**NEEDHAM PLANNING BOARD**
**Tuesday, October 15, 2024**
**7:00 p.m.**

**Charles River Room**
**Public Services Administration Building, 500 Dedham Avenue**
**AND**
**Virtual Meeting using Zoom**
Meeting ID: **880 4672 5264**
(Instructions for accessing below)

**To view and participate in this virtual meeting on your phone, download the "Zoom Cloud Meetings" app in any app store or at www.zoom.us. At the above date and time, click on "Join a Meeting" and enter the following Meeting ID: 880 4672 5264**

**To view and participate in this virtual meeting on your computer, at the above date and time, go to www.zoom.us click "Join a Meeting" and enter the following ID: 880 4672 5264**

**Or to Listen by Telephone: Dial (for higher quality, dial a number based on your current location): US: +1 312 626 6799 or +1 646 558 8656 or +1 301 715 8592 or +1 346 248 7799 or +1 669 900 9128 or +1 253 215 8782 Then enter ID: 880 4672 5264**

**Direct Link to meeting:** https://us02web.zoom.us/j/88046725264

1. Public Hearing:

   7:00 p.m. Major Project Site Plan Special Permit No. 2024-01: Needham Housing Authority (NHA), 21 Highland Circle, Suite 10, Needham, MA, Petitioner (Property is located at 0 Linden Street and 5 Chambers Street, Needham, Massachusetts). Regarding request redevelop the NHA Linden-Chambers property. *Please note that this hearing has been continued from the September 24, 2024 Planning Board meeting.*

2. Decision: Amendment to Major Project Site Plan Special Permit No. 2011-04: Town of Needham, 1471 Highland Avenue, Needham, MA, Petitioner (Property is the location of the Center at the Heights, 300 Hillside Avenue, Needham, Massachusetts). Regarding request for the installation of a permanent emergency generator to serve the Center at the Heights as well as a reduction of 3 parking spaces.

3. Public Hearing:

   8:00 p.m. Definitive Subdivision: 40 Highland Ave, LLC, 435E Dedham Street Newton, MA 02459, Petitioner, (Property located at 40 Highland Avenue and 14-16 Riverside Street, Needham, MA). Regarding request to subdivide the Premises into three building lots, two of which will be used for residential purposes, having frontage on the new road, and the third of which will continue to be used for commercial purposes. *Please note that this hearing has been continued from the August 27, 2024 and September 17, 2024 Planning Board meetings.*

4. Motion to Amend Article 8 of the October 2024 Special Town Meeting: Glenn Mulno, Town Meeting Member from Precinct 1.

5. ANR Plan – Lawton South Development, LLC, Petitioner, (Property located at 103 Lawton Road and 133 South Street, Needham, MA).

6. Board of Appeals – October 17, 2024.

7. General By-Law Review Committee Appointment.
8. Minutes.
9. Report from Planning Director and Board members.
10. Correspondence.

*(Items for which a specific time has not been assigned may be taken out of order.)*

**Needham Housing Authority**
21 Highland Circle, #11
Needham, MA 02494

October 8, 2024

Planning Board
Town of Needham
500 Dedham Avenue
Needham, MA 02492

**RE:** NHA Linden Street Redevelopment Project -- Follow-up on 9/24/2024 Site Plan Review Public Hearing

Dear Members of the Planning Board:

The Planning Board opened the Site Plan Review (SPR) public hearing for the above-referenced project on September 24, 2024. They received a presentation from the project team and considered comments, concerns and questions offered by the general public. Planning Board members also offered comments and posed questions. The Board then asked the NHA to follow-up, voting to continue the SPR public hearing to 7 pm on October 15, 2024.

The purpose of this letter is to document the follow-up conducted by the Linden Redevelopment Project team. It is our understanding that you will also separately receive confirmations from the Town Departments with whom we met.

After reviewing this letter and receiving confirmatory responses from other Town departments, we hope the Planning Board will find that all material comments, concerns, issues and comments have been fully addressed, and the Board will be able to close the SPR public hearing on October 15, 2024.

The following summarizes our meeting with various Needham Town Departments, and addresses the public comments received at the 9/24/24 SPR.

## BUILDING COMMISSIONER:

The Project team met with the Building Commissioner on September 30, 2024, about his and the Planning Board's comments, and reached the following understanding.

1. **Reaffirmation** -- We shared a selected subset of the comments and questions that had been received at the 9/24/2024 SPR. We also asked about the Building Commissioners August 30, 2024, Email to Alex Clee which stated, "The Building Department has no concerns for the proposal". The Building Commissioner reconfirmed that, based on his review of the SPR application materials, he had no concerns about the Project as proposed at this stage of its design.
2. **Comments/Concerns from Members of the Public** -- Several building constructability related comments and concerns were discussed with the Building Commissioner. His answers are shown *in italics below*.
    - Foundation Strength and Strength of Building Design – The site was formerly a marsh and the soil is very sandy. Can the site support the weight of a four story, 136-unit

apartment building? Will the building be structurally sound? *The building department and commissioner have reviewed the schematic design documents submitted with the SPR application and the answer is "yes".*

- Fresh Air Circulation -- Does the building's internal HVAC and air circulation systems sufficiently supply and exchange fresh air to the tenants? *Yes.*
- Exposure to Dust and Hazardous Substances -- Is there a concern about nearby tenants and neighbors being exposed hazardous materials, toxic chemicals and dust during the construction period? *The NEI General Construction person review their overall approach to construction management and safety. The Building Commissioner is satisfied that industry standards and safety practices will be used during the construction period to mitigate any risk to nearby tenants and neighbors.*

**DEPARTMENT OF PUBLIC WORKS:**

On 10/1/24 the Project team met with the Department of Public Works to discuss their 9/19/24 letter to the Planning Board. The parties reached the following understandings.

3. **Generator Noise** -- Given the distances to the nearest neighbors, it's unlikely that generator noise will be an issue. The Project team agreed to perform a sound study for the emergency generator and submit the results to DPW. This study will be undertaken in the final construction documents design phase once a generator size has been determined and equipment selected.

4. **Stormwater Concerns** -- The Project team reviewed the stormwater design as submitted on SPR application, including an analysis and comparison of the current conditions to the proposed design based on 2, 10, 25 and 100-year storms. The parties agreed current design meets the MA state regulations and the more stringent requirements of the Town of Needham bylaws:
    - The current design significantly reduces the amount of water flowing off site and into the surrounding neighborhood.
    - For a 25- year storm, the estimated runoff for the existing site conditions is roughly 36,600 CF as compared to 16,840 CF with the proposed design, a 54% reduction.

    **At the Project's expense and in recognition of DPW's and the neighbors' concerns, the Project team agreed to exceed the statutory and regulatory minimums.** The alternate design for the stormwater design doubles the size of the recharge area. This alternate design will reduce the amount of runoff to approximately 10,400 CF, a reduction of approximately 72% from the existing condition. The DPW agreed this could be a significant benefit to the Town and neighborhood.

    **DPW also requested the two drain lines under the parking lots be perforated pipe, similar to that under the two fire lanes – which the Linden Street Team agreed to.** Please see the following revised SPR submissions accompanying this letter:
    - SPR Sheet C4 – is resubmitted to include:
        - A revised (expanded) storm recharge system and associated pipes/manholes.
        - Change long stretches of solid pipe to perforated pipe set in crushed stone (typical for both parking lots).
        - Add a rain garden in the area of catch basin 5 (CB5) to receive stormwater

from the southern fire driveway underdrain.

- Revised HydroCAD calculations reflecting changes to storm recharge system.

5. **Operations and Maintenance Plan** -- The Project team advised that maintenance for stormwater controls will be budgeted in the building's annual operating budget and agreed to provide annual reports to DPW, due by April 30 of each following year.

6. **NPEDS Public Outreach and Education; Rain Garden** -- Needham's Sustainability Manager request consideration of a "rain garden" on the site. The Project team has incorporated a rain garden in the lawn area between the Phase 1B building and parking area. As part of the rain garden a plaque/signage will be provided highlighting water strategies for retention/watering and plant selections including native plantings at the wetland buffer zone.

7. **Comments/Concerns from Members of the Public** -- Beside the adequacy of the path on the east side of the building, the following concern was also discussed with the DPW team. The answers is shown *in italics below*.

    - Catch Basins -- Does the Project's design have a sufficient number of catch basins? *Yes.*

**FIRE DEPARTMENT:**

The Project met twice with the Fire Chief on September 30, 2024 and is scheduled to meet again along with fire safety personnel on October 9, 2024[1], to follow up on comments, questions and concerns raised by Planning Board members, citizens about fire safety. We reached the following understandings.

8. **Fire Lane on East Side of the Building** -- A fire lane behind the 1A/1B buildings is not required. Sufficient emergency vehicle access is provided at 3 sides of the building. Additionally, two new fire hydrants are being provided, one at the NE corner of the Phase 1A building and one at the SE corner of the Phase 1B building.

    At the rear of the building (the east side) there is a (hard surface) sidewalk running the entire length of the building. The NFD asked for a hard surface that would be acceptable to place ladders on in case of an emergency. The Linden Street team has adjusted the 5' wide path to be wider in particular areas.

    SPR Sheet L102A – is resubmitted to:

    - **Provide wider walk at east side of building**
    - **Change paving of walk to more visually connect the sidewalk through the fire lane.**
    - Show EV charging stations at both parking lots, adjust walkway and site stone wall to accommodate the charging stations.
    - Add a rain garden at as part of the 1B landscaping design.
    - Adjust paving and benches at main entry to building.

9. **Comments/Concerns from Members of the Public** -- Beside the adequacy of the path on the east side of the building, a number of fire safety-related comments and concerns were discussed with the Fire Chief. His answers are shown *in italics below*.

    - Window limiters -- Should the windows open fully, as opposed to having 4" limiters? *Full opening is not required for fire safety.*
    - Fire Exit Options -- Are three interior fire exit stairwells and an emergency generator

[1] This section is subject to final confirmation after the 10/9/24 meeting takes place.

to support elevators adequate? *As currently designed, yes.*

- Effectiveness of Fully Sprinklered Buildings -- Does a fully sprinklered multifamily residential apartment buildings actually prevent or reduce loss of life in case of a fire? *Yes.*
- External Fire Escape - Should there be an external fire escape? *No.*
- Permeable Pavers for East Fire Safety Access Path -- Should permeable pavers be used for the path on the east side of the building? *The Fire Department prefers that non-permeable pavers or surfaces be used for any portions of the path that might be used for ladders or fire department vehicles, in the event of a fire.*

**POLICE DEPARTMENT**:

The Project team met with the Police Chief on October 4, 2024 about the Police Chief's comments and Planning Board's questions. We reached the following understandings.

10. **Pre-Construction Meeting and Construction Management Plan** -- The Project team agreed to include a pre-construction meeting with NPD, NFD, DPW and High Rock School representative(s) to review construction hours and schedules, vehicle staging on Linden Street, contractor parking, etc. Additionally, a Construction Management Plan will be prepared and submitted to the Building Department.
11. **Comments/Concerns from Members of the Public** -- Traffic and public safety-related concerns was discussed with the Police Chief. His answer is as shown *in italics below*.
    - Safety and Traffic Management during the Construction Period -- The Project team reviewed its conceptual plan for managing access to the site by construction workers, vehicles delivering materials and equipment, laydown areas, construction fencing, construction time periods, etc. The Project team agreed to provide the final construction management plan with the building permit applications. and review the plan with the Police Department. *The Police Chief was satisfied that the Project would be deploying industry standard practices and approaches.*

**DESIGN REVIEW BOARD:**

In response to the Design Review Board (DRB) memo dated 8/19/24, the Project team as sent a response which proposes the following understandings.

12. **Adjustment to the East Side Walking Path** -- The Project team agrees with the recommendation to visually extend the walking path through the full site, from the north garden, through the drive aisles and connecting with the Chambers buildings. We have made these adjustments to the walkway in our revised landscape plan.

13. **Changes to Exterior Finishes and Accent Areas** --The Project team agrees that further development of details and materials at accent areas will improve the elevations. The Project team presented advanced elevations (colors/materials) at our meeting with DRB the evening of 8/19/24, and there was consensus that we're "on the same page". (A copy of the 8/19/24 presentation was provided in the 8/23/24 SPR submittal).

14. **Appearance of Building 1A South Elevation** -- At the 9/24/24 Planning Board hearing a question was raised as to the temporary condition of the south wall of Phase 1A, before Phase 1B construction begins. The Project team has developed an elevation of this wall to be carried as an Add Alternate which will be implemented in the case that Phase 1B construction does not immediately follow the completion of Phase 1A. The elevation includes windows and

exterior cladding similar to that used on other portions of the building. Our goal is to proceed with 1B as soon after 1A as possible so that the project does not incur these extra costs.

- SPR Sheet A201 – is resubmitted to include an Add Alternate for the south wall of Phase 1A.

The DRB memo notes an approval of the proposal and does not explicitly request any further submissions being required for DRB review, which the DRB confirmed on 10/7/24.

**DIVISION OF PUBLIC HEALTH**

In response to the Division of Public Health's (DPH's) comments we offer the following responses.

15. **Kitchen in the Community Room** -- We agree to comply with all Needham DPH requirements that apply the kitchen in the community room, including the requirements for solid waste dumpsters, recycling, waste oil/grease containment, etc.
16. **Exterior Residential Trash and Recycling Areas** -- When construction documents have been finalized, we will review the design with DPH staff and Board of Health members as necessary
17. **Demolition Permit Review** -- Prior to the commencement of construction activities, the Project team will apply online for the DPH's demolition review and permits. The necessary pest control reports and asbestos reports by building will be submitted as required.
18. **Minimum Standards of Fitness for Human Habitation (105 CMR 410.00)** -- The Linden Street building will meet or exceed all applicable state and federal regulations for fitness for human habitation.
19. **Outdoor Seating Areas** -- will be maintained as recommended by the DPH, so as not to attract pests.

**MISCELLANOUS PUBLIC COMMENTS:**

A number of other comments, questions, concerns or issues were raised by members of the public. Answers are provided in *italicized type.*

20. Sustainably via Renovation instead of Redevelopment -- A commenter asked whether, in the interests of sustainability, the Project team had considered renovating the existing Linden Street buildings? *Yes, this option was considered in the 2019 NHA Facilities Master Plan study and again at the beginning current Linden Redevelopment Project. Both times, it was determined that it isn't cost-effective or feasible to renovate the existing buildings and, further, there's no funding available for such renovations.*
21. Find another Site for the Development -- Why doesn't NHA find another, more suitable site for this development? *In 2012 timeframe NHA's consultants reviewed all sites available in Needham that could possibly support affordable housing development, both privately owned 0r Town owned. No other sites were identified.*
22. Linden/Chambers tenants don't know what's going on -- A commenter expressed concern that existing NHA tenants had not been sufficiently briefed on the Project. Their opinions haven't been solicited. Some tenants have language translation issues which may have a barrier to communications. *Five tenant engagement sessions have been conducted between April 2023-August 2024. A sixth session to introduce NHA's developer partner was held on September 26, 2024. At most meetings translators have been present to provide simultaneous translation of the presentations and Q&A, most frequently in Spanish, Russian and/or Mandarin.*

23. Impact of Post-Development Tenant Traffic on Linden Street -- The Project's central vehicular entrance and additional density means there will be an all-day traffic jam on Linden Street, not just during school drop-off and pickup periods. Linden Street is already too narrow and needs to be widened to add an additional lane. *The traffic study submitted with the SPR application indicates that after the development of the 1A/1B building, there will be no material worsening impact on Linden Street traffic. Widening Linden Street is a Town matter and not part of the Project's scope.*

* * * * * * * * * *

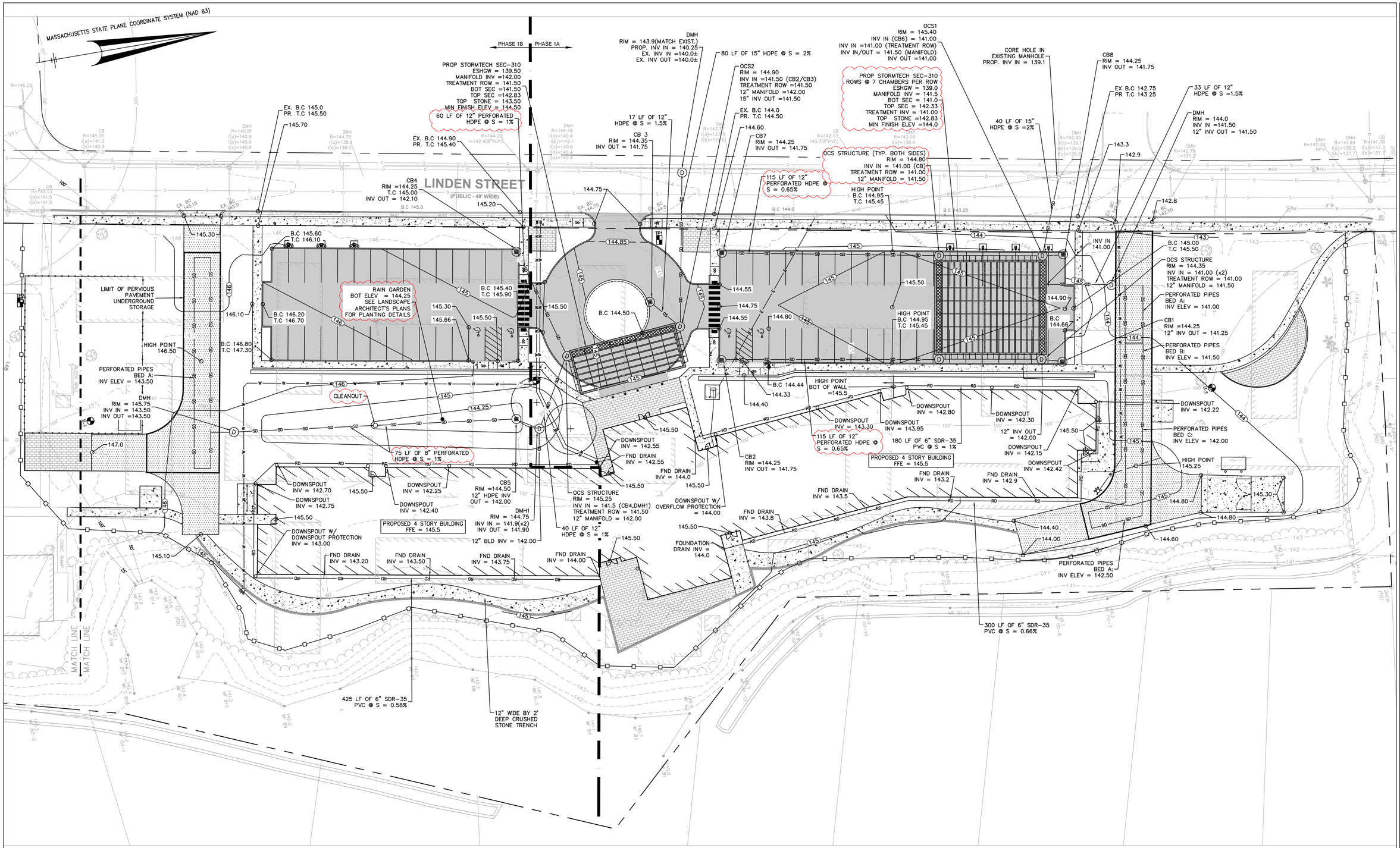
We look forward to answering questions about and finalizing our responses at the upcoming October 15, 2024 public hearing continuations. Thank you again for your consideration.

Sincerely,

Reginald C. Foster

Reginald C. Foster, Chair
Board of Commissioners
Needham Housing Authority

cc: Cheryl Gosmon, NHA Executive Director
Robert Smart, Esq.
Betsy Collins – Peabody Properties
Mike Mattos - AHSC
Dan Chen, BH+A
Brad McCord – BH+A
Anthony Donato, Olin Richter - Hancock
Curtis Puncher, Shauna Gillies-Smith
Greg Hochmuth, Chelsea Davidson - Epsilon




PLAN
1"=20'

NOTES:
1. LOCATION OF ALL EXISTING AND PROPOSED SERVICES MUST BE CONFIRMED IN THE FIELD PRIOR TO CONSTRUCTION. ALL DISCREPANCIES MUST BE REPORTED TO THE ENGINEER.
2. ALL UTILITIES AND SERVICES WITHIN LIMITS OF DISTURBANCES SHALL BE VERTICALLY AND HORIZONTALLY LOCATED.
3. CONTRACTOR TO COMPLY WITH UTILITY NOTIFICATION REQUIREMENTS.
4. ALL NEW UTILITIES/SERVICES ARE TO BE INSTALLED UNDERGROUND

LEGEND

| | EXISTING | PROPOSED |
|---|---|---|
| DRAIN MANHOLE | ⓓ | ⓓ |
| CATCH BASIN | ▦ | ▦ |
| DRAIN PIPE | —SD— | —SD— |
| CONTOUR | — — — | —0— |
| BORE LOCATION | ◒ | |

SOIL TESTING DATA:

PERFORMED ON MAY 30, 2024 BY ANTHONY DONATO = (#598)

| Test Pit#1 | | Test Pit#2 | |
|---|---|---|---|
| Elevation: | 144.6 ± | Elevation: | 146.8± |
| 0-6" | Loam/Fill | 0-6" | Loam/Fill |
| 6"-84" | Sand | 6"-80" | Sand |
| Weeping: | None | Weeping: | 72" |
| ESHWT: | 72"/6'p(Elev. 138.6) | ESHWT: | 78"/6'p(Elev. 140.8) |

SCALE: 1" = 20'
0 20 40 80

NOT FOR CONSTRUCTION - PERMITTING USE ONLY

C:\local Revit\3489 Linden Chambers Redevelopment NVA_SD_cfitzwaller5hZO6.rvt
5/6/2024 2:45:36 PM Author


ARCHITECT
bh+a
Bargmann Hendrie + Archetype, Inc.
9 Channel Center Street, Suite 300
Boston, MA 02210
(617) 350 0450


PROJECT NAME
**Linden Street Redevelopment**
138-188 Linden St, Needham MA, 02494
Assessor's Map:
199/133-23-00
199/133-24-00
199/134-41-00

CLIENT
**Needham Housing Authority**
21 Highland Circle,
Needham, MA, 02494


PROJECT TEAM

**Civil Engineer**
Hancock Associates
121 East Berkeley Street, 4th Floor
Boston, MA 02118
617.357.8145

**Landscape Architect**
Ground Landscape Inc.
285 Washington Street, Unit G
Somerville, MA 02143
617.718.0889

**Structural Engineer**
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63 Pleasant Street, Suite 300
Watertown, MA 02472
617.926.9300

**MEP/FP Engineer**
NV5
200 Brickstone Square
Andover, MA 01810
978.296.6219


REVISIONS

| # | COMMENT/DESCRIPTION | DATE |
|---|---|---|
| 1 | SPR COMMENTS | 10/08/2024 |

DRAWING TITLE
**GRADING AND DRAINAGE**

DRAWING INFORMATION

COMMONWEALTH OF MASSACHUSETTS
ANTHONY DONATO
CIVIL
No. 39598
REGISTERED PROFESSIONAL ENGINEER

09/06/2024
DATE OF ISSUE
50% DESIGN DEVELOPMENT
DESCRIPTION
SCALE
OMR
DRAWN BY
26774
PROJECT #
FILE NAME

DRAWING NUMBER
**C4.0**

SHEET NUMBER 4 OF 7


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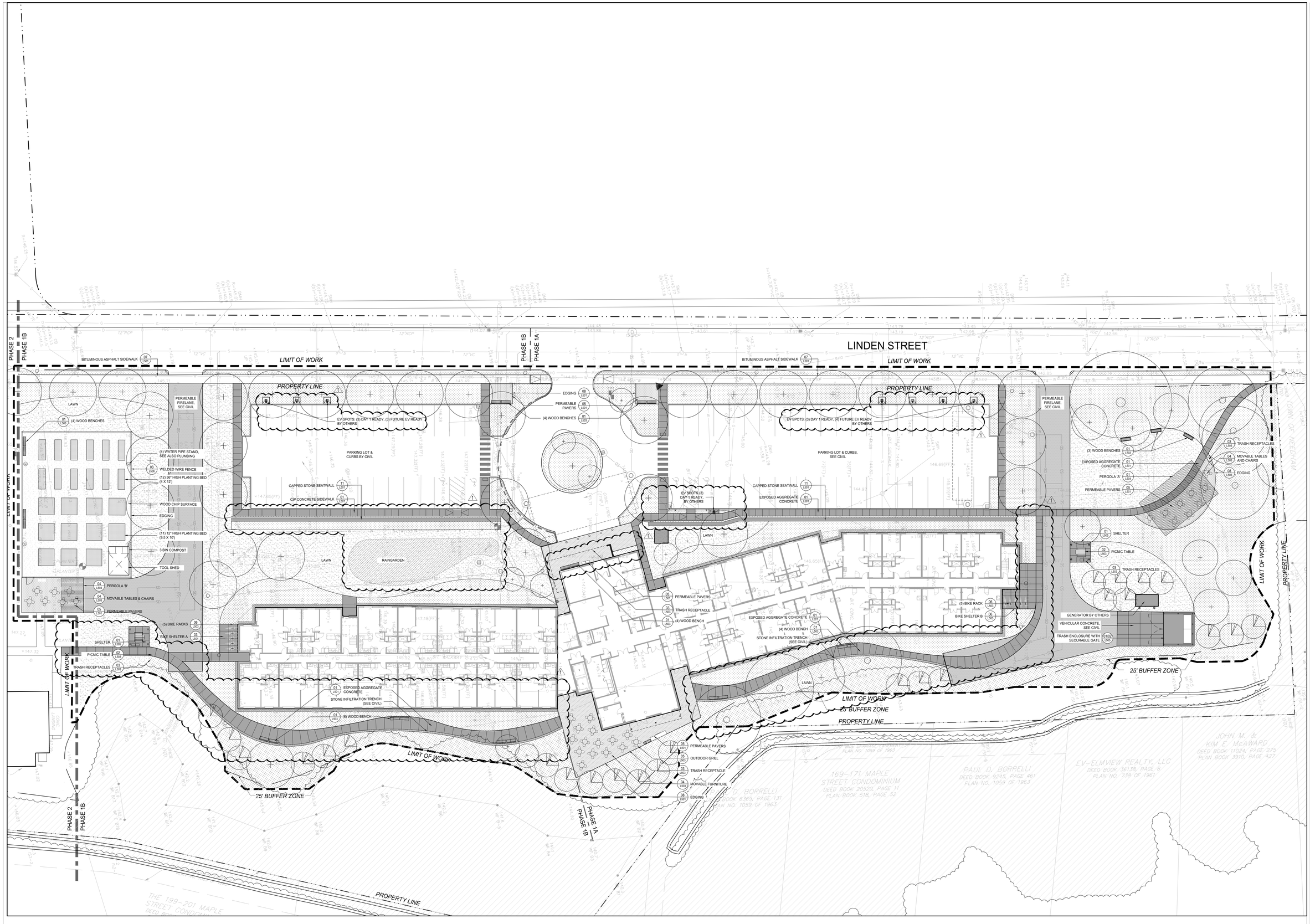
V.2.1





**ARCHITECT**

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**PROJECT NAME**

# Linden Street Redevelopment

**CLIENT**

## Needham Housing Authority

21 Highland Circle,
Needham, MA, 02494

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**MEP/FP Engineer**
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**REVISIONS**

| | | |
|---|---|---|
| 1 | SPR COMMENTS | 10/09/2024 |
| | | DATE |

**DRAWING TITLE**

## MATERIAL PLAN

**DRAWING INFORMATION**

09/06/2024
DATE OF ISSUE

50% DD SET
DESCRIPTION

1" = 20'
SCALE

CP
DRAWN BY

3499.00
PROJECT #

FILE NAME

**DRAWING NUMBER**

# L102A

1 Phase 1A - West Elevation 2
1/8" = 1'-0"




4 Lobby North Elevation
1/8" = 1'-0"

5 Lobby South Elevation
1/8" = 1'-0"

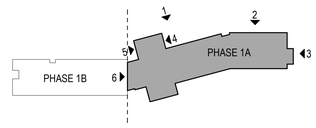
2 Phase 1A - West Elevation 1
1/8" = 1'-0"

6 Phase 1A - South Elevation ( Alternate Temporary Condition, Pre Phase 1B)
1/8" = 1'-0"

3 Phase 1A - North Elevation
1/8" = 1'-0"

**EXTERIOR WALL ASSEMBLY TYPES - SEE A011**

| | |
|---|---|
| EW1-1 | THIN MASONRY VENEER SYSTEM AS WALL BASE WITH TYPICAL WOOD FRAME WALL ASSEMBLY |
| EW2-1 | HIGH DENSITY FIBER CEMENT PANEL RAINSCREEN WITH TYPICAL WOOD FRAME WALL ASSEMBLY |
| EW3-1 | THIN MASONRY VENEER SYSTEM AS WALL BASE WITH TYPICAL WOOD FRAME WALL ASSEMBLY |
| EW4-1 | HIGH DENSITY FIBER CEMENT PANEL RAINSCREEN WITH CMU WALL ASSEMBLY |




0' 4' 8' 16"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PROJECT NAME
**Linden Street Redevelopment**

CLIENT
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REVISIONS

| | | |
|---|---|---|
| 1 | SPR COMMENTS | 10/08/2024 |
| | | DATE |

DRAWING TITLE
**Phase 1A - Elevations**

DRAWING INFORMATION

08/23/2024 DATE OF ISSUE
Site Plan Review DESCRIPTION
As indicated SCALE
CF DRAWN BY
3489.00 PROJECT #
rawLnut FILE NAME

DRAWING NUMBER
**A201**

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HANCOCK
ASSOCIATES

SITE PLAN REVIEW
REVISIONS TO 8/23/24 REPORT FOR
EXPANDED INFILTRATION SYSTEM:
10/8/2024

# Stormwater Report

*In Support Of*

## Notice of intent

*For*

**Linden Street Redevelopment**
**(Map 133, Lots 23 and 24)**
**Needham MA**

**PREPARED BY:**
Hancock Associates
#26774

**PREPARED FOR:**
Needham Housing Authority
21 Highland Circle,
Needham MA, 02494

HANCOCK
ASSOCIATES
Surveyors | Engineers | Scientists

October 8, 2024

Needham Plan Review Committee, Town Hall
1471Highland Ave, Needham, 02492
Subject: Summary of Revisions to Review comments from DPW

Hancock Associates has revised the civil site plans as part of the Linden Street Redevelopment design plans per the letter from Tom Ryder, Town Engineer, on September 19, 2024, and coordination meeting with DPW on October 1, 2024. The review highlighted a need for a larger stormwater management system beyond the requirements set forth by the town and state stormwater regulations and additional public outreach and education of environmental sustainability.

The stormwater infiltration system located under the northern parking lot is proposed to be 2,950 sf which is six times larger than the 500sf base design pursuant to MA Stormwater regulations. The proposed capacity of the expanded infiltration system detains and infiltrates all stormwater it receives up to the 25-year reoccurring storm event (table 2). This results in a significant decrease in run-off volume and peak flow rates in all storm events. The reduction in stormwater volume and peak flow for the 2,10-,25-, and 100-year storm events can be seen in tables 1 and 2.

As discussed in the coordination meeting, to further increase infiltration throughout the site, long pipe lengths will be made perforated and set in crushed stone. The pipe lengths between catch basin 2 and the expanded infiltration system, between catch basin 7 and the expanded system and between catch basin 4 and infiltration system 2 are proposed to be perforated 12” HDPE pipe set in crushed stone.

A rain garden has been proposed to further meet the Public Outreach & Education and Public Participation & Involvement control measures. The proposed location of the rain garden is in the landscaped area between the southern half of the building and the southern parking lot. It receives overflow stormwater water from the perforated pipes below the southern pervious fire driveway and from sheet flow over the surrounding landscaped areas. A catch basin will drain excess water to the subsurface infiltration system 2 located in the entrance circle. Signs with information regarding native plantings and rain garden functions will be installed to serve the public.

Please feel free to contact Hancock Associates with any questions or comments.
Sincerely,
Anthony Donato

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Attachments:

Table 1: Base System peak flow rate and run-off volume for reoccurring storm events

| Design Point | Peak Flow Rate (cfs) Flowing Off-Site- Base Design | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2-Year Storm (3.30" Rainfall Depth) | | | 10-Year Storm (5.20" Rainfall Depth) | | | 25-Year Storm (6.40" Rainfall Depth) | | | 100-Year Storm (8.20" Rainfall Depth) | | |
| | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions |
| DP1 (Linden St) | 3.31 | 3.31 | 0% | 6.81 | 6.79 | 0% | 9.27 | 8.9 | 4% | 13.16 | 11.46 | 13% |
| DP2 (Wetland) | 0.05 | 0 | 100% | 0.75 | 0 | 100% | 1.64 | 0.01 | 99% | 3.23 | 0.41 | 87% |

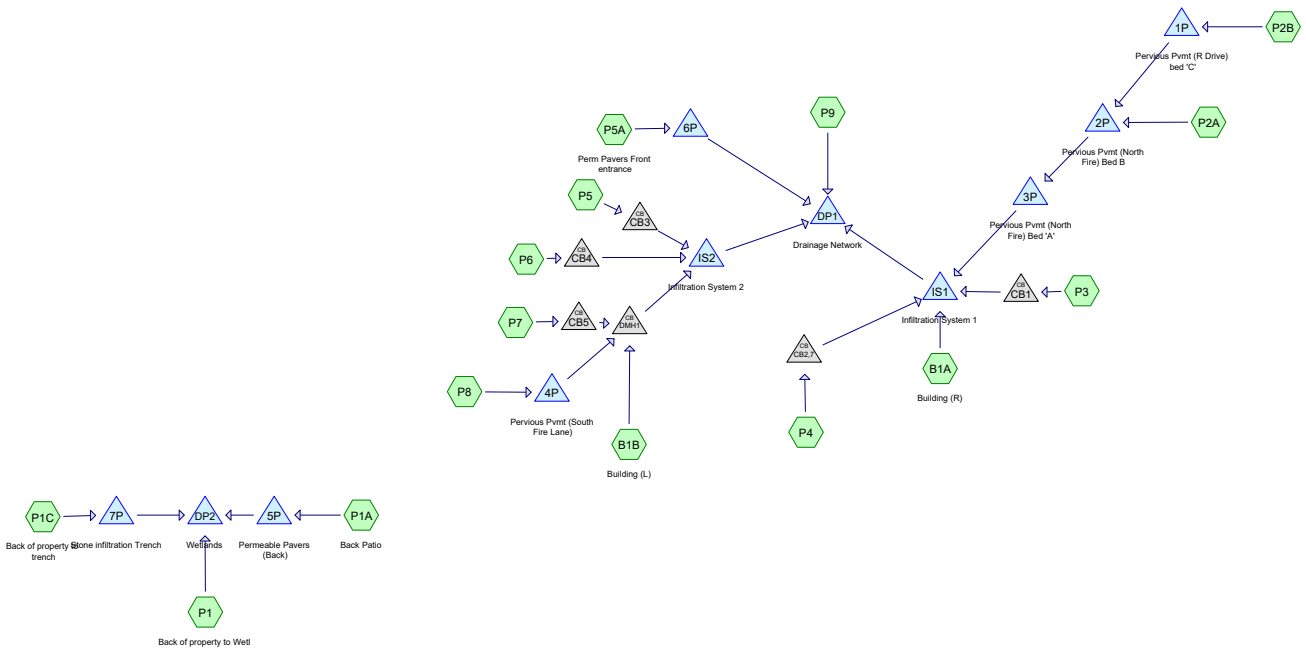
| Design Point | Stormwater Volume(cf) flowing off site -Base Design | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2-Year Storm (3.30" Rainfall Depth) | | | 10-Year Storm (5.20" Rainfall Depth) | | | 25-Year Storm (6.40" Rainfall Depth) | | | 100-Year Storm (8.20" Rainfall Depth) | | |
| | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions |
| DP1 (Linden St) | 11,658 | 3,746 | 68% | 22,602 | 10,840 | 52% | 30,303 | 16,453 | 46% | 42,573 | 26,102 | 39% |
| DP2 (wetland) | 626 | 0 | 100% | 3,568 | 38 | 99% | 6,300 | 385 | 94% | 11,291 | 1,715 | 85% |

Table 2: Expanded Systems peak flow rate and run-off volume for reoccurring storm events

| Design Point | Peak Flow Rate (cfs) Flowing Off-Site - Expanded Subsurface System | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2-Year Storm (3.30" Rainfall Depth) | | | 10-Year Storm (5.20" Rainfall Depth) | | | 25-Year Storm (6.40" Rainfall Depth) | | | 100-Year Storm (8.20" Rainfall Depth) | | |
| | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions |
| DP1 (Linden St) | 3.31 | 1.06 | 68% | 6.81 | 3.35 | 51% | 9.27 | 4.64 | 50% | 13.16 | 7.61 | 42% |
| DP2 (Wetland) | 0.05 | 0 | 100% | 0.75 | 0 | 100% | 1.64 | 0.01 | 99% | 3.23 | 0.34 | 89% |

| Design Point | Stormwater Volume(cf) flowing off site - Expanded Subsurface System | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2-Year Storm (3.30" Rainfall Depth) | | | 10-Year Storm (5.20" Rainfall Depth) | | | 25-Year Storm (6.40" Rainfall Depth) | | | 100-Year Storm (8.20" Rainfall Depth) | | |
| | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions | Existing Conditions | Proposed Conditions | % Reduction from existing conditions |
| DP1 (Linden St) | 11,658 | 1,067 | 91% | 22,602 | 4,542 | 80% | 30,303 | 7,512 | 75% | 42,573 | 14,202 | 67% |
| DP2 (wetland) | 626 | 0 | 100% | 3,568 | 38 | 99% | 6,300 | 385 | 94% | 11,291 | 1,679 | 85% |

Attachment 3: Post Development HydroCAD report




Subcat Reach Pond Link

**Routing Diagram for 2024-09-26_Post-Development_Med Sys**
Prepared by Hancock Associates, Printed 10/7/2024
HydroCAD® 10.20-3g s/n 00711 © 2023 HydroCAD Software Solutions LLC

## Rainfall Events Listing (selected events)

| 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 | 3.30 | 2 |
| 2 | 10 yr | Type III 24-hr | | Default | 24.00 | 1 | 5.20 | 2 |
| 3 | 25 yr | Type III 24-hr | | Default | 24.00 | 1 | 6.40 | 2 |
| 4 | 100 yr | Type III 24-hr | | Default | 24.00 | 1 | 8.20 | 2 |

## Area Listing (all nodes)

| Area (sq-ft) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 36,975 | 39 | >75% Grass cover, Good, HSG A (P3, P4, P5, P5A, P6, P7, P8, P9) |
| 5,400 | 80 | >75% Grass cover, Good, HSG D (P8) |
| 11,540 | 98 | CONCRETE (P1C, P2A, P2B, P3, P4, P5, P6, P8, P9) |
| 26,822 | 30 | Meadow, non-grazed, HSG A (P1, P1C, P2A, P2B) |
| 26,391 | 98 | Paved parking, HSG A (P3, P4, P5, P6, P9) |
| 28,328 | 98 | Roofs, HSG A (B1A, B1B) |
| 19,150 | 30 | Woods, Good, HSG A (P1) |
| 9,946 | 96 | permeable pavement (P2A, P2B, P8) |
| 3,270 | 80 | permeable pavers (P1A, P5, P5A) |

## Ground Covers (all nodes)

| HSG-A (sq-ft) | HSG-B (sq-ft) | HSG-C (sq-ft) | HSG-D (sq-ft) | Other (sq-ft) | Total (sq-ft) | Ground Cover | Su Nu |
|---|---|---|---|---|---|---|---|
| 36,975 | 0 | 0 | 5,400 | 0 | 42,375 | >75% Grass cover, Good | |
| 0 | 0 | 0 | 0 | 11,540 | 11,540 | CONCRETE | |
| 26,822 | 0 | 0 | 0 | 0 | 26,822 | Meadow, non-grazed | |
| 26,391 | 0 | 0 | 0 | 0 | 26,391 | Paved parking | |
| 28,328 | 0 | 0 | 0 | 0 | 28,328 | Roofs | |
| 19,150 | 0 | 0 | 0 | 0 | 19,150 | Woods, Good | |
| 0 | 0 | 0 | 0 | 9,946 | 9,946 | permeable pavement | |
| 0 | 0 | 0 | 0 | 3,270 | 3,270 | permeable pavers | |

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 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

**SubcatchmentB1A: Building (R)** Runoff Area=14,492 sf 100.00% Impervious Runoff Depth=3.07"
Tc=6.0 min CN=98 Runoff=1.04 cfs 3,704 cf

**SubcatchmentB1B: Building (L)** Runoff Area=13,836 sf 100.00% Impervious Runoff Depth=3.07"
Tc=6.0 min CN=98 Runoff=0.99 cfs 3,536 cf

**SubcatchmentP1: Back of property to Wetl** Runoff Area=38,559 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=30 Runoff=0.00 cfs 0 cf

**SubcatchmentP1A: Back Patio** Runoff Area=2,070 sf 0.00% Impervious Runoff Depth=1.48"
Tc=6.0 min CN=80 Runoff=0.08 cfs 255 cf

**SubcatchmentP1C: Back of property to** Runoff Area=7,565 sf 30.40% Impervious Runoff Depth=0.17"
Tc=6.0 min CN=51 Runoff=0.01 cfs 109 cf

**SubcatchmentP2A:** Runoff Area=3,446 sf 13.78% Impervious Runoff Depth=0.65"
Tc=6.0 min CN=65 Runoff=0.05 cfs 187 cf

**SubcatchmentP2B:** Runoff Area=6,132 sf 27.32% Impervious Runoff Depth=2.35"
Tc=6.0 min CN=91 Runoff=0.37 cfs 1,202 cf

**SubcatchmentP3:** Runoff Area=7,500 sf 90.93% Impervious Runoff Depth=2.54"
Tc=6.0 min CN=93 Runoff=0.48 cfs 1,589 cf

**SubcatchmentP4:** Runoff Area=9,561 sf 73.85% Impervious Runoff Depth=1.69"
Tc=6.0 min CN=83 Runoff=0.43 cfs 1,348 cf

**SubcatchmentP5:** Runoff Area=7,429 sf 68.84% Impervious Runoff Depth=1.84"
Tc=6.0 min CN=85 Runoff=0.36 cfs 1,141 cf

**SubcatchmentP5A: Perm Pavers Front** Runoff Area=560 sf 0.00% Impervious Runoff Depth=0.25"
Tc=6.0 min CN=54 Runoff=0.00 cfs 12 cf

**SubcatchmentP6:** Runoff Area=10,912 sf 94.08% Impervious Runoff Depth=2.74"
Tc=6.0 min CN=95 Runoff=0.74 cfs 2,494 cf

**SubcatchmentP7:** Runoff Area=9,750 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39 Runoff=0.00 cfs 2 cf

**SubcatchmentP8:** Runoff Area=18,366 sf 5.55% Impervious Runoff Depth=0.84"
Flow Length=175' Slope=0.0100 '/' Tc=9.5 min CN=69 Runoff=0.32 cfs 1,280 cf

**SubcatchmentP9:** Runoff Area=17,644 sf 18.14% Impervious Runoff Depth=0.15"
Tc=6.0 min CN=50 Runoff=0.01 cfs 220 cf

**Pond 1P: Pervious Pvmt (R Drive) bed 'C'** Peak Elev=142.00' Storage=0 cf Inflow=0.37 cfs 1,202 cf
Discarded=0.37 cfs 1,202 cf Primary=0.00 cfs 0 cf Outflow=0.37 cfs 1,202 cf

**Pond 2P: Pervious Pvmt (North Fire) Bed B** Peak Elev=141.50' Storage=0 cf Inflow=0.05 cfs 187 cf
Discarded=0.05 cfs 187 cf Primary=0.00 cfs 0 cf Outflow=0.05 cfs 187 cf

**Pond 3P: Pervious Pvmt (North Fire) Bed 'A'** Peak Elev=141.00' Storage=0 cf Inflow=0.00 cfs 0 cf
Discarded=0.00 cfs 0 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

**Pond 4P: Pervious Pvmt (South Fire Lane)** Peak Elev=143.70' Storage=292 cf Inflow=0.32 cfs 1,280 cf
Discarded=0.05 cfs 50 cf Primary=0.13 cfs 1,210 cf Outflow=0.17 cfs 1,259 cf

**Pond 5P: Permeable Pavers (Back)** Peak Elev=144.00' Storage=0 cf Inflow=0.08 cfs 255 cf
Discarded=0.08 cfs 255 cf Primary=0.00 cfs 0 cf Outflow=0.08 cfs 255 cf

**Pond 6P:** Peak Elev=143.00' Storage=0 cf Inflow=0.00 cfs 12 cf
Discarded=0.00 cfs 12 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 12 cf

**Pond 7P: Stone infiltration Trench** Peak Elev=144.00' Storage=0 cf Inflow=0.01 cfs 109 cf
Discarded=0.01 cfs 109 cf Primary=0.00 cfs 0 cf Outflow=0.01 cfs 109 cf

**Pond CB1:** Peak Elev=141.60' Inflow=0.48 cfs 1,589 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0625 '/' Outflow=0.48 cfs 1,589 cf

**Pond CB2,7:** Peak Elev=142.07' Inflow=0.43 cfs 1,348 cf
12.0" Round Culvert n=0.013 L=75.0' S=0.0100 '/' Outflow=0.43 cfs 1,348 cf

**Pond CB3:** Peak Elev=142.73' Inflow=0.36 cfs 1,141 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0125 '/' Outflow=0.36 cfs 1,141 cf

**Pond CB4:** Peak Elev=142.77' Inflow=0.74 cfs 2,494 cf
12.0" Round Culvert n=0.013 L=60.0' S=0.0100 '/' Outflow=0.74 cfs 2,494 cf

**Pond CB5:** Peak Elev=142.55' Inflow=0.00 cfs 2 cf
12.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=0.00 cfs 2 cf

**Pond DMH1:** Peak Elev=142.77' Inflow=1.01 cfs 4,748 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=1.01 cfs 4,748 cf

**Pond DP1: Drainage Network** Inflow=1.06 cfs 1,067 cf
Primary=1.06 cfs 1,067 cf

**Pond DP2: Wetlands** Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

**Pond IS1: Infiltration System 1** Peak Elev=141.35' Storage=888 cf Inflow=1.95 cfs 6,641 cf
Discarded=0.73 cfs 6,651 cf Primary=0.00 cfs 0 cf Outflow=0.73 cfs 6,651 cf

**Pond IS2: Infiltration System 2** Peak Elev=142.73' Storage=1,226 cf Inflow=2.12 cfs 8,383 cf
Discarded=0.46 cfs 7,545 cf Primary=1.06 cfs 847 cf Outflow=1.52 cfs 8,392 cf

## Summary for Subcatchment B1A: Building (R)

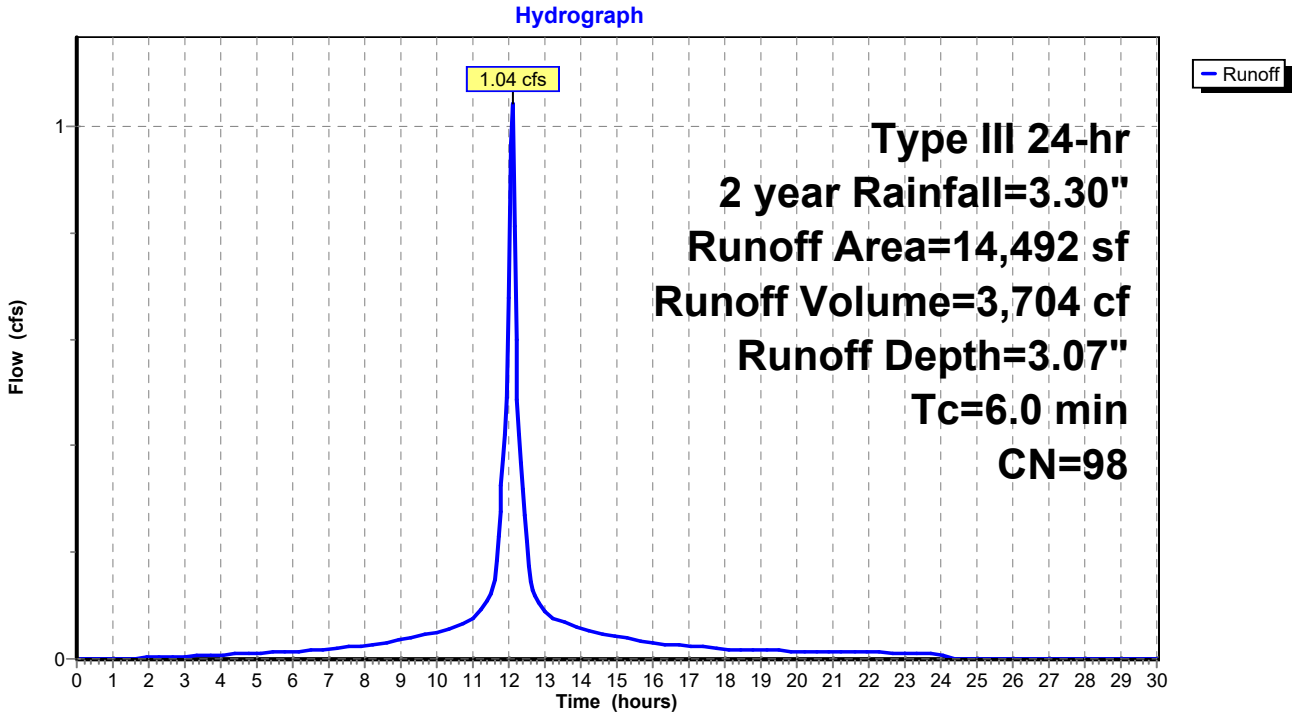
Runoff = 1.04 cfs @ 12.09 hrs, Volume= 3,704 cf, Depth= 3.07"
Routed to Pond IS1 : Infiltration System 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| Area (sf) | CN | Description |
|---|---|---|
| 14,492 | 98 | Roofs, HSG A |
| 14,492 | | 100.00% Impervious Area |

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

### Subcatchment B1A: Building (R)



## Summary for Subcatchment B1B: Building (L)

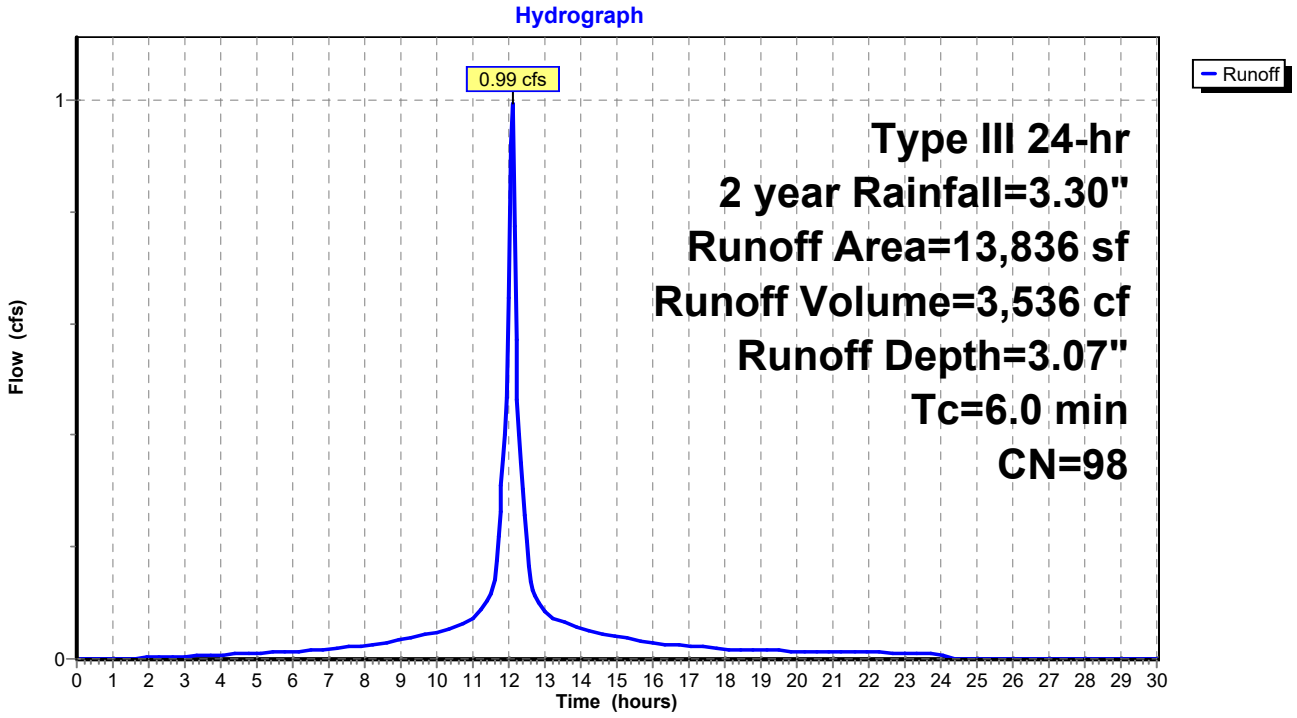
Runoff = 0.99 cfs @ 12.09 hrs, Volume= 3,536 cf, Depth= 3.07"
Routed to Pond DMH1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| Area (sf) | CN | Description |
|---|---|---|
| 13,836 | 98 | Roofs, HSG A |
| 13,836 | | 100.00% Impervious Area |

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

### Subcatchment B1B: Building (L)



## Summary for Subcatchment P1: Back of property to Wetl

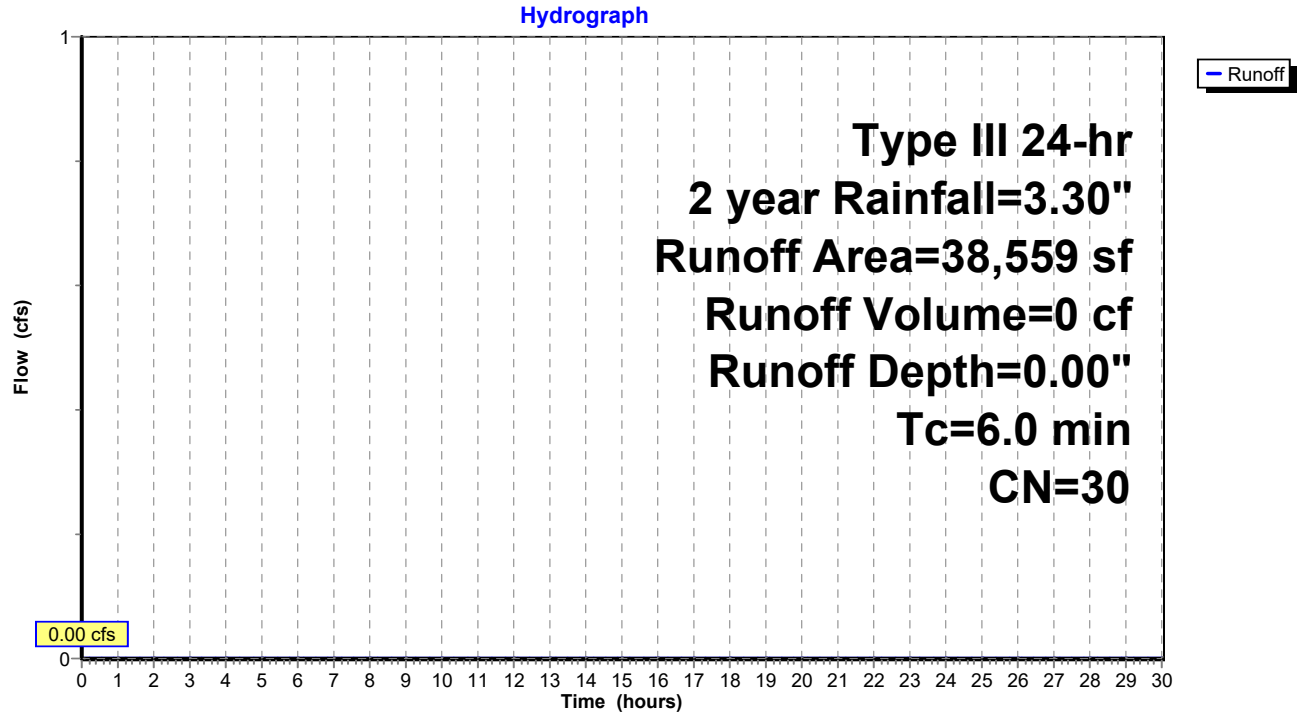
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond DP2 : Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| Area (sf) | CN | Description |
|---|---|---|
| 19,150 | 30 | Woods, Good, HSG A |
| 19,409 | 30 | Meadow, non-grazed, HSG A |
| 38,559 | 30 | Weighted Average |
| 38,559 | | 100.00% Pervious Area |

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

## Subcatchment P1: Back of property to Wetl



## Summary for Subcatchment P1A: Back Patio

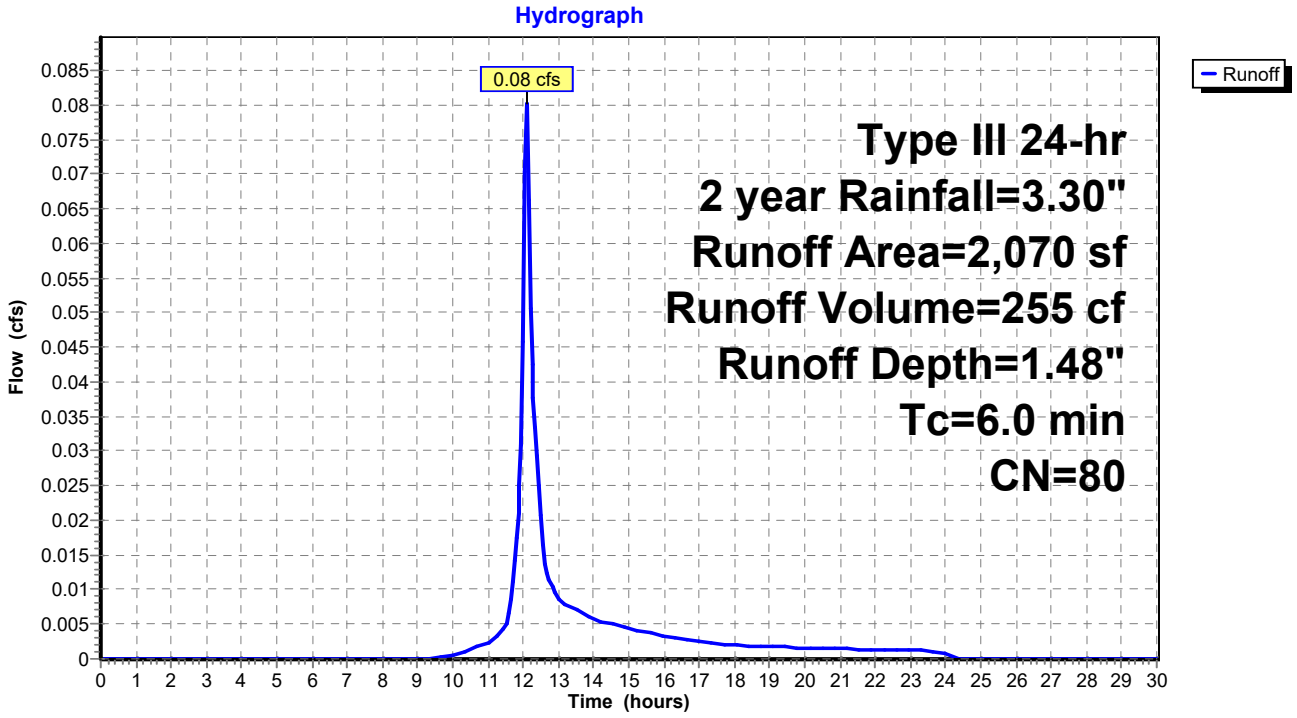
Runoff = 0.08 cfs @ 12.10 hrs, Volume= 255 cf, Depth= 1.48"
Routed to Pond 5P : Permeable Pavers (Back)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,070 | 80 | permeable pavers |
| | 2,070 | | 100.00% Pervious Area |

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

### Subcatchment P1A: Back Patio



## Summary for Subcatchment P1C: Back of property to trench

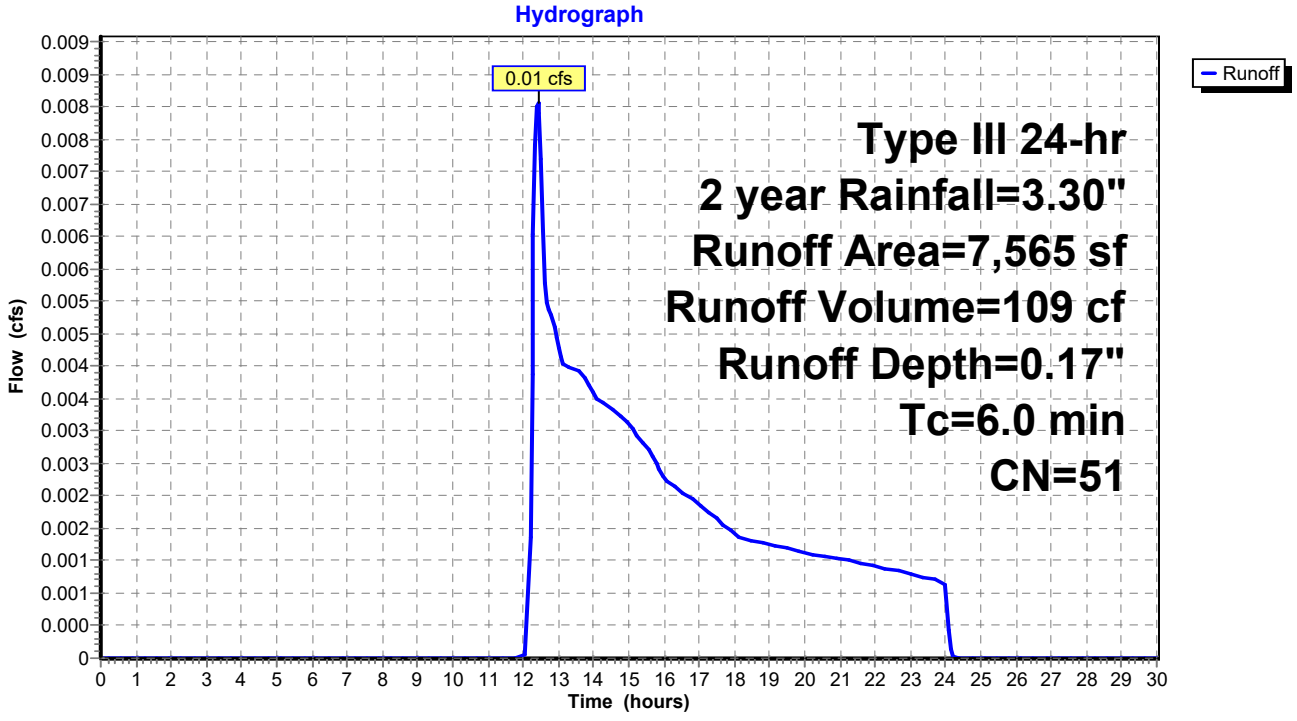
Runoff = 0.01 cfs @ 12.42 hrs, Volume= 109 cf, Depth= 0.17"
Routed to Pond 7P : Stone infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,300 | 98 | CONCRETE |
| | 5,265 | 30 | Meadow, non-grazed, HSG A |
| | 7,565 | 51 | Weighted Average |
| | 5,265 | | 69.60% Pervious Area |
| | 2,300 | | 30.40% Impervious Area |

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

## Subcatchment P1C: Back of property to trench



## Summary for Subcatchment P2A:

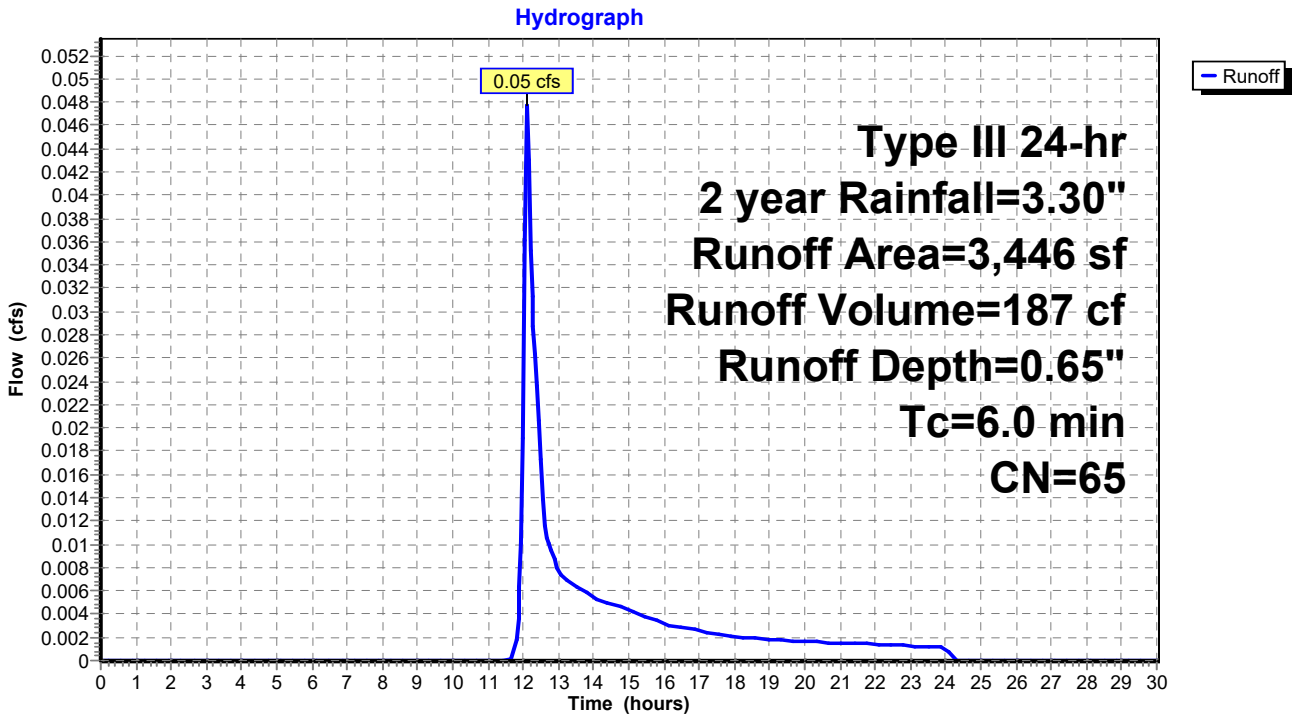
Runoff = 0.05 cfs @ 12.11 hrs, Volume= 187 cf, Depth= 0.65"
Routed to Pond 2P : Pervious Pvmt (North Fire) Bed B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 475 | 98 | CONCRETE |
| * | 1,351 | 96 | permeable pavement |
| | 1,620 | 30 | Meadow, non-grazed, HSG A |
| | 3,446 | 65 | Weighted Average |
| | 2,971 | | 86.22% Pervious Area |
| | 475 | | 13.78% Impervious Area |

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

## Subcatchment P2A:



## Summary for Subcatchment P2B:

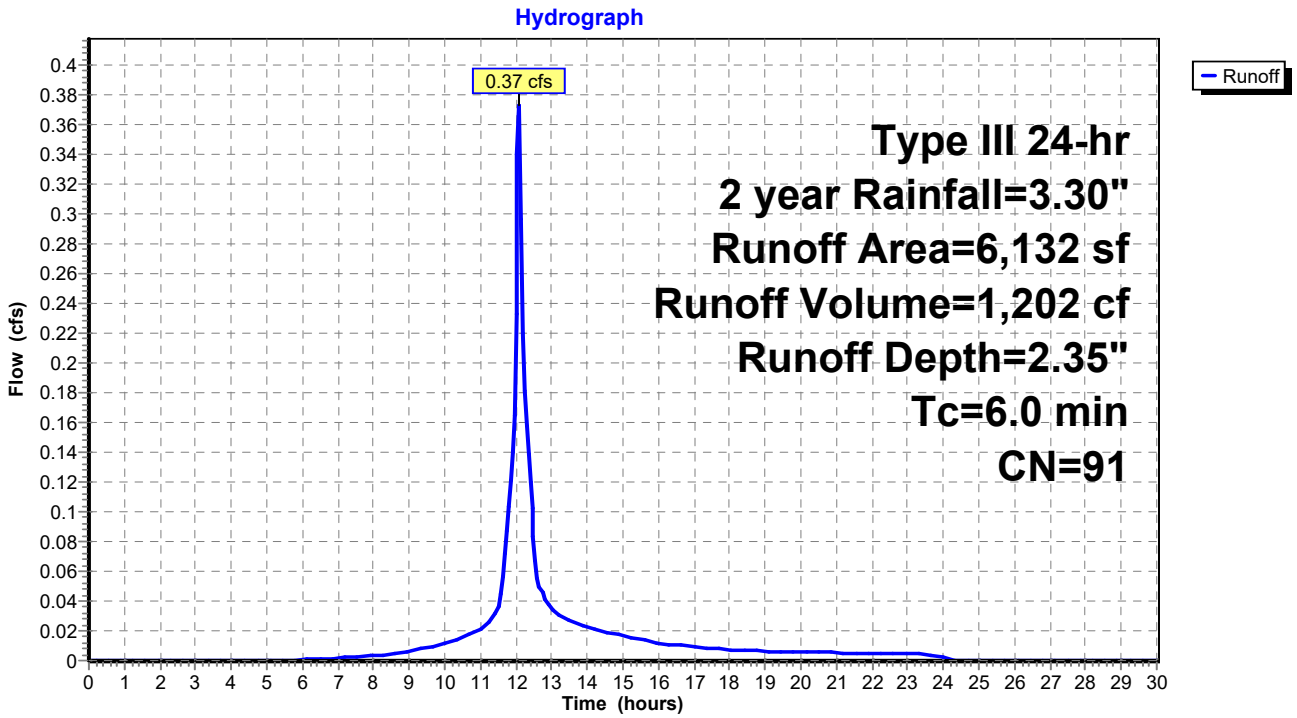
Runoff = 0.37 cfs @ 12.09 hrs, Volume= 1,202 cf, Depth= 2.35"
Routed to Pond 1P : Pervious Pvmt (R Drive) bed 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,675 | 98 | CONCRETE |
| * | 3,929 | 96 | permeable pavement |
| | 528 | 30 | Meadow, non-grazed, HSG A |
| | 6,132 | 91 | Weighted Average |
| | 4,457 | | 72.68% Pervious Area |
| | 1,675 | | 27.32% Impervious Area |

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

## Subcatchment P2B:



## Summary for Subcatchment P3:

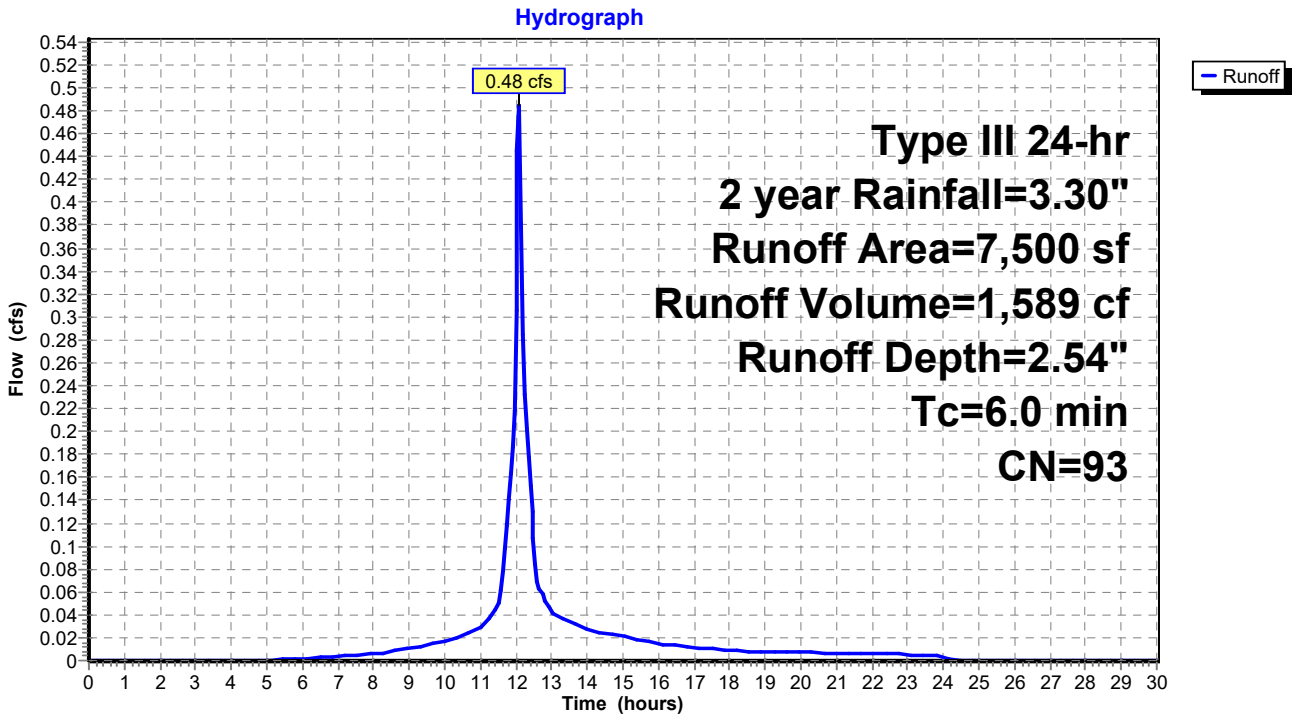
Runoff = 0.48 cfs @ 12.09 hrs, Volume= 1,589 cf, Depth= 2.54"
Routed to Pond CB1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 670 | 98 | CONCRETE |
| | 6,150 | 98 | Paved parking, HSG A |
| | 680 | 39 | >75% Grass cover, Good, HSG A |
| | 7,500 | 93 | Weighted Average |
| | 680 | | 9.07% Pervious Area |
| | 6,820 | | 90.93% Impervious Area |

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

## Subcatchment P3:



## Summary for Subcatchment P4:

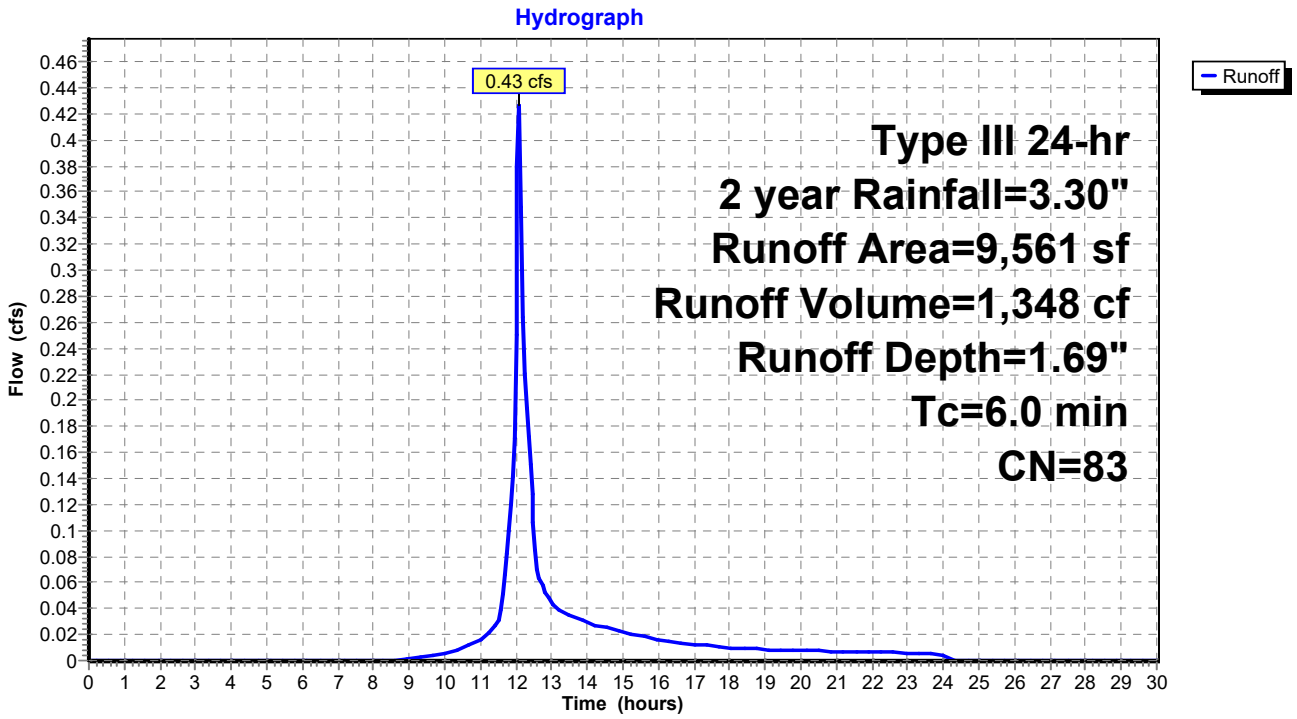
Runoff = 0.43 cfs @ 12.09 hrs, Volume= 1,348 cf, Depth= 1.69"
Routed to Pond CB2,7 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 900 | 98 | CONCRETE |
| | 6,161 | 98 | Paved parking, HSG A |
| | 2,500 | 39 | >75% Grass cover, Good, HSG A |
| | 9,561 | 83 | Weighted Average |
| | 2,500 | | 26.15% Pervious Area |
| | 7,061 | | 73.85% Impervious Area |

