVAN ARCHITECTS, INC.
ARCHITECTURE ▪ INTERIORS ▪ PLANNING

SUBMISSION DRAWING LIST

~~REVISED: 10/24/2022~~

REVISED 2: 11/28/2022

REGISTERED ARCHITECT
DAVID M. O'SULLIVAN
No. 8009
READING, MA
COMMONWEALTH OF MASSACHUSETTS

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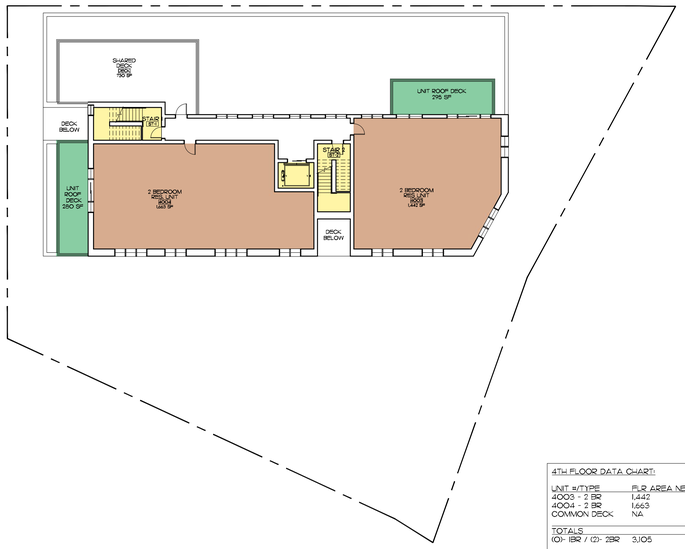
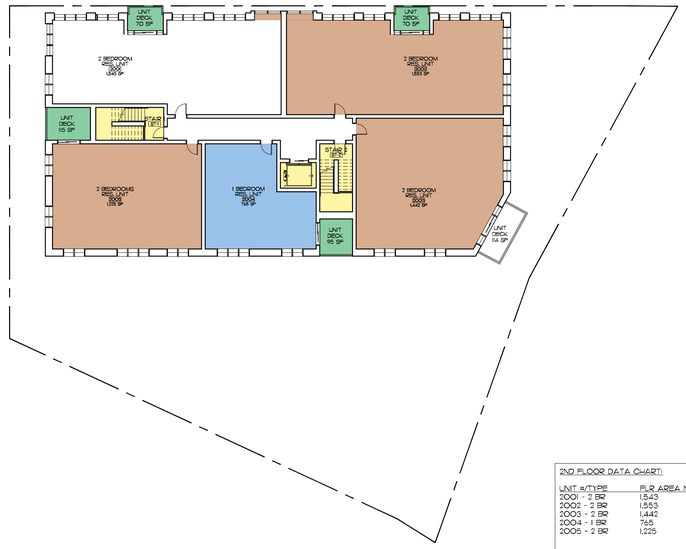


4 FOURTH FLOOR
Scale: 1 to 20

4TH FLOOR DATA CHART:

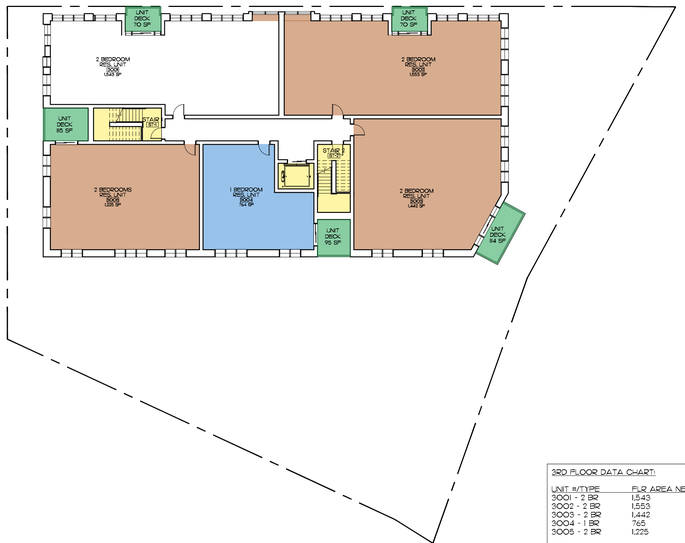
UNIT #/TYPE	FLR AREA NET SF	OPEN SP. SF
4003 - 2 BR	1,442	295
4004 - 2 BR	1,663	280
COMMON DECK	NA	730
TOTALS		
(0)- 1BR / (2)- 2BR	3,105	1,305



2 SECOND FLOOR
Scale: 1 to 20

2ND FLOOR DATA CHART:

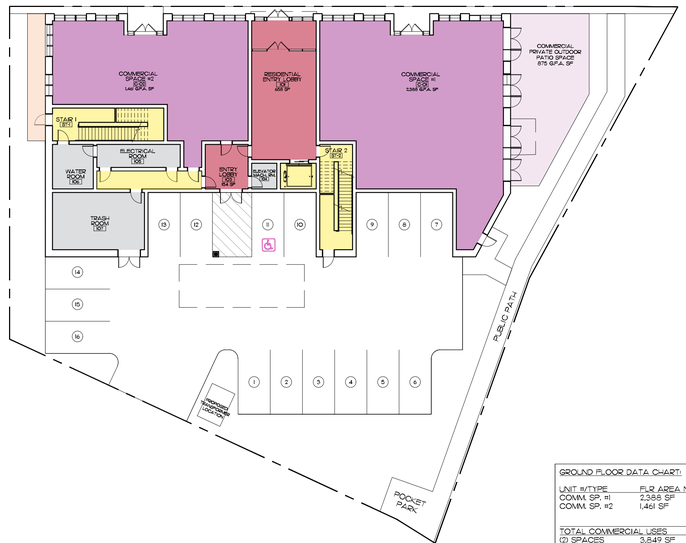
UNIT #/TYPE	FLR AREA NET SF	OPEN SP. SF
2001 - 2 BR	1,543	70
2002 - 2 BR	1,553	70
2003 - 2 BR	1,442	114
2004 - 1 BR	765	95
2005 - 2 BR	1,225	115
TOTALS		
(1)- 1BR / (4)- 2BR	6,528	464 SF



3 THIRD FLOOR
Scale: 1 to 20

3RD FLOOR DATA CHART:

UNIT #/TYPE	FLR AREA NET SF	OPEN SP. SF
3001 - 2 BR	1,543	70
3002 - 2 BR	1,553	70
3003 - 2 BR	1,442	114
3004 - 1 BR	765	95
3005 - 2 BR	1,225	115
TOTALS		
(1)- 1BR / (4)- 2BR	6,528	464 SF



1 GROUND FLOOR
Scale: 1 to 20

GROUND FLOOR DATA CHART:

UNIT #/TYPE	FLR AREA NET SF	OPEN SP. SF
COMM. SP. #1	2,588 SF	675
COMM. SP. #2	1,461 SF	0
TOTAL COMMERCIAL USES		
(2) SPACES	3,549 SF	675
(TOTAL COMMERCIAL SPACE ON SITE)	4,724 (65.1% VS. GROSS FL. AREA)	
RESIDENT LOBBY	658 SF	
TOTAL FLOOR AREA NET (INCLUDING GARAGE)	8,637 SF	
PUBLIC USE OPEN SPACE		1,308 SF
PRIVATE AMENITY OPEN SPACE:		675 SF
GROUND LEVEL OPEN SPACE:		3,392 SF
TOTAL OPEN SPACE		5,575 SF
PARKING:	16 PROVIDED (1.33 PER UNIT)	

TOTAL BUILDING DATA CHART:

EXISTING BUILDING SIZE: +/-7,953 SF COMMERCIAL USE
EXISTING BUILDING PARKING COUNT: 18 SPACES

NEW BUILDING:

ITEM	TOTAL FLR AREA NET SF
GROUND	8,637
SECOND	8,416
THIRD	8,416
FOURTH	4,540
TOTAL	30,009 SF

FAR:	1.58 (+/-18,935 LOT AREA)
LOT COVERAGE:	13,070 SF (69%) (INCLUDES SURFACE PARKING)
HEIGHT:	44' PROVIDED (45' ALLOWED)
SETBACKS -	
FRONT:	2' (0' MIN - 10' MAX)
SIDE:	10' & 16' MIN. (15' ALLOWED)
REAR:	NA OR 25' MIN. (15' ALLOWED)
(REAR & SIDE 15' WHEN ABUTTING RESIDENT USE/ZONE)	
CUMULATIVE:	53' PROVIDED
PARKING:	16 PROVIDED (1.33 PER UNIT)

OPEN SPACE -

FLR	PRIVATE	GREEN
1	875	4,700
2	464	
3	464	
4	1,305	
SUB-TOTAL:	3,108	4,700
TOTAL	7,808 SF (651 SF/UNIT)	

UNIT DENSITY PER ACRE: (20 PER ACRE REQUIRED)
PROPOSED: 27.9 UNIT/ACRE (*)

(*) WAIVER REQUESTED

TOTAL UNITS: 2 (1-BR) 10 (2-BR) = 12 TOTAL

RELIEF REQUEST CHART

ITEM	REQUIRED	PROVIDED	RELIEF (Y/N)
MAX F.A.R.	2.5 (MIXED USE)	1.58	N
MIN. LOT FRONTAGE	50'	186'-9"	N
MAX LOT COVERGE	NA	69%	N
MIN. LOT AREA	NA	+/-18,935	N
MAX. BLDG FRONTAGE	300'	158'-6"	N
YARD SETBACKS:			
FRONT (MIN/MAX)	0'/10'	2'	N
MIN. SIDE	0' (OR 15')	10' /16' MIN.	N
MIN. REAR	0' (OR 15')	25' MIN	N
INTERIOR BETWEEN BLDGS MIN.	15'	NA	N
DWELLING UNIT PER ACRE:	20	27.9	Y
MIN. PARKING:	1.25 (15)	1.33 (16)	N

GRAPHIC KEY:

- 2 BR UNIT TYPE
- 1 BR UNIT TYPE
- EGRESS/CIRCULATION
- COMMERCIAL SPACE
- RESIDENT LOBBY
- UTILITY/MECHANICAL SPACE

OPEN SPACE TYPES:

- PRIVATE OPEN SPACE FOR BUILDING TENANT USE
- OPEN SPACE
- SEMI-PUBLIC OPEN SPACE

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25 Haven Street
Reading, MA

Project Data Page

REGISTERED ARCHITECT DAVID M. O'SULLIVAN No. 6028 READING, MA COMMONWEALTH OF MASSACHUSETTS

SCALE: As Noted

ISSUED / DRAWN BY
4/29/2022

REVISED / REVISED BY
10/24/2022 - REV SUBMISSIONS
11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER
A0.01

SCHEMATIC LANDSCAPE LAYOUT PLAN

Scale: 1/8" = 1'

N

0 1 2 3 5 10 15 25

GENERAL LANDSCAPE NOTES

1. AREAS NOT OTHERWISE DEVELOPED SHALL RECEIVE MIN. 6" COMPACTED DEPTH SCREENED LOAM.
2. EXISTING LOAM, IF ANY, SHALL BE STOCKPILED FOR LATER USE.
3. FINISH COVER OVER PLANTING BEDS SHALL INCLUDE 3" MIN. DEPTH PINE MULCH.
4. FINISH SURFACE SHALL BE GRADED FROM A HIGH POINT AT CENTER OF ISLAND OUT TO THE BACK OF CURB, SEE GRADING, DRAINAGE, AND PAVIGN PLAN FOR FINISHES AND GRADES.
5. AT A MIN. TREES AND SHRUBS SHALL BE WATERED BY FLOODING AS FOLLOWS:
   - 0-3 MONTHS - ONCE PER WEEK
   - 3-6 MONTHS - TWICE PER MONTH
   - 6-12 MONTHS - ONCE PER MONTH
6. NUMBER OF PLANT TYPE AND SIZE PROVIDED IN THE PLANT LIST IS FOR CONTRACTORS CONVENIENCE ONLY. IF DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LIST AND THE NUMBER SHOWN ON THE DRAWINGS, THE GREATER NUMBER SHALL APPLY.
7. ALL PLANT MATERIAL SHALL BE APPROVED THE LANDSCAPE ARCHITECT OR OWNERS REP PRIOR TO ARRIVAL ON SITE.
8. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE.
9. CONTRACTORS SHALL LOCATE AND MARK ALL UTILITIES PRIOR TO PLANTING. ANY CONFLICTS BETWEEN PLANTING AND UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
10. NO SUBSTITUTIONS OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTS AGAINST DAMAGE FROM ON GOING CONSTRUCTION . PROTECTION SHALL BEGIN AT THE TIME THE PLAN IS INSTALLED AND CONTINUE UNTIL FORMAL ACCEPTANCE OF ALL PLANTING.
12. ALL DISTURBED AREAS OUTSIDE THE LIMIT OF USE AREA SHALL BE SEEDED WITH CONSERVATION SEED MIX AND 4" LOAM.

BASIS OF DESIGN PRELIMINARY PLANT SCHEDULE

	QTY.	KEY	BOTANICAL NAME	COMMON NAME	SIZE
			TREES		
	5	RM	ACER RUBRUM 'RED SUNSET	RED SUNSET MAPLE	2.5-3"
	6	GIN	GINKGO BILOBA 'AUTUMN GOLD'	MAIDENHAIR TREE	2.5-3"
			SHRUBS		
	3	ACP	AZALEA 'CORNELL PINK'	CORNELL PINK AZALEA	2-3"
	8	GVBX	BUXUS KOREANA 'GREEN VELVET'	GREEN VELVET BOXWOOD	2-2.5"
	4	KOR	ROSA 'KNOCKOUT' (IN PLANTERS)	KNOCKOUT ROSE	2 GAL.
	4	OLHY	HYDRANGEA QUERCIFOLIA	OAK LEAF HYDRANGEA	3 GAL.
			PERENNIALS		
	30	FG	PENNISETUM ALOPECURIODES	FOUNTAIN GRASS	1 GAL.
	28	GER	GERANIUM MACRORRHIZUM 'SPESSART'	CRANESBILL GERANIUM	1 GAL.

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25 Haven Street
Reading, MA

Schematic Landscape Layout Plan

REGISTERED ARCHITECT DAVID M. O'SULLIVAN No. 6589 READING MA COMMONWEALTH OF MASSACHUSETTS

SCALE: As Noted

ISSUED / DRAWN BY
4/29/2022

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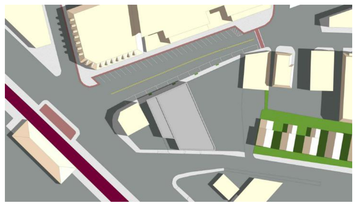
11/28/2022 - REV 2 SUBMISSION

JOB NO: 21015

SHEET NUMBER
A0.02

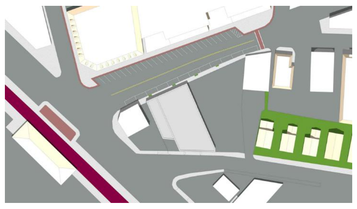
SUMMER SOLSTICE

N



S9 EXISTING: +/- 9AM
Scale: 1 to 20

S9 PROPOSED: +/- 9AM
Scale: 1 to 20



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Scale: 1 to 20

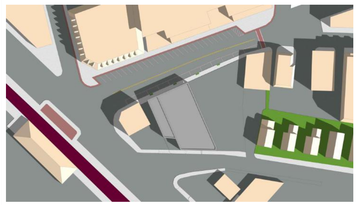
S12 PROPOSED: +/- NOON
Scale: 1 to 20

S4 EXISTING: +/- 4 PM
Scale: 1 to 20

S4 PROPOSED: +/- 4PM
Scale: 1 to 20

FALL/SPRING EQUINOX

N



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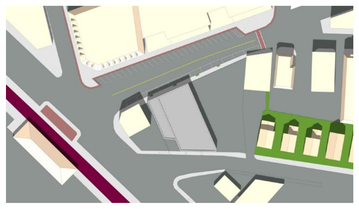

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Scale: 1 to 20

F12 PROPOSED: +/- NOON
Scale: 1 to 20

F4 EXISTING: +/- 4 PM
Scale: 1 to 20

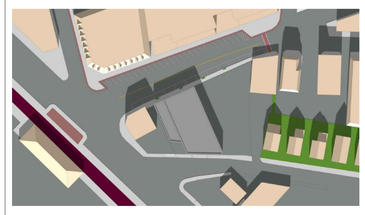
F4 PROPOSED: +/- 4PM
Scale: 1 to 20

WINTER SOLSTICE

N

W9 EXISTING: +/- 9AM
Scale: 1 to 20

W9 PROPOSED: +/- 9AM
Scale: 1 to 20



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Scale: 1 to 20

W12 PROPOSED: +/- NOON
Scale: 1 to 20

W4 EXISTING: +/- 4 PM
Scale: 1 to 20

W4 PROPOSED: +/- 4PM
Scale: 1 to 20

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Reading, MA

SHADOW STUDIES

REGISTERED ARCHITECT
DAVID M. O'SULLIVAN
No. 8018
READING, MA
COMMONWEALTH OF MASSACHUSETTS

SCALE: As Noted

ISSUED / DRAWN BY
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JOB NO: 21015

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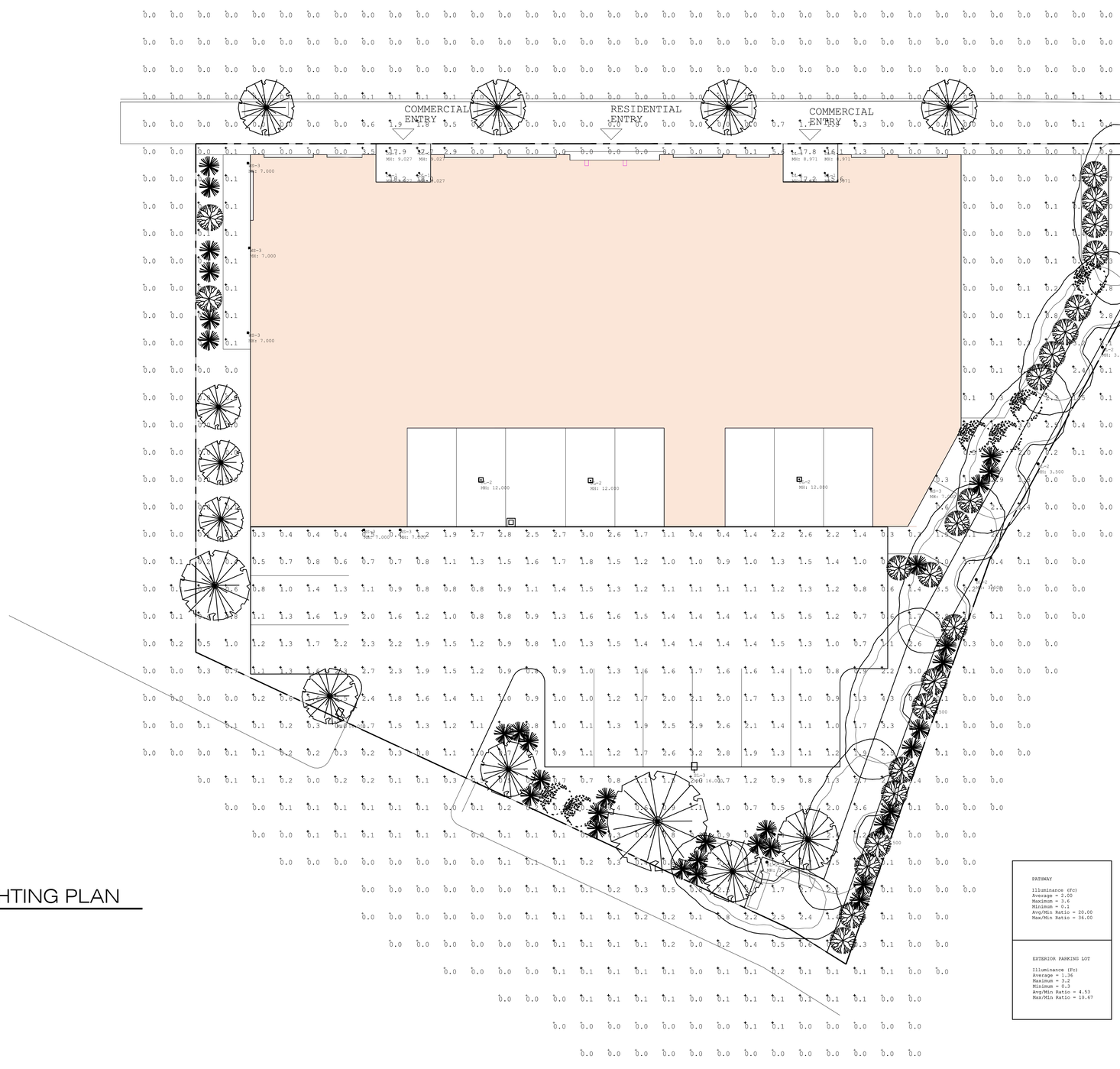

L SCHEMATIC LIGHTING PLAN

Scale: 1 to 10'

N

0 1 2 3 5 10 15 25

Luminaire Schedule								
Symbol	Tag	Qty	Label	Arrangement	LLF	Description	Lum. Watts	Lum. Lumens
		7	BL-2	Single	0.900	PA7R-NU3HS-12L-010-4K7	14	744
		8	DL-1	Single	0.900	ENCL2SF-L081, ENCL2SFD-930W-W	7.4	648
		3	DL-2	Single	0.900	LSQ1-25-4K7-UNV-X	24.3	3170
		1	SL-1	Single	0.900	VP-1-160L-35-4K7-4F-BC	34.9	2687
		1	SL-3	Single	0.900	VP-1-160L-35-4K-4F	34.9	4567
		6	WS-3	Single	0.900	BRIAN MT2	33.51	193

Calculation Summary								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	Grid Z
GRID AT GRADE	Illuminance	Fc	0.67	18.2	0.0	N.A.	N.A.	0
EXTERIOR PARKING LOT	Illuminance	Fc	1.36	3.2	0.3	4.53	10.67	
PATHWAY	Illuminance	Fc	2.00	3.6	0.1	20.00	36.00	

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omnilite illuminate

25 Haven Street
Reading, MA

Schematic Light Layout & Photometric

PREPARED BY
OTHERS

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04/29/2022

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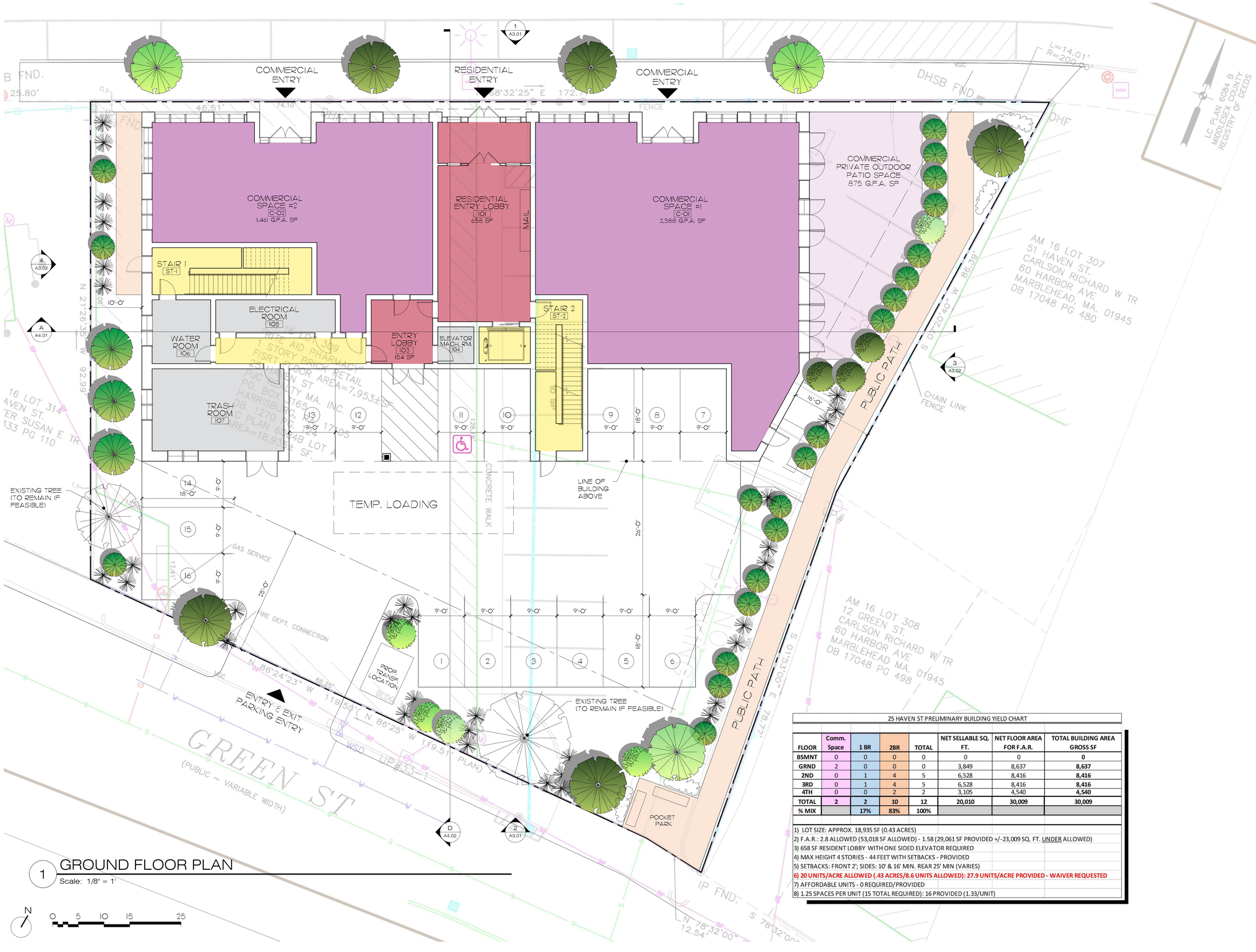

1 GROUND FLOOR PLAN

Scale: 1/8" = 1'

N 0 5 10 15 25

25 HAVEN ST PRELIMINARY BUILDING YIELD CHART

FLOOR	Comm. Space	1 BR	2BR	TOTAL	NET SELLABLE SQ. FT.	NET FLOOR AREA FOR F.A.R.	TOTAL BUILDING AREA GROSS SF
BSMNT	0	0	0	0	0	0	**0**
GRND	2	0	0	0	3,849	8,637	**8,637**
2ND	0	1	4	5	6,528	8,416	**8,416**
3RD	0	1	4	5	6,528	8,416	**8,416**
4TH	0	0	2	2	3,105	4,540	**4,540**
TOTAL	**2**	**2**	**10**	**12**	**20,010**	**30,009**	**30,009**
% MIX		**17%**	**83%**	**100%**			

1) LOT SIZE: APPROX. 18,935 SF (0.43 ACRES)
2) F.A.R.: 2.8 ALLOWED (53,018 SF ALLOWED) - 1.58 (29,061 SF PROVIDED +/-23,009 SQ. FT. UNDER ALLOWED)
3) 658 SF RESIDENT LOBBY WITH ONE SIDED ELEVATOR REQUIRED
4) MAX HEIGHT 4 STORIES - 44 FEET WITH SETBACKS - PROVIDED
5) SETBACKS: FRONT 2'; SIDES: 10' & 16' MIN. REAR 25' MIN (VARIES)
6) 20 UNITS/ACRE ALLOWED (.43 ACRES/8.6 UNITS ALLOWED): 27.9 UNITS/ACRE PROVIDED - WAIVER REQUESTED
7) AFFORDABLE UNITS - 0 REQUIRED/PROVIDED
8) 1.25 SPACES PER UNIT (15 TOTAL REQUIRED): 16 PROVIDED (1.33/UNIT)