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

## Subcatchment P4:



## Summary for Subcatchment P5:

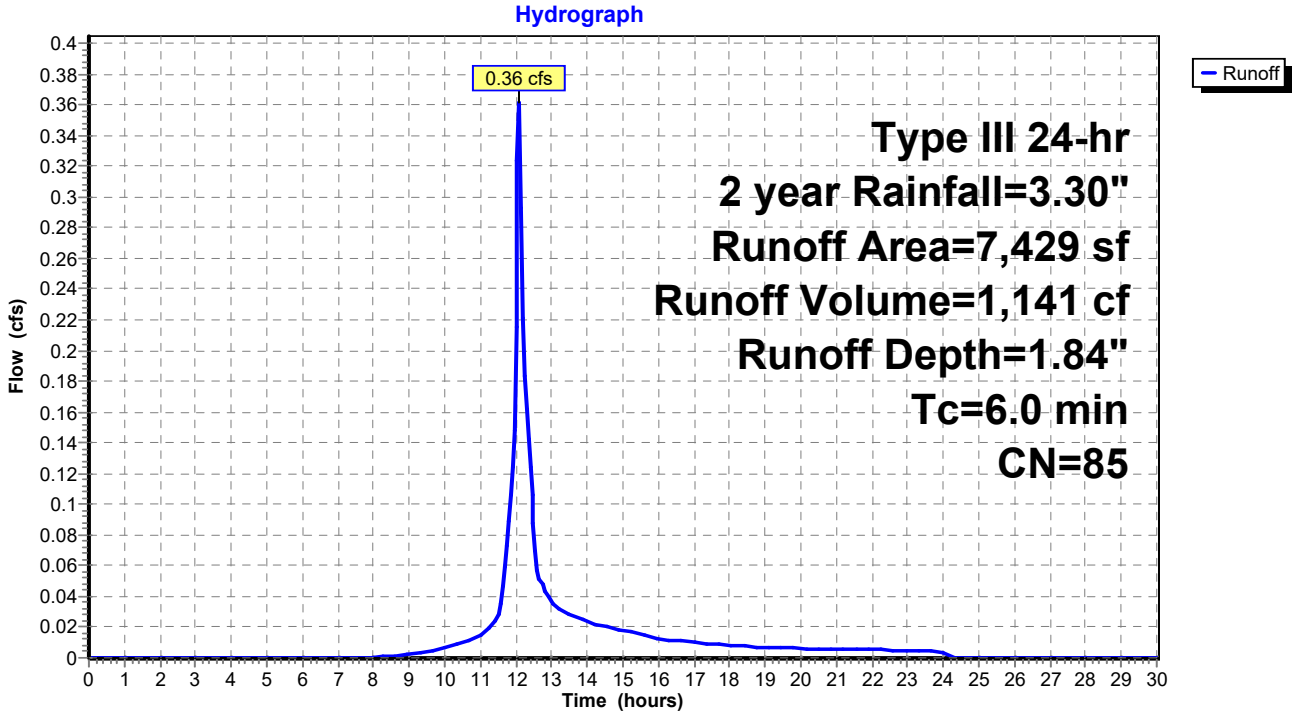
Runoff = 0.36 cfs @ 12.09 hrs, Volume= 1,141 cf, Depth= 1.84"
Routed to Pond CB3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 450 | 98 | CONCRETE |
| | 4,664 | 98 | Paved parking, HSG A |
| | 1,315 | 39 | >75% Grass cover, Good, HSG A |
| * | 1,000 | 80 | permeable pavers |
| | 7,429 | 85 | Weighted Average |
| | 2,315 | | 31.16% Pervious Area |
| | 5,114 | | 68.84% Impervious Area |

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

## Subcatchment P5:



## Summary for Subcatchment P5A: Perm Pavers Front entrance

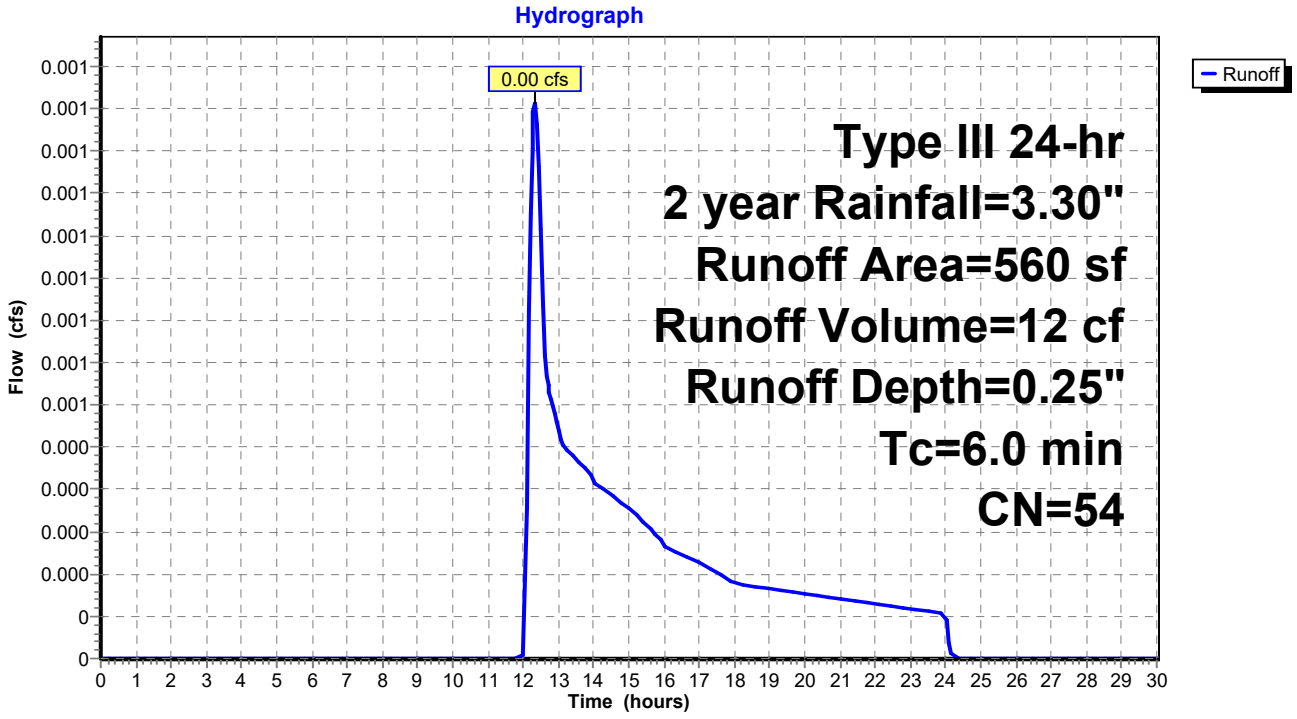
Runoff = 0.00 cfs @ 12.34 hrs, Volume= 12 cf, Depth= 0.25"
Routed to Pond 6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 200 | 80 | permeable pavers |
| | 360 | 39 | >75% Grass cover, Good, HSG A |
| | 560 | 54 | Weighted Average |
| | 560 | | 100.00% Pervious Area |

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

## Subcatchment P5A: Perm Pavers Front entrance



## Summary for Subcatchment P6:

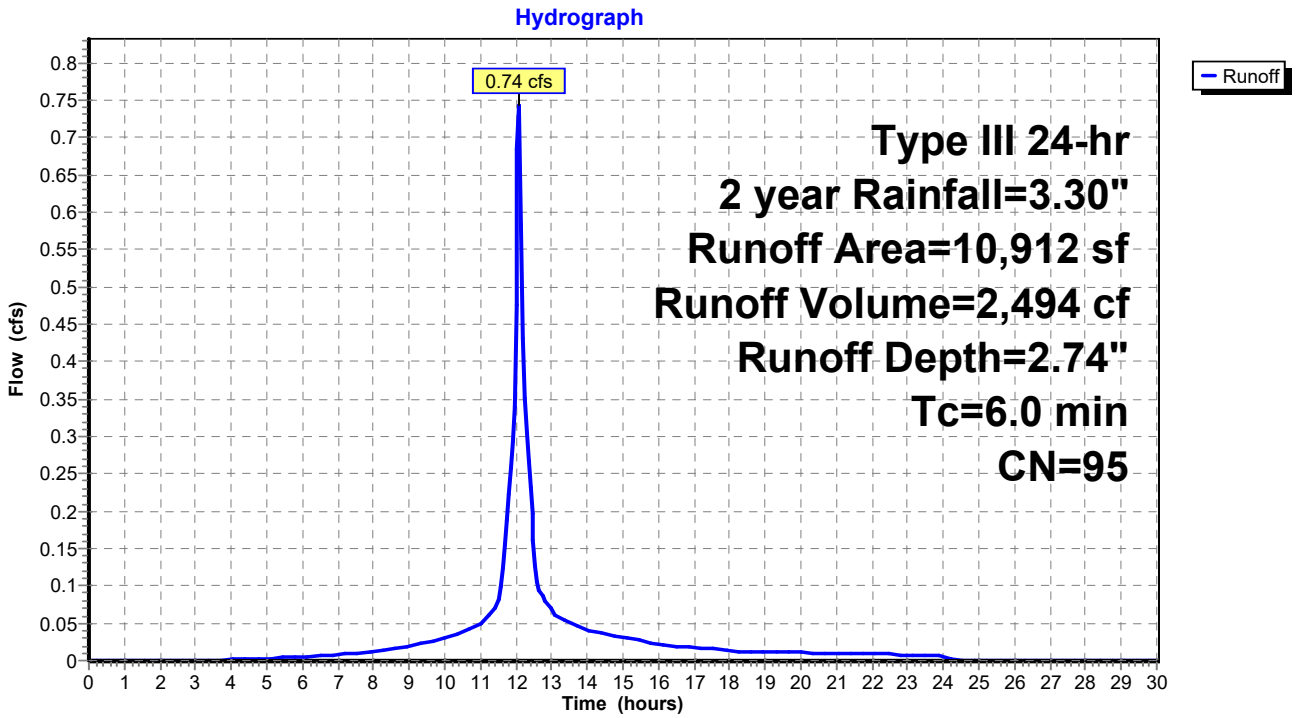
Runoff = 0.74 cfs @ 12.09 hrs, Volume= 2,494 cf, Depth= 2.74"
Routed to Pond CB4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,200 | 98 | CONCRETE |
| | 9,066 | 98 | Paved parking, HSG A |
| | 646 | 39 | >75% Grass cover, Good, HSG A |
| | 10,912 | 95 | Weighted Average |
| | 646 | | 5.92% Pervious Area |
| | 10,266 | | 94.08% Impervious Area |

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

## Subcatchment P6:



## Summary for Subcatchment P7:

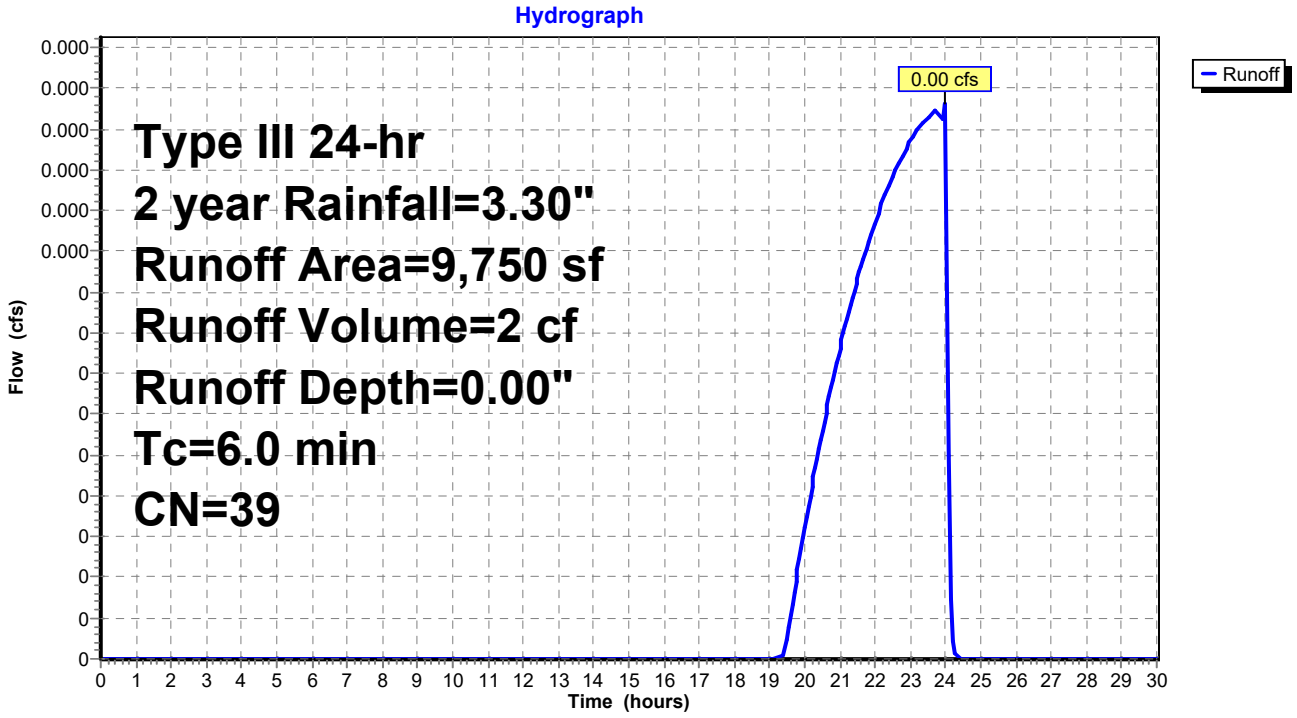
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 2 cf, Depth= 0.00"
Routed to Pond CB5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| Area (sf) | CN | Description |
|---|---|---|
| 9,750 | 39 | >75% Grass cover, Good, HSG A |
| 9,750 | | 100.00% Pervious Area |

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

## Subcatchment P7:



## Summary for Subcatchment P8:

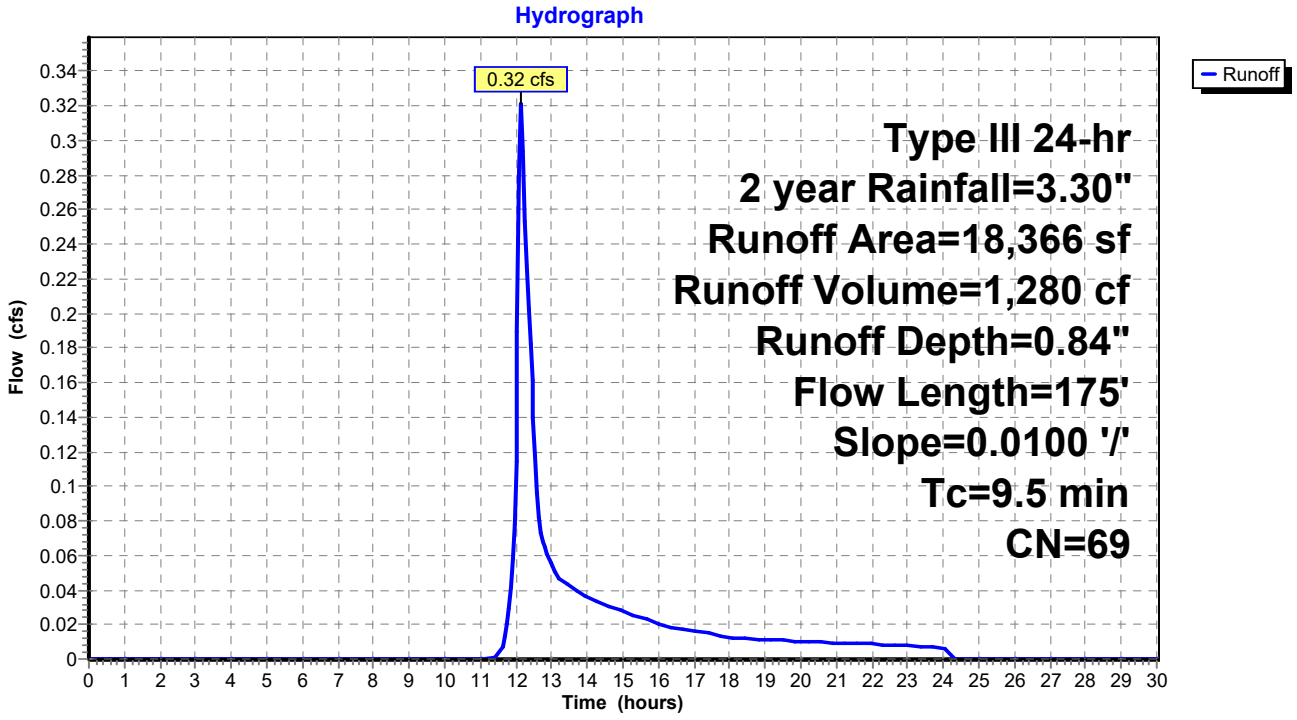
Runoff = 0.32 cfs @ 12.15 hrs, Volume= 1,280 cf, Depth= 0.84"
Routed to Pond 4P : Pervious Pvmt (South Fire Lane)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,020 | 98 | CONCRETE |
| * | 4,666 | 96 | permeable pavement |
| | 7,280 | 39 | >75% Grass cover, Good, HSG A |
| | 5,400 | 80 | >75% Grass cover, Good, HSG D |
| | 18,366 | 69 | Weighted Average |
| | 17,346 | | 94.45% Pervious Area |
| | 1,020 | | 5.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 50 | 0.0100 | 0.11 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.30" |
| 0.6 | 25 | 0.0100 | 0.70 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.6 | 100 | 0.0100 | 1.06 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30" |
| 9.5 | 175 | Total | | | |

## Subcatchment P8:



## Summary for Subcatchment P9:

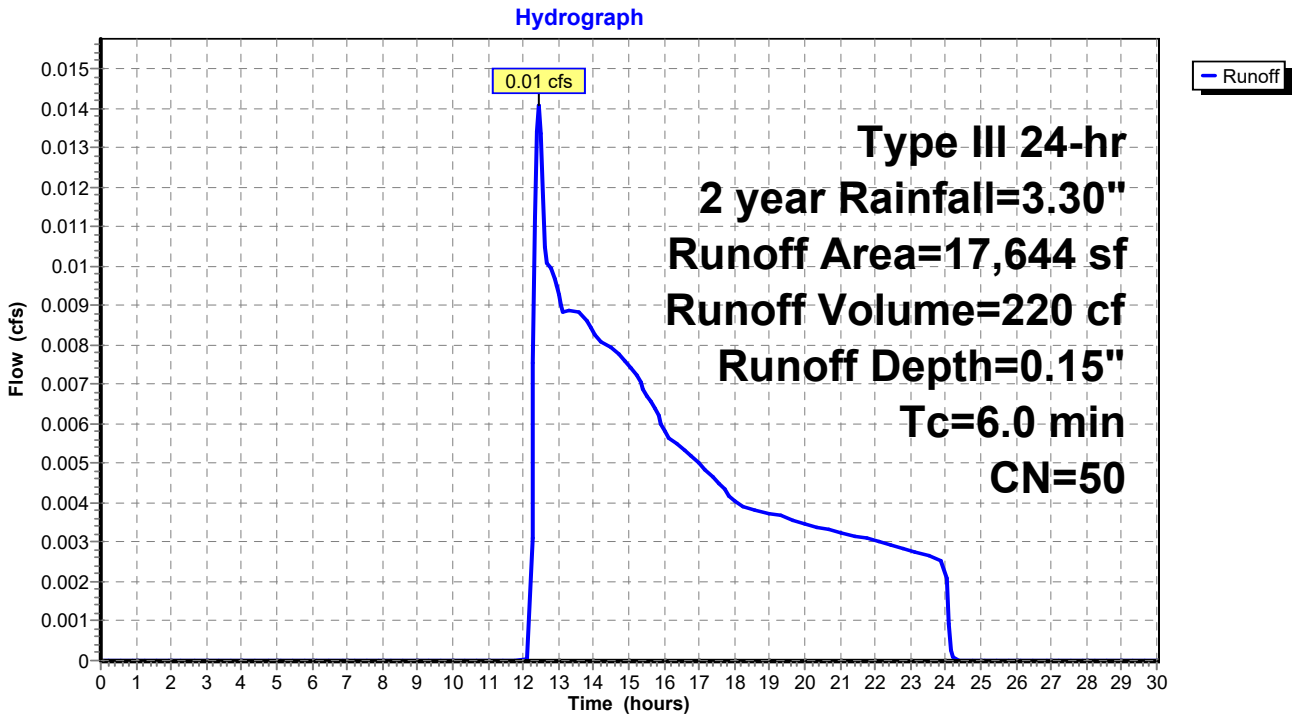
Runoff = 0.01 cfs @ 12.45 hrs, Volume= 220 cf, Depth= 0.15"
Routed to Pond DP1 : Drainage Network

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,850 | 98 | CONCRETE |
| | 350 | 98 | Paved parking, HSG A |
| | 14,444 | 39 | >75% Grass cover, Good, HSG A |
| | 17,644 | 50 | Weighted Average |
| | 14,444 | | 81.86% Pervious Area |
| | 3,200 | | 18.14% Impervious Area |

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

## Subcatchment P9:



## Summary for Pond 1P: Pervious Pvmt (R Drive) bed 'C'

Inflow Area = 6,132 sf, 27.32% Impervious, Inflow Depth = 2.35" for 2 year event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 1,202 cf
Outflow = 0.37 cfs @ 12.09 hrs, Volume= 1,202 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.37 cfs @ 12.09 hrs, Volume= 1,202 cf
Primary = 0.00 cfs @ 12.10 hrs, Volume= 0 cf
Routed to Pond 2P : Pervious Pvmt (North Fire) Bed B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.00' @ 12.10 hrs Surf.Area= 3,280 sf Storage= 0 cf
Flood Elev= 144.33' Surf.Area= 3,280 sf Storage= 2,071 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 801.3 - 801.3 )

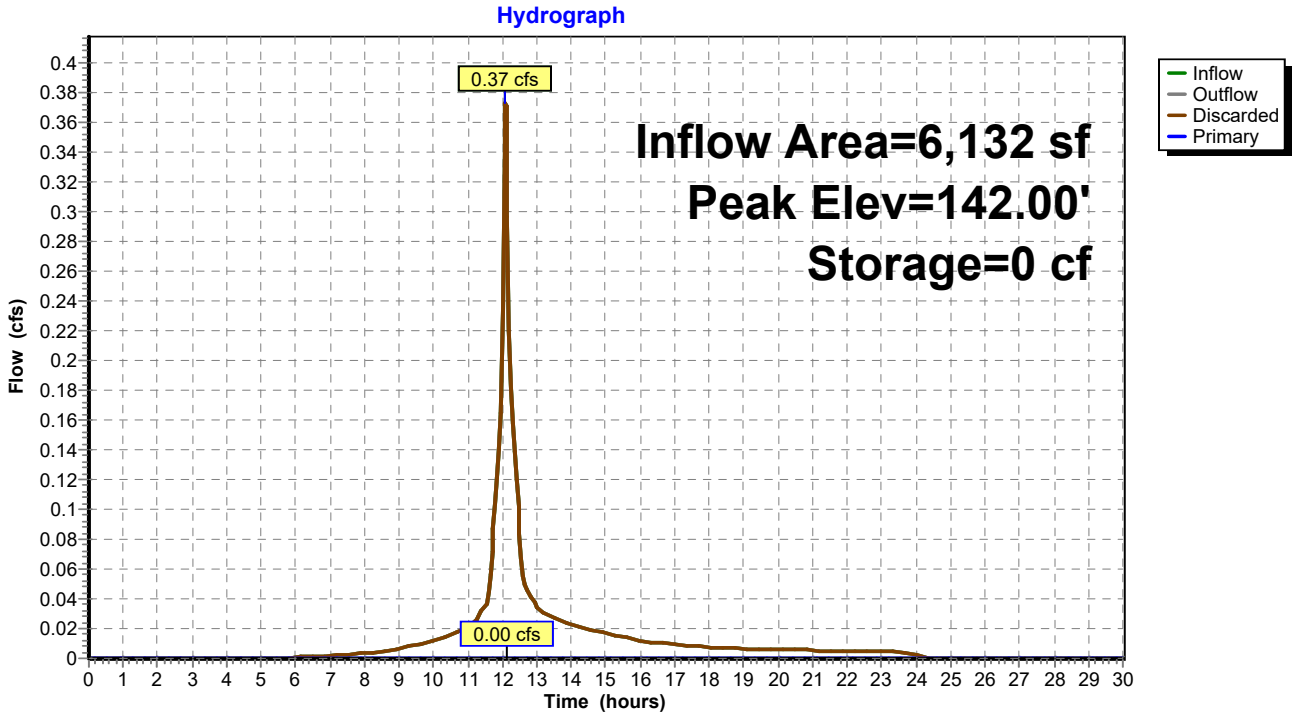
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 142.00' | 2,036 cf | **20.00'W x 164.00'L x 2.08'H Prismatoid**<br>6,822 cf Overall - 35 cf Embedded = 6,787 cf x 30.0% Voids |
| #2 | 142.00' | 35 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 180.0' |
| | | 2,071 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 144.08' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 142.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 142.00' | **6.0" Round Culvert X 2.00** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.00' / 141.50' S= 0.1000 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

**Discarded OutFlow** Max=0.63 cfs @ 12.09 hrs HW=142.00' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.63 cfs)

**Primary OutFlow** Max=0.00 cfs @ 12.10 hrs HW=142.00' TW=141.50' (Dynamic Tailwater)
↑—**2=Culvert** (Barrel Controls 0.00 cfs)

## Pond 1P: Pervious Pvmt (R Drive) bed 'C'



## Summary for Pond 2P: Pervious Pvmt (North Fire) Bed B

Inflow Area = 9,578 sf, 22.45% Impervious, Inflow Depth = 0.23" for 2 year event
Inflow = 0.05 cfs @ 12.11 hrs, Volume= 187 cf
Outflow = 0.05 cfs @ 12.11 hrs, Volume= 187 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.11 hrs, Volume= 187 cf
Primary = 0.00 cfs @ 11.65 hrs, Volume= 0 cf
Routed to Pond 3P : Pervious Pvmt (North Fire) Bed 'A'

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 141.50' @ 0.00 hrs Surf.Area= 700 sf Storage= 0 cf
Flood Elev= 143.50' Surf.Area= 700 sf Storage= 430 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 892.4 - 892.4 )

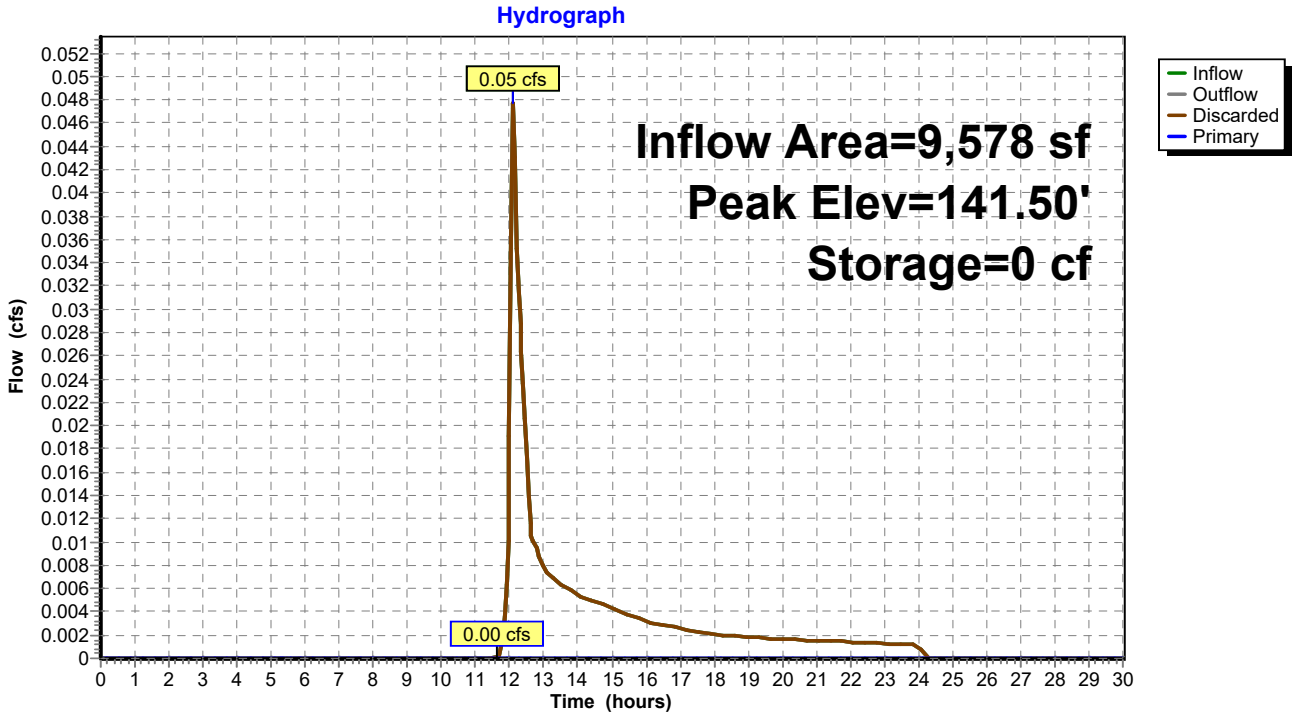
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 141.50' | 432 cf | **20.00'W x 35.00'L x 2.08'H Prismatoid**<br>1,456 cf Overall - 15 cf Embedded = 1,441 cf x 30.0% Voids |
| #2 | 141.50' | 15 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 75.0' |
| | | 447 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 143.58' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 141.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 141.50' | **6.0" Round Culvert X 2.00** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 141.00' S= 0.1000 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

**Discarded OutFlow** Max=0.00 cfs @ 12.11 hrs HW=141.50' (Free Discharge)
↑—**1=Exfiltration** (Passes 0.00 cfs of 0.13 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 11.65 hrs HW=141.50' TW=141.00' (Dynamic Tailwater)
↑—**2=Culvert** ( Controls 0.00 cfs)

## Pond 2P: Pervious Pvmt (North Fire) Bed B



## Summary for Pond 3P: Pervious Pvmt (North Fire) Bed 'A'

Inflow Area = 9,578 sf, 22.45% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 11.65 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 11.66 hrs, Volume= 0 cf, Atten= 28%, Lag= 0.7 min
Discarded = 0.00 cfs @ 11.66 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 141.00' @ 0.00 hrs Surf.Area= 1,200 sf Storage= 0 cf
Flood Elev= 143.50' Surf.Area= 1,200 sf Storage= 759 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.1 min ( 695.3 - 693.2 )

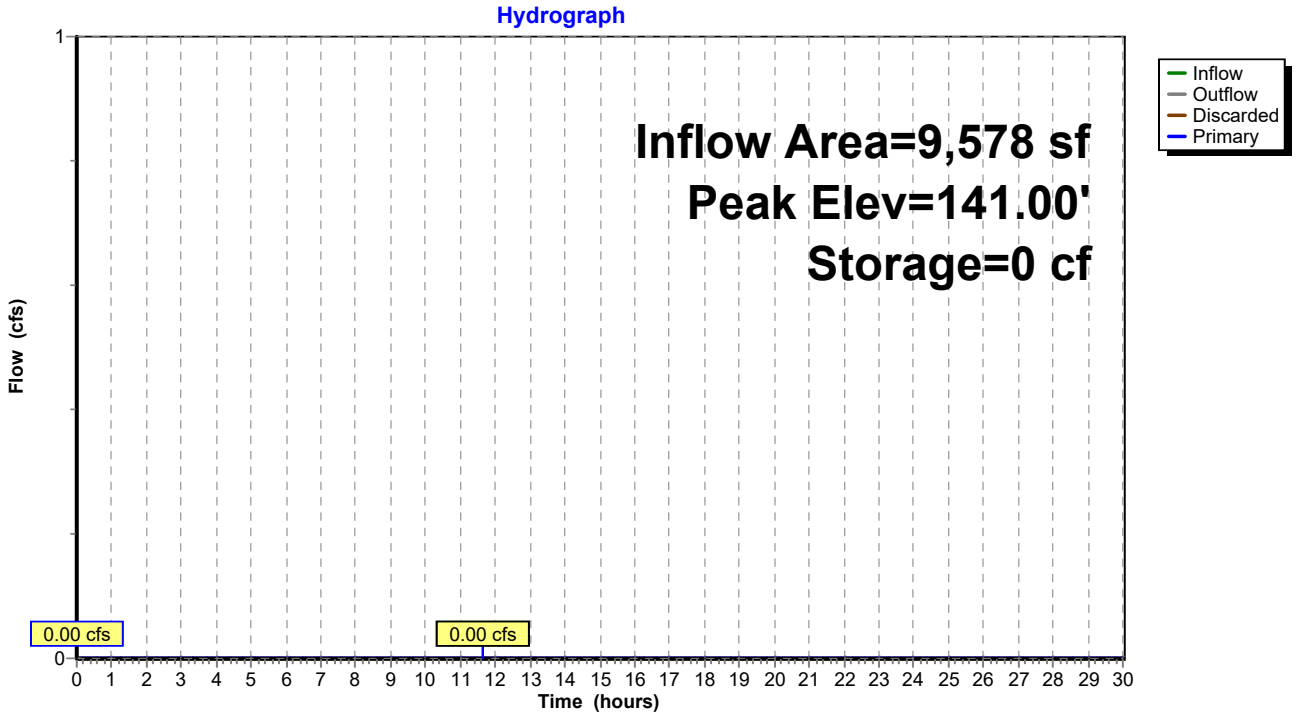
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 141.00' | 744 cf | **20.00'W x 60.00'L x 2.08'H Prismatoid**<br>2,496 cf Overall - 15 cf Embedded = 2,481 cf x 30.0% Voids |
| #2 | 141.00' | 15 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 75.0' |
| | | 759 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 143.08' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 141.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 141.50' | **12.0" Round Culvert** L= 25.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 141.00' S= 0.0200 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |
| #3 | Device 2 | 143.30' | **12.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.00 cfs @ 11.66 hrs HW=141.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.23 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=141.00' TW=141.00' (Dynamic Tailwater)
└**2=Culvert** ( Controls 0.00 cfs)
└**3=Orifice/Grate** ( Controls 0.00 cfs)

## Pond 3P: Pervious Pvmt (North Fire) Bed 'A'



## Summary for Pond 4P: Pervious Pvmt (South Fire Lane)

Inflow Area = 18,366 sf, 5.55% Impervious, Inflow Depth = 0.84" for 2 year event
Inflow = 0.32 cfs @ 12.15 hrs, Volume= 1,280 cf
Outflow = 0.17 cfs @ 12.43 hrs, Volume= 1,259 cf, Atten= 46%, Lag= 16.5 min
Discarded = 0.05 cfs @ 12.42 hrs, Volume= 50 cf
Primary = 0.13 cfs @ 12.44 hrs, Volume= 1,210 cf
Routed to Pond DMH1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.70' @ 12.42 hrs Surf.Area= 4,660 sf Storage= 292 cf
Flood Elev= 145.50' Surf.Area= 4,660 sf Storage= 2,837 cf

Plug-Flow detention time= 69.7 min calculated for 1,257 cf (98% of inflow)
Center-of-Mass det. time= 61.2 min ( 941.4 - 880.2 )

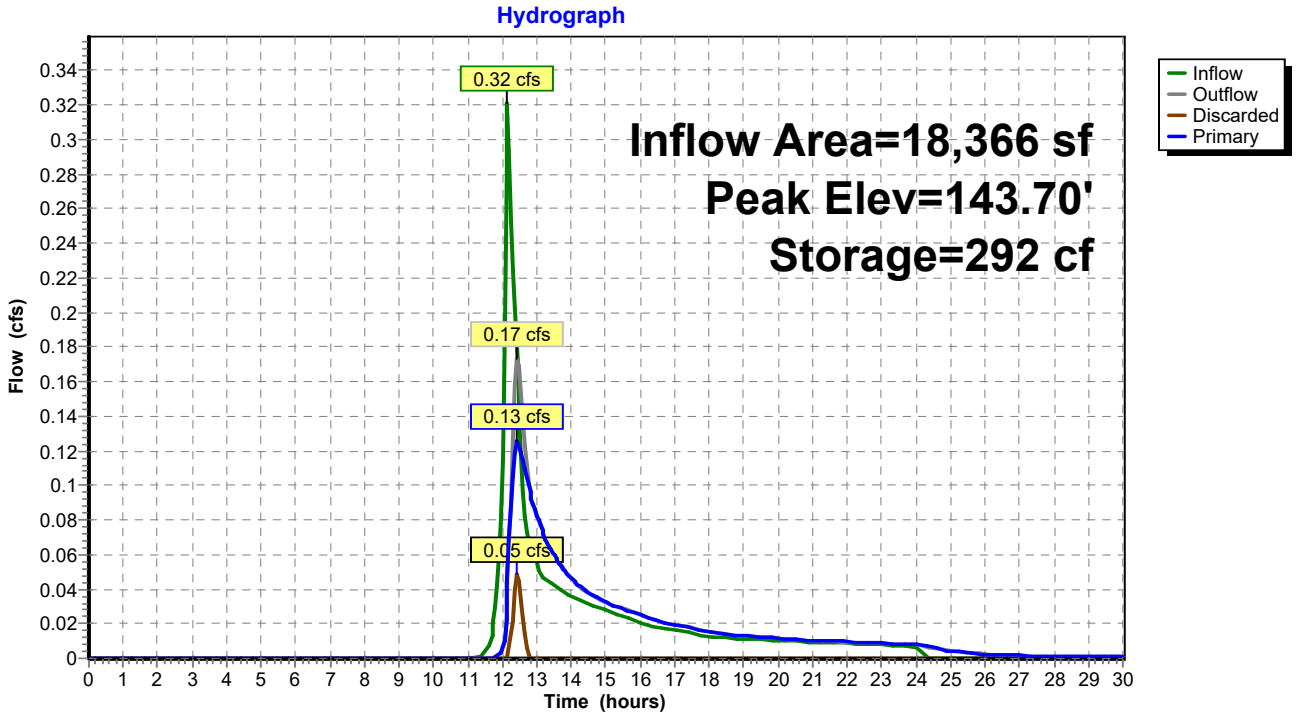
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 143.50' | 2,890 cf | **20.00'W x 233.00'L x 2.08'H Prismatoid**<br>9,693 cf Overall - 59 cf Embedded = 9,634 cf x 30.0% Voids |
| #2 | 143.50' | 59 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 300.0' |
| | | 2,949 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 145.58' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 143.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 141.50' |
| #2 | Primary | 143.50' | **12.0" Round Culvert** L= 170.0' Ke= 0.500<br>Inlet / Outlet Invert= 143.50' / 141.90' S= 0.0094 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |
| #3 | Device 1 | 143.67' | **12.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.05 cfs @ 12.42 hrs HW=143.70' (Free Discharge)
↑**1=Exfiltration** (Passes 0.05 cfs of 0.98 cfs potential flow)
↑**3=Orifice/Grate** (Weir Controls 0.05 cfs @ 0.54 fps)

**Primary OutFlow** Max=0.13 cfs @ 12.44 hrs HW=143.70' TW=142.67' (Dynamic Tailwater)
↑**2=Culvert** (Outlet Controls 0.13 cfs @ 1.74 fps)

## Pond 4P: Pervious Pvmt (South Fire Lane)



## Summary for Pond 5P: Permeable Pavers (Back)

Inflow Area = 2,070 sf, 0.00% Impervious, Inflow Depth = 1.48" for 2 year event
Inflow = 0.08 cfs @ 12.10 hrs, Volume= 255 cf
Outflow = 0.08 cfs @ 12.10 hrs, Volume= 255 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.08 cfs @ 12.10 hrs, Volume= 255 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP2 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 144.00' @ 0.00 hrs Surf.Area= 1,720 sf Storage= 0 cf
Flood Elev= 145.50' Surf.Area= 1,720 sf Storage= 516 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 841.2 - 841.2 )

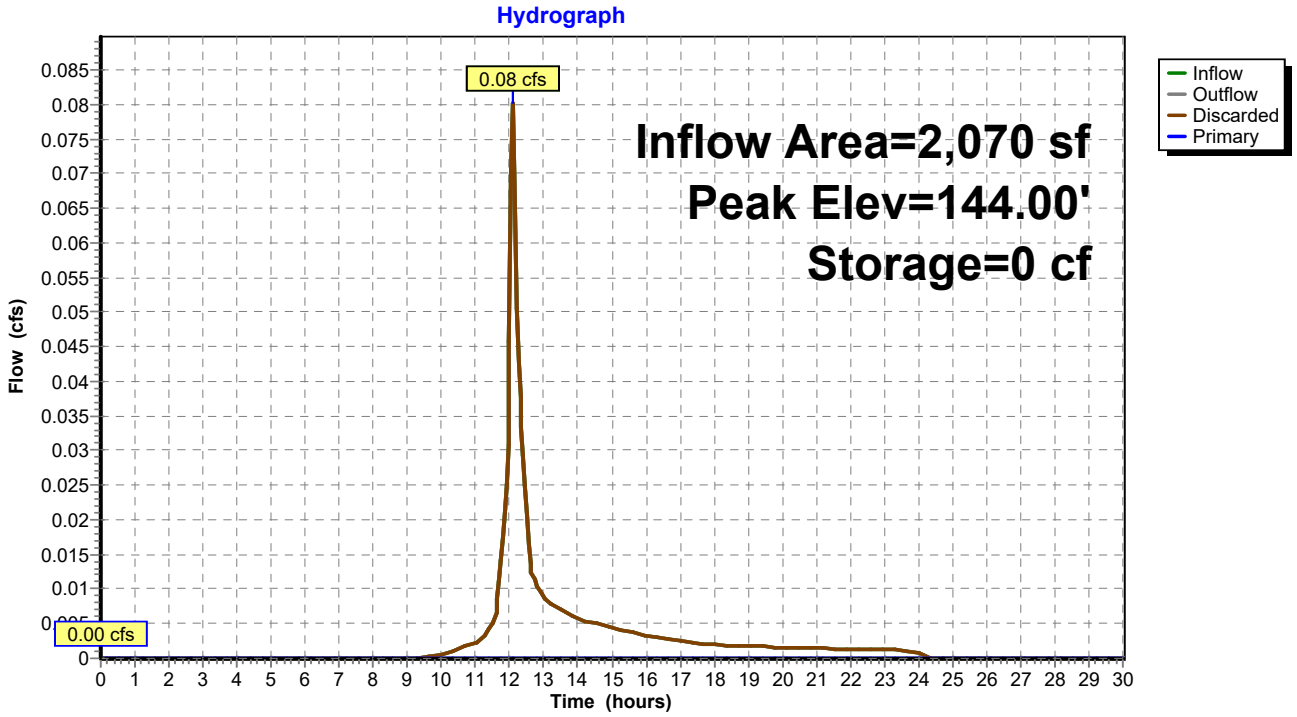
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 144.00' | 516 cf | **20.00'W x 86.00'L x 1.00'H Prismatoid**<br>1,720 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 145.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 144.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |

**Discarded OutFlow** Max=0.00 cfs @ 12.10 hrs HW=144.00' (Free Discharge)
↑**1=Exfiltration** (Passes 0.00 cfs of 0.33 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)

## Pond 5P: Permeable Pavers (Back)



## Summary for Pond 6P:

Inflow Area = 560 sf, 0.00% Impervious, Inflow Depth = 0.25" for 2 year event
Inflow = 0.00 cfs @ 12.34 hrs, Volume= 12 cf
Outflow = 0.00 cfs @ 12.34 hrs, Volume= 12 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.34 hrs, Volume= 12 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.00' @ 0.00 hrs Surf.Area= 400 sf Storage= 0 cf
Flood Elev= 145.00' Surf.Area= 400 sf Storage= 120 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 957.4 - 957.4 )

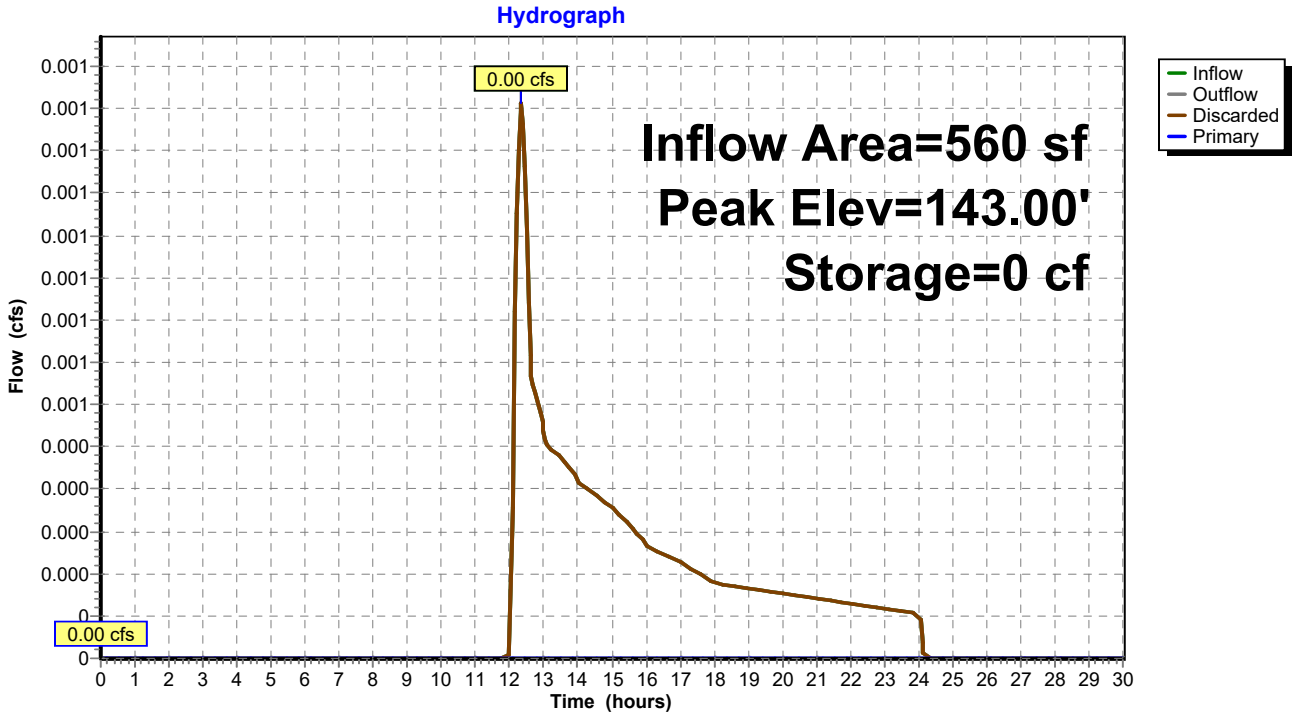
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 143.00' | 120 cf | **20.00'W x 20.00'L x 1.00'H Prismatoid**<br>400 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 144.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 143.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |

**Discarded OutFlow** Max=0.00 cfs @ 12.34 hrs HW=143.00' (Free Discharge)
↑—**1=Exfiltration** (Passes 0.00 cfs of 0.08 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=0.00' (Dynamic Tailwater)

## Pond 6P:


Hydrograph
Inflow Area=560 sf
Peak Elev=143.00'
Storage=0 cf
0.00 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0.001
0.000
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

## Summary for Pond 7P: Stone infiltration Trench

Inflow Area = 7,565 sf, 30.40% Impervious, Inflow Depth = 0.17" for 2 year event
Inflow = 0.01 cfs @ 12.42 hrs, Volume= 109 cf
Outflow = 0.01 cfs @ 12.42 hrs, Volume= 109 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.01 cfs @ 12.42 hrs, Volume= 109 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP2 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 144.00' @ 0.00 hrs Surf.Area= 500 sf Storage= 0 cf
Flood Elev= 145.00' Surf.Area= 500 sf Storage= 150 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 987.4 - 987.4 )

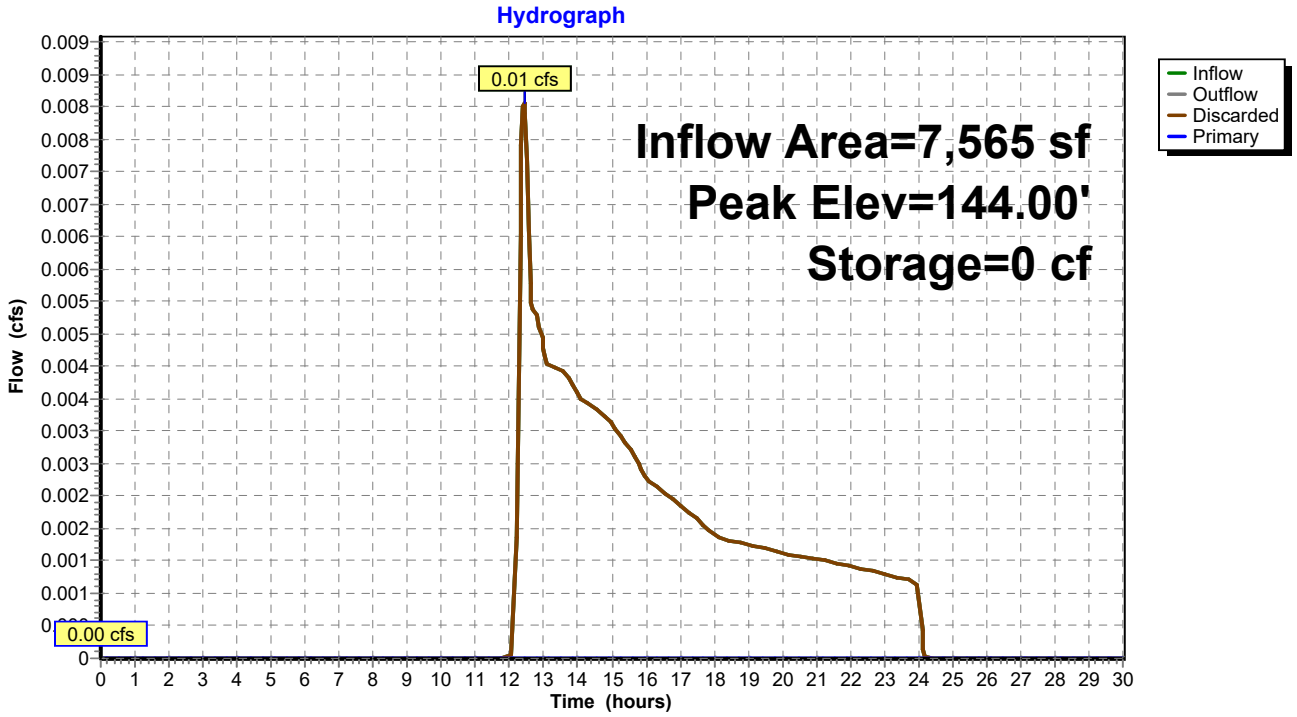
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 144.00' | 300 cf | **1.00'W x 500.00'L x 2.00'H Prismatoid**<br>1,000 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 146.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 144.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |
| #2 | Primary | 145.00' | **500.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |

**Discarded OutFlow** Max=0.00 cfs @ 12.42 hrs HW=144.00' (Free Discharge)
↑**1=Exfiltration** (Passes 0.00 cfs of 0.10 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 7P: Stone infiltration Trench



## Summary for Pond CB1:

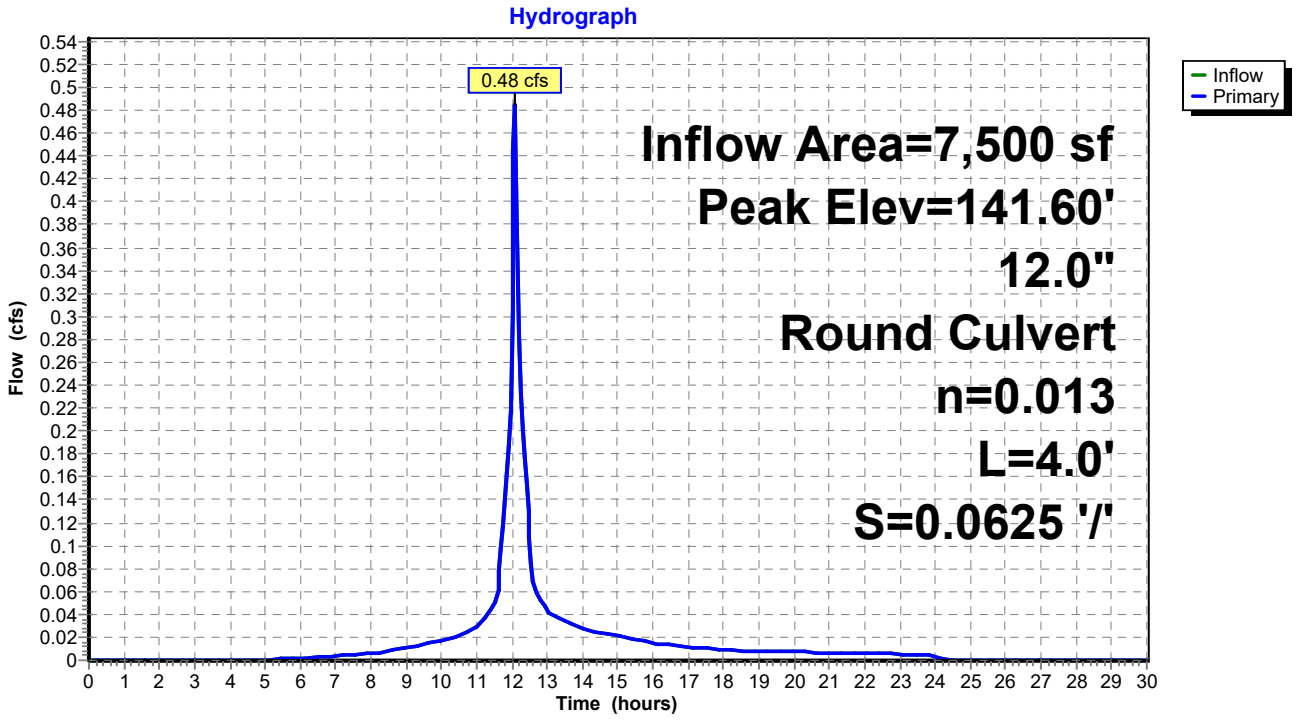
Inflow Area = 7,500 sf, 90.93% Impervious, Inflow Depth = 2.54" for 2 year event
Inflow = 0.48 cfs @ 12.09 hrs, Volume= 1,589 cf
Outflow = 0.48 cfs @ 12.09 hrs, Volume= 1,589 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.09 hrs, Volume= 1,589 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 141.60' @ 12.09 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.25' | **12.0" Round Culvert** L= 4.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.25' / 141.00' S= 0.0625 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.47 cfs @ 12.09 hrs HW=141.59' TW=141.17' (Dynamic Tailwater)
**1=Culvert** (Inlet Controls 0.47 cfs @ 1.99 fps)

## Pond CB1:



## Summary for Pond CB2,7:

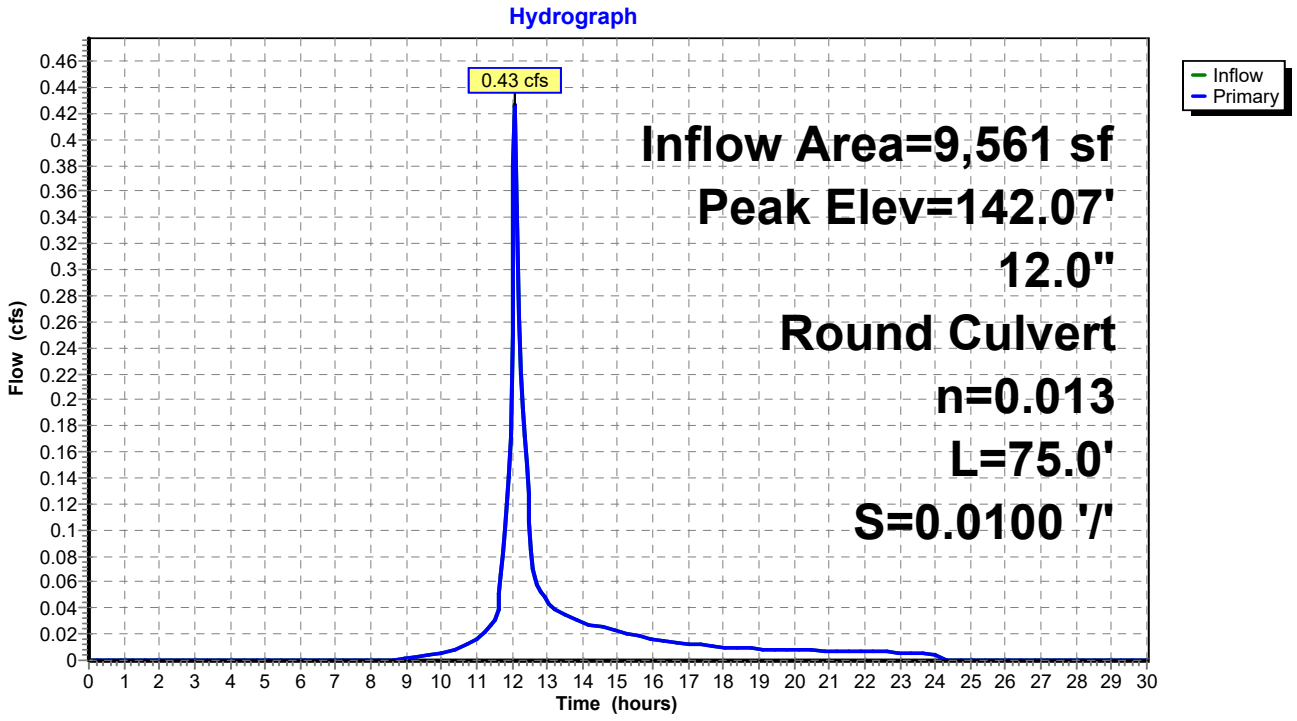
Inflow Area = 9,561 sf, 73.85% Impervious, Inflow Depth = 1.69" for 2 year event
Inflow = 0.43 cfs @ 12.09 hrs, Volume= 1,348 cf
Outflow = 0.43 cfs @ 12.09 hrs, Volume= 1,348 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.43 cfs @ 12.09 hrs, Volume= 1,348 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.07' @ 12.09 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.75' | **12.0" Round Culvert** L= 75.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.75' / 141.00' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.42 cfs @ 12.09 hrs HW=142.07' TW=141.18' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 0.42 cfs @ 2.87 fps)

## Pond CB2,7:



## Summary for Pond CB3:

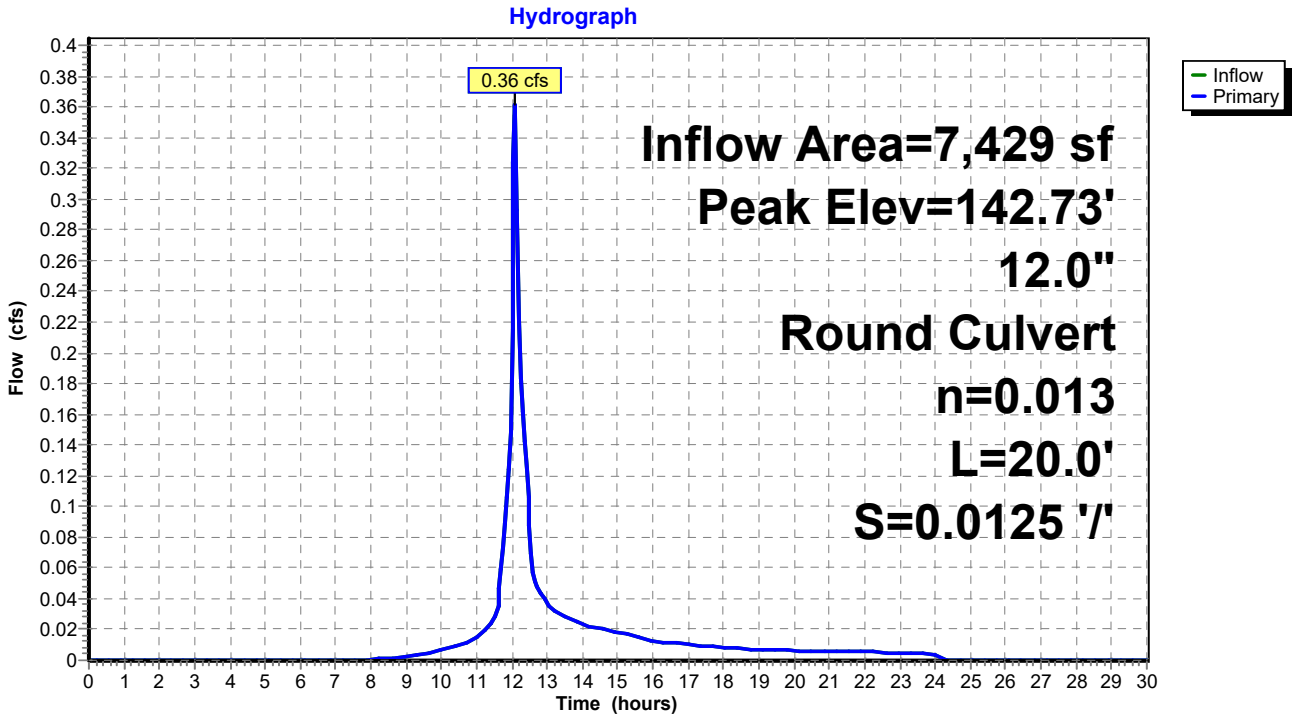
Inflow Area = 7,429 sf, 68.84% Impervious, Inflow Depth = 1.84" for 2 year event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 1,141 cf
Outflow = 0.36 cfs @ 12.09 hrs, Volume= 1,141 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.36 cfs @ 12.09 hrs, Volume= 1,141 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.73' @ 12.24 hrs
Flood Elev= 144.35'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.75' | **12.0" Round Culvert** L= 20.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.75' / 141.50' S= 0.0125 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.00 cfs @ 12.09 hrs HW=142.21' TW=142.42' (Dynamic Tailwater)
**1=Culvert** ( Controls 0.00 cfs)

## Pond CB3:



## Summary for Pond CB4:

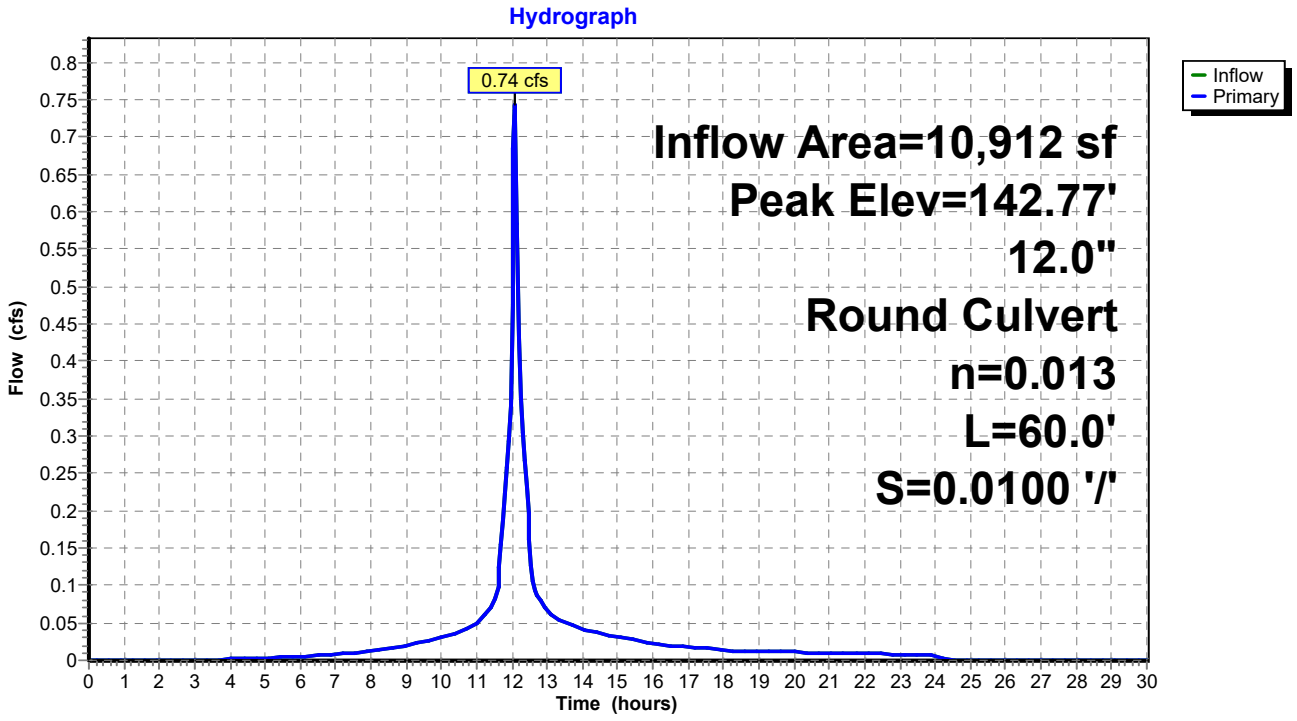
Inflow Area = 10,912 sf, 94.08% Impervious, Inflow Depth = 2.74" for 2 year event
Inflow = 0.74 cfs @ 12.09 hrs, Volume= 2,494 cf
Outflow = 0.74 cfs @ 12.09 hrs, Volume= 2,494 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.74 cfs @ 12.09 hrs, Volume= 2,494 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.77' @ 12.23 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 142.10' | **12.0" Round Culvert** L= 60.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.10' / 141.50' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.47 cfs @ 12.09 hrs HW=142.59' TW=142.39' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 0.47 cfs @ 1.80 fps)

## Pond CB4:



## Summary for Pond CB5:

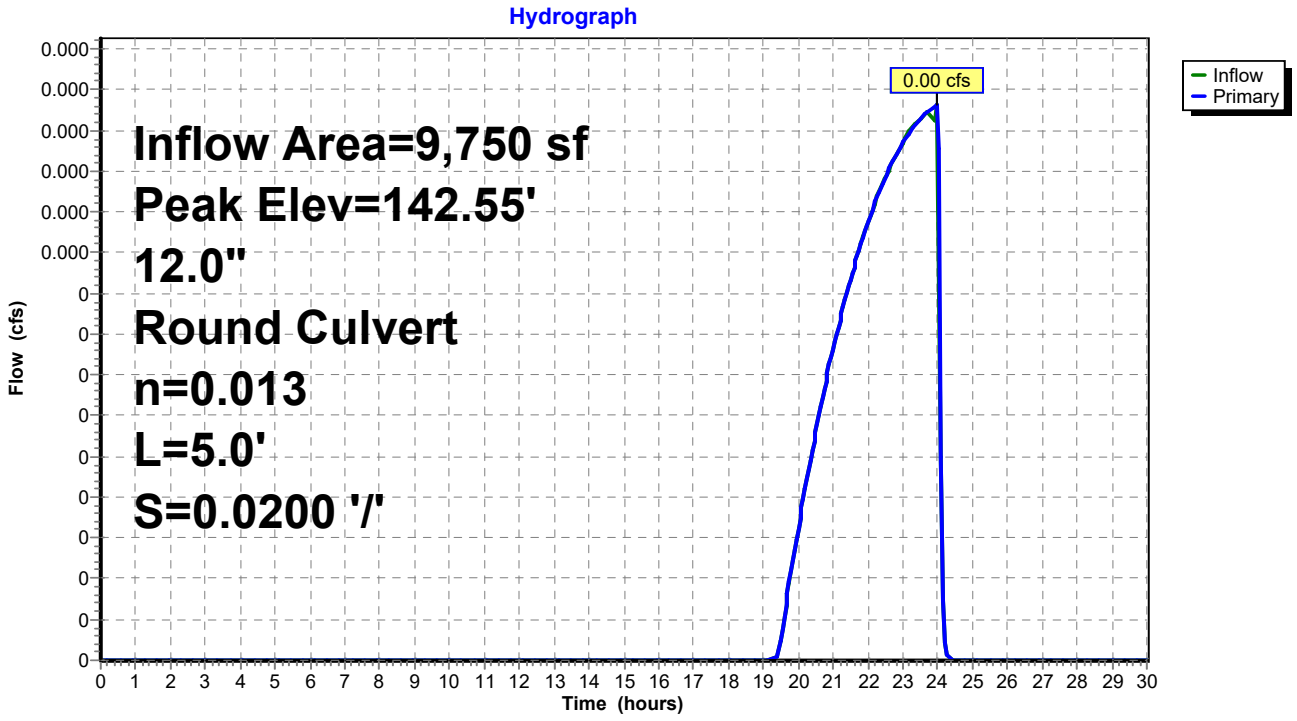
Inflow Area = 9,750 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 2 cf
Outflow = 0.00 cfs @ 24.00 hrs, Volume= 2 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 24.00 hrs, Volume= 2 cf
Routed to Pond DMH1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.55' @ 12.78 hrs
Flood Elev= 144.10'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 142.00' | **12.0" Round Culvert** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.00' / 141.90' S= 0.0200 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.00 cfs @ 24.00 hrs HW=142.01' TW=141.97' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 0.00 cfs @ 0.24 fps)

## Pond CB5:



## Summary for Pond DMH1:

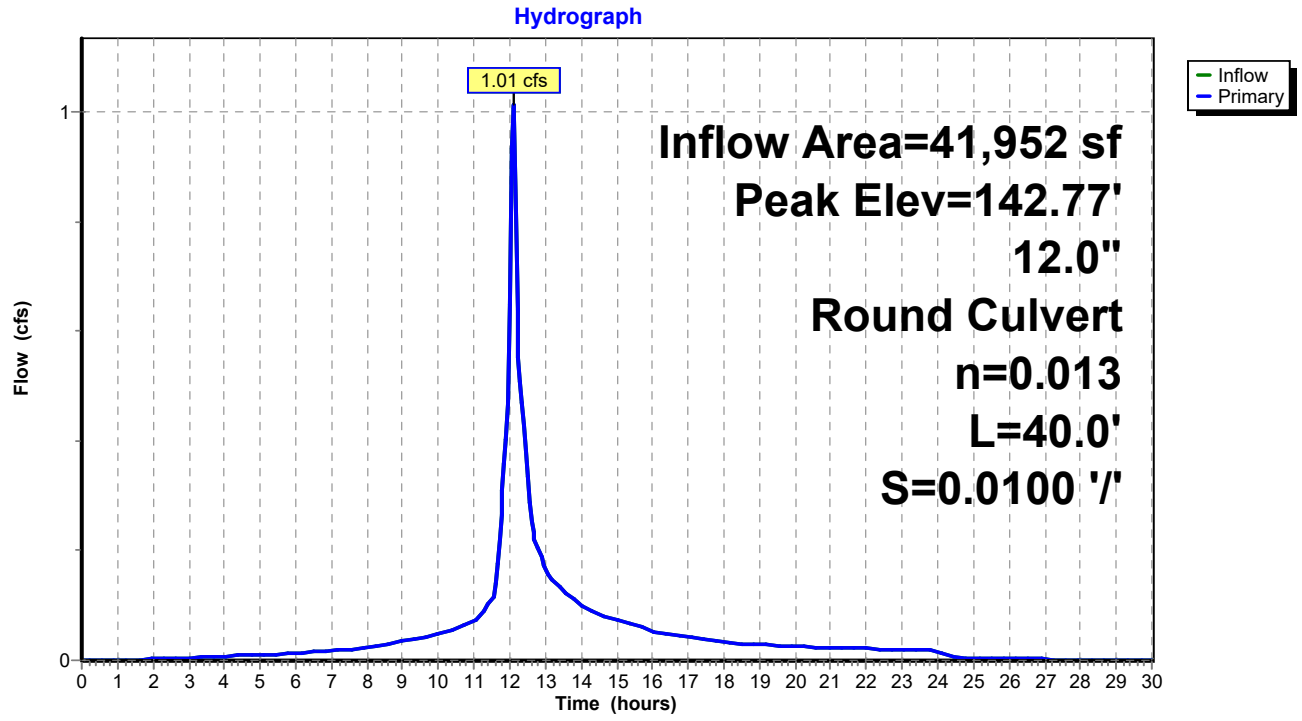
Inflow Area = 41,952 sf, 35.41% Impervious, Inflow Depth > 1.36" for 2 year event
Inflow = 1.01 cfs @ 12.09 hrs, Volume= 4,748 cf
Outflow = 1.01 cfs @ 12.09 hrs, Volume= 4,748 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.01 cfs @ 12.09 hrs, Volume= 4,748 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.77' @ 12.23 hrs
Flood Elev= 144.75'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.90' | **12.0" Round Culvert** L= 40.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.90' / 141.50' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.51 cfs @ 12.09 hrs HW=142.50' TW=142.40' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 0.51 cfs @ 1.49 fps)

## Pond DMH1:

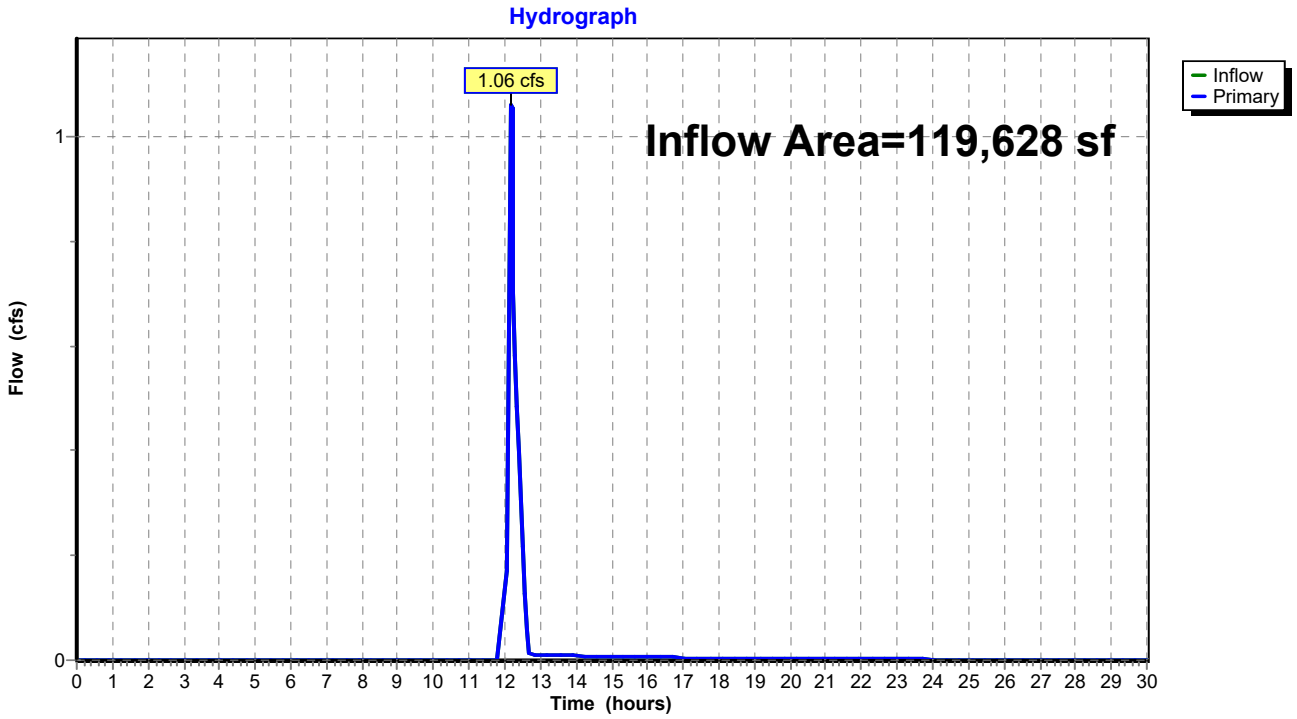


## Summary for Pond DP1: Drainage Network

Inflow Area = 119,628 sf, 53.46% Impervious, Inflow Depth = 0.11" for 2 year event
Inflow = 1.06 cfs @ 12.19 hrs, Volume= 1,067 cf
Primary = 1.06 cfs @ 12.19 hrs, Volume= 1,067 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

## Pond DP1: Drainage Network

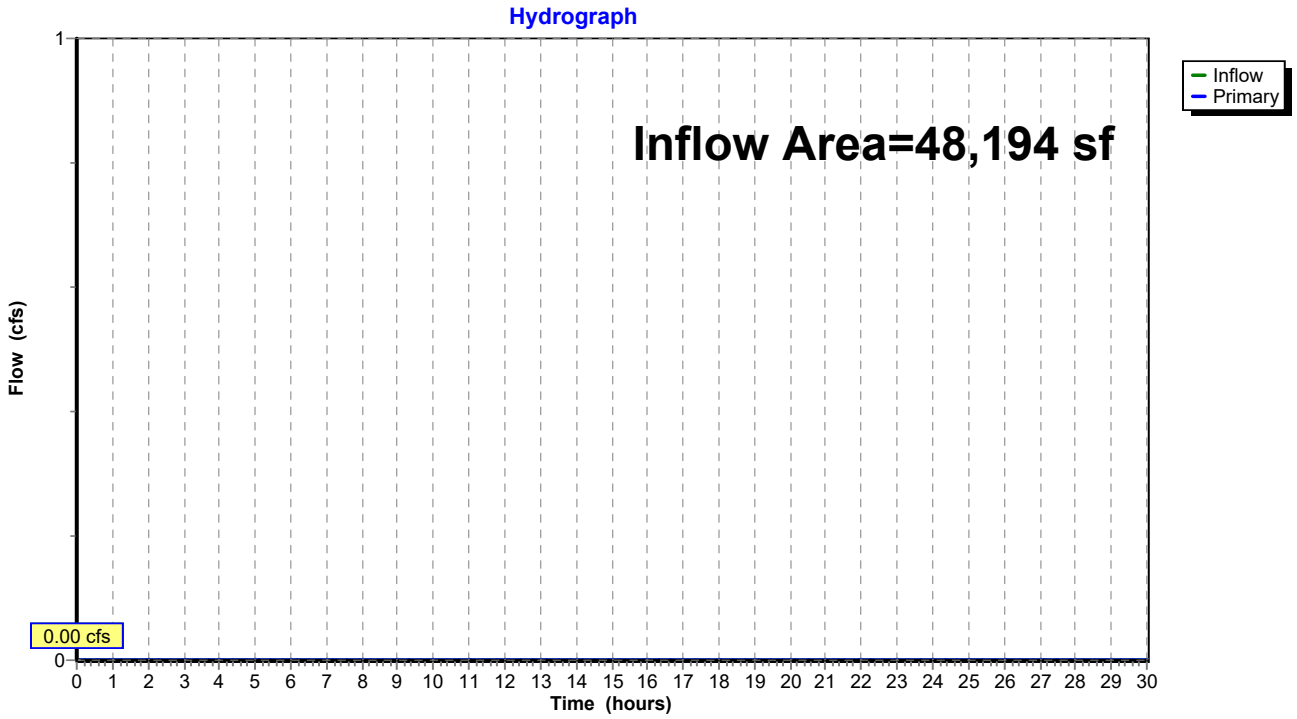


## Summary for Pond DP2: Wetlands

Inflow Area = 48,194 sf, 4.77% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