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25 Haven Street
Reading, MA

Ground Floor Plan

REGISTERED ARCHITECT DAVID B. O'SULLIVAN NO. 6088 READING, MA COMMONWEALTH OF MASSACHUSETTS

SCALE: As Noted

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04/29/2022
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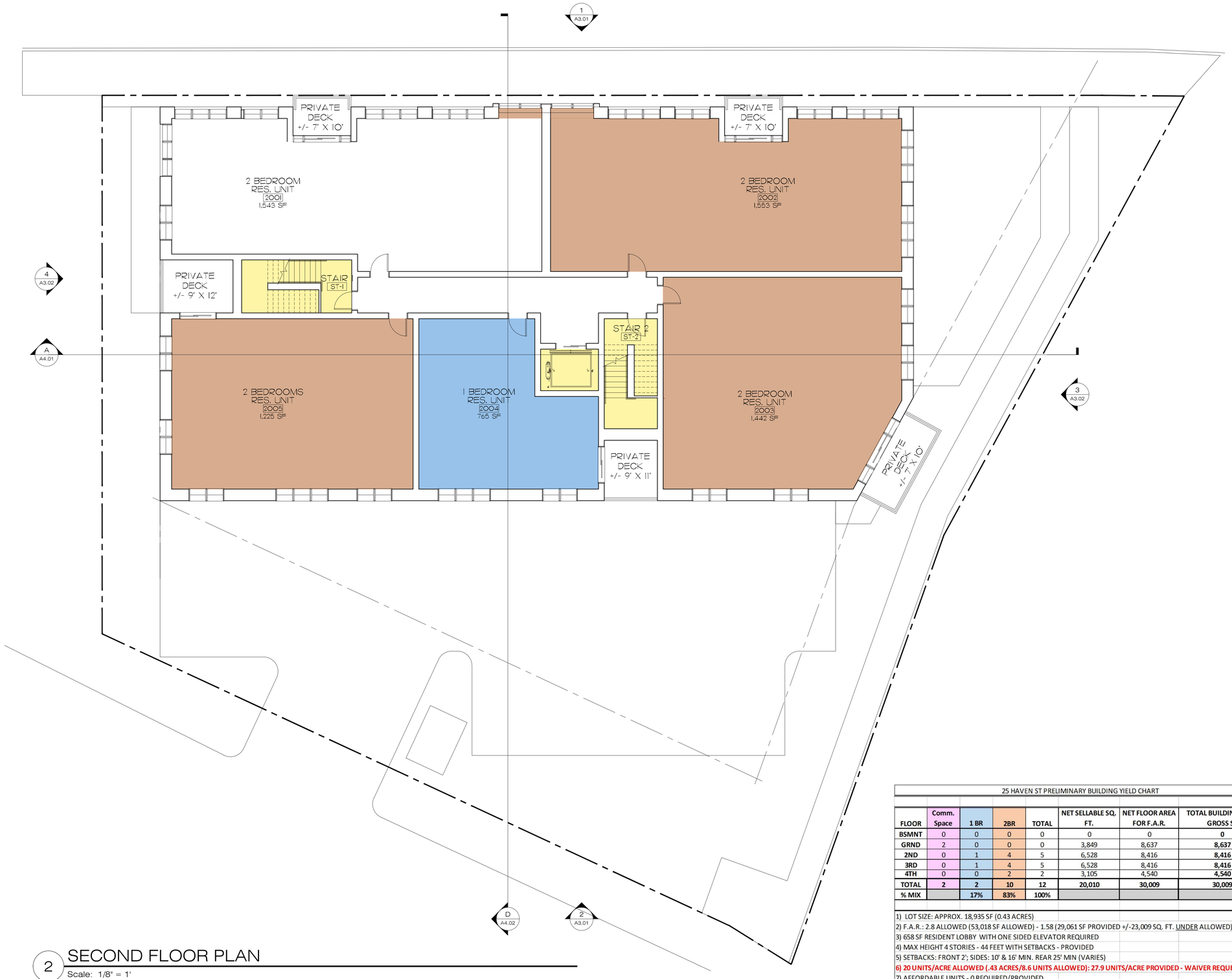

2 SECOND FLOOR PLAN

Scale: 1/8" = 1'

N

0 5 10 15 25

25 HAVEN ST PRELIMINARY BUILDING YIELD CHART

FLOOR	Comm. Space	1 BR	2BR	TOTAL	NET SELLABLE SQ. FT.	NET FLOOR AREA FOR F.A.R.	TOTAL BUILDING AREA GROSS SF
BSMNT	0	0	0	0	0	0	**0**
GRND	2	0	0	0	3,849	8,637	**8,637**
2ND	0	1	4	5	6,528	8,416	**8,416**
3RD	0	1	4	5	6,528	8,416	**8,416**
4TH	0	0	2	2	3,105	4,540	**4,540**
TOTAL	2	2	10	12	20,010	30,009	30,009
% MIX		17%	83%	100%			

1) LOT SIZE: APPROX. 18,935 SF (0.43 ACRES)
2) F.A.R.: 2.8 ALLOWED (53,018 SF ALLOWED) - 1.58 (29,061 SF PROVIDED +/-23,009 SQ. FT. UNDER ALLOWED)
3) 658 SF RESIDENT LOBBY WITH ONE SIDED ELEVATOR REQUIRED
4) MAX HEIGHT 4 STORIES - 44 FEET WITH SETBACKS - PROVIDED
5) SETBACKS: FRONT 2'; SIDES: 10' & 16' MIN. REAR 25' MIN (VARIES)
6) 20 UNITS/ACRE ALLOWED (.43 ACRES/8.6 UNITS ALLOWED): 27.9 UNITS/ACRE PROVIDED - WAIVER REQUESTED
7) AFFORDABLE UNITS - 0 REQUIRED/PROVIDED
8) 1.25 SPACES PER UNIT (15 TOTAL REQUIRED): 16 PROVIDED (1.33/UNIT)

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25 Haven Street
Reading, MA

Second Floor Plan

SCALE: As Noted

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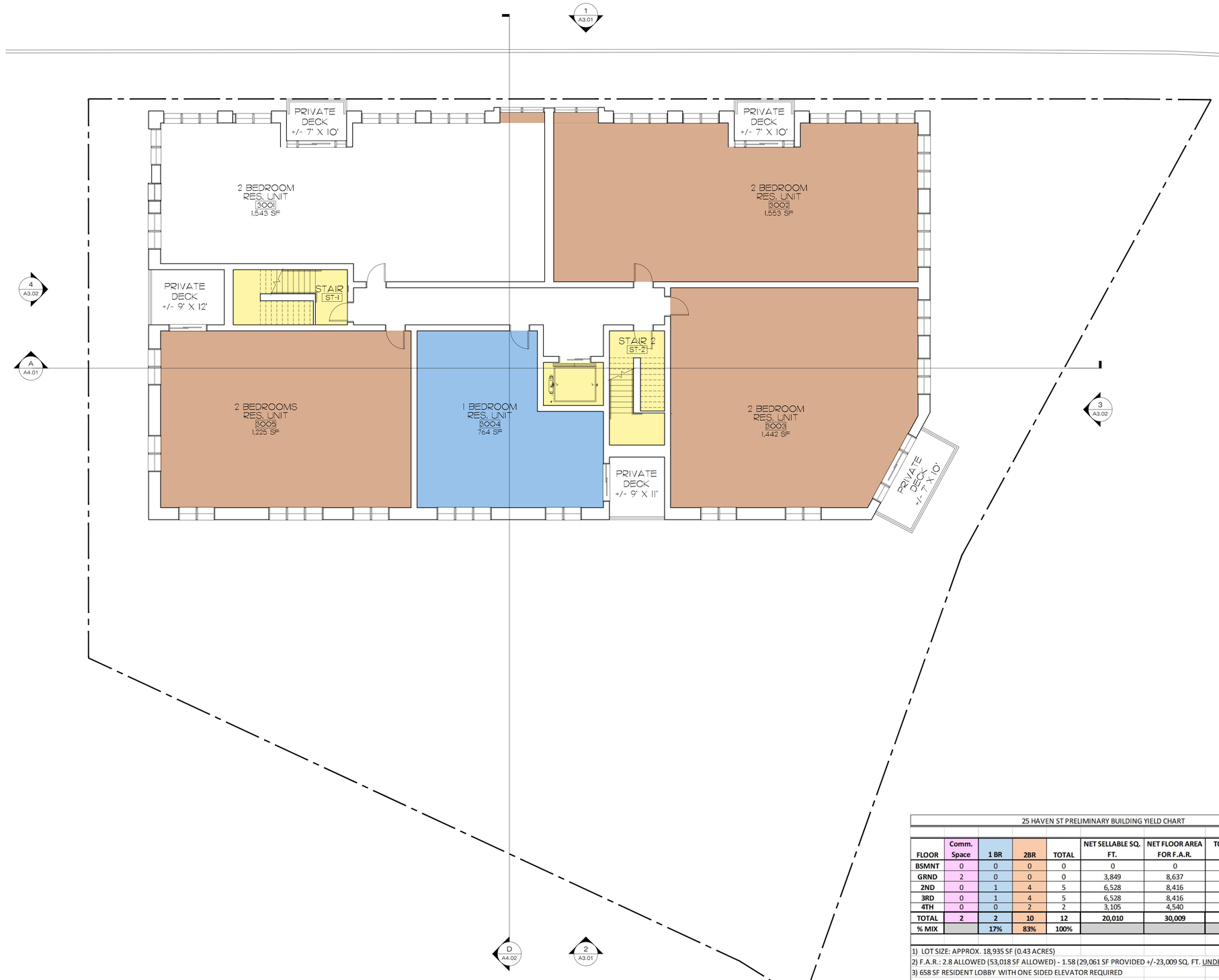

3 THIRD FLOOR PLAN

Scale: 1/8" = 1'

N

0 5 10 15 25

25 HAVEN ST PRELIMINARY BUILDING YIELD CHART

FLOOR	Comm. Space	1 BR	2BR	TOTAL	NET SELLABLE SQ. FT.	NET FLOOR AREA FOR F.A.R.	TOTAL BUILDING AREA GROSS SF
BSMNT	0	0	0	0	0	0	**0**
GRND	2	0	0	0	3,849	8,637	**8,637**
2ND	0	1	4	5	6,528	8,416	**8,416**
3RD	0	1	4	5	6,528	8,416	**8,416**
4TH	0	0	2	2	3,105	4,540	**4,540**
TOTAL	**2**	**2**	**10**	**12**	**20,010**	**30,009**	**30,009**
% MIX		**17%**	**83%**	**100%**			

1) LOT SIZE: APPROX. 18,935 SF (0.43 ACRES)
2) F.A.R.: 2.8 ALLOWED (53,018 SF ALLOWED) - 1.58 (29,061 SF PROVIDED +/-23,009 SQ. FT. UNDER ALLOWED)
3) 658 SF RESIDENT LOBBY WITH ONE SIDED ELEVATOR REQUIRED
4) MAX HEIGHT 4 STORIES - 44 FEET WITH SETBACKS - PROVIDED
5) SETBACKS: FRONT 2'; SIDES: 10' & 16' MIN. REAR 25' MIN (VARIES)
6) 20 UNITS/ACRE ALLOWED (.43 ACRES/8.6 UNITS ALLOWED): 27.9 UNITS/ACRE PROVIDED - WAIVER REQUESTED
7) AFFORDABLE UNITS - 0 REQUIRED/PROVIDED
8) 1.25 SPACES PER UNIT (15 TOTAL REQUIRED): 16 PROVIDED (1.33/UNIT)

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www.osullivanarchitects.com

25 Haven Street
Reading, MA

Third Floor Plan

REGISTERED ARCHITECT DAVID M. O'SULLIVAN No. 6918 READING, MA COMMONWEALTH OF MASSACHUSETTS

SCALE: As Noted

ISSUED / DRAWN BY
4/29/2022

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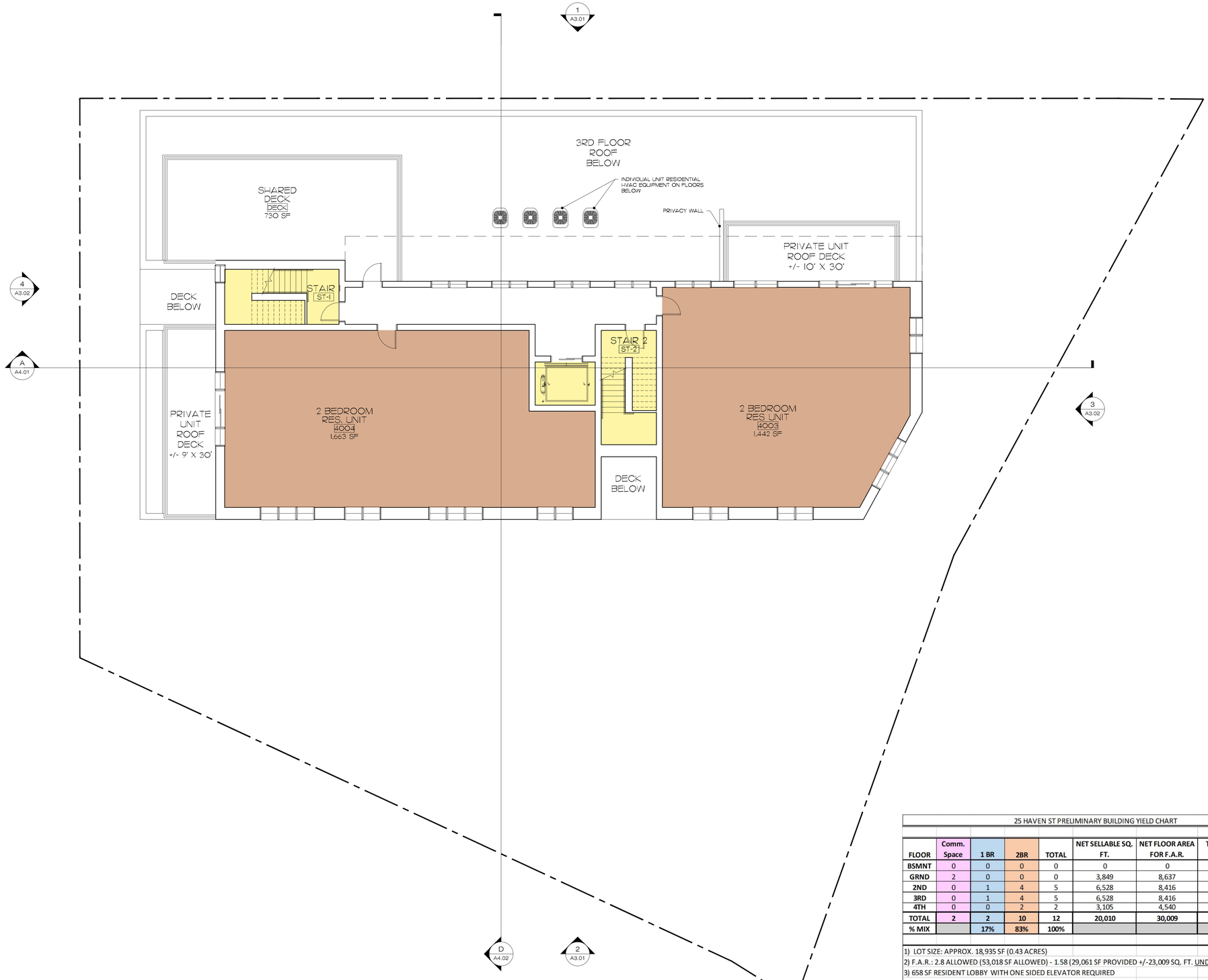
JOB NO: 21015

SHEET NUMBER
A1.03



4 FOURTH FLOOR PLAN

Scale: 1/8" = 1'

N

0 5 10 15 25

25 HAVEN ST PRELIMINARY BUILDING YIELD CHART

FLOOR	Comm. Space	1 BR	2BR	TOTAL	NET SELLABLE SQ. FT.	NET FLOOR AREA FOR F.A.R.	TOTAL BUILDING AREA GROSS SF
BSMNT	0	0	0	0	0	0	**0**
GRND	2	0	0	0	3,849	8,637	**8,637**
2ND	0	1	4	5	6,528	8,416	**8,416**
3RD	0	1	4	5	6,528	8,416	**8,416**
4TH	0	0	2	2	3,105	4,540	**4,540**
TOTAL	**2**	**2**	**10**	**12**	**20,010**	**30,009**	**30,009**
% MIX		**17%**	**83%**	**100%**			

1) LOT SIZE: APPROX. 18,935 SF (0.43 ACRES)
2) F.A.R.: 2.8 ALLOWED (53,018 SF ALLOWED) - 1.58 (29,061 SF PROVIDED +/-23,009 SQ. FT. UNDER ALLOWED)
3) 658 SF RESIDENT LOBBY WITH ONE SIDED ELEVATOR REQUIRED
4) MAX HEIGHT 4 STORIES - 44 FEET WITH SETBACKS - PROVIDED
5) SETBACKS: FRONT 2'; SIDES: 10' & 16' MIN. REAR 25' MIN (VARIES)
6) 20 UNITS/ACRE ALLOWED (.43 ACRES/8.6 UNITS ALLOWED): 27.9 UNITS/ACRE PROVIDED - WAIVER REQUESTED
7) AFFORDABLE UNITS - 0 REQUIRED/PROVIDED
8) 1.25 SPACES PER UNIT (15 TOTAL REQUIRED): 16 PROVIDED (1.33/UNIT)

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25 Haven Street
Reading, MA

Fourth Floor Plan

REGISTERED ARCHITECT DAVID M. O'SULLIVAN No. 6028 COMMONWEALTH OF MASSACHUSETTS

SCALE: As Noted

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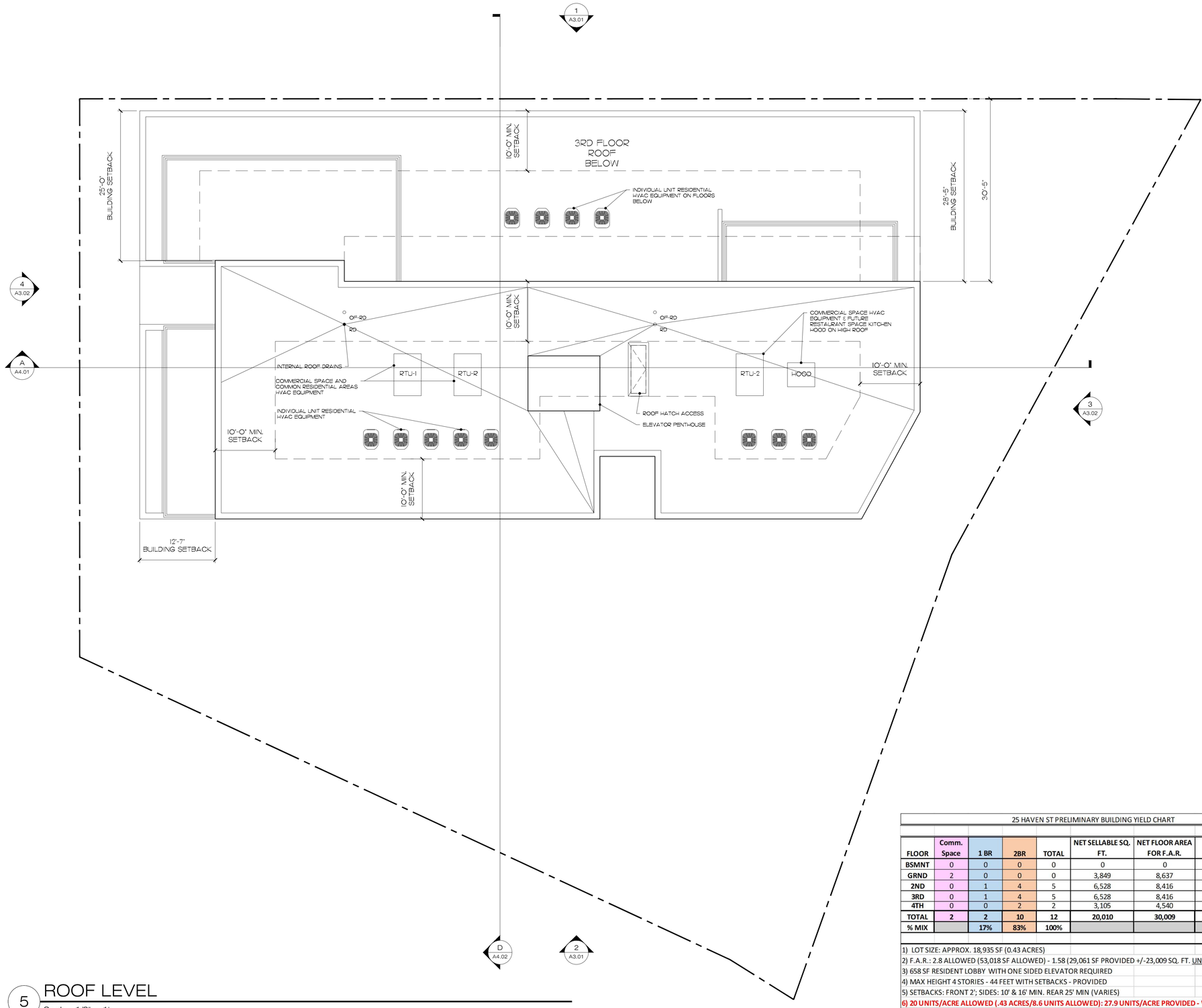
JOB NO: 21015

SHEET NUMBER
A1.04



5 ROOF LEVEL

Scale: 1/8" = 1'

N

0 5 10 15 25

25 HAVEN ST PRELIMINARY BUILDING YIELD CHART

FLOOR	Comm. Space	1 BR	2BR	TOTAL	NET SELLABLE SQ. FT.	NET FLOOR AREA FOR F.A.R.	TOTAL BUILDING AREA GROSS SF
BSMNT	0	0	0	0	0	0	**0**
GRND	2	0	0	0	3,849	8,637	**8,637**
2ND	0	1	4	5	6,528	8,416	**8,416**
3RD	0	1	4	5	6,528	8,416	**8,416**
4TH	0	0	2	2	3,105	4,540	**4,540**
TOTAL	2	2	10	12	20,010	30,009	30,009
% MIX		17%	83%	100%			

1) LOT SIZE: APPROX. 18,935 SF (0.43 ACRES)
2) F.A.R.: 2.8 ALLOWED (53,018 SF ALLOWED) - 1.58 (29,061 SF PROVIDED +/-23,009 SQ. FT. UNDER ALLOWED)
3) 658 SF RESIDENT LOBBY WITH ONE SIDED ELEVATOR REQUIRED
4) MAX HEIGHT 4 STORIES - 44 FEET WITH SETBACKS - PROVIDED
5) SETBACKS: FRONT 2'; SIDES: 10' & 16' MIN. REAR 25' MIN (VARIES)
6) 20 UNITS/ACRE ALLOWED (.43 ACRES/8.6 UNITS ALLOWED): 27.9 UNITS/ACRE PROVIDED - WAIVER REQUESTED
7) AFFORDABLE UNITS - 0 REQUIRED/PROVIDED
8) 1.25 SPACES PER UNIT (15 TOTAL REQUIRED): 16 PROVIDED (1.33/UNIT)

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25 Haven Street
Reading, MA

Roof Level Plan

REGISTERED ARCHITECT DAVID R. O'SULLIVAN No. 6028 READING COMMONWEALTH OF MASSACHUSETTS

SCALE: As Noted

ISSUED / DRAWN BY
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JOB NO: 21015

SHEET NUMBER
A1.05

1 FRONT ELEVATION (HAVEN STREET)

Scale: 1/8" = 1'

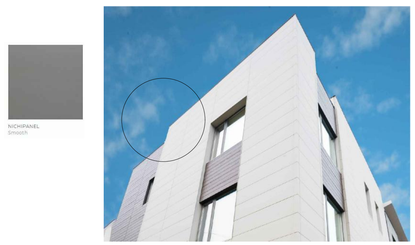
2 REAR ELEVATION (GREEN STREET)

Scale: 1/8" = 1'

EXTERIOR SIDING FINISHES KEY
(AT UPPER LEVELS)

BASIS OF DESIGN NICHIHA PANEL RAIN SCREEN SYSTEMS:
SMOOTH & RIBBED PANEL SYSTEMS

(EXAMPLE PHOTOS ATTACHED)



0 1 2 3 5 10 15 25

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25 Haven Street
Reading, MA

Elevations

REGISTERED ARCHITECT DAVID W. O'SULLIVAN No. 6002 READING, MA COMMONWEALTH OF MASSACHUSETTS

SCALE: As Noted

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JOB NO: 21015

SHEET NUMBER
A3.01

3 LEFT ELEVATION

Scale: 1/8" = 1'

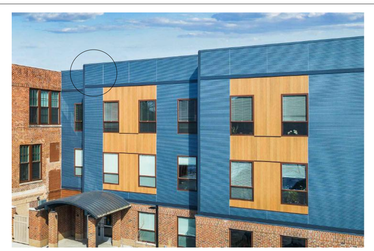
4 RIGHT ELEVATION

Scale: 1/8" = 1'

EXTERIOR SIDING FINISHES KEY (AT UPPER LEVELS)

BASIS OF DESIGN NICHIHA PANEL RAIN SCREEN SYSTEMS:
SMOOTH & RIBBED PANEL SYSTEMS

(EXAMPLE PHOTOS ATTACHED)



0 1 2 3 5 10 15 25

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25 Haven Street
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Elevations

REGISTERED ARCHITECT DAVID N. O'SULLIVAN No. 6302 READING, MA COMMONWEALTH OF MASSACHUSETTS

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SHEET NUMBER
A3.02

1 VIEW 1 FROM HAVEN ST.
Scale: N.T.S.

2 VIEW 2 FROM HAVEN ST.
Scale: N.T.S.

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25 Haven Street
Reading, MA

Perpectives

SCALE: As Noted

ISSUED / DRAWN BY
4/29/2022

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JOB NO: 21015

SHEET NUMBER
A3.10

3 VIEW 3 FROM GREEN ST. @ PUBLIC PATH
Scale: N.T.S.

4 VIEW 4 FROM DEPOT
Scale: N.T.S.

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25 Haven Street
Reading, MA

Perpectives

SCALE: As Noted

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SHEET NUMBER
A3.11

5 VIEW 5 WEST SIDE ELEVATION
Scale: N.T.S.

6 VIEW 6 FROM HAVEN
Scale: N.T.S.

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25 Haven Street
Reading, MA

Perpectives

SCALE: As Noted

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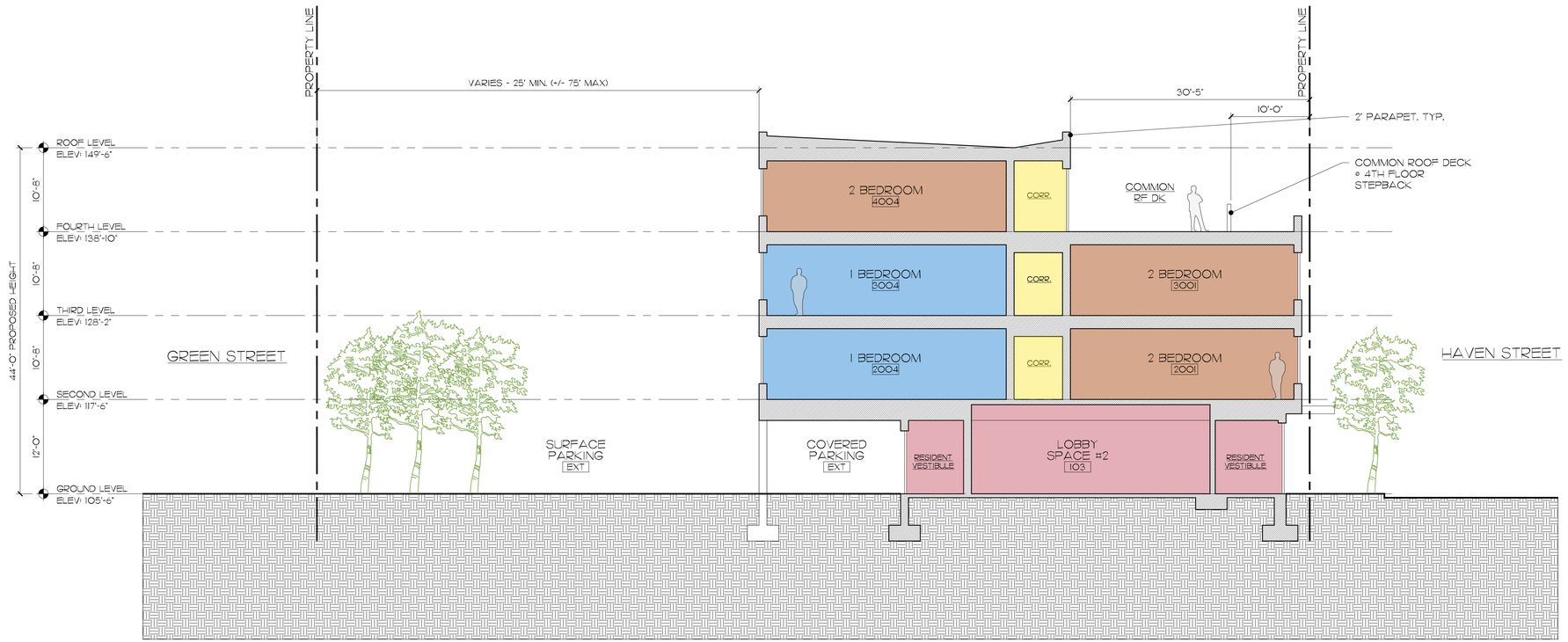
SHEET NUMBER
A3.12

B SECTION

Scale: 1/8" = 1'



0 1 2 3 5 10 15 25

A SECTION

Scale: 1/8" = 1'

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25 Haven Street
Reading, MA

Sections

REGISTERED ARCHITECT COMMONWEALTH OF MASSACHUSETTS DAVID M. O'SULLIVAN No. 9030 READING, MA

SCALE: As Noted

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4/29/2022
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JOB NO: 21015

SHEET NUMBER
A4.01

Waiver Requests for Plan Entitled

Proposed Plan of Lots
45 Beacon Street
Prepared by
GA Consultants
March 17, 2022

Mr. Angelo Salamone is asking that certain portions of the Subdivision and the Stormwater Management Regulations be waived so that the proposed two unit project can be approved without excessive costs and time delays. Specifically, Mr. Salamone is asking the following subsections of **Section 7.0 Design Standards** of the Subdivision Regulations be waived

7.1.1 Width and Grade of Ways

7.1.3 Street Cross Section

7.1.5 Dead End Streets/Cul-de-sacs

7.1.7 Curbing

7.2 Sidewalks

Additionally, Mr. Salamone is requesting that the fees required by **Section3.6 Fees** of the Subdivision Regulations be waived, as well as Subsections **3.6.3.1** and **3.6.4**

Also included here is a request for waiver of fees required by the Stormwater Management and Erosion Control Regulations section **3 PERMIT FEES,** particularly subsection **3.1 Permit Application Fee** and subsection **3.2 Consultant Fee**

Waiver Requests from Sections Subdivision Regulations Design Standards Listed Below

Because the project as proposed consists of only two units of housing and for practical purposes the extension of Beacon Street to provide access is comparable to a driveway and a turnaround for emergency vehicles has been provided and the right of way width of Beacon Street is already laid out we ask that the following sections of the Design Standards be waived.

7.1.1 Width and Grade of Ways

a The width of street rights-of-way shall be sixty (60) feet. Cul-de-sac terminations of street rights-of-way shall consist of a right-of-way circle with a radius of sixty (60) feet, the center of which radius shall coincide with the centerline of the roadway. Where appropriate for the needs of vehicular access and public safety, the CPDC may require a greater right-of-way width or radius.

The current right of way of Beacon Street is only 40 feet and it is not possible to widen it to 60 feet and request that the right of way width be waiver to 40 feet

b Grades of all streets shall be the reasonable minimum, but not less than one percent (1%) nor more than six percent (6%) for principal streets, nor more than ten percent (10%) for minor streets. General slope of grades at all intersections shall be a maximum of two (2) % percent for a distance of at least

sixty-four (64) feet from beginning of intersection. Proposed roads shall have a slight negative grade when intersecting with existing roads at or within 50 feet of the beginning of the intersection.

Because of the steepness of the land and the existing street the 2% requirement cannot be met and the negative slope requirement cannot be met.

7.1.3 Street Cross Section

The following shall be the minimum provided for streets. The Commission may require additional lanes, widths, and other dimensions where the use requires such increases. Cross sections shall conform to Figure 1, “Typical Cross Section for a Sixty-Foot Street”, in the Appendix.

a At least a 30 foot travel way completely paved and uniformly graded from the crown of the roadway to the granite curbing at three-eighths of an inch (3/8") per foot;

b The dimensions of the roadway, curbing, tree lawns, and sidewalks shall conform to the cross section shown in Figure 1;

It is requested that the roadway width be limited to 20 feet and curbing and sidewalks be eliminated

7.1.5 Dead End Streets/Cul-de-sacs

c Those dead end ways which shall eventually carry traffic to another way shall have a temporary turning circle having an outside pavement radius of not less than forty-five (45) feet.

It is requested that the turning circle in the cul-de-sac be waived

e An island within the cul-de-sac shall be required; it shall have a maximum outside radius of twenty (20) feet.

7.1.7 Curbing

a Vertical granite curb shall be used throughout the subdivision. It shall be Type

VA-4 as defined in the 1988 Commonwealth of Massachusetts Department of

Public Works "Standard Specifications for Highways and Bridges."

b Granite curb inlets shall be provided at all catch basins.

c Granite curb corners (Type B) shall be provided at all driveways.

d Granite transition curb shall be provided at all wheelchair ramps

It is requested that curbing be waived

7.2 Sidewalks

a Sidewalks shall be constructed on both sides of the street. Bituminous concrete shall be used in all areas of Town except for the area generally bounded by Lowell, Salem, John, Washington, Willow, Summer and Prescott Streets (see figure 2, “Area Requiring Cement Concrete Sidewalks”) where cement concrete sidewalks shall be used.

It is requested that sidewalks be waived

Waiver Request of Fees listed below as Required by the Subdivision Regulations and the Stormwater Management and Erosion Control Regulations.

The waiver of fees is being requested because this project is a plan developed as a compromise with the Town to reduce a project from a previously approved ten unit project to a two unit project. The review of this two unit project can easily be done by the Engineering Department of the Town and outside consultants are not needed. While the project will incorporate appropriate Stormwater Management Practices and Erosion Control, review of such a small project by an outside consultant would place undo expenses on the proponent. This is especially true when considering that the MassDEP only requires Stormwater Best Management Practices to be applied to projects of four units or greater and only when a project is within or discharges 100 feet of a wetland resource area.

Sections of the Subdivision Regulations

3.6 Fees

Application and Inspection Fees as described below shall be payable to the Town of Reading, by certified check only, at the time of filing of a subdivision plan pursuant to these Regulations. Any application not accompanied by the appropriate fee payment at the time of application shall be considered improper and incomplete in accordance with Section 3.7. hereof. No fees are refundable in whole or in part under any circumstances**.**

3.6.3.1 In cases where no Preliminary Subdivision Plan had been filed $500.00 plus $30.00 per lot shown on the plan

3.6.4 Review Costs

In addition to all other fees and charges specified herein, if the Commission in the course of review of an application, determines in its sole and absolute discretion that review of all or any part of a proposed project by (an) outside independent consultant(s) of the Commission's sole choosing is necessary for proper evaluation of the proposed project or its possible effects on any matter of public interest under the jurisdiction of the Subdivision Control Law, then the applicant shall provide immediately to the Town, by way of the Town Planner, (a) certified check(s) payable to such consultant(s) in an amount equal to the estimated cost of the relevant services of such consultant(s). No Building Permit or Certificate of Occupancy shall be issued for said project until all such review fees that may be so imposed have been paid in full.

Sections of the Stormwater Management and Erosion Control Regulations

3 PERMIT FEES

3.1 Permit Application Fee

3.1.1 Each Application shall be accompanied by the appropriate Permit Application Fee as set forth in the Stormwater Permit Fee Schedule promulgated by the CPDC. The Permit Application Fee is non-refundable.

3.2 Consultant Fee

3.2.1 Pursuant to Section 7.9.5.6 of the Bylaw and Chapter 44, Section 53G of the Massachusetts General Laws, each Stormwater Permit Application may also be subject to a Consultant Fee, which will be determined after an administratively complete Application is received by the Planning Division.

3.2.2 Determination of Need for Consultant Review, Selection of Consultant and Determination of Initial Consultant Fee

It is requested that as part of the settlement all fees and the requirement of an outside consultant be waived

FOR REGISTRY USE ONLY

SITE PLAN SET

MAJOR SITE PLAN MODIFICATION

GRANDVIEW ROAD SUBDIVISION – PRIVATE WAY

GRANDVIEW ROAD EXTENSION

PROJECT LOCATION:

LOTS 2, 3, and 4
GRANDVIEW ROAD EXTENSION
READING, MA 01867

SHEET INDEX

PROPERTY INFORMATION

ADDRESS
LOTS 2, 3, & 4
GRANDVIEW ROAD EXTENSION
READING, MA 01867

RECORD OWNER
GRANDVIEW, LLC
45 BEACON STREET
READING, MA 01867

LOT SIZE
COMBINED LOTS 2, 3, & 4
45,132 S.F. (1.04 AC.±)

ZONING DISTRICT
SINGLE FAMILY 15 (S-15)

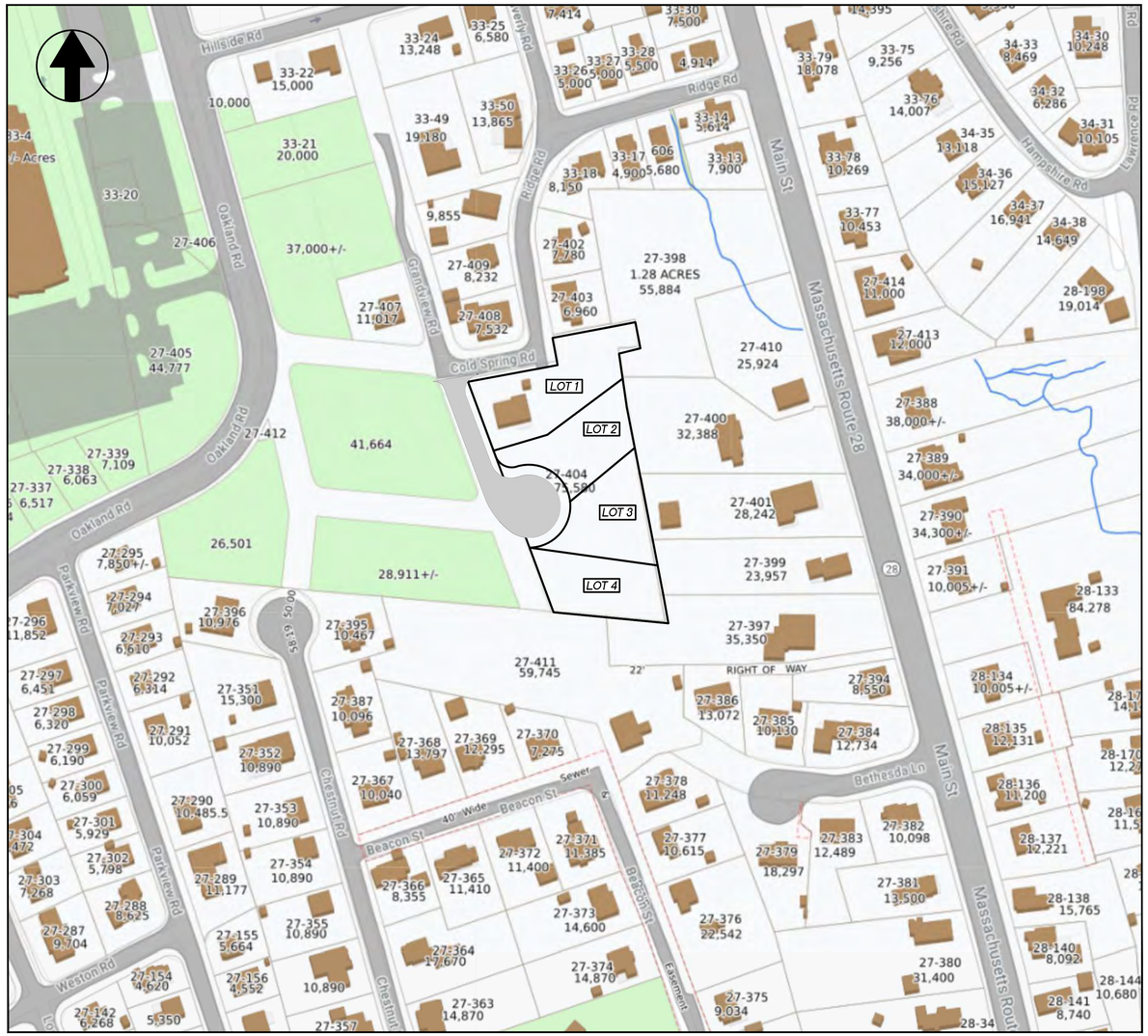
PARCEL ID
PART OF MAP 27, LOT 404

PLAN REFERENCES

1. BOUNDARY, TOPOGRAPHIC, AND PLANIMETRIC INFORMATION WAS OBTAINED FROM AN ON-THE-GROUND SURVEY PERFORMED AND COMPLETED BY PFS LAND SURVEYING, INC., DRAWING NUMBER SV-1, DATED 7/8/2020.
2. MIDDLESEX SOUTH REGISTRY OF DEEDS PLAN 754 OF YEAR 2022.

GENERAL NOTES

1. THE SUBDIVISION OF LAND FOR THIS PROJECT WAS APPROVED AND ENDORSED BY THE READING COMMUNITY PLANNING AND DEVELOPMENT COMMISSION (CPDC), AND THE SUBDIVISION WAS RECORDED WITH THE REGISTRY OF DEEDS AS PLAN 754 OF YEAR 2022.
2. THIS PLAN SET IS FOR THE APPROVAL OF A MAJOR SITE PLAN MODIFICATION. MODIFICATIONS INCLUDE REDESIGNING THE STORMWATER SYSTEM WITH ASSOCIATED SITE GRADING. EASEMENTS HAVE BEEN ADJUSTED AND THEREFORE WILL REQUIRE A NEW ENDORSED SET FOR RECORDING WITH THE REGISTRY.
3. TOPOGRAPHIC DATA IS ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. UTILITY INFORMATION OBTAINED FROM THE REFERENCE SURVEY PLAN.
5. SOIL TESTS BY DEEP OBSERVATION HOLES WERE COMPLETED AND REPORTED BY ARMAND J. PORRAZZO (SE#1958) IN JULY 2020. SITE SOILS FROM THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) ONLINE WEB SOIL SURVEY DETERMINE THE SITE TO CONTAIN TWO (2) SOIL TYPES IDENTIFIED AS CANTON-CHARLTON-URBAN LAND COMPLEX WITH A HYDROLOGIC SOIL GROUP (HSG) "A" AND PAXTON FINE SANDY LOAM WITH A HSG "C".
6. THE SITE DOES NOT CONTAIN AREAS SUBJECT TO 1% ANNUAL CHANCE OF FLOODING AND IS IN ZONE "X" AS DETERMINED BY FEMA FLOOD INSURANCE RATE MAP (FIRM) 25017C0311E WITH AN EFFECTIVE DATE OF 6/4/2010.
7. THE SITE IS INLAND AND NOT LOCATED NEAR OR WITHIN THE FOLLOWING PROTECTED RESOURCE AREAS AS DETERMINED BY THE STATE OF MASSACHUSETTS ONLINE GIS MAPPING SYSTEM "OLIVER".
   - NATURAL HERITAGE OF ENDANGERED SPECIES
   - RIVERFRONT
   - CERTIFIED VERNAL POOLS
   - WELLHEAD PROTECTION ZONES
8. THE SITE DOES CONTAIN A SMALL PORTION OF BORDERING VEGETATED WETLANDS AND WERE DELINEATED BY LEC ENVIRONMENTAL CONSULTANTS, INC. IN JUNE 2020.



LOCUS MAP
SCALE: 1" = 100'

ABUTTER'S LIST (NOW OR FORMERLY)

PARCEL ID	ADDRESS	OWNER
27-367	105 BEACON ST.	L & J FAMILY TRUST BRIAN F DESMOND TRUSTE
27-368	101 BEACON ST.	BEVERE LOREEN M
27-369	99 BEACON ST.	JOHNSON PHILLIP M PHOEBE M JOHNSON
27-370	89 BEACON ST.	DECROTEAU MICHAEL EUGENE
27-371	36 BEACON ST.	CUSOLITO JOHN LINCOLN JR ETA BEACON ST 2012 REALTY TR
27-372	98 BEACON ST.	KELLETT JAY S JOYCE A KELLETT
27-377	33 BEACON ST.	DICLEMENTE MICHAEL C DICLEMENTE JAMIE
27-378	39 BEACON ST.	WILMER CHRISTOPHER K SARA WILMER
27-379	14 BETHESDA	LN. BRETCHKO PAVEL TITOVA ELENA
27-384	882 MAIN ST.	MOREIRA GREGORY C ERIN B MORIERA
27-385	11 BETHESDA LN.	SICILIANO ROBERT L SICILIANO STEPHANIE A
27-386	17 BETHESDA LN.	KOUTOUVIDES DAKIS S KOUTOUVIDES KIMBERLY A
27-387	37 CHESTNUT RD.	GOODHUE MARK J WHITNEY GOODHUE
27-394	884 MAIN ST.	GEORGE JENNIFER L DANIEL F DECARPIS
27-395	43 CHESTNUT RD.	DASILVA JOSEPH A DASILVA ANASTASIA
27-397	890 MAIN ST.	JOYCE MARY ELIZABETH JOHN JOYCE
27-398	MAIN ST.	MILLER KEITH L
27-399	896 MAIN ST.	SANDBERG ELLEN L
27-400	908 MAIN ST.	CHEN I-CHEI
27-401	900 MAIN ST.	READING KOREAN CHURCH OF THE NAZARENE
27-402	26 RIDGE RD.	KERR CHRISTOPHER A LESLIE N KERR
27-403	32 RIDGE RD.	BEAUCHER ROBERT A BARBARA L BEAUCHER
27-404	4 COLDSPRING RD.	JEAN PENNY A
27-405	OAKLAND RD.	TOWN OF READING READING MEMORIAL HIGH
27-407	23 GRANDVIEW RD.	CUSOLITO ROBERT P JOANNE CUSOLITO
27-408	31 RIDGE RD.	CORAM GEOFFREY SUSAN G CORAM
27-409	25 RIDGE RD.	FONG ELAINE
27-410	912 MAIN ST.	HATCH WILLIAM G
27-411	45 BEACON ST.	SALAMONE ANGELO
33-13	930 MAIN ST.	RICCI ANTHONY J JANET K GALLAGHER RICCI
33-14	934 MAIN ST.	CROSBY JO ANN
33-15	RIDGE RD.	TOWN OF READING
33-16	8 RIDGE RD.	YAO RYAN S
33-17	10 RIDGE RD.	ALLEN KATHERINE D
33-18	14 RIDGE RD.	HEGARTY GERALD P ETAL TRS GERALD P HEGARTY REVOC
33-19	OAKLAND RD.	TOWN OF READING SCHOOL DEPT.
33-23	23 RIDGE RD.	MESSINA-PEREZ KAREN E
33-49	10 GRANDVIEW RD.	DRUID DAVID A PATRICIA E DRUID
33-50	2 WAVERLY RD.	HILDRETH JOHN W JUDITH D HILDRETH

UTILITIES AND CONTACTS

CABLE
COMCAST CABLE CORPORATION
5 OMNI WAY
CHELMSFORD, MA 01824
ATTN: TED QUINT
978-848-5163
ted_quint@comcast.com

ELECTRIC
READING MUNICIPAL LIGHT DEPARTMENT
230 ASH ST.
READING, MA 01867
ATTN: PETER PRICE
781-942-6429
pprice@rmld.com

GAS
NATIONAL GRID GAS
40 SYLVAN ROAD
WALTHAM, MA 02451
ATTN: MELISSA OWENS
781-907-2845
melissa.owens@nationalgrid.com

TELEPHONE
VERIZON
385 MYLES STANDISH BLVD.
TAUNTON, MA 02780
ATTN: KAREN MEALEY
774-409-3160
karen.m.mealey@verizon.com

WATER AND SEWER
READING DPW
16 LOWELL ST.
READING, MA 01867
781-942-9077

DEPARTMENT OF PUBLIC WORKS
READING DPW ENGINEERING DIVISION
16 LOWELL ST.
READING, MA 01867
781-942-9082

CONSULTANTS

CIVIL ENGINEER
FODERA ENGINEERING
28 HARBOR ST., SUITE 204
DANVERS, MA 01923
ATTN: GIOVANNI FODERA, P.E.
617-877-3293
gfodera@foderaengineering.com

LAND SURVEYOR
PFS LAND SURVEYING, INC.
20 BALCH AVE.
GROVELAND, MA 01834
ATTN: BRYAN PARMENTER, P.L.S.
508-446-0781
bryan@pfsland.com

DATE:
APRIL 20, 2023

PREPARED FOR:
(APPLICANT)
MICHAEL SALAMONE
45 BEACON STREET
READING, MA 01867

PREPARED BY:
FODERA ENGINEERING
28 HARBOR STREET, SUITE 204
DANVERS, MA 01923
(617) 877-3293

TOWN OF READING COMMUNITY PLANNING AND DEVELOPMENT COMMISSION	
DATE:	

REVISION BLOCK

REVISION SET	REVISION DATE	COMPLETED BY
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–

PROFESSIONAL SEAL:
COMMONWEALTH OF MASSACHUSETTS
GIOVANNI GAETANO FODERA
No. 54684
REGISTERED PROFESSIONAL ENGINEER

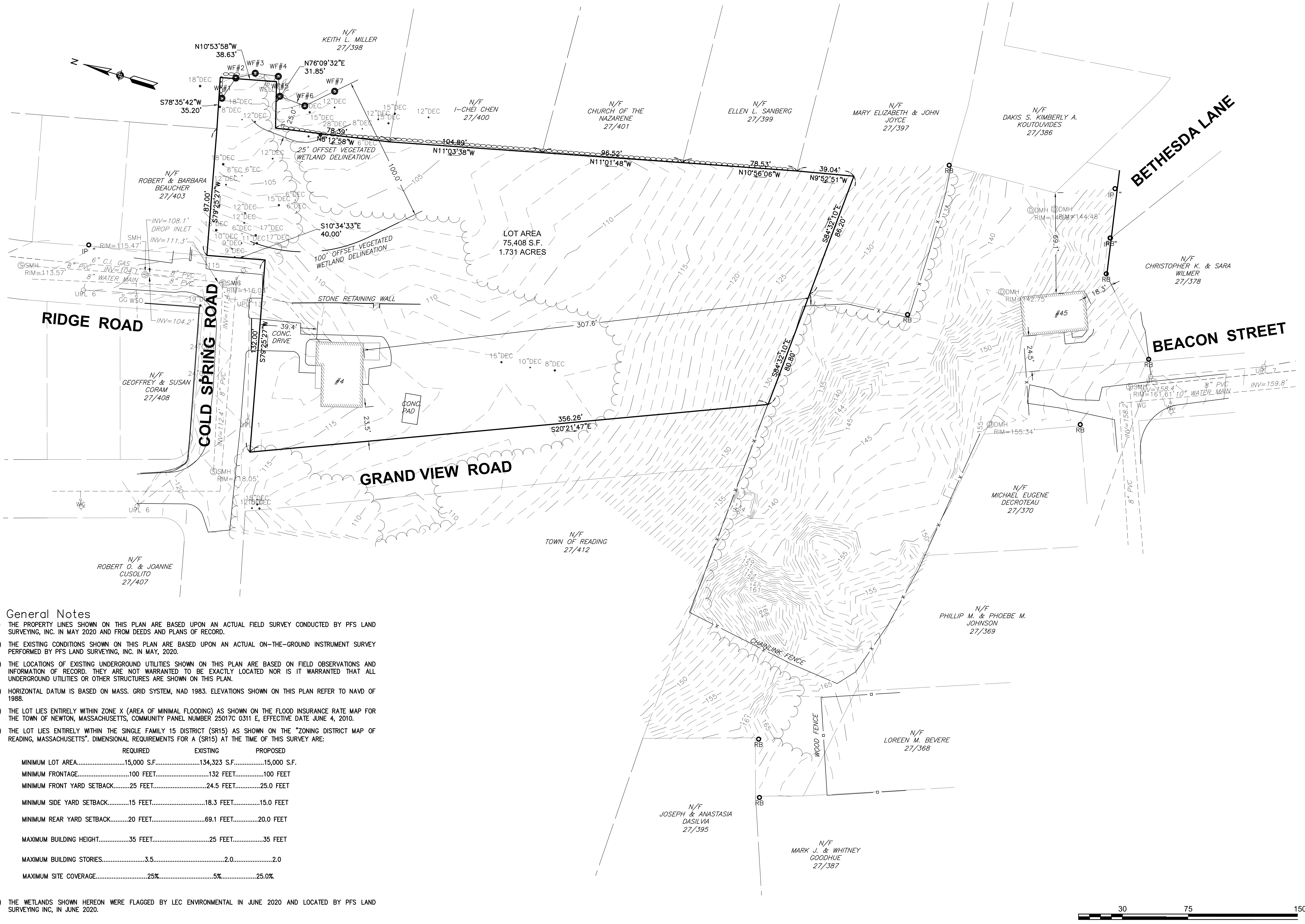
JOB NO.: 20160-149

SHEET TITLE:
COVER SHEET

SHEET NUMBER:
C-0

PFS Land Surveying, Inc.

20 Balch Avenue
Groveland, MA 01834
P 978.891.5203
www.pfsland.com



LEGEND

BM #	BENCHMARK
	BOUND (CONC, STONE, LAND COURT, ETC.)
CB	CATCH BASIN - SQUARE
CB	CATCH BASIN - ROUND
DSK	DISK (CA/T, USC&GS, LAND COURT, ETC.)
DH	DRILL HOLE
	DRAIN MANHOLE
EHH	ELECTRIC HANDHOLE
	ELECTRIC MANHOLE
EM	ELECTRIC METER
GG	GAS GATE
GM	GAS METER
	HANDICAP SYMBOL
	GUY WIRE ANCHOR
	FIRE HYDRANT
	LIGHT
OHW	OVERHEAD WIRE
MAG	MAG NAIL
MB	MAIL BOX
	OTHER MANHOLE
PB	PULL BOX
PED	PEDESTRIAN SIGNAL
	SEWER MANHOLE
	TELEPHONE MANHOLE
TRFM	TRANSFORMER
12	# OF PARKING SPACES
TS	TRAFFIC SIGNAL
TS	TRAFFIC SIGNAL MAST ARM/SPAN WIRE POLE
	SIGN
ULT#	UTILITY POLE W/ LIGHT
UPL#	UTILITY POLE
WG	WATER GATE
WSO	WATER SHUTOFF
	CHAIN LINK FENCE
	WOOD FENCE

General Notes

1) THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY PFS LAND SURVEYING, INC. IN MAY 2020 AND FROM DEEDS AND PLANS OF RECORD.

2) THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY PFS LAND SURVEYING, INC. IN MAY, 2020.

3) THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN.

4) HORIZONTAL DATUM IS BASED ON MASS. GRID SYSTEM, NAD 1983. ELEVATIONS SHOWN ON THIS PLAN REFER TO NAVD OF 1988.

5) THE LOT LIES ENTIRELY WITHIN ZONE X (AREA OF MINIMAL FLOODING) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE TOWN OF NEWTON, MASSACHUSETTS, COMMUNITY PANEL NUMBER 25017C 0311 E, EFFECTIVE DATE JUNE 4, 2010.

6) THE LOT LIES ENTIRELY WITHIN THE SINGLE FAMILY 15 DISTRICT (SR15) AS SHOWN ON THE "ZONING DISTRICT MAP OF READING, MASSACHUSETTS". DIMENSIONAL REQUIREMENTS FOR A (SR15) AT THE TIME OF THIS SURVEY ARE:

	REQUIRED	EXISTING	PROPOSED
MINIMUM LOT AREA	15,000 S.F.	134,323 S.F.	15,000 S.F.
MINIMUM FRONTAGE	100 FEET	132 FEET	100 FEET
MINIMUM FRONT YARD SETBACK	25 FEET	24.5 FEET	25.0 FEET
MINIMUM SIDE YARD SETBACK	15 FEET	18.3 FEET	15.0 FEET
MINIMUM REAR YARD SETBACK	20 FEET	69.1 FEET	20.0 FEET
MAXIMUM BUILDING HEIGHT	35 FEET	25 FEET	35 FEET
MAXIMUM BUILDING STORIES	3.5	2.0	2.0
MAXIMUM SITE COVERAGE	25%	5%	25.0%

7) THE WETLANDS SHOWN HEREON WERE FLAGGED BY LEC ENVIRONMENTAL IN JUNE 2020 AND LOCATED BY PFS LAND SURVEYING INC, IN JUNE 2020.