## Pond DP2: Wetlands



## Summary for Pond IS1: Infiltration System 1

Inflow Area = 41,131 sf, 74.21% Impervious, Inflow Depth = 1.94" for 2 year event
Inflow = 1.95 cfs @ 12.09 hrs, Volume= 6,641 cf
Outflow = 0.73 cfs @ 12.34 hrs, Volume= 6,651 cf, Atten= 62%, Lag= 15.2 min
Discarded = 0.73 cfs @ 12.34 hrs, Volume= 6,651 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 141.35' @ 12.34 hrs Surf.Area= 3,262 sf Storage= 888 cf
Flood Elev= 142.83' Surf.Area= 3,262 sf Storage= 3,502 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.7 min ( 785.4 - 779.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 141.00' | 1,649 cf | **61.50'W x 53.04'L x 1.83'H Field A**<br>5,980 cf Overall - 1,857 cf Embedded = 4,123 cf x 40.0% Voids |
| #2A | 141.00' | 1,857 cf | **ADS_StormTech SC-310 +Cap** x 126 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>126 Chambers in 18 Rows |
| | | 3,507 cf | Total Available Storage |

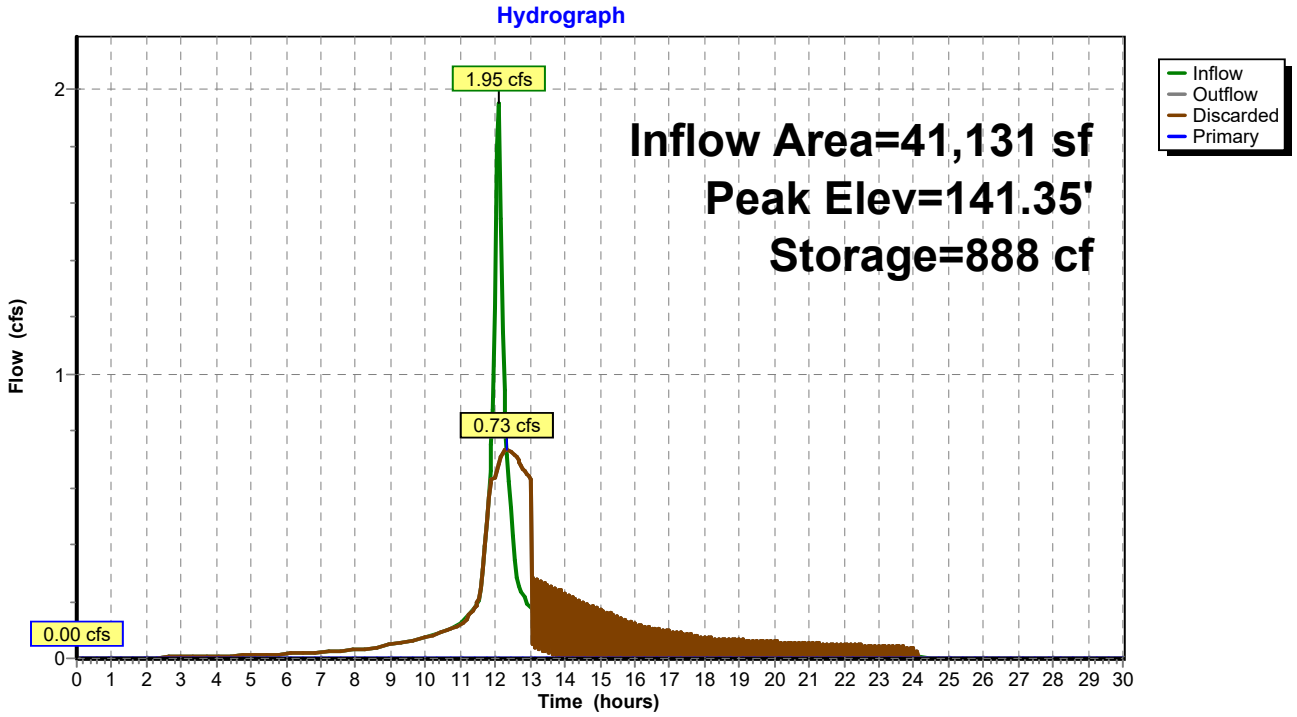
Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.00' | **15.0" Round Culvert** L= 40.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0250 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Discarded | 141.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |
| #3 | Device 1 | 142.50' | **18.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.73 cfs @ 12.34 hrs HW=141.35' (Free Discharge)
└**2=Exfiltration** ( Controls 0.73 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=141.00' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** ( Controls 0.00 cfs)
└**3=Orifice/Grate** ( Controls 0.00 cfs)

## Pond IS1: Infiltration System 1



## Summary for Pond IS2: Infiltration System 2

Inflow Area = 60,293 sf, 50.15% Impervious, Inflow Depth > 1.67" for 2 year event
Inflow = 2.12 cfs @ 12.09 hrs, Volume= 8,383 cf
Outflow = 1.52 cfs @ 12.19 hrs, Volume= 8,392 cf, Atten= 28%, Lag= 6.2 min
Discarded = 0.46 cfs @ 12.19 hrs, Volume= 7,545 cf
Primary = 1.06 cfs @ 12.19 hrs, Volume= 847 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.73' @ 12.19 hrs Surf.Area= 1,494 sf Storage= 1,226 cf
Flood Elev= 143.50' Surf.Area= 1,494 sf Storage= 1,691 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 14.3 min ( 814.8 - 800.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 141.50' | 865 cf | **24.83'W x 60.16'L x 2.00'H Field A**<br>2,988 cf Overall - 826 cf Embedded = 2,162 cf x 40.0% Voids |
| #2A | 141.50' | 826 cf | **ADS_StormTech SC-310 +Cap** x 56 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>56 Chambers in 7 Rows |
| | | 1,691 cf | Total Available Storage |

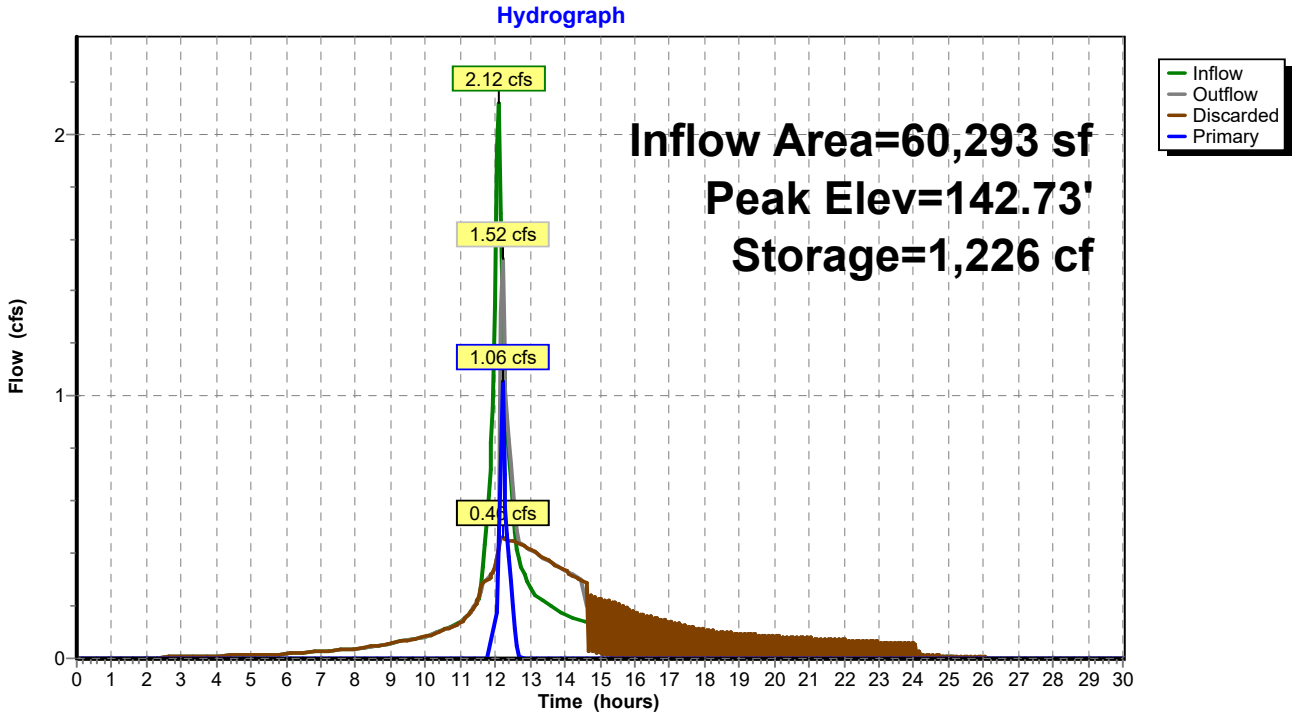
Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.50' | **15.0" Round Culvert** L= 80.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 140.00' S= 0.0187 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Discarded | 141.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.50' |
| #3 | Device 1 | 142.56' | **18.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.46 cfs @ 12.19 hrs HW=142.72' (Free Discharge)
└**2=Exfiltration** ( Controls 0.46 cfs)

**Primary OutFlow** Max=1.02 cfs @ 12.19 hrs HW=142.72' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.02 cfs of 4.60 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 1.02 cfs @ 1.32 fps)

## Pond IS2: Infiltration System 2



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 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

**SubcatchmentB1A: Building (R)** Runoff Area=14,492 sf 100.00% Impervious Runoff Depth=4.96"
Tc=6.0 min CN=98 Runoff=1.65 cfs 5,993 cf

**SubcatchmentB1B: Building (L)** Runoff Area=13,836 sf 100.00% Impervious Runoff Depth=4.96"
Tc=6.0 min CN=98 Runoff=1.58 cfs 5,722 cf

**SubcatchmentP1: Back of property to Wetl** Runoff Area=38,559 sf 0.00% Impervious Runoff Depth=0.01"
Tc=6.0 min CN=30 Runoff=0.00 cfs 38 cf

**SubcatchmentP1A: Back Patio** Runoff Area=2,070 sf 0.00% Impervious Runoff Depth=3.07"
Tc=6.0 min CN=80 Runoff=0.17 cfs 529 cf

**SubcatchmentP1C: Back of property to** Runoff Area=7,565 sf 30.40% Impervious Runoff Depth=0.83"
Tc=6.0 min CN=51 Runoff=0.12 cfs 526 cf

**SubcatchmentP2A:** Runoff Area=3,446 sf 13.78% Impervious Runoff Depth=1.79"
Tc=6.0 min CN=65 Runoff=0.16 cfs 513 cf

**SubcatchmentP2B:** Runoff Area=6,132 sf 27.32% Impervious Runoff Depth=4.18"
Tc=6.0 min CN=91 Runoff=0.64 cfs 2,134 cf

**SubcatchmentP3:** Runoff Area=7,500 sf 90.93% Impervious Runoff Depth=4.39"
Tc=6.0 min CN=93 Runoff=0.81 cfs 2,747 cf

**SubcatchmentP4:** Runoff Area=9,561 sf 73.85% Impervious Runoff Depth=3.36"
Tc=6.0 min CN=83 Runoff=0.84 cfs 2,674 cf

**SubcatchmentP5:** Runoff Area=7,429 sf 68.84% Impervious Runoff Depth=3.55"
Tc=6.0 min CN=85 Runoff=0.69 cfs 2,200 cf

**SubcatchmentP5A: Perm Pavers Front** Runoff Area=560 sf 0.00% Impervious Runoff Depth=1.02"
Tc=6.0 min CN=54 Runoff=0.01 cfs 47 cf

**SubcatchmentP6:** Runoff Area=10,912 sf 94.08% Impervious Runoff Depth=4.62"
Tc=6.0 min CN=95 Runoff=1.21 cfs 4,199 cf

**SubcatchmentP7:** Runoff Area=9,750 sf 0.00% Impervious Runoff Depth=0.24"
Tc=6.0 min CN=39 Runoff=0.01 cfs 197 cf

**SubcatchmentP8:** Runoff Area=18,366 sf 5.55% Impervious Runoff Depth=2.10"
Flow Length=175' Slope=0.0100 '/' Tc=9.5 min CN=69 Runoff=0.89 cfs 3,220 cf

**SubcatchmentP9:** Runoff Area=17,644 sf 18.14% Impervious Runoff Depth=0.78"
Tc=6.0 min CN=50 Runoff=0.24 cfs 1,141 cf

**Pond 1P: Pervious Pvmt (R Drive) bed 'C'** Peak Elev=142.00' Storage=3 cf Inflow=0.64 cfs 2,134 cf
Discarded=0.62 cfs 2,138 cf Primary=0.00 cfs 0 cf Outflow=0.62 cfs 2,138 cf

**Pond 2P: Pervious Pvmt (North Fire) Bed B** Peak Elev=141.52' Storage=4 cf Inflow=0.16 cfs 513 cf
Discarded=0.13 cfs 515 cf Primary=0.00 cfs 1 cf Outflow=0.14 cfs 515 cf

**Pond 3P: Pervious Pvmt (North Fire) Bed 'A'** Peak Elev=141.00' Storage=0 cf Inflow=0.00 cfs 1 cf
Discarded=0.00 cfs 1 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 1 cf

**Pond 4P: Pervious Pvmt (South Fire Lane)** Peak Elev=143.81' Storage=457 cf Inflow=0.89 cfs 3,220 cf
Discarded=0.53 cfs 775 cf Primary=0.26 cfs 2,423 cf Outflow=0.79 cfs 3,198 cf

**Pond 5P: Permeable Pavers (Back)** Peak Elev=144.00' Storage=0 cf Inflow=0.17 cfs 529 cf
Discarded=0.17 cfs 529 cf Primary=0.00 cfs 0 cf Outflow=0.17 cfs 529 cf

**Pond 6P:** Peak Elev=143.00' Storage=0 cf Inflow=0.01 cfs 47 cf
Discarded=0.01 cfs 47 cf Primary=0.00 cfs 0 cf Outflow=0.01 cfs 47 cf

**Pond 7P: Stone infiltration Trench** Peak Elev=144.04' Storage=6 cf Inflow=0.12 cfs 526 cf
Discarded=0.10 cfs 527 cf Primary=0.00 cfs 0 cf Outflow=0.10 cfs 527 cf

**Pond CB1:** Peak Elev=142.01' Inflow=0.81 cfs 2,747 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0625 '/' Outflow=0.81 cfs 2,747 cf

**Pond CB2,7:** Peak Elev=142.22' Inflow=0.84 cfs 2,674 cf
12.0" Round Culvert n=0.013 L=75.0' S=0.0100 '/' Outflow=0.84 cfs 2,674 cf

**Pond CB3:** Peak Elev=142.93' Inflow=0.69 cfs 2,200 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0125 '/' Outflow=0.69 cfs 2,200 cf

**Pond CB4:** Peak Elev=143.07' Inflow=1.21 cfs 4,199 cf
12.0" Round Culvert n=0.013 L=60.0' S=0.0100 '/' Outflow=1.21 cfs 4,199 cf

**Pond CB5:** Peak Elev=143.17' Inflow=0.01 cfs 197 cf
12.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=0.01 cfs 197 cf

**Pond DMH1:** Peak Elev=143.11' Inflow=1.77 cfs 8,342 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=1.77 cfs 8,342 cf

**Pond DP1: Drainage Network** Inflow=3.35 cfs 4,542 cf
Primary=3.35 cfs 4,542 cf

**Pond DP2: Wetlands** Inflow=0.00 cfs 38 cf
Primary=0.00 cfs 38 cf

**Pond IS1: Infiltration System 1** Peak Elev=142.00' Storage=2,349 cf Inflow=3.31 cfs 11,414 cf
Discarded=0.94 cfs 11,429 cf Primary=0.00 cfs 0 cf Outflow=0.94 cfs 11,429 cf

**Pond IS2: Infiltration System 2** Peak Elev=142.90' Storage=1,335 cf Inflow=3.67 cfs 14,741 cf
Discarded=0.49 cfs 11,341 cf Primary=3.11 cfs 3,401 cf Outflow=3.60 cfs 14,742 cf

## Summary for Subcatchment B1A: Building (R)

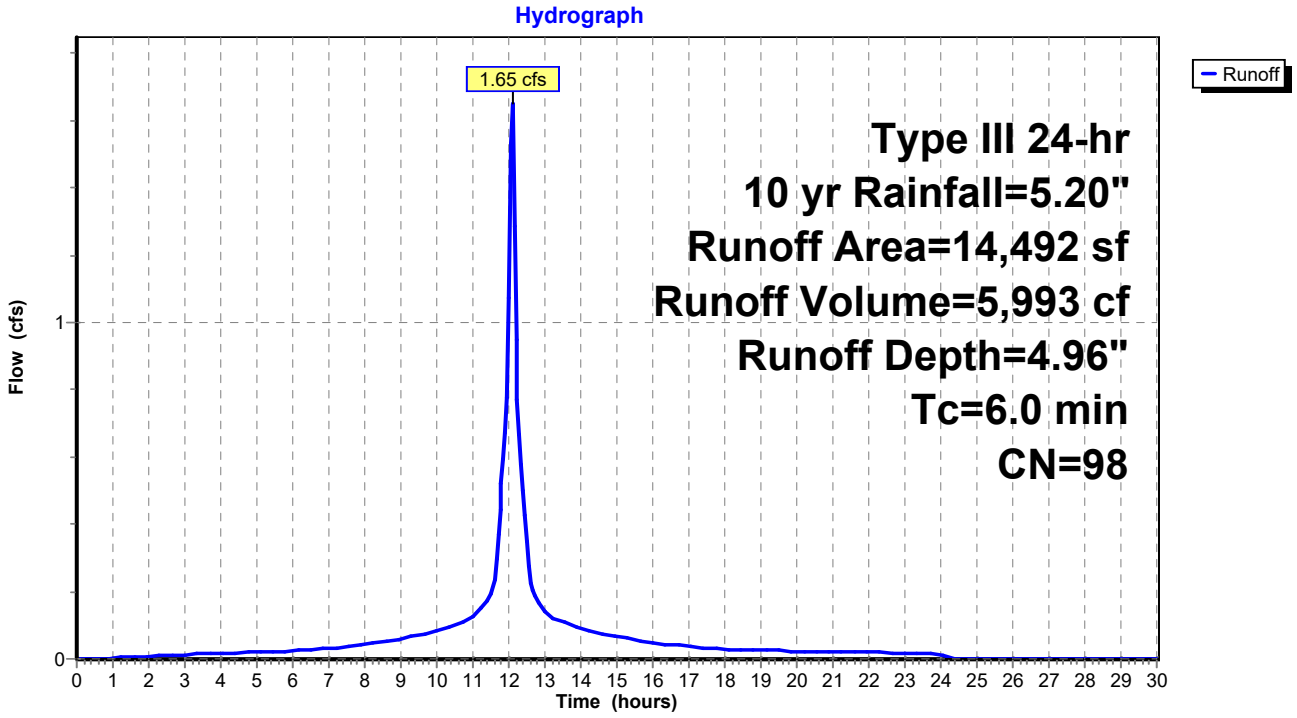
Runoff = 1.65 cfs @ 12.09 hrs, Volume= 5,993 cf, Depth= 4.96"
Routed to Pond IS1 : Infiltration System 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| Area (sf) | CN | Description |
|---|---|---|
| 14,492 | 98 | Roofs, HSG A |
| 14,492 | | 100.00% Impervious Area |

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

### Subcatchment B1A: Building (R)



## Summary for Subcatchment B1B: Building (L)

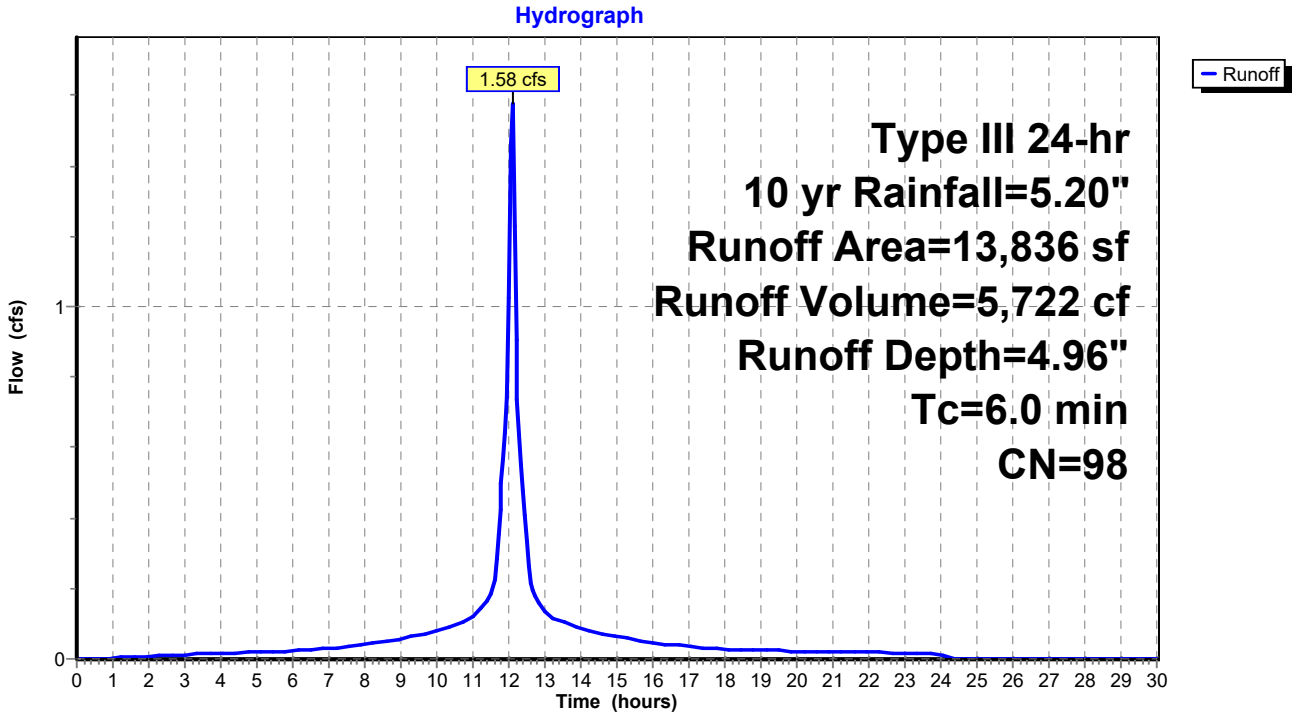
Runoff = 1.58 cfs @ 12.09 hrs, Volume= 5,722 cf, Depth= 4.96"
Routed to Pond DMH1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| Area (sf) | CN | Description |
|---|---|---|
| 13,836 | 98 | Roofs, HSG A |
| 13,836 | | 100.00% Impervious Area |

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

### Subcatchment B1B: Building (L)



## Summary for Subcatchment P1: Back of property to Wetl

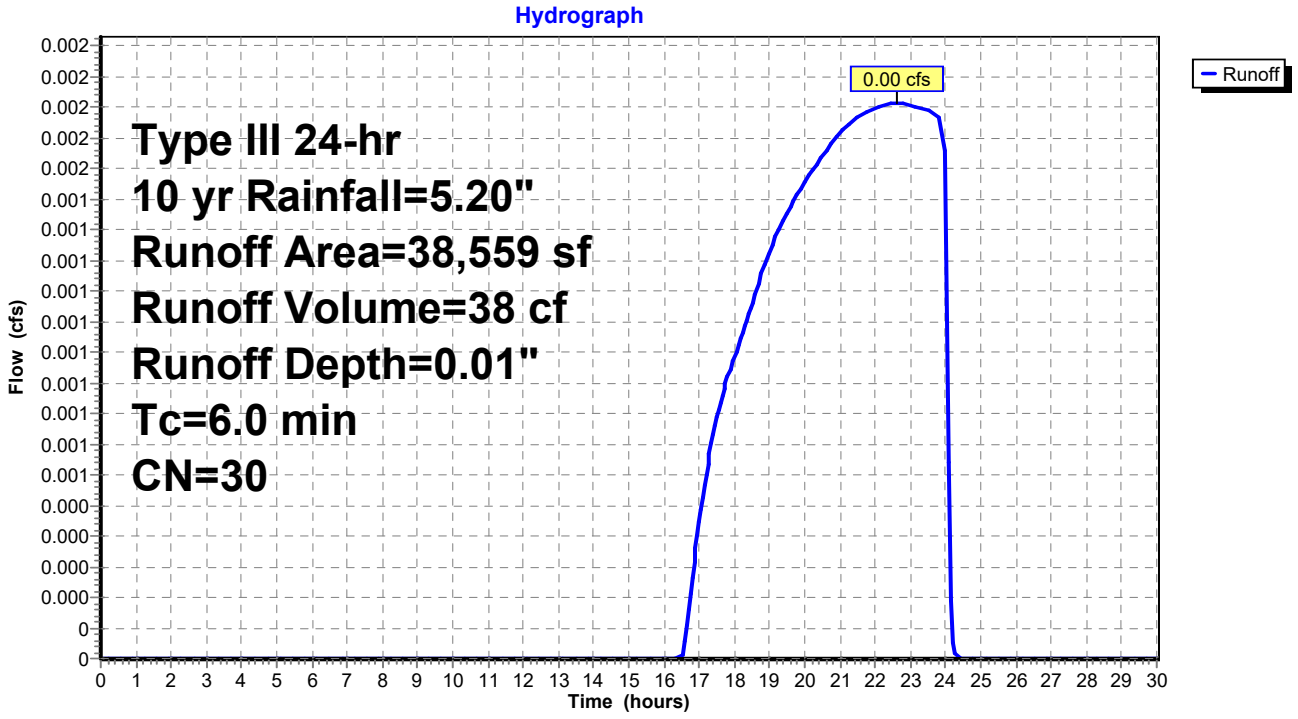
Runoff = 0.00 cfs @ 22.61 hrs, Volume= 38 cf, Depth= 0.01"
Routed to Pond DP2 : Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| Area (sf) | CN | Description |
|---|---|---|
| 19,150 | 30 | Woods, Good, HSG A |
| 19,409 | 30 | Meadow, non-grazed, HSG A |
| 38,559 | 30 | Weighted Average |
| 38,559 | | 100.00% Pervious Area |

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

## Subcatchment P1: Back of property to Wetl



## Summary for Subcatchment P1A: Back Patio

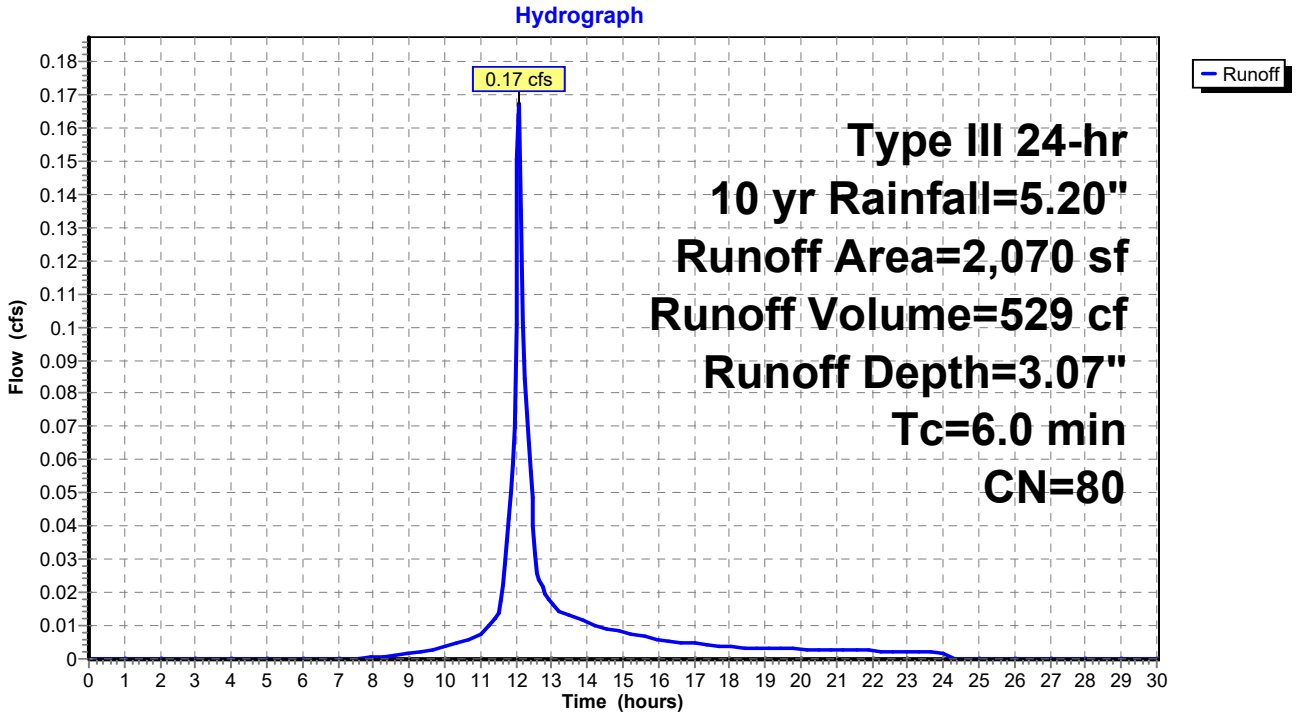
Runoff = 0.17 cfs @ 12.09 hrs, Volume= 529 cf, Depth= 3.07"
Routed to Pond 5P : Permeable Pavers (Back)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,070 | 80 | permeable pavers |
| | 2,070 | | 100.00% Pervious Area |

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

### Subcatchment P1A: Back Patio



## Summary for Subcatchment P1C: Back of property to trench

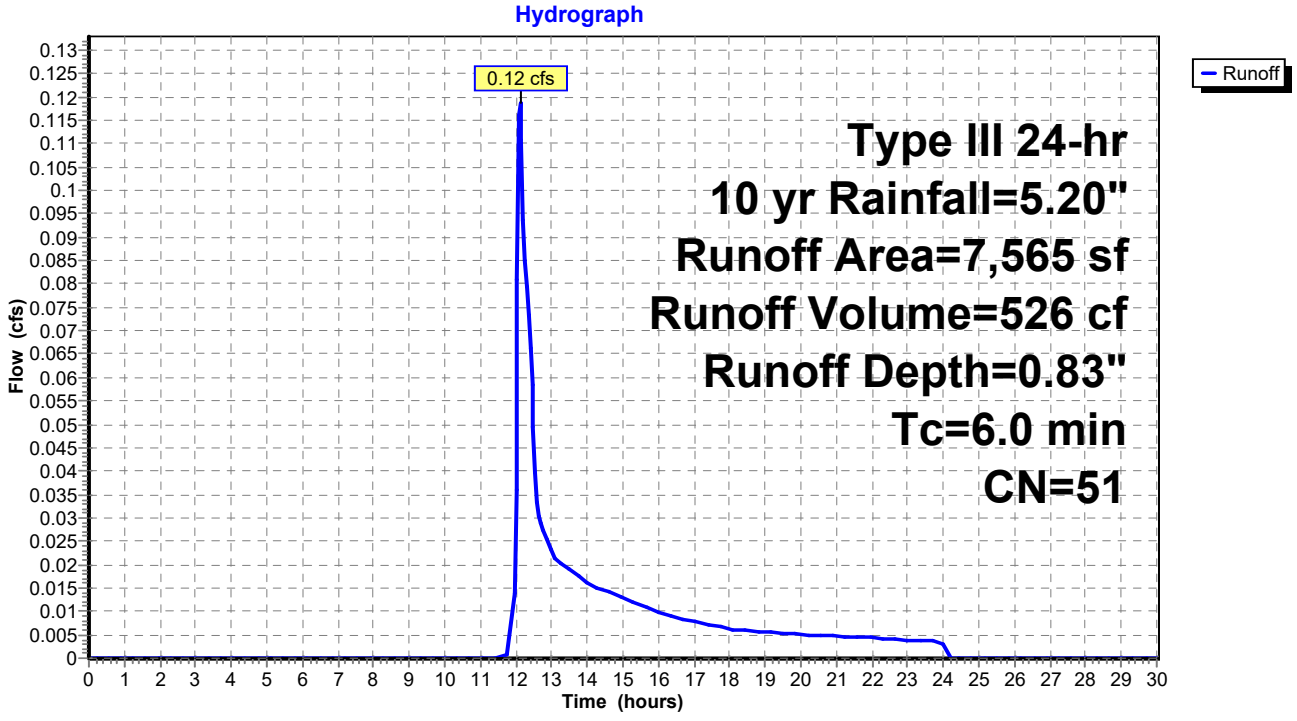
Runoff = 0.12 cfs @ 12.12 hrs, Volume= 526 cf, Depth= 0.83"
Routed to Pond 7P : Stone infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,300 | 98 | CONCRETE |
| | 5,265 | 30 | Meadow, non-grazed, HSG A |
| | 7,565 | 51 | Weighted Average |
| | 5,265 | | 69.60% Pervious Area |
| | 2,300 | | 30.40% Impervious Area |

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

## Subcatchment P1C: Back of property to trench



## Summary for Subcatchment P2A:

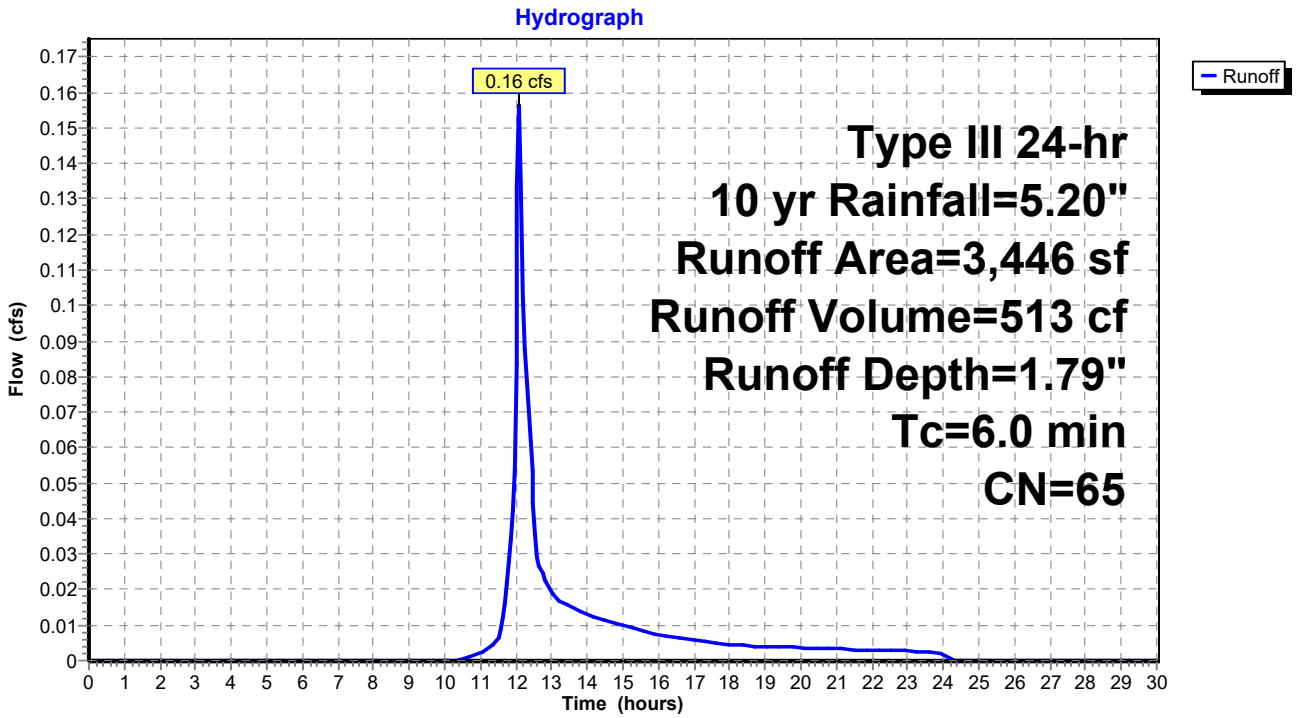
Runoff = 0.16 cfs @ 12.10 hrs, Volume= 513 cf, Depth= 1.79"
Routed to Pond 2P : Pervious Pvmt (North Fire) Bed B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 475 | 98 | CONCRETE |
| * | 1,351 | 96 | permeable pavement |
| | 1,620 | 30 | Meadow, non-grazed, HSG A |
| | 3,446 | 65 | Weighted Average |
| | 2,971 | | 86.22% Pervious Area |
| | 475 | | 13.78% Impervious Area |

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

## Subcatchment P2A:



## Summary for Subcatchment P2B:

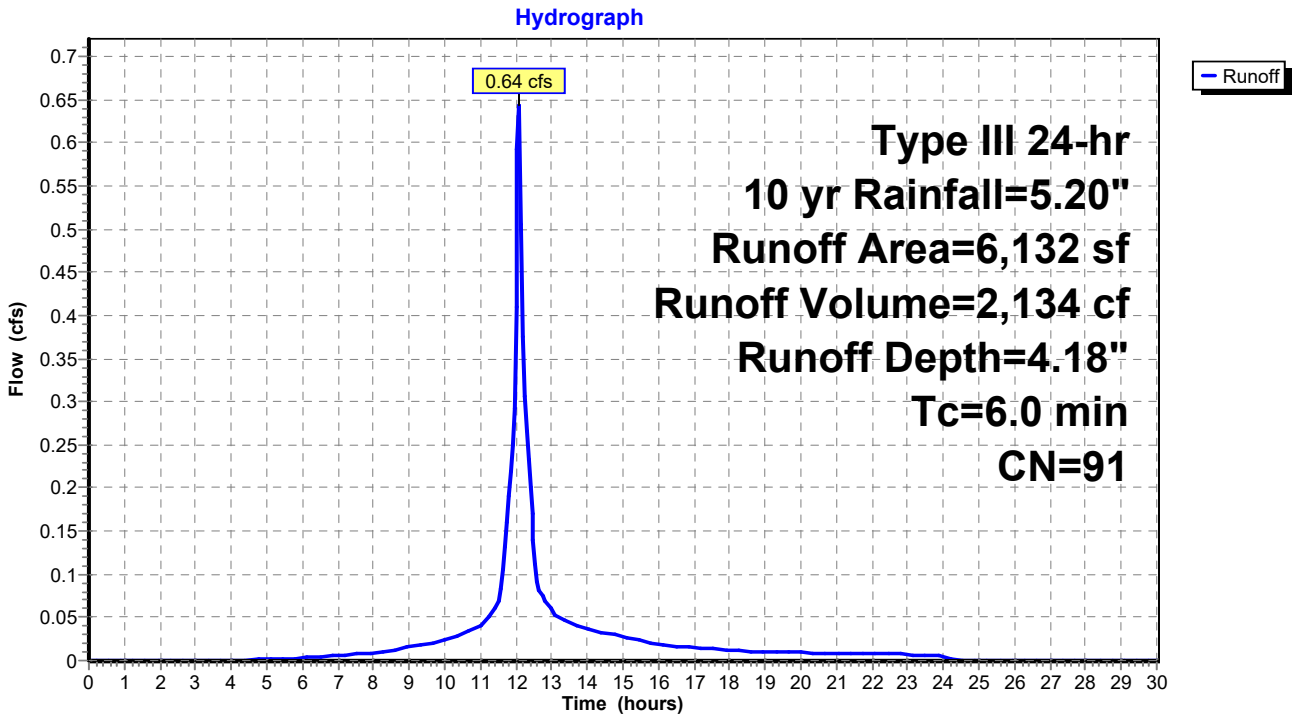
Runoff = 0.64 cfs @ 12.09 hrs, Volume= 2,134 cf, Depth= 4.18"
Routed to Pond 1P : Pervious Pvmt (R Drive) bed 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,675 | 98 | CONCRETE |
| * | 3,929 | 96 | permeable pavement |
| | 528 | 30 | Meadow, non-grazed, HSG A |
| | 6,132 | 91 | Weighted Average |
| | 4,457 | | 72.68% Pervious Area |
| | 1,675 | | 27.32% Impervious Area |

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

## Subcatchment P2B:



## Summary for Subcatchment P3:

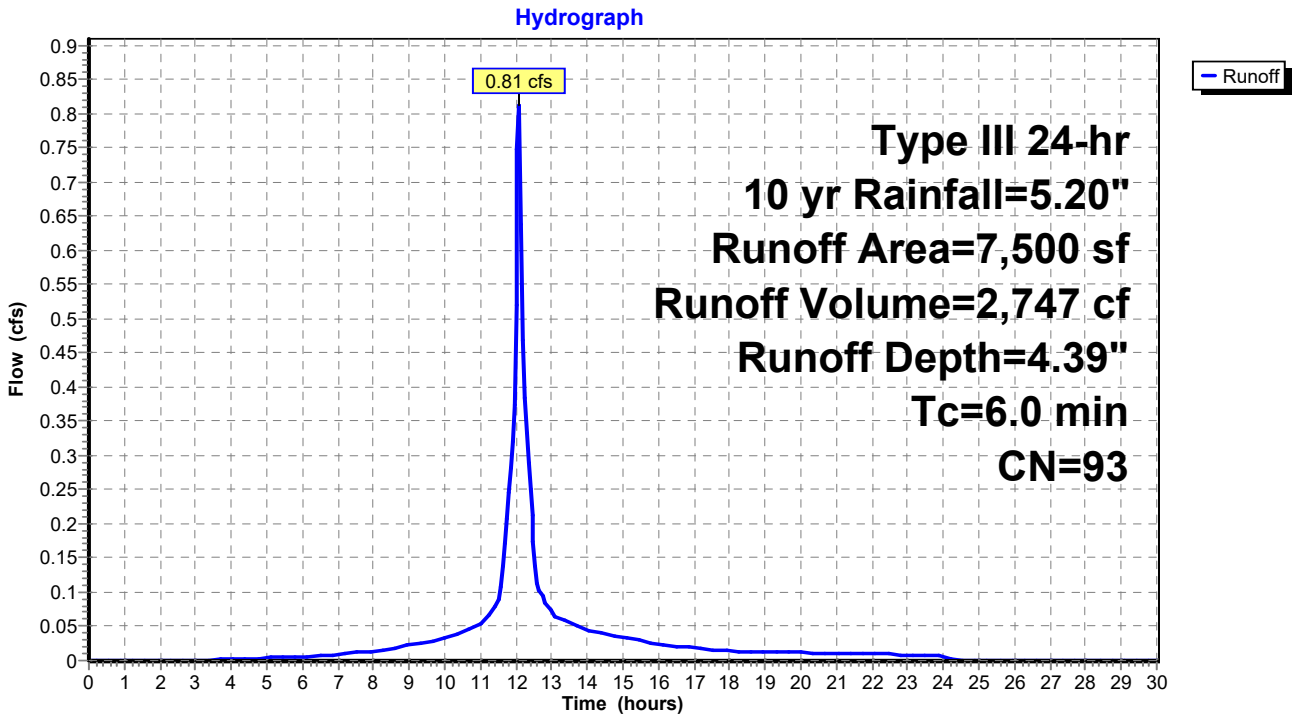
Runoff = 0.81 cfs @ 12.09 hrs, Volume= 2,747 cf, Depth= 4.39"
Routed to Pond CB1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 670 | 98 | CONCRETE |
| | 6,150 | 98 | Paved parking, HSG A |
| | 680 | 39 | >75% Grass cover, Good, HSG A |
| | 7,500 | 93 | Weighted Average |
| | 680 | | 9.07% Pervious Area |
| | 6,820 | | 90.93% Impervious Area |

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

## Subcatchment P3:



## Summary for Subcatchment P4:

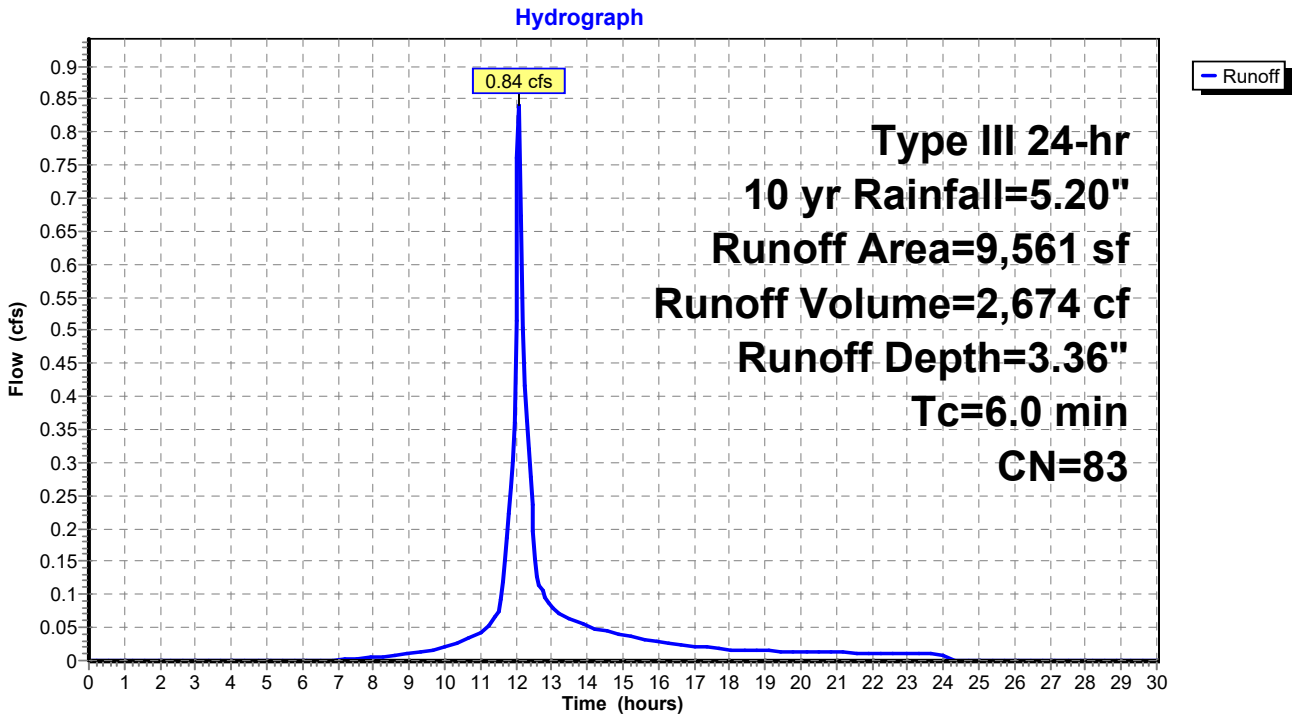
Runoff = 0.84 cfs @ 12.09 hrs, Volume= 2,674 cf, Depth= 3.36"
Routed to Pond CB2,7 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 900 | 98 | CONCRETE |
| | 6,161 | 98 | Paved parking, HSG A |
| | 2,500 | 39 | >75% Grass cover, Good, HSG A |
| | 9,561 | 83 | Weighted Average |
| | 2,500 | | 26.15% Pervious Area |
| | 7,061 | | 73.85% Impervious Area |

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

## Subcatchment P4:



## Summary for Subcatchment P5:

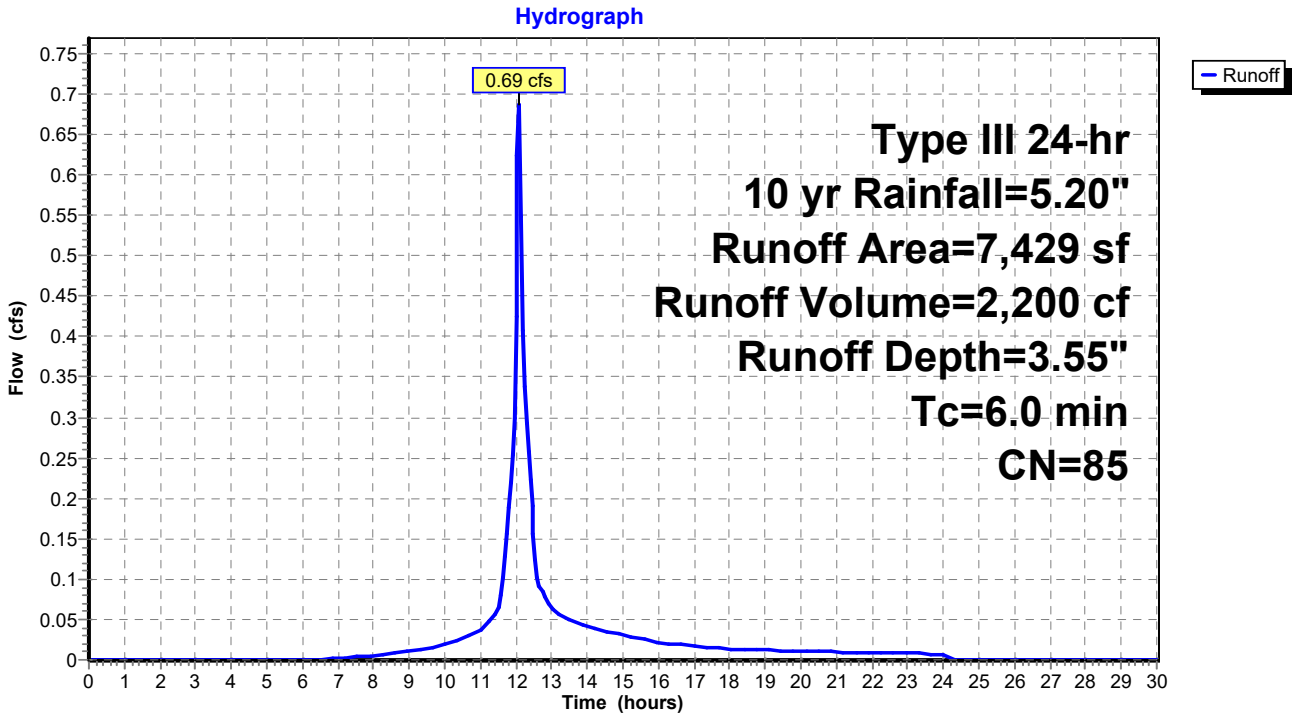
Runoff = 0.69 cfs @ 12.09 hrs, Volume= 2,200 cf, Depth= 3.55"
Routed to Pond CB3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 450 | 98 | CONCRETE |
| | 4,664 | 98 | Paved parking, HSG A |
| | 1,315 | 39 | >75% Grass cover, Good, HSG A |
| * | 1,000 | 80 | permeable pavers |
| | 7,429 | 85 | Weighted Average |
| | 2,315 | | 31.16% Pervious Area |
| | 5,114 | | 68.84% Impervious Area |

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

## Subcatchment P5:



## Summary for Subcatchment P5A: Perm Pavers Front entrance

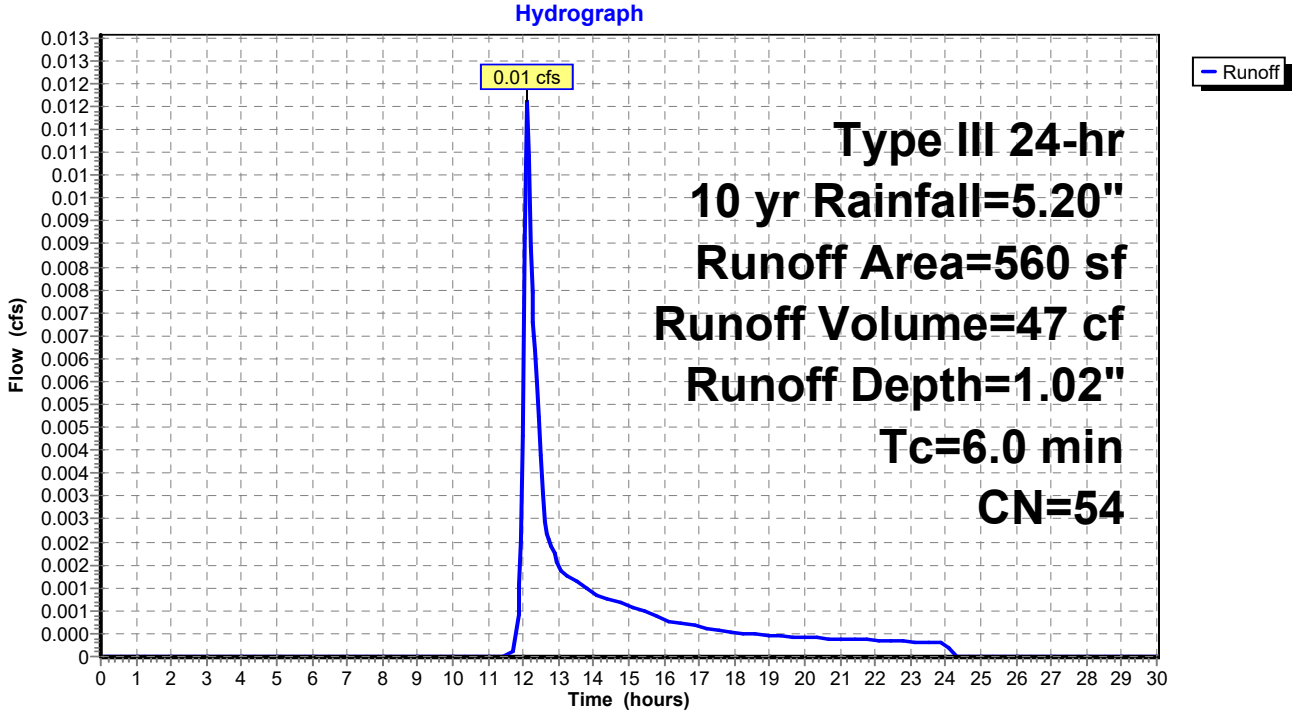
Runoff = 0.01 cfs @ 12.11 hrs, Volume= 47 cf, Depth= 1.02"
Routed to Pond 6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 200 | 80 | permeable pavers |
| | 360 | 39 | >75% Grass cover, Good, HSG A |
| | 560 | 54 | Weighted Average |
| | 560 | | 100.00% Pervious Area |

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

## Subcatchment P5A: Perm Pavers Front entrance



## Summary for Subcatchment P6:

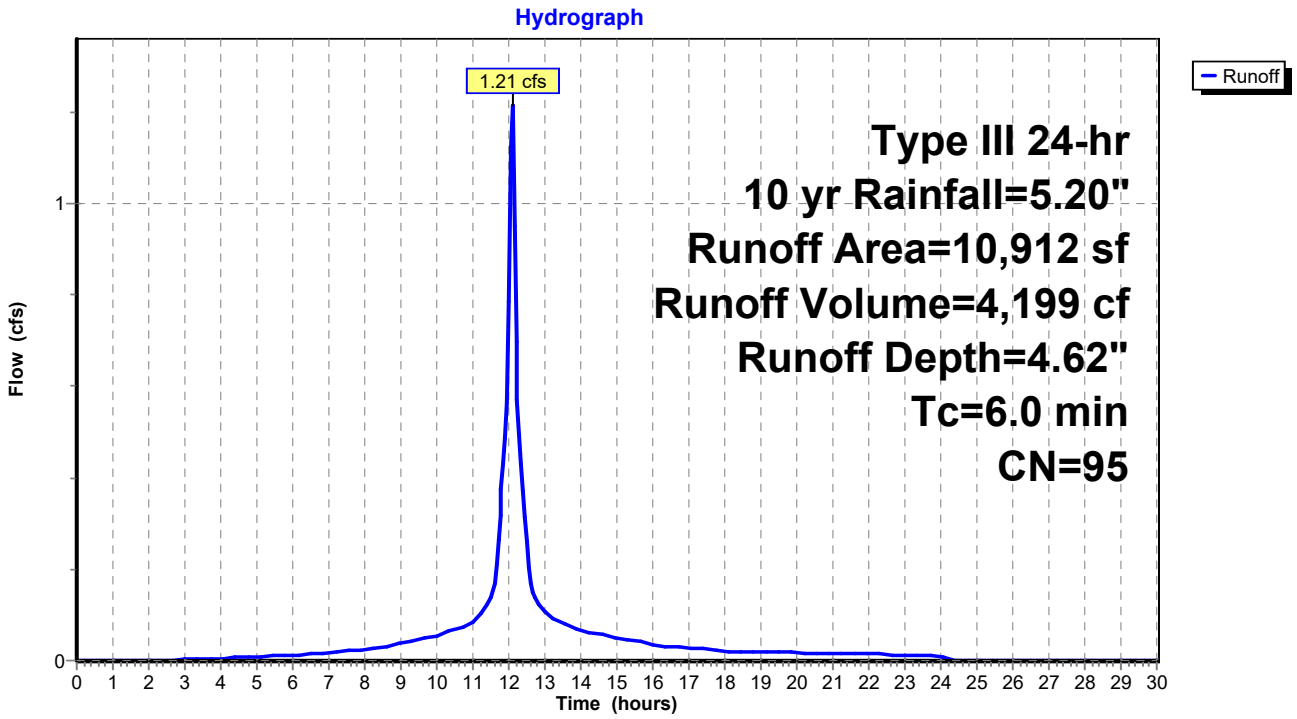
Runoff = 1.21 cfs @ 12.09 hrs, Volume= 4,199 cf, Depth= 4.62"
Routed to Pond CB4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,200 | 98 | CONCRETE |
| | 9,066 | 98 | Paved parking, HSG A |
| | 646 | 39 | >75% Grass cover, Good, HSG A |
| | 10,912 | 95 | Weighted Average |
| | 646 | | 5.92% Pervious Area |
| | 10,266 | | 94.08% Impervious Area |

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

## Subcatchment P6:



## Summary for Subcatchment P7:

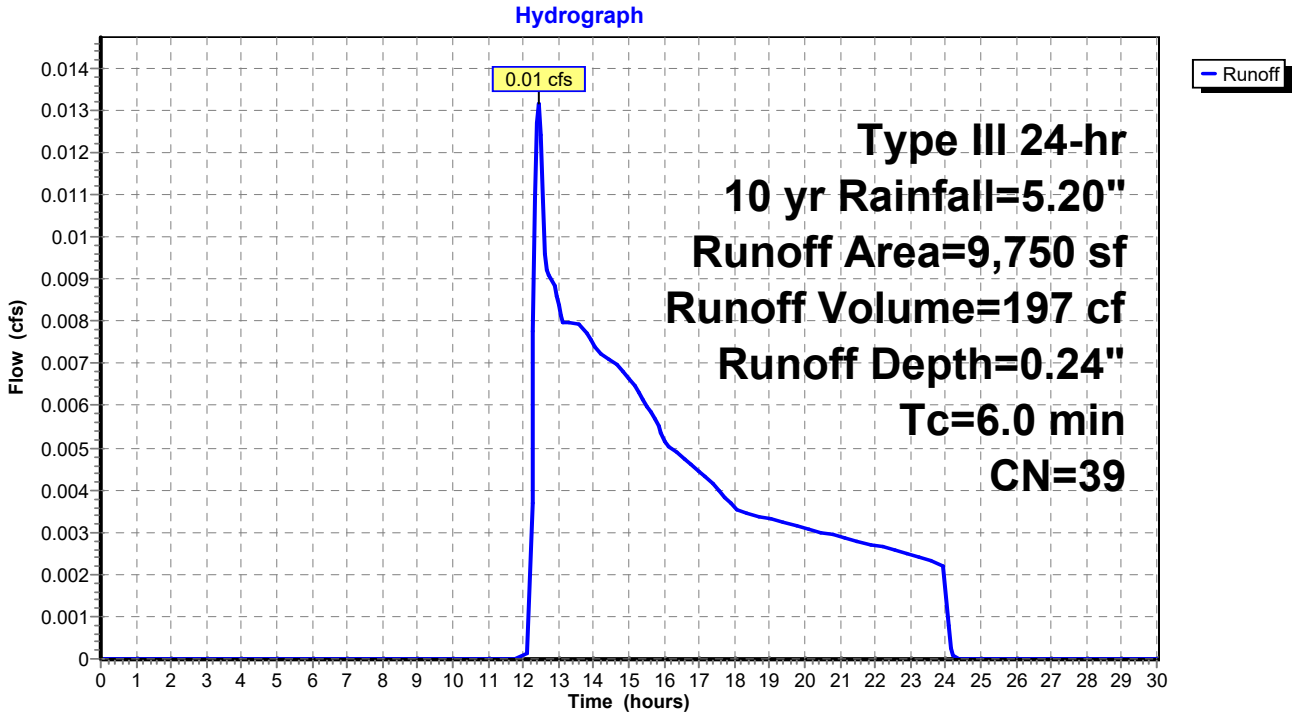
Runoff = 0.01 cfs @ 12.44 hrs, Volume= 197 cf, Depth= 0.24"
Routed to Pond CB5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| Area (sf) | CN | Description |
|---|---|---|
| 9,750 | 39 | >75% Grass cover, Good, HSG A |
| 9,750 | | 100.00% Pervious Area |

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

## Subcatchment P7:



## Summary for Subcatchment P8:

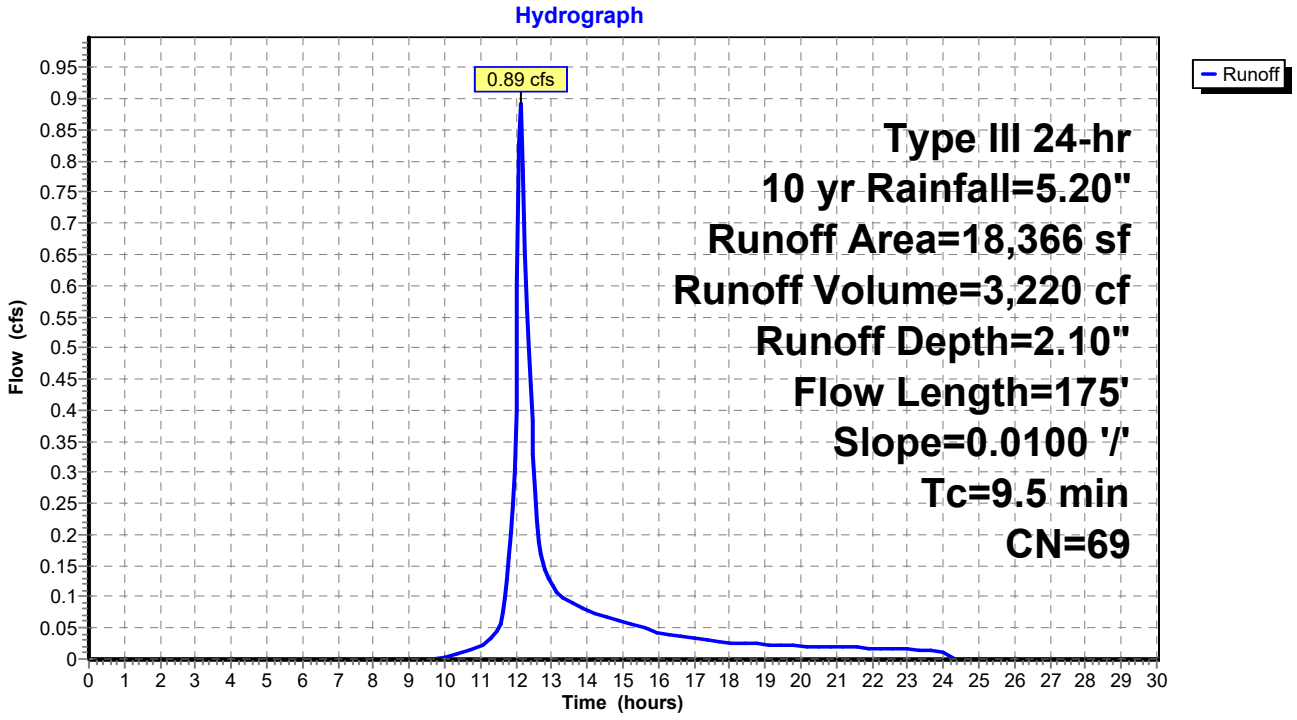
Runoff = 0.89 cfs @ 12.14 hrs, Volume= 3,220 cf, Depth= 2.10"
Routed to Pond 4P : Pervious Pvmt (South Fire Lane)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,020 | 98 | CONCRETE |
| * | 4,666 | 96 | permeable pavement |
| | 7,280 | 39 | >75% Grass cover, Good, HSG A |
| | 5,400 | 80 | >75% Grass cover, Good, HSG D |
| | 18,366 | 69 | Weighted Average |
| | 17,346 | | 94.45% Pervious Area |
| | 1,020 | | 5.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 50 | 0.0100 | 0.11 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.30" |
| 0.6 | 25 | 0.0100 | 0.70 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.6 | 100 | 0.0100 | 1.06 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30" |
| 9.5 | 175 | Total | | | |

## Subcatchment P8:



## Summary for Subcatchment P9:

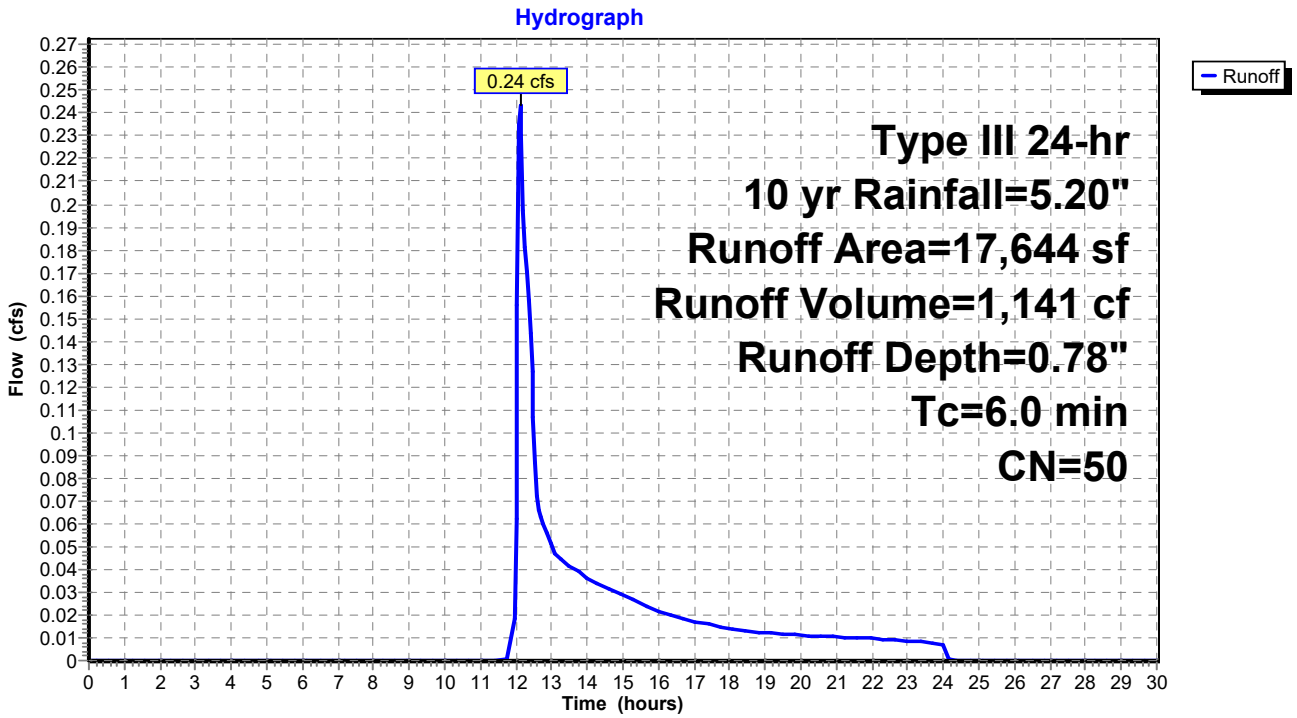
Runoff = 0.24 cfs @ 12.12 hrs, Volume= 1,141 cf, Depth= 0.78"
Routed to Pond DP1 : Drainage Network

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,850 | 98 | CONCRETE |
| | 350 | 98 | Paved parking, HSG A |
| | 14,444 | 39 | >75% Grass cover, Good, HSG A |
| | 17,644 | 50 | Weighted Average |
| | 14,444 | | 81.86% Pervious Area |
| | 3,200 | | 18.14% Impervious Area |

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

## Subcatchment P9:



## Summary for Pond 1P: Pervious Pvmt (R Drive) bed 'C'

Inflow Area = 6,132 sf, 27.32% Impervious, Inflow Depth = 4.18" for 10 yr event
Inflow = 0.64 cfs @ 12.09 hrs, Volume= 2,134 cf
Outflow = 0.62 cfs @ 12.09 hrs, Volume= 2,138 cf, Atten= 4%, Lag= 0.2 min
Discarded = 0.62 cfs @ 12.09 hrs, Volume= 2,138 cf
Primary = 0.00 cfs @ 12.10 hrs, Volume= 0 cf
Routed to Pond 2P : Pervious Pvmt (North Fire) Bed B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.00' @ 12.10 hrs Surf.Area= 3,280 sf Storage= 3 cf
Flood Elev= 144.33' Surf.Area= 3,280 sf Storage= 2,071 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min ( 786.0 - 785.6 )

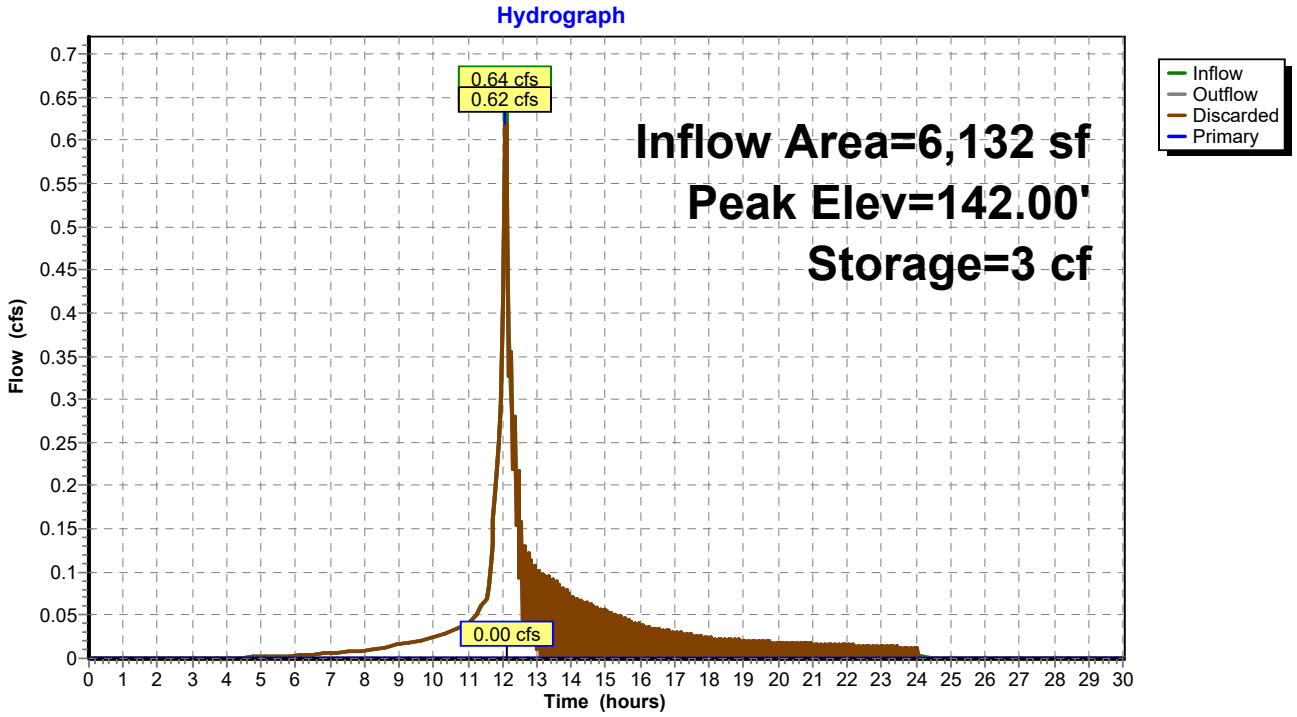
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 142.00' | 2,036 cf | **20.00'W x 164.00'L x 2.08'H Prismatoid**<br>6,822 cf Overall - 35 cf Embedded = 6,787 cf x 30.0% Voids |
| #2 | 142.00' | 35 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 180.0' |
| | | 2,071 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 144.08' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 142.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 142.00' | **6.0" Round Culvert X 2.00** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.00' / 141.50' S= 0.1000 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

**Discarded OutFlow** Max=0.63 cfs @ 12.09 hrs HW=142.00' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.63 cfs)

**Primary OutFlow** Max=0.00 cfs @ 12.10 hrs HW=142.00' TW=141.51' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.00 cfs @ 0.18 fps)

## Pond 1P: Pervious Pvmt (R Drive) bed 'C'



## Summary for Pond 2P: Pervious Pvmt (North Fire) Bed B

Inflow Area = 9,578 sf, 22.45% Impervious, Inflow Depth = 0.64" for 10 yr event
Inflow = 0.16 cfs @ 12.10 hrs, Volume= 513 cf
Outflow = 0.14 cfs @ 12.14 hrs, Volume= 515 cf, Atten= 12%, Lag= 2.4 min
Discarded = 0.13 cfs @ 12.13 hrs, Volume= 515 cf
Primary = 0.00 cfs @ 12.14 hrs, Volume= 1 cf
Routed to Pond 3P : Pervious Pvmt (North Fire) Bed 'A'

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 141.52' @ 12.14 hrs Surf.Area= 700 sf Storage= 4 cf
Flood Elev= 143.50' Surf.Area= 700 sf Storage= 430 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min ( 858.9 - 858.4 )

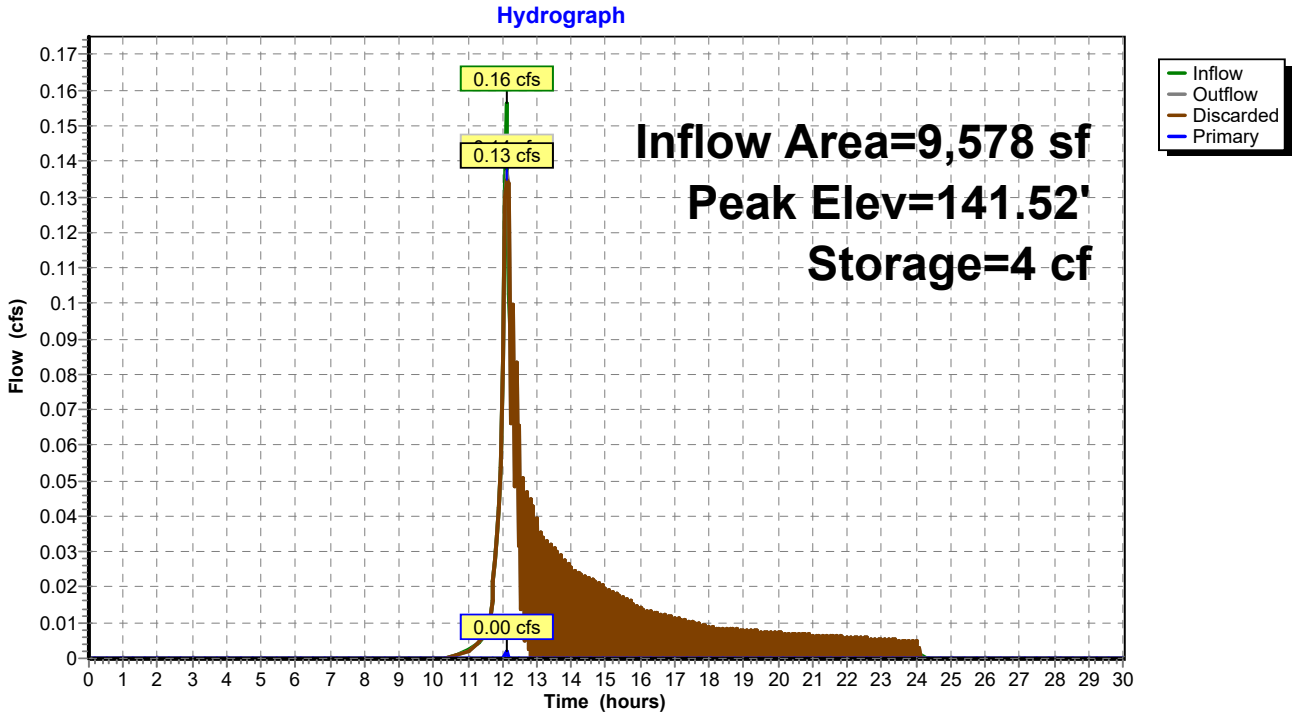
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 141.50' | 432 cf | **20.00'W x 35.00'L x 2.08'H Prismatoid**<br>1,456 cf Overall - 15 cf Embedded = 1,441 cf x 30.0% Voids |
| #2 | 141.50' | 15 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 75.0' |
| | | 447 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 143.58' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 141.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 141.50' | **6.0" Round Culvert X 2.00** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 141.00' S= 0.1000 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

**Discarded OutFlow** Max=0.13 cfs @ 12.13 hrs HW=141.52' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.13 cfs)

**Primary OutFlow** Max=0.00 cfs @ 12.14 hrs HW=141.52' TW=141.00' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.00 cfs @ 0.45 fps)

## Pond 2P: Pervious Pvmt (North Fire) Bed B



## Summary for Pond 3P: Pervious Pvmt (North Fire) Bed 'A'

Inflow Area = 9,578 sf, 22.45% Impervious, Inflow Depth = 0.00" for 10 yr event
Inflow = 0.00 cfs @ 12.14 hrs, Volume= 1 cf
Outflow = 0.00 cfs @ 12.14 hrs, Volume= 1 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.14 hrs, Volume= 1 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 141.00' @ 0.00 hrs Surf.Area= 1,200 sf Storage= 0 cf
Flood Elev= 143.50' Surf.Area= 1,200 sf Storage= 759 cf

Plug-Flow detention time= 0.0 min calculated for 1 cf (100% of inflow)
Center-of-Mass det. time= 0.0 min ( 728.2 - 728.2 )

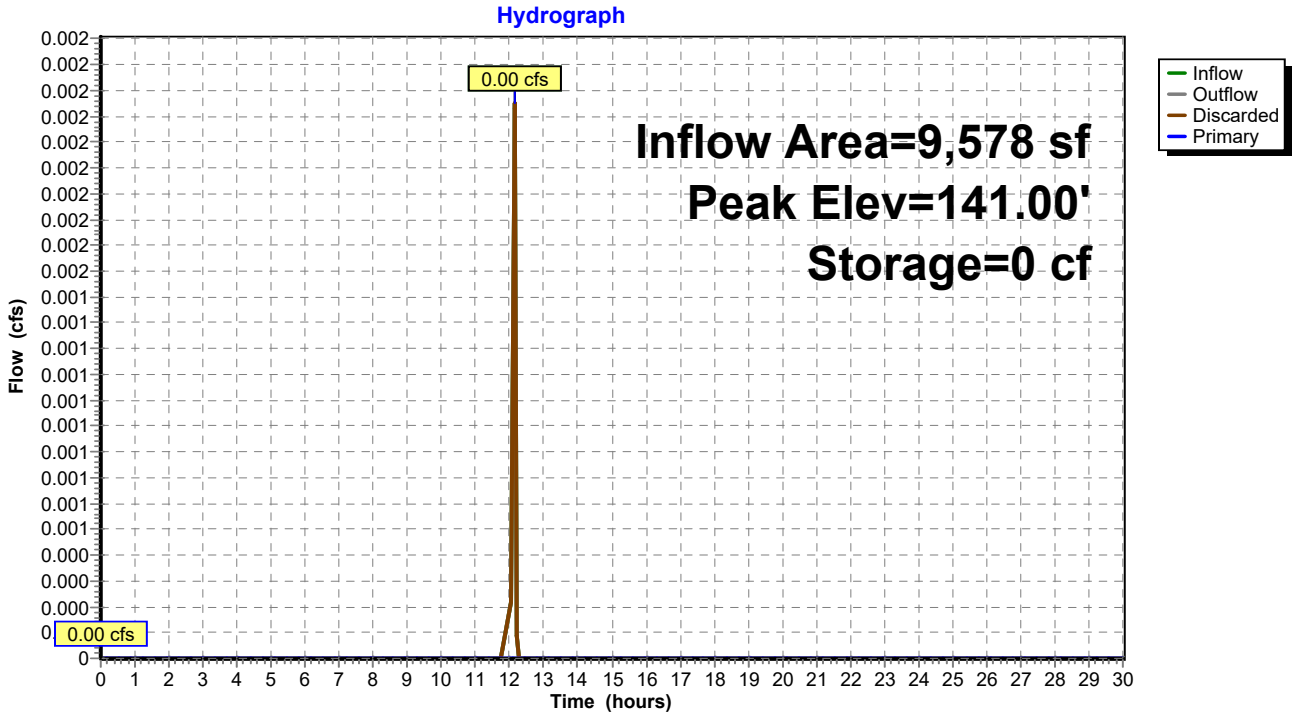
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 141.00' | 744 cf | **20.00'W x 60.00'L x 2.08'H Prismatoid**<br>2,496 cf Overall - 15 cf Embedded = 2,481 cf x 30.0% Voids |
| #2 | 141.00' | 15 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 75.0' |
| | | 759 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 143.08' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 141.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 141.50' | **12.0" Round Culvert** L= 25.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 141.00' S= 0.0200 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |
| #3 | Device 2 | 143.30' | **12.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.00 cfs @ 12.14 hrs HW=141.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.23 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=141.00' TW=141.00' (Dynamic Tailwater)
└**2=Culvert** ( Controls 0.00 cfs)
└**3=Orifice/Grate** ( Controls 0.00 cfs)

## Pond 3P: Pervious Pvmt (North Fire) Bed 'A'



## Summary for Pond 4P: Pervious Pvmt (South Fire Lane)

Inflow Area = 18,366 sf, 5.55% Impervious, Inflow Depth = 2.10" for 10 yr event
Inflow = 0.89 cfs @ 12.14 hrs, Volume= 3,220 cf
Outflow = 0.79 cfs @ 12.21 hrs, Volume= 3,198 cf, Atten= 12%, Lag= 4.2 min
Discarded = 0.53 cfs @ 12.21 hrs, Volume= 775 cf
Primary = 0.26 cfs @ 12.23 hrs, Volume= 2,423 cf
Routed to Pond DMH1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.81' @ 12.21 hrs Surf.Area= 4,660 sf Storage= 457 cf
Flood Elev= 145.50' Surf.Area= 4,660 sf Storage= 2,837 cf

Plug-Flow detention time= 40.5 min calculated for 3,192 cf (99% of inflow)
Center-of-Mass det. time= 36.9 min ( 888.2 - 851.3 )

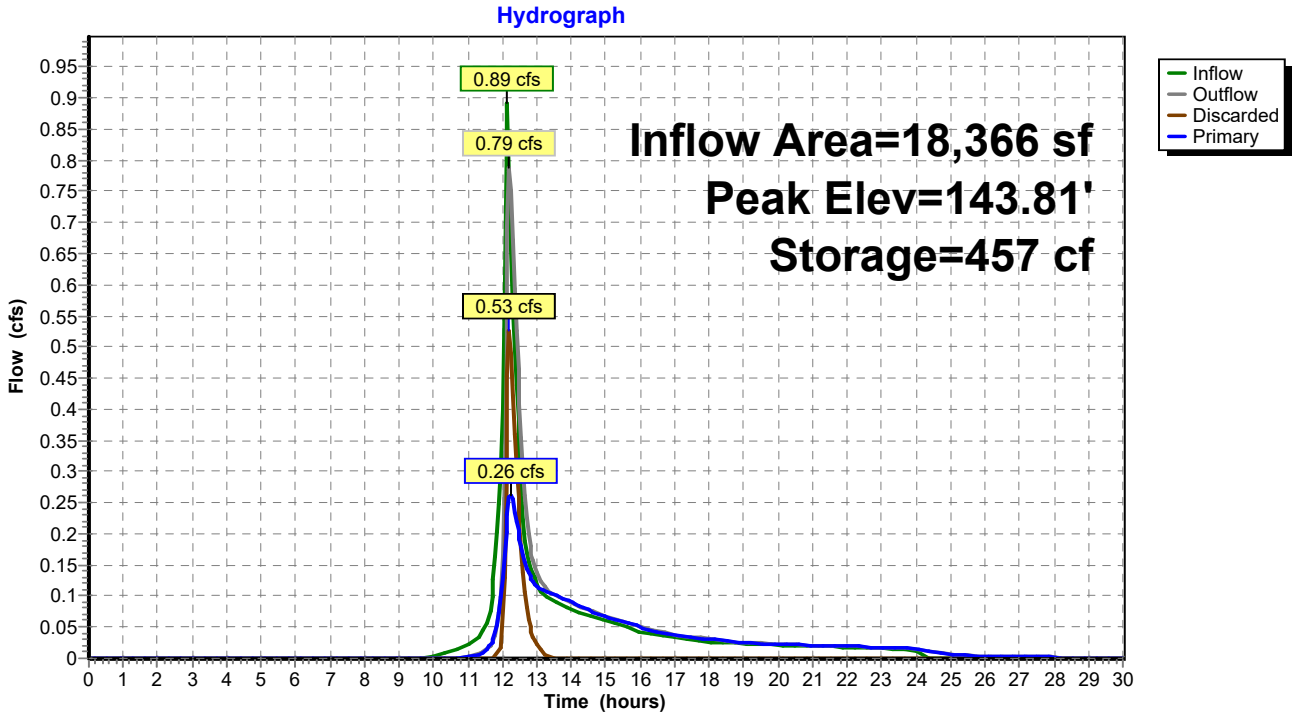
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 143.50' | 2,890 cf | **20.00'W x 233.00'L x 2.08'H Prismatoid**<br>9,693 cf Overall - 59 cf Embedded = 9,634 cf x 30.0% Voids |
| #2 | 143.50' | 59 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 300.0' |
| | | 2,949 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 145.58' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 143.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 141.50' |
| #2 | Primary | 143.50' | **12.0" Round Culvert** L= 170.0' Ke= 0.500<br>Inlet / Outlet Invert= 143.50' / 141.90' S= 0.0094 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |
| #3 | Device 1 | 143.67' | **12.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.52 cfs @ 12.21 hrs HW=143.81' (Free Discharge)
↑**1=Exfiltration** (Passes 0.52 cfs of 1.03 cfs potential flow)
↑**3=Orifice/Grate** (Weir Controls 0.52 cfs @ 1.21 fps)

**Primary OutFlow** Max=0.27 cfs @ 12.23 hrs HW=143.80' TW=142.93' (Dynamic Tailwater)
↑**2=Culvert** (Outlet Controls 0.27 cfs @ 2.03 fps)

## Pond 4P: Pervious Pvmt (South Fire Lane)



## Summary for Pond 5P: Permeable Pavers (Back)

Inflow Area = 2,070 sf, 0.00% Impervious, Inflow Depth = 3.07" for 10 yr event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 529 cf
Outflow = 0.17 cfs @ 12.09 hrs, Volume= 529 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.17 cfs @ 12.09 hrs, Volume= 529 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP2 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 144.00' @ 12.10 hrs Surf.Area= 1,720 sf Storage= 0 cf
Flood Elev= 145.50' Surf.Area= 1,720 sf Storage= 516 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 820.1 - 820.1 )

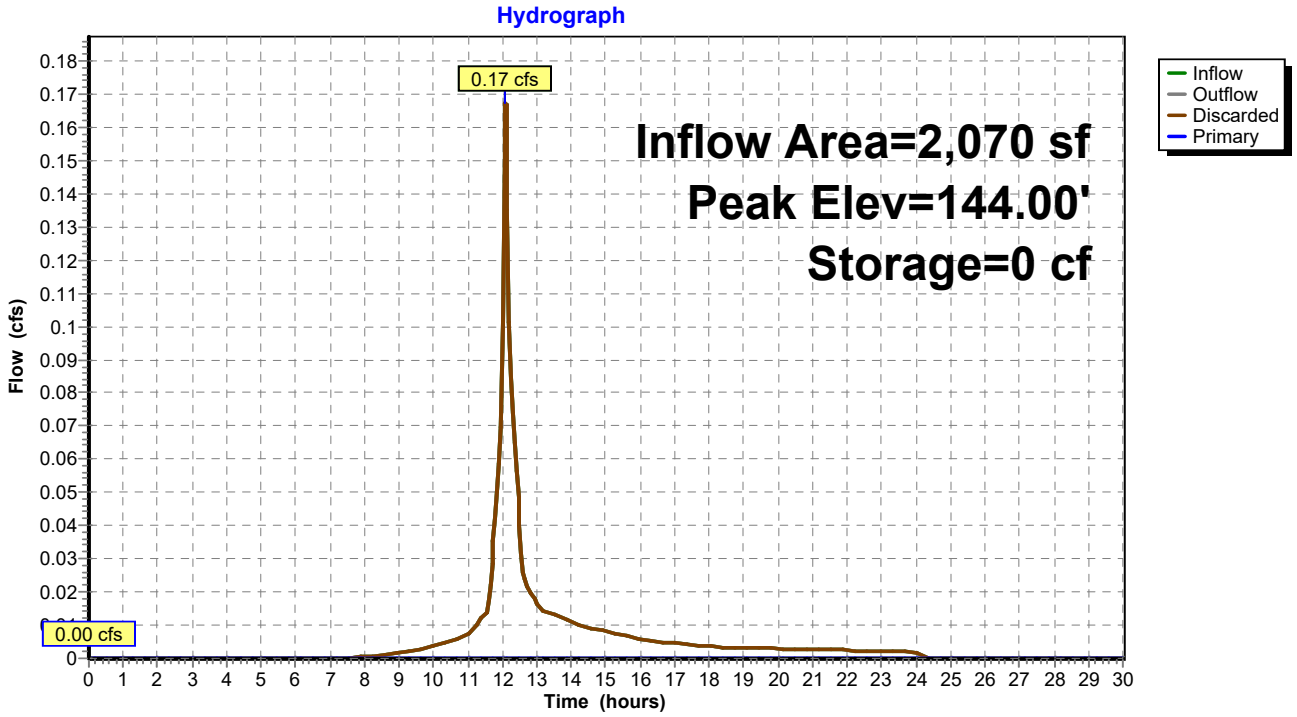
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 144.00' | 516 cf | **20.00'W x 86.00'L x 1.00'H Prismatoid**<br>1,720 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 145.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 144.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |

**Discarded OutFlow** Max=0.33 cfs @ 12.09 hrs HW=144.00' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.33 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)

## Pond 5P: Permeable Pavers (Back)



## Summary for Pond 6P:

Inflow Area = 560 sf, 0.00% Impervious, Inflow Depth = 1.02" for 10 yr event
Inflow = 0.01 cfs @ 12.11 hrs, Volume= 47 cf
Outflow = 0.01 cfs @ 12.11 hrs, Volume= 47 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.01 cfs @ 12.11 hrs, Volume= 47 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.00' @ 0.00 hrs Surf.Area= 400 sf Storage= 0 cf
Flood Elev= 145.00' Surf.Area= 400 sf Storage= 120 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 892.8 - 892.8 )

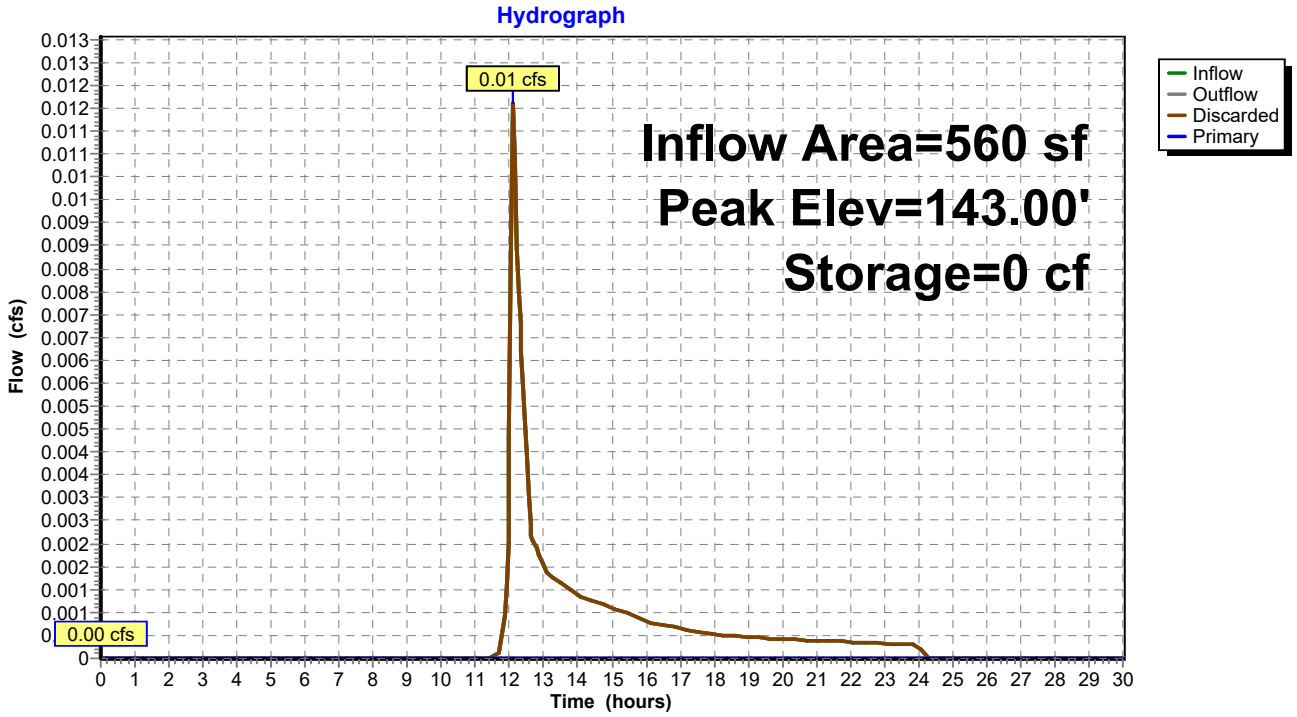
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 143.00' | 120 cf | **20.00'W x 20.00'L x 1.00'H Prismatoid**<br>400 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 144.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 143.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |

**Discarded OutFlow** Max=0.00 cfs @ 12.11 hrs HW=143.00' (Free Discharge)
↑—**1=Exfiltration** (Passes 0.00 cfs of 0.08 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=0.00' (Dynamic Tailwater)

## Pond 6P:


Hydrograph
Inflow Area=560 sf
Peak Elev=143.00'
Storage=0 cf
0.01 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

## Summary for Pond 7P: Stone infiltration Trench

Inflow Area = 7,565 sf, 30.40% Impervious, Inflow Depth = 0.83" for 10 yr event
Inflow = 0.12 cfs @ 12.12 hrs, Volume= 526 cf
Outflow = 0.10 cfs @ 12.20 hrs, Volume= 527 cf, Atten= 19%, Lag= 4.7 min
Discarded = 0.10 cfs @ 12.20 hrs, Volume= 527 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP2 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 144.04' @ 12.20 hrs Surf.Area= 500 sf Storage= 6 cf
Flood Elev= 145.00' Surf.Area= 500 sf Storage= 150 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min ( 905.9 - 905.3 )

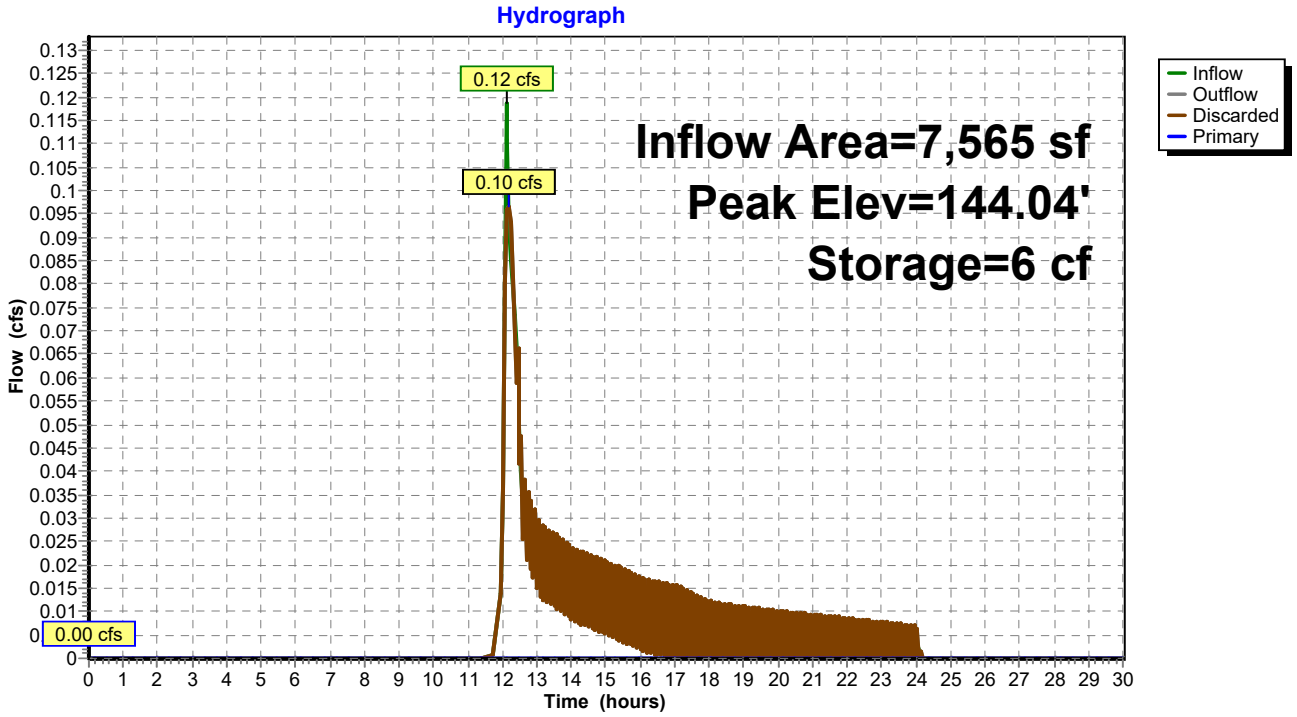
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 144.00' | 300 cf | **1.00'W x 500.00'L x 2.00'H Prismatoid**<br>1,000 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 146.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 144.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |
| #2 | Primary | 145.00' | **500.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |

**Discarded OutFlow** Max=0.10 cfs @ 12.20 hrs HW=144.04' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.10 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 7P: Stone infiltration Trench



## Summary for Pond CB1:

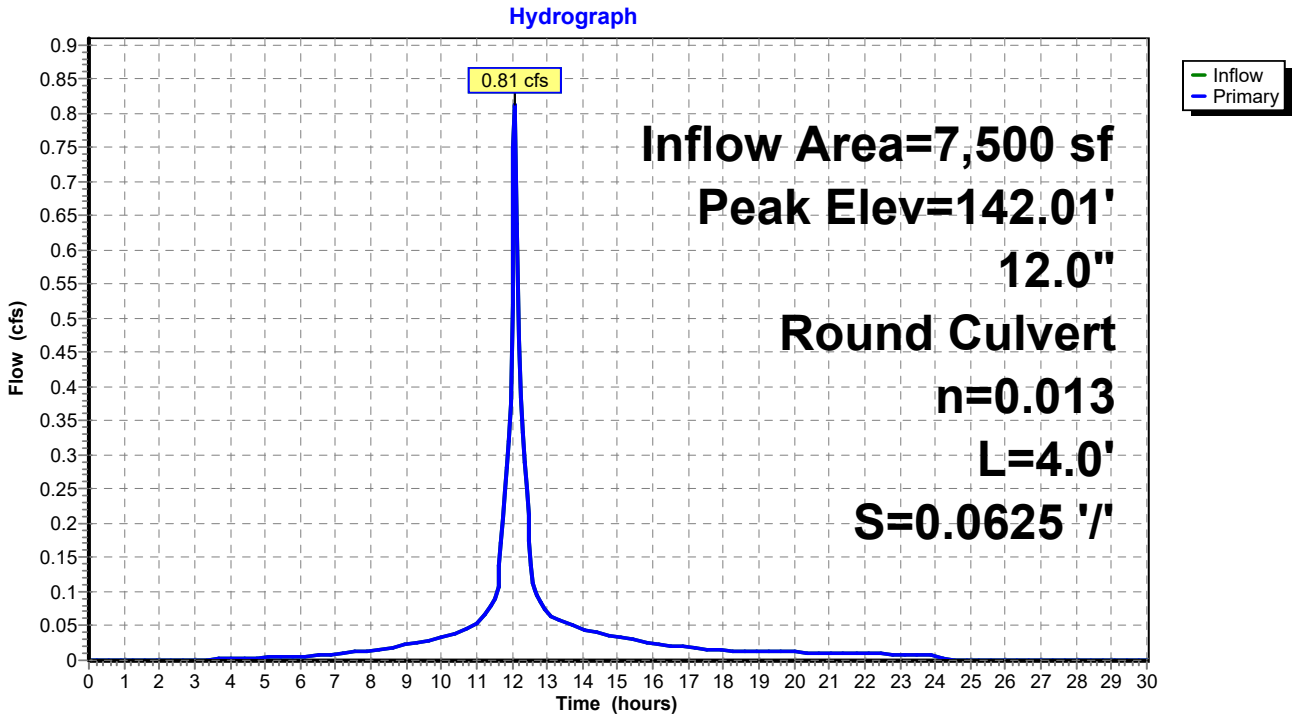
Inflow Area = 7,500 sf, 90.93% Impervious, Inflow Depth = 4.39" for 10 yr event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 2,747 cf
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 2,747 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 12.09 hrs, Volume= 2,747 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.01' @ 12.47 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.25' | **12.0" Round Culvert** L= 4.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.25' / 141.00' S= 0.0625 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.65 cfs @ 12.09 hrs HW=141.70' TW=141.50' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 0.65 cfs @ 2.78 fps)

## Pond CB1:



## Summary for Pond CB2,7:

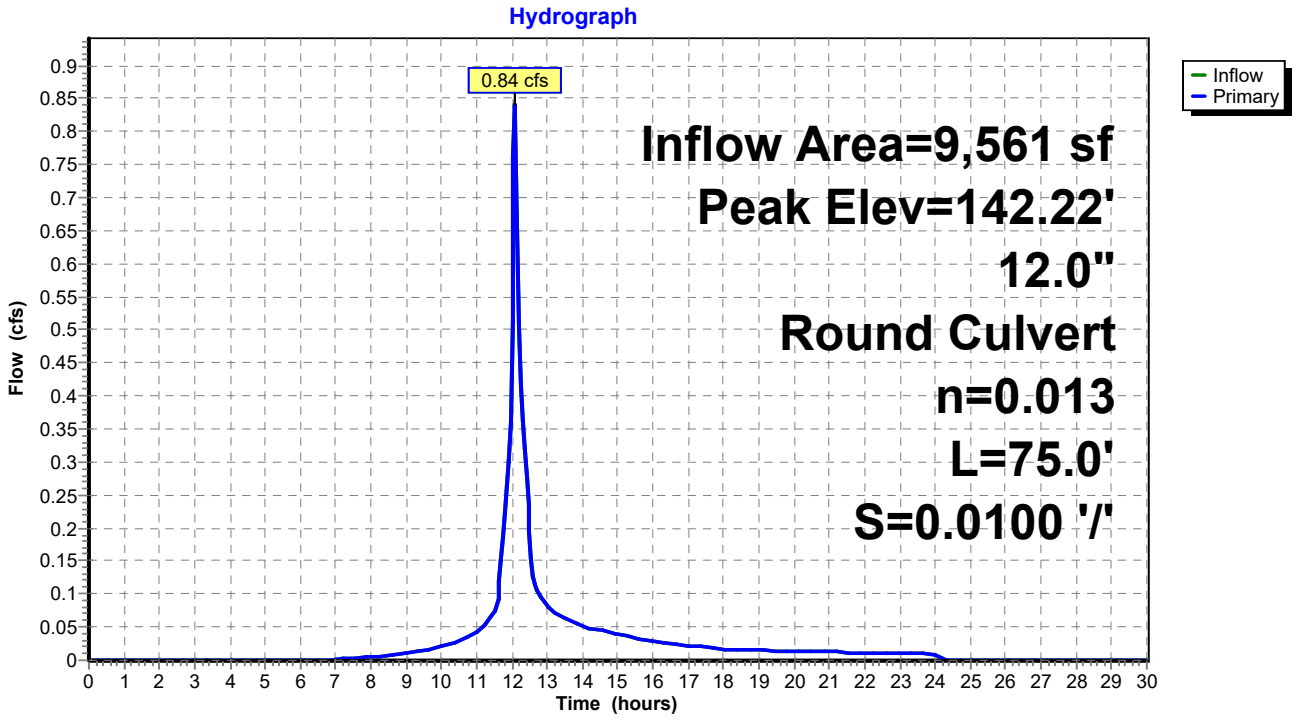
Inflow Area = 9,561 sf, 73.85% Impervious, Inflow Depth = 3.36" for 10 yr event
Inflow = 0.84 cfs @ 12.09 hrs, Volume= 2,674 cf
Outflow = 0.84 cfs @ 12.09 hrs, Volume= 2,674 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.09 hrs, Volume= 2,674 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.22' @ 12.10 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.75' | **12.0" Round Culvert** L= 75.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.75' / 141.00' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.75 cfs @ 12.09 hrs HW=142.21' TW=141.51' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 0.75 cfs @ 3.06 fps)

## Pond CB2,7:



## Summary for Pond CB3:

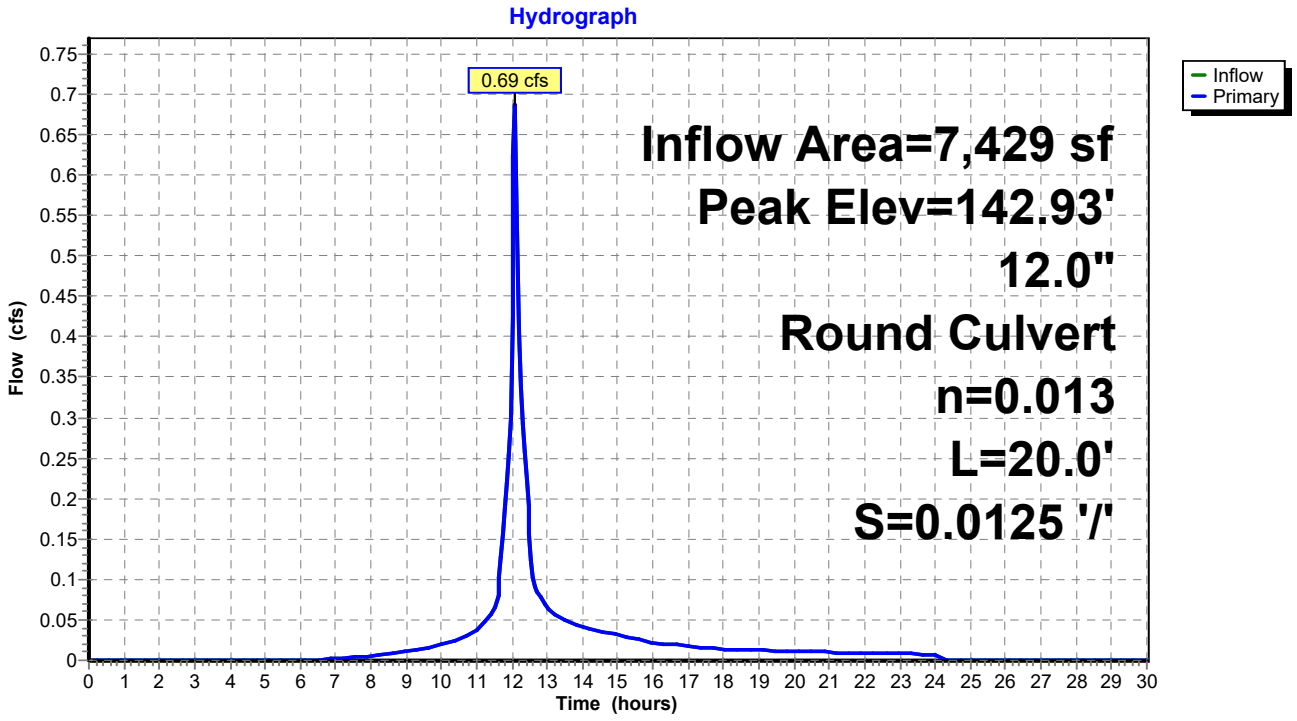
Inflow Area = 7,429 sf, 68.84% Impervious, Inflow Depth = 3.55" for 10 yr event
Inflow = 0.69 cfs @ 12.09 hrs, Volume= 2,200 cf
Outflow = 0.69 cfs @ 12.09 hrs, Volume= 2,200 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.69 cfs @ 12.09 hrs, Volume= 2,200 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.93' @ 12.14 hrs
Flood Elev= 144.35'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.75' | **12.0" Round Culvert** L= 20.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.75' / 141.50' S= 0.0125 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.00 cfs @ 12.09 hrs HW=142.87' TW=142.90' (Dynamic Tailwater)
**1=Culvert** ( Controls 0.00 cfs)

## Pond CB3:



## Summary for Pond CB4:

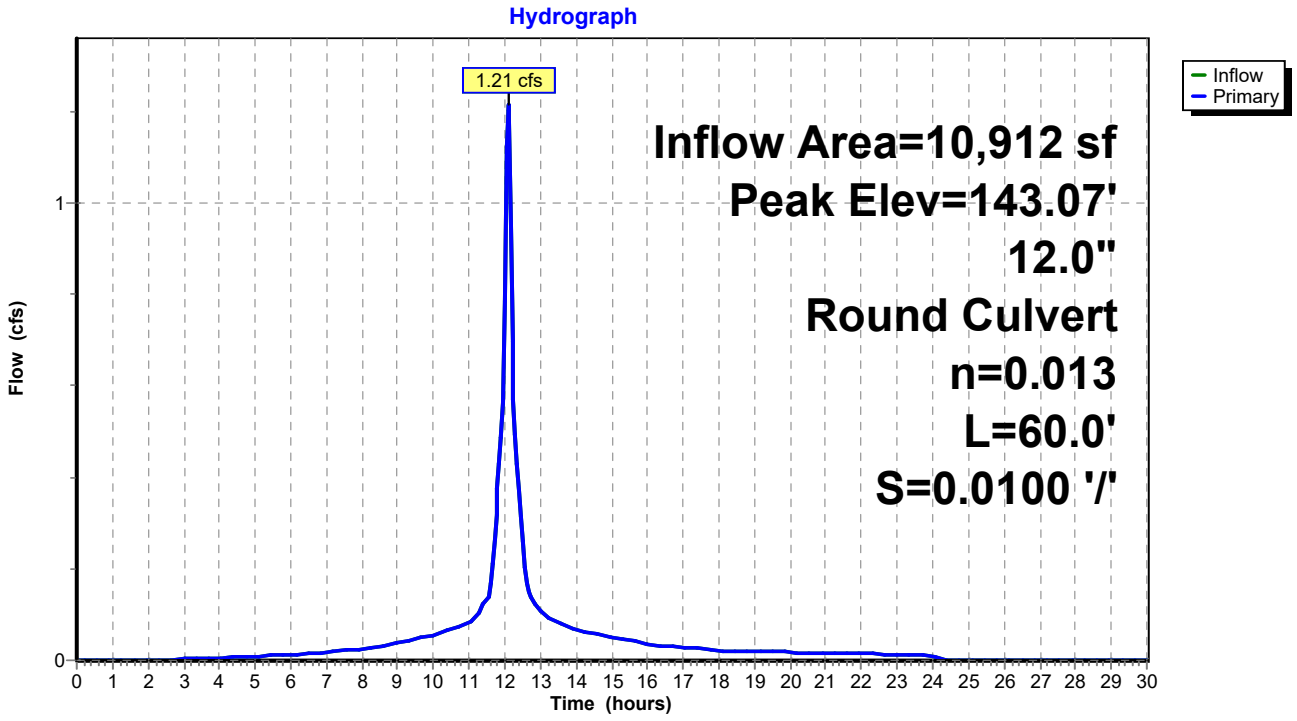
Inflow Area = 10,912 sf, 94.08% Impervious, Inflow Depth = 4.62" for 10 yr event
Inflow = 1.21 cfs @ 12.09 hrs, Volume= 4,199 cf
Outflow = 1.21 cfs @ 12.09 hrs, Volume= 4,199 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.21 cfs @ 12.09 hrs, Volume= 4,199 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.07' @ 12.12 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 142.10' | **12.0" Round Culvert** L= 60.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.10' / 141.50' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.96 cfs @ 12.09 hrs HW=143.02' TW=142.90' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 0.96 cfs @ 1.65 fps)

## Pond CB4:



## Summary for Pond CB5:

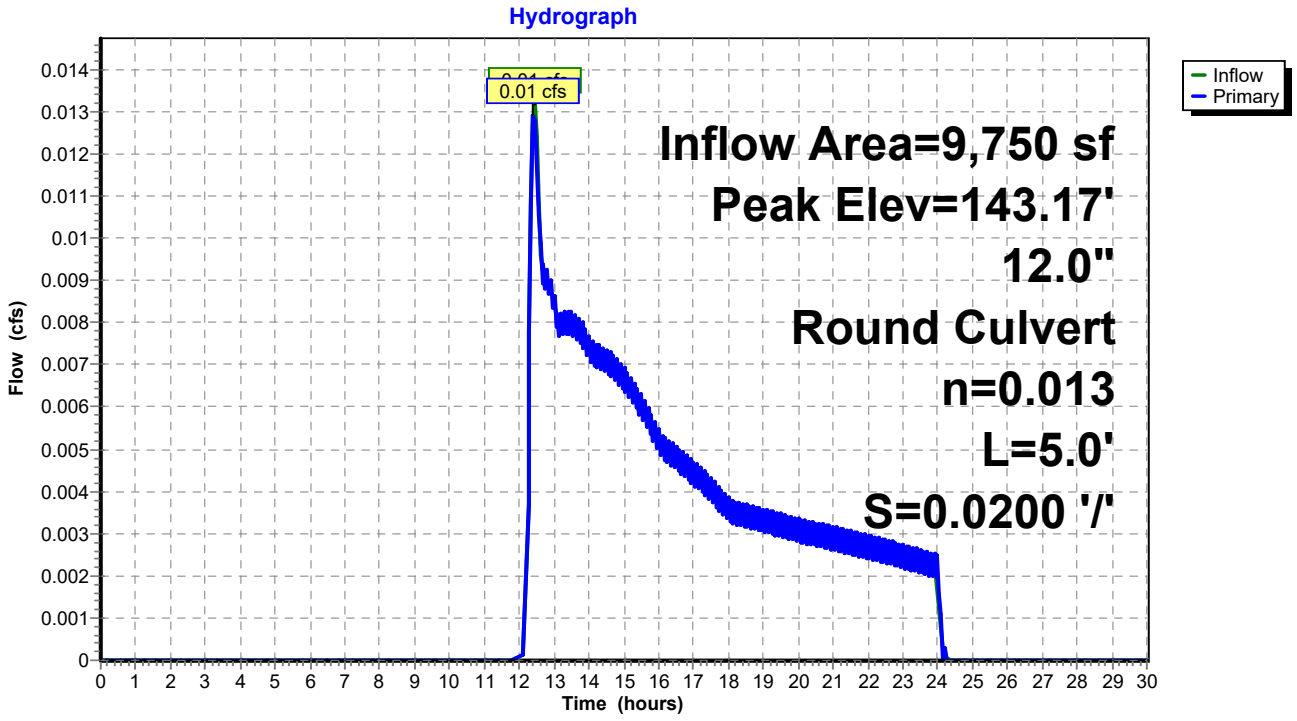
Inflow Area = 9,750 sf, 0.00% Impervious, Inflow Depth = 0.24" for 10 yr event
Inflow = 0.01 cfs @ 12.44 hrs, Volume= 197 cf
Outflow = 0.01 cfs @ 12.40 hrs, Volume= 197 cf, Atten= 2%, Lag= 0.0 min
Primary = 0.01 cfs @ 12.40 hrs, Volume= 197 cf
Routed to Pond DMH1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.17' @ 12.17 hrs
Flood Elev= 144.10'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 142.00' | **12.0" Round Culvert** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.00' / 141.90' S= 0.0200 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.56 cfs @ 12.40 hrs HW=142.82' TW=142.79' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 0.56 cfs @ 1.09 fps)

## Pond CB5:



## Summary for Pond DMH1:

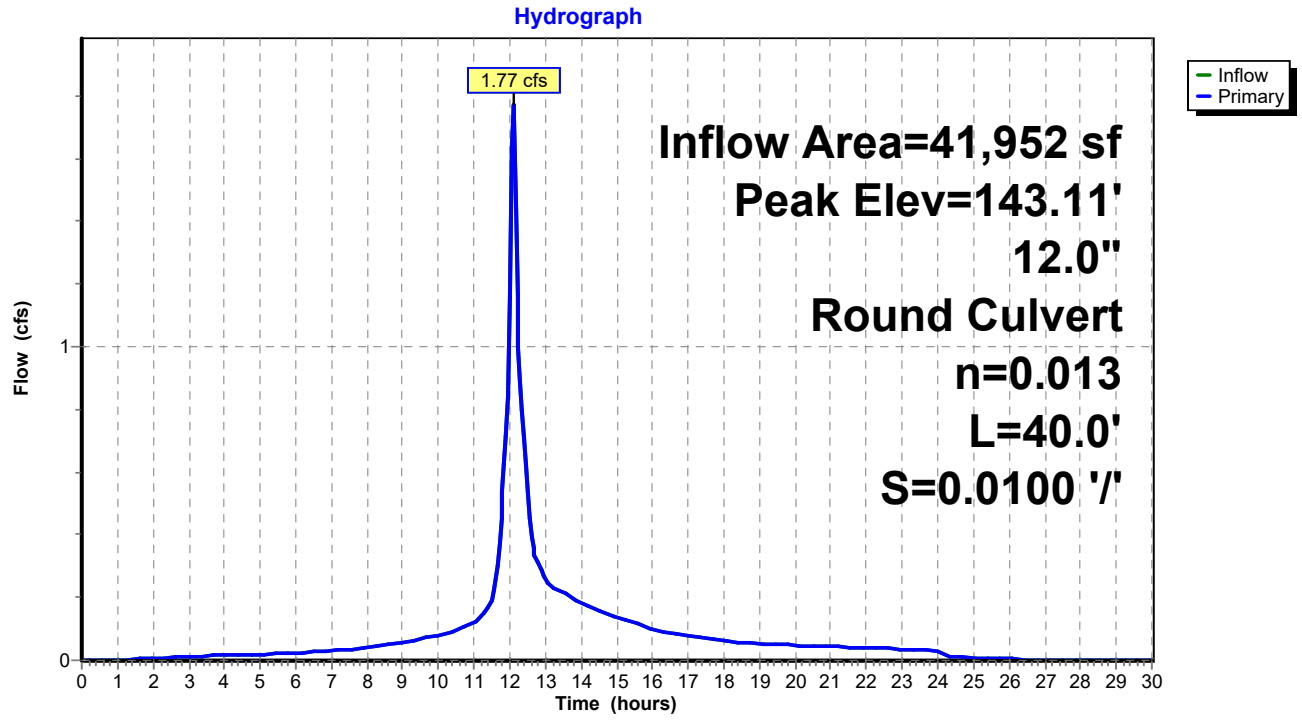
Inflow Area = 41,952 sf, 35.41% Impervious, Inflow Depth > 2.39" for 10 yr event
Inflow = 1.77 cfs @ 12.09 hrs, Volume= 8,342 cf
Outflow = 1.77 cfs @ 12.09 hrs, Volume= 8,342 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.77 cfs @ 12.09 hrs, Volume= 8,342 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.11' @ 12.12 hrs
Flood Elev= 144.75'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.90' | **12.0" Round Culvert** L= 40.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.90' / 141.50' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=1.50 cfs @ 12.09 hrs HW=143.06' TW=142.90' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 1.50 cfs @ 2.07 fps)

## Pond DMH1:

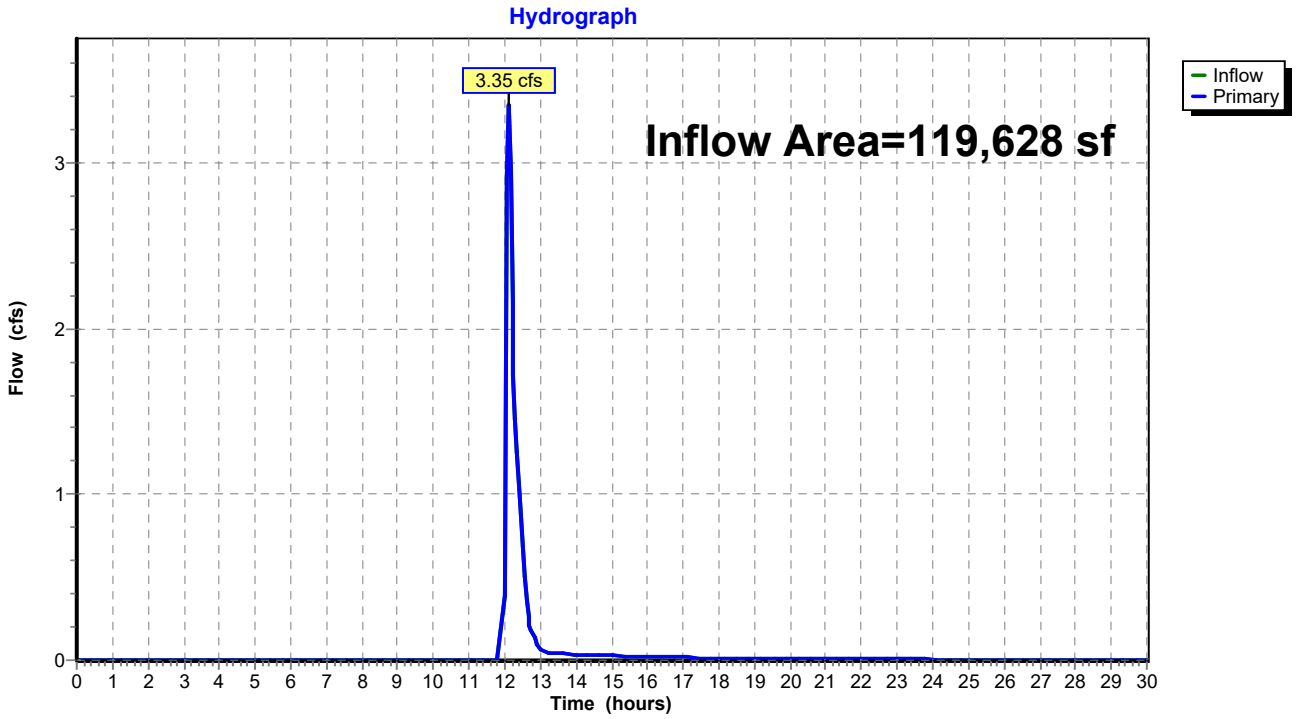


## Summary for Pond DP1: Drainage Network

Inflow Area = 119,628 sf, 53.46% Impervious, Inflow Depth = 0.46" for 10 yr event
Inflow = 3.35 cfs @ 12.10 hrs, Volume= 4,542 cf
Primary = 3.35 cfs @ 12.10 hrs, Volume= 4,542 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

## Pond DP1: Drainage Network

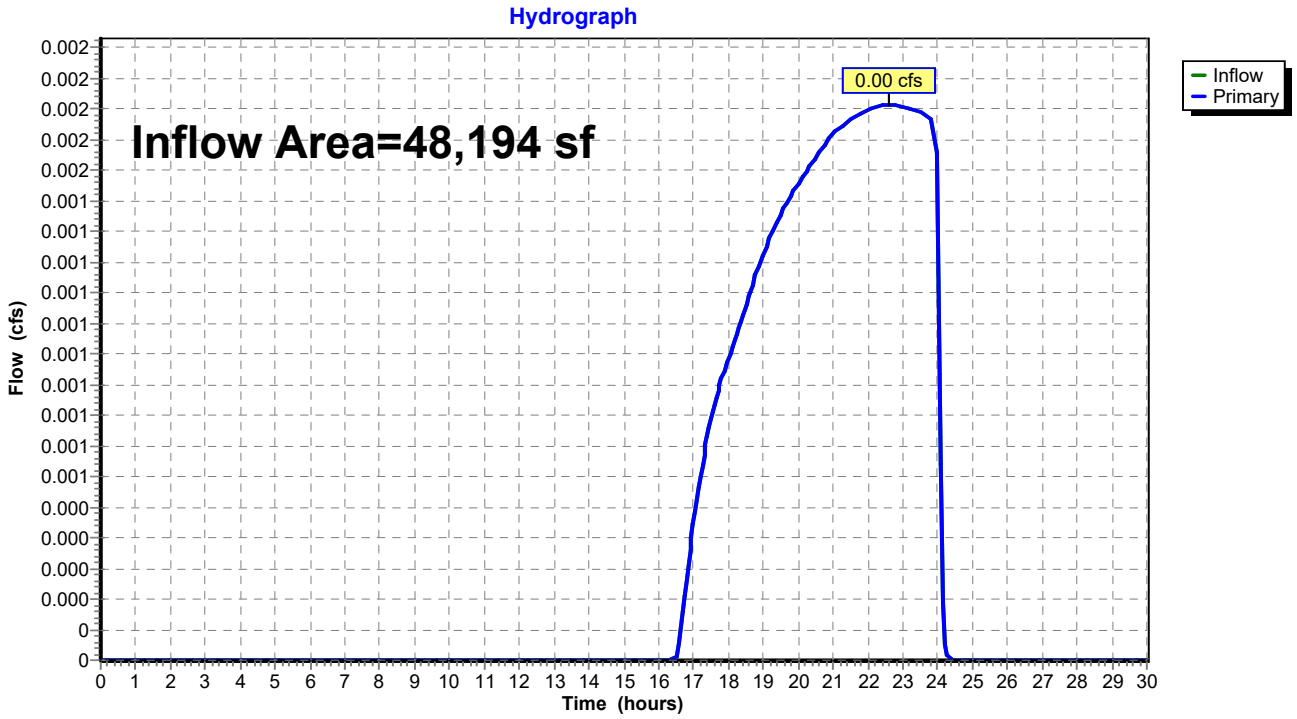


## Summary for Pond DP2: Wetlands

Inflow Area = 48,194 sf, 4.77% Impervious, Inflow Depth = 0.01" for 10 yr event
Inflow = 0.00 cfs @ 22.61 hrs, Volume= 38 cf
Primary = 0.00 cfs @ 22.61 hrs, Volume= 38 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

## Pond DP2: Wetlands



## Summary for Pond IS1: Infiltration System 1

Inflow Area = 41,131 sf, 74.21% Impervious, Inflow Depth = 3.33" for 10 yr event
Inflow = 3.31 cfs @ 12.09 hrs, Volume= 11,414 cf
Outflow = 0.94 cfs @ 12.43 hrs, Volume= 11,429 cf, Atten= 72%, Lag= 20.5 min
Discarded = 0.94 cfs @ 12.43 hrs, Volume= 11,429 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.00' @ 12.43 hrs Surf.Area= 3,262 sf Storage= 2,349 cf
Flood Elev= 142.83' Surf.Area= 3,262 sf Storage= 3,502 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 14.0 min ( 783.7 - 769.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 141.00' | 1,649 cf | **61.50'W x 53.04'L x 1.83'H Field A**<br>5,980 cf Overall - 1,857 cf Embedded = 4,123 cf x 40.0% Voids |
| #2A | 141.00' | 1,857 cf | **ADS_StormTech SC-310 +Cap** x 126 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>126 Chambers in 18 Rows |
| | | 3,507 cf | Total Available Storage |

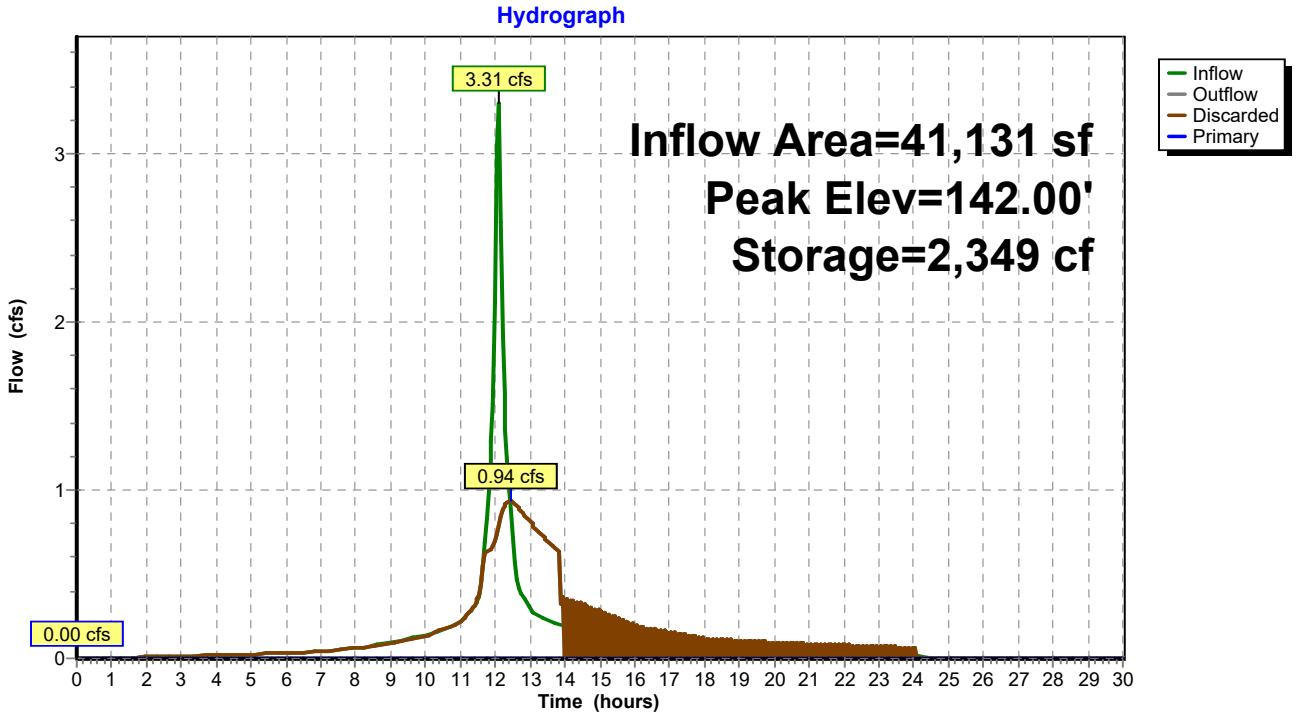
Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.00' | **15.0" Round Culvert** L= 40.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0250 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Discarded | 141.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |
| #3 | Device 1 | 142.50' | **18.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.94 cfs @ 12.43 hrs HW=142.00' (Free Discharge)
└**2=Exfiltration** ( Controls 0.94 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=141.00' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** ( Controls 0.00 cfs)
└**3=Orifice/Grate** ( Controls 0.00 cfs)

## Pond IS1: Infiltration System 1



## Summary for Pond IS2: Infiltration System 2

Inflow Area = 60,293 sf, 50.15% Impervious, Inflow Depth > 2.93" for 10 yr event
Inflow = 3.67 cfs @ 12.09 hrs, Volume= 14,741 cf
Outflow = 3.60 cfs @ 12.10 hrs, Volume= 14,742 cf, Atten= 2%, Lag= 0.5 min
Discarded = 0.49 cfs @ 12.10 hrs, Volume= 11,341 cf
Primary = 3.11 cfs @ 12.10 hrs, Volume= 3,401 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.90' @ 12.10 hrs Surf.Area= 1,494 sf Storage= 1,335 cf
Flood Elev= 143.50' Surf.Area= 1,494 sf Storage= 1,691 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 13.4 min ( 809.4 - 796.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 141.50' | 865 cf | **24.83'W x 60.16'L x 2.00'H Field A**<br>2,988 cf Overall - 826 cf Embedded = 2,162 cf x 40.0% Voids |
| #2A | 141.50' | 826 cf | **ADS_StormTech SC-310 +Cap** x 56 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>56 Chambers in 7 Rows |
| | | 1,691 cf | Total Available Storage |

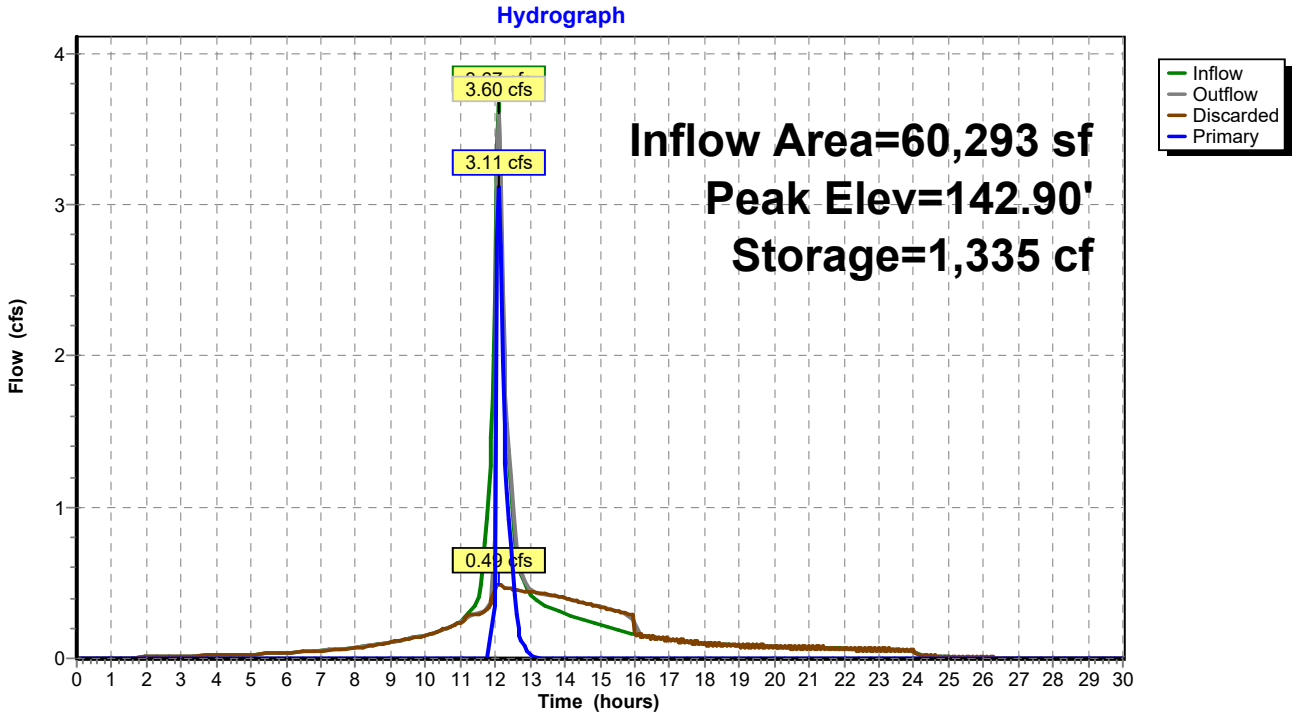
Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.50' | **15.0" Round Culvert** L= 80.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 140.00' S= 0.0187 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Discarded | 141.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.50' |
| #3 | Device 1 | 142.56' | **18.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.49 cfs @ 12.10 hrs HW=142.90' (Free Discharge)
└**2=Exfiltration** ( Controls 0.49 cfs)

**Primary OutFlow** Max=3.10 cfs @ 12.10 hrs HW=142.90' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 3.10 cfs of 5.21 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 3.10 cfs @ 1.92 fps)

## Pond IS2: Infiltration System 2



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 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

**SubcatchmentB1A: Building (R)** Runoff Area=14,492 sf 100.00% Impervious Runoff Depth=6.16"
Tc=6.0 min CN=98 Runoff=2.04 cfs 7,441 cf

**SubcatchmentB1B: Building (L)** Runoff Area=13,836 sf 100.00% Impervious Runoff Depth=6.16"
Tc=6.0 min CN=98 Runoff=1.95 cfs 7,104 cf

**SubcatchmentP1: Back of property to Wetl** Runoff Area=38,559 sf 0.00% Impervious Runoff Depth=0.12"
Tc=6.0 min CN=30 Runoff=0.01 cfs 385 cf

**SubcatchmentP1A: Back Patio** Runoff Area=2,070 sf 0.00% Impervious Runoff Depth=4.14"
Tc=6.0 min CN=80 Runoff=0.22 cfs 715 cf

**SubcatchmentP1C: Back of property to** Runoff Area=7,565 sf 30.40% Impervious Runoff Depth=1.42"
Tc=6.0 min CN=51 Runoff=0.24 cfs 898 cf

**SubcatchmentP2A:** Runoff Area=3,446 sf 13.78% Impervious Runoff Depth=2.65"
Tc=6.0 min CN=65 Runoff=0.24 cfs 760 cf

**SubcatchmentP2B:** Runoff Area=6,132 sf 27.32% Impervious Runoff Depth=5.35"
Tc=6.0 min CN=91 Runoff=0.81 cfs 2,733 cf

**SubcatchmentP3:** Runoff Area=7,500 sf 90.93% Impervious Runoff Depth=5.58"
Tc=6.0 min CN=93 Runoff=1.02 cfs 3,486 cf

**SubcatchmentP4:** Runoff Area=9,561 sf 73.85% Impervious Runoff Depth=4.46"
Tc=6.0 min CN=83 Runoff=1.11 cfs 3,557 cf

**SubcatchmentP5:** Runoff Area=7,429 sf 68.84% Impervious Runoff Depth=4.68"
Tc=6.0 min CN=85 Runoff=0.89 cfs 2,898 cf

**SubcatchmentP5A: Perm Pavers Front** Runoff Area=560 sf 0.00% Impervious Runoff Depth=1.67"
Tc=6.0 min CN=54 Runoff=0.02 cfs 78 cf

**SubcatchmentP6:** Runoff Area=10,912 sf 94.08% Impervious Runoff Depth=5.81"
Tc=6.0 min CN=95 Runoff=1.51 cfs 5,282 cf

**SubcatchmentP7:** Runoff Area=9,750 sf 0.00% Impervious Runoff Depth=0.57"
Tc=6.0 min CN=39 Runoff=0.06 cfs 460 cf

**SubcatchmentP8:** Runoff Area=18,366 sf 5.55% Impervious Runoff Depth=3.03"
Flow Length=175' Slope=0.0100 '/' Tc=9.5 min CN=69 Runoff=1.30 cfs 4,635 cf

**SubcatchmentP9:** Runoff Area=17,644 sf 18.14% Impervious Runoff Depth=1.34"
Tc=6.0 min CN=50 Runoff=0.52 cfs 1,977 cf

**Pond 1P: Pervious Pvmt (R Drive) bed 'C'** Peak Elev=142.05' Storage=50 cf Inflow=0.81 cfs 2,733 cf
Discarded=0.64 cfs 2,745 cf Primary=0.02 cfs 6 cf Outflow=0.65 cfs 2,751 cf

**Pond 2P: Pervious Pvmt (North Fire) Bed B** Peak Elev=141.61' Storage=25 cf Inflow=0.25 cfs 765 cf
Discarded=0.14 cfs 727 cf Primary=0.07 cfs 39 cf Outflow=0.21 cfs 766 cf

**Pond 3P: Pervious Pvmt (North Fire) Bed 'A'** Peak Elev=141.00' Storage=0 cf Inflow=0.07 cfs 39 cf
Discarded=0.07 cfs 39 cf Primary=0.00 cfs 0 cf Outflow=0.07 cfs 39 cf

**Pond 4P: Pervious Pvmt (South Fire Lane)** Peak Elev=143.86' Storage=537 cf Inflow=1.30 cfs 4,635 cf
Discarded=0.86 cfs 1,430 cf Primary=0.33 cfs 3,182 cf Outflow=1.19 cfs 4,612 cf

**Pond 5P: Permeable Pavers (Back)** Peak Elev=144.00' Storage=0 cf Inflow=0.22 cfs 715 cf
Discarded=0.22 cfs 715 cf Primary=0.00 cfs 0 cf Outflow=0.22 cfs 715 cf

**Pond 6P:** Peak Elev=143.00' Storage=0 cf Inflow=0.02 cfs 78 cf
Discarded=0.02 cfs 78 cf Primary=0.00 cfs 0 cf Outflow=0.02 cfs 78 cf

**Pond 7P: Stone infiltration Trench** Peak Elev=144.63' Storage=95 cf Inflow=0.24 cfs 898 cf
Discarded=0.11 cfs 899 cf Primary=0.00 cfs 0 cf Outflow=0.11 cfs 899 cf

**Pond CB1:** Peak Elev=142.59' Inflow=1.02 cfs 3,486 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0625 '/' Outflow=1.02 cfs 3,486 cf

**Pond CB2,7:** Peak Elev=142.60' Inflow=1.11 cfs 3,557 cf
12.0" Round Culvert n=0.013 L=75.0' S=0.0100 '/' Outflow=1.11 cfs 3,557 cf

**Pond CB3:** Peak Elev=143.01' Inflow=0.89 cfs 2,898 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0125 '/' Outflow=0.89 cfs 2,898 cf

**Pond CB4:** Peak Elev=143.16' Inflow=1.51 cfs 5,282 cf
12.0" Round Culvert n=0.013 L=60.0' S=0.0100 '/' Outflow=1.51 cfs 5,282 cf

**Pond CB5:** Peak Elev=143.28' Inflow=0.06 cfs 460 cf
12.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=0.06 cfs 460 cf

**Pond DMH1:** Peak Elev=143.28' Inflow=2.23 cfs 10,746 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=2.23 cfs 10,746 cf

**Pond DP1: Drainage Network** Inflow=4.64 cfs 7,512 cf
Primary=4.64 cfs 7,512 cf

**Pond DP2: Wetlands** Inflow=0.01 cfs 385 cf
Primary=0.01 cfs 385 cf

**Pond IS1: Infiltration System 1** Peak Elev=142.58' Storage=3,177 cf Inflow=4.16 cfs 14,484 cf
Discarded=1.12 cfs 14,318 cf Primary=0.35 cfs 179 cf Outflow=1.47 cfs 14,496 cf

**Pond IS2: Infiltration System 2** Peak Elev=142.98' Storage=1,377 cf Inflow=4.63 cfs 18,926 cf
Discarded=0.50 cfs 13,569 cf Primary=4.12 cfs 5,357 cf Outflow=4.62 cfs 18,926 cf

## Summary for Subcatchment B1A: Building (R)

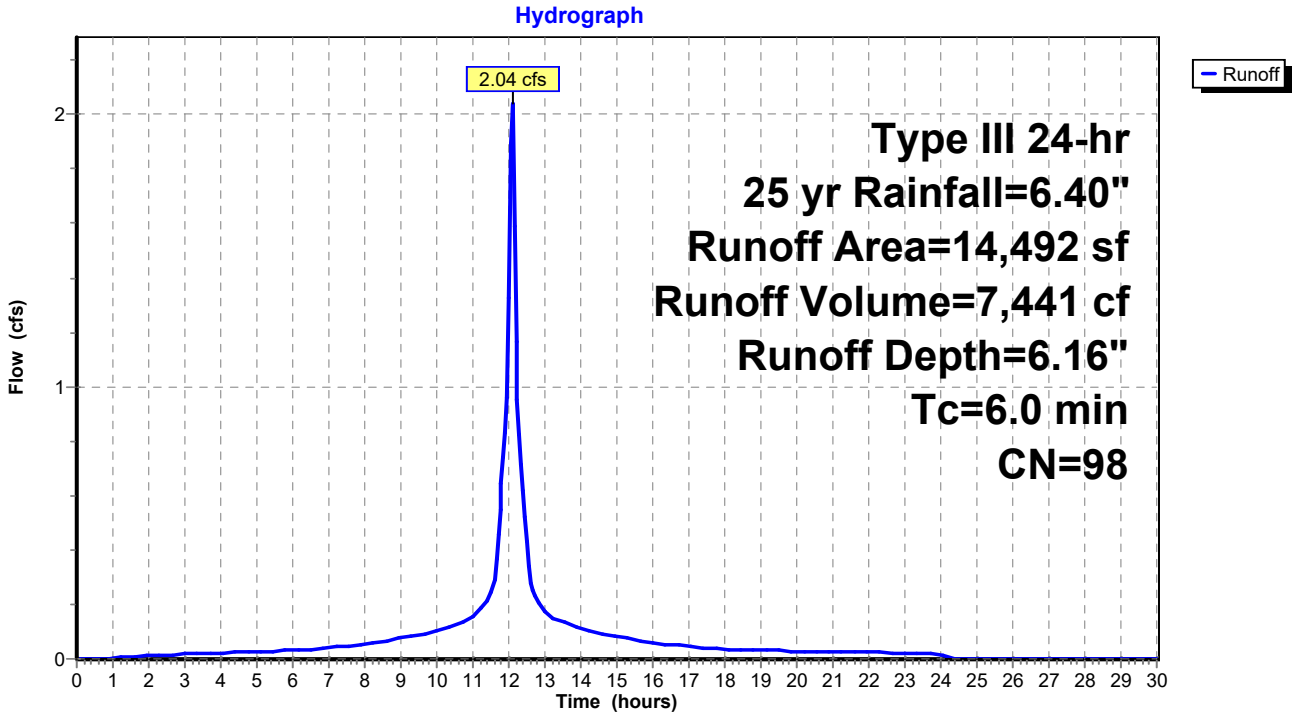
Runoff = 2.04 cfs @ 12.09 hrs, Volume= 7,441 cf, Depth= 6.16"
Routed to Pond IS1 : Infiltration System 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| Area (sf) | CN | Description |
|---|---|---|
| 14,492 | 98 | Roofs, HSG A |
| 14,492 | | 100.00% Impervious Area |

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

### Subcatchment B1A: Building (R)



## Summary for Subcatchment B1B: Building (L)

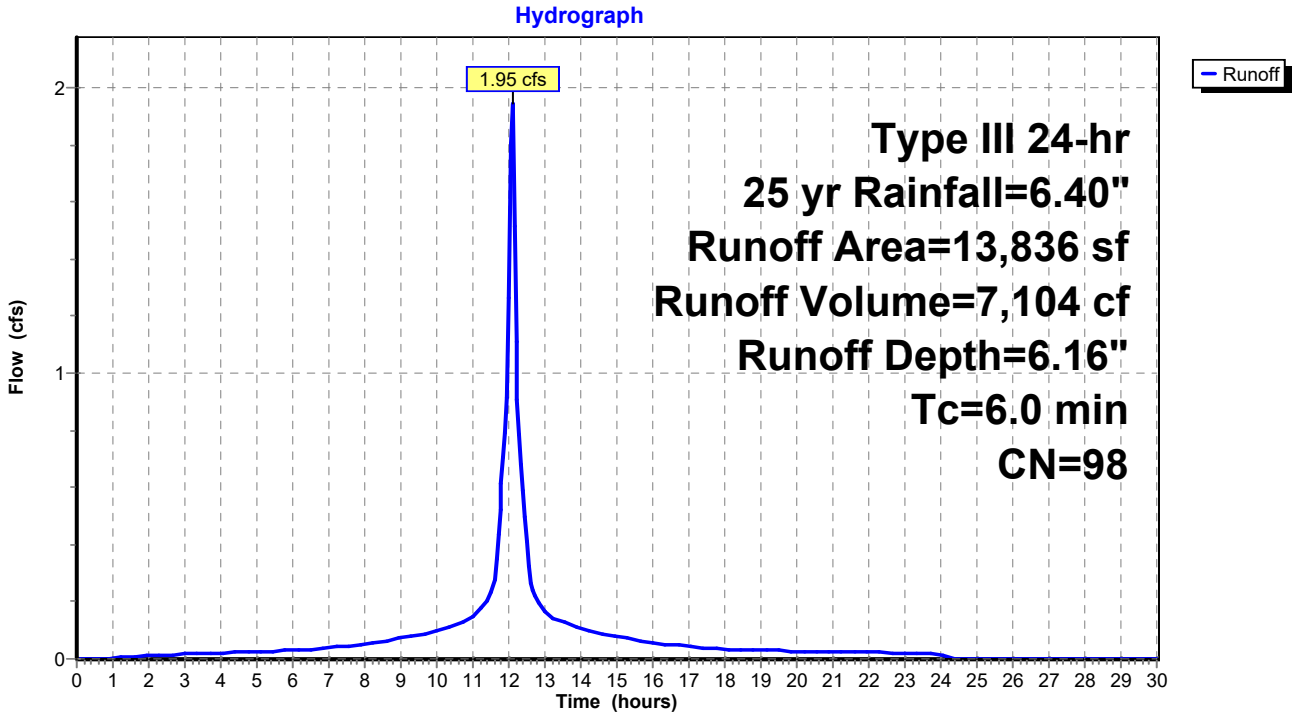
Runoff = 1.95 cfs @ 12.09 hrs, Volume= 7,104 cf, Depth= 6.16"
Routed to Pond DMH1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| Area (sf) | CN | Description |
|---|---|---|
| 13,836 | 98 | Roofs, HSG A |
| 13,836 | | 100.00% Impervious Area |

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

### Subcatchment B1B: Building (L)



## Summary for Subcatchment P1: Back of property to Wetl

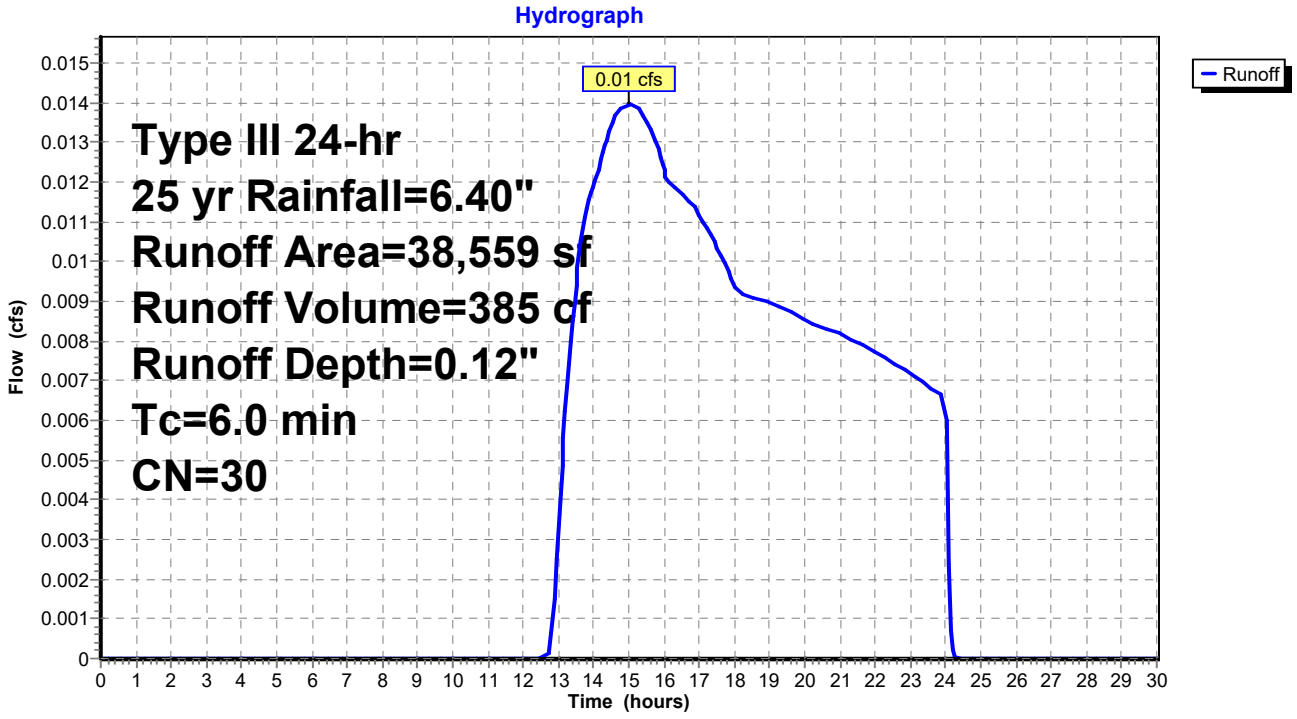
Runoff = 0.01 cfs @ 15.01 hrs, Volume= 385 cf, Depth= 0.12"
Routed to Pond DP2 : Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| Area (sf) | CN | Description |
|---|---|---|
| 19,150 | 30 | Woods, Good, HSG A |
| 19,409 | 30 | Meadow, non-grazed, HSG A |
| 38,559 | 30 | Weighted Average |
| 38,559 | | 100.00% Pervious Area |