No.	Revision	Date	Appvd.
2	added tree locations in buffer zone	2-04-2021	BGP
1	updated well location	12-09-2020	BGP

Designed by	BGP	Drawn by	BGP	Checked by	BGP
CAD checked by	BGP	Approved by	BGP		
Scale	1"=30'	Date	7/8/2020		

Project Title

Existing Conditions
4 Cold Spring Rd
Reading, MA

Issued for

Review

Drawing Title

Existing Conditions
Plan of Land

Drawing Number

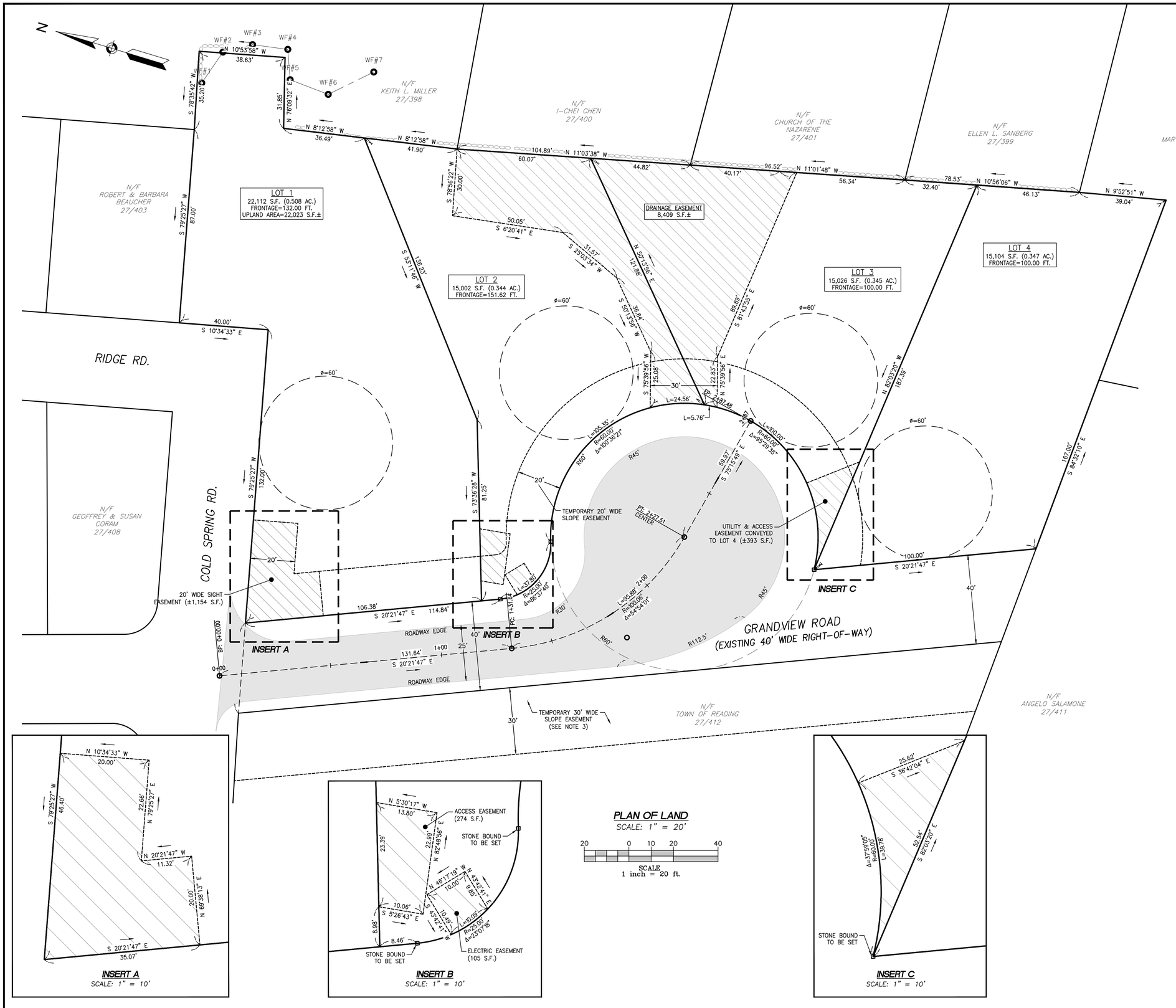
SV-1

Sheet

1 of 1

Project Number

COMMONWEALTH OF MASSACHUSETTS
BRIAN G. PAYNE
NO. 48193
REGISTERED PROFESSIONAL LAND SURVEYOR



INSERT A
SCALE: 1" = 10'

INSERT B
SCALE: 1" = 10'

PLAN OF LAND
SCALE: 1" = 20'

20 0 10 20 40
SCALE
1 inch = 20 ft.

INSERT C
SCALE: 1" = 10'

RIGHT-OF-WAY STATEMENT

THE RIGHT-OF-WAY (ROW), SOUTH OF THE INTERSECTION FROM COLD SPRING ROAD AND GRANDVIEW ROAD, IS AS A PRIVATE WAY FOR ALL LAND OWNERS IN AND ABUTTING THE SUBDIVISION, AND WILL REMAIN NAMED AS GRANDVIEW ROAD.

LEGEND

- PROPERTY LINE
- EASEMENT LINE
- WETLAND BOUNDARY
- RXX' RADIUS MEASUREMENT
- WF# WETLAND FLAG
- STONE BOUND WITH DRILL HOLE

GENERAL NOTES

1. WETLANDS WERE FLAGGED BY LEC ENVIRONMENTAL CONSULTANTS IN JUNE 2020.
2. THE PROJECT IS LOCATED OUTSIDE OF ANY PROTECTED RESOURCE AREAS AND FLOOD ZONES AS DETERMINED BY THE MOST RECENTLY PUBLISHED DATA FROM THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION AND FEMA.
3. IN LIEU OF A RETAINING WALL LOCATED IN THE RIGHT-OF-WAY ALONG THE WESTERN BOUNDARY OF GRAND VIEW ROAD, A TEMPORARY THIRTY (30) FOOT WIDE SLOPE EASEMENT IS PROPOSED ON TOWN PROPERTY AND SHALL BE APPROVED BY THE TOWN. SEE SHEET C-5 FOR GRADING.

PLAN REFERENCES

1. BOUNDARY, TOPOGRAPHIC, AND PLANIMETRIC INFORMATION WAS OBTAINED FROM AN ON-THE-GROUND SURVEY PERFORMED AND COMPLETED BY PFS LAND SURVEYING.

PROPERTY INFORMATION

ADDRESS: LOTS 2, 3, & 4
GRANDVIEW ROAD EXTENSION
READING, MA 01867
TAX MAP, LOT: PART OF MAP 27, LOT 404
LOT SIZE: 45,132 S.F. (1.04 AC.)

RECORD OWNERS

LOTS 2, 3, & 4
GRANDVIEW, LLC
45 BEACON STREET
READING, MA 01867

APPLICANT

MICHAEL SALAMONE
45 BEACON ST.
READING, MA 01867

ZONING SUMMARY

ZONING DISTRICT: SINGLE FAMILY 15 (S15)

	REQUIRED	LOT 1	LOT 2	LOT 3	LOT 4
MIN. LOT WIDTH	60'	>60'	>60'	>60'	>60'
MIN. LOT AREA (SF)	15,000	22,112	15,002	15,026	15,104
MIN. FRONTAGE	100'	132.00	151.62	100.00	100.00
RELIEF REQUIRED	–	N	N	N	N

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MASSACHUSETTS ONE CALL SYSTEM

REVISION	DATE	BY

PROJECT LOCATION:
LOTS 2, 3, + 4
GRANDVIEW ROAD
READING, MA 01867
PARCEL ID:
MAP 27, LOT 404

APRIL 20, 2023

PLAN SET:
MAJOR SITE PLAN MODIFICATION
GRANDVIEW ROAD SUBDIVISION - PRIVATE WAY
(GRANDVIEW ROAD EXTENSION)

SITE PLAN PERMIT SET

SCALE: 1" = 20'

TOWN OF READING
COMMUNITY PLANNING & DEVELOPMENT COMMISSION
DATE: _____

FOR REGISTRY USE ONLY

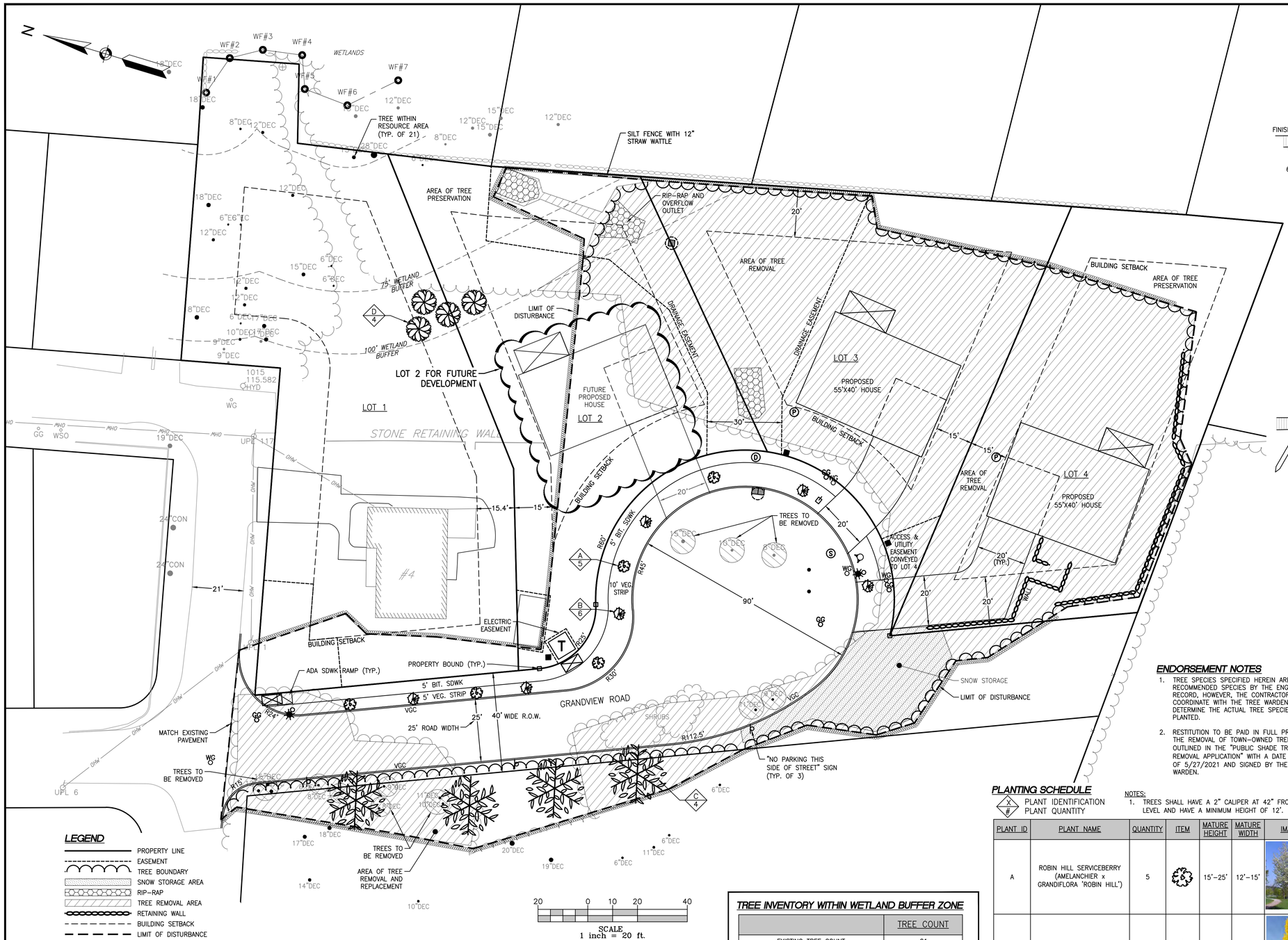
ENGINEER:
FODERA ENGINEERING
(617)877-3293
gfodera@foderaengineering.com
28 Harbor St., Suite 204
Danvers, MA 01923
PROFESSIONAL SEAL
COMMONWEALTH OF MASSACHUSETTS
GIOVANNI GAETANO FODERA
No. 54884
REGISTERED PROFESSIONAL ENGINEER

SURVEYOR:
PFS Land Surveying, Inc.
20 Balch Avenue
Groveland, MA 01834
P 978.891.5203
www.pfsland.com
PROFESSIONAL SEAL

JOB NO.: 20160-149

SHEET TITLE:
PLAN OF LAND

SHEET NUMBER:
C-1



SCALE
1 inch = 20 ft.

SITE AND TREE PRESERVATION PLAN

SCALE: 1" = 20'

LEGEND

- PROPERTY LINE
- EASEMENT
- TREE BOUNDARY
- SNOW STORAGE AREA
- RIP-RAP
- TREE REMOVAL AREA
- RETAINING WALL
- BUILDING SETBACK
- LIMIT OF DISTURBANCE
- WETLAND BOUNDARY
- WETLAND BUFFER
- WF# WETLAND FLAG
- VGC VERTICAL GRANITE CURB
- MAILBOX
- (P) SEWER PUMP
- (S) FORCE MAIN FLUSHING GATE
- FORCE SERVICE BALL VALVE
- CB CATCH BASIN
- (D) DMH DRAIN MANHOLE
- OOS OVERFLOW OUTLET STRUCTURE
- WG WATER VALVE
- GG GAS VALVE
- T ELECTRIC TRANSFORMER & EASEMENT
- ELECTRIC SERVICE PULLBOX
- ELECTRIC MANHOLE

TREE INVENTORY WITHIN WETLAND BUFFER ZONE

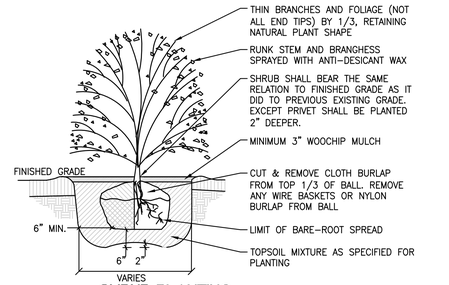
	TREE COUNT
EXISTING TREE COUNT	21
TREES TO BE REMOVED	0
TOTAL TREES TO REMAIN	21

TREE PRESERVATION CALCULATIONS

	LOT 1	LOT 2	LOT 3	LOT 4	Grand View Rd.	TOTALS
LOT AREA, S.F.	22,112	15,002	15,026	15,104	22,164	89,408
NEW IMPERVIOUS, S.F.	0	2,388	2,526	2,998	12,572	23,549
SUM: OPEN SPACE, S.F.	*19,047	12,614	12,500	12,106	9,592	65,859
**REQUIRED # OF TREES	10	7	7	7	N/A	31
AREA OF TREE REMOVAL, S.F.	0	3,605	13,325	11,140	6,217	34,287
AREA OF TREE PRESERVED, S.F.	7,948	3,260	1,590	3,970	2,832	19,600
***ESTIMATED # OF TREES PRESERVED	20	14	7	17	12	70

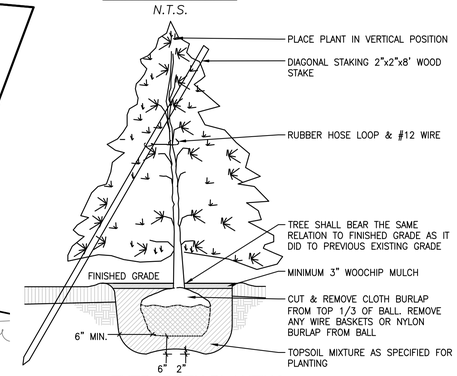
* SUBTRACTED EXISTING IMPERVIOUS AREA OF 3,065 SF.
** BASED ON 1 TREE PER 2,000 S.F. OF OPEN SPACE PER SECTION 7.6.2.2 OF THE TOWN OF READING SUBDIVISION REGULATIONS.
*** ESTIMATED BASED ON 1 TREE PER 225 S.F. (15'X15')

PERMANENT GRASS SEED MIX	SEED, POUNDS PER 1,000 S.F.
LITTLE BLUESTEM OR BROOMSEDGE	0.25
TUMBLE LOVEGRASS	0.10
SWITCHGRASS	0.10
BUSH CLOVER	0.10
RED TOP	0.10



SHRUB PLANTING

N.T.S.



EVERGREEN PLANTING

N.T.S.

GENERAL NOTES

1. ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITION (AMERICAN ASSOCIATION OF NURSERYMEN, INC.).
2. NO TREES OR SHRUBS SHALL BE PLANTED AT THE STREET INTERSECTION WHERE THEY COULD BECOME A TRAFFIC HAZARD BY OBSTRUCTING VISION.
3. ALL TREES SHALL BE GUARANTEED BY THE DEVELOPER FOR THEIR ERECTNESS AND GOOD HEALTH FOR TWO (2) YEARS AFTER PLANTING.
4. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE LOAMED AND SEEDED. LOAM DEPTH SHALL BE A MINIMUM OF 4 INCHES. ALL LOAM PLACED SHALL BE pH CORRECTED AND FREE OF CLODS, LUMPS, STONES AND OTHER DELETERIOUS MATERIAL.
5. ANY DEAD VEGETATION SHALL BE REMOVED IMMEDIATELY AND REPLACED IN ACCORDANCE WITH THE SPECIFICATION ON PLAN.
6. OWNER SHALL MAINTAIN LANDSCAPE PLANTINGS TO ENSURE THE AESTHETIC APPEARANCE AND OVERALL PLANT HEALTHINESS IS RETAINED. THIS INCLUDES INSPECTING AND REPLACING PLANTINGS AS NECESSARY, WEEKLY MOWING AND MULCHING.
7. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE.
8. ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
9. THE CONSTRUCTION SITE SHALL BE SECURED IN A MANNER SO AS TO PREVENT INJURY OR PROPERTY DAMAGE TO THE RESIDENTS OF THE TOWN.
10. AN APPROVED SITE AS-BUILT SHALL BE SUBMITTED TO THE ENGINEERING DIVISION WITHIN 60 DAYS OF CERTIFICATE OF OCCUPANCY. THE AS-BUILT SHALL BE SUBMITTED IN MYLAR AND ELECTRONIC ACAD FORMAT.

ENDORSEMENT NOTES

1. TREE SPECIES SPECIFIED HEREIN ARE SIMPLY RECOMMENDED SPECIES BY THE ENGINEER OF RECORD, HOWEVER, THE CONTRACTOR SHALL COORDINATE WITH THE TREE WARDEN TO DETERMINE THE ACTUAL TREE SPECIES TO BE PLANTED.
2. RESTITUTION TO BE PAID IN FULL PRIOR TO THE REMOVAL OF TOWN-OWNED TREES AS OUTLINED IN THE "PUBLIC SHADE TREE REMOVAL APPLICATION" WITH A DATE OF ACTION OF 5/27/2021 AND SIGNED BY THE TREE WARDEN.

PLANTING SCHEDULE

(X) # PLANT IDENTIFICATION
PLANT QUANTITY

NOTES:
1. TREES SHALL HAVE A 2" CALIPER AT 42" FROM GROUND LEVEL AND HAVE A MINIMUM HEIGHT OF 12'.

PLANT ID	PLANT NAME	QUANTITY	ITEM	MATURE HEIGHT	MATURE WIDTH	IMAGE
A	ROBIN HILL SERVICEBERRY (AMELANCHIER x GRANDIFLORA 'ROBIN HILL')	5	(A)	15'-25'	12'-15'	
B	GOLDSPIRE GINKGO (GINKGO BILOBA "GOLDSPIRE")	6	(B)	15'	5'-6'	
*C	SUGAR MAPLE TREE (ACER SACCHARUM)	4	(C)	60'-75'	40'-50'	
D	HIGHBUSH BLUEBERRY (VACCINIUM CORYMBOSUM)	4	(D)	6'-12'	8'-12'	

* TREE SPECIES TO BE REPLANTED IN TOWN OWNED PROPERTY SHALL BE APPROVED BY THE TREE WARDEN.

CALL BEFORE YOU DIG
1-888-344-7233
MASSACHUSETTS ONE CALL SYSTEM

REVISION	DATE	BY

PROJECT LOCATION:
LOTS 2, 3, + 4
GRANDVIEW ROAD
READING, MA 01867

PARCEL ID:
MAP 27, LOT 404

APRIL 20, 2023

PLAN SET:

MAJOR SITE PLAN MODIFICATION
GRANDVIEW ROAD SUBDIVISION - PRIVATE WAY
(GRANDVIEW ROAD EXTENSION)

SITE PLAN PERMIT SET

SCALE: 1" = 20'

TOWN OF READING
COMMUNITY PLANNING & DEVELOPMENT COMMISSION
DATE: _____

FOR REGISTRY USE ONLY

ENGINEER:
FODERA ENGINEERING
(617)877-3293
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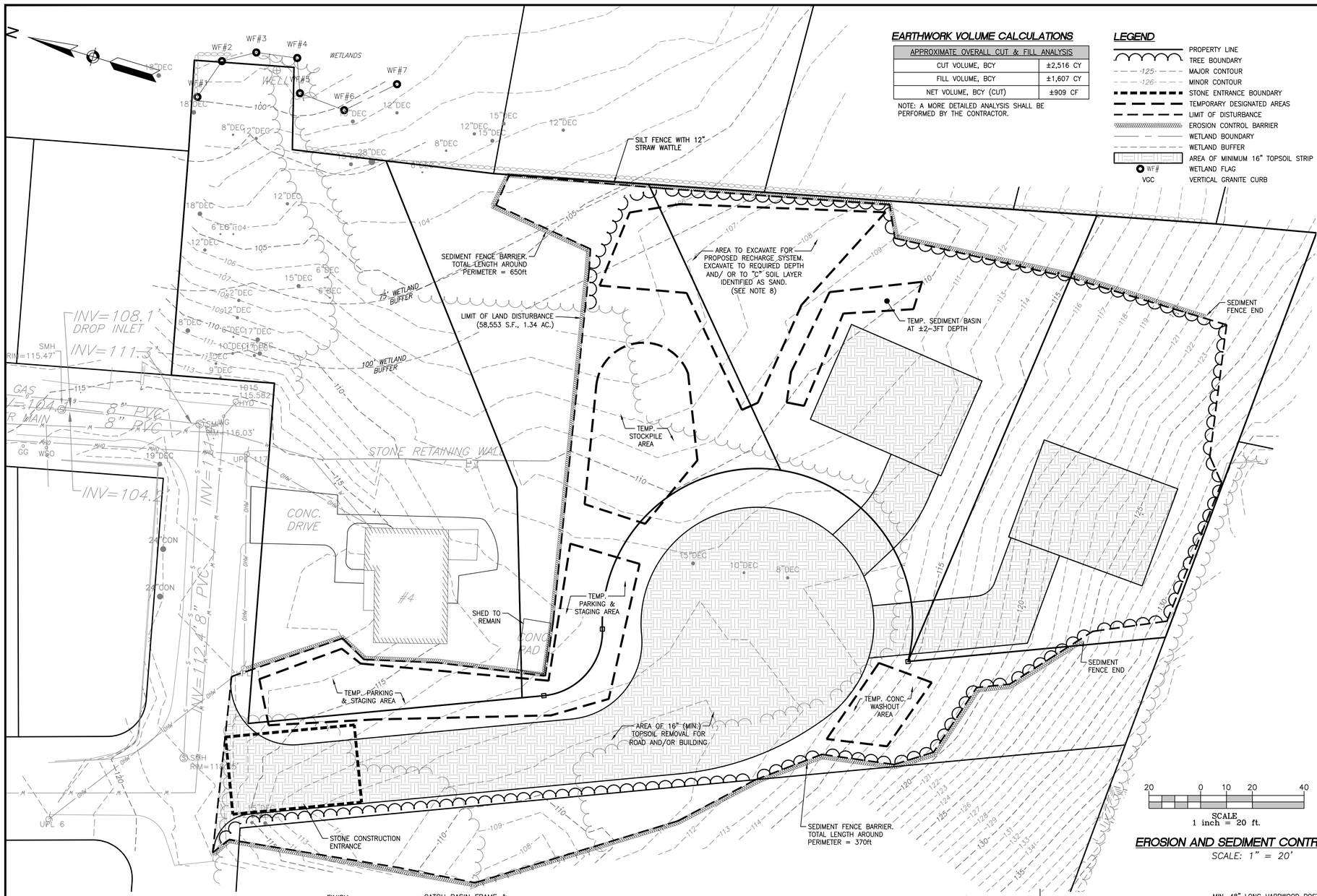
PROFESSIONAL SEAL

JOB NO.: 20160-149

SHEET TITLE:
SITE AND TREE PRESERVATION

SHEET NUMBER:
C-2



EARTHWORK VOLUME CALCULATIONS

APPROXIMATE OVERALL CUT & FILL ANALYSIS	
CUT VOLUME, BCY	±2,516 CY
FILL VOLUME, BCY	±1,607 CY
NET VOLUME, BCY (CUT)	±909 CF

NOTE: A MORE DETAILED ANALYSIS SHALL BE PERFORMED BY THE CONTRACTOR.

LEGEND

- PROPERTY LINE
- TREE BOUNDARY
- MAJOR CONTOUR
- MINOR CONTOUR
- STONE ENTRANCE BOUNDARY
- TEMPORARY DESIGNATED AREAS
- LIMIT OF DISTURBANCE
- EROSION CONTROL BARRIER
- WETLAND BOUNDARY
- WETLAND BUFFER
- AREA OF MINIMUM 16" TOPSOIL STRIP
- WF# WETLAND FLAG
- VGC VERTICAL GRANITE CURB

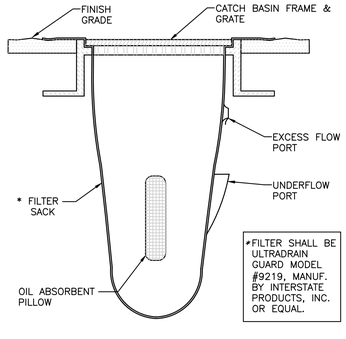
EROSION CONTROL NOTES

1. PRIOR TO COMMENCING LAND DISTURBANCE ACTIVITY THE LIMITS OF LAND DISTURBANCE SHALL BE CLEARLY AND ACCURATELY DEMARCATED WITH STAKES, RIBBONS, OR OTHER APPROPRIATE MEANS.
2. INSTALL SEDIMENTATION AND EROSION CONTROL MEASURES PRIOR TO CLEARING GRADING AND DEMOLITION WORK. MAINTAIN ALL SEDIMENT AND EROSION CONTROL, AND TREE PROTECTION MEASURES UNTIL PERMANENT GROUND COVER IS ESTABLISHED.
3. ALL EROSION AND SEDIMENT CONTROL PRACTICES ARE SUBJECT TO FIELD MODIFICATIONS AT THE DIRECTION OF THE TOWN'S DPW ENGINEERING DEPARTMENT.
4. PRIOR TO ANY OTHER CONSTRUCTION, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED AT EACH ENTRY TO OR EXIT FROM THE SITE. CONTRACTOR SHALL MAINTAIN CONSTRUCTION ENTRANCE UNTIL SITE PAVING IS COMPLETE.
5. INLET PROTECTIONS SHALL BE INSTALLED ON ALL EXISTING CATCH BASINS AS INDICATED ON THE PLAN, AND IMMEDIATELY AFTER THE INSTALLATION OF ALL NEWLY INSTALLED INLETS.
6. THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO THE ACCESSING ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH STONE, AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEAN-OUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED BY VEHICLE OFF-SITE ONTO THE ROADWAY OR INTO STORM DRAINS MUST BE REMOVED.
7. IMMEDIATELY AFTER THE ESTABLISHMENT OF CONSTRUCTION ENTRANCES/EXITS, ALL PERIMETER EROSION CONTROL DEVICES AND STORM WATER MANAGEMENT DEVICES SHALL BE INSTALLED PRIOR TO ANY OTHER CONSTRUCTION.
8. ADD EROSION BARRIER AROUND PERIMETER OF PROPOSED RECHARGE AREA IF THE EXCAVATED PIT WILL REMAIN EXPOSED FOR MORE THAN TWO (2) DAYS, WEATHER PERMITTING. THE EXCAVATED PIT SHALL BE CLEAN OF ALL SEDIMENT.
9. EROSION CONTROL DEVICES SHALL BE INSTALLED BEFORE GROUND DISTURBANCE OCCURS. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM THAT SHOWN ON THE APPROVED PLANS IF DRAINAGE PATTERNS DURING CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
10. THE CONSTRUCTION OF THE SITE WILL INITIATE WITH THE INSTALLATION OF EROSION CONTROL MEASURES SUFFICIENT TO CONTROL SEDIMENT DEPOSITS AND EROSION. ALL SEDIMENT CONTROL WILL BE MAINTAINED UNTIL ALL UPSTREAM GROUND WITHIN THE CONSTRUCTION AREA HAS BEEN COMPLETELY STABILIZED WITH PERMANENT VEGETATION AND ALL ROADS/DRIVES HAVE BEEN PAVED.
11. THE CONTRACTOR SHALL FURNISH AND MAINTAIN ALL NECESSARY BARRICADES WHILE IMPROVEMENTS ARE BEING MADE. TRAFFIC CONTROL MEASURES TO BE IN ACCORDANCE WITH LOCAL REGULATIONS AND OR MASSDOT.
12. ALL SILT BARRIERS MUST BE PLACED AS ACCESS IS OBTAINED DURING CLEARING. NO GRADING SHALL BE DONE UNTIL SILT BARRIER INSTALLATION AND DETENTION FACILITIES, IF REQUIRED, ARE CONSTRUCTED.
13. CONTRACTOR SHALL PERFORM EROSION CONTROL INSPECTIONS REGULARLY AND IMMEDIATELY FOLLOWING HEAVY RAIN STORMS TO ENSURE MEASURES ARE FUNCTIONING PROPERLY. REPAIR OR REPLACE FAILED SYSTEMS AT THE EARLIEST POSSIBLE DATE.
14. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH TEMPORARY SEEDING.
15. ALL DISTURBED AREAS, WITH NO SPECIFIED GROUND COVER ARE TO BE RESTORED WITH MINIMUM FOUR (4) INCHES OF TOPSOIL AND SEEDING.
16. PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERLY PROTECTED AT ALL TIMES DURING CONSTRUCTION TO ENSURE INTEGRITY. IF DISTURBED, THEY SHALL BE REPLACED BY A REGISTERED SURVEYOR AT THE CONTRACTOR'S EXPENSE.
17. ALL EXCAVATION SHALL INCLUDE CLEARING, STRIPPING AND STOCKPILING TOPSOIL, REMOVING UNSUITABLE MATERIALS, THE CONSTRUCTION OF EMBANKMENTS, CONSTRUCTION FILLS, AND THE FINAL SHAPING AND TRIMMING TO THE LINES AND GRADES SHOWN ON THE PLANS.
18. ALL TREES, BRUSH, AND ORGANIC TOPSOIL AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED, UNLESS OTHERWISE SPECIFIED, AND DISPOSED OF AT AN OFF-SITE LOCATION, WITH THE EXCEPTION THAT ENOUGH TOPSOIL SHALL BE RETAINED FOR RE-SPREAD AND GENERAL LANDSCAPING. AREAS WHICH ARE TO BE FILLED SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D1557, METHOD C) COMPACTION TEST IN THE PAVED AREAS AND 90% IN THE OTHER AREAS.
19. SWEEP CLEAN THE BINDER COURSE PRIOR TO THE INSTALLATION OF THE FINAL BITUMINOUS CONCRETE SURFACE COURSE. EXCESSIVE CLEANING OF THE BINDER COURSE THAT MAY BE REQUIRED, AND IS NOT THE FAULT OF THE PAVING CONTRACTOR, SHALL BE PAID FOR ON A TIME AND MATERIAL BASIS BY PRIOR AGREEMENT WITH THE GENERAL CONTRACTOR.
20. THE TOWN'S ENGINEERING DIVISION SHALL BE NOTIFIED SEVENTY-TWO (72) HOURS PRIOR TO ANY EXCAVATION TO MARK OUT TOWN UTILITIES.
21. ALL WATER, SEWER, CURB CUT, STREET OPENING AND JACKIE'S LAW EXCAVATION PERMITS SHALL BE OBTAINED AT THE ENGINEERING DIVISION PRIOR TO ANY EXCAVATIONS.
22. ALL SITE WORK SHALL BE INSPECTED BY THE ENGINEERING DIVISION. THE APPLICANT\OWNER'S CONTRACTOR SHALL SUBMIT A CONSTRUCTION SCHEDULE OF PROPOSED WORK. ALL INSPECTIONS SHALL BE SCHEDULED 48 HOURS IN ADVANCE

20 0 10 20 40
SCALE
1 inch = 20 ft.