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

### Subcatchment P1: Back of property to Wetl



## Summary for Subcatchment P1A: Back Patio

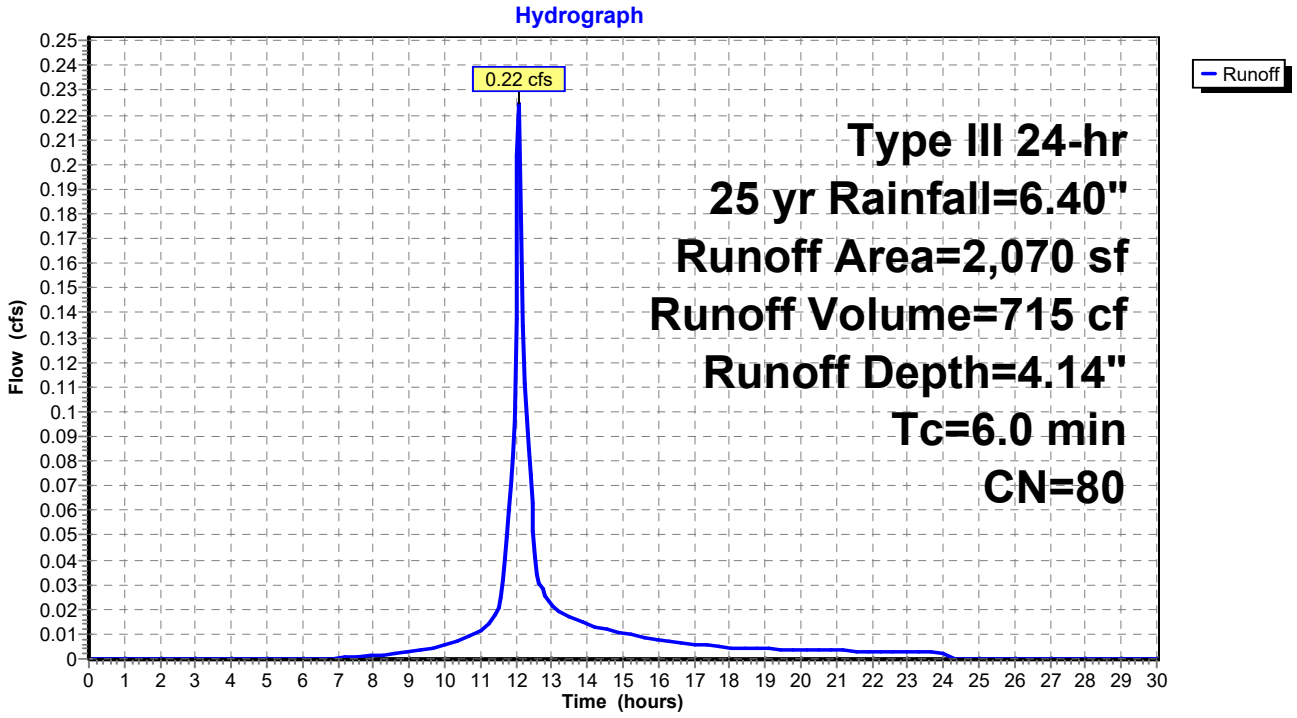
Runoff = 0.22 cfs @ 12.09 hrs, Volume= 715 cf, Depth= 4.14"
Routed to Pond 5P : Permeable Pavers (Back)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,070 | 80 | permeable pavers |
| | 2,070 | | 100.00% Pervious Area |

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

### Subcatchment P1A: Back Patio



## Summary for Subcatchment P1C: Back of property to trench

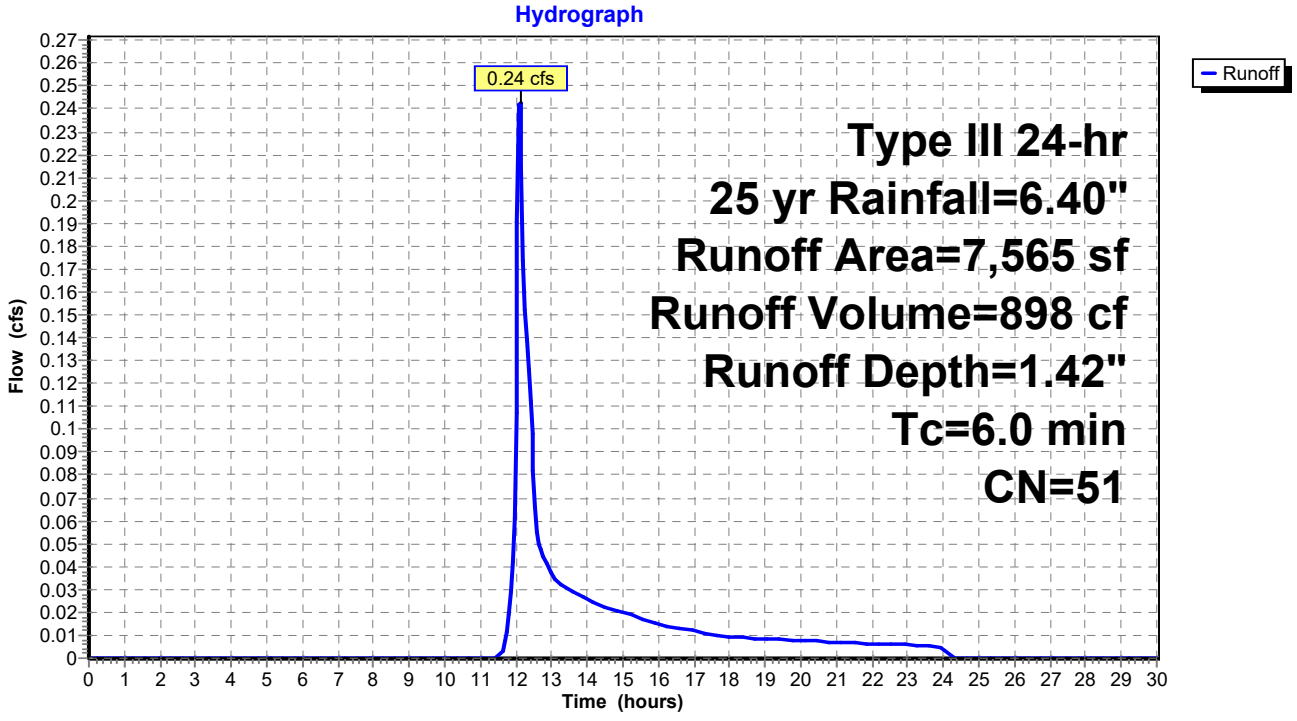
Runoff = 0.24 cfs @ 12.11 hrs, Volume= 898 cf, Depth= 1.42"
Routed to Pond 7P : Stone infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,300 | 98 | CONCRETE |
| | 5,265 | 30 | Meadow, non-grazed, HSG A |
| | 7,565 | 51 | Weighted Average |
| | 5,265 | | 69.60% Pervious Area |
| | 2,300 | | 30.40% Impervious Area |

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

## Subcatchment P1C: Back of property to trench



## Summary for Subcatchment P2A:

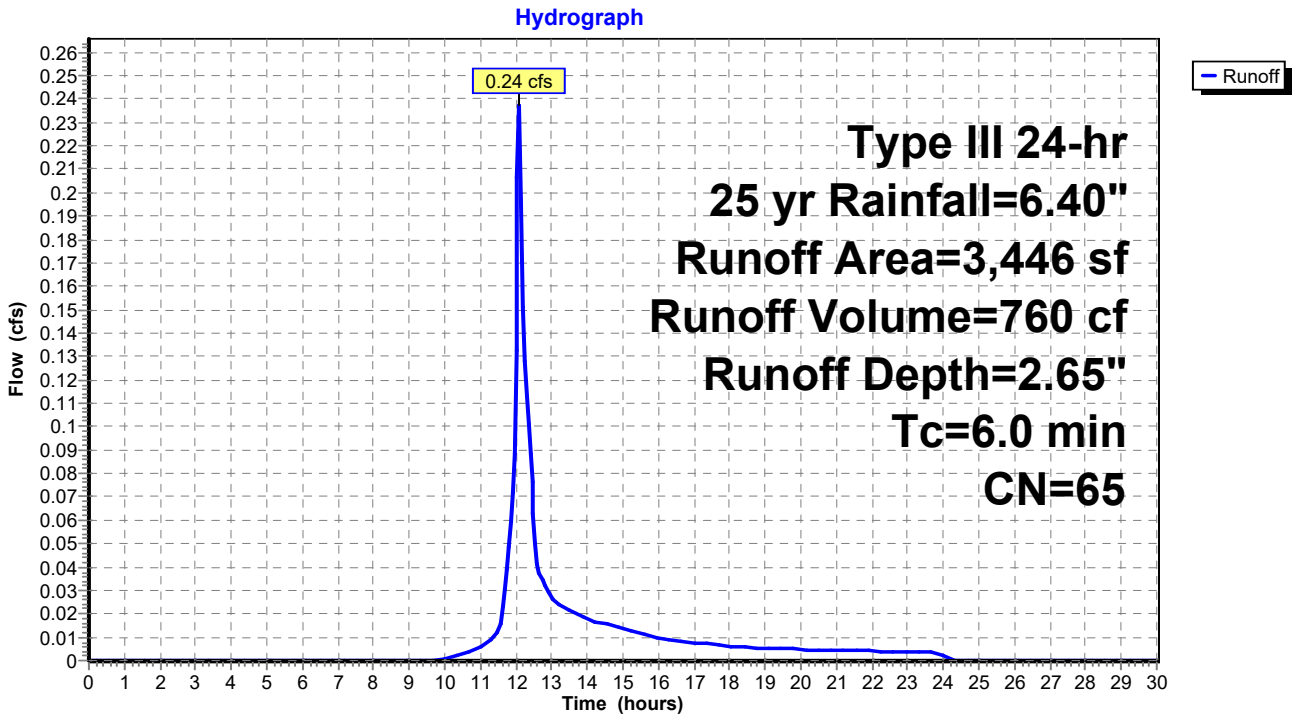
Runoff = 0.24 cfs @ 12.10 hrs, Volume= 760 cf, Depth= 2.65"
Routed to Pond 2P : Pervious Pvmt (North Fire) Bed B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 475 | 98 | CONCRETE |
| * | 1,351 | 96 | permeable pavement |
| | 1,620 | 30 | Meadow, non-grazed, HSG A |
| | 3,446 | 65 | Weighted Average |
| | 2,971 | | 86.22% Pervious Area |
| | 475 | | 13.78% Impervious Area |

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

## Subcatchment P2A:



## Summary for Subcatchment P2B:

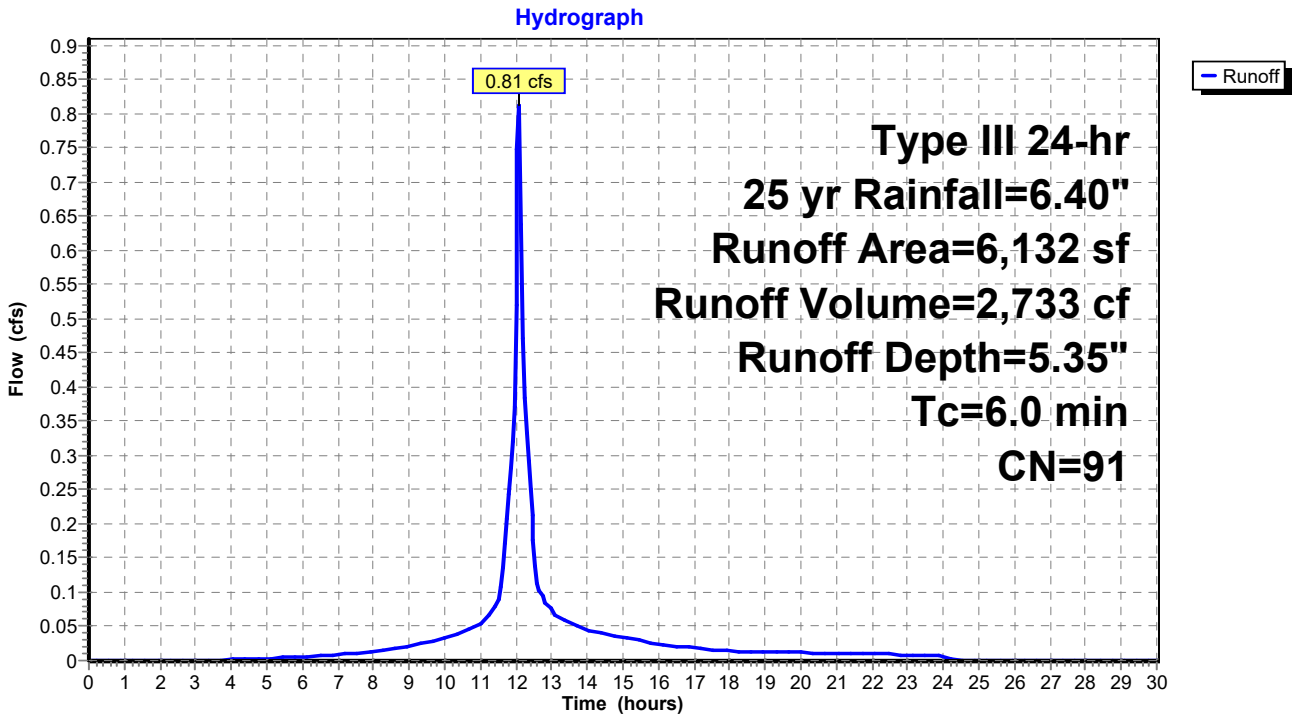
Runoff = 0.81 cfs @ 12.09 hrs, Volume= 2,733 cf, Depth= 5.35"
Routed to Pond 1P : Pervious Pvmt (R Drive) bed 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,675 | 98 | CONCRETE |
| * | 3,929 | 96 | permeable pavement |
| | 528 | 30 | Meadow, non-grazed, HSG A |
| | 6,132 | 91 | Weighted Average |
| | 4,457 | | 72.68% Pervious Area |
| | 1,675 | | 27.32% Impervious Area |

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

## Subcatchment P2B:



## Summary for Subcatchment P3:

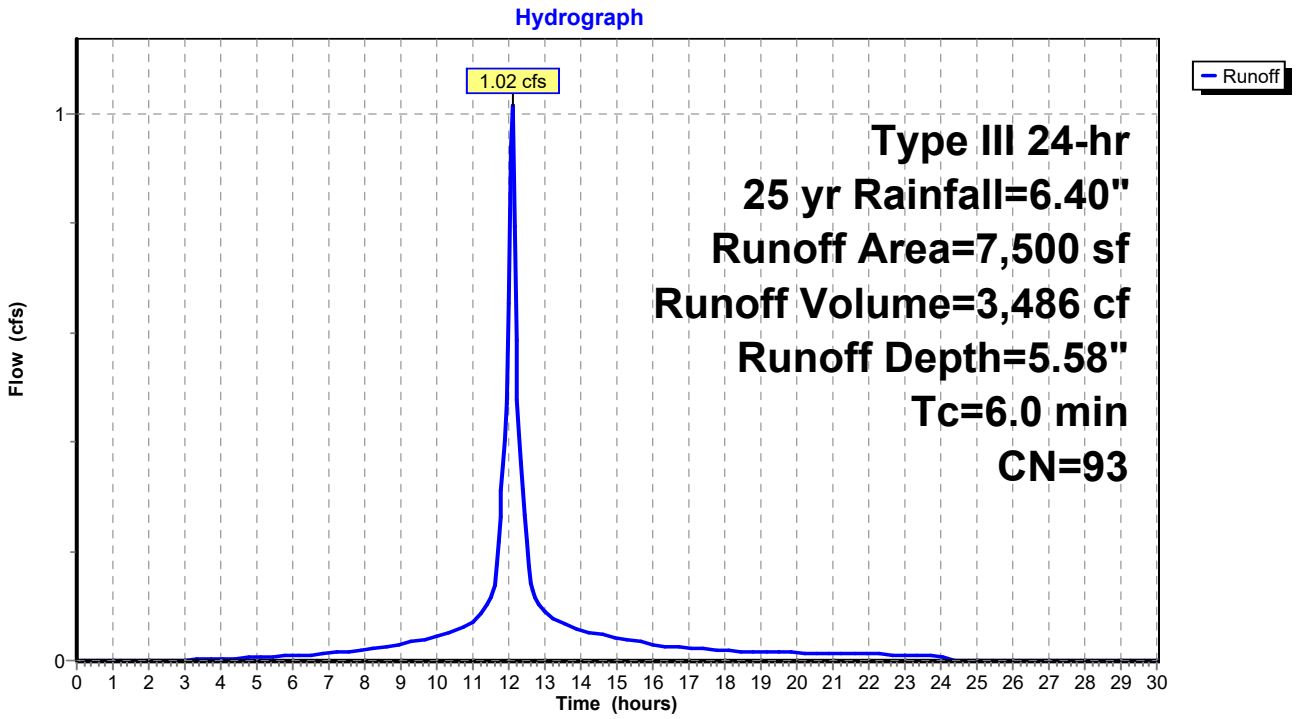
Runoff = 1.02 cfs @ 12.09 hrs, Volume= 3,486 cf, Depth= 5.58"
Routed to Pond CB1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 670 | 98 | CONCRETE |
| | 6,150 | 98 | Paved parking, HSG A |
| | 680 | 39 | >75% Grass cover, Good, HSG A |
| | 7,500 | 93 | Weighted Average |
| | 680 | | 9.07% Pervious Area |
| | 6,820 | | 90.93% Impervious Area |

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

## Subcatchment P3:



## Summary for Subcatchment P4:

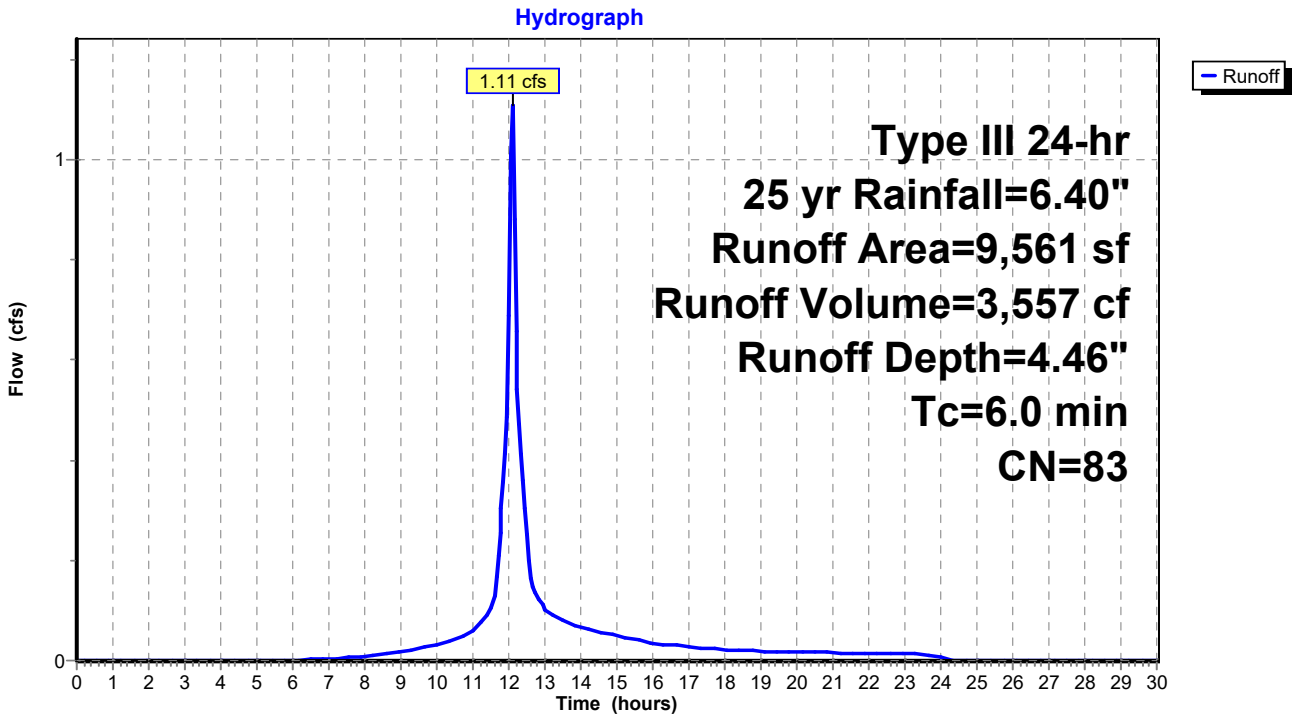
Runoff = 1.11 cfs @ 12.09 hrs, Volume= 3,557 cf, Depth= 4.46"
Routed to Pond CB2,7 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 900 | 98 | CONCRETE |
| | 6,161 | 98 | Paved parking, HSG A |
| | 2,500 | 39 | >75% Grass cover, Good, HSG A |
| | 9,561 | 83 | Weighted Average |
| | 2,500 | | 26.15% Pervious Area |
| | 7,061 | | 73.85% Impervious Area |

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

## Subcatchment P4:



## Summary for Subcatchment P5:

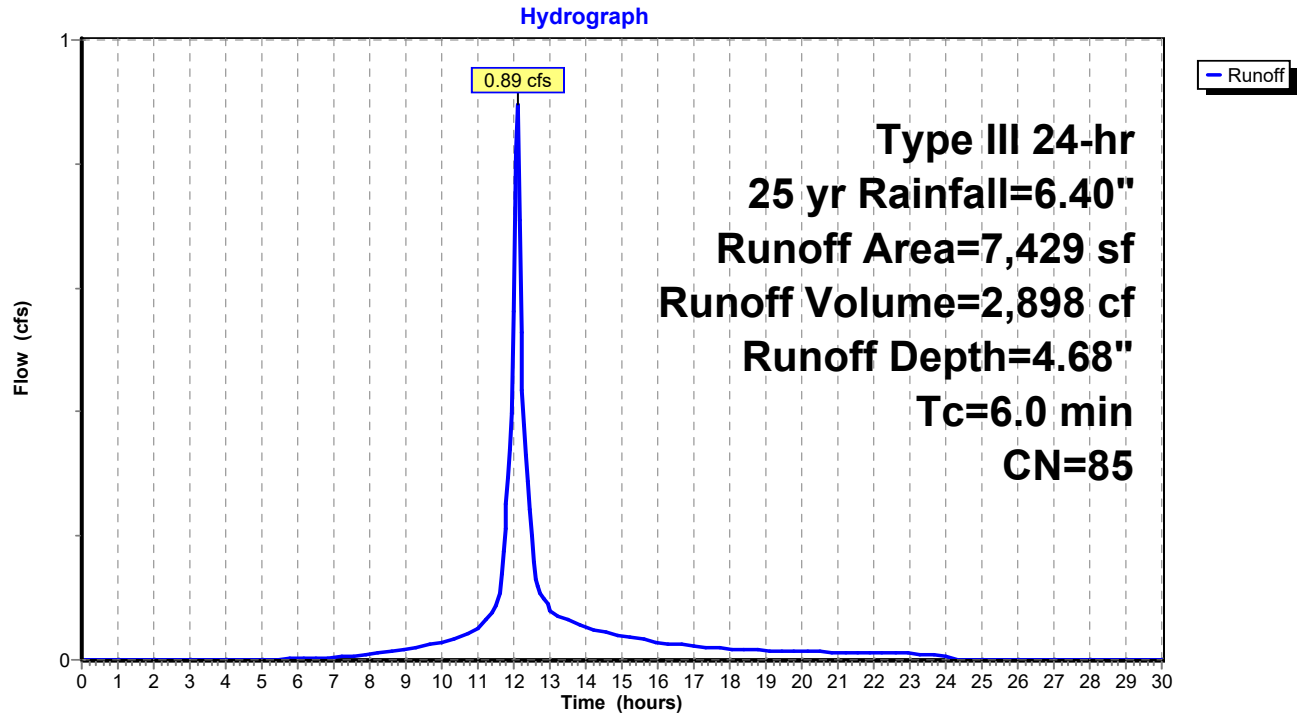
Runoff = 0.89 cfs @ 12.09 hrs, Volume= 2,898 cf, Depth= 4.68"
Routed to Pond CB3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 450 | 98 | CONCRETE |
| | 4,664 | 98 | Paved parking, HSG A |
| | 1,315 | 39 | >75% Grass cover, Good, HSG A |
| * | 1,000 | 80 | permeable pavers |
| | 7,429 | 85 | Weighted Average |
| | 2,315 | | 31.16% Pervious Area |
| | 5,114 | | 68.84% Impervious Area |

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

## Subcatchment P5:



## Summary for Subcatchment P5A: Perm Pavers Front entrance

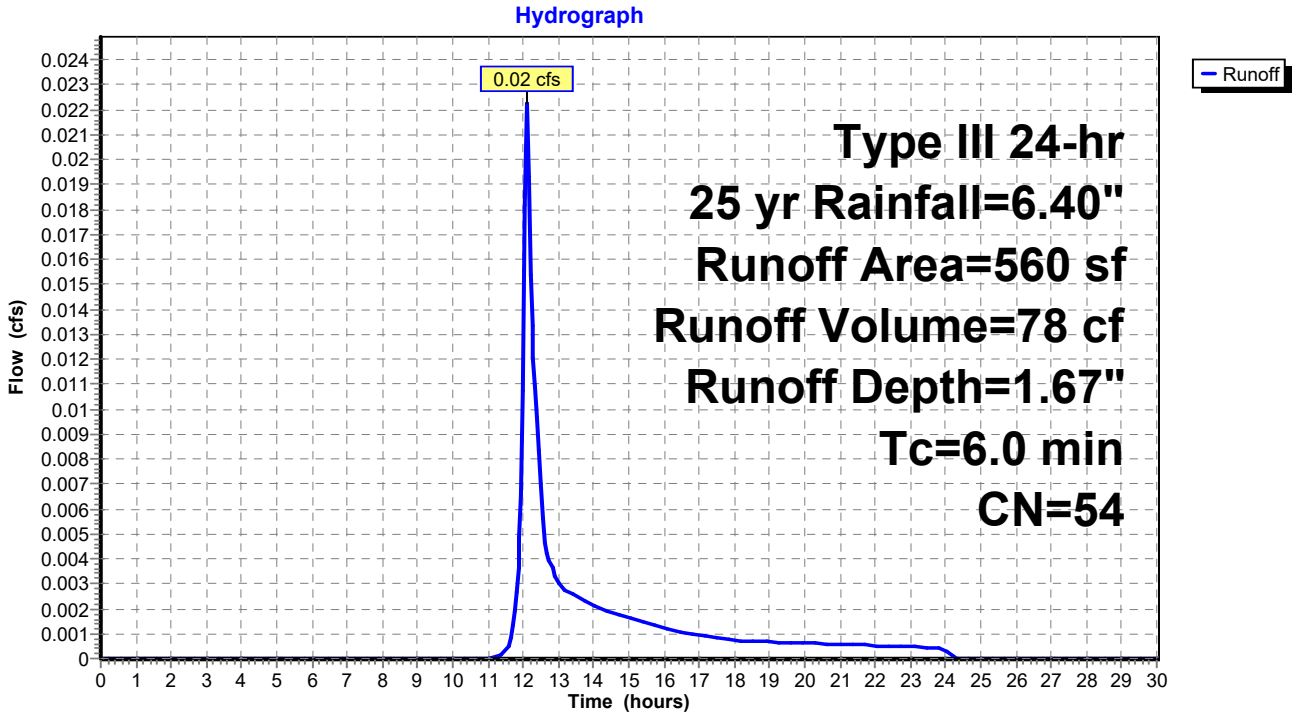
Runoff = 0.02 cfs @ 12.10 hrs, Volume= 78 cf, Depth= 1.67"
Routed to Pond 6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 200 | 80 | permeable pavers |
| | 360 | 39 | >75% Grass cover, Good, HSG A |
| | 560 | 54 | Weighted Average |
| | 560 | | 100.00% Pervious Area |

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

## Subcatchment P5A: Perm Pavers Front entrance



## Summary for Subcatchment P6:

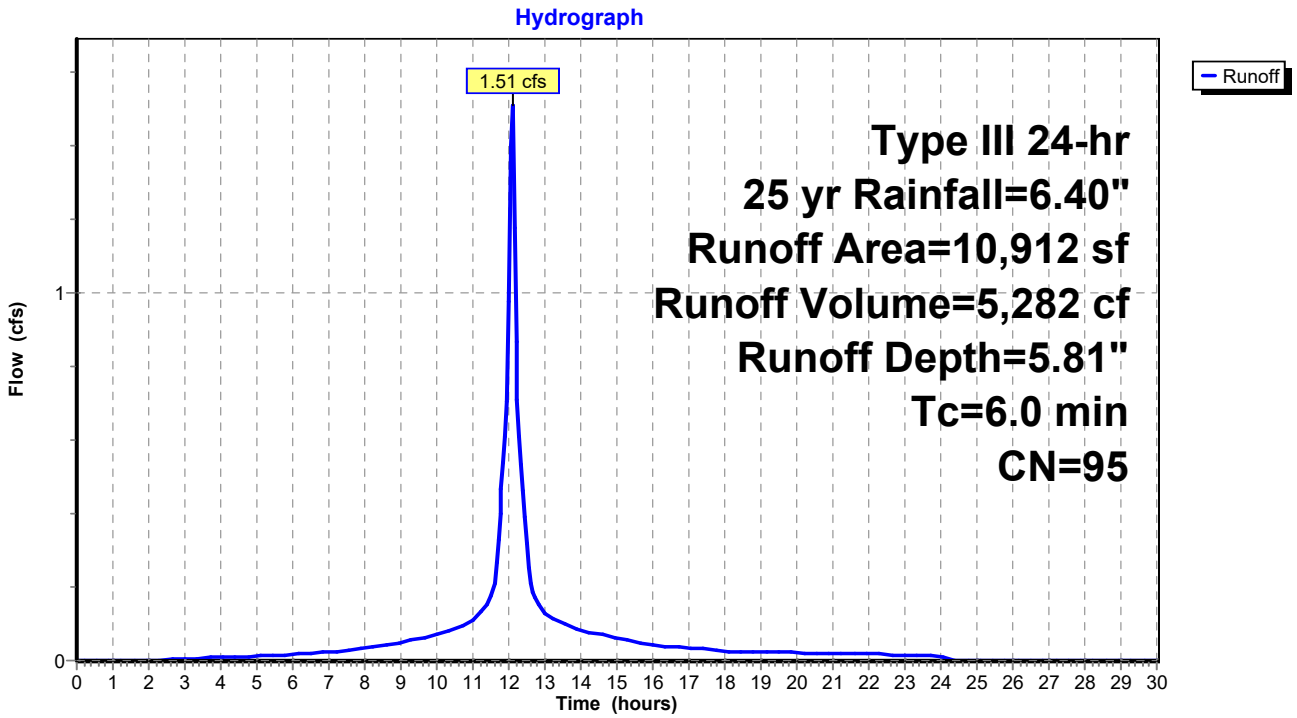
Runoff = 1.51 cfs @ 12.09 hrs, Volume= 5,282 cf, Depth= 5.81"
Routed to Pond CB4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,200 | 98 | CONCRETE |
| | 9,066 | 98 | Paved parking, HSG A |
| | 646 | 39 | >75% Grass cover, Good, HSG A |
| | 10,912 | 95 | Weighted Average |
| | 646 | | 5.92% Pervious Area |
| | 10,266 | | 94.08% Impervious Area |

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

## Subcatchment P6:



## Summary for Subcatchment P7:

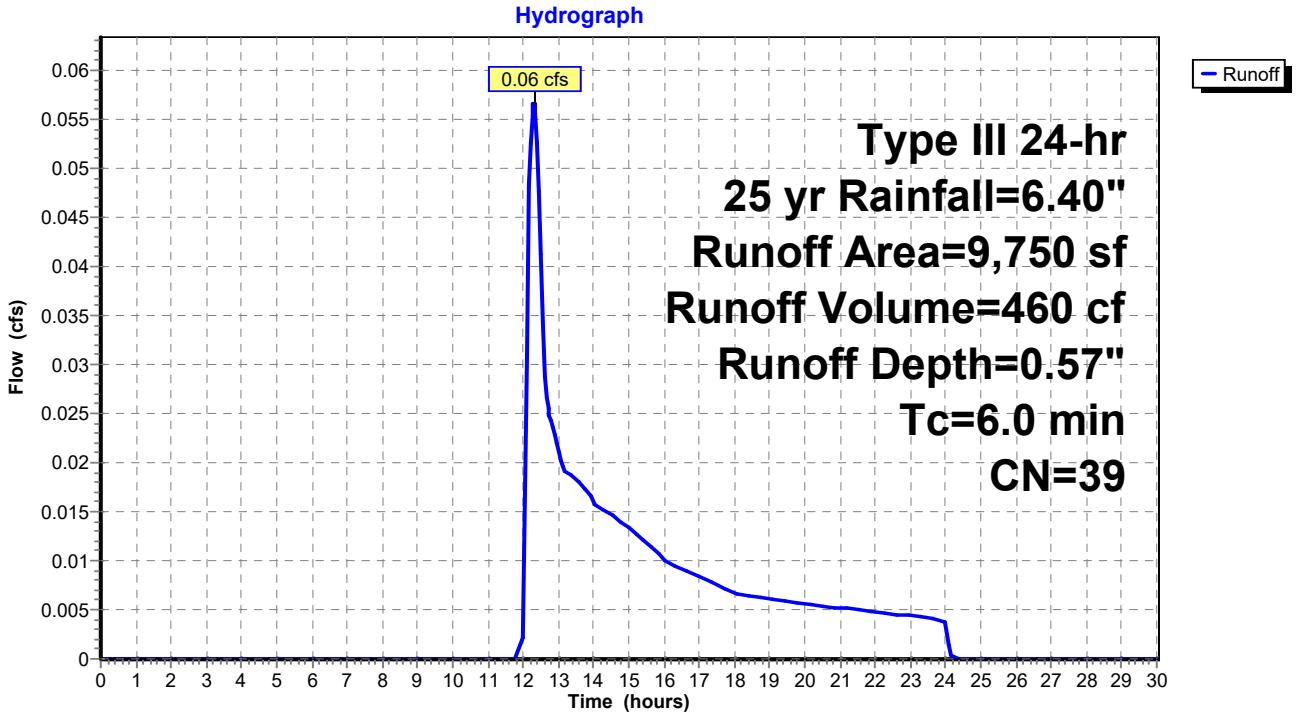
Runoff = 0.06 cfs @ 12.30 hrs, Volume= 460 cf, Depth= 0.57"
Routed to Pond CB5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| Area (sf) | CN | Description |
|---|---|---|
| 9,750 | 39 | >75% Grass cover, Good, HSG A |
| 9,750 | | 100.00% Pervious Area |

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

## Subcatchment P7:



## Summary for Subcatchment P8:

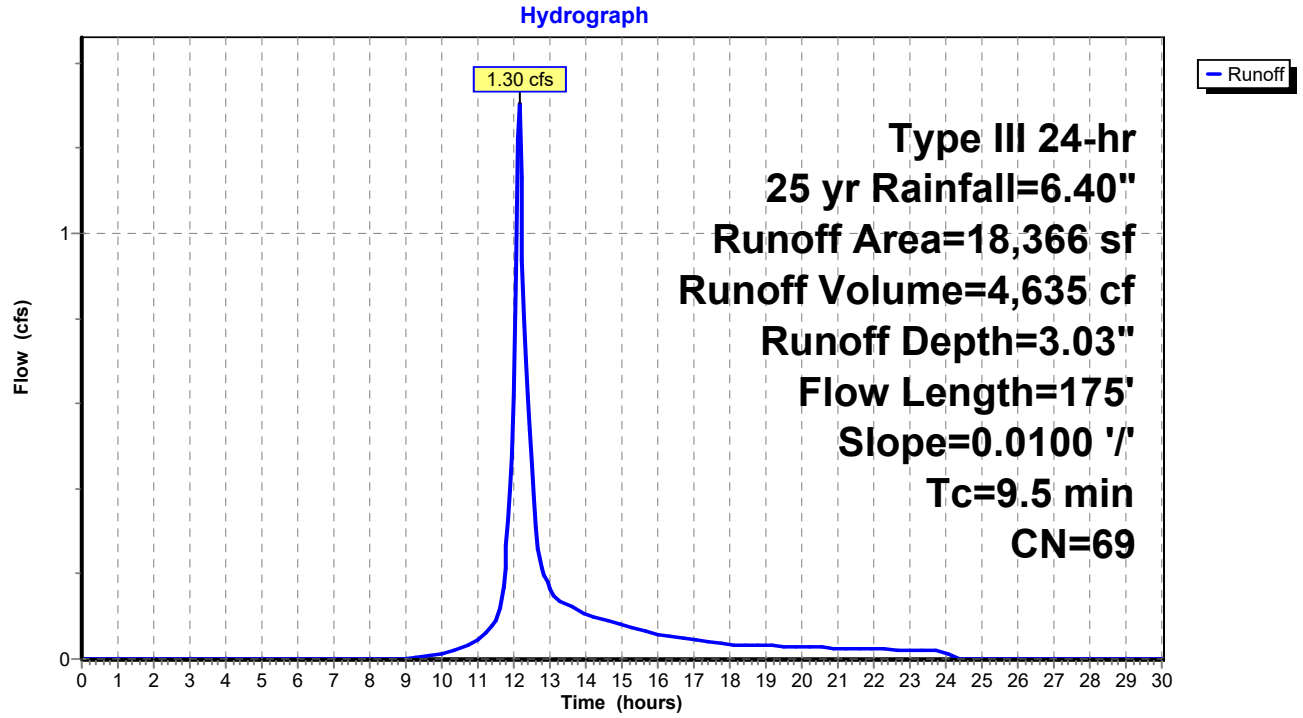
Runoff = 1.30 cfs @ 12.14 hrs, Volume= 4,635 cf, Depth= 3.03"
Routed to Pond 4P : Pervious Pvmt (South Fire Lane)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,020 | 98 | CONCRETE |
| * | 4,666 | 96 | permeable pavement |
| | 7,280 | 39 | >75% Grass cover, Good, HSG A |
| | 5,400 | 80 | >75% Grass cover, Good, HSG D |
| | 18,366 | 69 | Weighted Average |
| | 17,346 | | 94.45% Pervious Area |
| | 1,020 | | 5.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 50 | 0.0100 | 0.11 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.30" |
| 0.6 | 25 | 0.0100 | 0.70 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.6 | 100 | 0.0100 | 1.06 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30" |
| 9.5 | 175 | Total | | | |

## Subcatchment P8:



## Summary for Subcatchment P9:

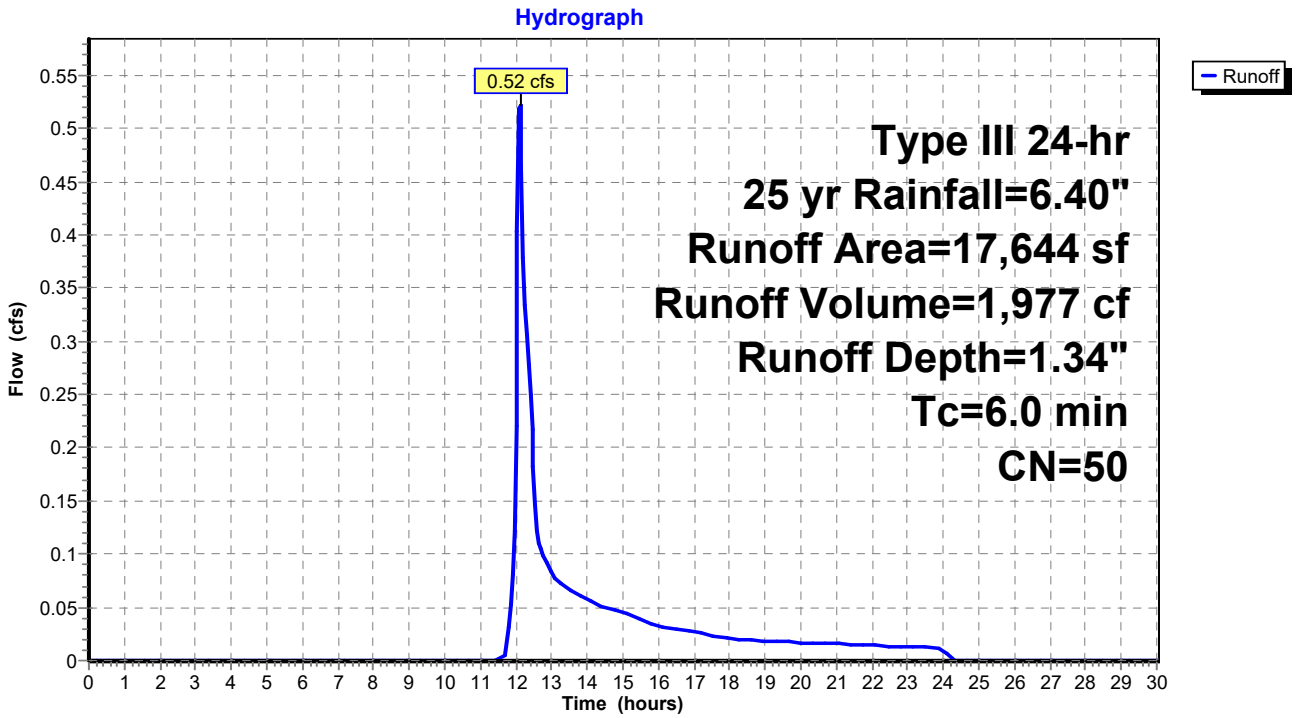
Runoff = 0.52 cfs @ 12.11 hrs, Volume= 1,977 cf, Depth= 1.34"
Routed to Pond DP1 : Drainage Network

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,850 | 98 | CONCRETE |
| | 350 | 98 | Paved parking, HSG A |
| | 14,444 | 39 | >75% Grass cover, Good, HSG A |
| | 17,644 | 50 | Weighted Average |
| | 14,444 | | 81.86% Pervious Area |
| | 3,200 | | 18.14% Impervious Area |

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

## Subcatchment P9:



## Summary for Pond 1P: Pervious Pvmt (R Drive) bed 'C'

Inflow Area = 6,132 sf, 27.32% Impervious, Inflow Depth = 5.35" for 25 yr event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 2,733 cf
Outflow = 0.65 cfs @ 12.15 hrs, Volume= 2,751 cf, Atten= 20%, Lag= 3.6 min
Discarded = 0.64 cfs @ 12.15 hrs, Volume= 2,745 cf
Primary = 0.02 cfs @ 12.15 hrs, Volume= 6 cf
Routed to Pond 2P : Pervious Pvmt (North Fire) Bed B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.05' @ 12.15 hrs Surf.Area= 3,280 sf Storage= 50 cf
Flood Elev= 144.33' Surf.Area= 3,280 sf Storage= 2,071 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min ( 779.6 - 779.1 )

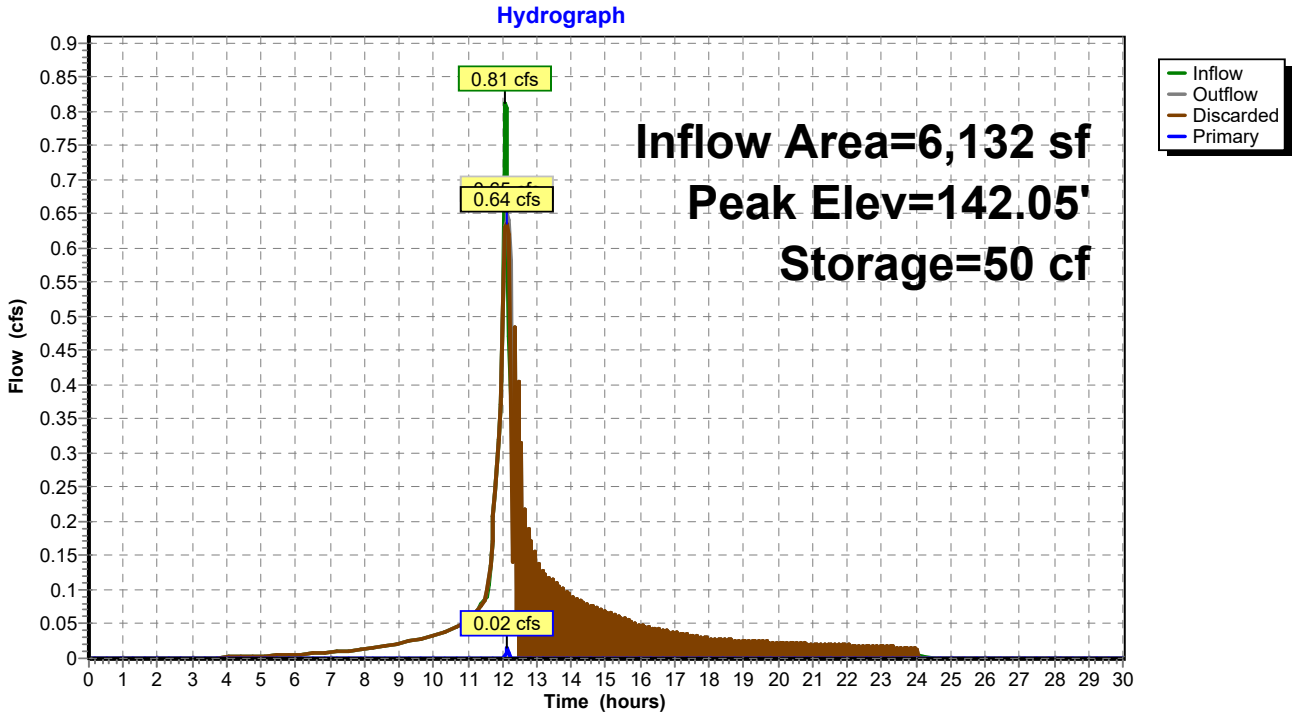
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 142.00' | 2,036 cf | **20.00'W x 164.00'L x 2.08'H Prismatoid**<br>6,822 cf Overall - 35 cf Embedded = 6,787 cf x 30.0% Voids |
| #2 | 142.00' | 35 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 180.0' |
| | | 2,071 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 144.08' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 142.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 142.00' | **6.0" Round Culvert X 2.00** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.00' / 141.50' S= 0.1000 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

**Discarded OutFlow** Max=0.64 cfs @ 12.15 hrs HW=142.05' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.64 cfs)

**Primary OutFlow** Max=0.01 cfs @ 12.15 hrs HW=142.05' TW=141.61' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.01 cfs @ 0.75 fps)

## Pond 1P: Pervious Pvmt (R Drive) bed 'C'



## Summary for Pond 2P: Pervious Pvmt (North Fire) Bed B

Inflow Area = 9,578 sf, 22.45% Impervious, Inflow Depth = 0.96" for 25 yr event
Inflow = 0.25 cfs @ 12.10 hrs, Volume= 765 cf
Outflow = 0.21 cfs @ 12.16 hrs, Volume= 766 cf, Atten= 14%, Lag= 3.4 min
Discarded = 0.14 cfs @ 12.16 hrs, Volume= 727 cf
Primary = 0.07 cfs @ 12.16 hrs, Volume= 39 cf
Routed to Pond 3P : Pervious Pvmt (North Fire) Bed 'A'

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 141.61' @ 12.16 hrs Surf.Area= 700 sf Storage= 25 cf
Flood Elev= 143.50' Surf.Area= 700 sf Storage= 430 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min ( 846.4 - 845.8 )

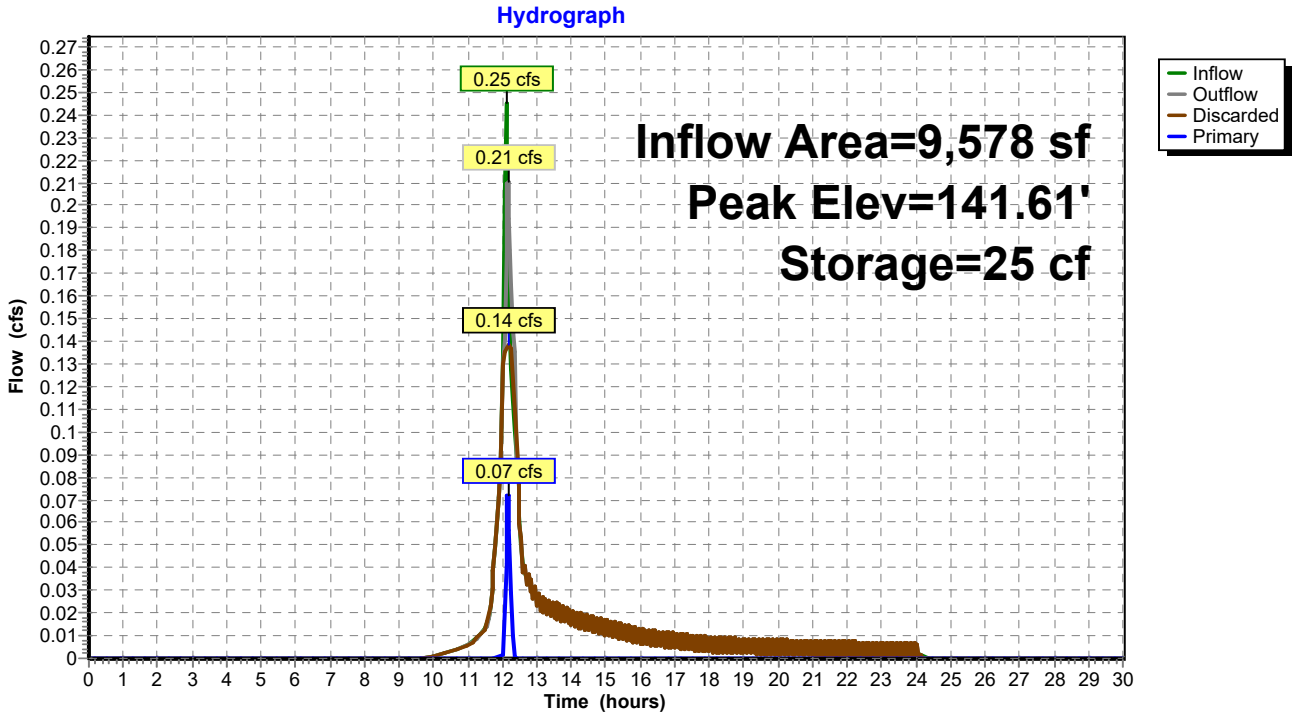
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 141.50' | 432 cf | **20.00'W x 35.00'L x 2.08'H Prismatoid**<br>1,456 cf Overall - 15 cf Embedded = 1,441 cf x 30.0% Voids |
| #2 | 141.50' | 15 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 75.0' |
| | | 447 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 143.58' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 141.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 141.50' | **6.0" Round Culvert X 2.00** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 141.00' S= 0.1000 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

**Discarded OutFlow** Max=0.14 cfs @ 12.16 hrs HW=141.61' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.14 cfs)

**Primary OutFlow** Max=0.07 cfs @ 12.16 hrs HW=141.61' TW=141.00' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.07 cfs @ 1.12 fps)

## Pond 2P: Pervious Pvmt (North Fire) Bed B



## Summary for Pond 3P: Pervious Pvmt (North Fire) Bed 'A'

Inflow Area = 9,578 sf, 22.45% Impervious, Inflow Depth = 0.05" for 25 yr event
Inflow = 0.07 cfs @ 12.16 hrs, Volume= 39 cf
Outflow = 0.07 cfs @ 12.16 hrs, Volume= 39 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.07 cfs @ 12.16 hrs, Volume= 39 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 141.00' @ 0.00 hrs Surf.Area= 1,200 sf Storage= 0 cf
Flood Elev= 143.50' Surf.Area= 1,200 sf Storage= 759 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 730.3 - 730.3 )

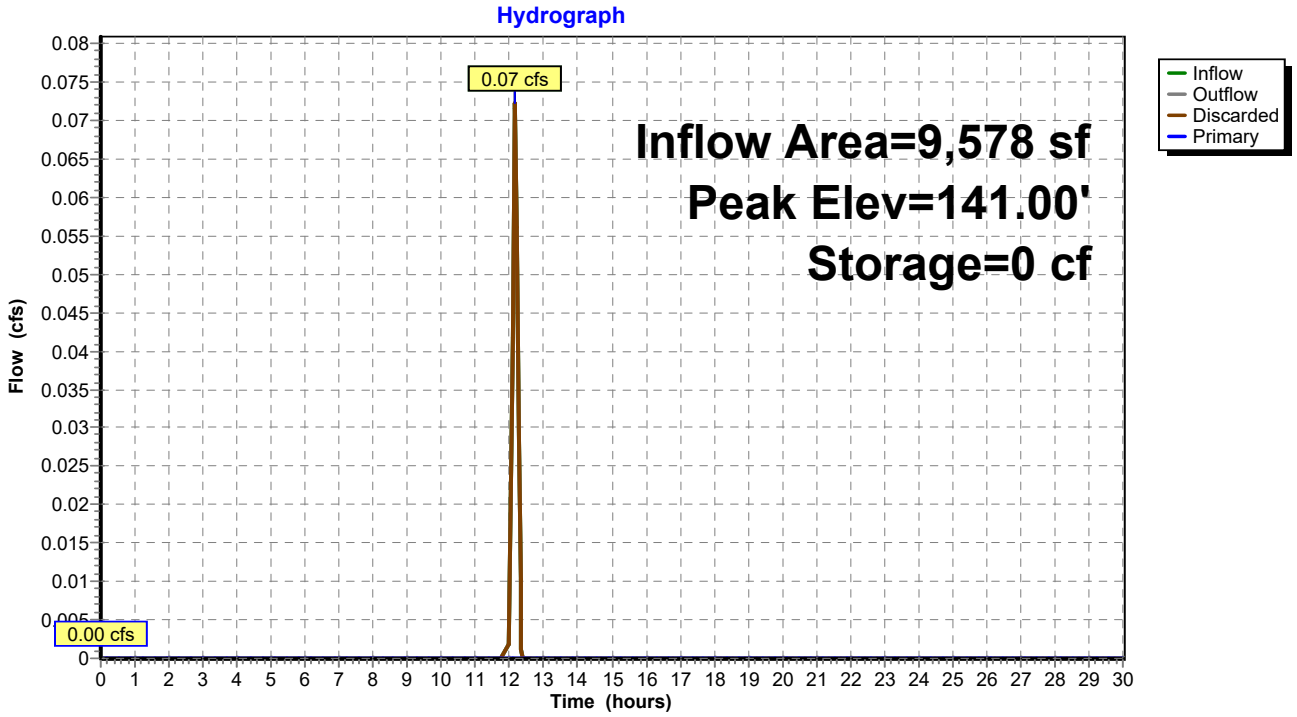
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 141.00' | 744 cf | **20.00'W x 60.00'L x 2.08'H Prismatoid**<br>2,496 cf Overall - 15 cf Embedded = 2,481 cf x 30.0% Voids |
| #2 | 141.00' | 15 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 75.0' |
| | | 759 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 143.08' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 141.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 141.50' | **12.0" Round Culvert** L= 25.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 141.00' S= 0.0200 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |
| #3 | Device 2 | 143.30' | **12.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.00 cfs @ 12.16 hrs HW=141.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.23 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=141.00' TW=141.00' (Dynamic Tailwater)
└**2=Culvert** ( Controls 0.00 cfs)
└**3=Orifice/Grate** ( Controls 0.00 cfs)

## Pond 3P: Pervious Pvmt (North Fire) Bed 'A'



## Summary for Pond 4P: Pervious Pvmt (South Fire Lane)

Inflow Area = 18,366 sf, 5.55% Impervious, Inflow Depth = 3.03" for 25 yr event
Inflow = 1.30 cfs @ 12.14 hrs, Volume= 4,635 cf
Outflow = 1.19 cfs @ 12.20 hrs, Volume= 4,612 cf, Atten= 9%, Lag= 3.6 min
Discarded = 0.86 cfs @ 12.19 hrs, Volume= 1,430 cf
Primary = 0.33 cfs @ 12.23 hrs, Volume= 3,182 cf
Routed to Pond DMH1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.86' @ 12.19 hrs Surf.Area= 4,660 sf Storage= 537 cf
Flood Elev= 145.50' Surf.Area= 4,660 sf Storage= 2,837 cf

Plug-Flow detention time= 33.8 min calculated for 4,612 cf (100% of inflow)
Center-of-Mass det. time= 30.8 min ( 871.4 - 840.6 )

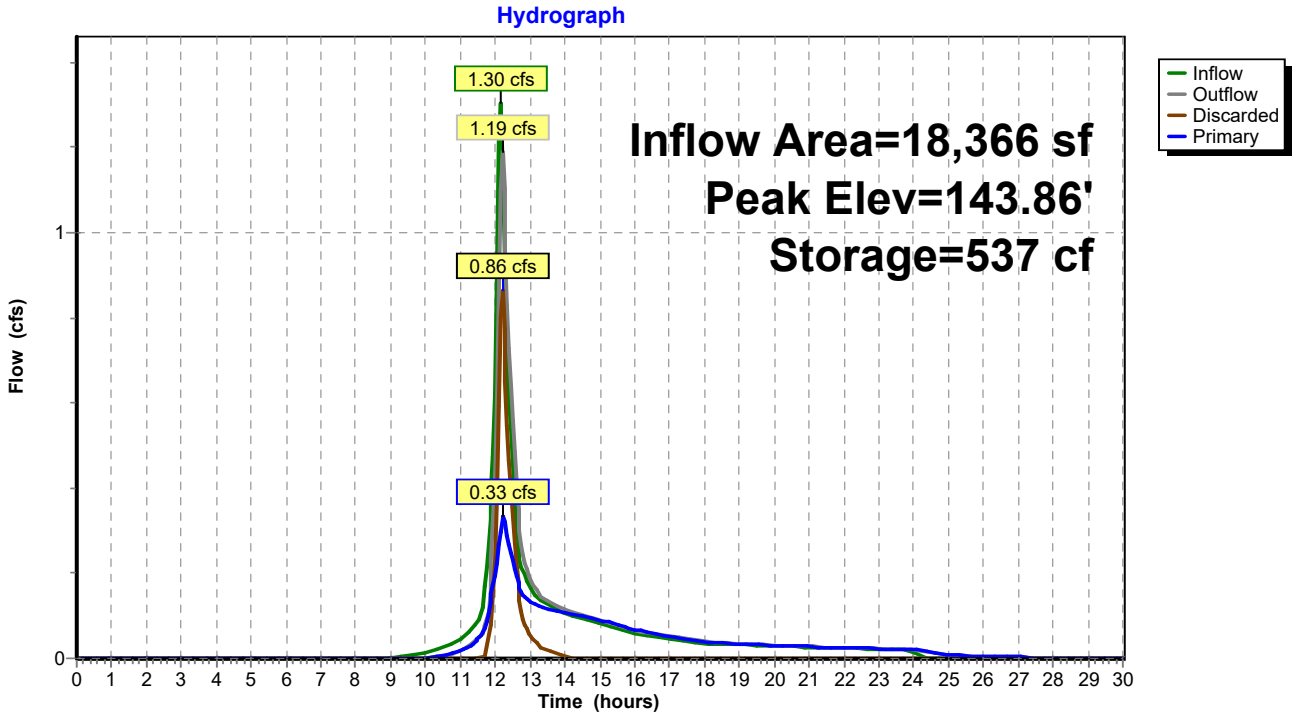
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 143.50' | 2,890 cf | **20.00'W x 233.00'L x 2.08'H Prismatoid**<br>9,693 cf Overall - 59 cf Embedded = 9,634 cf x 30.0% Voids |
| #2 | 143.50' | 59 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 300.0' |
| | | 2,949 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 145.58' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 143.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 141.50' |
| #2 | Primary | 143.50' | **12.0" Round Culvert** L= 170.0' Ke= 0.500<br>Inlet / Outlet Invert= 143.50' / 141.90' S= 0.0094 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |
| #3 | Device 1 | 143.67' | **12.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.85 cfs @ 12.19 hrs HW=143.86' (Free Discharge)
↑**1=Exfiltration** (Passes 0.85 cfs of 1.05 cfs potential flow)
↑**3=Orifice/Grate** (Weir Controls 0.85 cfs @ 1.43 fps)

**Primary OutFlow** Max=0.35 cfs @ 12.23 hrs HW=143.85' TW=143.03' (Dynamic Tailwater)
↑**2=Culvert** (Outlet Controls 0.35 cfs @ 2.13 fps)

## Pond 4P: Pervious Pvmt (South Fire Lane)



## Summary for Pond 5P: Permeable Pavers (Back)

Inflow Area = 2,070 sf, 0.00% Impervious, Inflow Depth = 4.14" for 25 yr event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 715 cf
Outflow = 0.22 cfs @ 12.09 hrs, Volume= 715 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.22 cfs @ 12.09 hrs, Volume= 715 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP2 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 144.00' @ 12.10 hrs Surf.Area= 1,720 sf Storage= 0 cf
Flood Elev= 145.50' Surf.Area= 1,720 sf Storage= 516 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 811.5 - 811.5 )

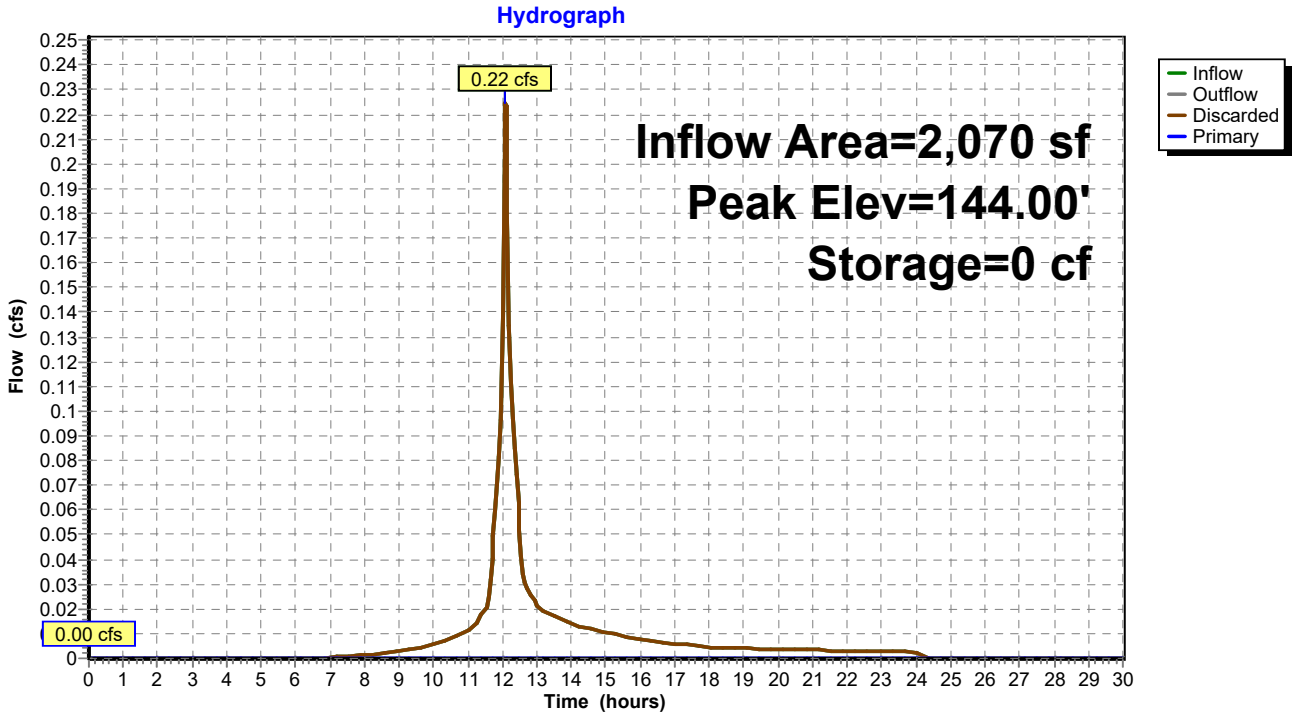
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 144.00' | 516 cf | **20.00'W x 86.00'L x 1.00'H Prismatoid**<br>1,720 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 145.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 144.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |

**Discarded OutFlow** Max=0.33 cfs @ 12.09 hrs HW=144.00' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.33 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)

## Pond 5P: Permeable Pavers (Back)



## Summary for Pond 6P:

Inflow Area = 560 sf, 0.00% Impervious, Inflow Depth = 1.67" for 25 yr event
Inflow = 0.02 cfs @ 12.10 hrs, Volume= 78 cf
Outflow = 0.02 cfs @ 12.10 hrs, Volume= 78 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.02 cfs @ 12.10 hrs, Volume= 78 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.00' @ 0.00 hrs Surf.Area= 400 sf Storage= 0 cf
Flood Elev= 145.00' Surf.Area= 400 sf Storage= 120 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 875.3 - 875.3 )

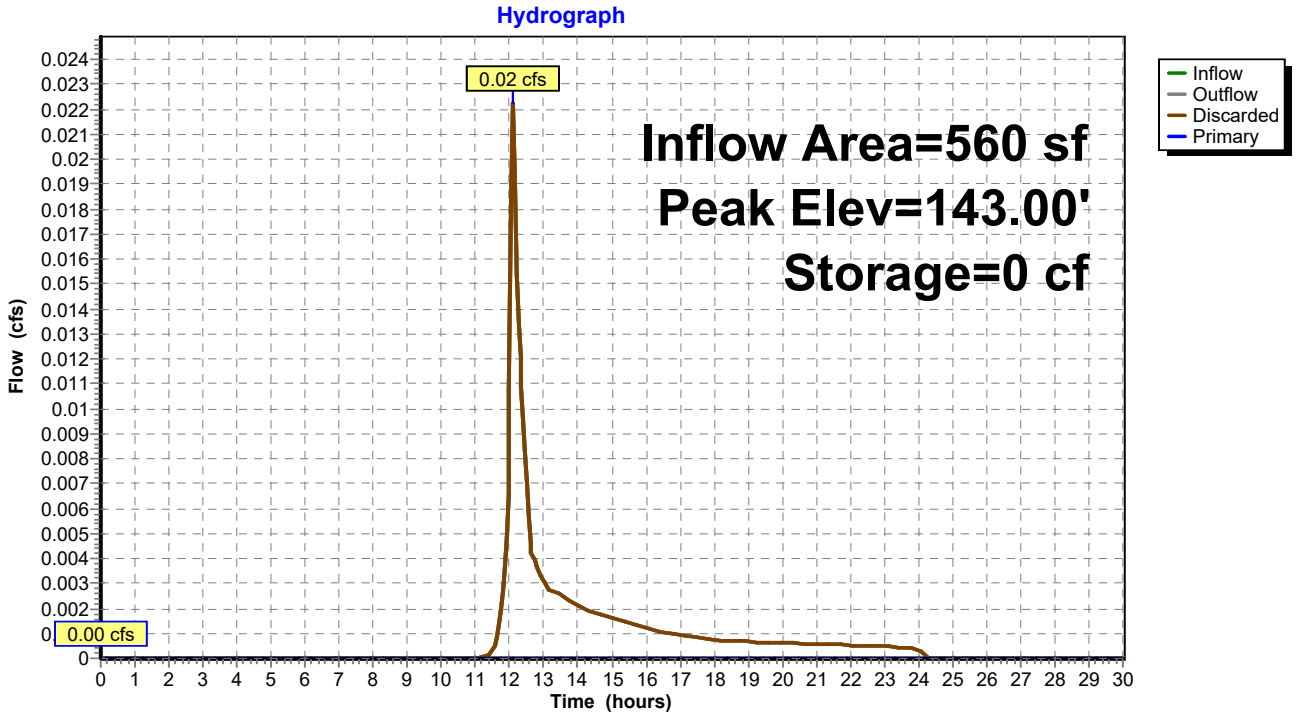
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 143.00' | 120 cf | **20.00'W x 20.00'L x 1.00'H Prismatoid**<br>400 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 144.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 143.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |

**Discarded OutFlow** Max=0.00 cfs @ 12.10 hrs HW=143.00' (Free Discharge)
↑—**1=Exfiltration** (Passes 0.00 cfs of 0.08 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=0.00' (Dynamic Tailwater)

## Pond 6P:


Hydrograph
Inflow Area=560 sf
Peak Elev=143.00'
Storage=0 cf
0.02 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

## Summary for Pond 7P: Stone infiltration Trench

Inflow Area = 7,565 sf, 30.40% Impervious, Inflow Depth = 1.42" for 25 yr event
Inflow = 0.24 cfs @ 12.11 hrs, Volume= 898 cf
Outflow = 0.11 cfs @ 12.42 hrs, Volume= 899 cf, Atten= 56%, Lag= 18.6 min
Discarded = 0.11 cfs @ 12.42 hrs, Volume= 899 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP2 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 144.63' @ 12.42 hrs Surf.Area= 500 sf Storage= 95 cf
Flood Elev= 145.00' Surf.Area= 500 sf Storage= 150 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.3 min ( 889.2 - 884.9 )

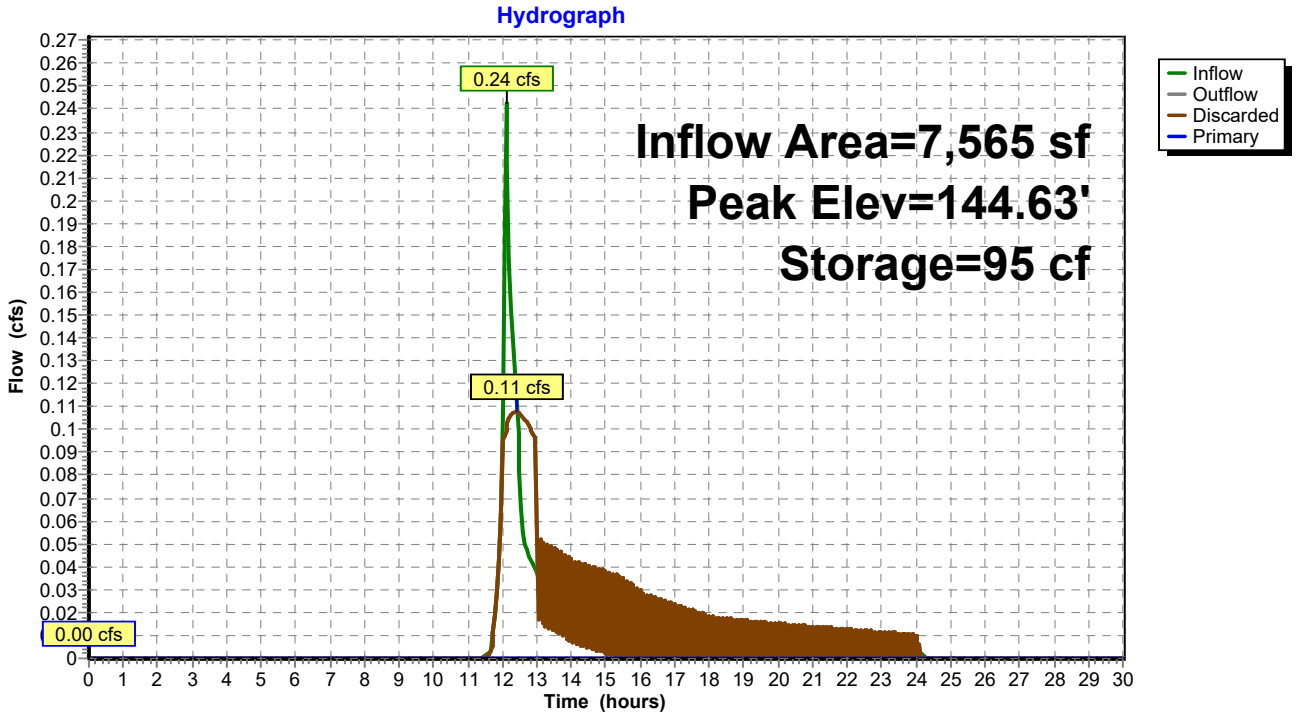
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 144.00' | 300 cf | **1.00'W x 500.00'L x 2.00'H Prismatoid**<br>1,000 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 146.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 144.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |
| #2 | Primary | 145.00' | **500.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |

**Discarded OutFlow** Max=0.11 cfs @ 12.42 hrs HW=144.63' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.11 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 7P: Stone infiltration Trench



## Summary for Pond CB1:

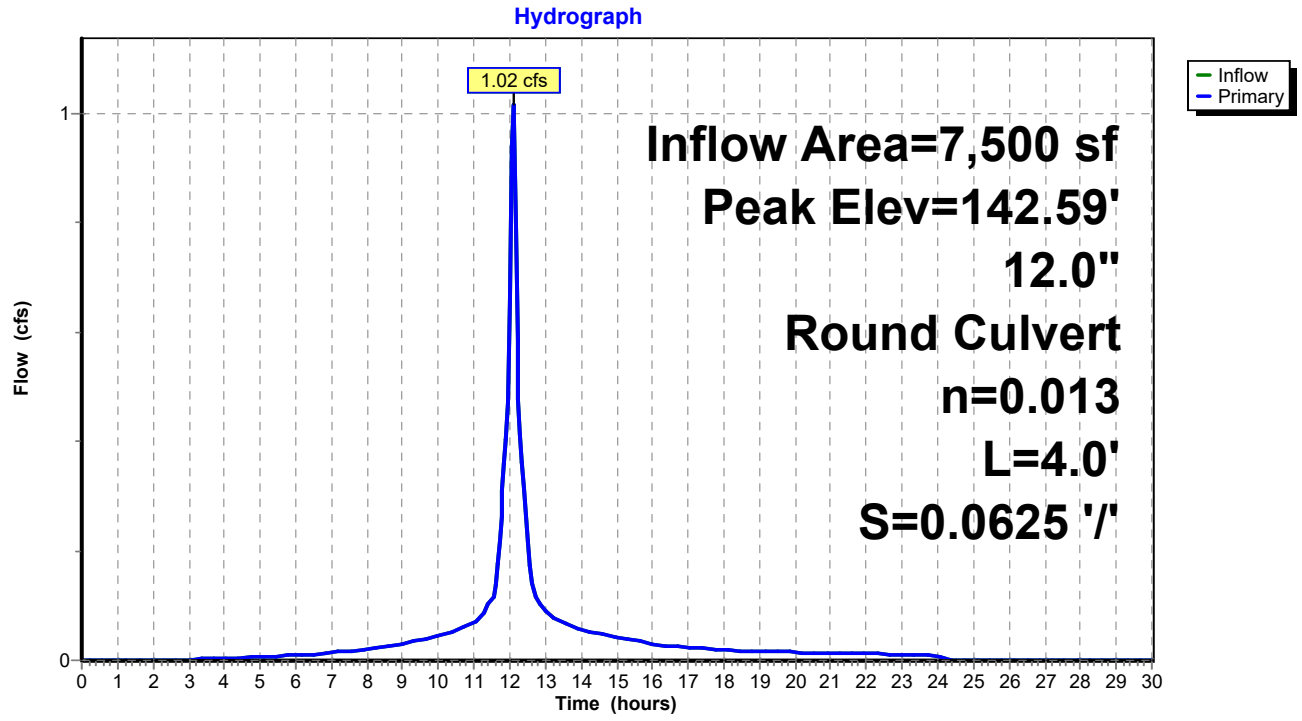
Inflow Area = 7,500 sf, 90.93% Impervious, Inflow Depth = 5.58" for 25 yr event
Inflow = 1.02 cfs @ 12.09 hrs, Volume= 3,486 cf
Outflow = 1.02 cfs @ 12.09 hrs, Volume= 3,486 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.02 cfs @ 12.09 hrs, Volume= 3,486 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.59' @ 12.42 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.25' | **12.0" Round Culvert** L= 4.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.25' / 141.00' S= 0.0625 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.43 cfs @ 12.09 hrs HW=141.80' TW=141.75' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 0.43 cfs @ 1.40 fps)

## Pond CB1:



## Summary for Pond CB2,7:

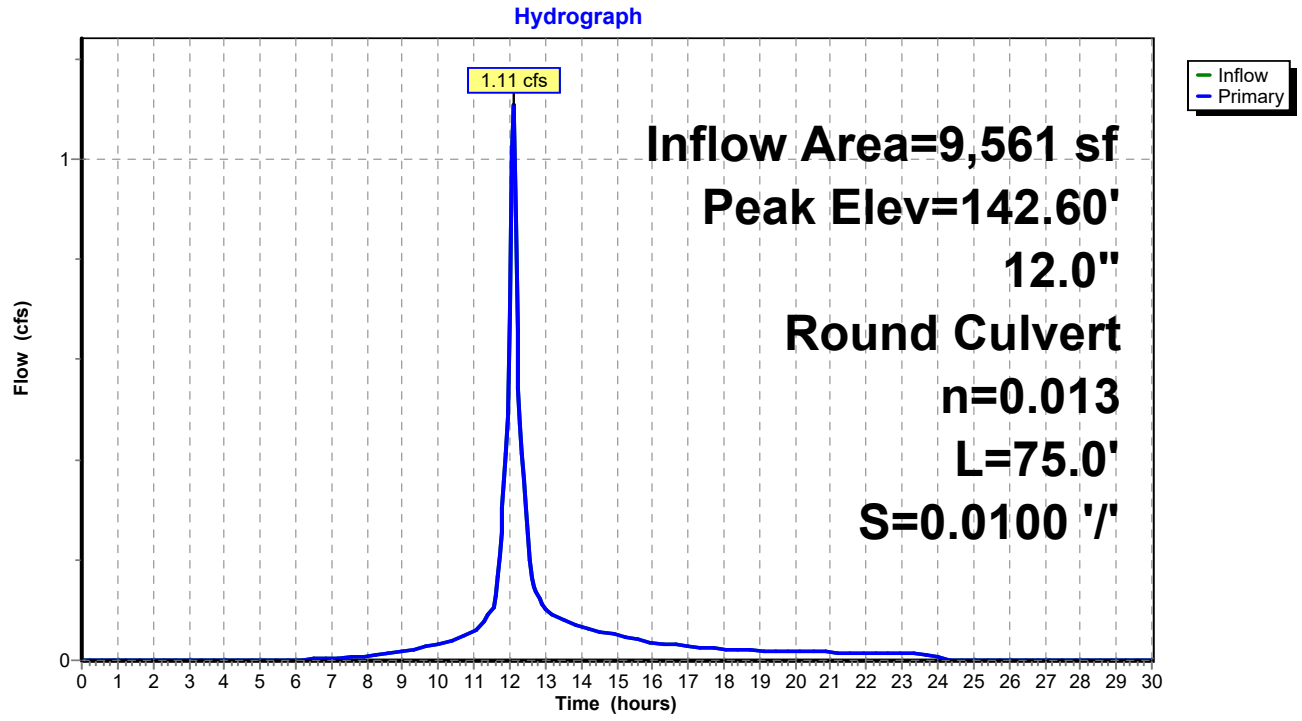
Inflow Area = 9,561 sf, 73.85% Impervious, Inflow Depth = 4.46" for 25 yr event
Inflow = 1.11 cfs @ 12.09 hrs, Volume= 3,557 cf
Outflow = 1.11 cfs @ 12.09 hrs, Volume= 3,557 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.11 cfs @ 12.09 hrs, Volume= 3,557 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.60' @ 12.41 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.75' | **12.0" Round Culvert** L= 75.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.75' / 141.00' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.91 cfs @ 12.09 hrs HW=142.31' TW=141.76' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 0.91 cfs @ 2.88 fps)