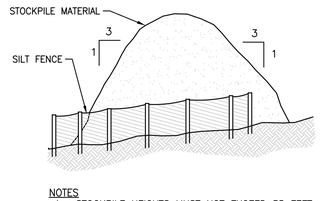
EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 20'



CATCH BASIN INLET PROTECTION

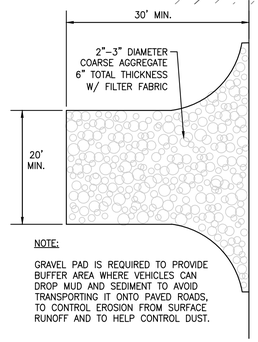
N.T.S.



NOTES
1. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET.
2. STOCKPILE SLOPES MUST BE 3:1 OR FLATTER.

STOCKPILE DETAIL

N.T.S.

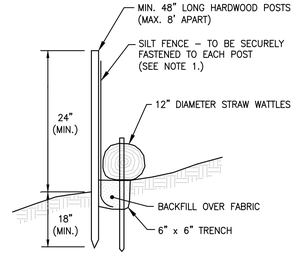


NOTE:

GRAVEL PAD IS REQUIRED TO PROVIDE BUFFER AREA WHERE VEHICLES CAN DROP MUD AND SEDIMENT TO AVOID TRANSPORTING IT ONTO PAVED ROADS, TO CONTROL EROSION FROM SURFACE RUNOFF AND TO HELP CONTROL DUST.

STONE CONSTRUCTION ENTRANCE

N.T.S.



NOTES:
1. WATTLES SHALL BE STAKED A MINIMUM OF 24 INCHES INTO THE GROUND WITH 2 INCHES OR LESS OF STAKE EXPOSED ABOVE WATTLE. STAKE SHALL BE A MAXIMUM OF 4 FEET APART AND WITHIN 2 FEET OF END OF WATTLE SECTIONS.

SILT FENCE/ STRAW WATTLE BARRIER

N.T.S.

CALL BEFORE YOU DIG 1-888-344-7233 MASSACHUSETTS ONE CALL SYSTEM

REVISION	DATE	BY

PROJECT LOCATION:
LOTS 2, 3, + 4
GRANDVIEW ROAD
READING, MA 01867

PARCEL ID:
MAP 27, LOT 404

PLAN SET:
MAJOR SITE PLAN MODIFICATION
GRANDVIEW ROAD SUBDIVISION - PRIVATE WAY
(GRANDVIEW ROAD EXTENSION)

APRIL 20, 2023

SITE PLAN PERMIT SET

SCALE: 1" = 20'

TOWN OF READING
COMMUNITY PLANNING & DEVELOPMENT COMMISSION

DATE: _____

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ENGINEER:
FODERA ENGINEERING
(617)877-3293
gfodera@foderaengineering.com
28 Harbor St., Suite 204
Danvers, MA 01923
PROFESSIONAL SEAL
COMMONWEALTH OF MASSACHUSETTS
GIOVANNI GAETANO FODERA
No. 54884
REGISTERED PROFESSIONAL ENGINEER

SURVEYOR:
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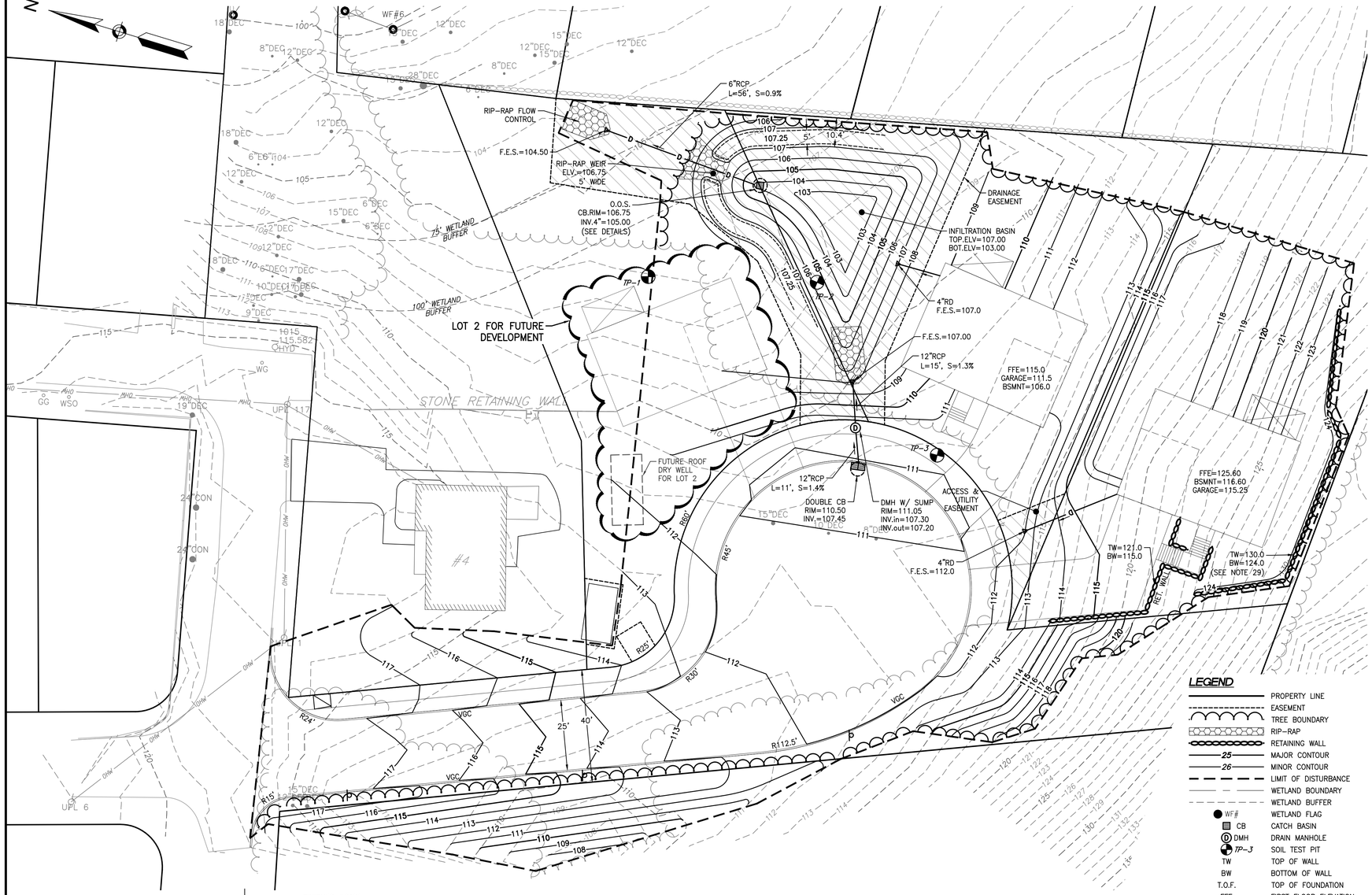
Groveland, MA 01834
P 978.891.5203
www.pfsland.com
PROFESSIONAL SEAL

JOB NO.: 20160-149

SHEET TITLE:
EROSION + SEDIMENT CONTROL PLAN

SHEET NUMBER:
C-3



LEGEND

- PROPERTY LINE
- EASEMENT
- TREE BOUNDARY
- RIP-RAP
- RETAINING WALL
- 25 MAJOR CONTOUR
- 26 MINOR CONTOUR
- LIMIT OF DISTURBANCE
- WETLAND BOUNDARY
- WETLAND BUFFER
- WF# WETLAND FLAG
- CB CATCH BASIN
- D DMH DRAIN MANHOLE
- TP-3 SOIL TEST PIT
- TW TOP OF WALL
- BW BOTTOM OF WALL
- T.O.F. TOP OF FOUNDATION
- FFE FIRST FLOOR ELEVATION
- RIM RIM ELEVATION
- INV INVERT ELEVATION
- O.O.S. OVERFLOW OUTLET STRUCTURE
- F.E.S. FLARED END SECTION

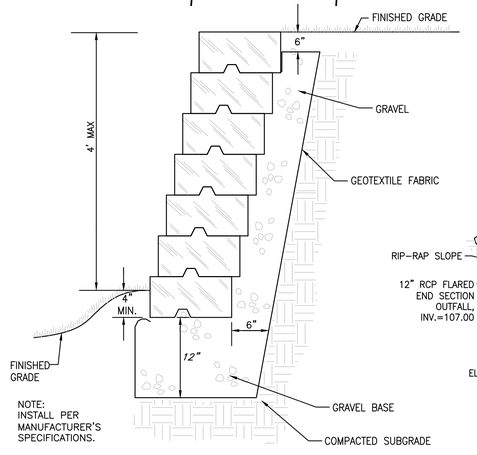
GRADING AND DRAINAGE NOTES

1. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE TO THE TOWN'S LATEST CONSTRUCTION SPECIFICATIONS AND DETAILS.
2. GRADING IN THE RIGHT-OF-WAY SHALL IN ACCORDANCE WITH LOCAL REGULATIONS, UNLESS OTHERWISE APPROVED BY THE TOWN.
3. THE CONTRACTOR SHALL NOTIFY DIG SAFE AND THE TOWN A MINIMUM OF 72 HOURS PRIOR TO THE START OF ANY EXCAVATIONS.
4. INSTALL ALL APPROPRIATE TREE PROTECTION MEASURES PRIOR TO GRADING AND EXCAVTION.
5. EXACT LOCATIONS OF SAW-CUTTING MAY BE FIELD DETERMINED BASED ON EXISTING PAVEMENT CONDITIONS.
6. THE CONTRACTOR SHALL CAREFULLY PRESERVE BENCHMARKS, REFERENCE POINTS AND STAKES.
7. EROSION CONTROL MEASURES SHALL BE STABILIZED IN PLACE BEFORE BEGINNING SITE WORK. THESE MEASURES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
8. ALL INDICATED ELEVATIONS ARE FINISHED ELEVATIONS.
9. LOCATE AND PROTECT ALL UTILITIES ASSOCIATED WITH THE PROJECT PRIOR TO CONSTRUCTION.
10. ALL EXCAVATION SHALL INCLUDE CLEARING, STRIPPING AND STOCKPILING TOPSOIL, REMOVING UNSUITABLE MATERIALS, THE CONSTRUCTION OF EMBANKMENTS, CONSTRUCTION FILLS, AND THE FINAL SHAPING AND TRIMMING TO THE LINES AND GRADES SHOWN ON THE PLANS.
11. ALL TREES, BRUSH, AND ORGANIC TOPSOIL AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED, UNLESS OTHERWISE SPECIFIED, AND DISPOSED OF AT AN OFF-SITE LOCATION, WITH THE EXCEPTION THAT ENOUGH TOPSOIL SHALL BE RETAINED FOR RE-SPREAD AND GENERAL LANDSCAPING. AREAS WHICH ARE TO BE FILLED SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D1557, METHOD C) COMPACTION TEST IN THE PAVED AREAS AND 90% IN THE OTHER AREAS.
12. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE TO ALL INLETS AND CATCH BASINS. AREAS OF SURFACE PONDING SHALL BE CORRECTED BY CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
13. IF AREAS ARE DISTURBED BEYOND PROPOSED GRADES BY NEGLIGENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY REGRADING OR REPAIR TO MATCH ORIGINAL EXISTING CONDITIONS.
14. SHORING SHALL BE DONE AS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR THE SAFETY OF PERSONNEL. SHORING SHALL BE IN ACCORDANCE WITH ALL O.S.H.A AND LOCAL REGULATIONS.
15. CONTRACTOR SHALL ADJUST GRADES BY VARYING THE PAVEMENT SECTIONS ACCORDINGLY. EXISTING COMPACTED SUBGRADE TO BE DISTURBED AS LITTLE AS POSSIBLE.
16. ALL PROPOSED SPOT ELEVATIONS SHOWN INDICATE FINISHED GRADED ELEVATIONS AT EDGE OF PAVEMENT AND/OR GRADE BREAKS, UNLESS OTHERWISE NOTED.
17. MAINTAIN PROPER SITE DRAINAGE AT ALL TIMES DURING THE COURSE OF CONSTRUCTION, AND PREVENT STORM WATER FROM RUNNING INTO OR STANDING IN EXCAVATED AREAS.
18. SPREAD AND COMPACT UNIFORMLY TO THE DEGREE SPECIFIED ALL EXCESS TRENCH SPOIL AFTER COMPLETION OF THE UNDERGROUND IMPROVEMENTS (EARTHWORK CONTRACTOR SHALL MAKE APPROPRIATE ADJUSTMENTS IN ROUGH GRADING TO ACCOMMODATE TRENCH SPOIL).
19. PROVIDE WATER TO ADD TO DRY MATERIAL IN ORDER TO ADJUST THE MOISTURE CONTENT FOR THE PURPOSE OF ACHIEVING THE SPECIFIED COMPACTION.
20. UNSUITABLE MATERIAL SHALL BE CONSIDERED AS MATERIAL WHICH IS NOT SUITABLE FOR THE SUPPORT OF PAVEMENT AND BUILDING CONSTRUCTION, AND IS ENCOUNTERED BELOW NORMAL TOPSOIL DEPTHS AND THE PROPOSED SUB-GRADE ELEVATION. THE DECISION TO REMOVE SAID MATERIAL, AND TO WHAT EXTENT, SHALL BE MADE BY A SOILS ENGINEER WITH THE CONCURRENCE OF THE OWNER.
21. REPAIR ANY BASE COURSE AND BINDER COURSE FAILURES PRIOR TO THE INSTALLATION OF THE FINAL BITUMINOUS CONCRETE SURFACE COURSE.
22. SWEEP CLEAN THE BINDER COURSE PRIOR TO THE INSTALLATION OF THE FINAL BITUMINOUS CONCRETE SURFACE COURSE. EXCESSIVE CLEANING OF THE BINDER COURSE THAT MAY BE REQUIRED, AND IS NOT THE FAULT OF THE PAVING CONTRACTOR, SHALL BE PAID FOR ON A TIME AND MATERIAL BASIS BY PRIOR AGREEMENT WITH THE GENERAL CONTRACTOR.
23. CONFIRM INVERTS OF ALL EXISTING STORM INLETS AND SANITARY SEWER MANHOLES BEFORE COMMENCING CONSTRUCTION.
24. A GEOTEXTILE MATTING (LANDLOCK TRM 450 OR EQUIVALENT) SHALL BE USED FOR EROSION CONTROL AN ALL SLOPES GREATER THAN 3H:1V IF NECESSARY.
25. DRAINAGE STRUCTURES AND UNDERGROUND INFILTRATION FACILITIES SHALL BE INSPECTED SEMIANNUALLY TO ENSURE PROPER WORKING ORDER.
26. UNSUITABLE EXISTING SOILS, SILT, AND DEBRIS SHALL BE ADEQUATELY REMOVED FROM THE AREA OF THE PROPOSED INFILTRATION BASIN. REMOVE ALL ORGANICS.
27. IF THE CONTRACTOR IN THE COURSE OF WORK FINDS ANY DISCREPANCIES BETWEEN THE PLANS AND THE PHYSICAL CONDITIONS OF THE LOCALITY, OR ANY ERRORS OR OMISSIONS IN THE PLANS OR IN THE LAYOUT AS GIVEN BY THE ENGINEER, IT SHALL BE HIS DUTY TO IMMEDIATELY INFORM THE ENGINEER, IN WRITING AND THE ENGINEER WILL PROMPTLY VERIFY THE SAME. ANY WORK DONE AFTER SUCH A DISCOVERY, UNTIL AUTHORIZED, WILL BE AT THE CONTRACTOR'S RISK.
28. ANNUAL O&M REPORTS SHALL BE DELIVERED TO THE OFFICE OF THE TOWN ENGINEER BY JANUARY 15 OF EACH YEAR.
29. ANY RETAINING WALL OVER FOUR (4) FEET IN RETAINED HEIGHT SHALL REQUIRE AN ENGINEERED DESIGN FROM A DESIGN PROFESSIONAL.

GRADING AND DRAINAGE PLAN

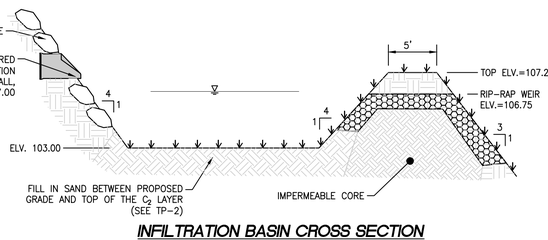
SCALE: 1" = 20'

SCALE
1 inch = 20 ft.

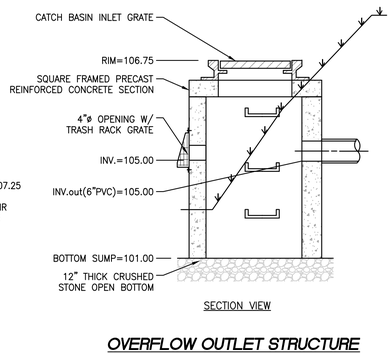


NOTE:
INSTALL PER MANUFACTURER'S SPECIFICATIONS.

4ft MAX HIGH RETAINING WALL
N.T.S.



INFILTRATION BASIN CROSS SECTION
N.T.S.



SECTION VIEW

OVERFLOW OUTLET STRUCTURE
N.T.S.

SOIL TEST RESULTS

TEST DATE: 7/6/2020
WEATHER: 65'F, SUNNY/ DRY
SOIL EVALUATOR: ARMAND PORRAZZO
LICENCE #: 1958

TP-1

ELV.	DPT.	Soil Data
106	0"-9"	A_p (0"-9") Sandy Loam 10YR 3/2
105	9"-24"	B (9"-24") Sandy Loam 10YR 7/6
104		
103		
102		
101		
100	24"-108"	C (24"-108") Loamy Sand 2.5Y 4/3
99		
98		
97		
96	108"-	

NO REFUSAL
NO WEEPING
REDOX @ 60"
ESHWT = 101.0

TP-2

ELV.	DPT.	Soil Data
108	0"-12"	A (0"-12") Sandy Loam 10YR 3/2
107		
106	12"-36"	B_w (12"-36") Sandy Loam 10YR 7/6
105		
104		
103	36"-80"	C_1 (36"-80") Loamy Sand 2.5Y 5/2
102		
101		
100	80"-120"	C_2 (80"-120") Sand Gravel 2.5Y 4/3
99		
98	120"-	

NO REFUSAL
NO WEEPING
NO REDOX

TP-3

ELV.	DPT.	Soil Data
112	0"-8"	A (0"-8") Sandy Loam 10YR 3/2
111		
110	8"-27"	B_w (8"-27") Sandy Loam 10YR 7/6
109		
108		
107	27"-66"	C (27"-66") Loamy Sand 2.5Y 5/2
106		
105		
104		
103		
-	66"-	

NO REFUSAL
NO WEEPING
NO REDOX

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MASSACHUSETTS ONE CALL SYSTEM

REVISION	DATE	BY

PROJECT LOCATION:
LOTS 2, 3, + 4
GRANDVIEW ROAD
READING, MA 01867
PARCEL ID:
MAP 27, LOT 404

PLAN SET:
MAJOR SITE PLAN MODIFICATION
GRANDVIEW ROAD SUBDIVISION - PRIVATE WAY
(GRANDVIEW ROAD EXTENSION)
SITE PLAN PERMIT SET

APRIL 20, 2023

SCALE: 1" = 20'

TOWN OF READING
COMMUNITY PLANNING & DEVELOPMENT COMMISSION
DATE: _____

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ENGINEER:
FODERA ENGINEERING
(617)877-3293
gfodera@foderaengineering.com
28 Harbor St., Suite 204
Danvers, MA 01923
PROFESSIONAL SEAL
COMMONWEALTH OF MASSACHUSETTS
GIOVANNI GAETANO FODERA
No. 54684
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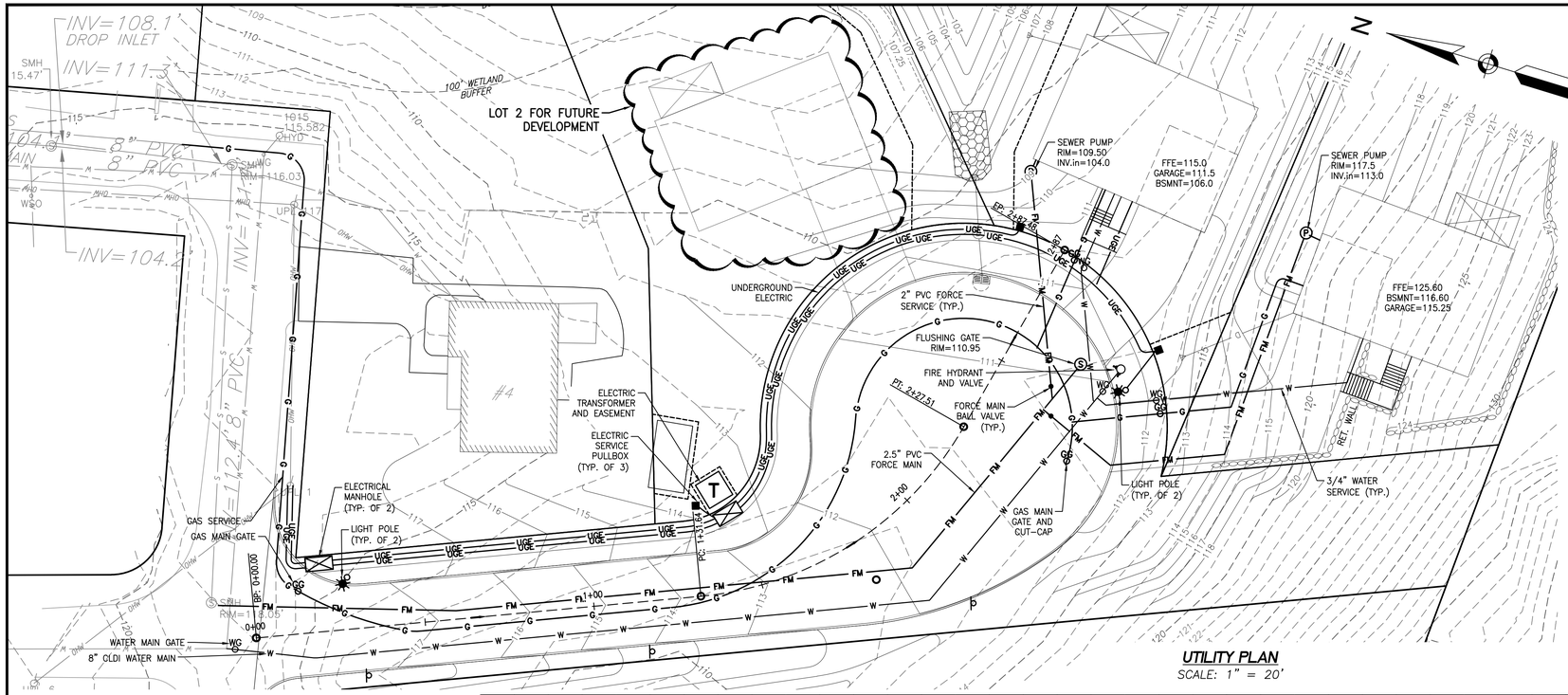
P 978.891.5203
www.pfsland.com
PROFESSIONAL SEAL

JOB NO.: 20160-149

SHEET TITLE:
GRADING AND DRAINAGE PLAN

SHEET NUMBER:
C-4



UTILITY PLAN
SCALE: 1" = 20'

LEGEND

- PROPERTY LINE
- RIP-RAP
- RETAINING WALL
- 125 MAJOR CONTOUR
- 126 MINOR CONTOUR
- LIMIT OF DISTURBANCE
- D STORM DRAIN LINE
- G GAS LINE
- OHW OVERHEAD UTILITY WIRE LINE
- S SANITARY SEWER UTILITY LINE
- FM SEWER FORCE MAIN
- UGE UNDERGROUND ELECTRIC LINE
- W WATER UTILITY LINE
- CB CATCH BASIN
- DMH DRAIN MANHOLE
- SEWER PUMP
- SEWER FLUSHING GATE
- FORCE MAIN BALL VALVE
- GAS VALVE
- WATER VALVE
- FIRE HYDRANT
- RIM RIM ELEVATION
- INV INVERT ELEVATION
- STREET LIGHT
- T ELECTRIC TRANSFORMER & EASEMENT
- ELECTRIC SERVICE PULLBOX
- ELECTRIC MANHOLE

SEWAGE CALCULATIONS

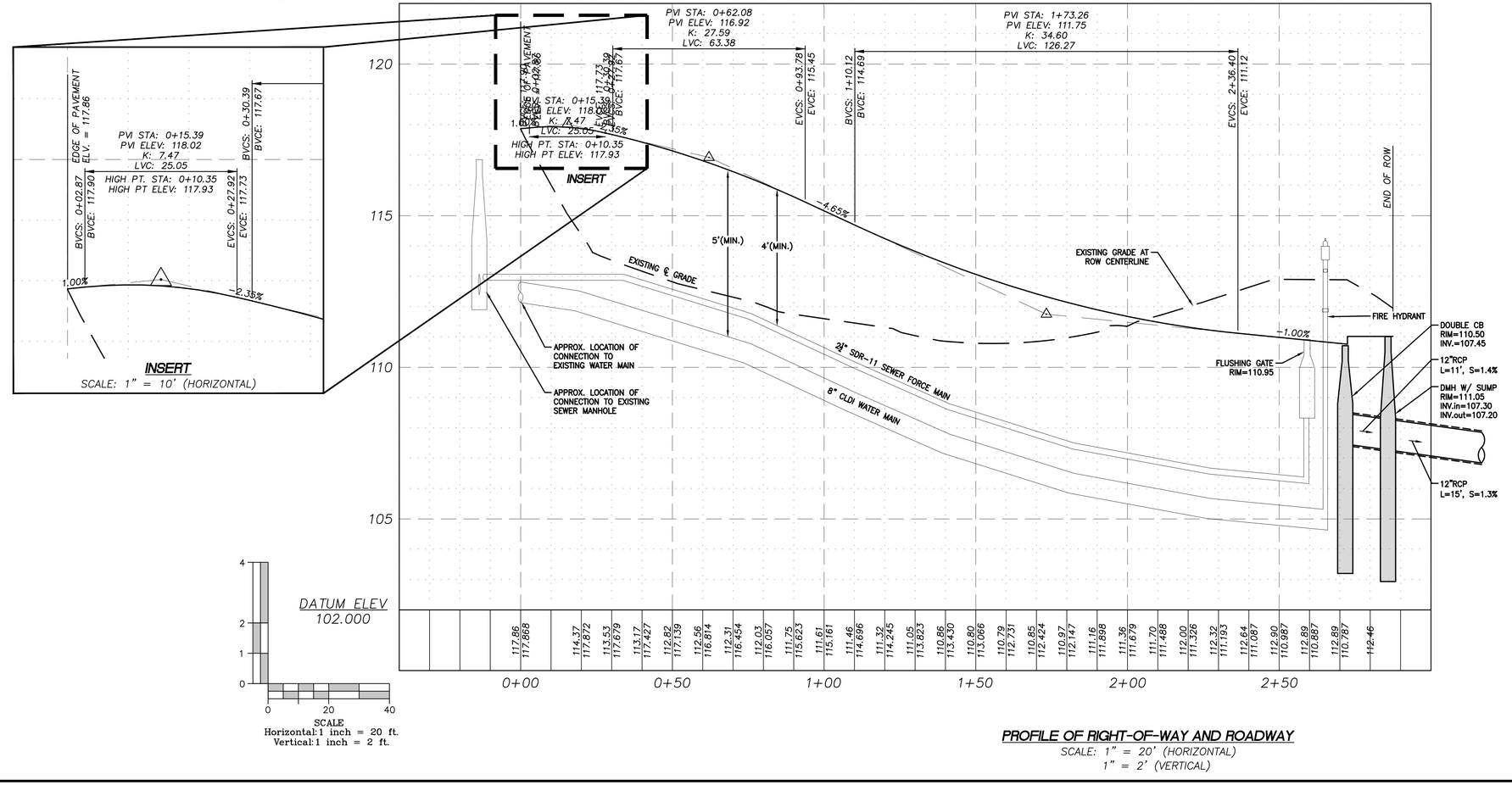
ASSUMPTIONS MADE FOR EACH PROPOSED HOUSE TO CONTAIN FOUR (4) BEDROOMS. CALCULATIONS BELOW ARE IN ACCORDANCE TO 310 CMR 15.00.

3 NEW HOUSES * 4 BEDROOMS PER HOUSE = 12 BEDROOMS ADDED

12 BEDROOMS * 110 GAL/DAY = 1,320 GAL/DAY OF ADDED SEWAGE

UTILITY NOTES

1. CONTRACTOR IS TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND ENSURE NO CONFLICTS EXIST WITH PROPOSED IMPROVEMENTS. NOTIFY ENGINEER IMMEDIATELY IF UTILITIES ARE LOCATED DIFFERENTLY THAN SHOWN. THE CONTRACTOR SHALL COORDINATE WITH EACH RESPECTIVE UTILITY COMPANY IN ORDER TO RELOCATE IF NEEDED IN CONFORMANCE WITH THEIR GUIDELINES.
2. CONTRACTOR SHALL NOTIFY AND COORDINATE WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO THE REMOVAL OF INDICATED UTILITIES ON SITE. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS REQUIRED FOR DEMOLITION AND HAUL OFF FROM THE APPROPRIATE AUTHORITIES.
3. THE DEPARTMENT OF PUBLIC WORKS OR APPLICABLE GOVERNING DEPARTMENT MUST AUTHORIZE AND PERMIT TO CONSTRUCT, ALTER OR MODIFY A WATER OR SEWER LINE.
4. AT THE COMPLETION OF THE WATER AND/OR SEWER CONSTRUCTION AND PRIOR TO RECORDING THE FINAL PLAT, THE CONTRACTOR WILL FURNISH THE WATER SYSTEM INSPECTOR RECORD DRAWINGS OF THE PROJECT.
5. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE GAS COMPANY FOR THE CONSTRUCTION OF THE GAS LINE BETWEEN METER AND MAIN.
6. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE POWER COMPANY FOR THE CONSTRUCTION OF ELECTRICAL CONDUIT TO PROVIDE SERVICE AND IF A TRANSFORMER IS REQUIRED TO BE INSTALLED.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING, PRIOR TO CONSTRUCTION, ALL EXISTING LOCATIONS AND INVERT ELEVATIONS OF SANITARY SEWERS, STORM DRAINAGE, AND WATER MAINS. IF ANY INVERT ELEVATION VARIES MORE THAN 0.1 FT. FROM RECORD ELEVATIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. WORK SHALL NOT PROCEED UNTIL THE CONTRACTOR IS NOTIFIED BY THE ENGINEER.
8. CONNECT TO EXISTING UTILITIES AND INSTALL UTILITIES IN COMPLIANCE WITH REQUIREMENTS OF APPROPRIATE JURISDICTIONAL AGENCIES.
9. COORDINATE WITH BUILDING PLANS TO ASSURE ACCURACY OF UTILITY CONNECTIONS AND COMPLIANCE WITH LOCAL CODES.
10. ALL SEWERS TO BE MAINTAINED THROUGHOUT CONSTRUCTION, INCLUDING CLEANING OF ANY SILT OR DEBRIS ACCUMULATED IN STRUCTURES.
11. ALL SURPLUS EXCAVATED MATERIAL FROM THE TRENCH SHALL BE DISPOSED OFF THE SITE BY CONTRACTOR.
12. TRENCHING SHOULD BE CONDUCTED IN ACCORDANCE WITH ALL OSHA REGULATIONS.
13. COORDINATE EXACT TRENCHING, ROUTING, AND POINT OF TERMINATION WITH ALL UTILITY COMPANIES.
14. BACKFILL MATERIAL SHALL BE SUITABLE MATERIAL IN COMPLIANCE WITH THE TOWN OF DANVERS AND/OR THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MASSDOT).
15. WATER MAIN SHALL HAVE A MINIMUM COVER OF FIVE (5) FEET.
16. THE SANITARY SEWER AND POTABLE WATER LINES ARE TO BE SEPARATED BY AT LEAST 10 FEET HORIZONTALLY, OR THE POTABLE WATER LINE SHALL BE AT LEAST 18 INCHES VERTICALLY ABOVE THE SANITARY SEWER.
17. CONTRACTOR TO RECONFIGURE PROPOSED ELECTRIC/TELEPHONE/CABLE CONDUITS AS NECESSARY TO AVOID CONFLICT WITH TREES/LANDSCAPING.
18. THRUST BLOCKS TO BE PLACED AT ALL BEND LOCATIONS WITHIN THE POTABLE WATER LINES. SEE DETAIL SHEETS.
19. ALL UTILITIES SHALL BE APPROVED MATERIALS AND INSTALLED IN ACCORDANCE WITH THE DEPARTMENT OF PUBLIC WORKS STANDARDS.
20. THE TOWN'S ENGINEERING DIVISION SHALL BE NOTIFIED SEVENTY-TWO (72) HOURS PRIOR TO ANY EXCAVATION TO MARK OUT TOWN UTILITIES.



PROFILE OF RIGHT-OF-WAY AND ROADWAY
SCALE: 1" = 20' (HORIZONTAL)
1" = 2' (VERTICAL)

UTILITY AND ROADWAY PROFILE PLAN
SCALE: 1" = 20' (HORIZONTAL)

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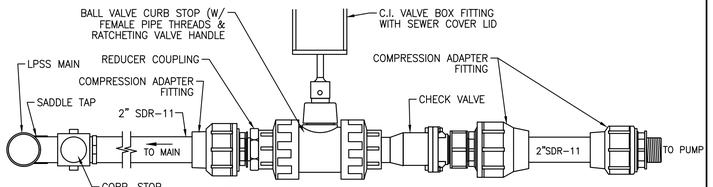
JOB NO.: 20160-149

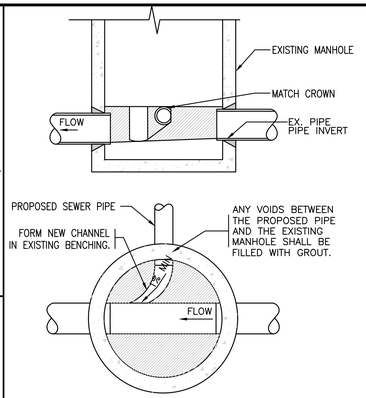
SHEET TITLE:
UTILITY + ROADWAY PROFILE PLAN

SHEET NUMBER:
C-5



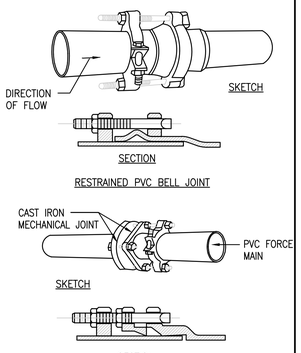
LOW PRESSURE SEWER SERVICE LATERAL VALVE AND CONNECTION

N.T.S.



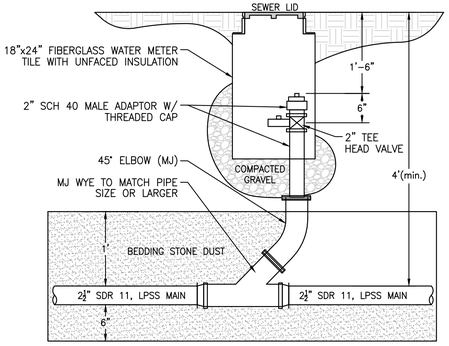
CONNECTION TO EXISTING SEWER MANHOLE

N.T.S.



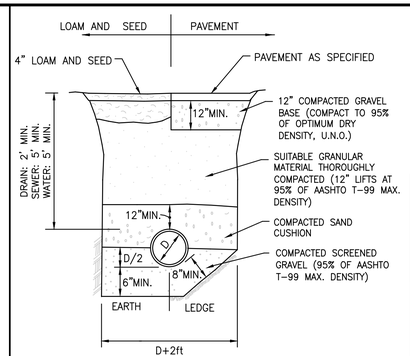
RESTRAINED MECHANICAL JOINT FITTING

N.T.S.



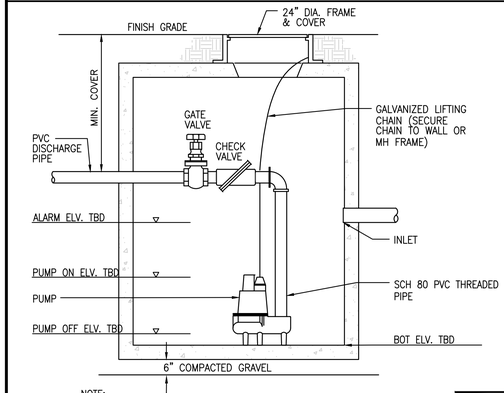
SEWER FORCE MAIN FLUSHING CONNECTION

N.T.S.



DRAIN/ SEWER/ WATER TRENCH AND BACKFILL DETAIL

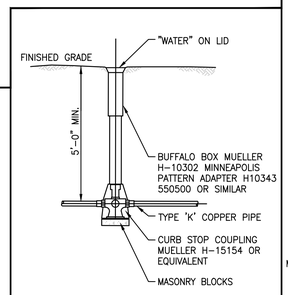
N.T.S.



NOTE:
SEWER PUMP DESIGNS FOR ASSOCIATED LOTS SHALL BE SUBMITTED TO THE ENGINEERING DIVISION FOR REVIEW AND APPROVAL UPON OR BEFORE THE SUBMISSION OF THE APPLICATION FOR THE SEWER PERMIT OF EACH LOT.

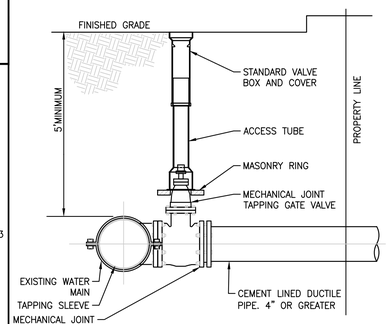
PUMP CHAMBER

N.T.S.



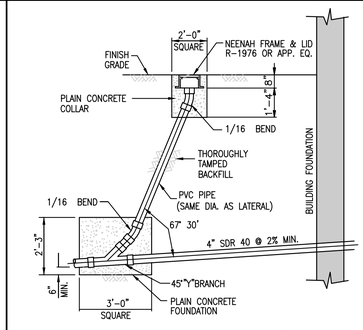
WATER SERVICE VALVE

N.T.S.



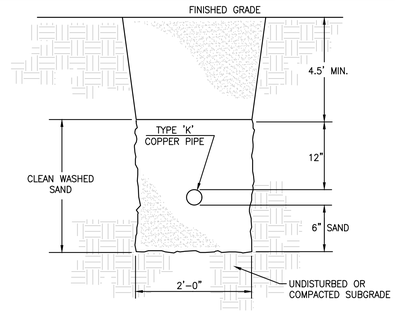
WATER CONNECTION WITH TAPPING SLEEVE AND VALVE

N.T.S.



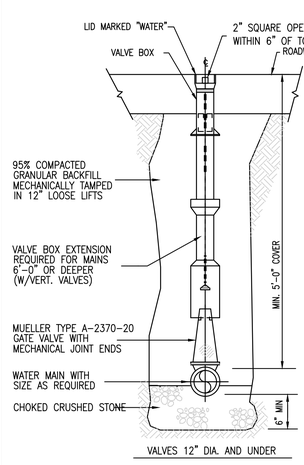
SEWER SERVICE AT BUILDING W/ CLEANOUT

N.T.S.



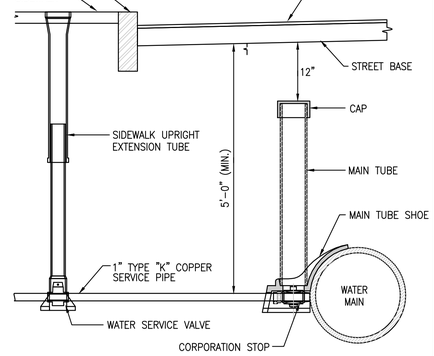
COPPER WATER SERVICE PIPE TRENCH

N.T.S.



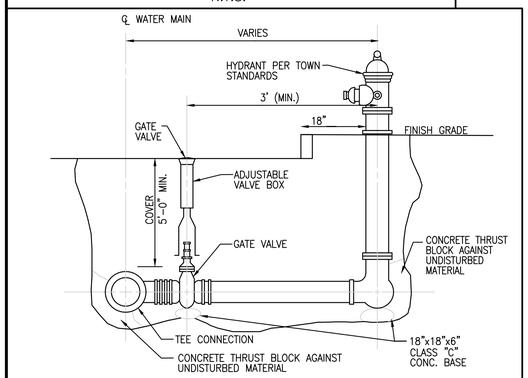
UNDERGROUND GATE VALVE

N.T.S.



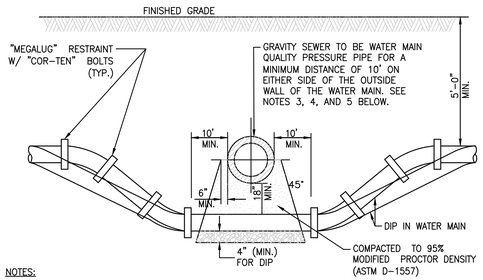
TYPICAL WATER SERVICE CONNECTION

N.T.S.



PROPOSED FIRE HYDRANT

N.T.S.

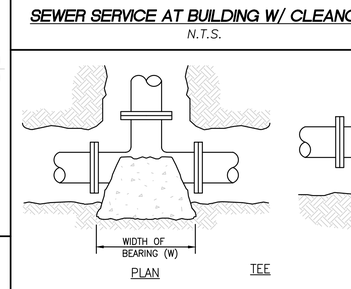


NOTES:

1. HORIZONTAL AND VERTICAL SEPARATION BETWEEN WATERMAINS AND SEWERS SHALL COMPLY WITH APPLICABLE SECTIONS OF LOCAL OR STATE REQUIREMENTS, WHICHEVER IS MORE STRINGENT.
2. CONTRACTOR MAY BEND WATER MAIN PIPE UNIFORMLY UNDER SEWERS WITHOUT USING FITTINGS, PROVIDED THAT JOINT DEFLECTION DOES NOT EXCEED 5 DEGREES PER JOINT FOR PIPE UNDER 14" IN DIAMETER AND 3 DEGREES PER JOINT FOR PIPE 14" AND OVER IN DIAMETER. IF FITTINGS ARE USED, CONTINUOUS STRAPPING WITH RODS, STRAPS, NUTS AND BOLTS BELOW NORMAL WATERMAIN DEPTH ARE REQUIRED, OR RETAINER GLANDS MAY BE USED IN LIEU OF STRAPPING. RETAINER GLANDS TO BE CLOW No. F-1058 OR APPROVED EQUAL.
3. ALL SANITARY SEWER (INCLUDING SERVICE) CROSSINGS WHERE THE WATER MAINS OR WATER SERVICES ARE LESS THAN 18" VERTICALLY ABOVE THE SEWER SHALL BE POLYVINYL CHLORIDE PRESSURE PIPE (SDR 26-160 PSI) AND SHALL CONFORM WITH THE LATEST REVISION OF ASTM D- 2241. JOINTS SHALL CONFORM TO ASTM D-3139 AND ELASTOMERIC GASKETS SHALL CONFORM TO ASTM F-477. THE SAME PIPE AND JOINT MATERIALS SHALL BE USED WHENEVER WATER MAIN CROSSES BELOW THE SEWER.
4. ALL STORM SEWER (INCLUDING SERVICE) CROSSINGS WHERE THE WATER MAINS ARE LESS THAN 18" VERTICALLY ABOVE THE SEWER SHALL BE REINFORCED CONCRETE PIPE, ASTM C-361, CLASS D-25,WITH BELL AND SPIGOT JOINTS AND RUBBER GASKETS, OR PVC SDR 26 AS SPECIFIED IN NOTE 3 ABOVE. THE SAME PIPE AND JOINT MATERIAL SHALL BE USED WHENEVER WATER MAIN CROSSES BELOW THE SEWER.
5. FOR NEW SEWER INSTALLATIONS CROSSING OVER WATER MAINS, THE ENTIRE RUN OF NEW SEWER SHALL BE WATER MAIN QUALITY PIPE, EXTENDING FROM STRUCTURE TO STRUCTURE ON EACH SIDE OF THE CROSSING.

WATER MAIN CROSSING

N.T.S.



MINIMUM THRUST BLOCK AREA REQUIRED (Y x W)		
PIPE SIZE	WATER PIPE	
	TEE, DEAD END, 90° BEND	45° & 22½-8° BENDS
4" OR LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET

NOTES
1. THRUST BLOCKS TO EXTEND TO UNDISTURBED GROUND.
2. ALL CONCRETE SHALL BE CLASS B.
3. TABLE IS BASED ON 3000 LB./SQ. FT. SOIL. IF SOIL CONDITIONS ARE FOUND TO INDICATE SOIL BEARING LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
4. AREAS FOR PIPES GREATER THAN 16" SHALL BE CALCULATED FOR EACH PROJECT.
5. FOR ALL NON BEARING VERTICAL SURFACES.

TRUST BLOCKS FOR WATER SYSTEM

N.T.S.

CALL BEFORE YOU DIG 1-888-344-7233 MASSACHUSETTS ONE CALL SYSTEM

REVISION	DATE	BY

PROJECT LOCATION:
LOTS 2, 3, + 4
GRANDVIEW ROAD
READING, MA 01867
PARCEL ID:
MAP 27, LOT 404

APRIL 20, 2023

PLAN SET:
MAJOR SITE PLAN MODIFICATION
GRANDVIEW ROAD SUBDIVISION - PRIVATE WAY
(GRANDVIEW ROAD EXTENSION)

SITE PLAN PERMIT SET

SCALE: N.T.S.

TOWN OF READING
COMMUNITY PLANNING & DEVELOPMENT COMMISSION
DATE: _____

FOR REGISTRY USE ONLY

ENGINEER:
FODERA ENGINEERING
(617)877-3293
gfodera@foderaengineering.com
28 Harbor St., Suite 204
Danvers, MA 01923

SURVEYOR:
PFS Land Surveying, Inc.
20 Balch Avenue
Groveland, MA 01834
P 978.891.5203
www.pfsland.com

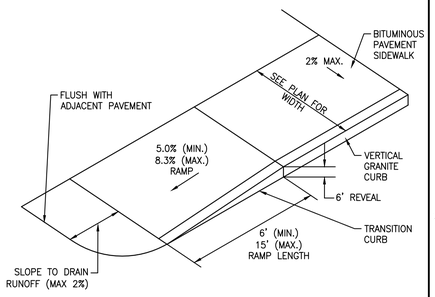
PROFESSIONAL SEAL
COMMONWEALTH OF MASSACHUSETTS
GIOVANNI GAETANO FODERA
No. 54884
REGISTERED PROFESSIONAL ENGINEER

PROFESSIONAL SEAL

JOB NO.: 20160-149

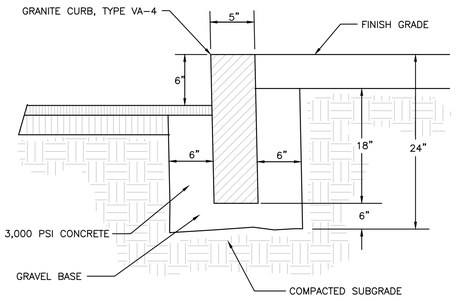
SHEET TITLE:
DETAILS
SHEET 1

SHEET NUMBER:
C-6



ADA ACCESSIBLE SIDEWALK RAMP

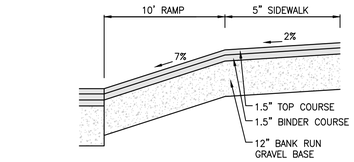
N.T.S.



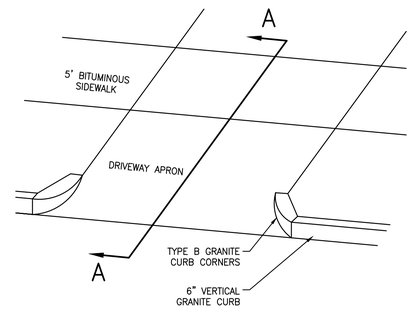
NOTE:
INSTALL GRANITE CURB INLET AT EACH CATCH BASIN LOCATION

VERTICAL GRANITE CURB

N.T.S.

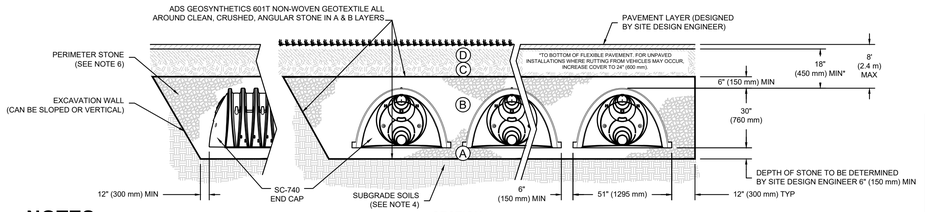


SECTION A–A



TYPICAL DRIVEWAY APRON

N.T.S.

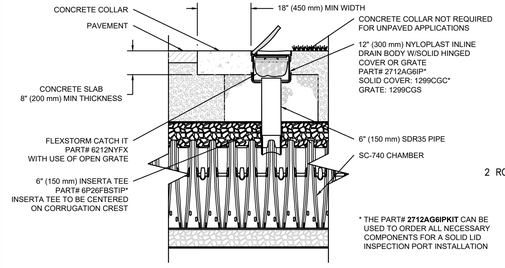


SECTION
NTS

NOTES:

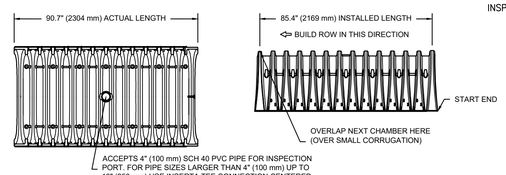
1. SC–740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR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

Ⓐ DOUBLE WASHED ¾"–1½" STONE
Ⓑ DOUBLE WASHED ¾"–1¼" STONE
Ⓒ CLEAN GRANULAR FILL MATERIAL
Ⓓ 4"–6" TOPSOIL (LAWN AREA) OR 12" COMPACTED GRAVEL BASE (PAVEMENT AREA)

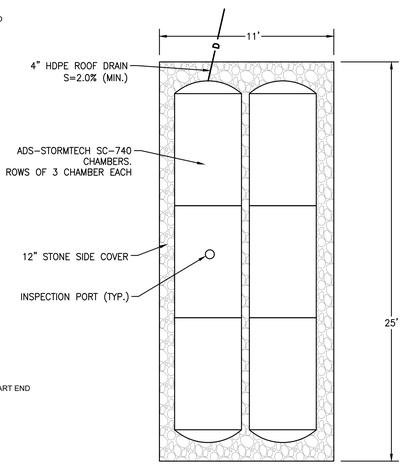


* THE PART# **2712AG6IPKIT** CAN BE USED TO ORDER ALL NECESSARY COMPONENTS FOR A SOLID LID INSPECTION PORT INSTALLATION

6" PVC INSPECTION PORT DETAIL
NTS



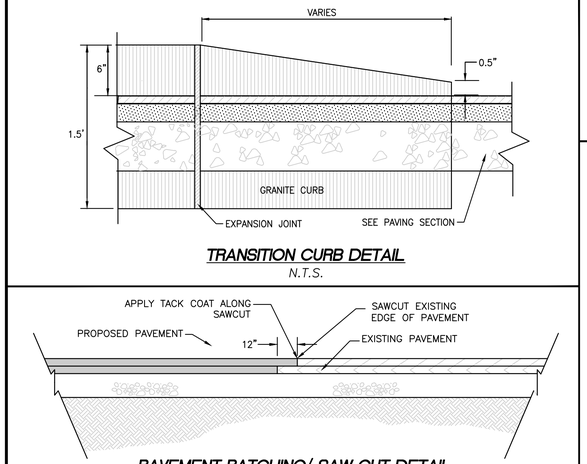
SC-740 TECHNICAL SPECIFICATION
NTS



NOTE:
SEE ADDITIONAL DETAILS AND SPECIFICATIONS ON THIS PAGE.

ROOF DRY WELL DETAIL
(FOR FUTURE INSTALL AT LOT 2)

N.T.S.



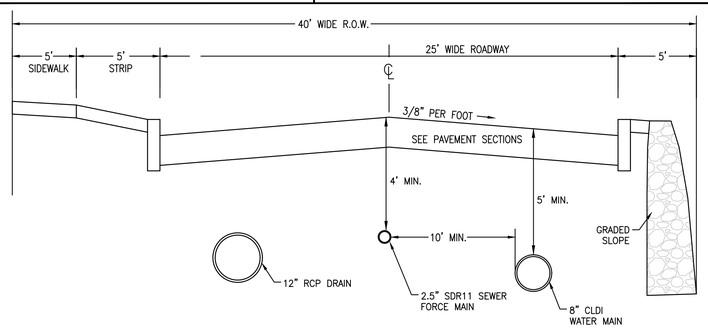
PAVEMENT PATCHING/ SAW CUT DETAIL

N.T.S.

NOT USED

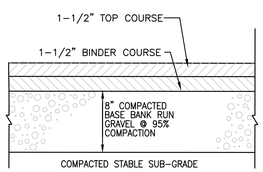
TRANSITION CURB DETAIL

N.T.S.

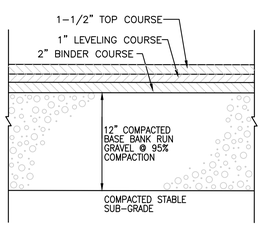


TYPICAL ROADWAY CROSS SECTION

N.T.S.



SIDEWALK SECTION

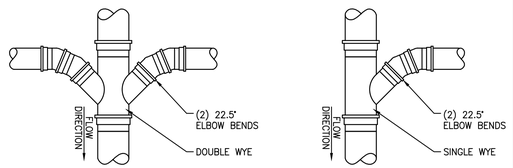


ROADWAY SECTION

NOTE:
COMPACTED FILL SUBSURFACE BACKFILL SHALL MEET SPECIFICATIONS SET FORTH BY THE ENGINEERING DEPARTMENT AND/OR MASSDOT SPECIFICATIONS.

BITUMINOUS PAVEMENT SECTION

N.T.S.

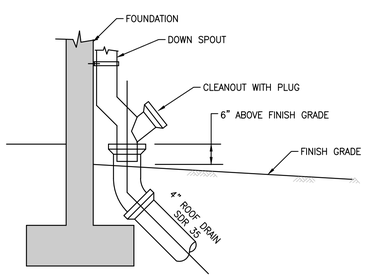


MANIFOLD PLAN VIEW

'WYE' CONNECTION PLAN VIEW

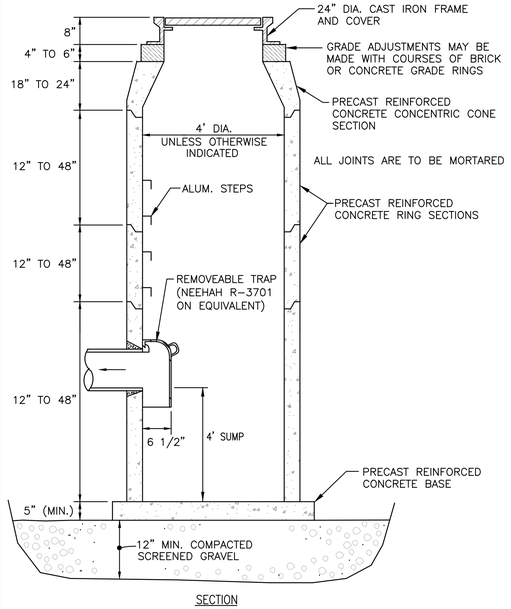
MANIFOLD AND WYE CONNECTIONS

N.T.S.