## Pond CB2,7:



## Summary for Pond CB3:

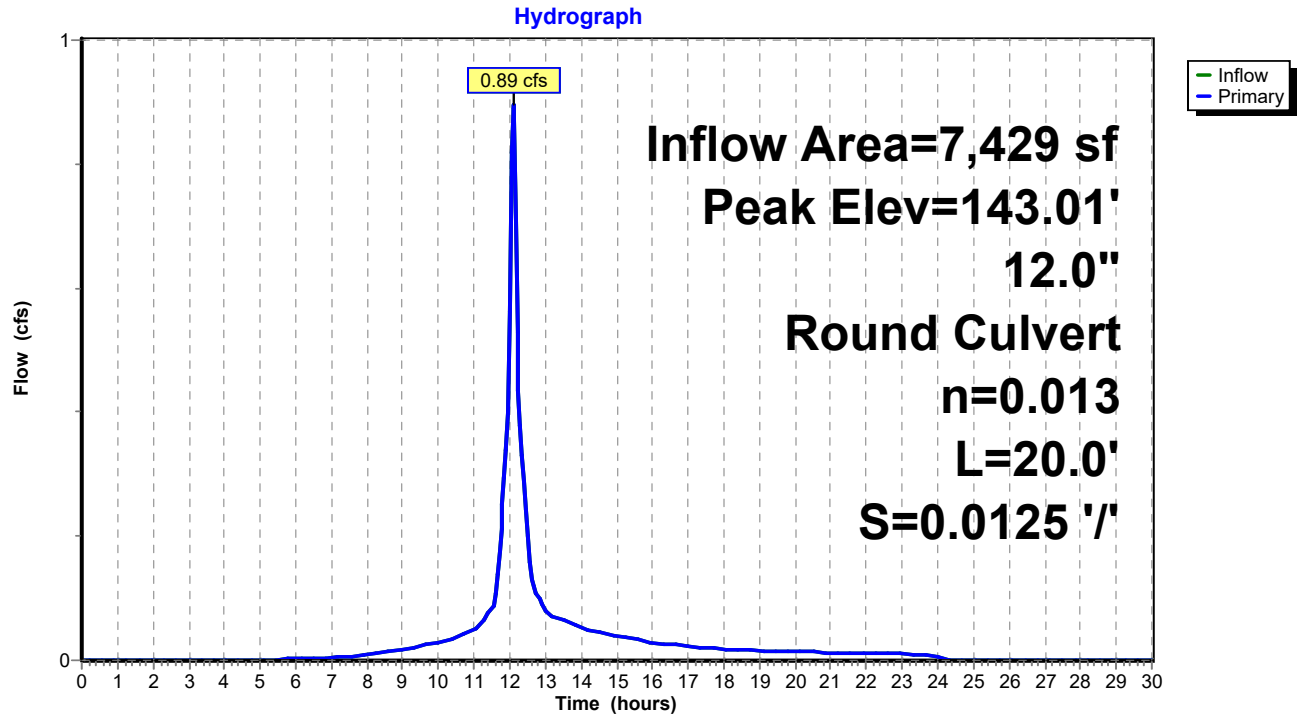
Inflow Area = 7,429 sf, 68.84% Impervious, Inflow Depth = 4.68" for 25 yr event
Inflow = 0.89 cfs @ 12.09 hrs, Volume= 2,898 cf
Outflow = 0.89 cfs @ 12.09 hrs, Volume= 2,898 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.89 cfs @ 12.09 hrs, Volume= 2,898 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.01' @ 12.14 hrs
Flood Elev= 144.35'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.75' | **12.0" Round Culvert** L= 20.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.75' / 141.50' S= 0.0125 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.00 cfs @ 12.09 hrs HW=142.96' TW=142.96' (Dynamic Tailwater)
**1=Culvert** ( Controls 0.00 cfs)

## Pond CB3:



## Summary for Pond CB4:

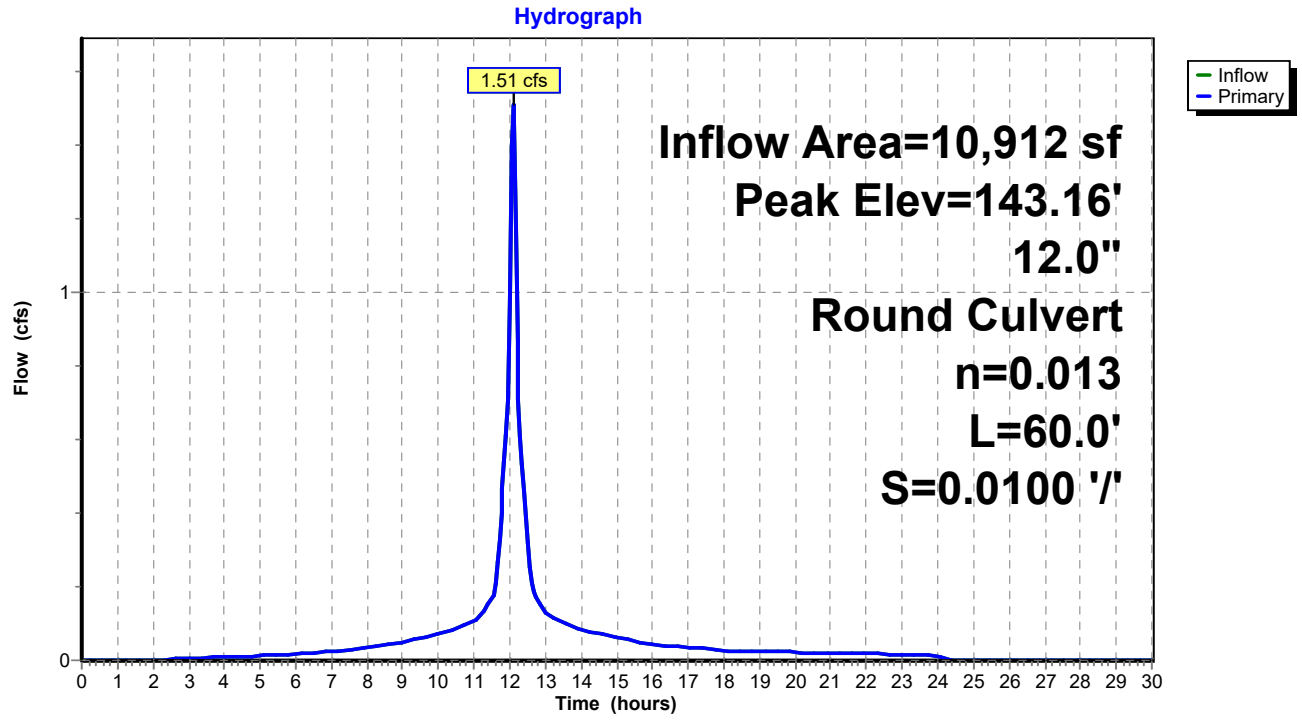
Inflow Area = 10,912 sf, 94.08% Impervious, Inflow Depth = 5.81" for 25 yr event
Inflow = 1.51 cfs @ 12.09 hrs, Volume= 5,282 cf
Outflow = 1.51 cfs @ 12.09 hrs, Volume= 5,282 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.51 cfs @ 12.09 hrs, Volume= 5,282 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.16' @ 12.11 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 142.10' | **12.0" Round Culvert** L= 60.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.10' / 141.50' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=1.27 cfs @ 12.09 hrs HW=143.13' TW=142.96' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 1.27 cfs @ 1.94 fps)

## Pond CB4:



## Summary for Pond CB5:

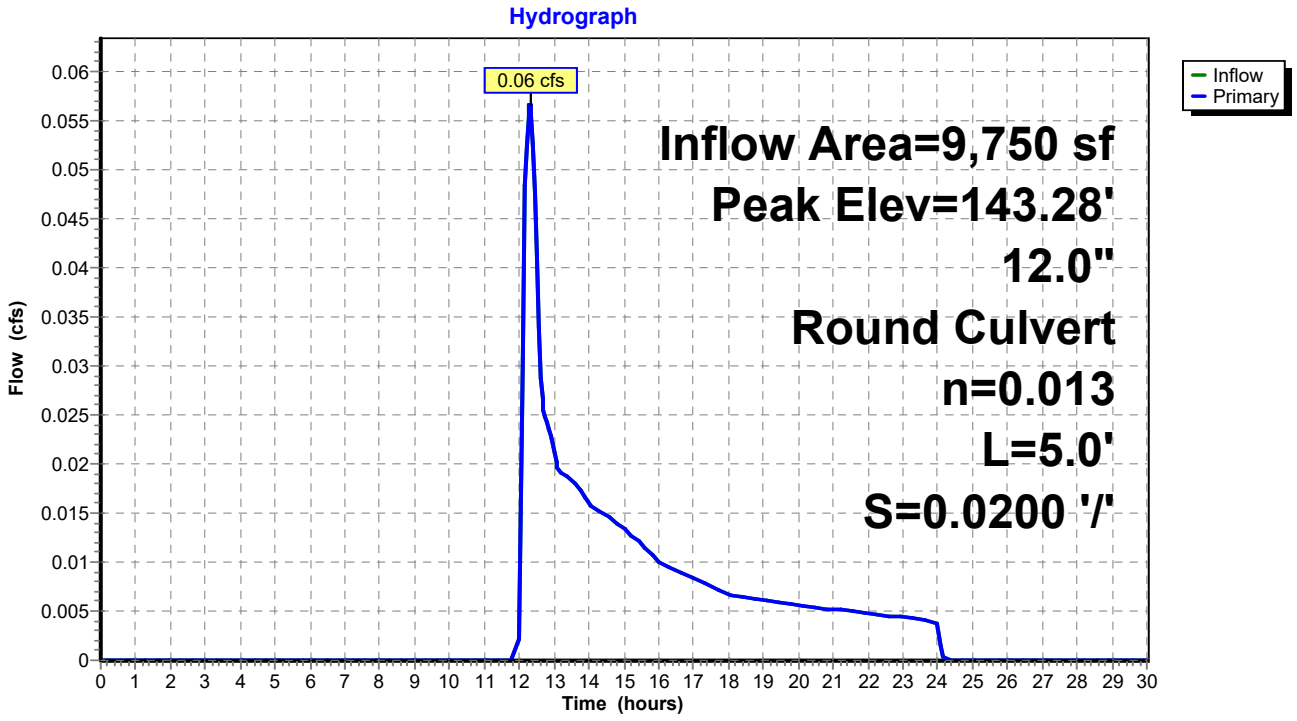
Inflow Area = 9,750 sf, 0.00% Impervious, Inflow Depth = 0.57" for 25 yr event
Inflow = 0.06 cfs @ 12.30 hrs, Volume= 460 cf
Outflow = 0.06 cfs @ 12.30 hrs, Volume= 460 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 12.30 hrs, Volume= 460 cf
Routed to Pond DMH1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.28' @ 12.16 hrs
Flood Elev= 144.10'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 142.00' | **12.0" Round Culvert** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.00' / 141.90' S= 0.0200 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.91 cfs @ 12.30 hrs HW=142.99' TW=142.94' (Dynamic Tailwater)
**1=Culvert** (Inlet Controls 0.91 cfs @ 1.16 fps)

## Pond CB5:



## Summary for Pond DMH1:

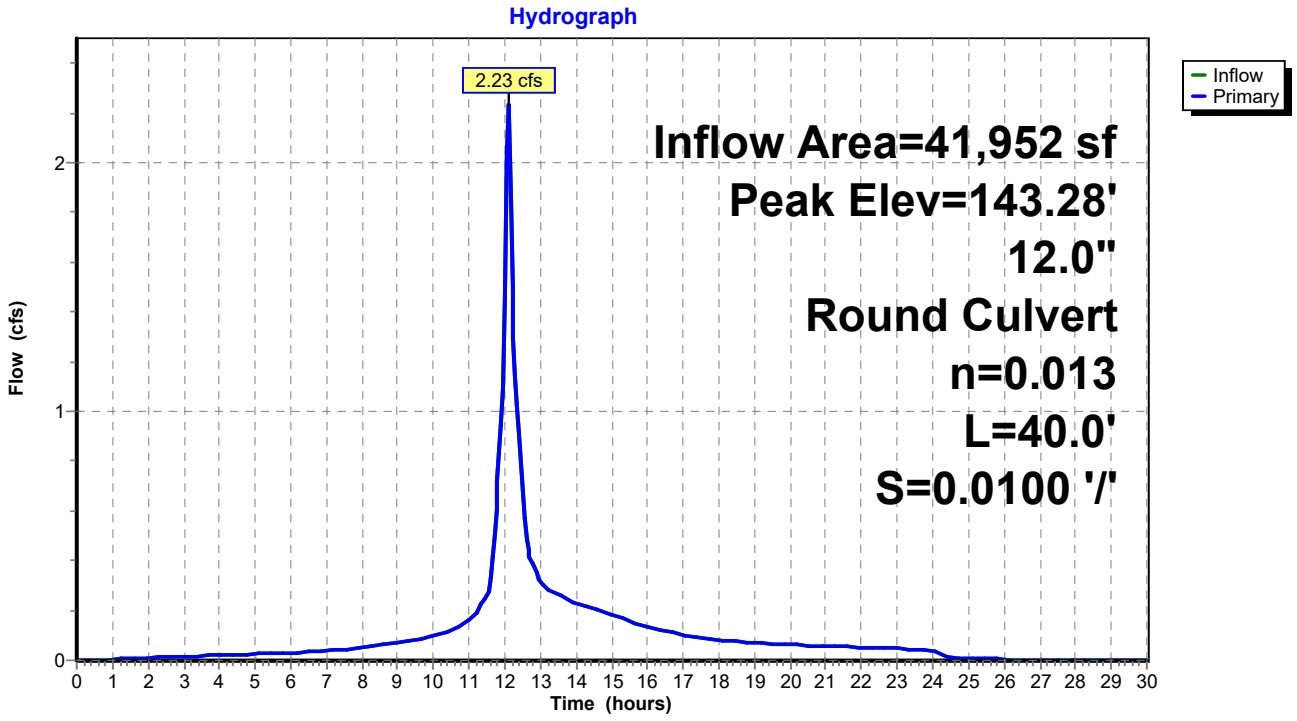
Inflow Area = 41,952 sf, 35.41% Impervious, Inflow Depth > 3.07" for 25 yr event
Inflow = 2.23 cfs @ 12.09 hrs, Volume= 10,746 cf
Outflow = 2.23 cfs @ 12.09 hrs, Volume= 10,746 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.23 cfs @ 12.09 hrs, Volume= 10,746 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.28' @ 12.11 hrs
Flood Elev= 144.75'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.90' | **12.0" Round Culvert** L= 40.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.90' / 141.50' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=2.01 cfs @ 12.09 hrs HW=143.25' TW=142.97' (Dynamic Tailwater)
**1=Culvert** (Inlet Controls 2.01 cfs @ 2.56 fps)

## Pond DMH1:

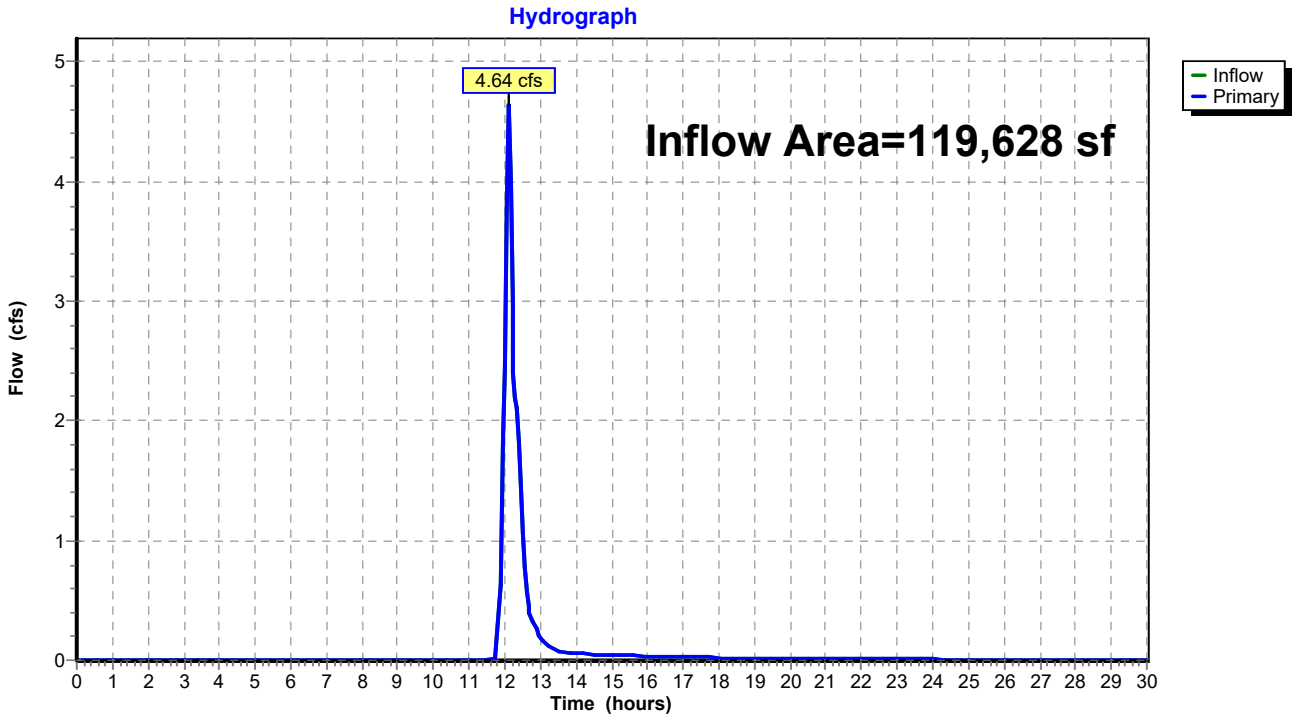


## Summary for Pond DP1: Drainage Network

Inflow Area = 119,628 sf, 53.46% Impervious, Inflow Depth = 0.75" for 25 yr event
Inflow = 4.64 cfs @ 12.10 hrs, Volume= 7,512 cf
Primary = 4.64 cfs @ 12.10 hrs, Volume= 7,512 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

## Pond DP1: Drainage Network

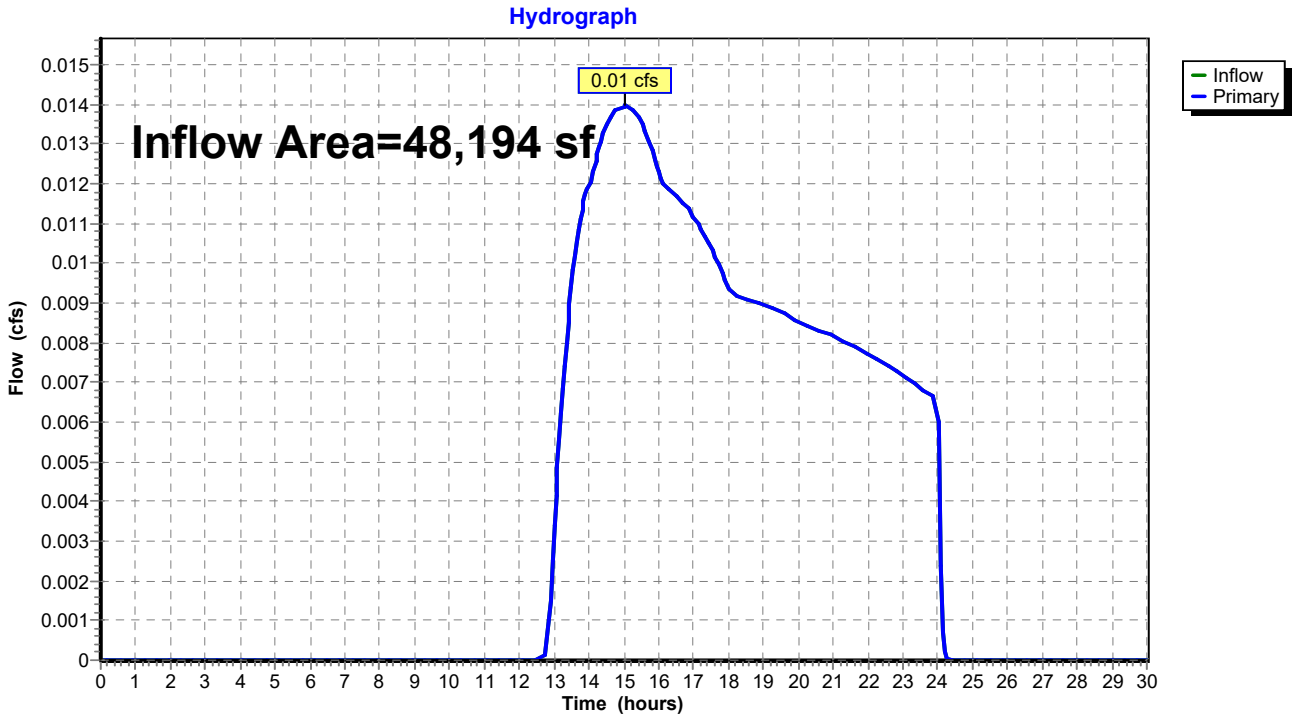


## Summary for Pond DP2: Wetlands

Inflow Area = 48,194 sf, 4.77% Impervious, Inflow Depth = 0.10" for 25 yr event
Inflow = 0.01 cfs @ 15.01 hrs, Volume= 385 cf
Primary = 0.01 cfs @ 15.01 hrs, Volume= 385 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

## Pond DP2: Wetlands



## Summary for Pond IS1: Infiltration System 1

Inflow Area = 41,131 sf, 74.21% Impervious, Inflow Depth = 4.23" for 25 yr event
Inflow = 4.16 cfs @ 12.09 hrs, Volume= 14,484 cf
Outflow = 1.47 cfs @ 12.37 hrs, Volume= 14,496 cf, Atten= 65%, Lag= 16.8 min
Discarded = 1.12 cfs @ 12.37 hrs, Volume= 14,318 cf
Primary = 0.35 cfs @ 12.37 hrs, Volume= 179 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.58' @ 12.37 hrs Surf.Area= 3,262 sf Storage= 3,177 cf
Flood Elev= 142.83' Surf.Area= 3,262 sf Storage= 3,502 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 17.3 min ( 782.6 - 765.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 141.00' | 1,649 cf | **61.50'W x 53.04'L x 1.83'H Field A**<br>5,980 cf Overall - 1,857 cf Embedded = 4,123 cf x 40.0% Voids |
| #2A | 141.00' | 1,857 cf | **ADS_StormTech SC-310 +Cap** x 126 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>126 Chambers in 18 Rows |
| | | 3,507 cf | Total Available Storage |

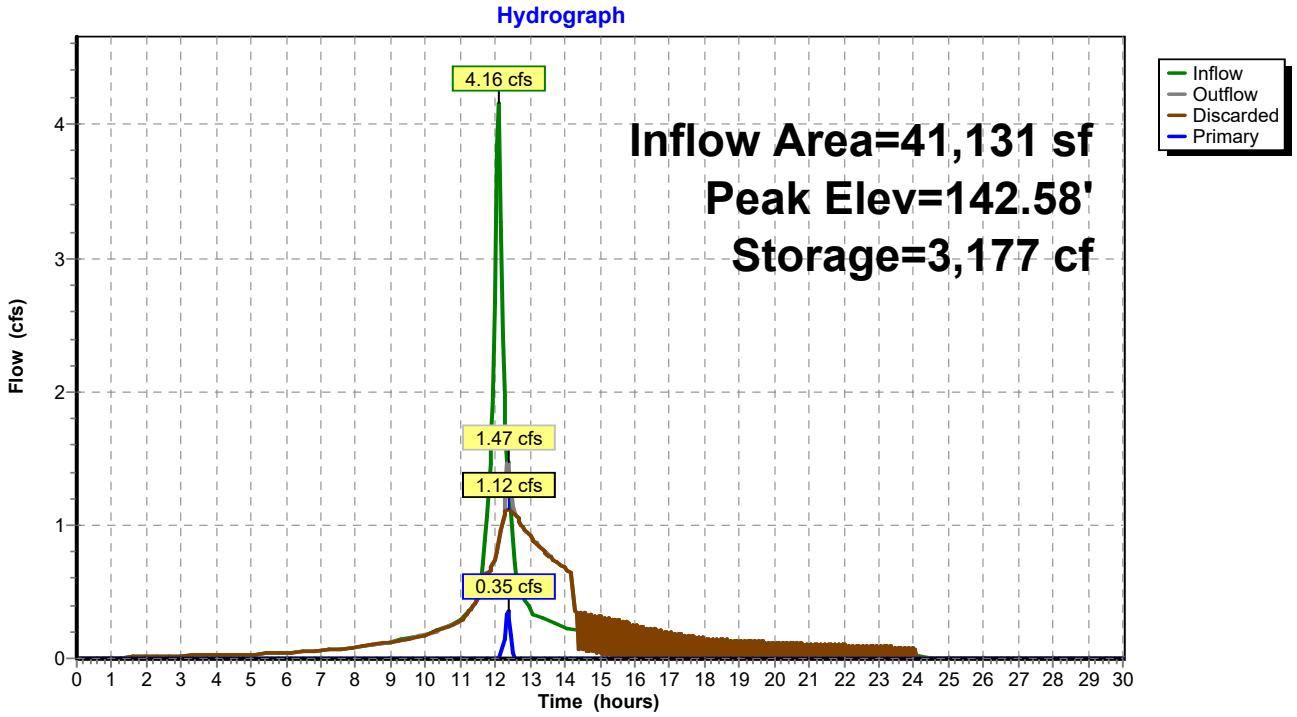
Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.00' | **15.0" Round Culvert** L= 40.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0250 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Discarded | 141.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |
| #3 | Device 1 | 142.50' | **18.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=1.12 cfs @ 12.37 hrs HW=142.58' (Free Discharge)
└**2=Exfiltration** ( Controls 1.12 cfs)

**Primary OutFlow** Max=0.32 cfs @ 12.37 hrs HW=142.58' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.32 cfs of 5.76 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 0.32 cfs @ 0.90 fps)

## Pond IS1: Infiltration System 1



## Summary for Pond IS2: Infiltration System 2

Inflow Area = 60,293 sf, 50.15% Impervious, Inflow Depth > 3.77" for 25 yr event
Inflow = 4.63 cfs @ 12.09 hrs, Volume= 18,926 cf
Outflow = 4.62 cfs @ 12.10 hrs, Volume= 18,926 cf, Atten= 0%, Lag= 0.7 min
Discarded = 0.50 cfs @ 12.10 hrs, Volume= 13,569 cf
Primary = 4.12 cfs @ 12.10 hrs, Volume= 5,357 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.98' @ 12.10 hrs Surf.Area= 1,494 sf Storage= 1,377 cf
Flood Elev= 143.50' Surf.Area= 1,494 sf Storage= 1,691 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 13.7 min ( 807.2 - 793.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 141.50' | 865 cf | **24.83'W x 60.16'L x 2.00'H Field A**<br>2,988 cf Overall - 826 cf Embedded = 2,162 cf x 40.0% Voids |
| #2A | 141.50' | 826 cf | **ADS_StormTech SC-310 +Cap** x 56 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>56 Chambers in 7 Rows |
| | | 1,691 cf | Total Available Storage |

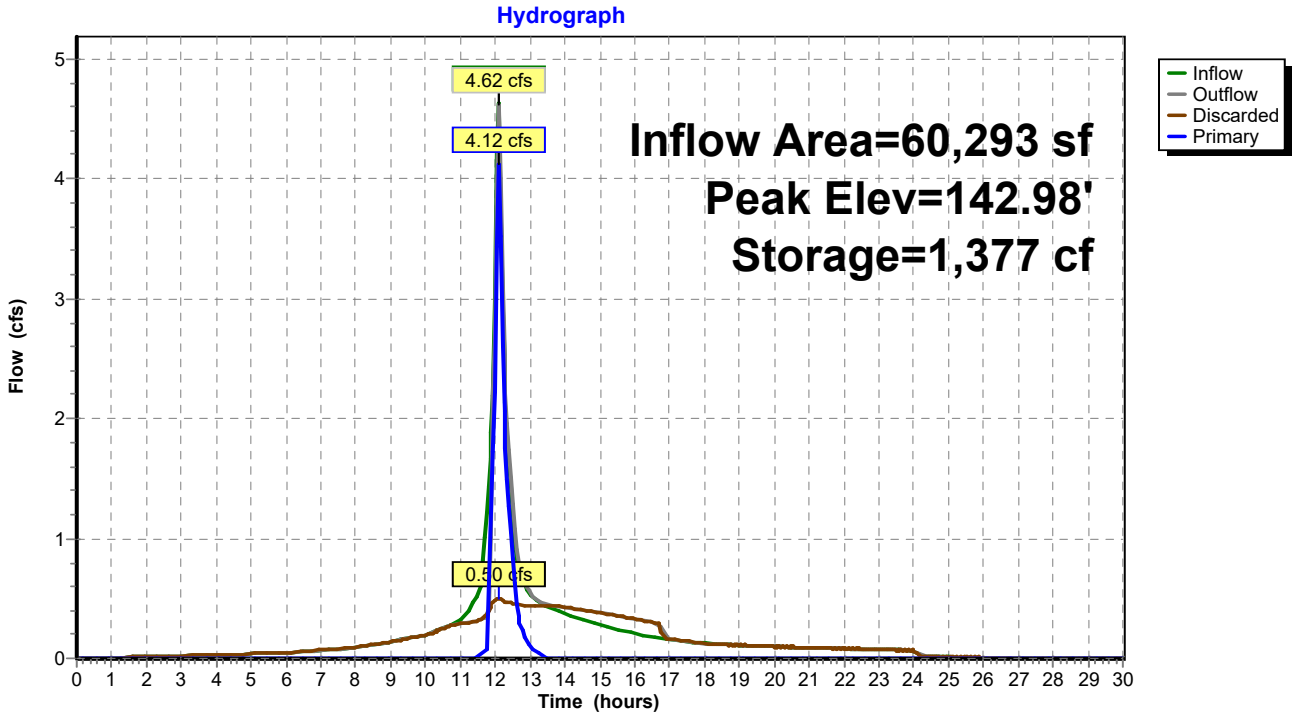
Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.50' | **15.0" Round Culvert** L= 80.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 140.00' S= 0.0187 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Discarded | 141.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.50' |
| #3 | Device 1 | 142.56' | **18.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.50 cfs @ 12.10 hrs HW=142.97' (Free Discharge)
└**2=Exfiltration** ( Controls 0.50 cfs)

**Primary OutFlow** Max=4.10 cfs @ 12.10 hrs HW=142.97' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 4.10 cfs of 5.44 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 4.10 cfs @ 2.10 fps)

## Pond IS2: Infiltration System 2



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 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

**SubcatchmentB1A: Building (R)** Runoff Area=14,492 sf 100.00% Impervious Runoff Depth=7.96"
Tc=6.0 min CN=98 Runoff=2.62 cfs 9,613 cf

**SubcatchmentB1B: Building (L)** Runoff Area=13,836 sf 100.00% Impervious Runoff Depth=7.96"
Tc=6.0 min CN=98 Runoff=2.50 cfs 9,178 cf

**SubcatchmentP1: Back of property to Wetl** Runoff Area=38,559 sf 0.00% Impervious Runoff Depth=0.46"
Tc=6.0 min CN=30 Runoff=0.13 cfs 1,493 cf

**SubcatchmentP1A: Back Patio** Runoff Area=2,070 sf 0.00% Impervious Runoff Depth=5.81"
Tc=6.0 min CN=80 Runoff=0.31 cfs 1,003 cf

**SubcatchmentP1C: Back of property to** Runoff Area=7,565 sf 30.40% Impervious Runoff Depth=2.48"
Tc=6.0 min CN=51 Runoff=0.46 cfs 1,564 cf

**SubcatchmentP2A:** Runoff Area=3,446 sf 13.78% Impervious Runoff Depth=4.06"
Tc=6.0 min CN=65 Runoff=0.37 cfs 1,165 cf

**SubcatchmentP2B:** Runoff Area=6,132 sf 27.32% Impervious Runoff Depth=7.12"
Tc=6.0 min CN=91 Runoff=1.06 cfs 3,639 cf

**SubcatchmentP3:** Runoff Area=7,500 sf 90.93% Impervious Runoff Depth=7.36"
Tc=6.0 min CN=93 Runoff=1.32 cfs 4,601 cf

**SubcatchmentP4:** Runoff Area=9,561 sf 73.85% Impervious Runoff Depth=6.17"
Tc=6.0 min CN=83 Runoff=1.51 cfs 4,915 cf

**SubcatchmentP5:** Runoff Area=7,429 sf 68.84% Impervious Runoff Depth=6.41"
Tc=6.0 min CN=85 Runoff=1.21 cfs 3,966 cf

**SubcatchmentP5A: Perm Pavers Front** Runoff Area=560 sf 0.00% Impervious Runoff Depth=2.81"
Tc=6.0 min CN=54 Runoff=0.04 cfs 131 cf

**SubcatchmentP6:** Runoff Area=10,912 sf 94.08% Impervious Runoff Depth=7.60"
Tc=6.0 min CN=95 Runoff=1.95 cfs 6,911 cf

**SubcatchmentP7:** Runoff Area=9,750 sf 0.00% Impervious Runoff Depth=1.24"
Tc=6.0 min CN=39 Runoff=0.22 cfs 1,009 cf

**SubcatchmentP8:** Runoff Area=18,366 sf 5.55% Impervious Runoff Depth=4.52"
Flow Length=175' Slope=0.0100 '/' Tc=9.5 min CN=69 Runoff=1.95 cfs 6,918 cf

**SubcatchmentP9:** Runoff Area=17,644 sf 18.14% Impervious Runoff Depth=2.37"
Tc=6.0 min CN=50 Runoff=1.03 cfs 3,489 cf

**Pond 1P: Pervious Pvmt (R Drive) bed 'C'** Peak Elev=142.14' Storage=144 cf Inflow=1.06 cfs 3,639 cf
Discarded=0.65 cfs 3,573 cf Primary=0.11 cfs 68 cf Outflow=0.76 cfs 3,641 cf

**Pond 2P: Pervious Pvmt (North Fire) Bed B** Peak Elev=141.72' Storage=51 cf Inflow=0.44 cfs 1,233 cf
Discarded=0.14 cfs 1,026 cf Primary=0.27 cfs 209 cf Outflow=0.41 cfs 1,234 cf

**Pond 3P: Pervious Pvmt (North Fire) Bed 'A'** Peak Elev=141.02' Storage=8 cf Inflow=0.27 cfs 209 cf
Discarded=0.23 cfs 213 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 213 cf

**Pond 4P: Pervious Pvmt (South Fire Lane)** Peak Elev=143.99' Storage=723 cf Inflow=1.95 cfs 6,918 cf
Discarded=1.11 cfs 2,568 cf Primary=0.54 cfs 4,326 cf Outflow=1.65 cfs 6,894 cf

**Pond 5P: Permeable Pavers (Back)** Peak Elev=144.00' Storage=0 cf Inflow=0.31 cfs 1,003 cf
Discarded=0.31 cfs 1,003 cf Primary=0.00 cfs 0 cf Outflow=0.31 cfs 1,003 cf

**Pond 6P:** Peak Elev=143.00' Storage=0 cf Inflow=0.04 cfs 131 cf
Discarded=0.04 cfs 131 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 131 cf

**Pond 7P: Stone infiltration Trench** Peak Elev=145.00' Storage=151 cf Inflow=0.46 cfs 1,564 cf
Discarded=0.11 cfs 1,380 cf Primary=0.32 cfs 186 cf Outflow=0.44 cfs 1,566 cf

**Pond CB1:** Peak Elev=142.82' Inflow=1.32 cfs 4,601 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0625 '/' Outflow=1.32 cfs 4,601 cf

**Pond CB2,7:** Peak Elev=142.86' Inflow=1.51 cfs 4,915 cf
12.0" Round Culvert n=0.013 L=75.0' S=0.0100 '/' Outflow=1.51 cfs 4,915 cf

**Pond CB3:** Peak Elev=143.14' Inflow=1.21 cfs 3,966 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0125 '/' Outflow=1.21 cfs 3,966 cf

**Pond CB4:** Peak Elev=143.33' Inflow=1.95 cfs 6,911 cf
12.0" Round Culvert n=0.013 L=60.0' S=0.0100 '/' Outflow=1.95 cfs 6,911 cf

**Pond CB5:** Peak Elev=143.65' Inflow=0.22 cfs 1,009 cf
12.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=0.22 cfs 1,009 cf

**Pond DMH1:** Peak Elev=143.65' Inflow=3.01 cfs 14,513 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=3.01 cfs 14,513 cf

**Pond DP1: Drainage Network** Inflow=7.61 cfs 14,202 cf
Primary=7.61 cfs 14,202 cf

**Pond DP2: Wetlands** Inflow=0.34 cfs 1,679 cf
Primary=0.34 cfs 1,679 cf

**Pond IS1: Infiltration System 1** Peak Elev=142.80' Storage=3,457 cf Inflow=5.45 cfs 19,129 cf
Discarded=1.19 cfs 17,319 cf Primary=2.48 cfs 1,831 cf Outflow=3.66 cfs 19,149 cf

**Pond IS2: Infiltration System 2** Peak Elev=143.07' Storage=1,435 cf Inflow=6.16 cfs 25,391 cf
Discarded=0.51 cfs 16,508 cf Primary=5.65 cfs 8,883 cf Outflow=6.16 cfs 25,391 cf

## Summary for Subcatchment B1A: Building (R)

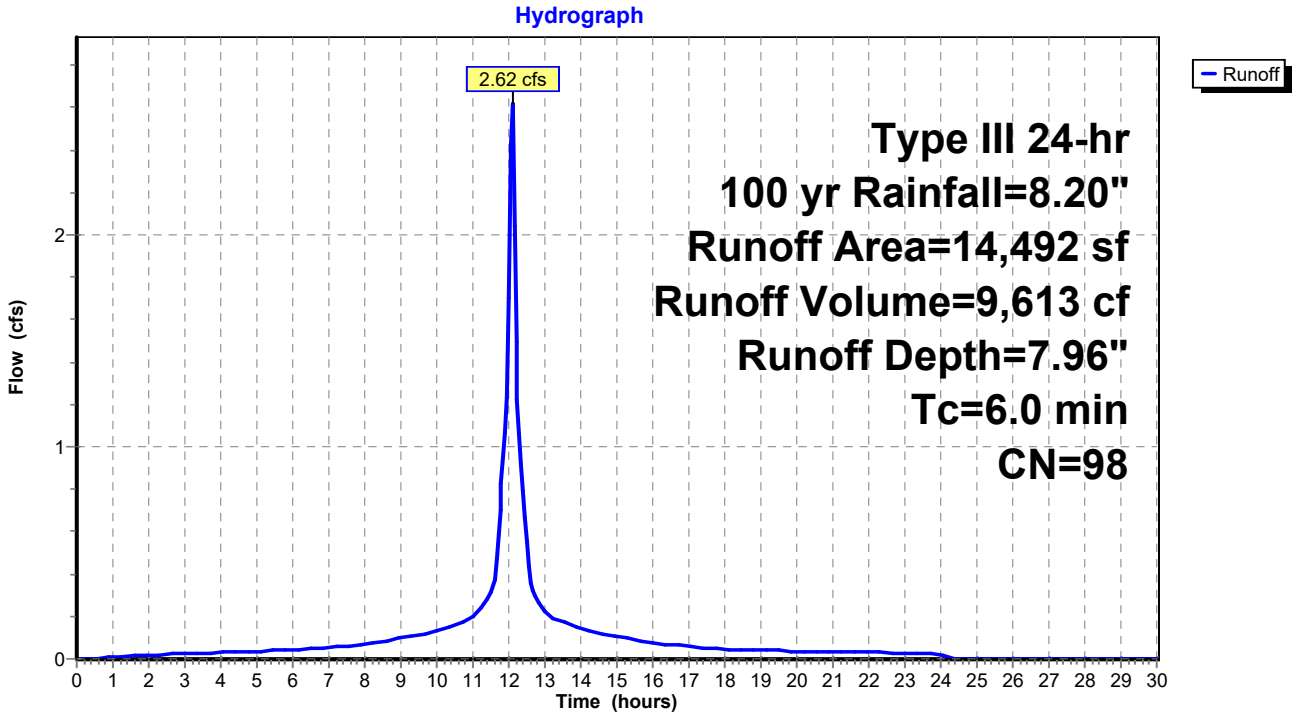
Runoff = 2.62 cfs @ 12.09 hrs, Volume= 9,613 cf, Depth= 7.96"
Routed to Pond IS1 : Infiltration System 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| Area (sf) | CN | Description |
|---|---|---|
| 14,492 | 98 | Roofs, HSG A |
| 14,492 | | 100.00% Impervious Area |

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

### Subcatchment B1A: Building (R)



## Summary for Subcatchment B1B: Building (L)

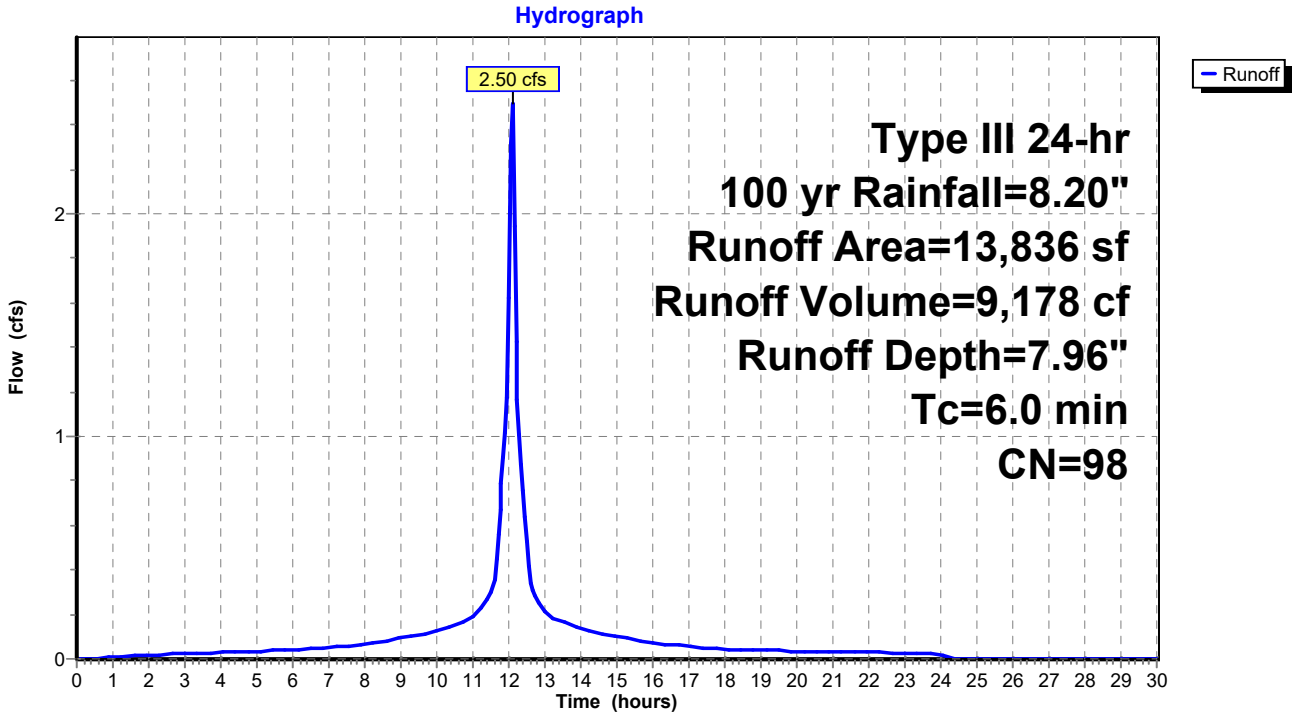
Runoff = 2.50 cfs @ 12.09 hrs, Volume= 9,178 cf, Depth= 7.96"
Routed to Pond DMH1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| Area (sf) | CN | Description |
|---|---|---|
| 13,836 | 98 | Roofs, HSG A |
| 13,836 | | 100.00% Impervious Area |

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

### Subcatchment B1B: Building (L)



## Summary for Subcatchment P1: Back of property to Wetl

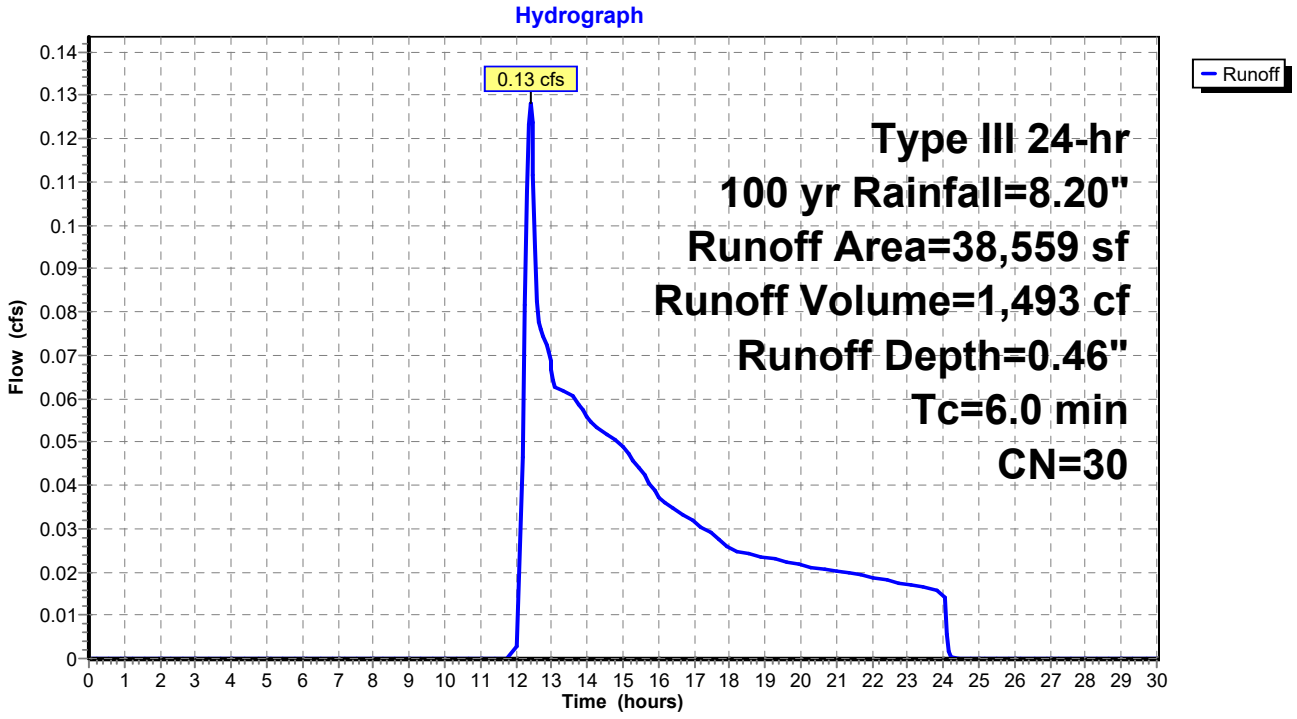
Runoff = 0.13 cfs @ 12.40 hrs, Volume= 1,493 cf, Depth= 0.46"
Routed to Pond DP2 : Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| Area (sf) | CN | Description |
|---|---|---|
| 19,150 | 30 | Woods, Good, HSG A |
| 19,409 | 30 | Meadow, non-grazed, HSG A |
| 38,559 | 30 | Weighted Average |
| 38,559 | | 100.00% Pervious Area |

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

## Subcatchment P1: Back of property to Wetl



## Summary for Subcatchment P1A: Back Patio

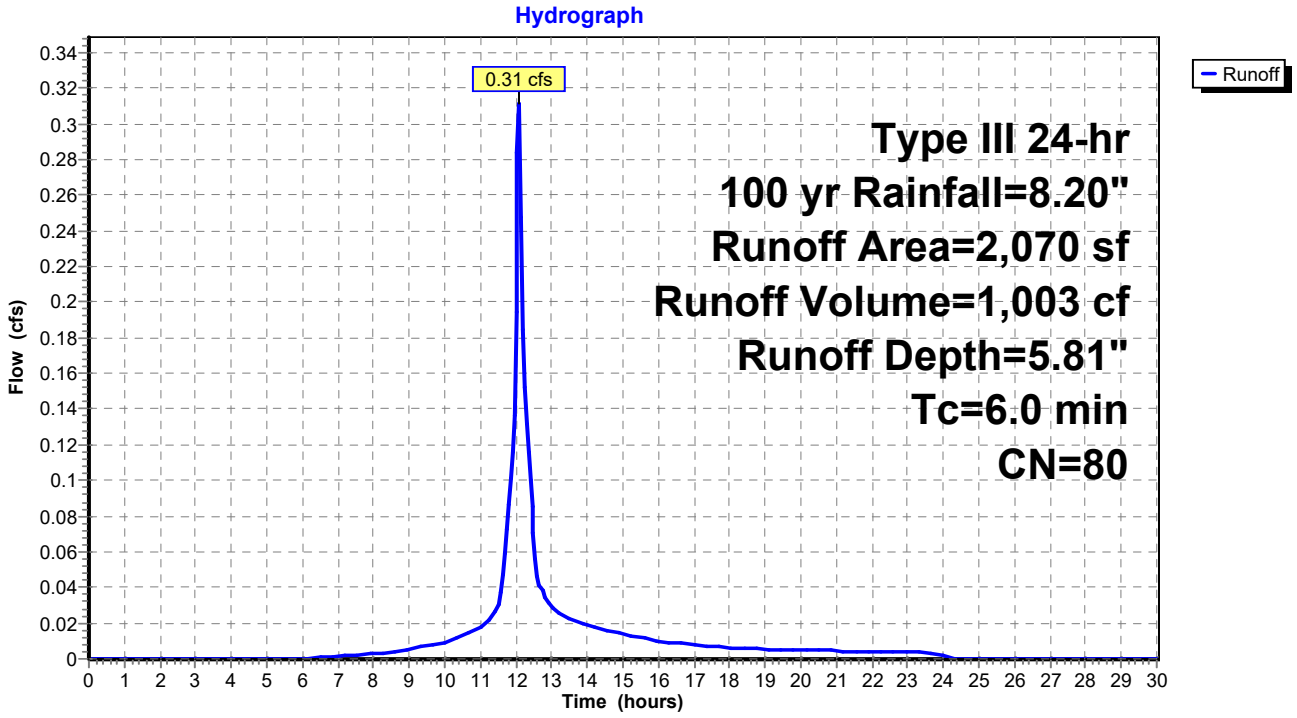
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 1,003 cf, Depth= 5.81"
Routed to Pond 5P : Permeable Pavers (Back)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,070 | 80 | permeable pavers |
| | 2,070 | | 100.00% Pervious Area |

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

### Subcatchment P1A: Back Patio



## Summary for Subcatchment P1C: Back of property to trench

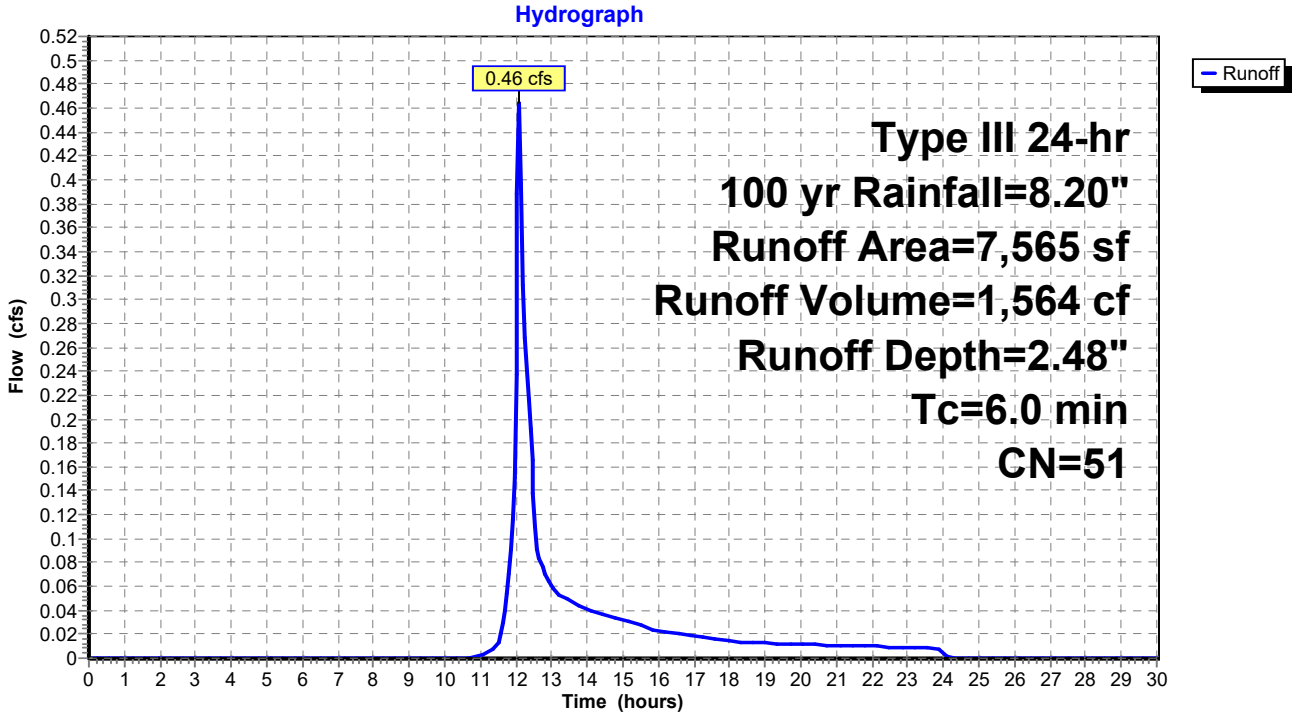
Runoff = 0.46 cfs @ 12.10 hrs, Volume= 1,564 cf, Depth= 2.48"
Routed to Pond 7P : Stone infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,300 | 98 | CONCRETE |
| | 5,265 | 30 | Meadow, non-grazed, HSG A |
| | 7,565 | 51 | Weighted Average |
| | 5,265 | | 69.60% Pervious Area |
| | 2,300 | | 30.40% Impervious Area |

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

## Subcatchment P1C: Back of property to trench



## Summary for Subcatchment P2A:

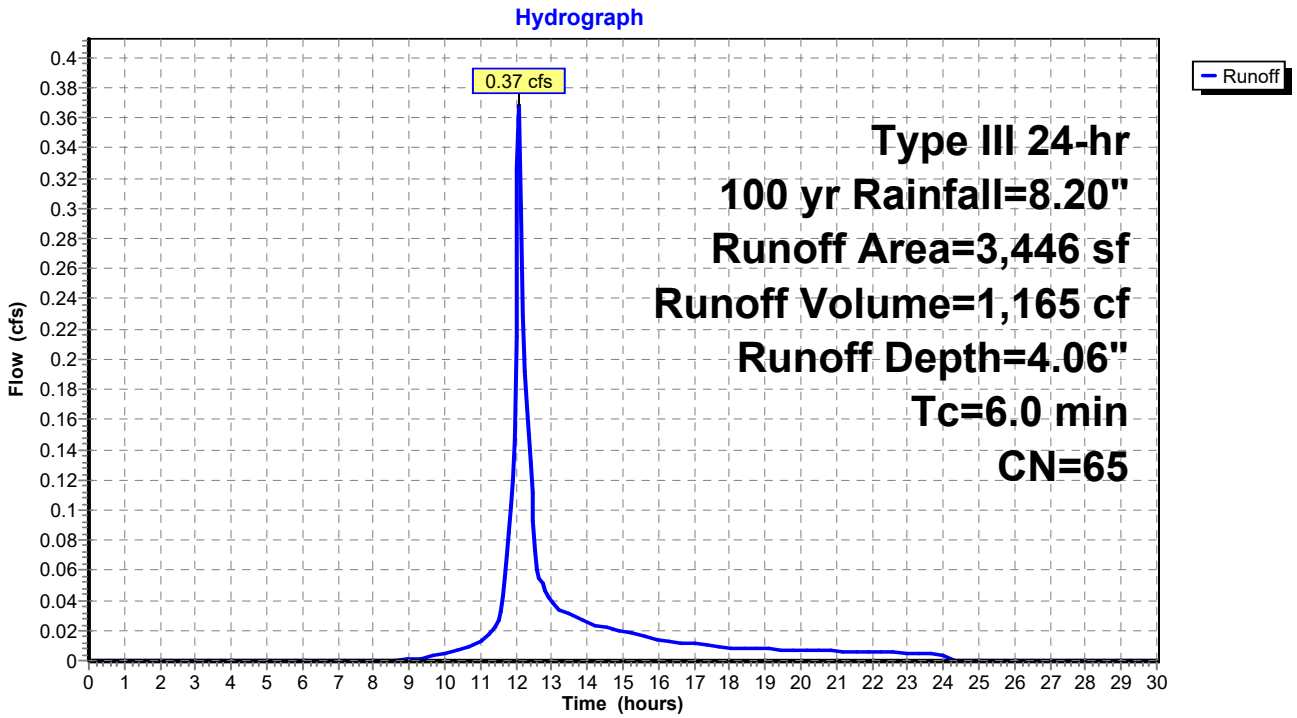
Runoff = 0.37 cfs @ 12.09 hrs, Volume= 1,165 cf, Depth= 4.06"
Routed to Pond 2P : Pervious Pvmt (North Fire) Bed B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 475 | 98 | CONCRETE |
| * | 1,351 | 96 | permeable pavement |
| | 1,620 | 30 | Meadow, non-grazed, HSG A |
| | 3,446 | 65 | Weighted Average |
| | 2,971 | | 86.22% Pervious Area |
| | 475 | | 13.78% Impervious Area |

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

## Subcatchment P2A:



## Summary for Subcatchment P2B:

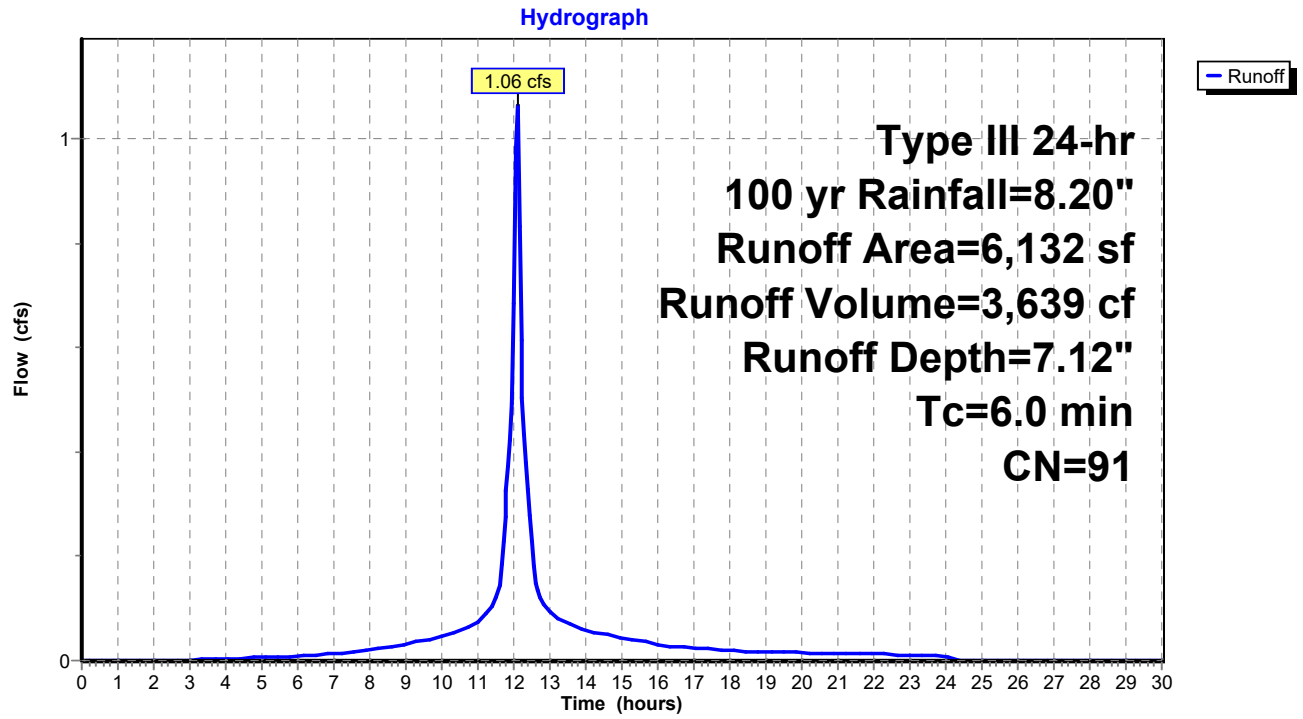
Runoff = 1.06 cfs @ 12.09 hrs, Volume= 3,639 cf, Depth= 7.12"
Routed to Pond 1P : Pervious Pvmt (R Drive) bed 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,675 | 98 | CONCRETE |
| * | 3,929 | 96 | permeable pavement |
| | 528 | 30 | Meadow, non-grazed, HSG A |
| | 6,132 | 91 | Weighted Average |
| | 4,457 | | 72.68% Pervious Area |
| | 1,675 | | 27.32% Impervious Area |

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

## Subcatchment P2B:



## Summary for Subcatchment P3:

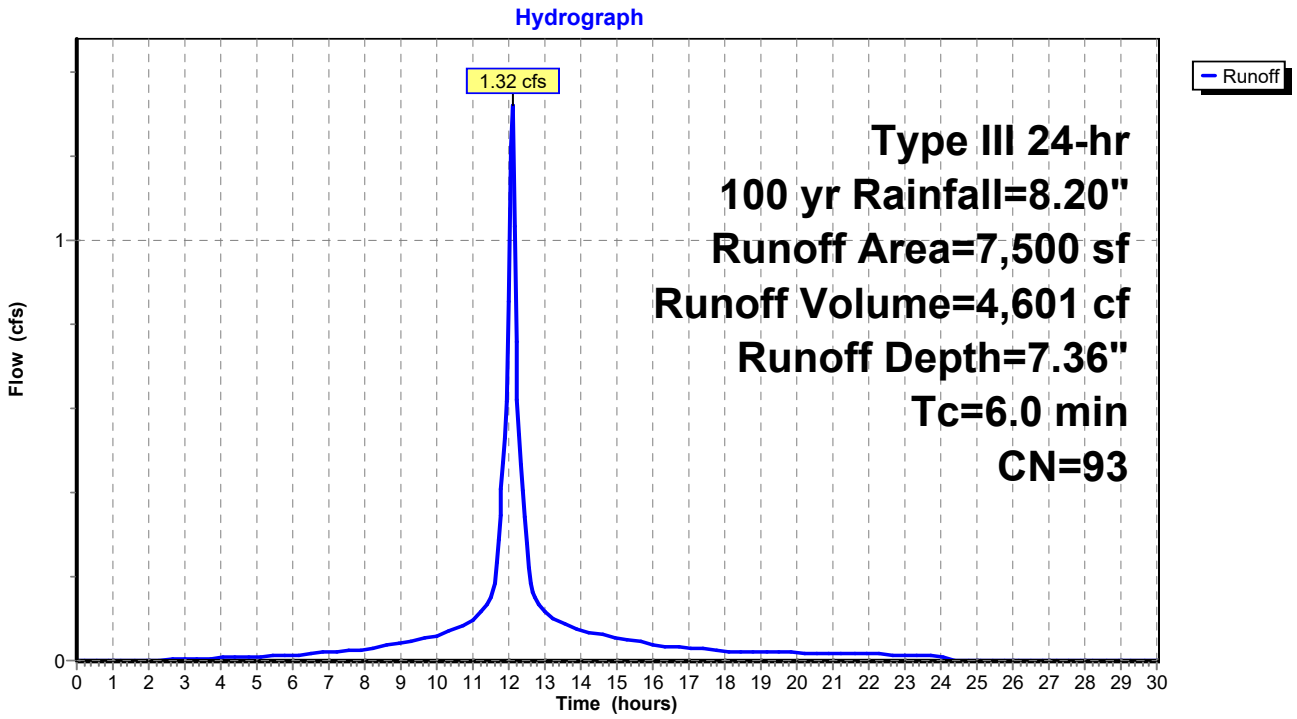
Runoff = 1.32 cfs @ 12.09 hrs, Volume= 4,601 cf, Depth= 7.36"
Routed to Pond CB1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 670 | 98 | CONCRETE |
| | 6,150 | 98 | Paved parking, HSG A |
| | 680 | 39 | >75% Grass cover, Good, HSG A |
| | 7,500 | 93 | Weighted Average |
| | 680 | | 9.07% Pervious Area |
| | 6,820 | | 90.93% Impervious Area |

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

## Subcatchment P3:



## Summary for Subcatchment P4:

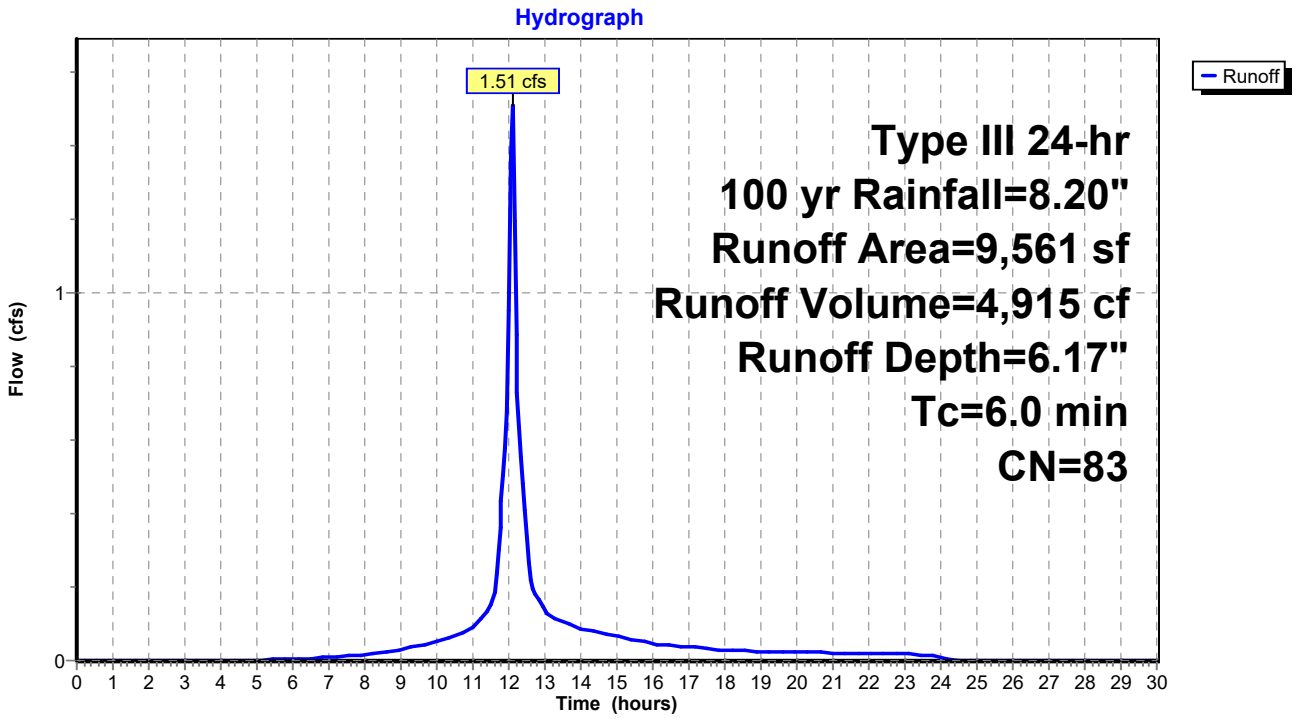
Runoff = 1.51 cfs @ 12.09 hrs, Volume= 4,915 cf, Depth= 6.17"
Routed to Pond CB2,7 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 900 | 98 | CONCRETE |
| | 6,161 | 98 | Paved parking, HSG A |
| | 2,500 | 39 | >75% Grass cover, Good, HSG A |
| | 9,561 | 83 | Weighted Average |
| | 2,500 | | 26.15% Pervious Area |
| | 7,061 | | 73.85% Impervious Area |

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

## Subcatchment P4:



## Summary for Subcatchment P5:

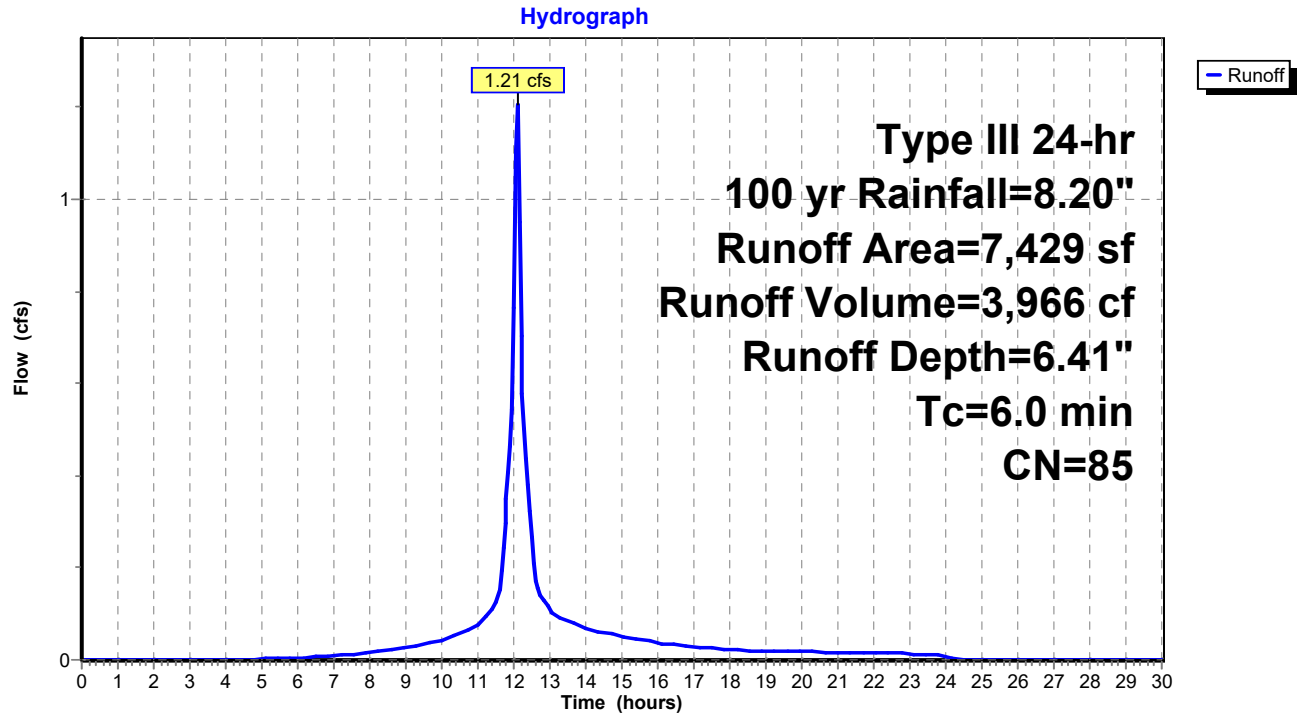
Runoff = 1.21 cfs @ 12.09 hrs, Volume= 3,966 cf, Depth= 6.41"
Routed to Pond CB3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 450 | 98 | CONCRETE |
| | 4,664 | 98 | Paved parking, HSG A |
| | 1,315 | 39 | >75% Grass cover, Good, HSG A |
| * | 1,000 | 80 | permeable pavers |
| | 7,429 | 85 | Weighted Average |
| | 2,315 | | 31.16% Pervious Area |
| | 5,114 | | 68.84% Impervious Area |

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

## Subcatchment P5:



## Summary for Subcatchment P5A: Perm Pavers Front entrance

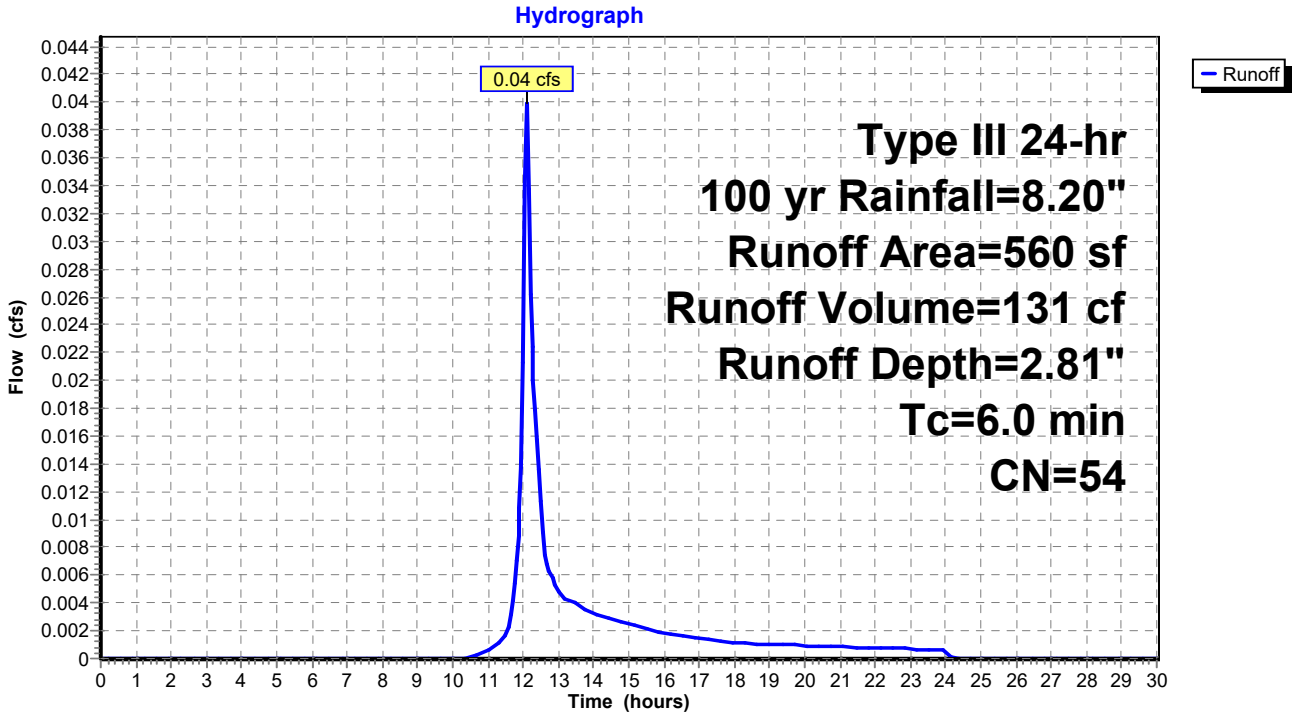
Runoff = 0.04 cfs @ 12.10 hrs, Volume= 131 cf, Depth= 2.81"
Routed to Pond 6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 200 | 80 | permeable pavers |
| | 360 | 39 | >75% Grass cover, Good, HSG A |
| | 560 | 54 | Weighted Average |
| | 560 | | 100.00% Pervious Area |

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

## Subcatchment P5A: Perm Pavers Front entrance



## Summary for Subcatchment P6:

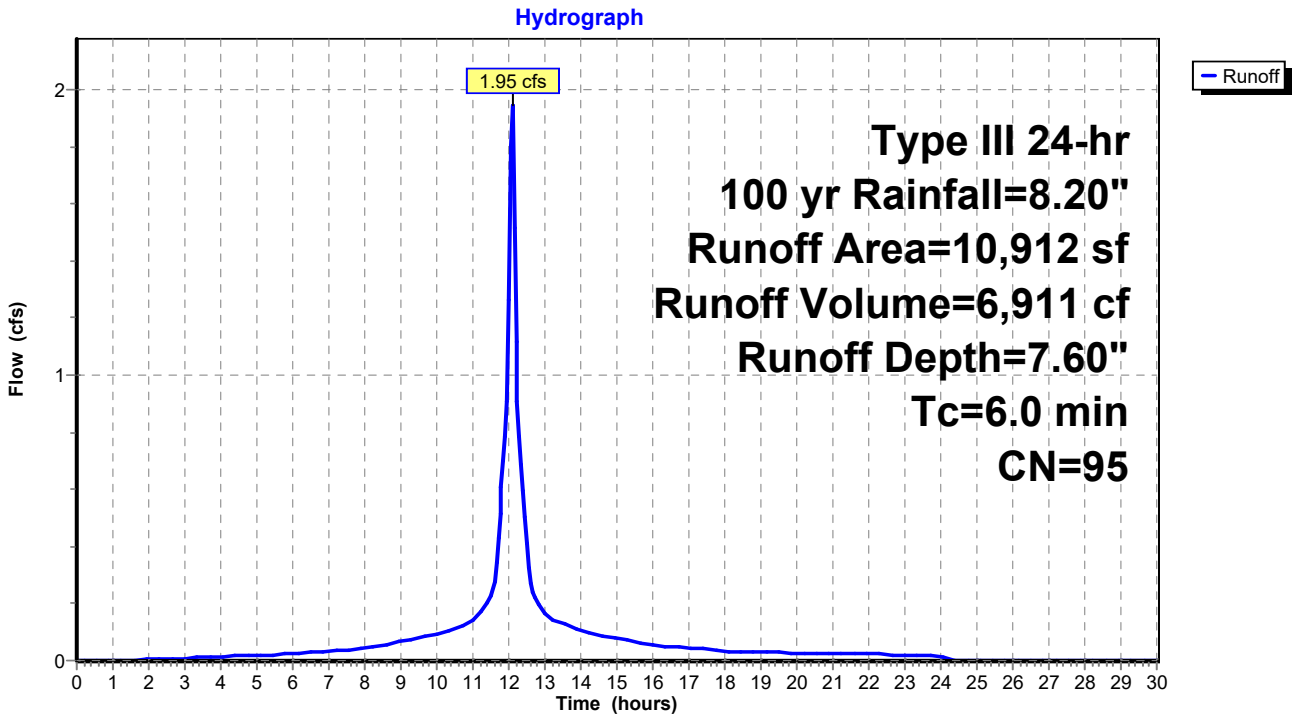
Runoff = 1.95 cfs @ 12.09 hrs, Volume= 6,911 cf, Depth= 7.60"
Routed to Pond CB4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,200 | 98 | CONCRETE |
| | 9,066 | 98 | Paved parking, HSG A |
| | 646 | 39 | >75% Grass cover, Good, HSG A |
| | 10,912 | 95 | Weighted Average |
| | 646 | | 5.92% Pervious Area |
| | 10,266 | | 94.08% Impervious Area |

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

## Subcatchment P6:



## Summary for Subcatchment P7:

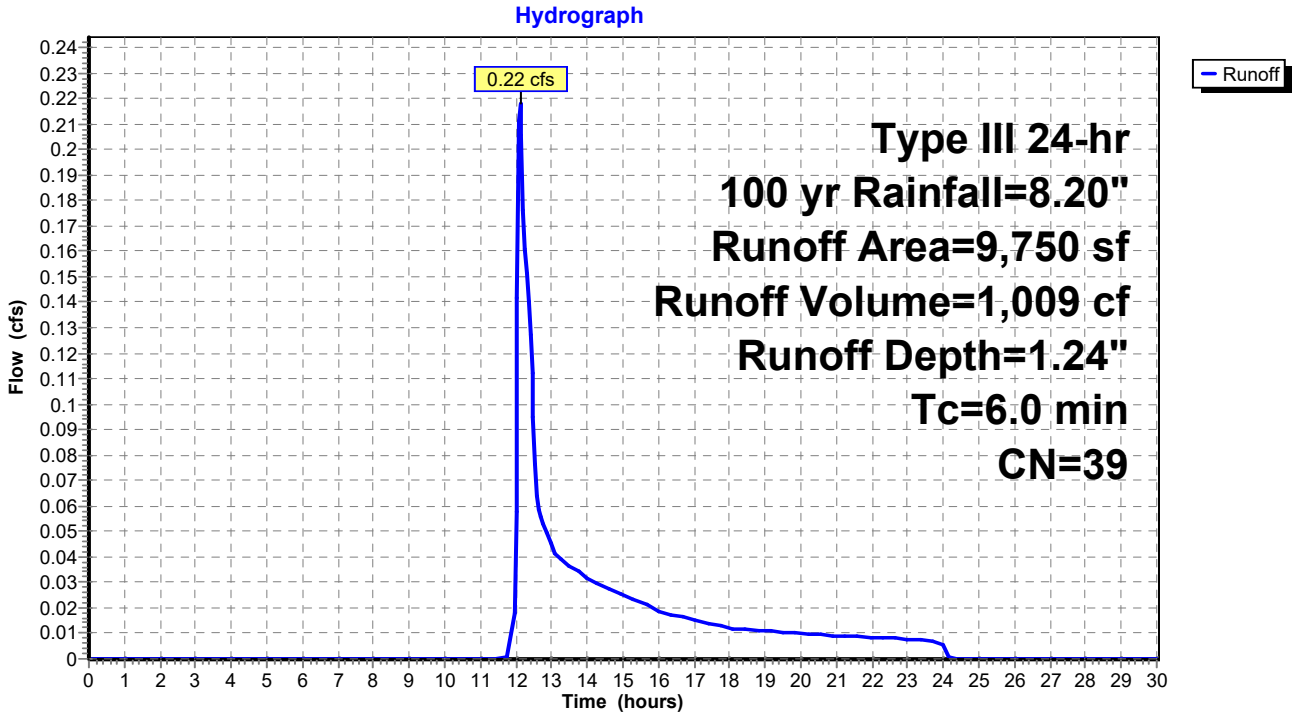
Runoff = 0.22 cfs @ 12.12 hrs, Volume= 1,009 cf, Depth= 1.24"
Routed to Pond CB5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| Area (sf) | CN | Description |
|---|---|---|
| 9,750 | 39 | >75% Grass cover, Good, HSG A |
| 9,750 | | 100.00% Pervious Area |

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

## Subcatchment P7:



## Summary for Subcatchment P8:

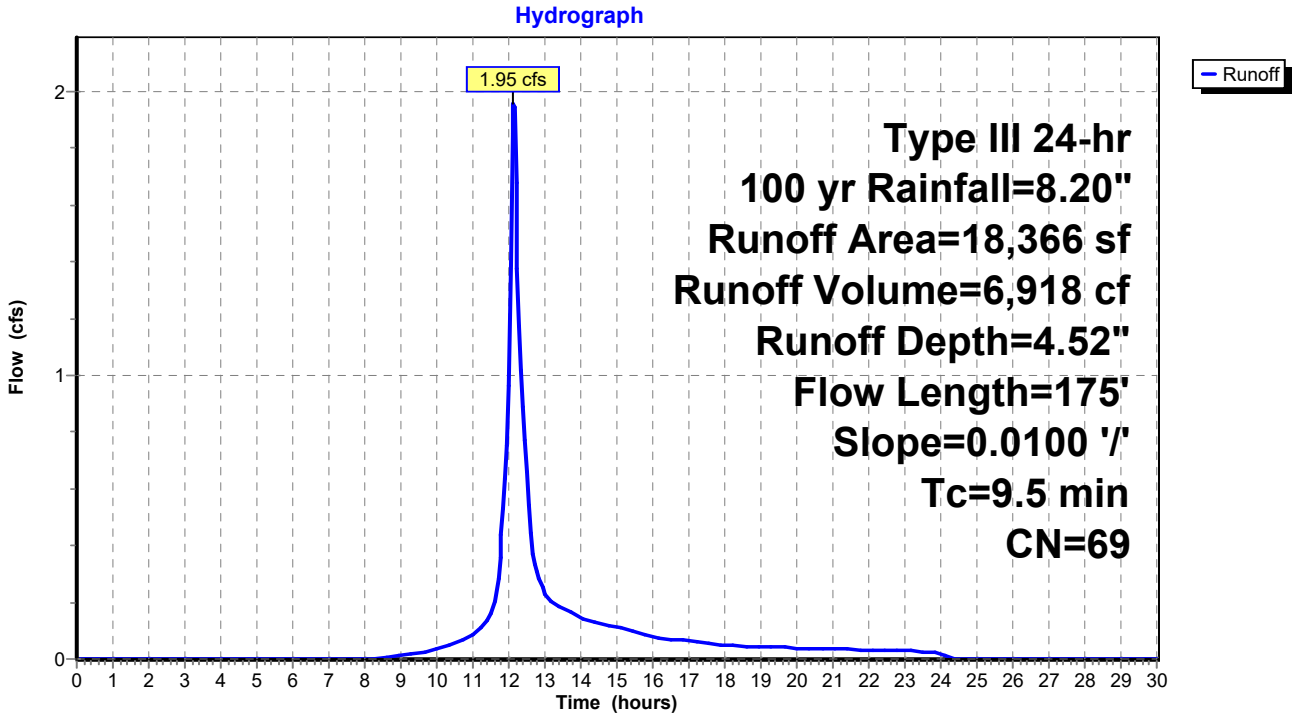
Runoff = 1.95 cfs @ 12.14 hrs, Volume= 6,918 cf, Depth= 4.52"
Routed to Pond 4P : Pervious Pvmt (South Fire Lane)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 1,020 | 98 | CONCRETE |
| * | 4,666 | 96 | permeable pavement |
| | 7,280 | 39 | >75% Grass cover, Good, HSG A |
| | 5,400 | 80 | >75% Grass cover, Good, HSG D |
| | 18,366 | 69 | Weighted Average |
| | 17,346 | | 94.45% Pervious Area |
| | 1,020 | | 5.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 50 | 0.0100 | 0.11 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.30" |
| 0.6 | 25 | 0.0100 | 0.70 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.6 | 100 | 0.0100 | 1.06 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30" |
| 9.5 | 175 | Total | | | |

## Subcatchment P8:



## Summary for Subcatchment P9:

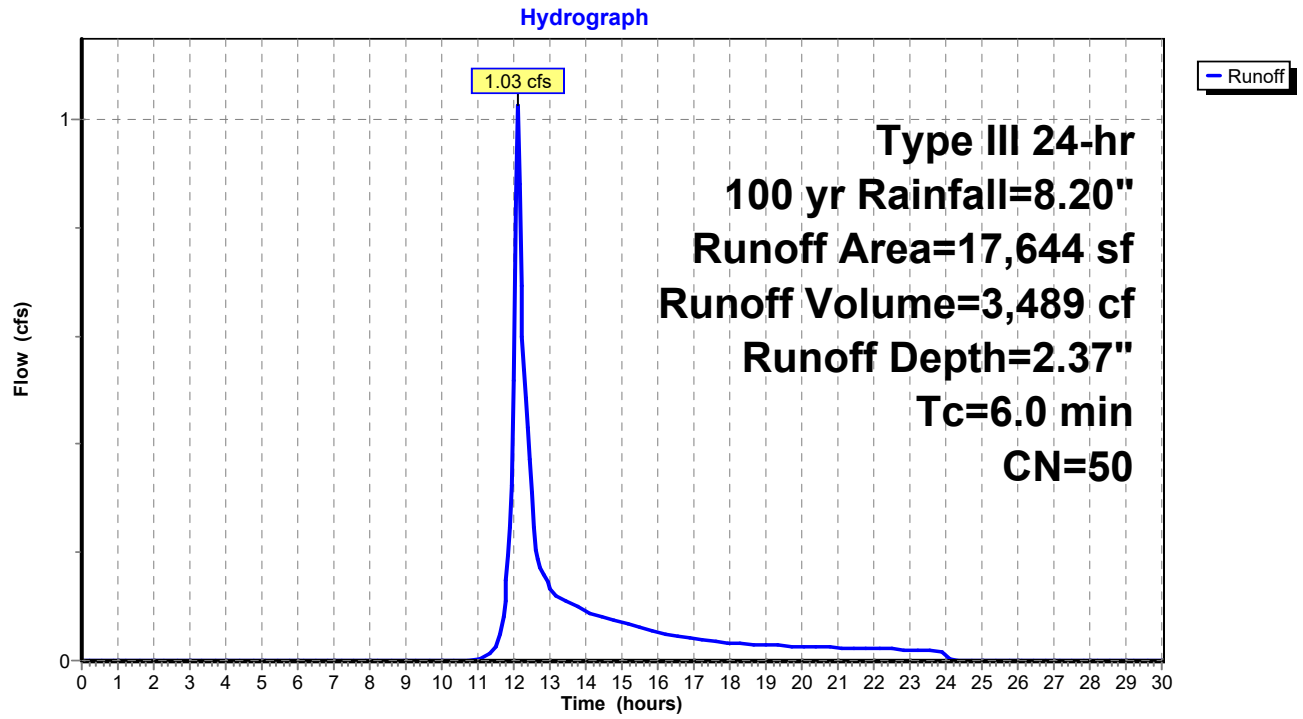
Runoff = 1.03 cfs @ 12.10 hrs, Volume= 3,489 cf, Depth= 2.37"
Routed to Pond DP1 : Drainage Network

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,850 | 98 | CONCRETE |
| | 350 | 98 | Paved parking, HSG A |
| | 14,444 | 39 | >75% Grass cover, Good, HSG A |
| | 17,644 | 50 | Weighted Average |
| | 14,444 | | 81.86% Pervious Area |
| | 3,200 | | 18.14% Impervious Area |

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

## Subcatchment P9:



## Summary for Pond 1P: Pervious Pvmt (R Drive) bed 'C'

Inflow Area = 6,132 sf, 27.32% Impervious, Inflow Depth = 7.12" for 100 yr event
Inflow = 1.06 cfs @ 12.09 hrs, Volume= 3,639 cf
Outflow = 0.76 cfs @ 12.17 hrs, Volume= 3,641 cf, Atten= 28%, Lag= 4.8 min
Discarded = 0.65 cfs @ 12.17 hrs, Volume= 3,573 cf
Primary = 0.11 cfs @ 12.17 hrs, Volume= 68 cf
Routed to Pond 2P : Pervious Pvmt (North Fire) Bed B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.14' @ 12.17 hrs Surf.Area= 3,280 sf Storage= 144 cf
Flood Elev= 144.33' Surf.Area= 3,280 sf Storage= 2,071 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min ( 772.7 - 771.9 )

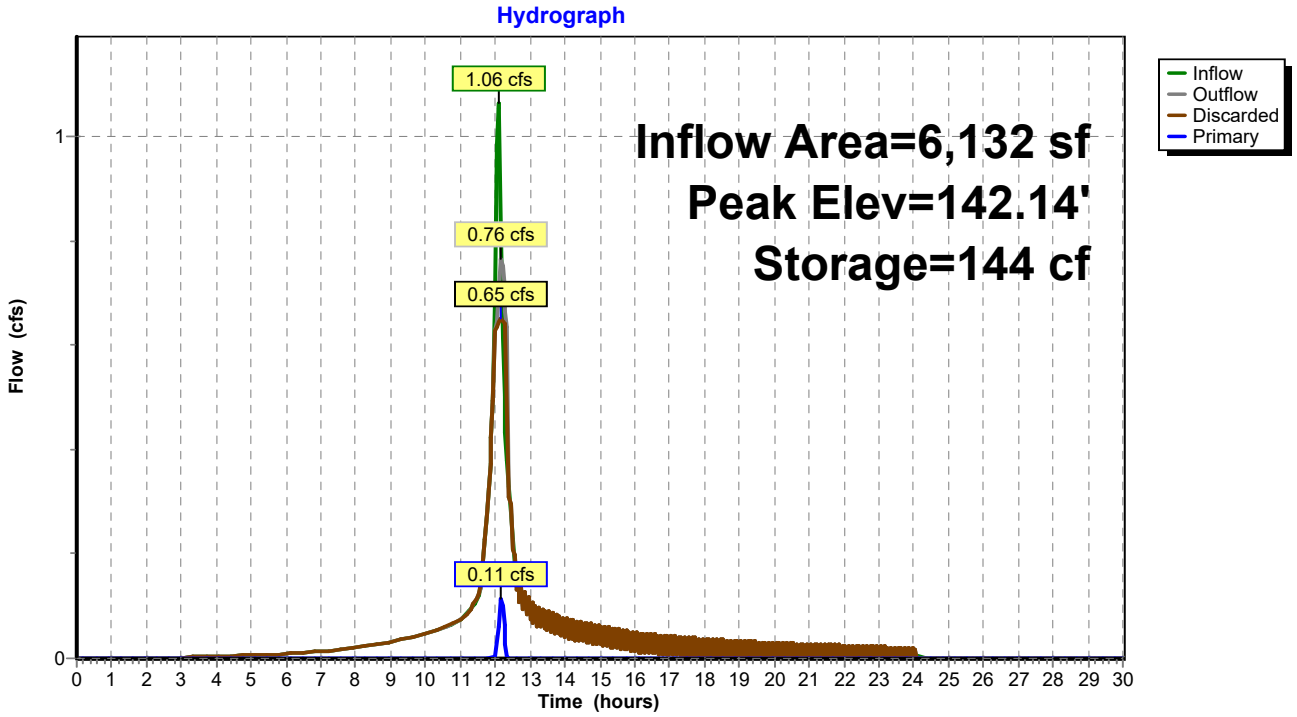
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 142.00' | 2,036 cf | **20.00'W x 164.00'L x 2.08'H Prismatoid**<br>6,822 cf Overall - 35 cf Embedded = 6,787 cf x 30.0% Voids |
| #2 | 142.00' | 35 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 180.0' |
| | | 2,071 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 144.08' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 142.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 142.00' | **6.0" Round Culvert X 2.00** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.00' / 141.50' S= 0.1000 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

**Discarded OutFlow** Max=0.65 cfs @ 12.17 hrs HW=142.14' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.65 cfs)

**Primary OutFlow** Max=0.11 cfs @ 12.17 hrs HW=142.14' TW=141.72' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.11 cfs @ 1.25 fps)

## Pond 1P: Pervious Pvmt (R Drive) bed 'C'



## Summary for Pond 2P: Pervious Pvmt (North Fire) Bed B

Inflow Area = 9,578 sf, 22.45% Impervious, Inflow Depth = 1.54" for 100 yr event
Inflow = 0.44 cfs @ 12.12 hrs, Volume= 1,233 cf
Outflow = 0.41 cfs @ 12.16 hrs, Volume= 1,234 cf, Atten= 5%, Lag= 2.4 min
Discarded = 0.14 cfs @ 12.16 hrs, Volume= 1,026 cf
Primary = 0.27 cfs @ 12.16 hrs, Volume= 209 cf
Routed to Pond 3P : Pervious Pvmt (North Fire) Bed 'A'

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 141.72' @ 12.16 hrs Surf.Area= 700 sf Storage= 51 cf
Flood Elev= 143.50' Surf.Area= 700 sf Storage= 430 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.2 min ( 829.6 - 828.5 )

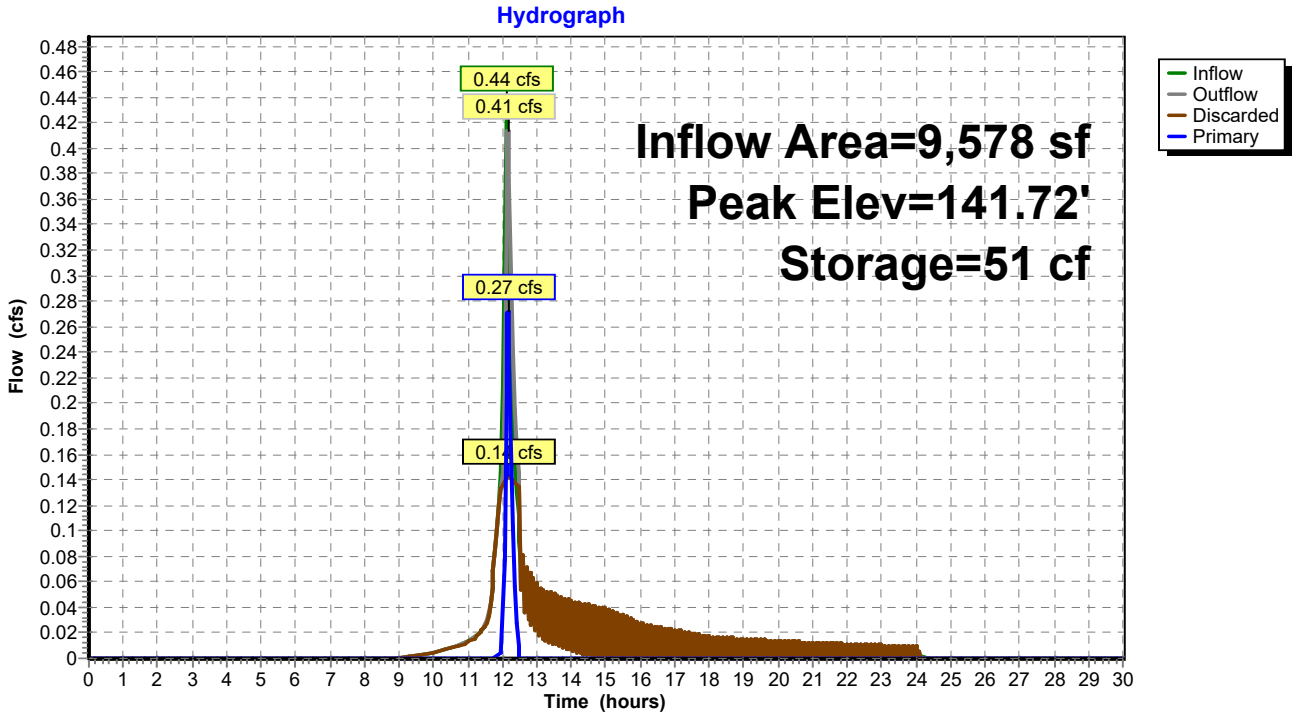
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 141.50' | 432 cf | **20.00'W x 35.00'L x 2.08'H Prismatoid**<br>1,456 cf Overall - 15 cf Embedded = 1,441 cf x 30.0% Voids |
| #2 | 141.50' | 15 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 75.0' |
| | | 447 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 143.58' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 141.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 141.50' | **6.0" Round Culvert X 2.00** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 141.00' S= 0.1000 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |

**Discarded OutFlow** Max=0.14 cfs @ 12.16 hrs HW=141.72' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.14 cfs)

**Primary OutFlow** Max=0.27 cfs @ 12.16 hrs HW=141.72' TW=141.01' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.27 cfs @ 1.60 fps)

## Pond 2P: Pervious Pvmt (North Fire) Bed B



## Summary for Pond 3P: Pervious Pvmt (North Fire) Bed 'A'

Inflow Area = 9,578 sf, 22.45% Impervious, Inflow Depth = 0.26" for 100 yr event
Inflow = 0.27 cfs @ 12.16 hrs, Volume= 209 cf
Outflow = 0.23 cfs @ 12.19 hrs, Volume= 213 cf, Atten= 15%, Lag= 1.9 min
Discarded = 0.23 cfs @ 12.19 hrs, Volume= 213 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 141.02' @ 12.20 hrs Surf.Area= 1,200 sf Storage= 8 cf
Flood Elev= 143.50' Surf.Area= 1,200 sf Storage= 759 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min ( 731.8 - 731.4 )

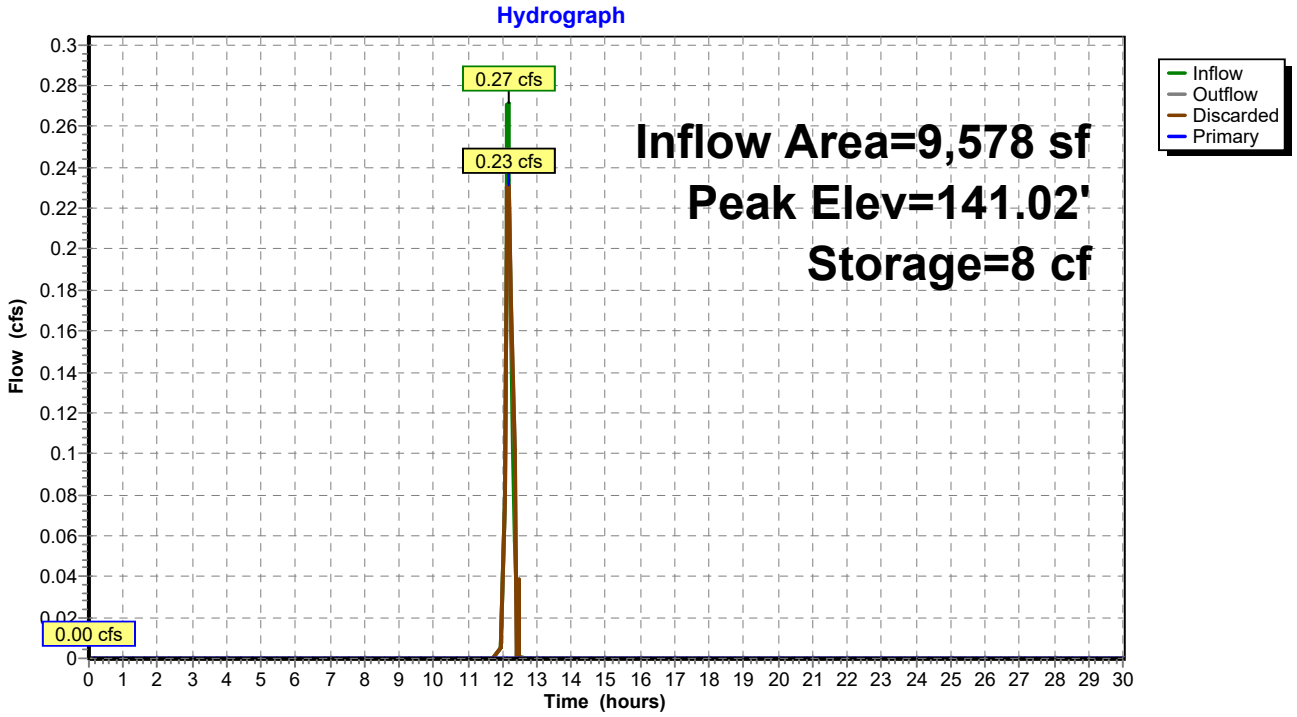
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 141.00' | 744 cf | **20.00'W x 60.00'L x 2.08'H Prismatoid**<br>2,496 cf Overall - 15 cf Embedded = 2,481 cf x 30.0% Voids |
| #2 | 141.00' | 15 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 75.0' |
| | | 759 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 143.08' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 141.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 138.00' |
| #2 | Primary | 141.50' | **12.0" Round Culvert** L= 25.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 141.00' S= 0.0200 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |
| #3 | Device 2 | 143.30' | **12.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.23 cfs @ 12.19 hrs HW=141.02' (Free Discharge)
└**1=Exfiltration** ( Controls 0.23 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=141.00' TW=141.00' (Dynamic Tailwater)
└**2=Culvert** ( Controls 0.00 cfs)
└**3=Orifice/Grate** ( Controls 0.00 cfs)

## Pond 3P: Pervious Pvmt (North Fire) Bed 'A'



## Summary for Pond 4P: Pervious Pvmt (South Fire Lane)

Inflow Area = 18,366 sf, 5.55% Impervious, Inflow Depth = 4.52" for 100 yr event
Inflow = 1.95 cfs @ 12.14 hrs, Volume= 6,918 cf
Outflow = 1.65 cfs @ 12.25 hrs, Volume= 6,894 cf, Atten= 16%, Lag= 6.5 min
Discarded = 1.11 cfs @ 12.21 hrs, Volume= 2,568 cf
Primary = 0.54 cfs @ 12.25 hrs, Volume= 4,326 cf
Routed to Pond DMH1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.99' @ 12.21 hrs Surf.Area= 4,660 sf Storage= 723 cf
Flood Elev= 145.50' Surf.Area= 4,660 sf Storage= 2,837 cf

Plug-Flow detention time= 27.1 min calculated for 6,883 cf (99% of inflow)
Center-of-Mass det. time= 25.5 min ( 854.5 - 829.0 )

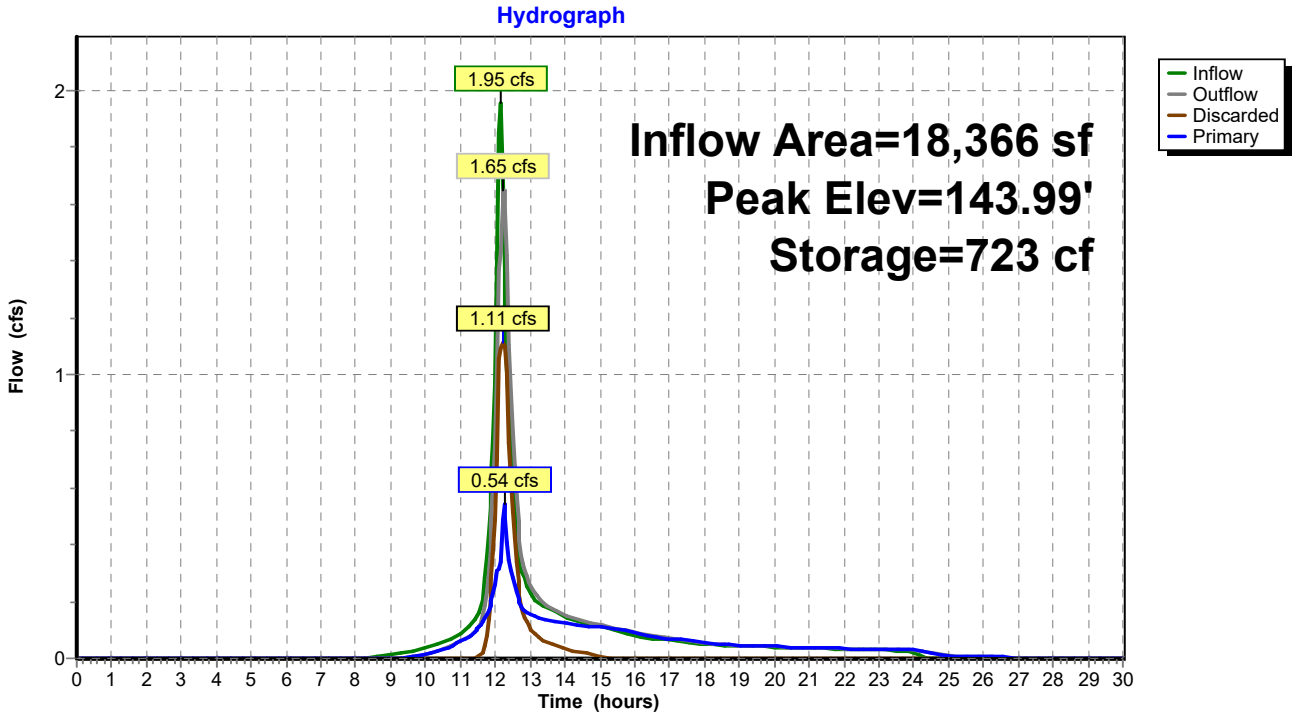
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 143.50' | 2,890 cf | **20.00'W x 233.00'L x 2.08'H Prismatoid**<br>9,693 cf Overall - 59 cf Embedded = 9,634 cf x 30.0% Voids |
| #2 | 143.50' | 59 cf | **6.0" Round Pipe Storage** Inside #1<br>L= 300.0' |
| | | 2,949 cf | Total Available Storage |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 145.58' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 143.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 141.50' |
| #2 | Primary | 143.50' | **12.0" Round Culvert** L= 170.0' Ke= 0.500<br>Inlet / Outlet Invert= 143.50' / 141.90' S= 0.0094 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |
| #3 | Device 1 | 143.67' | **12.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=1.11 cfs @ 12.21 hrs HW=143.98' (Free Discharge)
└**1=Exfiltration** ( Controls 1.11 cfs)
└**3=Orifice/Grate** (Passes 1.11 cfs of 1.80 cfs potential flow)

**Primary OutFlow** Max=0.60 cfs @ 12.25 hrs HW=143.97' TW=143.18' (Dynamic Tailwater)
└**2=Culvert** (Outlet Controls 0.60 cfs @ 2.39 fps)

## Pond 4P: Pervious Pvmt (South Fire Lane)



## Summary for Pond 5P: Permeable Pavers (Back)

Inflow Area = 2,070 sf, 0.00% Impervious, Inflow Depth = 5.81" for 100 yr event
Inflow = 0.31 cfs @ 12.09 hrs, Volume= 1,003 cf
Outflow = 0.31 cfs @ 12.09 hrs, Volume= 1,003 cf, Atten= 1%, Lag= 0.0 min
Discarded = 0.31 cfs @ 12.09 hrs, Volume= 1,003 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP2 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 144.00' @ 12.10 hrs Surf.Area= 1,720 sf Storage= 0 cf
Flood Elev= 145.50' Surf.Area= 1,720 sf Storage= 516 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.2 min ( 802.2 - 802.0 )

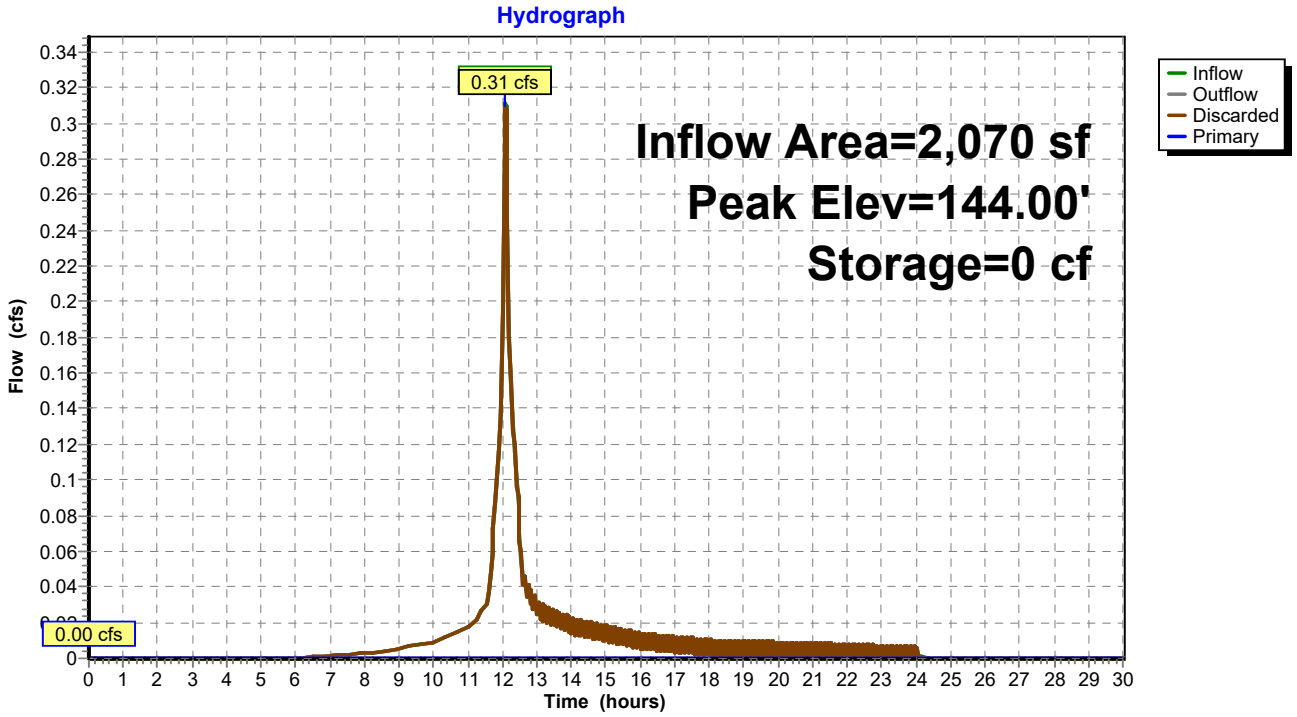
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 144.00' | 516 cf | **20.00'W x 86.00'L x 1.00'H Prismatoid**<br>1,720 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 145.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 144.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |

**Discarded OutFlow** Max=0.33 cfs @ 12.09 hrs HW=144.00' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.33 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)

## Pond 5P: Permeable Pavers (Back)



## Summary for Pond 6P:

Inflow Area = 560 sf, 0.00% Impervious, Inflow Depth = 2.81" for 100 yr event
Inflow = 0.04 cfs @ 12.10 hrs, Volume= 131 cf
Outflow = 0.04 cfs @ 12.10 hrs, Volume= 131 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.04 cfs @ 12.10 hrs, Volume= 131 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.00' @ 12.10 hrs Surf.Area= 400 sf Storage= 0 cf
Flood Elev= 145.00' Surf.Area= 400 sf Storage= 120 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min ( 858.6 - 858.6 )

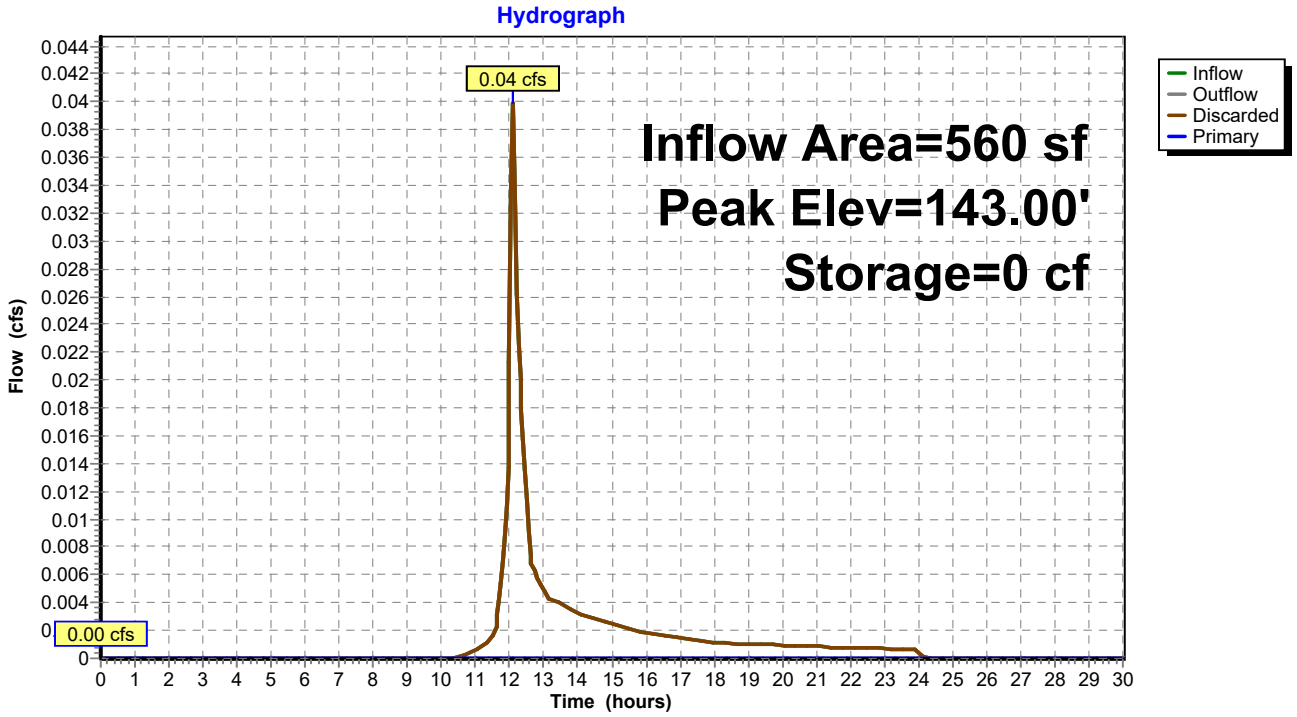
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 143.00' | 120 cf | **20.00'W x 20.00'L x 1.00'H Prismatoid**<br>400 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 144.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 143.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |

**Discarded OutFlow** Max=0.08 cfs @ 12.10 hrs HW=143.00' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.08 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=0.00' (Dynamic Tailwater)

## Pond 6P:


Hydrograph
Inflow Area=560 sf
Peak Elev=143.00'
Storage=0 cf
0.04 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0.044
0.042
0.04
0.038
0.036
0.034
0.032
0.03
0.028
0.026
0.024
0.022
0.02
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

## Summary for Pond 7P: Stone infiltration Trench

Inflow Area = 7,565 sf, 30.40% Impervious, Inflow Depth = 2.48" for 100 yr event
Inflow = 0.46 cfs @ 12.10 hrs, Volume= 1,564 cf
Outflow = 0.44 cfs @ 12.16 hrs, Volume= 1,566 cf, Atten= 6%, Lag= 3.5 min
Discarded = 0.11 cfs @ 12.15 hrs, Volume= 1,380 cf
Primary = 0.32 cfs @ 12.16 hrs, Volume= 186 cf
Routed to Pond DP2 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 145.00' @ 12.15 hrs Surf.Area= 500 sf Storage= 151 cf
Flood Elev= 145.00' Surf.Area= 500 sf Storage= 150 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.3 min ( 872.6 - 866.3 )

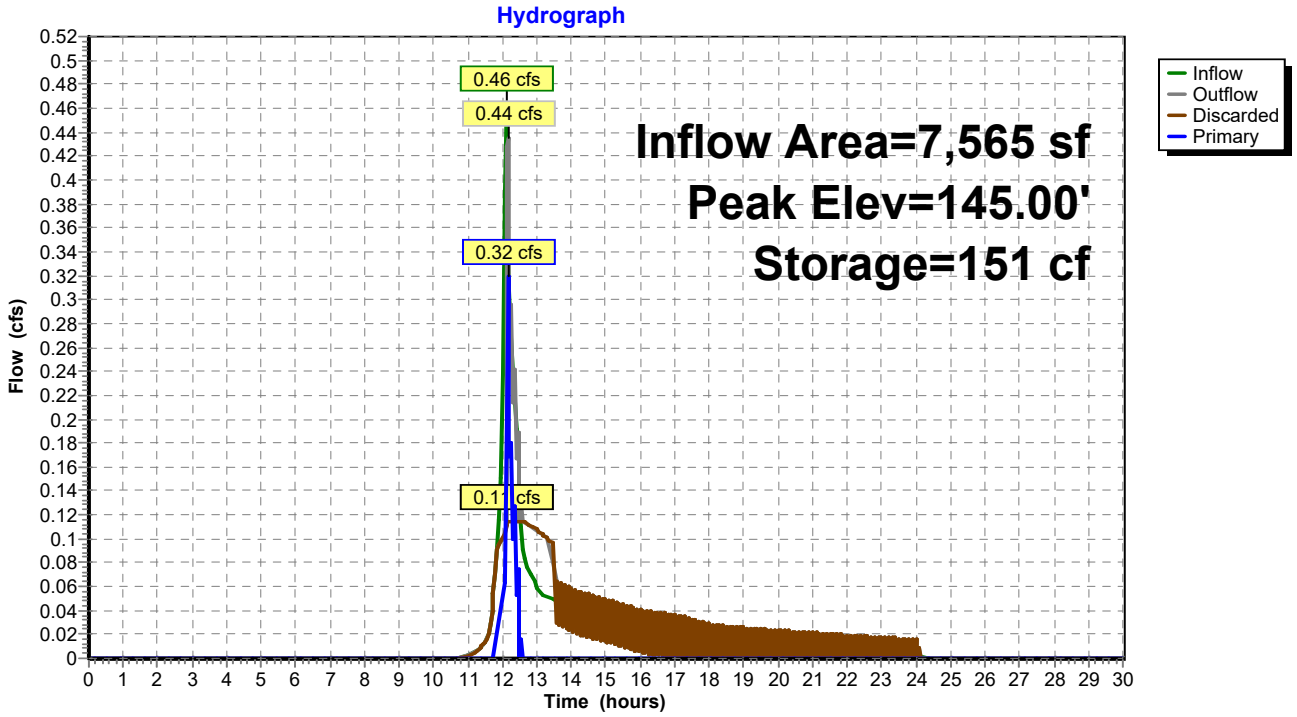
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 144.00' | 300 cf | **1.00'W x 500.00'L x 2.00'H Prismatoid**<br>1,000 cf Overall x 30.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 146.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 144.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |
| #2 | Primary | 145.00' | **500.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |

**Discarded OutFlow** Max=0.11 cfs @ 12.15 hrs HW=145.00' (Free Discharge)
**1=Exfiltration** ( Controls 0.11 cfs)

**Primary OutFlow** Max=0.28 cfs @ 12.16 hrs HW=145.00' TW=0.00' (Dynamic Tailwater)
**2=Broad-Crested Rectangular Weir** (Weir Controls 0.28 cfs @ 0.16 fps)

## Pond 7P: Stone infiltration Trench



## Summary for Pond CB1:

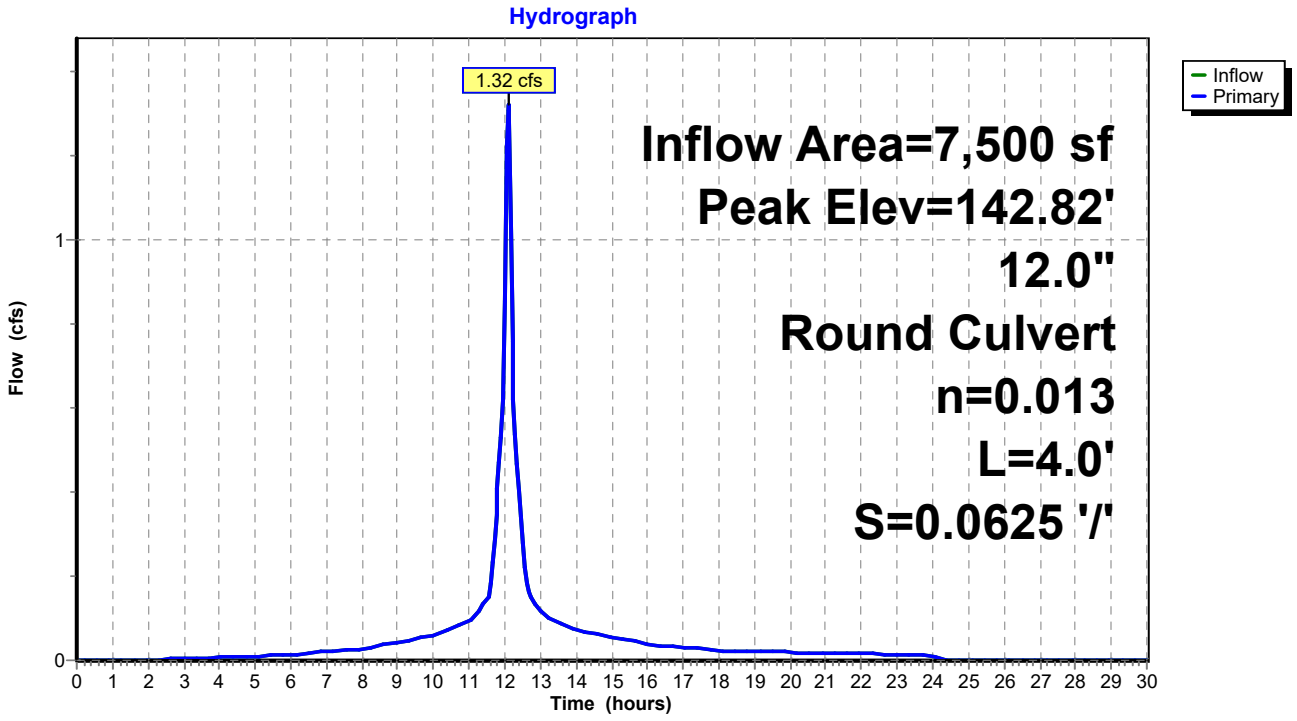
Inflow Area = 7,500 sf, 90.93% Impervious, Inflow Depth = 7.36" for 100 yr event
Inflow = 1.32 cfs @ 12.09 hrs, Volume= 4,601 cf
Outflow = 1.32 cfs @ 12.09 hrs, Volume= 4,601 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.32 cfs @ 12.09 hrs, Volume= 4,601 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.82' @ 12.24 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.25' | **12.0" Round Culvert** L= 4.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.25' / 141.00' S= 0.0625 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.00 cfs @ 12.09 hrs HW=142.02' TW=142.25' (Dynamic Tailwater)
**1=Culvert** ( Controls 0.00 cfs)

## Pond CB1:



## Summary for Pond CB2,7:

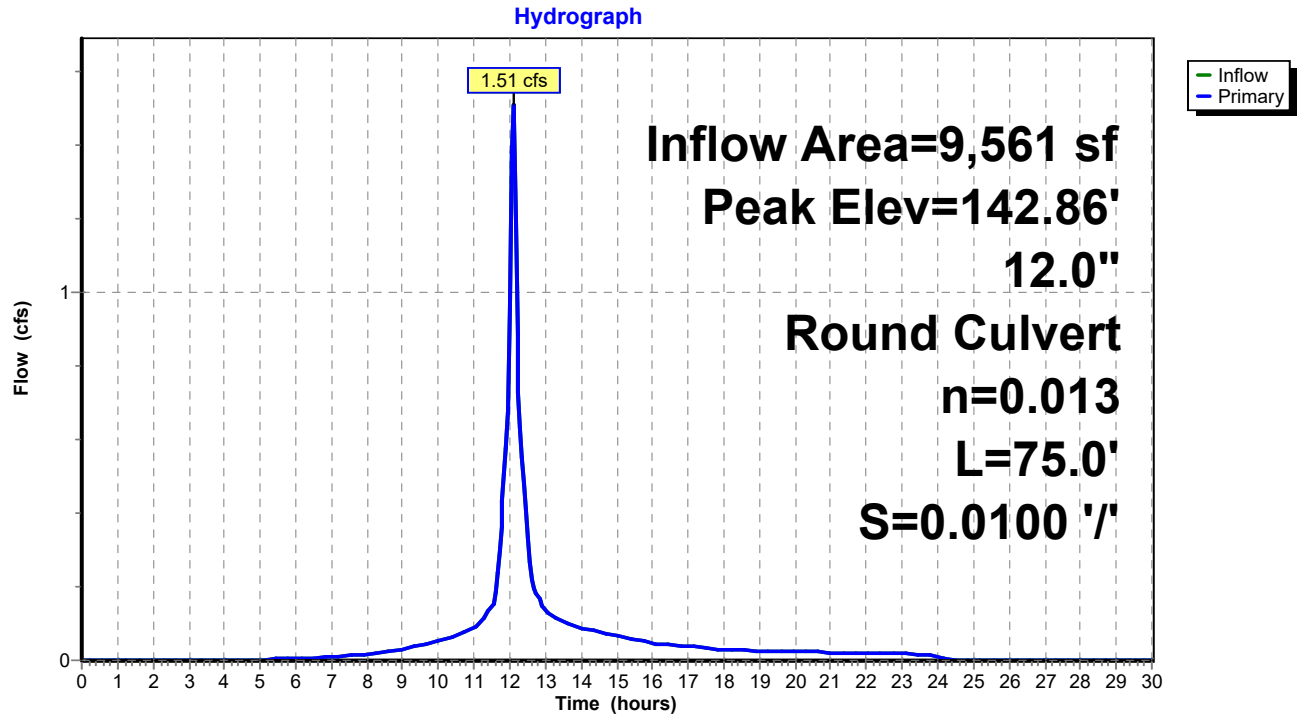
Inflow Area = 9,561 sf, 73.85% Impervious, Inflow Depth = 6.17" for 100 yr event
Inflow = 1.51 cfs @ 12.09 hrs, Volume= 4,915 cf
Outflow = 1.51 cfs @ 12.09 hrs, Volume= 4,915 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.51 cfs @ 12.09 hrs, Volume= 4,915 cf
Routed to Pond IS1 : Infiltration System 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.86' @ 12.23 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.75' | **12.0" Round Culvert** L= 75.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.75' / 141.00' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.85 cfs @ 12.09 hrs HW=142.48' TW=142.27' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 0.85 cfs @ 1.93 fps)

## Pond CB2,7:



## Summary for Pond CB3:

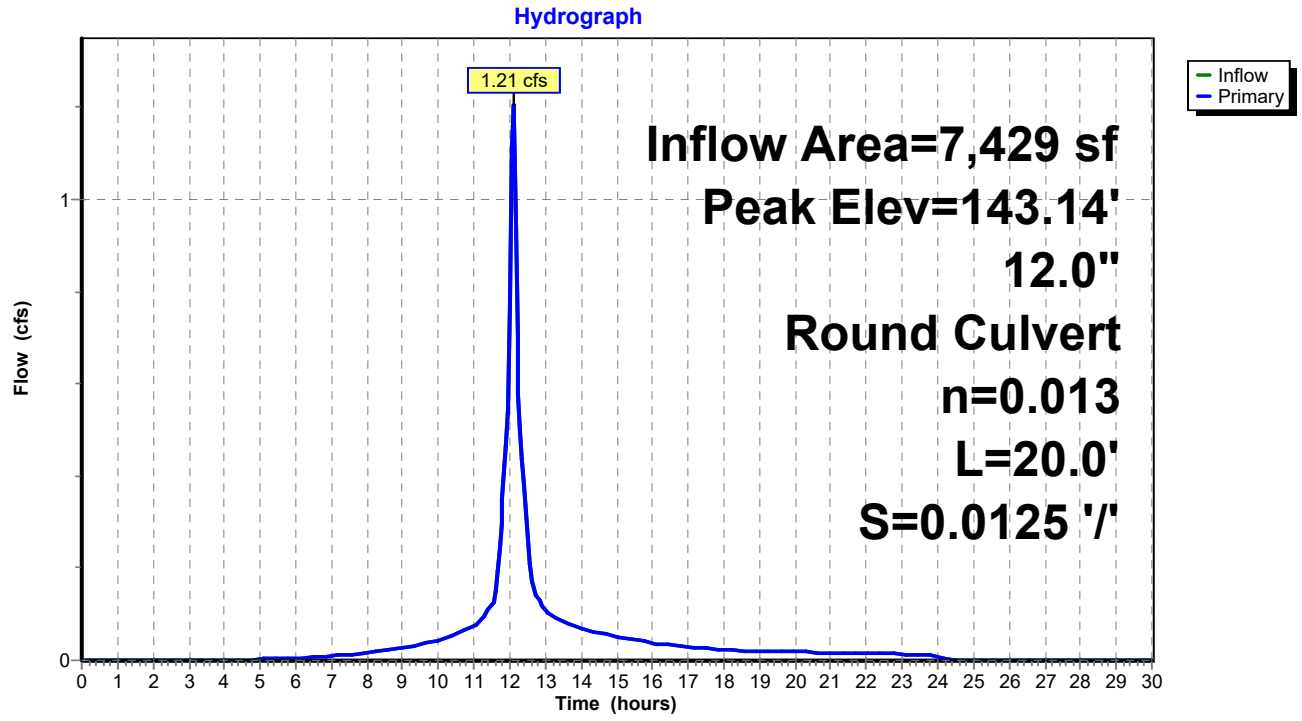
Inflow Area = 7,429 sf, 68.84% Impervious, Inflow Depth = 6.41" for 100 yr event
Inflow = 1.21 cfs @ 12.09 hrs, Volume= 3,966 cf
Outflow = 1.21 cfs @ 12.09 hrs, Volume= 3,966 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.21 cfs @ 12.09 hrs, Volume= 3,966 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.14' @ 12.13 hrs
Flood Elev= 144.35'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.75' | **12.0" Round Culvert** L= 20.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.75' / 141.50' S= 0.0125 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.65 cfs @ 12.09 hrs HW=143.09' TW=143.06' (Dynamic Tailwater)
**1=Culvert** (Inlet Controls 0.65 cfs @ 0.82 fps)

## Pond CB3:



## Summary for Pond CB4:

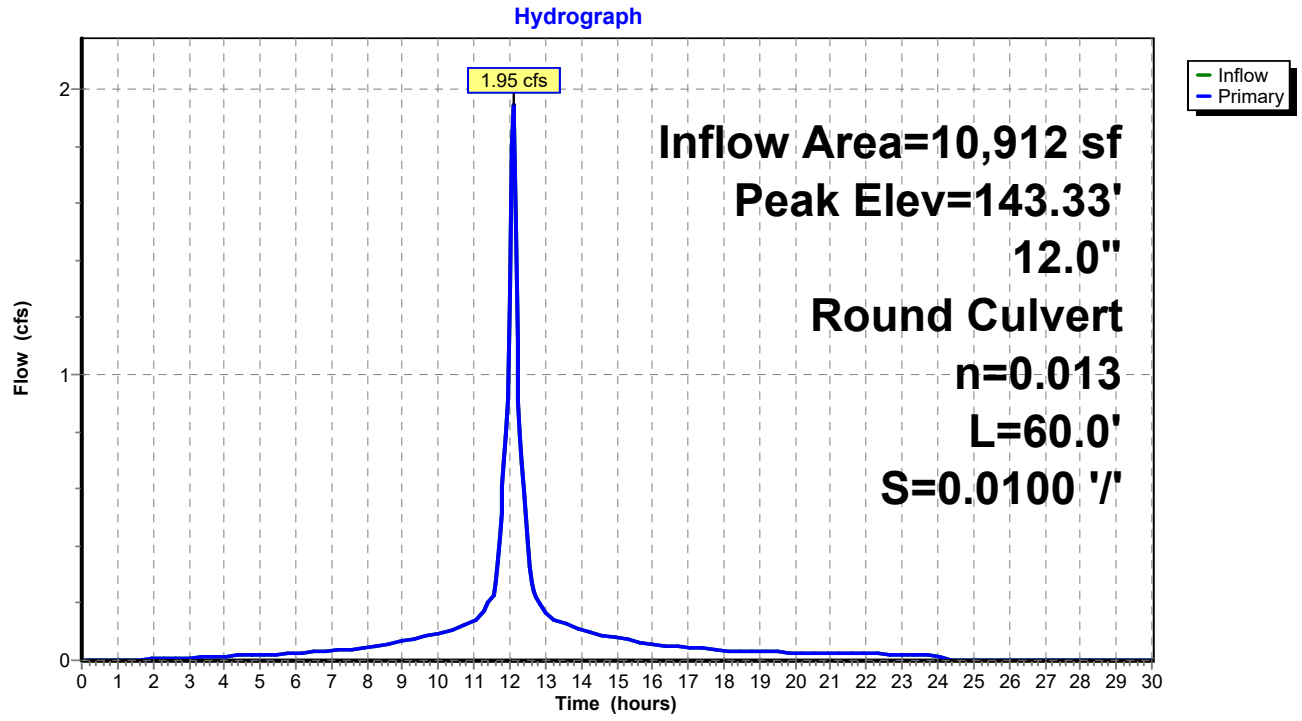
Inflow Area = 10,912 sf, 94.08% Impervious, Inflow Depth = 7.60" for 100 yr event
Inflow = 1.95 cfs @ 12.09 hrs, Volume= 6,911 cf
Outflow = 1.95 cfs @ 12.09 hrs, Volume= 6,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.95 cfs @ 12.09 hrs, Volume= 6,911 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.33' @ 12.11 hrs
Flood Elev= 144.25'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 142.10' | **12.0" Round Culvert** L= 60.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.10' / 141.50' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=1.67 cfs @ 12.09 hrs HW=143.29' TW=143.06' (Dynamic Tailwater)
**1=Culvert** (Outlet Controls 1.67 cfs @ 2.25 fps)

## Pond CB4:



## Summary for Pond CB5:

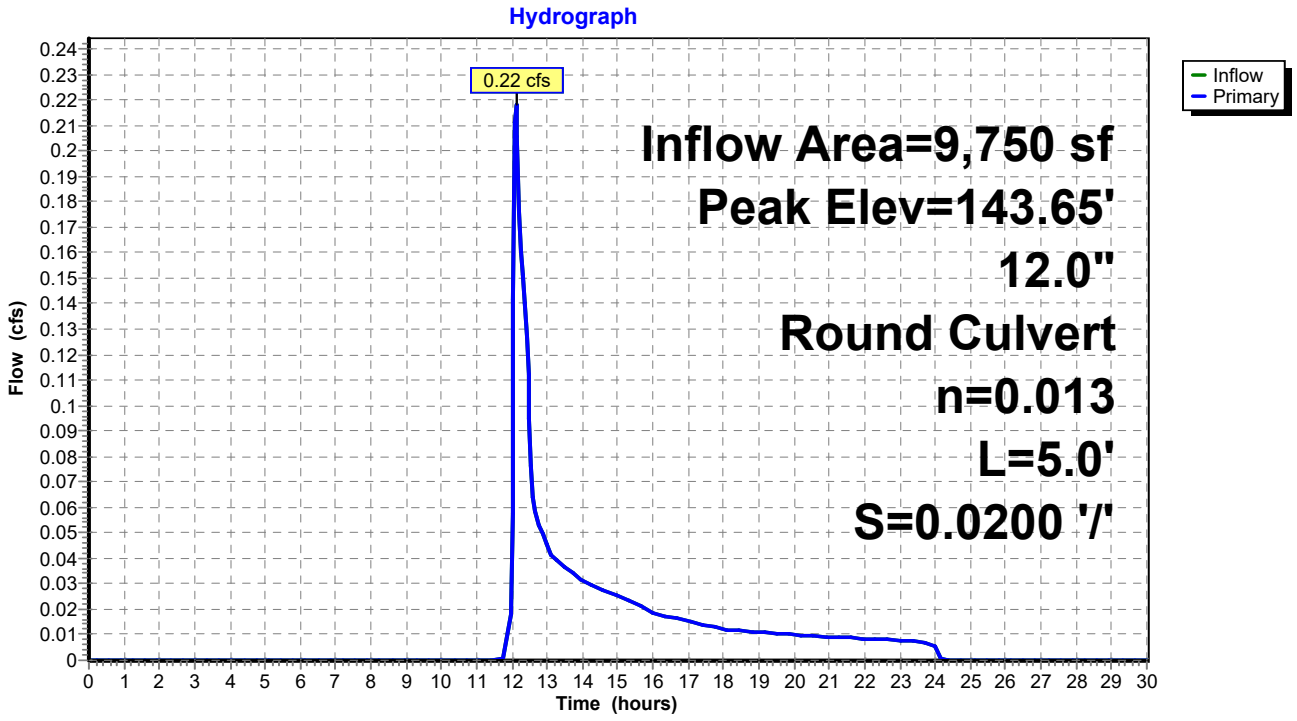
Inflow Area = 9,750 sf, 0.00% Impervious, Inflow Depth = 1.24" for 100 yr event
Inflow = 0.22 cfs @ 12.12 hrs, Volume= 1,009 cf
Outflow = 0.22 cfs @ 12.12 hrs, Volume= 1,009 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.12 hrs, Volume= 1,009 cf
Routed to Pond DMH1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.65' @ 12.15 hrs
Flood Elev= 144.10'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 142.00' | **12.0" Round Culvert** L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 142.00' / 141.90' S= 0.0200 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.00 cfs @ 12.12 hrs HW=143.53' TW=143.59' (Dynamic Tailwater)
**1=Culvert** ( Controls 0.00 cfs)

## Pond CB5:



## Summary for Pond DMH1:

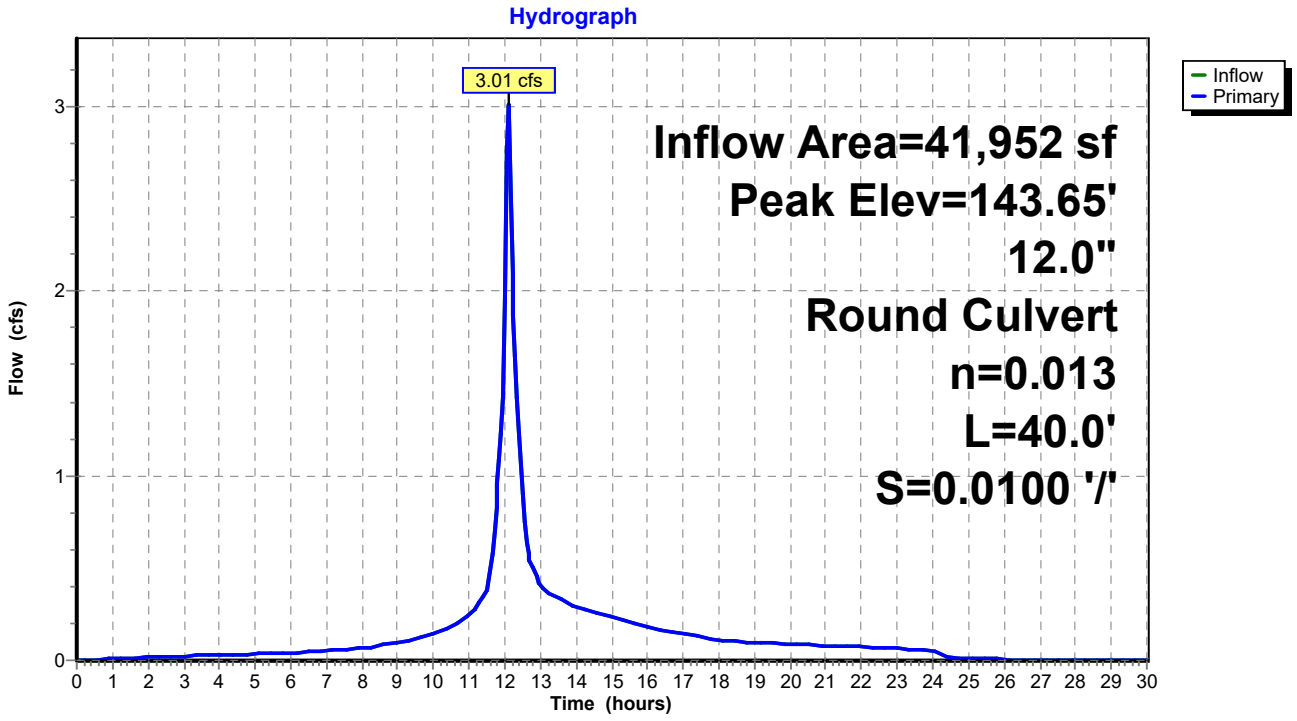
Inflow Area = 41,952 sf, 35.41% Impervious, Inflow Depth > 4.15" for 100 yr event
Inflow = 3.01 cfs @ 12.09 hrs, Volume= 14,513 cf
Outflow = 3.01 cfs @ 12.09 hrs, Volume= 14,513 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.01 cfs @ 12.09 hrs, Volume= 14,513 cf
Routed to Pond IS2 : Infiltration System 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.65' @ 12.10 hrs
Flood Elev= 144.75'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.90' | **12.0" Round Culvert** L= 40.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.90' / 141.50' S= 0.0100 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=2.79 cfs @ 12.09 hrs HW=143.61' TW=143.06' (Dynamic Tailwater)
**1=Culvert** (Inlet Controls 2.79 cfs @ 3.56 fps)

## Pond DMH1:

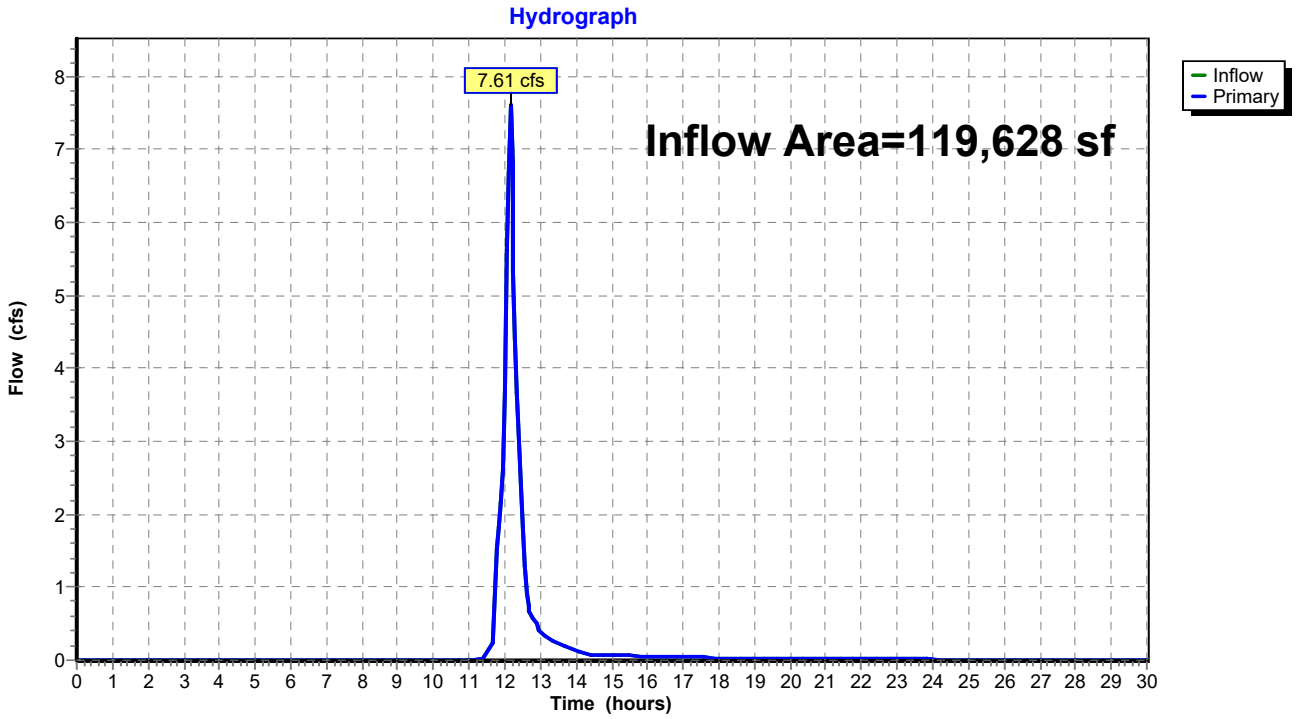


## Summary for Pond DP1: Drainage Network

Inflow Area = 119,628 sf, 53.46% Impervious, Inflow Depth = 1.42" for 100 yr event
Inflow = 7.61 cfs @ 12.15 hrs, Volume= 14,202 cf
Primary = 7.61 cfs @ 12.15 hrs, Volume= 14,202 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

## Pond DP1: Drainage Network

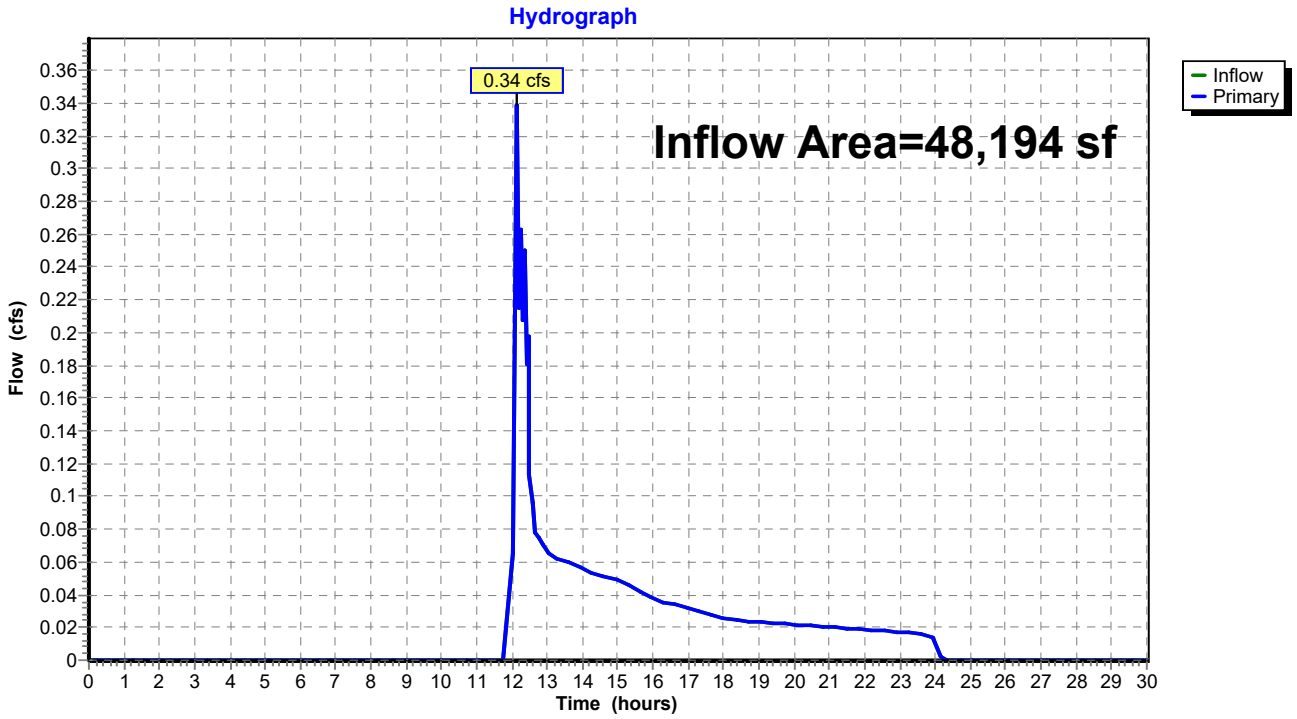


## Summary for Pond DP2: Wetlands

Inflow Area = 48,194 sf, 4.77% Impervious, Inflow Depth = 0.42" for 100 yr event
Inflow = 0.34 cfs @ 12.16 hrs, Volume= 1,679 cf
Primary = 0.34 cfs @ 12.16 hrs, Volume= 1,679 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

## Pond DP2: Wetlands



## Summary for Pond IS1: Infiltration System 1

Inflow Area = 41,131 sf, 74.21% Impervious, Inflow Depth = 5.58" for 100 yr event
Inflow = 5.45 cfs @ 12.09 hrs, Volume= 19,129 cf
Outflow = 3.66 cfs @ 12.20 hrs, Volume= 19,149 cf, Atten= 33%, Lag= 6.5 min
Discarded = 1.19 cfs @ 12.20 hrs, Volume= 17,319 cf
Primary = 2.48 cfs @ 12.20 hrs, Volume= 1,831 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 142.80' @ 12.20 hrs Surf.Area= 3,262 sf Storage= 3,457 cf
Flood Elev= 142.83' Surf.Area= 3,262 sf Storage= 3,502 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 16.0 min ( 776.5 - 760.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 141.00' | 1,649 cf | **61.50'W x 53.04'L x 1.83'H Field A**<br>5,980 cf Overall - 1,857 cf Embedded = 4,123 cf x 40.0% Voids |
| #2A | 141.00' | 1,857 cf | **ADS_StormTech SC-310 +Cap** x 126 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>126 Chambers in 18 Rows |
| | | 3,507 cf | Total Available Storage |

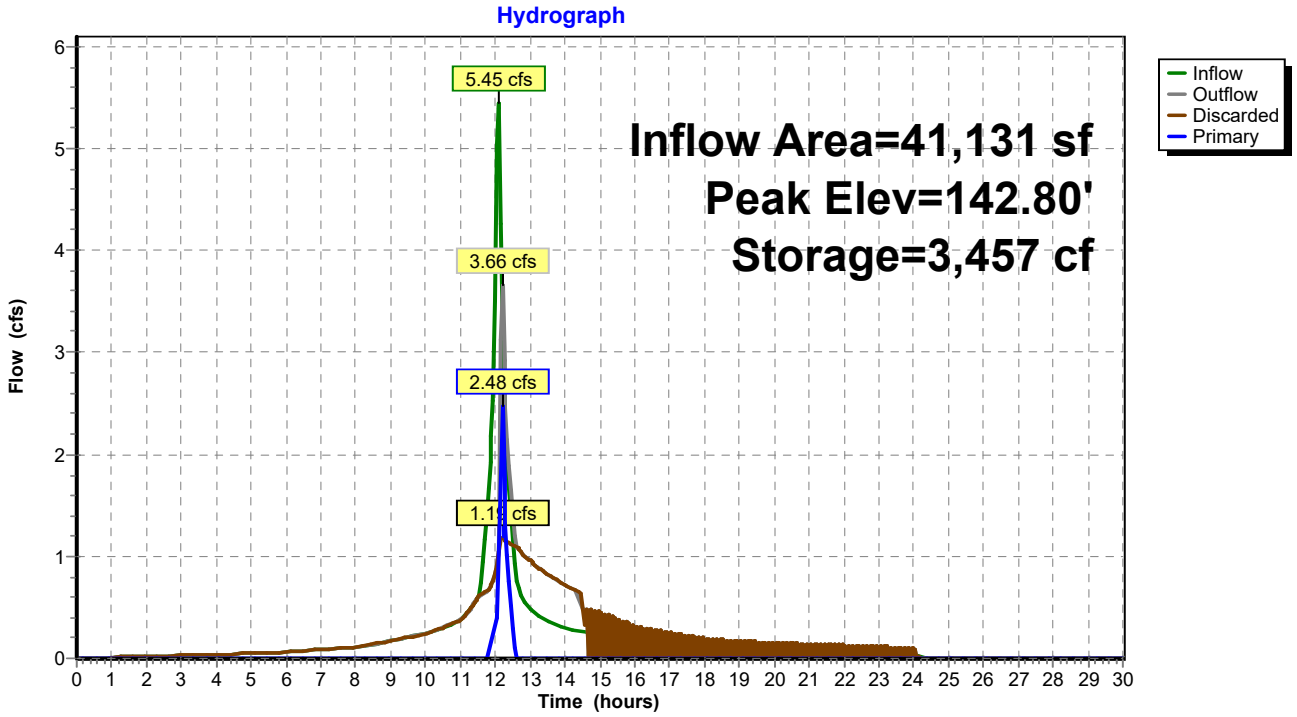
Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.00' | **15.0" Round Culvert** L= 40.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.00' / 140.00' S= 0.0250 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Discarded | 141.00' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.00' |
| #3 | Device 1 | 142.50' | **18.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=1.18 cfs @ 12.20 hrs HW=142.79' (Free Discharge)
└**2=Exfiltration** ( Controls 1.18 cfs)

**Primary OutFlow** Max=2.43 cfs @ 12.20 hrs HW=142.79' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 2.43 cfs of 6.38 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 2.43 cfs @ 1.77 fps)

## Pond IS1: Infiltration System 1



## Summary for Pond IS2: Infiltration System 2

Inflow Area = 60,293 sf, 50.15% Impervious, Inflow Depth > 5.05" for 100 yr event
Inflow = 6.16 cfs @ 12.09 hrs, Volume= 25,391 cf
Outflow = 6.16 cfs @ 12.10 hrs, Volume= 25,391 cf, Atten= 0%, Lag= 0.7 min
Discarded = 0.51 cfs @ 12.10 hrs, Volume= 16,508 cf
Primary = 5.65 cfs @ 12.10 hrs, Volume= 8,883 cf
Routed to Pond DP1 : Drainage Network

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 143.07' @ 12.10 hrs Surf.Area= 1,494 sf Storage= 1,435 cf
Flood Elev= 143.50' Surf.Area= 1,494 sf Storage= 1,691 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 13.9 min ( 803.6 - 789.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 141.50' | 865 cf | **24.83'W x 60.16'L x 2.00'H Field A**<br>2,988 cf Overall - 826 cf Embedded = 2,162 cf x 40.0% Voids |
| #2A | 141.50' | 826 cf | **ADS_StormTech SC-310 +Cap** x 56 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>56 Chambers in 7 Rows |
| | | 1,691 cf | Total Available Storage |

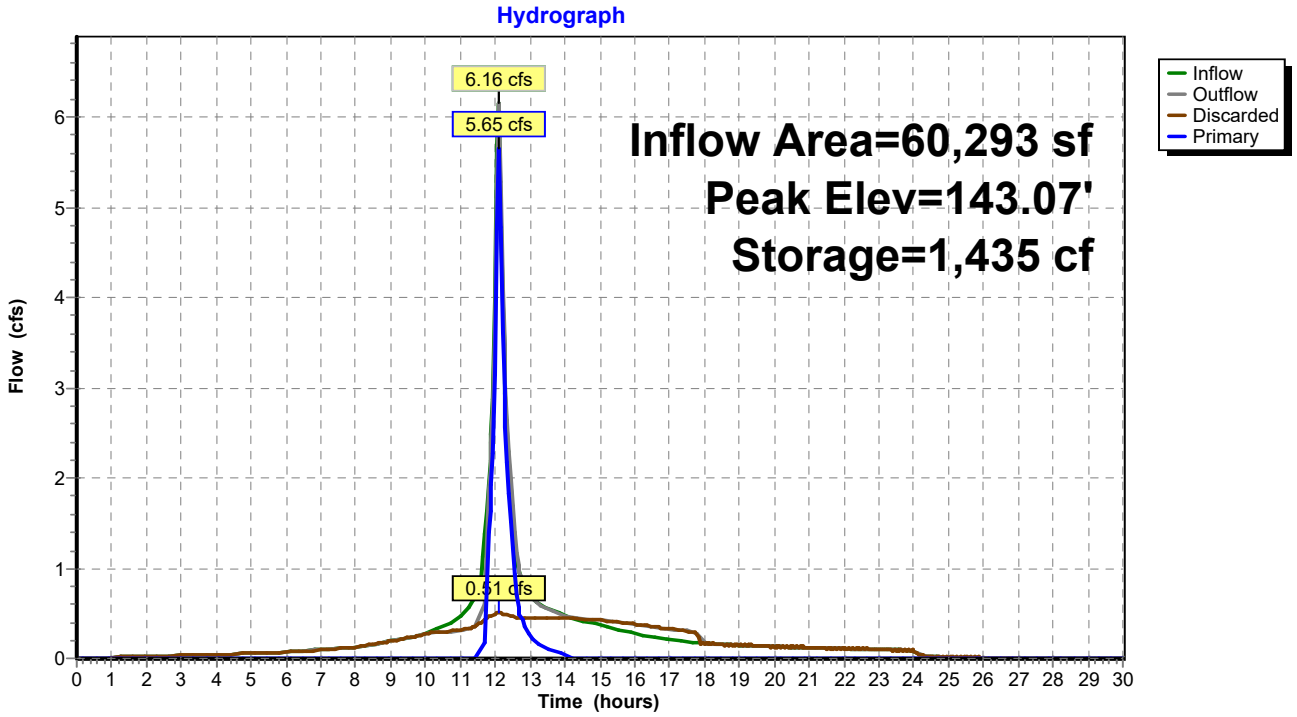
Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 141.50' | **15.0" Round Culvert** L= 80.0' Ke= 0.500<br>Inlet / Outlet Invert= 141.50' / 140.00' S= 0.0187 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Discarded | 141.50' | **8.270 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 139.50' |
| #3 | Device 1 | 142.56' | **18.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.51 cfs @ 12.10 hrs HW=143.07' (Free Discharge)
└**2=Exfiltration** ( Controls 0.51 cfs)

**Primary OutFlow** Max=5.65 cfs @ 12.10 hrs HW=143.07' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 5.65 cfs of 5.75 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 5.65 cfs @ 2.34 fps)

## Pond IS2: Infiltration System 2



ROBERT T. SMART, JR., ESQ.
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399 CHESTNUT STREET
NEEDHAM, MASSACHUSETTS 02492

TEL (781) 444-9344 FAX (781) 449-0242
E-MAIL bob@robertsmart.net WEBSITE www.robertsmart.net

Email and By Hand
October 15, 2024

Needham Planning Board
500 Dedham Avenue
Needham, MA 02492

Re: Needham Housing Authority, Linden Street Redevelopment, 0 Linden Street and 5 Chambers Street, Needham

Dear Planning Board Members:

At the hearing on September 24, 2024, I asked the Planning Board to include language in its site plan review decision allowing the NHA three years to obtain the necessary permits and begin construction on Phase 1A, and four ½ years to do so on Phase IB. The rationale given for the extended time frame was that the NHA might not be approved for financing before 2026, and that financing might only cover Phase 1A and not Phase 1B (in which case the NHA would likely file with the EOHLC in 2026 or 2027 for Phase 1B financing).