TYPICAL DOWNSPOUT LEADER

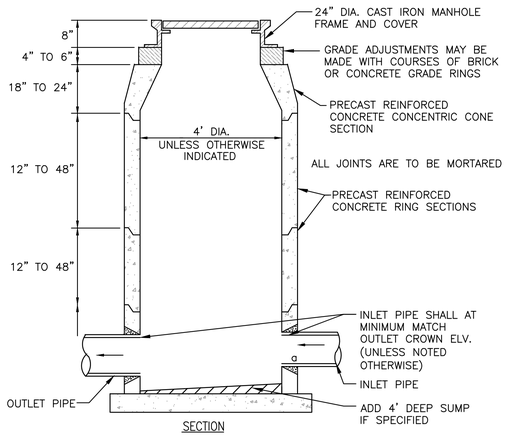
N.T.S.



SECTION

TYPICAL CATCH BASIN

N.T.S.



SECTION

TYPICAL DRAIN MANHOLE

N.T.S.

TOWN OF READING
COMMUNITY PLANNING & DEVELOPMENT COMMISSION

DATE: _____

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ENGINEER:
FODERA ENGINEERING
(617)877-3293
gfodera@foderaengineering.com
28 Harbor St., Suite 204
Danvers, MA 01923

PROFESSIONAL SEAL
COMMONWEALTH OF MASSACHUSETTS
GIOVANNI GAETANO FODERA
No. 54884
REGISTERED PROFESSIONAL ENGINEER

SURVEYOR:
PFS Land Surveying, Inc.
20 Balch Avenue
Groveland, MA 01834
P 978.891.5203
www.pfsland.com

PROFESSIONAL SEAL

JOB NO.: 20160–149

SHEET TITLE:
DETAILS
SHEET 2

SHEET NUMBER:
C-7

CALL BEFORE YOU DIG
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MASSACHUSETTS ONE CALL SYSTEM

REVISION	DATE	BY

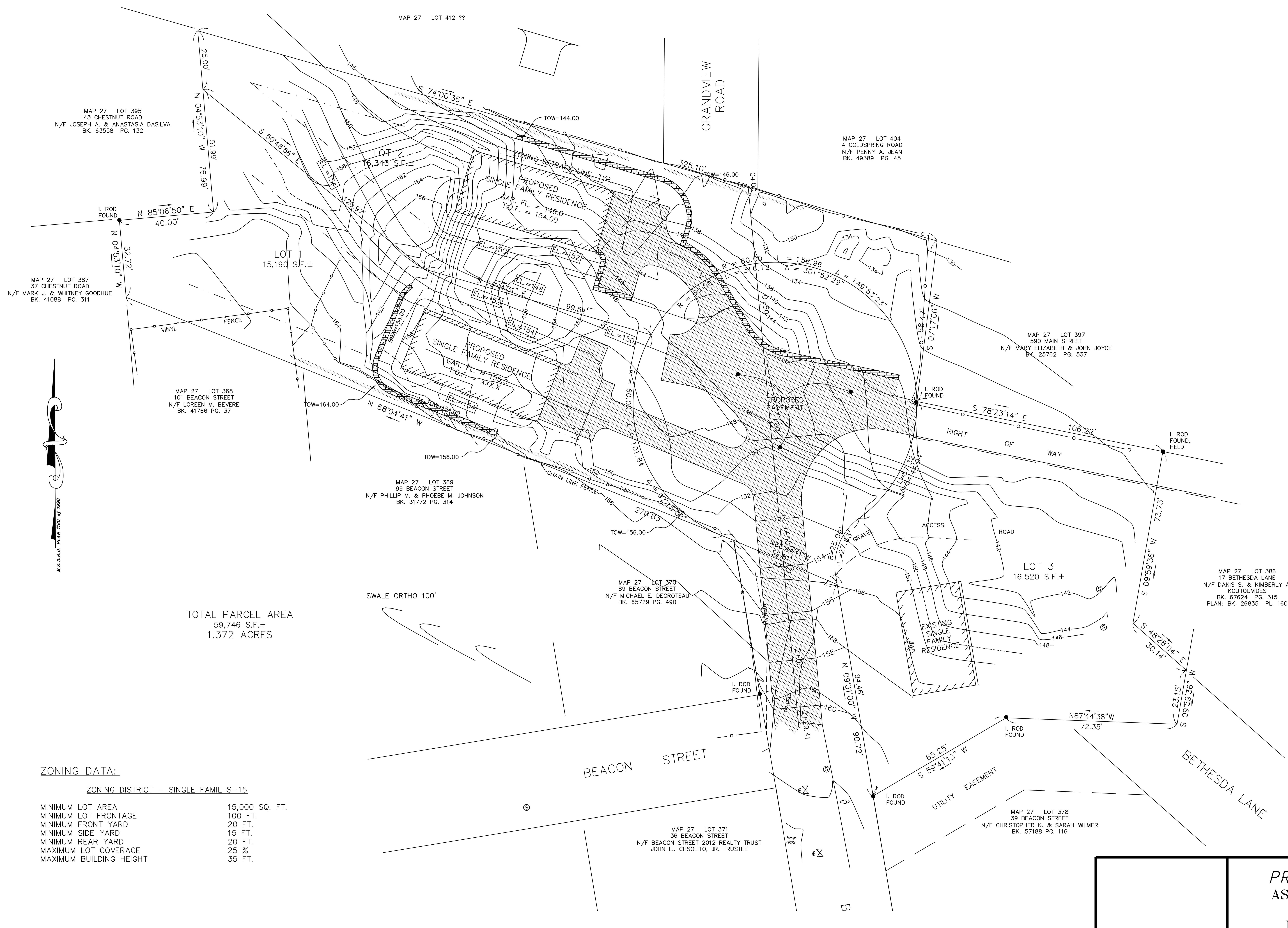
PROJECT LOCATION:
LOTS 2, 3, + 4
GRANDVIEW ROAD
READING, MA 01867

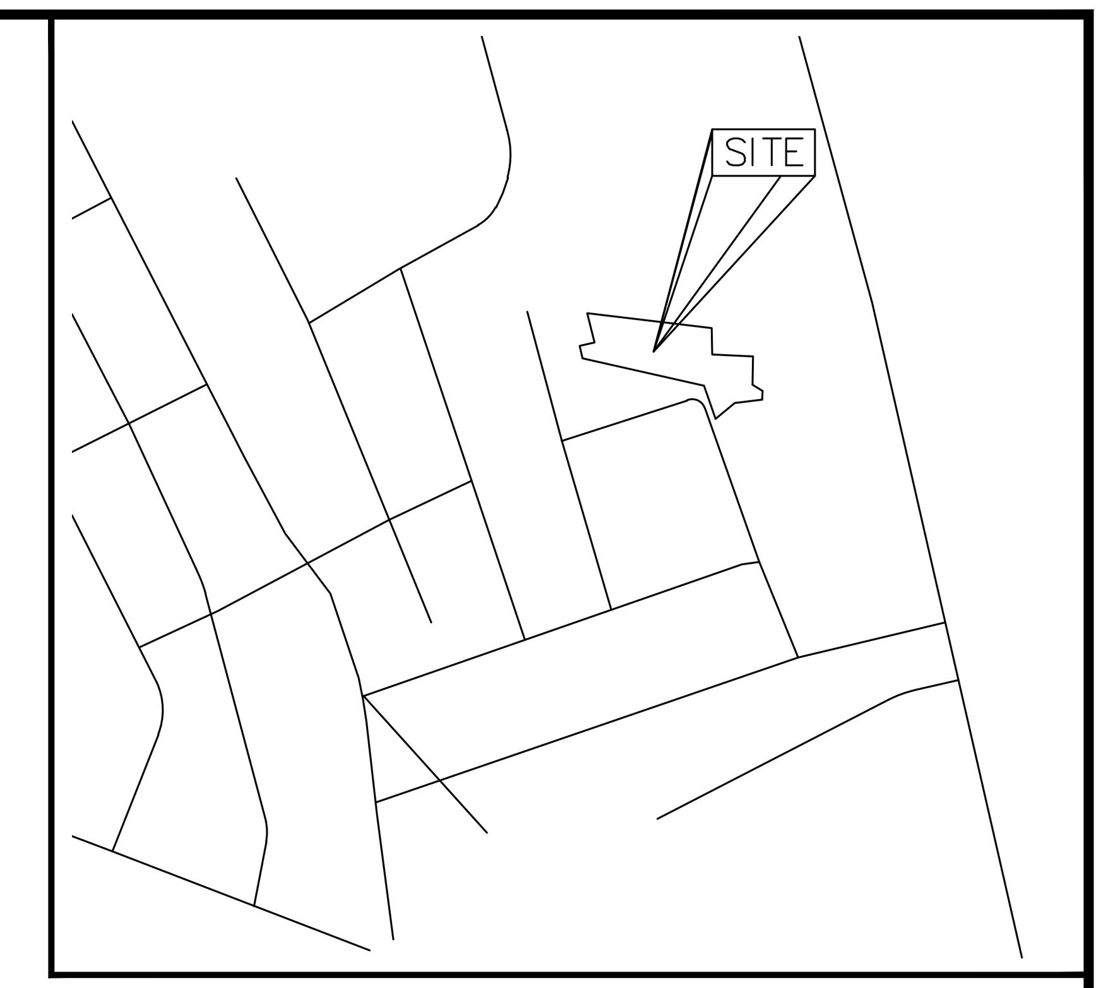
PARCEL ID:
MAP 27, LOT 404

APRIL 20, 2023

PLAN SET:
MAJOR SITE PLAN MODIFICATION
GRANDVIEW ROAD SUBDIVISION – PRIVATE WAY
(GRANDVIEW ROAD EXTENSION)
SITE PLAN PERMIT SET

SCALE: N.T.S.





VICINITY PLAN

SCALE: 1" = 500'

ZONING DATA:

ZONING DISTRICT – SINGLE FAMIL S-15

MINIMUM LOT AREA	15,000 SQ. FT.
MINIMUM LOT FRONTAGE	100 FT.
MINIMUM FRONT YARD	20 FT.
MINIMUM SIDE YARD	15 FT.
MINIMUM REAR YARD	20 FT.
MAXIMUM LOT COVERAGE	25 %
MAXIMUM BUILDING HEIGHT	35 FT.

SITE PLAN

SCALE: 1" = 20'

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DATE: 10/13/22

PROPOSED PLAN OF LOTS

ASSESSOR'S MAP 27, LOT 411
45 BEACON STREET
READING, MASSACHUSETTS

OWNER & APPLICANT:
ANGELO SALAMONE
45 BEACON STREET, READING MA MA 01867

GA CONSULTANTS, INC. PROFESSIONAL ENGINEERS & LAND SURVEYORS
10 STATE STREET, NEWBURYPORT, MA 01950 TEL. 978-502-5197

Town of Reading
Engineering Division

Memo

To: Andrew MacNichol, Community Development Director

From: Alex Rozycki, P.E., Senior Civil Engineer

CC: Ryan A. Percival, P.E., Town Engineer; Mary Benedetto, Senior Planner

Date: April 27, 2023

Re: Grandview Road Extension

Materials reviewed:

- Proposed Site Plans entitled; "Major Site Plan Modification- Grandview Road Subdivision prepared by Fodera Engineering dated April 20th 2023"
- Site Plan Set entitled "Penny Lane Subdivision – Grandview Road Extension – Private Way; prepared by Fodera Engineering; dated December 2nd 2020"

The Engineering Division has reviewed the proposed site application for the proposed project and offers the following comments:

- Previous plans for the southernmost home included roof drainage tied into the infiltration system, there are concerns that the adjacent property will now receive stormwater flows given the grades. The stormwater report indicates all impervious area will be captured, does that include hardscapes on the lots? The previous plan captured impervious areas on individual lots.
- The infiltration chamber design under the endorsed plans will allow for more land use in the backyard areas, the proposed detention pond design eliminates the use of land.
- Engineering sees no reason to support the waiver allowing less cover on utilities, there appears to be no benefit to support such a waiver.
- The Engineering Department does not approve of gas lines or electrical services, those shall be coordinated and approved by others.
- There are many instances of utilities crossing, we are particularly concerned with the crossing of water and sewer. Crossings should be limited, and invert elevations of the services may be requested to ensure proper separation.
- Inverts of the existing sewer manhole should be provided, as well as a detail for the force main connection.
- MaDEP regulations may not allow for discharge of water or overflow rip-rap within 10 feet of a property line.
- NPDES MS4 permit requirements shall be met for TSS removal and Phosphorous reduction. The supporting calculations should be provided and reviewed by Engineering. The project will also require a Storm Water Pollution Prevention Plan as well as an O&M plan for the proposed detention basin.
- A Sewer Connection I/I fee is required.
- The driveway curb cuts shall meet Town of Reading standard cross sections. The proposed elevations are unclear in these areas, all driveways will be approved individually.
- All utilities shall be approved materials and installed in accordance with the Department of Public Works Standards.
- Engineering Division shall be notified 72 hours in advance to mark out Town utilities.
- All water, sewer, curb cut, street opening and Jackie's Law excavation permits shall be obtained at the Engineering Division prior to any excavations.
- All site work shall be inspected by the Engineering Division. The Applicant/Owner's contractor shall submit a construction schedule of proposed work. All inspections shall be scheduled 48 hours in advance.
- An approved site as-built shall be submitted to the Engineering Division within 60 days of certificate of occupancy. The as-built shall be submitted in mylar and electronic ACAD format.

FODERA
ENGINEERING
28 Harbor Street, Suite 204
Danvers, MA 01923
Tel: (617) 992-8492
contact@foderaengineering.com

March 10, 2023

To: Andrew MacNichol, Community Development Director
Town of Reading
Community Planning and Development Commission
16 Lowell Street
Reading, MA 01867

RE: GRANDVIEW ROAD SUBDIVISION
SITE PLAN MODIFICATIONS
4 COLD SPRING ROAD
READING, MA 01867

To Mr. MacNichol,

The project at 4 Cold Spring Road known as Grandview Road Subdivision was approved by the Community Planning and Development Commission (CPDC) and a Decision of Approval was issued and dated February 8, 2021. The approved plans were endorsed and recorded at the Middlesex South District Registry of Deeds (M.S.D.R.D.) as Plan 754 of 2022. A deed for the subdivision was recorded as Book 80930 Page 320.

The site has since been revisited and site design changes have been made. The following is a summary of the revisions.

- Lot 2 will remain undeveloped but with the potential to be developed in the future.
- Lot 1 will keep the existing on-site shed and an associated easement into Lot 2 has been created for the encroachment.
- Relocated electric easement on Lot 2.
- The stormwater subsurface infiltration system has been replaced with a detention/infiltration basin and revised the drainage easement accordingly.
- The roadway has been regraded to create a low point at the end of the cul-de-sac.
- The building footprints for Lots 3 and 4 have increased from 1,925 sq-ft to 2,200.
- Created a larger backyard for Lot 4.
- Associated stormwater runoff calculations have been revised and the stormwater report has been updated.

Proposed stormwater pipes have reduced to just two (2) pipes and are at the end of the roadway, directed into the proposed infiltration basin. Cover above the pipes are approximately 2.5 feet, which will require a waiver from Section 7.4.4.3.e of the Subdivision Rules and Regulations dated August 26, 2006. The waiver is to accept a 2.5' cover above the drain pipes, which is less than the required four (4) feet and three (3) in vehicular roadways and easements, respectively.

Please accept this submittal as formal request for review. Please do not hesitate to call or email me shall you have any questions, comments, or concerns.

Sincerely yours,

Giovanni Fodera, P.E.
Principal Engineer
FODERA Engineering

Attachments:

- Major Site Plan Modification – Grandview Road Subdivision, dated March 10, 2023.
- Stormwater Management Report, Major Site Plan Modification, dated March 10, 2023.
- M.S.D.R.D. Plan 754 of 2022
- M.S.D.R.D. Book 80930, Page 320.

Cc: Michael Salamone
Frank Lanzillo

A2

2022 00166357
Bk: 80930 Pg: 320 Doc: DEED
Page: 1 of 2 11/09/2022 03:01 PM

Quitclaim Deed

PENNY A. JEAN, a single woman, of 4 Cold Spring Road, Reading, Massachusetts, for nominal consideration of Ten dollars ($10.00), grant to:

GRANDVIEW, LLC, a Massachusetts limited liability company, of 45 Beacon Street, Reading, Massachusetts

With ***QUITCLAIM COVENANTS***

The land in Reading, Middlesex County, Massachusetts identified as Lots 2, 3 and 4, together with the fee in the land shown as "Grandview Road", as shown on a Subdivision Plan entitled "*Grandview Road Subdivision – Private Way, Grand View Road Extension*" prepared by Fodera Engineering, 28 Harbor Street, Suite 204, Danvers, MA 010923, dated December 3, 2020, revised through July 12, 2021, and which Plan is recorded herewith. Said land is conveyed subject to and with the benefit of all easements, agreement, covenants, and provisions of record. No right, title or interest is conveyed in, to or over the property shown as Lot 1 on said Plan, which is retained by the Grantor.

Grantor hereby releases and terminates any and all claims of homestead in the premises conveyed hereby, and further hereby state that no other person is entitled to claim the benefit of an existing state of homestead in the premises conveyed hereby.

Meaning and intending to convey a portion of the land conveyed to the Grantor by deed dated May 2, 2007, and recorded in the Middlesex County Registry of Deeds at Book 49389, Page 45.

Property Address: Lots 2, 3 and 4 and Grandview Road Extension, Reading, Massachusetts 01867

Executed as a sealed instrument this 25TH day of OCTOBER 2022.

Penny A. Jean

Commonwealth of Massachusetts

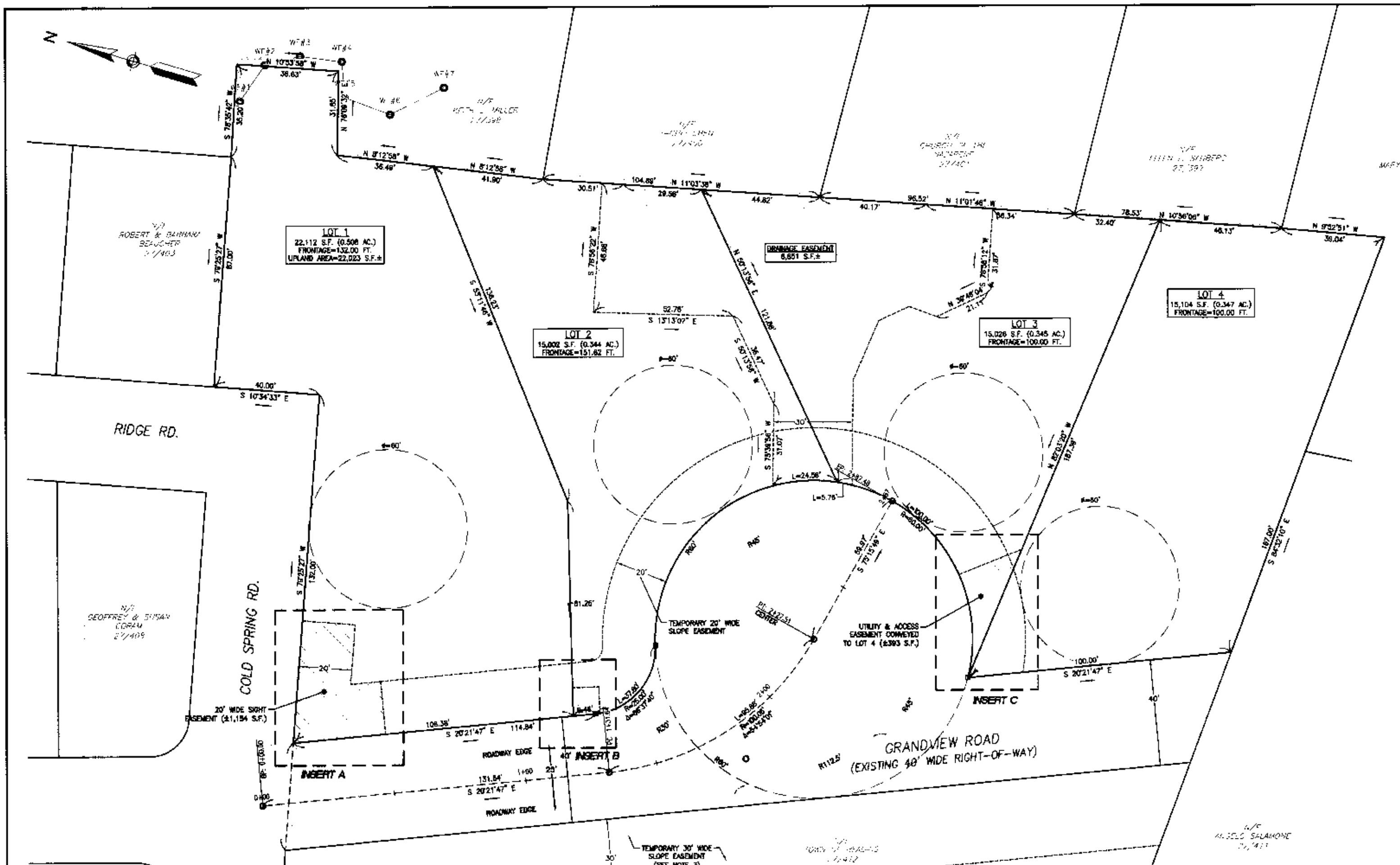
Middlesex, ss.

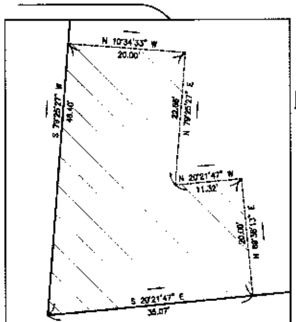
On 25TH day of October, 2022, before me, the undersigned notary public, personally appeared Penny A Jean, the above-named and proved to me through satisfactory evidence of identification being PERSONAL KNOWLEDGE, to be the persons whose names are signed on this document, and acknowledged to me that she signed it voluntarily for its stated purpose and that the foregoing instrument is her free act and deed.

JOSHUA E. LATHAM
MY COMM. EXPIRES MAY 10, 2024
NOTARY PUBLIC COMMONWEALTH OF MASSACHUSETTS

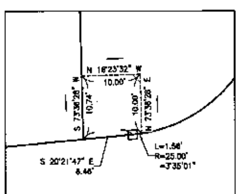
Notary Public: JOSHUA E. LATHAM
My Commission Expires: 5/10/24

SEE PLAN NO. 754 OF 2022

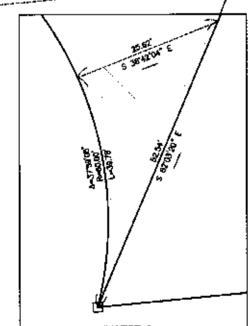




INSERT A
SCALE: 1" = 10'



INSERT B
SCALE: 1" = 10'



INSERT C
SCALE: 1" = 10'

PLAN OF LAND
SCALE: 1" = 20'

20 0 10 20 40

SCALE
1 inch = 20 ft.

REVISION	DATE	BY
REVISION 1	12/29/20	GGF
CONSERVATION	2/17/21	GGF
ENDORSEMENT SET	7/12/21	GGF

RIGHT-OF-WAY STATEMENT

THE PROPOSED RIGHT-OF-WAY (ROW), SOUTH OF THE INTERSECTION FROM COLD SPRING ROAD AND GRANDVIEW ROAD, IS PROPOSED AS A PRIVATE WAY FOR ALL LAND OWNERS IN AND ABUTTING THE SUBDIVISION, AND WILL REMAIN NAMED AS GRANDVIEW ROAD.

LEGEND

- PROPERTY LINE
- EASEMENT LINE
- WETLAND BOUNDARY
- R(X)' RADIUS MEASUREMENT
- WETLAND FLAG
- STONE BOUND WITH DRILL HOLE

GENERAL NOTES

1. WETLANDS WERE FLAGGED BY LEC ENVIRONMENTAL CONSULTANTS IN JUNE 2020.
2. THE PROJECT IS LOCATED OUTSIDE OF ANY PROTECTED RESOURCE AREAS AND FLOOD ZONES AS DETERMINED BY THE MOST RECENTLY PUBLISHED DATA FROM THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION AND FEMA.
3. IN LIEU OF A RETAINING WALL LOCATED IN THE RIGHT-OF-WAY ALONG THE WESTERN BOUNDARY OF GRAND VIEW ROAD, A TEMPORARY THIRTY (30) FOOT WIDE SLOPE EASEMENT IS PROPOSED ON TOWN PROPERTY AND SHALL BE APPROVED BY THE TOWN. SEE SHEET C-5 FOR GRADING.

PLAN REFERENCES

1. BOUNDARY, TOPOGRAPHIC, AND PLANIMETRIC INFORMATION WAS OBTAINED FROM AN ON-THE-GROUND SURVEY PERFORMED AND COMPLETED BY PFS LAND SURVEYING.

PROPERTY INFORMATION

ADDRESS: 4 COLD SPRING ROAD
READING, MA 01867
TAX MAP, LOT: MAP 27, LOT 404
LOT SIZE: 75,407 S.F. (1.73 AC.)

RECORD OWNERS

4 COLD SPRING ROAD
PENNY A. JEAN
4 COLD SPRING RD.
READING, MA 01867

APPLICANT

MICHAEL SALAMONE
45 BEACON ST.
READING, MA 01867

ZONING SUMMARY

ZONING DISTRICT: SINGLE FAMILY 15 (S15)

	REQUIRED	LOT 1	LOT 2	LOT 3	LOT 4
MIN. LOT WIDTH	60'	>60'	>60'	>60'	>60'
MIN. LOT AREA (SF)	15,000	22,112	15,002	15,026	15,104
MIN. FRONTAGE	100'	132.00	151.62	100.00	100.00
RELIEF REQUIRED	–	N	N	N	N

PROJECT LOCATION:
4 COLD SPRING RD.
READING, MA 01867

PARCEL ID:
MAP 27, LOT 404

PLAN SET:
GRANDVIEW ROAD SUBDIVISION - PRIVATE WAY
(GRAND VIEW ROAD EXTENSION)

DECEMBER 3, 2020

ENDORSEMENT SET

SCALE 1" = 20'

TOWN OF READING
COMMUNITY PLANNING & DEVELOPMENT COMMISSION

DATE:

FOR REGISTRY USE ONLY
Middlesex Registry of Deeds, Southern District
Cambridge, Massachusetts
Plan No. 754 of 2022
Rec'd 11-9 2022
at 2 H 42 M P M
Attest
Register

ENGINEER:
FODERA ENGINEERING
(617) 877-3293
gfodera@foderaengineering.com
28 Harbor St., Suite 204
Danvers, MA 01923
PROFESSIONAL SEAL

SURVEYOR:
PFS Land Surveying, Inc.
PROFESSIONAL SEAL

JOB NO.: 20160-149

SHEET TITLE:
PLAN OF LAND

SHEET NUMBER:
C-1

754 of 2022

KK

Memorandum

May 10, 2023

To: Andrew MacNichol, Community Development Director
Town of Reading
Community Planning and Development Commission
16 Lowell Street
Reading, MA 01867

RE: Grandview Road Subdivision

The Conservation Commission reviewed the March 10th 2023 memo by Fodera Engineering regarding site design changes. Although, the Conservation Commission supports stormwater infiltration systems. This change would require the applicant to return to the conservation commission for review and approval.

- The stormwater subsurface infiltration system has been replaced with a detention/infiltration basin

Sincerely,

Chuck Tirone
Conservation Administrator

BSC GROUP
BUILD | SUPPORT | CONNECT

Engineers
Environmental Scientists
Software Developers
Landscape Architects
Planners
Surveyors

www.bscgroup.com

APRIL 10, 2023

Reading Community Planning & Development Commission (CPDC)
16 Lowell Street
Town Hall
Reading, MA 01867

RE: Minor Site Plan Review Application for Burbank YMCA site improvements
36 Arthur B Lord Drive (Map 33, Lot 92)

Dear Members of the Commission,

This submittal includes the following materials:

- Completed Minor Site Plan Review Application
- Locus Map
- Photograph Log of the proposed location of site improvements
- SYNLAWN: SYNAugustine 347 & Infill Specification Sheets & Infill Certification Letter
- Site Plan – Showing Proposed Site Improvements at The Burbank YMCA

This application for Minor Site Plan Review is related to the proposed site improvements at the Burbank YMCA consisting of the conversion of an existing concrete splash pad, synthetic play area and a portion of the paved parking lot into a synthetic lawn area for use by the YMCA's programs and members. The proposed work and improvements will take place entirely within the existing limits of site development do not propose to increase the site's impervious footprint. A summary of the proposed site improvements include:

- Removing approximately 500sf of existing synthetic play surface, 750sf of existing concrete splash pad and 1,100sf of existing paved parking lot. This will also result in the net loss of three (3) existing parking spaces and reconfiguration of one (1) existing parking space.
- Removing existing tanks/gravel utility area used to service the existing splash pad.
- Replacing this area with SYNLAWN, SYNAugustine 347 Artificial Lawn (or approved equal) as shown on attached site plan. This SYNLawn product has a typical lifespan of at least 15 years and is on the United States Department of Agriculture's list of "BioPreferred" products. The infill used with this product is an organic sand infill, not the black, crumb rubber material found on many athletic fields.
- Extending existing curb line, chain link fence and guardrail around the perimeter of the new artificial lawn surface.

Due to the relatively minor nature and location of the proposed site improvements, it is the Applicant and BSC's opinion, that the proposed improvements will not create additional adverse impact to the surrounding area and therefore request Administrative Approval from the CPDC.

We look forward to discussing the findings and recommendations herein regarding our request and provided information with the Commission. If you require any additional information, please feel free to contact me directly at (617) 896-4582 or at jjwhite@bscgroup.com .

Sincerely,
BSC GROUP, INC.

Joseph J. White
Project Manager

Application:

Property Address 36 Arthur B. Lord Drive

Assessors Map 33 **Lot** 92

Name of Applicant YMCA of Greater Boston, c/o Helio Rosa

Address 316 Huntington Avenue, Boston, MA 02115

Email hrosa@ymcaboston.org

Phone / Fax

Name of Owner (if not applicant) Same as applicant

Address

Email

Phone / Fax

Name of Engineer Joseph White, PE

Firm BSC Group, Inc.

Address 300 Brickstone Square, Suite 203, Andover, MA 01810

Email jjwhite@bscgroup.com

Phone / Fax (617)896-4582

Name of Attorney N/A

Firm

Address

Email

Phone / Fax

Name of Architect N/A

Firm

Address

Email

Phone / Fax

Current Use of the Property Combined Service Use

Proposed Use of the Property No Change

Brief Description of the Project Proposed site improvements include replacing an existing concrete splash pad, synthetic play area and several existing parking spaces with an artificial lawn surface and gravel base.

BSC GROUP
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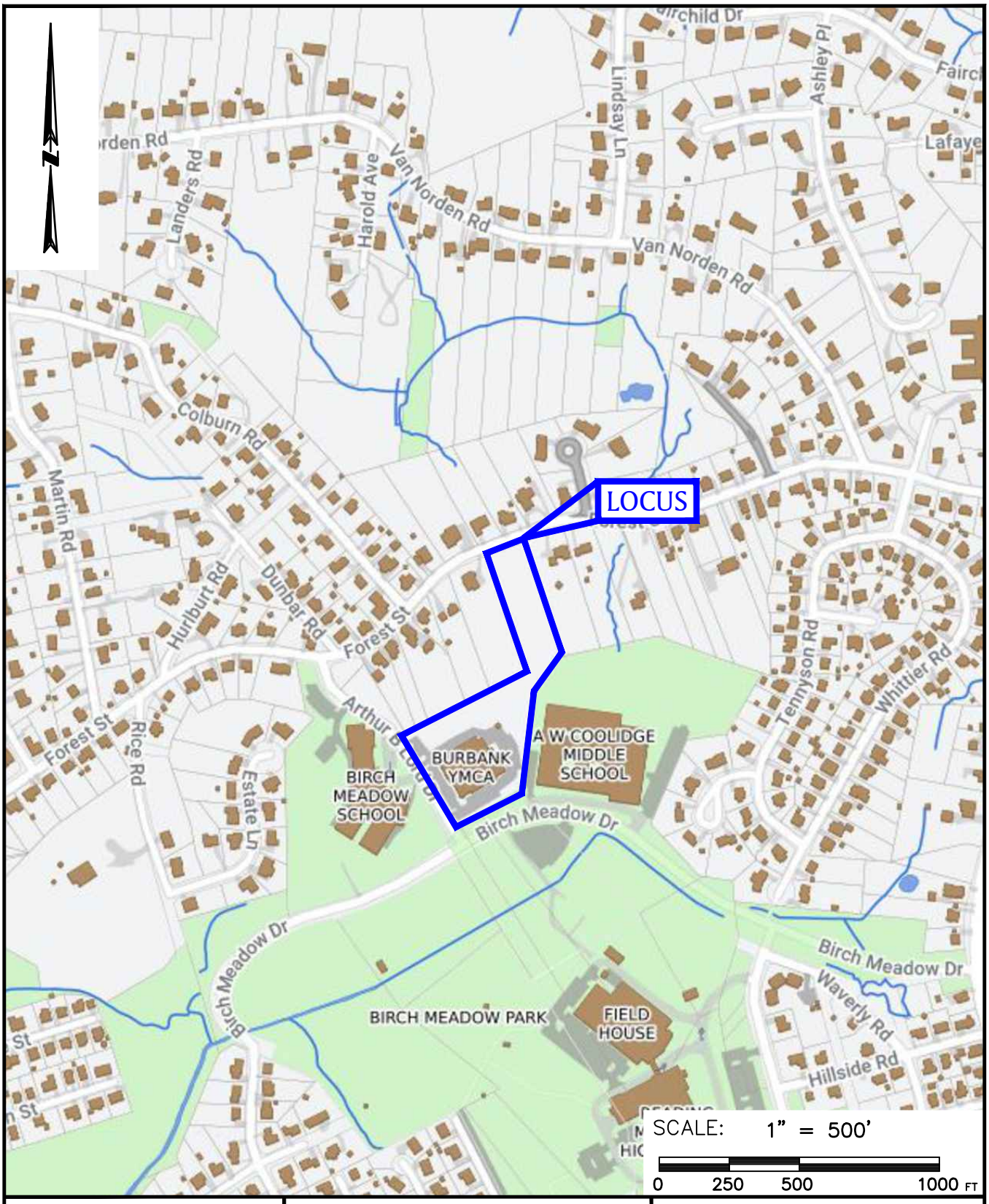
ATTACHMENT 1
LOCUS MAP

MINOR SITE PLAN REVIEW – BURBANK YMCA SITE IMPROVEMENTS
36 ARTHUR B. LORD DRIVE
READING, MASSACHUSETTS



PREPARED FOR:

GREATER BOSTON YMCA
321 HUNTINGTON AVE,
BOSTON, MA 02115

AERIAL MAP

Source: Town of Reading GIS

BURBANK YMCA
36 ARTHUR B LORD DR,
READING, MA 01867

BSC GROUP
300 Brickstone Square
Andover, Massachusetts
01810
617 896 4300

Job No.: 99029.00 Date: FEB. 27, 2023
Scale: 1" = 500' Revised:
Dwg. No: Figure: 1 OF 1

BSC GROUP
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ATTACHMENT 2
PROJECT PHOTO LOG

MINOR SITE PLAN REVIEW – BURBANK YMCA SITE IMPROVEMENTS
36 ARTHUR B. LORD DRIVE
READING, MASSACHUSETTS

Photo 1: Existing Fence Enclosure/Synthetic Play Area

Photo 2: Existing Fence Enclosure/Concrete Splash Pad

Photo 3: Existing Fence Enclosure/Concrete Splash Pad Area

Photo 4: Existing Splash Pad & Synthetic Play Area

BSC GROUP
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ATTACHMENT 3
"SYNLAWN: SYNAUGUSTINE 347" & INFILL PRODUCT SPECIFICATIONS

MINOR SITE PLAN REVIEW – BURBANK YMCA SITE IMPROVEMENTS
36 ARTHUR B. LORD DRIVE
READING, MASSACHUSETTS

SYNLAWN®

Plant-Based Artificial Grass

PRODUCT SPECIFICATIONS

SYNAugustine 347

Combining beautiful multi-colored grass blades with a dense multi-colored thatch to create a natural appearance with a realistic feel and superior strength. Our softest, most comfortable variety of grass ever created now with Super Yarn™ technology.

- Unmatched Lifetime Warranty
- EnviroLoc+™ Plant-Based Backing
- Deluster + UV Protection
- ASTM E108 Class A Fire Rating

SKU	SA347
Grass Zone Yarn/Color	PE / Field Green / Olive / Apple
Grass Zone Denier	9,900 / 9
Thatch Zone Yarn/Color	PE / Field Green / Beige
Thatch Zone Denier	5,000 / 8
Grass Zone Yarn Shape	Soft Omega
Finished Pile Height	1 7/8"
Finished Pile Weight	75 oz.
Backing	15 / 18 PP 2-Part / 22oz. EnviroLoc+™
Tuft Gauge	3/8"
Total Weight	103 oz.
Tuf Bind	> 8 lbs.
Permeability	> 400 inches per / SY
Features	Sanitized®, EnviroLoc+™, StatBlock™ Anti-Static, DualChill™ IR Reflective, Deluster, UV Stabilizers
Test Data	ASTM E108 Class A Fire Rating, F1292, F1951, IPEMA Certified

SUPER YARN™ TECHNOLOGY

Sanitized®	DualChill™	StatBlock™
Antimicrobial	IR Reflective	Anti-Static

Learn more at CADdetails.com

Not to scale. For illustration only.

RECOMMENDED USES

LANDSCAPE — PETS — PLAY — ROOFTOP

SYNLAWN® a sportgroup company

MADE IN U. S. A.

IPEMA CERTIFIED ASTM F1292

Sanitized Actifresh

For ordering and questions, contact SYNLawn at 866-796-5296 or visit SYNLawn.com

SYNLAWN®
a sportgroup company

SYNAugustine 347

Primary Yarn Polymer	Polyethylene
Yarn Cross Section	Soft Omega
Standard Color	Field Green / Olive / Apple
Fabric Construction	Tufted
Second Yarn Polymer Thatch	Polyethylene
Secondary Yarn Color	Field Green / Beige

Primary Backing	15/18 PP 2-Part
Coating Type	22 oz. EnviroLoc+
PE Yarn Denier / Ends	9,900 / 9
Texturized Thatch Denier / Ends	5,000 / 8
Warranty Period	Limited Lifetime

Finish Fabric	English System		ASTM Test
Nominal Specification	*Value*	*Units*	*Method*
Pile Height (Nominal)	1 7/8	inches	D-5823
Face Weight	75	oz/yd^2	D-5848
Total Fabric Weight	103	oz/yd^2	D-5848
Primary Backing Weight	6	oz/yd^2	D-5848
Secondary Coating Weight	22	oz/yd^2	D-5848
Tuft Bind	> 8	lbs.	D-1335
Grab Tear Strength (Average)	> 200	lbs.	D-5034
Total Yarn Linear Density	14,900	Denier	D-1577
Elongation to Break	> 30	%	D-2256
Yarn Breaking Strength	> 20	lbs.	D-5793
Machine Gauge	3/8	inches	D-5793
Flammability	Passed	-	D-2859
Water Permeability	413.17	in/hr	D-1551
Fabric Width	15	ft	-

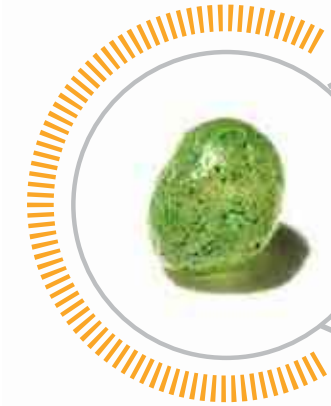

INFILL THAT WITHSTANDS. A YARD THAT STANDS OUT.
Endorsed by feet of all sizes.
envirofill®
Artificial Turf Supply

INFILL THAT STANDS THE TEST OF TIME
Redefining Your Landscape

> My kids are constantly in and out of the yard, so the anti-microbial infill is helpful in keeping germs at a minimum for all of us.
>
> *- Sarah B., Homeowner*

Envirofill® makes artificial turf look and feel great. It's tough enough for any application, and it's completely safe. **Envirofill** is American-made using non-toxic components. No wonder it's the favorite of landscape experts for everything from playgrounds and putting greens to residential lawns and pet areas.

Benefits



A different kind of infill. Envirofill is composed of naturally occurring sand found only in the Hickory Formation of central Texas. Its highly rounded quartz core resists compression so it doesn't compact over the life of the turf.

It's cleaner. Microban® antimicrobial protection is infused into Envirofill during the manufacturing process to help prevent the growth of bacteria, mold, and mildew that can cause stains, odors, and product deterioration.

Sustainable. Because of its superior durability, Envirofill's coating and color are warrantied for 16 years. When your turf wears out and needs replacement, Envirofill has the potential to be reused in your new turf.

Easy installation. With its texturized thatch layers, landscape turf can be very dense and difficult to infill. Because of Envirofill's rounded shape, uniform size, and smooth surface, it quickly settles down into the turf—saving you time, effort, and aggravation.

Envirofill's exclusive partnership with Microban® provides an added level of antimicrobial protection for the lifetime of your infill.

PROTECTION THAT LIVES ON MICROBAN®

Contact us today at: 877-525-8873

ArtificialTurfSupply.com

Artificial Turf Supply

envirofill®

PFOA, PFOS and PFASs in synthetic turf installations

A synthetic turf resources study in support of SYNlawn

In pursuit of an article published by environmental group PEER which claimed to have found PFAS, PFOS and PFOASs on a ppt (parts per trillion) trace level concentration in synthetic turf installations. Synthetic turf resources completed a study on the presence of these chemicals in their turf systems.

The study completed consisted of 2 parts.

- Part a; a discussion and information round with the foremost material suppliers in which all of these claimed to not knowingly or willingly using PFAS-containing substances in their production.
- Part b; An analytical lab study in corporation with ISO/EPA certified lab AIRL, INC located in Cleveland Tennessee. For the selection of the "to be tested" product samples a consideration was made in the products noted in the published article and the more frequent materials that are used in the manufacturing process in SYNlawn products.

A collection of 20 samples, including a finished turf system, were submitted for testing. With the current test methods available for testing, no PFASs, PFOSs or PFOAs could be detected above the reporting detection limit.

As we understand the concern on the presence of these chemicals, Synthetic Turf Resources will continue to monitor and safeguard the quality and safety of their products.

Synthetic turf resources prides itself on its responsibility to the health and safety of our customers and employees, to the environment and to manufacturing in a responsible manner.

R&D Project manager
Jelle Meurrens

410 Callahan Road Dalton, GA 30721 Office: 706-272-4200 ext:5210 Email: jmeurrens@syntheticturfresources.com

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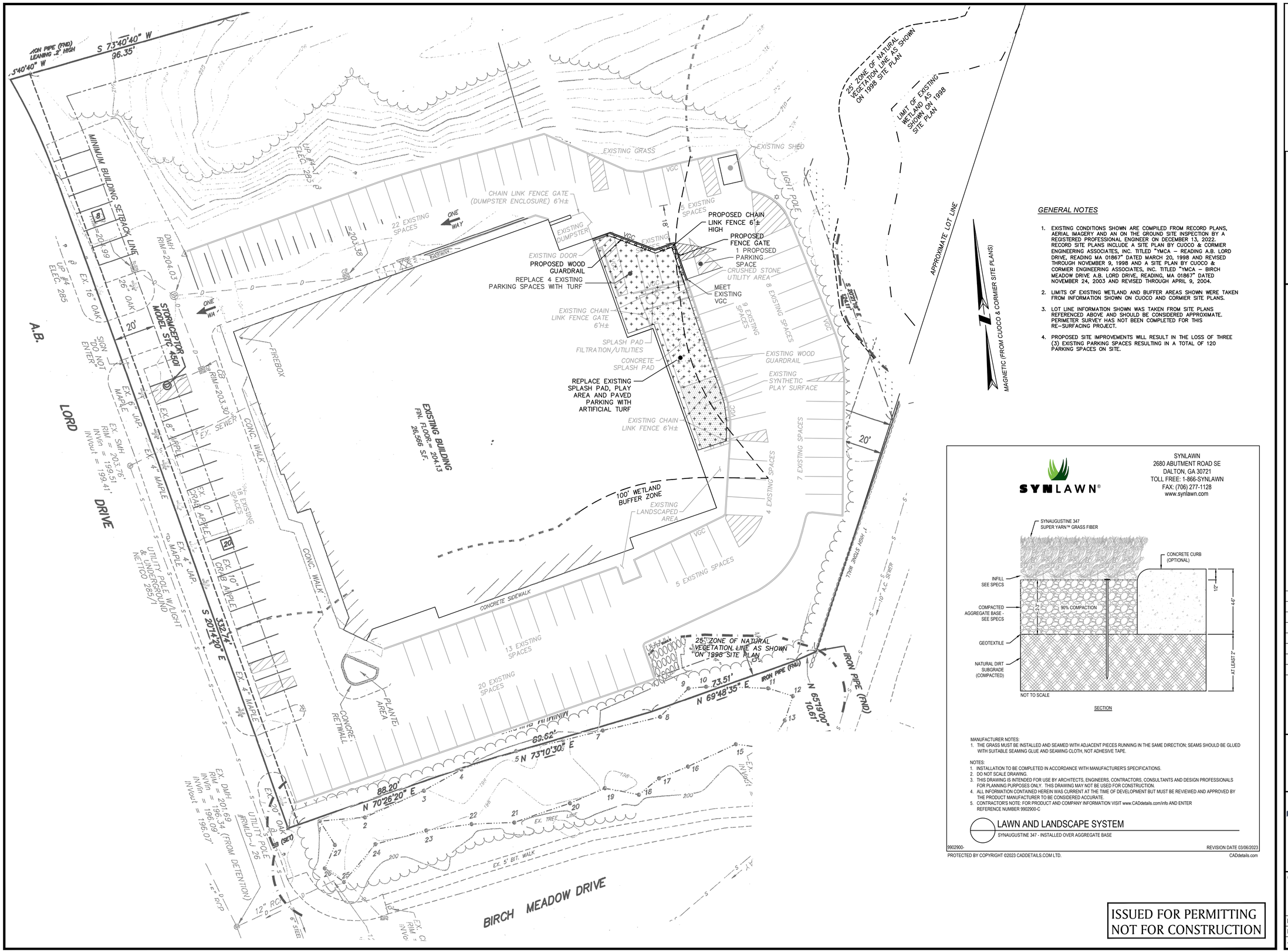
ATTACHMENT 4
SITE PLAN

MINOR SITE PLAN REVIEW – BURBANK YMCA SITE IMPROVEMENTS
36 ARTHUR B. LORD DRIVE
READING, MASSACHUSETTS



GENERAL NOTES

1. EXISTING CONDITIONS SHOWN ARE COMPILED FROM RECORD PLANS, AERIAL IMAGERY AND AN ON THE GROUND SITE INSPECTION BY A REGISTERED PROFESSIONAL ENGINEER ON DECEMBER 13, 2022. RECORD SITE PLANS INCLUDE A SITE PLAN BY CUOCO & CORMIER ENGINEERING ASSOCIATES, INC. TITLED "YMCA – READING A.B. LORD DRIVE, READING MA 01867" DATED MARCH 20, 1998 AND REVISED THROUGH NOVEMBER 9, 1998 AND A SITE PLAN BY CUOCO & CORMIER ENGINEERING ASSOCIATES, INC. TITLED "YMCA – BIRCH MEADOW DRIVE A.B. LORD DRIVE, READING, MA 01867" DATED NOVEMBER 24, 2003 AND REVISED THROUGH APRIL 9, 2004.
2. LIMITS OF EXISTING WETLAND AND BUFFER AREAS SHOWN WERE TAKEN FROM INFORMATION SHOWN ON CUOCO AND CORMIER SITE PLANS.
3. LOT LINE INFORMATION SHOWN WAS TAKEN FROM SITE PLANS REFERENCED ABOVE AND SHOULD BE CONSIDERED APPROXIMATE. PERIMETER SURVEY HAS NOT BEEN COMPLETED FOR THIS RE-SURFACING PROJECT.
4. PROPOSED SITE IMPROVEMENTS WILL RESULT IN THE LOSS OF THREE (3) EXISTING PARKING SPACES RESULTING IN A TOTAL OF 120 PARKING SPACES ON SITE.

SYNLAWN
2680 ABUTMENT ROAD SE
DALTON, GA 30721
TOLL FREE: 1-866-SYNLAWN
FAX: (706) 277-1128
www.synlawn.com

NOT TO SCALE

SECTION

MANUFACTURER NOTES:
1. THE GRASS MUST BE INSTALLED AND SEAMED WITH ADJACENT PIECES RUNNING IN THE SAME DIRECTION; SEAMS SHOULD BE GLUED WITH SUITABLE SEAMING GLUE AND SEAMING CLOTH, NOT ADHESIVE TAPE.

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWING.
3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
5. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 9902900-C

LAWN AND LANDSCAPE SYSTEM
SYNAUGUSTINE 347 - INSTALLED OVER AGGREGATE BASE

9902900- REVISION DATE 03/06/2023

 CADdetails.com

ISSUED FOR PERMITTING
NOT FOR CONSTRUCTION

the YMCA

COMMONWEALTH OF MASSACHUSETTS
JOSEPH J. WHITE
CIVIL
No. 56506
REGISTERED PROFESSIONAL ENGINEER

3/6/2023
DATE
PROFESSIONAL ENGINEER

BURBANK YMCA

36 ARTHUR B. LORD DRIVE
IN
READING
MA
MIDDLESEX COUNTY

SITE PLAN

SHOWING PROPOSED SITE IMPROVEMENTS

3/6/2023

REVISIONS:

NO.	DATE	DESC.

PREPARED FOR:
GREATER BOSTON YMCA
316 HUNTINGTON AVENUE
BOSTON, MA 02115

BSC GROUP
300 Brickstone Square
Andover, Massachusetts
01810
617 896 4300

SCALE: 1" = 20'
0 10 20 40 FEET

FILE: PROJ-AND/9902900/C/D
DWG.: 9902900-CPT
JOB. NO: 9-9029.00
SHEET 1 OF 1

Town of Reading
16 Lowell Street
Reading, MA 01867-2683

Andrew MacNichol
Community Development Director
Phone: (781) 942-6670
Fax: (781) 942-9071
Amacnichol@ci.reading.ma.us

To:	CPDC
From:	Andrew MacNichol, Community Development Director & Ryan Percival, Town Engineer
Date:	May 15, 2023
Re:	Approval Not Required Plan, land of Vincent Zaccardi at 17 Lilah Lane & Matthew Stanton at 5 Lilah Lane

On May 2, 2023 an Approval Not Required Plan for land of Vincent Zaccardi at 17 Lilah Lane (Assessors Map 56, Lot 42) and land of Matthew Stanton at 5 Lilah Lane (Assessors Map 56, Lot 43), dated May 1, 2023, prepared by Sullivan Engineering Group, LLC, was submitted to the Public Services Office.

The land under consideration is within the S-20 Zoning District, which requires a minimum of 20,000sf per lot, 12,000sf of upland area and 120 linear feet of frontage on a Right of Way. The Plan identifies 17 Lilah Lane as 'Lot 16' and 5 Lilah Lane as 'Lot 17'. The Plan shows an adjustment of lot lines that creates Parcel A (811sf) and Parcel B (811sf).

Parcel A is to be conveyed from Lot 17 to Lot 16 (5 Lilah Lane, Matthew Stanton to 17 Lilah Lane, Vincent Zaccardi) and become part of the property at Lot 16 (17 Lilah Lane). The resulting area of Lot 16 will total 20,001sf, the same that exists today. All lot area is upland area. Lot 16's existing 232.95 linear feet of frontage along Lilah Lane and Verde Circle will be reduced to 193.33 linear feet of frontage.

Parcel B is to be conveyed from Lot 16 to Lot 17 (17 Lilah Lane, Vincent Zaccardi to 5 Lilah Lane, Matthew Stanton) and become part of the property at Lot 17 (5 Lilah Lane). The resulting area of the lot will total 20,002sf, also the same that exists today. All lot area is upland area. Lot 17's existing 149.01 linear feet of frontage on Lilah Lane and Sanborn Lane will be increased to 188.63 linear feet of frontage.

The land swap of identical square footage will result in conformance with the requirements of the S-20 Zoning District.

The Plan qualifies for Approval Not Required under the Subdivision Control Law because it shows a conveyance of land for which each lot shown has at least 120' of frontage on an existing public way of adequate construction for the intended use.

Town of Reading
16 Lowell Street
Reading, MA 01867-2683

Andrew MacNichol
Community Development Director
Phone: (781) 942-6670
Fax: (781) 942-9071
Amacnichol@ci.reading.ma.us

To:	CPDC
From:	Andrew MacNichol, Community Development Director & Ryan Percival, Town Engineer
Date:	May 15, 2023
Re:	Approval Not Required Plan, land of Vincent Zaccardi at 17 Lilah Lane & Matthew Stanton at 5 Lilah Lane

On May 2, 2023 an Approval Not Required Plan for land of Vincent Zaccardi at 17 Lilah Lane (Assessors Map 56, Lot 42) and land of Matthew Stanton at 5 Lilah Lane (Assessors Map 56, Lot 43), dated May 1, 2023, prepared by Sullivan Engineering Group, LLC, was submitted to the Public Services Office.

The land under consideration is within the S-20 Zoning District, which requires a minimum of 20,000sf per lot, 12,000sf of upland area and 120 linear feet of frontage on a Right of Way. The Plan identifies 17 Lilah Lane as 'Lot 16' and 5 Lilah Lane as 'Lot 17'. The Plan shows an adjustment of lot lines that creates Parcel A (811sf) and Parcel B (811sf).

Parcel A is to be conveyed from Lot 17 to Lot 16 (5 Lilah Lane, Matthew Stanton to 17 Lilah Lane, Vincent Zaccardi) and become part of the property at Lot 16 (17 Lilah Lane). The resulting area of Lot 16 will total 20,001sf, the same that exists today. All lot area is upland area. Lot 16's existing 232.95 linear feet of frontage along Lilah Lane and Verde Circle will be reduced to 193.33 linear feet of frontage.

Parcel B is to be conveyed from Lot 16 to Lot 17 (17 Lilah Lane, Vincent Zaccardi to 5 Lilah Lane, Matthew Stanton) and become part of the property at Lot 17 (5 Lilah Lane). The resulting area of the lot will total 20,002sf, also the same that exists today. All lot area is upland area. Lot 17's existing 149.01 linear feet of frontage on Lilah Lane and Sanborn Lane will be increased to 188.63 linear feet of frontage.

The land swap of identical square footage will result in conformance with the requirements of the S-20 Zoning District.

The Plan qualifies for Approval Not Required under the Subdivision Control Law because it shows a conveyance of land for which each lot shown has at least 120' of frontage on an existing public way of adequate construction for the intended use.

Town of Reading
16 Lowell Street
Reading, MA 01867-2683

Andrew MacNichol
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To:	CPDC
From:	Andrew MacNichol, Community Development Director & Ryan Percival, Town Engineer
Date:	May 15, 2023
Re:	Approval Not Required Plan, land of The Greater Boston YMCA at 26 Arthur B Lord Drive

On April 25, 2023 an Approval Not Required Plan for land of The Greater Boston YMCA (Assessors Map 33, Lot 92), dated March 15, 2023, and revised April 21, 2023, prepared by Medford Engineering and Survey, was submitted to the Public Services Office.

The land under consideration is within the S-15 Zoning District, which requires a minimum of 15,000sf per lot, 12,000sf of upland area and 100 linear feet of frontage on a Right of Way. The existing land at 36 Arthur B Lord Drive maintains 215,834sf of area, 173,333sf of which is upland area, 382.95 linear feet of frontage along the existing public way of Arthur B Lord Drive, and 140 linear feet of frontage along the existing public way of Forest Street. Wetland area is present on-site and there is an existing Conservation Restriction on a portion of the land, as shown on The Plan.

The Plan shows the creation of a new lot line that divides the existing parcel into Lot 1 and Lot 2.

Lot 1 is to maintain 199,036sf of area, 173,333sf of which is upland area, and the pre-existing 382.95 linear feet of frontage along Arthur B Lord Drive, conforming to the S-15 Zoning District Requirements.

Lot 2 is to maintain 16,798sf of area, all of which is upland area, and the pre-existing 140 linear feet of frontage along Franklin Street, conforming to the S-15 Zoning District Requirements.

The Plan qualifies for Approval Not Required under the Subdivision Control Law because it shows a proposed division of land for which each new lot has at least 100 feet of frontage along an existing public way.

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Lot 2 is to maintain 16,798sf of area, all of which is upland area, and the pre-existing 140 linear feet of frontage along Franklin Street, conforming to the S-15 Zoning District Requirements.

The Plan qualifies for Approval Not Required under the Subdivision Control Law because it shows a proposed division of land for which each new lot has at least 100 feet of frontage along an existing public way.