The Board asked Town Counsel Christopher Heep to advise it as to the extent of the Planning Board's authority to extend the grant of relief beyond the two year lapse period under Needham Zoning Bylaw.

I sent legal analysis and some documentation on the lapse issue to Christopher Heep on September 25th:

Needham Zoning Bylaw section 7.4.3, defining Major Projects, says the special permit granting authority has the powers of a special permit granting authority under General Laws Chapter 40A, and shall conduct its business in accordance with the decisional requirements there set forth.

Article V of the Needham Planning Board rules, applicable to site plan review, requires an applicant to obtain permits and begin construction within 2 years after the filing of the decision with the Town Clerk, except for good cause. This two-year limitation is also contained in Zoning By-Law Section 7.5.2, on special permits.

General Laws Chapter 40A, section 9, says special permits may impose conditions, safeguards and limitations on time or use, and establishes a three-year lapse period.

None of these provisions prohibits the Planning Board from determining good cause for extension of the lapse period right at the outset – in the text of its site plan review decision. None of these provisions require a public hearing for an extension or renewal of the granted relief. In Hopengarten v. Board of Appeals of Lincoln, 17 Mass.App.Ct. 1006 (1984), the Massachusetts Appeals Court found that the special permit granting authority could attach a provision which made renewal of the special permit automatic at the end of the lapse period, so long as the request is timely made, and there is no written objection (at which point there would be a hearing).

Christopher Heep sent an email to Lee Newman on October 7, 2024. In his email, he indicated that the Board could include a finding that there is good cause for an extension in its decision.

I propose that the Planning Board adopt language in its decision substantially as follows:

The relief granted under this Decision is good for two years from the date of filing of the decision with the Town Clerk. The Board understands that two years is likely to be insufficient time for the NHA to secure state approvals, obtain financing, obtain demolition and building permits, and start construction. Accordingly, the Board finds and rules that renewal of the site plan review approval for two consecutive two-year periods will be automatic, provided that the NHA provides written requests to the Planning Board for renewal, along with descriptions of progress made on the project, at least three months from the two-year anniversary date of the initial filing of the Decision with the Town Clerk, as to the first renewal, and at least three months from the date of the four-year anniversary of the initial filing of the Decision with the Town Clerk, as to the second renewal.

Very truly yours,

RTS

Robert T. Smart, Jr.

Cc: Needham Housing Authority
Christopher Heep, Esq.

Gmail

Robert Smart <bob@robertsmart.net>

# Lapse of Special Permit

1 message

**Lee Newman** <LNewman@needhamma.gov> Mon, Oct 7, 2024 at 5:21 PM
To: "Bob@robertsmart.net" <Bob@robertsmart.net>
Cc: Alexandra Clee <aclee@needhamma.gov>

Hi Bob.

When Chris Heep attended the Planning Board meeting a couple of weeks ago, he was asked whether the Board could allow for a period of time longer than 2 years for NHA to exercise their permit.

Chris read Section 7.5.2 to say that the special permit must expire no later than 2 years after issuance and did not see any room for greater flexibility given the clear language of the bylaw.

That said he did think it would be possible for the Board to include a finding that NHA's financing is dependent upon multiple sources, and may not allow for commencement of construction within the 2 year window, and that the Planning Board expects there should be good cause for an extension so long as NHA remains actively engaged in financing efforts when it nears the end of the initial 2-year exercise period. (Or something to that effect). Hopefully that will give NHA the assurance it needs.

Let me know if you have any questions.

Lee

Lee Newman

Director of Planning and Community Development

Town of Needham

500 Dedham Avenue

Needham, MA 02492

781-455-7550 ext.270

https//www.needhamma.gov/

explanatory reasons for its action if it is contrary to the recommendations of the Planning Board. The Planning Board may schedule a meeting(s) with the applicant during the review period.

**MINOR PROJECTS** – In the case of a minor project not requiring a special permit from the Board of Appeals and except as provided otherwise in Section 7.4.2 for a minor project that only involves a change in the exterior façade of a building in the Center Business District, the Planning Board shall conduct the Site Plan Review and issue a report to the applicant with a copy of said report to the Building Inspector within thirty-five (35) days from the date of filing of the Site Plan. Failure of the Board to issue said report within the 35 days shall be construed as satisfying this section.

**MAJOR PROJECTS** – No building, use or occupancy permit for any improvement to real property which constitutes a Major Project under this By-Law shall be issued, except in accordance with the terms of a special permit for such project, after site plan review as further set forth herein. A special permit shall be required for every Major Project, regardless of whether the contemplated use thereof is designated as permissible, as of right or by special permit, under the table of uses set forth in Section 3.2 of this By-Law. The special permit granting authority for all permits the issuance of which is necessary for the construction or use of a Major Project shall be the Planning Board, which, for such purposes, shall have all the powers conferred upon such special permit granting authorities by General Laws Chapter 40A, and shall conduct its business in accordance with the notice, hearing and decisional requirements there set forth, and in accordance with the requirements of this By-Law.

Prior to issuance of a Certificate of Occupancy by the Building Department, the Building Inspector or his designee shall transmit an approval of the completed project as conforming to the approved site plan special permit to the Planning Board.

### 7.4.4 Procedure

An application for Site Plan Review and ten (10) copies shall be submitted to the Planning Board concurrent with the submission of a copy to the Town Clerk. At the same time application materials shall be submitted to the Design Review Board, along with an application for design review, in accordance with the procedures described in Subsection 7.7.3 of Section 7.7. Design Review.

The applicant shall include in the application an itemized list of sections of the By-Law under which relief by special permit is or may be required for the construction or use of the project. The applicant shall certify either: (i) that the project can be constructed and/or the proposed use thereof commenced, without need for the issuance of any variance from any provision of this By-Law by the Zoning Board of Appeals, or (ii) that any and all variances necessary for the construction and/or use of the proposed project have been secured, and the period established by law for appeal from the granting thereof has expired without notice of any such appeal having been filed in the office of the Town Clerk.

acting as the Special Permit Granting Authority, such appropriate conditions, limitations, and safeguards necessary to assure the project meets the criteria of a through f.

## 7.5 Board of Appeals

The Board of Appeals consists of three (3) regular members and two (2) associate members as authorized and established by General Laws, Chapter 40A, the Special Home Rule Charter Act and Article VIII of the General By-Laws is the Board of Appeals intended and referred to in this By-Law. Subject to and consistent with all the authority, power and duties imposed upon the Board of Appeals by said General Laws, Special Home Rule Charter Act and the General By-Laws, said Board of Appeals shall exercise and perform the authority, powers and duties set forth therein, elsewhere in this By-Law and the following:

### 7.5.1 Appeals

To hear and decide an appeal taken by any person aggrieved by reason of his (her) inability to obtain a permit or enforcement action from the Building Inspector under the provisions of General Laws, Chapter 40A and/or this By-Law, by the Metropolitan Area Planning Council or by any person including an officer or board of the Town of Needham or of any abutting city or town aggrieved by an order or decision of the Building Inspector in violation of any provision of the General Laws, Chapter 40A or this By-Law.

### 7.5.2 Special Permits

To hear and decide an application for a special permit for a use, building, structure, off-street parking or loading, modification of dimensional standards, screening or landscaping, or other activity where it would not otherwise be permitted but only in those cases where this By-Law specifically refers to a change from the provisions of this By-Law by the granting of a special permit and only in those cases where the Board of Appeals makes the finding and determination set forth in subparagraph 7.5.2.1. An applicant is not entitled to a special permit and the Board of Appeals, in its discretion, may decline to grant a special permit if it is unable to make a positive finding and determination as required in subparagraph 7.5.2.1.

A special permit shall lapse within a specified period of time, not more than two years, and including any time required to pursue or await the determination of an appeal pursuant to General Laws, Chapter 40A, Section 17, and if a substantial use thereof has not sooner commenced except for good cause or in the case of a permit for construction has not begun within the period except for good cause.

(k) Similarly, no cross-examination will be allowed, although questions seeking information and deemed relevant by the Planning Board may be allowed at its discretion.

(l) Members of the Planning Board who are hearing the case may direct appropriate questions during the hearing.

(m) When all facts have been presented, the chairperson close the Hearing and inform the petitioner or his representative and others present that they will be notified of the Planning Board's decision.

Section 4. Hearing of Application for Amendments

The Planning Board shall have the authority to waive the requirement for a hearing in conjunction with an application for an amendment if, in its opinion, such amendment is minor in nature and does not constitute a substantial change in the plan or plans referenced in the original Special Permit Decision.

## ARTICLE IV FLEXIBLE DEVELOPMENT (PLANNED RESIDENTIAL DEVELOPMENT) IS A SUBDIVISION

All applications for Flexible Developments shall be reviewed simultaneously with the application for a Definitive Subdivision as prescribed under M.G.L., Chapter 41, Sections 81K-81GG. If a Planned Residential Development is also a subdivision within the meaning of the Subdivision Control Law, the above procedure shall also pertain.

## ARTICLE V ACTIONS BY THE BOARD

Section 1. Voting Requirements

The concurring vote of four of the five members of the Planning Board shall be necessary to decide in favor of the application for a Special Permit for a Planned Residential Development, Residential Compound, Flexible Development or Site Plan Review. The Planning Board shall cause to be made a detailed record of its proceedings, showing the vote of each member or, if absent or failing to vote, indicating such fact, and setting forth clearly the reason or reasons for its decision and of its other official actions, copies of which shall be filed in the Office of the Town Clerk.

Section 2. Withdrawal

An application may be withdrawn without prejudice by notice in writing to the Planning Board at any time prior to the publication of the notice of a public hearing. Withdrawal thereafter with or without prejudice requires Planning Board approval and, in either event, there shall be no return of any fee paid with such application.

Section 3. Repetitive Petition

No application which has been unfavorable and finally acted upon by the Planning Board shall be acted favorably upon within two years after the date of final unfavorable action unless the Planning Board finds by a four-fifths vote of the Board specific and material changes in the conditions upon which the previous unfavorable action was based, and describes such changes in the records of its proceedings, and unless all but one of the members of the Planning Board consent to consideration of the matter. Notice to parties in interest shall be given of the time and place of the proceedings at which the question of consent will be considered.

Section 4. Limitation on Approval/Extension

If an application for a special permit is approved by the Board, all permits necessary for the prosecution of the work shall be obtained and substantial use thereof shall be commenced except for good cause or construction begun except for good cause within two years from the date of filing of the Board's decision in the office of the Town Clerk unless the Board otherwise provides for a lesser period of time in the decision. A reasonable extension of said time shall be granted by the Board in the case of an appeal to the Superior Court under M.G.L., Chapter 17 or for other good cause shown.

Section 5. Decisions

(a) The Clerk of the Planning Board will send a copy of its decision to the property owner, the applicant if other than the property owner, the Town Clerk and, when applicable other Town Boards and departments, and will send notices of its decision to parties in interest and every person present at the public hearing who requests that notice be sent and states the address to which it is to be sent.

(b) The applicant is responsible for filing the certified decision in the Registry of Deeds and for paying the recording fees. A copy of the recorded decision, certified by the Registry, must be submitted to the Planning Board before a building permit dependent on the Special Permit can be issued by the Building Inspector, or before any lots can be released from a restrictive covenant.

## ARTICLE VI POLICIES AND ADVICE

Any advice, opinion, or information given to the applicant by a Planning Board member, the Building Inspector, the Planning Director, or other official or employee of the Town prior to a public hearing shall not be binding on the Board. Individuals are discouraged from appealing personally to the members of the Planning Board prior to a public hearing and a final decision.

General Law, 40A §9

**Part I** ADMINISTRATION OF THE GOVERNMENT

**Title VII** CITIES, TOWNS AND DISTRICTS

**Chapter 40A** ZONING

**Section 9** SPECIAL PERMITS

Section 9. Zoning ordinances or by-laws shall provide for specific types of uses which shall only be permitted in specified districts upon the issuance of a special permit. Special permits may be issued only for uses which are in harmony with the general purpose and intent of the ordinance or by-law, and shall be subject to general or specific provisions set forth therein; and such permits may also impose conditions, safeguards and limitations on time or use.

Zoning ordinances or by-laws may also provide for special permits authorizing increases in the permissible density of population or intensity of a particular use in a proposed development; provided that the petitioner or applicant shall, as a condition for the grant of said permit, provide certain open space, housing for persons of low or moderate income, traffic or pedestrian improvements, installation of solar energy systems, protection for solar access, or other amenities. Such zoning ordinances or by-laws shall state the specific improvements or amenities

record of its proceedings, indicating the vote of each member upon each question, or if absent or failing to vote, indicating such fact, and setting forth clearly the reason for its decision and of its official actions, copies of all of which shall be filed within fourteen days in the office of the city or town clerk and shall be deemed a public record, and notice of the decision shall be mailed forthwith to the petitioner, applicant or appellant, to the parties in interest designated in section eleven, and to every person present at the hearing who requested that notice be sent to him and stated the address to which such notice was to be sent. Each such notice shall specify that appeals, if any, shall be made pursuant to section seventeen and shall be filed within twenty days after the date of filing of such notice in the office of the city or town clerk.

Zoning ordinances or by-laws shall provide that a special permit granted under this section shall lapse within a specified period of time, not more than 3 years, which shall not include such time required to pursue or await the determination of an appeal referred to in section seventeen, from the grant thereof, if a substantial use thereof has not sooner commenced except for good cause or, in the case of permit for construction, if construction has not begun by such date except for good cause.

Zoning ordinances or by-laws shall also provide that uses, whether or not on the same parcel as activities permitted as a matter of right, accessory to activities permitted as a matter of right, which activities are necessary in connection with scientific research or scientific development or related production, may be permitted upon the issuance of a special permit provided the granting authority finds that the proposed accessory use does not substantially derogate from the public good.

JUSTIA

# FRED HOPENGARTEN vs. BOARD OF APPEALS OF LINCOLN.

FRED HOPENGARTEN vs. BOARD OF APPEALS OF LINCOLN.

17 Mass. App. Ct. 1006

February 22, 1984

Fred Hopengarten, of the District of Columbia, pro se.

Donald D. Cooper (Kenneth J. Mickiewicz with him) for the defendant.

Christopher D. Imlay, of the District of Columbia, for The American Radio Relay League, Incorporated, amicus curiae, submitted a brief.

Mr. Hopengarten, an attorney (the petitioner), obtained on April 8, 1981, from the town board of appeals (the board) a special permit to erect a noncommercial radio tower at the rear of his land (containing 57,847 square feet) in an R-1 zoning district in Lincoln. The permit contained conditions. Upon the present appeal the petitioner discusses only those numbered 7 and 8. [Note 1] The board acted upon recommendations of the town's planning board that (no. 4) "[t]he permit be reviewed every three years" and (no. 5) that it "remain exclusively with the petitioner and . . . not [be] transferable nor run with the land." The board, in granting the permit, proceeded under G. L. c. 40A, Section 9, as amended through St. 1980, c. 508, Section 5, the first paragraph of which reads in part, "Zoning . . . by-laws shall provide for specific types of uses which shall only be permitted in specified districts upon the issuance of a special permit. Special permits may be issued only for uses which are in harmony with the general purpose and intent of the . . . by law, and shall be subject to general or

Page 1007

specific provisions set forth therein; and such permits may also impose conditions, safeguards and limitations on time or use" (emphasis supplied).

The town's zoning by-law in Section 6.2(f) provides that the board may grant a special permit for stated uses even in an R-1 district "with the written advice of the [p]lanning [b]oard in each case . . . . [including] (f) private, non-commercial radio . . . towers; provided that a permit to erect and maintain such a tower in connection with the operation of an amateur radio station shall not be denied unless the safety of the public will be endangered by such erection or maintenance . . ." (emphasis supplied). Section 13.1.2 of the by-law provided that height limitations in the by-law (ordinarily thirty-six feet in an R-1 district) "shall not apply to radio . . . towers, permits for which have been granted under [s]ection 6.2(f). . . ."

The board removed to the Superior Court the petitioner's complaint, filed in a District Court, seeking review of the board's conditions. A Superior Court judge, after a de novo hearing, made comprehensive findings warranted by the evidence and concluded that the tower "not only [will] meet minimum safety standards but will have a significant safety factor." Judgment was entered stating that the board's decision did not exceed its authority. The petitioner appealed.

1. The judge correctly ruled that condition no. 7, making the permit "personal to the" petitioner, was valid and appropriate. See Maki v. Yarmouth, 340 Mass. 207 , 213 (1960). Condition no. 7 is consistent with G. L. c. 40A, Section 9, and with the by-law. At the arguments, the petitioner objected that, if he were by deed to convert his individual title to a tenancy by the entirety with his wife (see G. L. c. 184, Section 7, as amended through St. 1979, c. 239, Section 1) or otherwise to provide for her to share in it, as e.g., by revocable trust, compare Sullivan v. Burkin, 390 Mass. 864 (1984), it would result in a termination of the special permit under condition no. 7. We concur with the concession by the town's counsel that condition no. 7, although somewhat confusing in its imprecise terms, compare Shuman v. Aldermen of Newton, 361 Mass. 758 , 766-767 (1972), was intended to cause the permit to lapse only if the petitioner ceased to have a substantial ownership and use interest, direct or beneficial, in his present land.

2. Condition no. 8 was ruled correctly, on the basis of the evidence before the judge, to be an appropriate method of preserving an opportunity to the board (and to others with standing) to obtain, at least every three years, board review of the continuing safety (in actual use) of the metal tower, a structure which obviously may be subject to deterioration if not properly maintained and repaired. As to maintenance, a witness called by the petitioner recommended inspections of the tower, its bolts, connecting sections, and guy

wires, twice a year for rust and to be sure "everything is safe." The board reasonably could have provided that the permit should expire at the end of the three year period, so that complete

Page 1008

reapplication would have been necessary. Condition no. 8 is much less drastic. "[T]he safety of the public," of course, under the present by-law, is the only consideration which the board may take into account in the circumstances of this permit in the event of an objection to its renewal. Such an objection may be based only on public safety grounds.

Chapter 40A, Section 9, first par., expressly allows in special permits "limitations on time or use." If and when the by-law is amended, or if a renewal permit is denied for reasons other than the public safety, it will be soon enough to consider questions prematurely suggested by the petitioner (and by a largely inapposite brief of an amicus curiae) concerning conceivable (a) abuses of condition no. 8, or (b) board action based upon by-law amendments which may never take place. See as to questions discussed in the brief of the amicus curiae, Sleeper v. Old King's Hy. Reg. Hist. Dist. Commn., 11 Mass. App. Ct. 571 , 575-576 (1981).

3. The board did not discriminate against the petitioner merely because it began, with the petitioner's application, to impose (as compared with its action with respect to towers earlier erected in Lincoln) more adequate conditions to protect the public's safety in granting this permit to this petitioner. See Middlesex & Boston St. Ry. v. Aldermen of Newton, 371 Mass. 849 , 852-853 (1977).

Judgment affirmed.

FOOTNOTES

[Note 1] Conditions numbered 7 and 8 read (in part):

"7. The special permit here granted shall terminate automatically on the date that Petitioner alienates the title he now holds to his property. . . .

8. Subject to condition no. 7 . . . [this] special permit . . . shall be for a period of three (3) years from the date of this decision. . . . [It] shall be renewed automatically for successive three-year periods provided that a written request for renewal is made to . . . [this] Board . . . not less than three (3) months prior to the expiration of the then-existing three-year period. Publication of notice of said request shall be made in the same manner as would be

required for an original application for a special permit. . . . Said notice shall state that the renewal request will be granted automatically unless, prior to the expiration of the then-existing permit, a written objection to the renewal, stating . . . reasons . . . is received by the Board. In the event . . . [of] such an objection . . ., a hearing on the . . . renewal shall be held and shall proceed in a manner identical to the course of proceedings in connection with an original permit application."

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## Alexandra Clee

**From:** John Schlittler
**Sent:** Friday, October 4, 2024 1:34 PM
**To:** Alexandra Clee
**Subject:** Needham Housing project on Linden St

Alexandra,
I have met with the team regarding the Needham Housing construction on Linden St. The group has answered our questions related to the construction phase and its impact to the area. The Police Department is ok with the design and first construction phase.

Chief John J Schlittler
Needham Police Department
88 Chestnut St
Needham, MA 02492
Office: (781-455-7583)
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jschlittler@needhamma.gov

## Alexandra Clee

**From:** John Schlittler
**Sent:** Wednesday, October 9, 2024 11:28 AM
**To:** Alexandra Clee
**Subject:** RE: Request for comment -REVISED Materials Received - NHA Linden Chambers Redevelopment

Pd is fine

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**From:** Alexandra Clee <aclee@needhamma.gov>
**Sent:** Wednesday, October 9, 2024 11:25 AM
**To:** Joseph Prondak <jprondak@needhamma.gov>; Thomas Ryder <tryder@needhamma.gov>; John Schlittler <JSchlittler@needhamma.gov>; Tara Gurge <TGurge@needhamma.gov>; Timothy McDonald <tmcdonald@needhamma.gov>; Tom Conroy <TConroy@needhamma.gov>; Carys Lustig <clustig@needhamma.gov>; Deb Anderson <andersond@needhamma.gov>
**Cc:** Elisa Litchman <elitchman@needhamma.gov>; Lee Newman <LNewman@needhamma.gov>; Justin Savignano <jsavignano@needhamma.gov>; Donald Anastasi <DAnastasi@needhamma.gov>; Jay Steeves <steevesj@needhamma.gov>; Ronnie Gavel <rgavel@needhamma.gov>; Edward Olsen <eolsen@needhamma.gov>
**Subject:** Request for comment -REVISED Materials Received - NHA Linden Chambers Redevelopment

<< File: Planning Board 9-24-24 Linden Project Public Hearing Follow-up Summary v6.1_FINAL.pdf >> << File: SPR Revisions 2024-10-08 - Draingae Report - SPR Revision Summary.pdf >> << File: SPR Revisions 2024-10-08 - NHA Linden - drawings.pdf >>
Dear all,

We have received the attached revised materials from the Needham Housing Authority regarding their application to redevelop Linden Chambers. The Planning Board has scheduled this continued public hearing for October 15. If you could get your comments to our department by that time (or the sooner the better), that would be great.

Attached please find:

1. Letter from Reginald C. Foster, Chair, Board of Commissioners, Needham Housing Authority, dated October 8, 2024.
2. Stormwater Report, titled “Stormwater Report In Support of Notice of Intent for Linden Street Redevelopment (Map 133, Lots 23 and 24) Needham MA” by Hancock Associates, dated 8/23/24, revised 10/8/2024.
3. Revised Plan Sheets:
    a. Sheet 6, Sheet C4.0, entitled “Grading and Drainage,” dated September 6, 2024, revised October 8, 2024.
    b. Sheet 11, Sheet L102A, entitled “Materials Plan,” dated September 6, 2024, revised October 8, 2024.
    c. Sheet 27, Sheet A201, entitled “Phase 1A Elevations,” dated September 6, 2024, revised October 8, 2024.

THanks, alex.

Alexandra Clee
Assistant Town Planner
Needham, MA

Town of Needham
Building Department
500 Dedham Ave.
Needham, MA 02492

*Tel.781-455-7550 x 308*

October 9, 2024

Town of Needham Planning Board
Lee Newman / Town Planner
500 Dedham Ave.
Needham, MA. 024902

Re: NHA Linden Chambers Redevelopment

Dear Planning Board Members,

Please be advised that I have reviewed the proposed plan for the Linden Chambers Redevelopment and have the following comments, which are based on concerns raised in prior meetings.

The Massachusetts State Building Code governs the design and construction of the building. This includes, but is not limited to structural design, safe egress facilities and fire protection systems.

The project has a Geo-technical Engineer who will determine the type of soil under the building through soil borings and the foundation will be engineered to those conditions. A structural Engineer will design the entire structure including the foundations and framing which ultimately consider gravity, wind, snow and seismic forces. All of this engineering will be peer reviewed by an independent structural engineer, as mandated within the State Building Code.

The Building Code determines the number of stairways required in this building and the maximum travel distance required to get to these. This building provides 3 independent stairways with a travel distance of less than (the maximum of) 250’ from anywhere within each floor. Stairways are also enclosed by highly fire-restive walls and doors, providing additional safe haven from smoke and fire, ensuring a protected path to the outside.

The building will have state of the art fire alarm and fire sprinkler systems along with an emergency response radio coverage amplifier to ensure that emergency responders have communication capabilities throughout the entire building, all designed by Fire Protection Engineers in accordance with the Building Code.

Windows with an interior-sill height of 24 inches or less, that are also more than 6’ above the exterior grade must have fall protection devices that limit the initial opening of the window to only 4 inches. The window can then be fully opened by disabling the limiter, typically by the push of a button or flip of a lever.

The removal of hazardous waste and control of dust is overseen by our Health Dept, in concert with the Mass DEP.

The Building Department works closely with the Fire, Health and Engineering Departments to ensure that all required safety features are incorporated into the construction of all new buildings. Personnel in each of these departments are highly skilled in administering the various aspects of all our applicable codes.

I am satisfied that this building will be safe and comfortable for all occupants, once completed. I remain available to answer any further questions.

Sincerely,

Joe Prondak
Building Commissioner

**TOWN OF NEEDHAM, MASSACHUSETTS**
**PUBLIC WORKS DEPARTMENT**
**500 Dedham Avenue, Needham, MA 02492**
**Telephone (781) 455-7550 FAX (781) 449-9023**

October 15, 2024

Needham Planning Board
Needham Public Service Administration Building
Needham, MA 02492

RE: Major Project Special Permit MPSP 2024-01
Linden Chambers Housing Redevelopment

Dear Members of the Board,

The Department of Public Works has completed its review of the updated plans for the above referenced site. The applicant is proposing to demolish and redevelop property at 0 Linden and 5 Chamber Street. Phase IA consists of demolishing 10-existing buildings on Linden Street and constructing a new 4-story building with 76- units. Phase IB is not part of this review.

The updated documents submitted for review are as follows:

1. Letter from Reginald C. Foster, Chair, Board of Commissioners, Needham Housing Authority, dated October 8, 2024.
2. Stormwater Report, titled "Stormwater Report In Support of Notice of Intent for Linden Street Redevelopment (Map 133, Lots 23 and 24) Needham MA" by Hancock Associates, dated 8/23/24, revised 10/8/2024.
3. Revised Plan Sheets:
    a. Sheet 6, Sheet C4.0, entitled "Grading and Drainage," dated September 6, 2024, revised October 8, 2024.
    b. Sheet 11, Sheet L102A, entitled "Materials Plan," dated September 6, 2024, revised October 8, 2024.
    c. Sheet 27, Sheet A201, entitled "Phase 1A Elevations," dated September 6, 2024, revised October 8, 2024.

Our comments and recommendations are as follows:

- We have met with the Housing Development Team, and they have addressed our comments. We have no more comments or concerns.

If you have any questions regarding the above, please contact our office at 781-455-7538.

Truly yours,

Thomas A Ryder
Town Engineer

PLANNING & COMMUNITY DEVELOPMENT
PLANNING DIVISION

**AMENDMENT TO DECISION**
**October 15, 2024**

**Major Project Site Plan Special Permit**
**Needham Senior Center**
**SPMP No. 2011-04**
(Original Decision dated October 18, 2011,
amended February 21, 2012, September 3, 2013 and December 2, 2014)

Decision of the Planning Board (hereinafter referred to as the Board) on the Petition of the Town of Needham, 1471 Highland Avenue, Needham, Massachusetts (hereinafter referred to as the Petitioner) for property that is the location of the Center at the Heights at 300 Hillside Avenue, Needham, Massachusetts, shown on Assessor's Map 299, Parcel 14 containing 1.64 acres in the Hillside Avenue Business Zoning District.

This decision is in response to an application submitted to the Board on August 6, 2024, by the Petitioner for an amendment of Major Project Site Plan Special Permit No. 2011-04 issued by the Board on October 18, 2011, amended February 21, 2012, September 3, 2013 and December 2, 2014. The requested Major Project Site Plan Special Permit Amendment would, if granted, amend the previously approved permit to allow the installation of a permanent emergency generator to serve the Center at the Heights building. Additionally, the generator placement will require the reduction of 3 parking spaces from the site.

In accordance with the Zoning By-Law, Section 5.1.1.5, a Special Permit is required to waive strict adherence with the requirements of Sections 5.1.2 of the Zoning By-Law (Off Street Parking Requirements). In accordance with the Zoning By-Law and Special Permit No. 2011-04, Section 4.2, a Major Project Site Plan Review Amendment is required to authorize the change to the approved plans.

After causing notice of the time and place of the public hearing and of the subject matter hereof to be published, posted and mailed to the Petitioner, abutters and other parties-in-interest as required by law, the hearing was called to order by the Chairperson, Natasha Espada, on Tuesday, August 27, 2024, at 7:00 PM in the Public Services Administration Building, Charles River Room, 500 Dedham Ave, Needham, Massachusetts, as well as by Zoom Web ID Number 880 4672 5264. Board members Adam Block, Natasha Espada, Paul S. Alpert, Jeanne S. McKnight and Artie Crocker were present throughout the August 27, 2024 proceedings. The record of the proceedings and the submission upon which this decision is based may be obtained from the office of the Town Clerk or the office of the Board.

Submitted for the Board's deliberation prior to the close of the public hearing were the following exhibits:

Exhibit 1 - Application Form for Site Plan Review completed by the Petitioner date stamped by the Town Clerk August 6, 2024.

Exhibit 2 - Letter from Attorney Chris Heep, dated June 26, 2024, with Exhibit A – aerial photograph showing proposed location of emergency generator.

Exhibit 3 - Letter from Attorney Chris Heep, dated August 21, 2024, transmitting a Memorandum from Lawrence G. Copley, L.G. Copley Associates, Acoustic and Vibration, dated August 19, 2024.

Exhibit 4 - Interdepartmental Communication (IDC) to the Board from Thomas Ryder, Town Engineer, Department of Public Works, dated August 21, 2024; IDC to the Board from Police Chief, John Schlittler, Needham Police Department, dated August 2, 2024; IDC to the Board from Chief Tom Conroy, Needham Fire Department, dated August 2, 2024; IDC to the Board from Joe Prondak, Building Commissioner, Building Department, dated August 2, 2024; IDC to the Board from Tara Gurge, Assistant Public Health Director, Needham Health Department, dated August 12, 2024; and IDC to the Board from Kristin Scoble, Emergency Management Administrator, dated August 15, 2024.

Exhibits 1, 2 and 3 are referred to as The Plan.

## FINDINGS AND CONCLUSIONS

Based upon its review of the exhibits and the record of the proceedings, the Board found and concluded that:

1.1 The original permit was issued on October 18, 2011, and it authorized construction and use of the Center at the Heights ("CATH") at 300 Hillside Avenue. The original permit has been amended by the Amendments to Decision dated February 21, 2012 (authorizing minor site modifications), September 3, 2013 (authorizing minor site modifications) and December 2, 2014 (modifying parking arrangements for Senior Center employees and volunteers).

1.2 The Petitioner, Town of Needham, is seeking to modify Major Project Site Plan Review Special Permit No. 2011-04 dated October 18, 2011, amended February 21, 2012, September 3, 2013 and December 2, 2014 as follows: to install a permanent emergency generator to serve the CATH building. Additionally, the generator placement will require the reduction of 3 parking spaces.

1.3 When the CATH was originally permitted with the Planning Board, a generator was not included in the design or shown on the approved plans. A generator was not required at that time, in part because the CATH had not been designated by the Town for use as a shelter in the event of an emergency. That has changed; the Town's emergency management planning now provides for the CATH to serve as a shelter in the event of an emergency (for example, as a cooling center in an extreme heatwave). To fully serve as an emergency shelter, a permanent on-site emergency generator is needed to support the building and its occupants. A temporary emergency generator has previously been placed at the property, but this temporary generator is not capable of supporting the entire electrical load for the building and an upgrade to a more permanent solution is necessary at this time. The Petitioner is therefore requesting that the permit be amended to reflect this new site improvement, which was not previously shown on the plans or referred to in the permit.

1.4 The emergency generator is not intended to be used except (a) in event of a power outage and (b) during routine maintenance, testing, and exercise of the generator consistent with the manufacturer's specifications. In particular, the Petitioner has suggested that the permit include a condition that limits maintenance and testing to an interval consistent with the manufacturer's

recommendation, to be conducted on a schedule within weekday hours of 9:00 a.m. and 5:00 p.m. only.

1.5 The new emergency generator can be expected to generate noise on the intermittent occasions when its operation is necessary, but it has been strategically placed at a location recommended by the Petitioner's acoustic engineer to minimize any impact to residential properties and the surrounding area. The emergency generator is proposed to be located along the eastern property line. This generator location immediately abuts the MBTA commuter rail line. On the opposite side of the commuter rail line, the nearest abutting private properties are 17 Avery Square, a commercial office building, 875 Highland Avenue, a commercial automobile service station, 855 Highland Avenue, a commercial retail store, and 845 Highland Avenue, another commercial retail location. There are no residential abutters in the immediate area to the east side of the CATH property line, nearest to where the proposed emergency generator will be located. The abutting property to the north of the CATH site is 280 Hillside, which is also an office building.

1.6 There are residential properties located to the west of the CATH, across Hillside Avenue. The CATH building itself sits between the emergency generator location and the nearest residences across Hillside, and the building will provide a structural sound barrier between the generator and those residences. The proposed location was strategically selected by the Petitioner's acoustic consultant so that the CATH building will obstruct the path of sound travelling in the direction of the residences on the opposite side of Hillside Avenue.

1.7 To provide additional sound protection, the generator will also be constructed within a sound attenuation jacket. To fully ensure that the emergency generator operates within the applicable limits of MassDEP's noise policy, the Petitioner proposes that the Planning Board include a condition in its decision requiring the Petitioner to submit a sound study after installation to demonstrate compliance with the policy, and to implement appropriate mitigation measures in the event the study shows the applicable limits are exceeded.

1.8 The exact make and model of the emergency generator to be installed is not known at the present time and will be determined during the public procurement process after the conclusion of permitting. However, a typical generator that meets the specifications of the Caterpillar C7-1 installed in a Level 2 sound attenuated enclosure was studied at the subject location. The noted noise compliance study was prepared by Lawrence G. Copley, PE. Mr. Copley reviewed the ambient sound levels at the CATH and its surrounding area, the location of the proposed emergency generator, and the sound levels expected from that generator, and concluded that the emergency generator will comply with the MassDEP Noise Policy. Accordingly, the Petitioner proposes that it submit, as a condition of any permit amendment, specification sheets for the exact make and model to the Planning Board prior to commencement of construction.

1.9 In addition to the relief noted above, the Petitioner requests an amendment of the permit relative to parking. As previously permitted, the project involves 65 on-site parking spaces for the CATH, plus an additional 85 parking spaces used by the MBTA for its Needham Heights commuter rail station. In the original permit issued on October 18, 2011, the Planning Board noted that the recommended number of on-site parking spaces for the CATH was 108, and it granted a special permit pursuant to Section 5.1.1.5 of the Zoning By-Law to waive strict adherence to the requirements of Section 5.1.2 (number of parking spaces) to authorize a waiver of 43 parking spaces (from 108 to 65). The Petitioner respectfully requests that this special permit be amended to allow for a reduction of 3 additional spaces, from 65 to 62.

1.10 Although the proposed emergency generator will result in the loss of 3 parking spaces on site, this parking reduction situation at the property is expected to be temporary: The Town is presently

working with the MBTA, which holds an easement allowing operation of the Needham Heights MBTA Parking Lot, to lease back 12 parking spaces (10 regular parking spaces and 2 accessible parking spaces) for use in connection with the CATH. Therefore, while it is possible depending on construction timing that the emergency generator may temporarily result in a reduction of 3 parking spaces, the Petitioner expects to be able to report back to the Planning Board in short order that 12 additional spaces have been added to the available CATH parking total, for an increase to the available spaces overall.

1.11 Based on the foregoing, the Petitioner respectfully requests that the Planning Board amend modify Major Project Site Plan Review Special Permit No. 2011-04 dated October 18, 2011, amended February 21, 2012, September 3, 2013 and December 2, 2014, to authorize placement of a permanent emergency generator at the eastern property line, and to modify the special permit previously granted pursuant to Section 5.1.1.5 of the Zoning By-Law to waive strict adherence to the requirements of Section 5.1.2 (number of parking spaces) by reducing the number of on-site parking spaces by three (3) spaces, from 65 to 62.

1.12 The Board finds that the proposed project is in harmony with the general purpose and intent of the Zoning By-Law. The site is presently developed as the Center at the Heights. Sixty-two (62) on-site parking spaces will be devoted solely to the CATH with the Needham Heights MBTA Parking Lot, to lease back 12 parking spaces (10 regular parking spaces and 2 accessible parking spaces) for use in connection with the CATH.

1.13 The site is appropriate for the use. The Center at the Heights already exists and has recently become a shelter in the event of an emergency (for example, as a cooling center in an extreme heatwave). Such a facility must be able to have power in the event of power loss.

1.14 Convenience and safety of vehicular and pedestrian movement within the site and on adjacent streets, the location of driveway openings in relation to traffic or to adjacent streets and, when necessary, compliance with other regulations for the handicapped, minors and the elderly has been assured. The project does not propose to alter the vehicular or pedestrian movements on site.

1.15 The adjoining premises will be protected against seriously detrimental uses on the site by provision of surface water drainage, sound and site buffers, and preservation of views, light and air. The site is already in use as the CATH. This generator location immediately abuts the MBTA commuter rail line. On the opposite side of the commuter rail line, the nearest abutting private properties are 17 Avery Square, a commercial office building, 875 Highland Avenue, a commercial automobile service station, 855 Highland Avenue, a commercial retail store, and 845 Highland Avenue, another commercial retail location. There are no residential abutters in the immediate area to the east side of the CATH property line, nearest to where the proposed emergency generator will be located. The abutting property to the north of the CATH site is 280 Hillside, which is also an office building. Therefore, the generator will be relatively hidden by virtue of its location on site from any residences. Finally, although the exact make and model of the emergency generator to be installed is not known at the present time, a noise compliance study of a Caterpillar C7-1 generator installed in a Level 2 sound attenuated enclosure was performed. Said study reviewed the ambient sound levels at the CATH and its surrounding area, the location of the proposed emergency generator, and the sound levels expected from that generator, and concluded that the emergency generator will comply with the MassDEP Noise Policy.

1.16 Adequate methods for disposal of refuse and waste will be provided. The project is not a major generator of refuse and other wastes, and the volume of refuse generated is not anticipated to

increase relative to the proposed generator. Disposal will be in accordance with applicable law and established practice for this site.

1.17 The proposed project will not have any adverse impacts on the Town's resources, including the Town's water supply and distribution system, sewer collection and treatment, fire protection and streets. The site is already in use as the CATH, and the emergency generator will not create any new impacts on the Town's water supply and distribution system, sewer, fire protection or streets.

1.18 The arrangement of parking and loading spaces in relation to the proposed uses of the premises is adequate. The plans do not propose to alter the parking lot except for utilizing three (3) parking spaces for the generator to occupy. Additionally, the Town intends for overall reduction in parking available to serve the CATH to be temporary: The Town is presently working with the MBTA, which holds an easement allowing operation of the Needham Heights MBTA Parking Lot, to lease back 12 parking spaces (10 regular parking spaces and 2 accessible parking spaces) for use in connection with the CATH. Therefore, while it is possible depending on construction timing that the emergency generator may temporarily result in a reduction of 3 parking spaces, the Petitioner expects to be able to report back to the Planning Board that 12 additional spaces have been added to the available CATH parking total, for an increase to the available spaces overall.

1.19 The relationship of structures and open spaces to the natural landscape, existing buildings and other community assets in the area are in compliance with the requirements of the Zoning By-Law. This site is presently developed as the CATH. No changes to the landscaping are proposed. The generator is proposed to be in a portion of the lot that is hidden from residences.

1.20 The Board finds that the proposed project is in harmony with the general purpose and intent of the Zoning By-Law, and in harmony with the specific purposes and intent of the Zoning By-Law regarding the Hillside Avenue Business Zoning District.

1.21 The Board finds that all its findings and conclusions contained in Major Project Site Plan Special Permit No. 2011-04, issued to Town of Needham on October 18, 2011, amended February 21, 2012, September 3, 2013 and December 2, 2014, are applicable to this amendment, except as specifically set forth in this amendment.

1.22 Under Section 5.1.1.5 of the Zoning By-Law, a Special Permit to waive strict adherence with the requirements of Section 5.1.2 (Required Parking), may be granted in the Hillside Avenue Business Zoning District provided the Board finds (a) special circumstances in a particular use of a structure that does not warrant the minimum number of parking spaces required under Section 5.1.2 or (b) the extent of building coverage on a particular lot is such in laying out the design requirements of Section 5.1.3, that the requirement for a minimum number of parking spaces under Section 5.1.2 cannot be met. Based on the above findings and conclusions, the Board finds the proposed project and Plan, as conditioned and limited herein, to meet these requirements, to be in harmony with the general purposes and intent of the Zoning By-Law, to comply with all applicable Zoning By-Law requirements, and not to be a detriment to the Town's and neighborhood's inherent use of the surrounding area.

1.23 Under Section 7.4 of the Zoning By-Law, a Major Project Site Plan Review Special Permit Amendment may be granted in the Hillside Avenue Business Zoning District if the Board finds that the proposed development complies with the standards and criteria set forth in the provisions of the Zoning By-Law. Based on the above findings and criteria, the Board finds that the proposed development plan, as conditioned and limited herein for the site plan review, to be in harmony with the purposes and intent of the Zoning By-Law, to comply with all applicable

Zoning By-Law requirements, to have minimal adverse impact and to have promoted a development which is harmonious with the surrounding area.

THEREFORE, the Board voted 5-0 to GRANT: (1) the requested Amendment to Major Project Site Plan Special Permit Under Section 7.4 of the Needham Zoning By-Law and Section 4.2 of Major Project Special Permit No. 2011-04, dated October 18, 2011, amended February 21, 2012, September 3, 2013 and December 2, 2014; and (2) the Special Permit under Section 5.1.1.5 to waive strict adherence to the requirements of Section 5.1.2 (Required Parking) subject to and with the benefit of the following plan modifications, conditions and limitations.

## PLAN MODIFICATIONS

Prior to the start of any construction on the Site, the Petitioner shall cause the Plan to be revised to show the following additional, corrected, or modified information. The Building Commissioner shall not permit any construction activity on the Site to begin on the Site until and unless he finds that the Plan is revised to include the following additional corrected, or modified information. Except where otherwise provided, all such information shall be subject to the approval of the Building Commissioner. Where approvals are required from persons other than the Building Commissioner, the Petitioner shall be responsible for providing a written copy of such approvals to the Building Commissioner before the Commissioner shall permit for any construction on the Site. The Petitioner shall submit nine copies of the final Plans as approved for construction by the Building Commissioner to the Board prior to the commencement of construction.

2.1 The Plans shall be modified to include the requirements and recommendations of the Board as set forth below. The modified plans shall be submitted to the Board for approval and endorsement. All requirements and recommendations of the Board, set forth below, shall be met by the Petitioner.

a) No Plan Modifications required.

## CONDITIONS AND LIMITATIONS

The conditions and limitation made in Major Project Site Plan Special Permit No. 2011-04 issued by the Board on October 18, 2011, amended February 21, 2012, September 3, 2013 and December 2, 2014 were ratified and confirmed except as noted below. The following conditions of this approval shall be strictly adhered to. Failure to adhere to these conditions or to comply with all applicable laws and permit conditions shall give the Board the rights and remedies set forth in Section 3.14 hereof.

3.1 The proposed generator shall contain the dimensions and be located on that portion of the site exactly as shown on the Plan, and in accordance with applicable dimensional requirements of the Zoning By-Law. No more than three (3) parking spaces shall be used to house the generator.

3.2 The Mass. DEP Noise Policy requires that the sound level at residences with the generator running shall be no more than 10 dBA higher than the background ambient sound level (LA90) at times when the generator will run. The night-time ambient sound levels at the proposed location for all the residences is 36 dBA(L90), as reported in the Sound Attenuation Report (Exhibit 3). The maximum allowable generator sound level at the residences is thus 46 dBA.

3.3 The exact model of the emergency generator is not yet known and will not be until the project goes out to bid. However, a typical generator similar in specification to the Caterpillar C7-1 installed in a Level 2 sound attenuated enclosure is hereby permitted. The Petitioner shall submit

the specification sheets for the exact model to the Board and Building Commissioner prior to the commencement of construction.

3.4 Normal maintenance and testing of the emergency generator as recommended by the manufacturer shall be limited to one occurrence per month between the weekday hours of 9:00 a.m. and 5:00 p.m. for a period not to exceed 2 hours. The emergency generator shall not operate more than 300 hours per rolling 12-month period, including the normal maintenance and testing procedure as recommended by the manufacturer and periods when the primary power source for the Center at the Heights, has been lost during an emergency, such as power outage, an on-site disaster or an act of God.

3.5 The emergency generator shall not: (a) increase the broad band sound level by more than 10 dBA; or (b) produce a "pure tone" condition- where any octave band center frequency sound pressure level exceeds the two adjacent center frequency levels by 3 decibels or more. These criteria are to be measured consistent with MassDEP noise policy. For purposes of this section, ambient is defined as the background A-weighted sound level that is exceeded 90% of the time measured during equipment operating hours. Notwithstanding the above, the sound levels attributable to the emergency generator at the upper-floor windows of the nearby residential abutters as identified in the L.G. Copley Associates report shall not exceed 46 dBA.

3.6 The emergency diesel fueled generator to be installed shall be designed and operated to comply with MassDEP noise policy to protect adjoining properties and the nearest inhabited residence from excessive noise, as defined in said regulations. The mechanical equipment and emergency diesel fueled generator shall also be installed and screened as far as practical to minimize the visibility of the mechanical equipment and emergency generator from Hillside Avenue. The Petitioner shall deliver to the Building Commissioner for review and approval plans and specifications of said mechanical equipment and emergency diesel fueled generator, including sound attenuation components, if necessary, together with Petitioner's certification to the Building Commissioner that said mechanical equipment and emergency generator have been designed such that when they are operated they will be in compliance with the regulations described above with respect to noise, and screened in accordance with the requirements described above.

3.7 An as-built plan of the mechanical equipment and emergency generator together with a sound level analysis prepared by an acoustical engineer shall be submitted to the Building Commissioner. The sound analysis shall demonstrate compliance with the MassDEP noise policy addressing sound attenuation to protect adjoining properties and the nearest inhabited residence from excessive noise, as defined in said regulations.

3.8 The Petitioner will continue its efforts with the MBTA, which holds an easement allowing operation of the Needham Heights MBTA Parking Lot, to lease back 12 parking spaces (10 regular parking spaces and 2 accessible parking spaces) for use in connection with the CATH. If successful, the Petitioner, at conclusion of the project, will add 12 additional spaces to the available CATH parking total, for an increase to the available spaces overall. However, the Petitioner may utilize 3 parking spaces for the generator, in the location shown on the plan (Exhibit 2), whether or not the noted lease is achieved.

3.9 No construction in the pursuance of this approval shall commence until:

a) The Petitioner shall have delivered to the Building Commissioner for review and approval plans and specifications for the mechanical equipment and emergency diesel fueled

generator, including sound attenuation components as described in paragraph 3.6 of this decision.

b) The Petitioner shall have recorded this decision with the Norfolk County Registry of Deeds and delivered to the Planning Board a copy bearing the appropriate reference to the book and page number of the recording of the Petitioner's title deed or notice endorsed thereon.

3.10 The emergency generator subject to this Amendment to Major Project Site Plan Review Special Permit shall not be utilized until:

a) An as-built plan, supplied by the engineer of record certifying that the on-site project improvements were built according to the approved documents, has been submitted to the Board and Department of Public Works. The as-built plan shall show the location and final construction details of the mechanical equipment and emergency generator, in their true relationship to the lot lines.

b) The Petitioner shall have filed an as-built plan of the mechanical equipment and emergency generator and a sound level analysis prepared by an acoustical engineer as described in paragraph 3.7 of this Decision.

3.11 All construction staging shall be on-site. No construction parking shall be on public streets. Construction parking shall be all on-site or a combination of on-site and off-site parking at locations in which the Petitioner can make suitable arrangements. Construction staging plans shall be included in the final construction documents prior to the commencement of construction at the site and shall be subject to the review and approval of the Building Commissioner.

3.12 The following interim safeguards shall be implemented during construction:

a) The hours of construction shall be 7:00 a.m. to 6:00 p.m. Monday through Saturday.

b) The Petitioner's contractor shall provide temporary security chain-link or similar type fencing around the portions of the project site, which require excavation or otherwise pose a danger to public safety.

c) The Petitioner's contractor shall designate a person who shall be responsible for the construction process. That person shall be identified to the Police Department, the Department of Public Works, the Building Inspector and the abutters and shall be contacted if problems arise during the construction process. The designee shall also be responsible for assuring that truck traffic and the delivery of construction material does not interfere with or endanger traffic flow on West Street, Hillside Avenue or the adjacent roads.

d) The Petitioner shall take appropriate steps to minimize, to the maximum extent feasible, dust generated by the construction including, but not limited to, requiring subcontractors to place covers over open trucks transporting construction debris and keeping West Street and Hillside Avenue and the adjacent roads clean of dirt and debris and watering appropriate portions of the construction site from time to time as may be required.

3.13 The Petitioner, by accepting this permit decision, warrants that the Petitioner has included all relevant documentation, reports, and information available to the Petitioner in the application submitted, that this information is true and valid to the best of the Petitioner's knowledge.

3.14 Violation of any of the conditions of this Decision shall be grounds for revocation of any building permit or certificate of occupancy associated with the emergency generator as follows: In the case of violation of any conditions of this Decision, the Town will notify the owner of such violation and give the owner reasonable time, not to exceed thirty (30) days, to cure the violation. If, at the end of said thirty (30) day period, the Petitioner has not cured the violation, or in the case of violations requiring more than thirty (30) days to cure, has not commenced the cure and prosecuted the cure continuously, the permit granting authority may, after notice to the Petitioner, conduct a hearing in order to determine whether the failure to abide by the conditions contained herein should result in a recommendation to the Building Commissioner to revoke any building permit or certificate of occupancy granted hereunder. This provision is not intended to limit or curtail the Town's other remedies to enforce compliance with the conditions of this Decision including, without limitation, by an action for injunctive relief before any court of competent jurisdiction. The Petitioner agrees to reimburse the Town for its reasonable costs in connection with the enforcement of the conditions of this Decision if the Town prevails in such enforcement action.

## LIMITATIONS

4.0 The authority granted to the Petitioner by this permit is limited as follows:

4.1 This permit applies only to the site and off-site improvements, which are the subject of this Application. All construction to be conducted on-site and off-site shall be conducted in accordance with the terms of this permit and shall be limited to the improvements on the Plan, as modified by this Decision.

4.2 There shall be no further development of this site without further site plan approval as required under Section 7.4 of the Zoning By-Law. The Board, in accordance with M.G.L., Ch. 40A, S.9 and said Section 7.4, hereby retains jurisdiction to (after hearing) modify and/or amend the conditions to, or otherwise modify, amend or supplement, this decision and to take other action necessary to determine and ensure compliance with the decision.

4.3 This decision applies only to the requested Special Permits and Site Plan Review. Other permits or approvals required by the Zoning By-Law, other governmental boards, agencies or bodies having jurisdiction shall not be assumed or implied by this decision.

4.4 No approval of any indicated signs or advertising devices is implied by this decision.

4.5 The foregoing restrictions are stated for the purpose of emphasizing their importance but are not intended to be all-inclusive or to negate the remainder of the Zoning By-Law.

4.6 This Site Plan Special Permit Amendment shall lapse with respect to the Project on October 15, 2026 if substantial use thereof has not sooner commenced, except for good cause. Any requests for an extension of the time limits set forth herein must be in writing to the Board at least 30 days prior to October 15, 2026. The Board herein reserves its rights and powers to grant or deny such extension without a public hearing.

4.7 This Decision shall be recorded at the Norfolk District Registry of Deeds. This Special Permit shall not take effect until a copy of this decision bearing the certification of the Town Clerk that twenty (20) days have elapsed after the Decision has been filed in the Town Clerk's office or that if such appeal has been filed, that it has been dismissed or denied is recorded with Norfolk District Registry of Deeds and until the Petitioner has delivered a certified copy of the recorded document to the Board.

The provisions of this Special Permit shall be binding upon every owner or owner of the lots and the executors, administrators, heirs, successors and assigns of such owners, and the obligations and restrictions herein set forth shall run with the land, as shown of the Plan, as modified by this decision, in full force and effect for the benefit of and enforceable by the Town of Needham.

Any person aggrieved by this decision may appeal pursuant to General Laws, Chapter 40A, Section 17, within twenty (20) days after filing of this decision with the Needham Town Clerk.

Witness our hands this 15th day of October, 2024.

NEEDHAM PLANNING BOARD

_____
Natasha Espada, Chairperson

_____
Artie Crocker, Vice Chairperson

_____
Adam Block

_____
Paul S. Alpert

_____
Justin McCullen

COMMONWEALTH OF MASSACHUSETTS

_____2024

On this _____day of October, 2024, before me, the undersigned notary public, personally appeared _____, one of the members of the Planning Board of the Town of Needham, Massachusetts, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the proceeding or attached document, and acknowledged the foregoing to be the free act and deed of said Board before me.

_____
Notary Public
My Commission Expires: _____

TO WHOM IT MAY CONCERN: This is to certify that the 20-day appeal period on the approval of the Project proposed by Town of Needham, 1471 Highland Avenue, Needham, MA, for Property located at 300 Hillside Avenue, Needham, Massachusetts, shown on Assessor's Map No. 299, Parcel 14, has passed,

____and there have been no appeals filed in the Office of the Town Clerk or
____there has been an appeal filed.

_____ _____
Date Louise Miller, Town Clerk

Copy sent to:

| | |
|---|---|
| Petitioner - Certified Mail # | Select Board |
| Town Clerk | Engineering |
| Building Commissioner | Fire Department |
| Director, PWD | Police Department |
| Board of Health | Christopher Heep, Town Counsel |
| Conservation Commission | Parties in Interest |

GEORGE GIUNTA, JR.
ATTORNEY AT LAW*
281 CHESTNUT STREET
NEEDHAM, MASSACHUSETTS 02492
*Also admitted in Maryland
TELEPHONE (781) 449-4520 FAX (781) 465-6095

October 7, 2024

Lee Newman
Planning Director
Town of Needham
1471 Highland Avenue
Needham, MA 02492

VIA EMAIL

Re: Definitive Subdivision Application
40 Highland Ave, LLC
40 Highland Avenue & 14-16 Riverside Street

Dear Lee,

In connection with the pending application of 40 Highland Ave, LLC for definitive subdivision approval relative to its properties at 40 Highland Avenue and 14-16 Riverside Street, Needham, MA (jointly, the "Premises'), submitted herewith please find the following revised plan sheets:

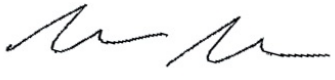
1. Sheet 5 of 10, "Grading and Drainage Plan";
2. Sheet 7 of 10, "Details"; and
3. Sheet 8 of 10, "Details.

Please note that these sheets supersede and replace the relative sheets from the original plan set and hard copies will be delivered directly to your office tomorrow.

As shown on the revised sheets, the area along the southerly property line, in the vicinity of the proposed infiltration trench, has been revised to address the comments of the Engineering Department. In addition, proposed landscaping has been added to that area in response to comments at the last hearing.

If you have any questions, comments or concerns relative to any of the foregoing, please do not hesitate to let me know.

Sincerely,



George Giunta, Jr.

| PLANT SCHEDULE | | | | | | | |
|---|---|---|---|---|---|---|---|
| QTY | KEY | BOTANICAL NAME | COMMON NAME | SIZE | ROOT | SPACING | COMMENTS |
| 3 | Af | Acer x freemani 'Autumn Blaze' | Autumn Blaze Red Maple | 2" - 2.5" cal. | B&B | AS SHOWN | Limb up to 6' |
| 6 | Pa | Picea abies 'Cupressina' | Cupressina Norway Spruce-fastigiate | 7' - 8' ht. | B&B | AS SHOWN | AS SHOWN |
| 5 | Ps | Pinus strobus 'Fastigata' | Columnar Eastern White Pine | 7' - 8' ht. | B&B | AS SHOWN | AS SHOWN |
| 15 | To | Thuja occidentalis 'Nigra' | Dark American Arborvitae | 7' - 8' ht. | B&B | AS SHOWN | AS SHOWN |

NEEDHAM PLANNING BOARD

APPROVAL IN ACCORDANCE WITH SECTION 81-U OF CHAPTER 41 OF THE GENERAL LAWS AS AMENDED

APPROVED SUBJECT TO TERMS AND CONDITIONS OF A COVENANT GIVEN IN ACCORDANCE WITH SECTION 81-U CHAPTER 41 OF THE GENERAL LAWS AS AMENDED.

NEEDHAM PLANNING BOARD

NEEDHAM DIRECTOR OF PUBLIC WORKS

SIGNATURE DATE

NEEDHAM TOWN ENGINEER

SIGNATURE DATE

NEEDHAM TOWN CLERK CERTIFICATION

"I, TOWN CLERK OF THE TOWN OF NEEDHAM, CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE NEEDHAM PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE

SIGNATURE DATE

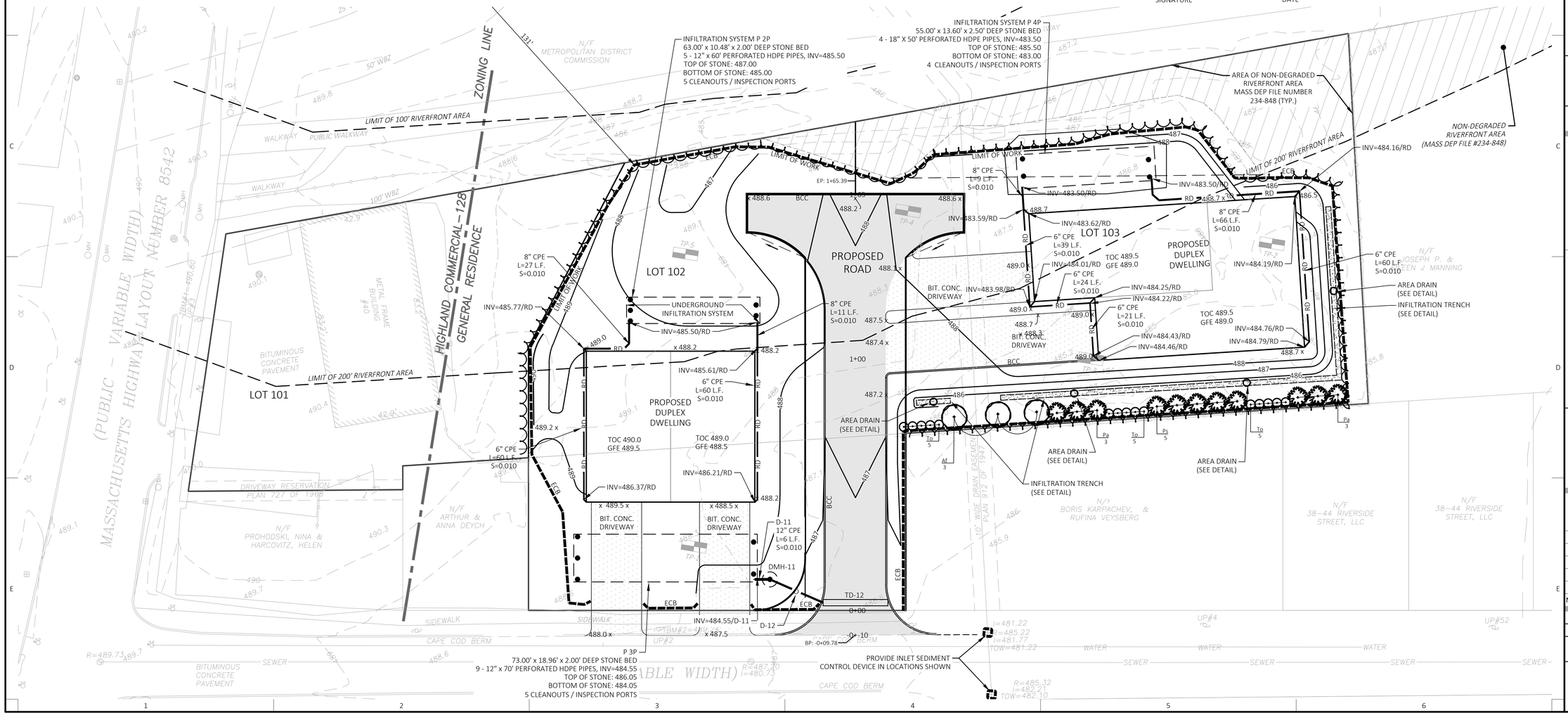
I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS PLAN IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY THE SUBDIVISION REGULATIONS AND PROCEDURAL RULES OF THE NEEDHAM PLANNING BOARD.

COMMONWEALTH OF MASSACHUSETTS
MICHAEL J. SCOTT
CIVIL
No. 40863
REGISTERED PROFESSIONAL ENGINEER

09/24/2024
NAME REGISTRATION NO.

COMMONWEALTH OF MASSACHUSETTS
JAMES T. ALMONTE
No. 3108
REGISTERED LANDSCAPE ARCHITECT

09/24/2024
NAME REGISTRATION NO.




THE CONTENT, INFORMATION AND DESIGN OF THIS PLAN ARE PROPRIETARY AND DUPLICATION AND/OR UTILIZATION FOR ANY PURPOSES IS STRICTLY PROHIBITED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM LAND DESIGN COLLABORATIVE. ONLY APPROVED, SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.
© LAND DESIGN COLLABORATIVE, LLC.

Project Owner:
40 Highland Avenue, LLC
435 Dedham Street, Unit E
Newton, MA 02459

Prepared For:
40 Highland Avenue, LLC
435 Dedham Street, Unit E
Newton, MA 02459

Project Title:
Definitive Subdivision Plan
40 Highland Ave.
Needham, MA
(Norfolk County)

Sheet Title:
GRADING & DRAINAGE PLAN

Definitive Subdivision

Prepared By:
LAND DESIGN COLLABORATIVE
Chauncy Place | Terrace North | Suite 1
45 Lyman Street
Westborough, MA 01581
508.952.6300 | LDCollaborative.com

Project Surveyor:
Field Resources, Inc.
LAND SURVEYORS
P.O. Box 324, Auburn, MA, 508.832.4332
281 Chestnut Street, Needham, MA, 781.444.5936
fieldresources@hotmail.com

THE CONTENT, INFORMATION AND DESIGN OF THIS PLAN ARE PROPRIETARY AND DUPLICATION AND/OR UTILIZATION FOR ANY PURPOSES IS STRICTLY PROHIBITED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM LAND DESIGN COLLABORATIVE. ONLY APPROVED, SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.
© LAND DESIGN COLLABORATIVE, LLC.

| No: | Date: | Revision \| Issue: |
|---|---|---|
| 1 | 09/24/2024 | TOWN COMMENTS |

Drawn By: JTA | Checked By: MJS
Date: 04/19/2022 | Project No.: 21-0089

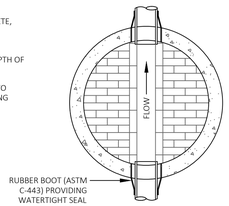
Scale: 1" = 20'

Sheet No.:
5 OF 10

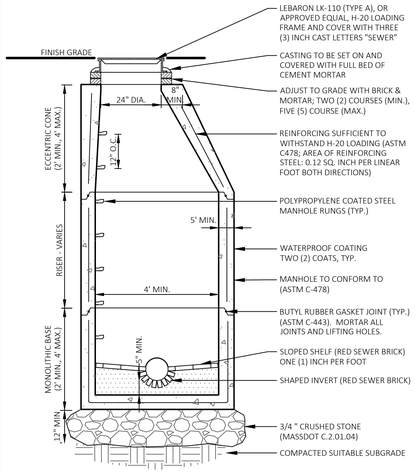
C:\Users\jtaranto\Land Design Collaborative\Land Design Collaborative - Documents_ - Public\New projects (landdesignpublic)\PROJECTS\21-0089 - 40 Highland Avenue\DWG\21-0089-C200.dwg

NOTES:

1. STRUCTURES SHALL BE PRECAST CONCRETE, DESIGNED FOR HS-20 LOADING.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. EXTERIOR SURFACES SHALL BE GIVEN TWO COATS OF BITUMINOUS WATER-PROOFING MATERIAL.




PLAN




SECTION

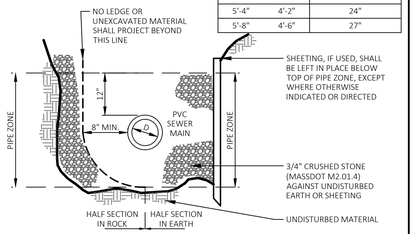
## SEWER MANHOLE (SMH)

33 30 00 N.T.S.

NOTES:

1. WHERE INDICATED ON THE PLANS, PROVIDE AT LEAST ONE TRENCH DAM BETWEEN EACH SMH OR EVERY 300 FEET, WHICHEVER IS LESS.
2. REFER TO PLANS FOR SIZE AND MATERIAL OF SEWER MAIN.

| TRENCH WIDTH | | DIAMETER OF PIPE (D.) |
|---|---|---|
| SHEETED | UNSHEETED | |
| 4'-2" | 3'-0" | 12" AND SMALLER |
| 4'-4" | 3'-2" | 15" |
| 4'-8" | 3'-6" | 18" |
| 5'-0" | 3'-10" | 21" |
| 5'-4" | 4'-2" | 24" |
| 5'-8" | 4'-6" | 27" |



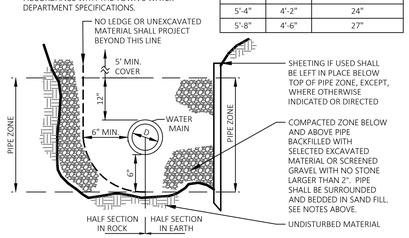

## PVC SEWER TRENCH SECTION

33 30 00 N.T.S.

NOTES:

1. SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
2. WATER MAIN INSTALLATION SHALL BE IN ACCORDANCE WITH THE TOWN'S WATER DEPARTMENT SPECIFICATIONS.

| TRENCH WIDTH | | DIAMETER OF PIPE (D.) |
|---|---|---|
| SHEETED | UNSHEETED | |
| 4'-2" | 3'-0" | 12" AND SMALLER |
| 4'-4" | 3'-2" | 15" |
| 4'-8" | 3'-6" | 18" |
| 5'-0" | 3'-10" | 21" |
| 5'-4" | 4'-2" | 24" |
| 5'-8" | 4'-6" | 27" |



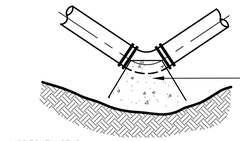

## WATER MAIN TRENCH SECTION

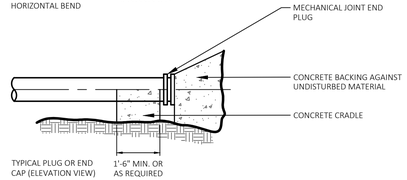
33 10 00 N.T.S.

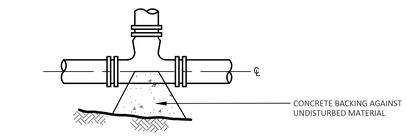
NOTES:

1. SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
2. CONCRETE SHALL BE POURED TO NOT INTERFERE WITH DISASSEMBLY OF FITTING END JOINTS.

| MINIMUM VERTICAL-PLANE BEARING AREAS FOR WATER MAIN FITTINGS (SF) | | | |
|---|---|---|---|
| SIZE OF MAIN (IN.) | 22 1/2° BEND | 45° BEND | TEES & PLUGS |
| 8" OR LESS | 8 | 8 | 10 |
| 10" & 12" | 13 | 22 | 16 |




## THRUST BLOCKS FOR WATER MAIN

33 10 00 N.T.S.

I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS PLAN IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY THE SUBDIVISION REGULATIONS AND PROCEDURAL RULES OF THE NEEDHAM PLANNING BOARD.

COMMONWEALTH OF MASSACHUSETTS — MICHAEL J. SCOTT — CIVIL — No. 40863 — REGISTERED PROFESSIONAL ENGINEER

09/24/2024

NAME REGISTRATION NO.

NEEDHAM PLANNING BOARD

APPROVED IN ACCORDANCE WITH SECTION 81-U OF CHAPTER 41 OF THE GENERAL LAWS AS AMENDED.

APPROVED SUBJECT TO TERMS AND CONDITIONS OF A COVENANT GIVEN IN ACCORDANCE WITH SECTION 81-U CHAPTER 41 OF THE GENERAL LAWS AS AMENDED.

NEEDHAM PLANNING BOARD

NEEDHAM DIRECTOR OF PUBLIC WORKS

SIGNATURE DATE

NEEDHAM TOWN ENGINEER

SIGNATURE DATE

NEEDHAM TOWN CLERK CERTIFICATION

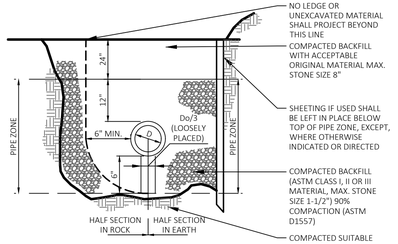
"I, TOWN CLERK OF THE TOWN OF NEEDHAM, CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE NEEDHAM PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE

SIGNATURE DATE

NOTES:

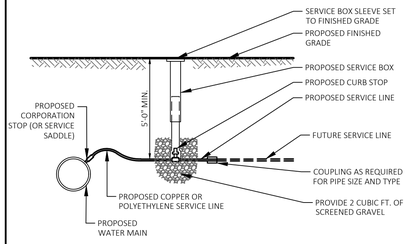
1. SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.

| TRENCH WIDTH | | DIAMETER OF PIPE (D.) |
|---|---|---|
| SHEETED | UNSHEETED | |
| 4'-2" | 3'-0" | 15" AND SMALLER |
| 4'-5" | 3'-3" | 18" |
| 5'-2" | 4'-0" | 24" |
| 6'-8" | 5'-6" | 30" |
| 7'-8" | 6'-6" | 36" |
| 8'-7" | 7'-5" | 48" |




## HDPE TRENCH SECTION

33 40 00 N.T.S.

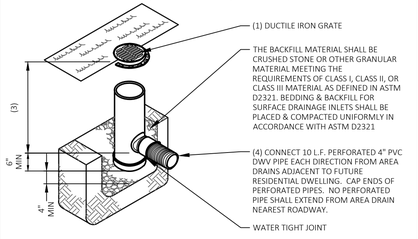



## WATER SERVICE CONNECTION

33 10 00 N.T.S.

NOTES:

1. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE
2. CUSTOM DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
3. STANDARD DRAIN BASIN HAS FIXED ADAPTER LOCATIONS OF 0° & 180°. CUSTOM DRAIN ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°.
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL) & PVC SEWER (4" - 24").

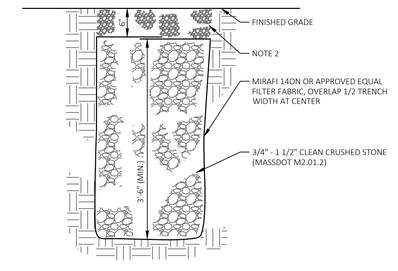



## 8" DRAIN BASIN

33 40 00 N.T.S.

NOTES:

1. SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
2. COVER SHALL BE: DIA. ≤ 8" - PEA STONE (MASSDOT M.2.01.6)

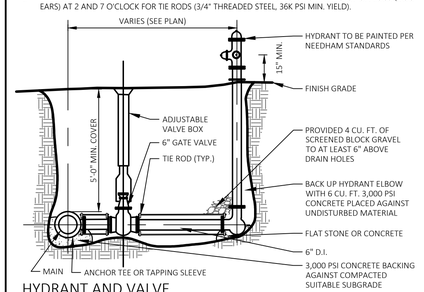



## INFILTRATION TRENCH

33 40 00 N.T.S.

NOTES:

1. SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
2. HYDRANT AND GATE VALVE TO BE RODDED TO ANCHOR TEE. FLANGES TO HAVE CAST ON LUGS (DOG EARS) AT 2 AND 7 O'CLOCK FOR TIE RODS (3/4" THREADED STEEL, 36K PSI MIN. YIELD).

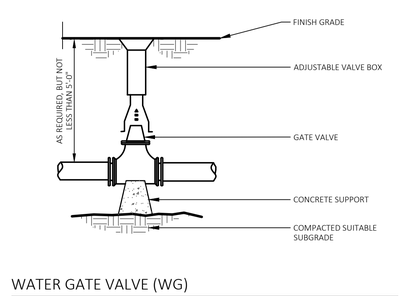



## HYDRANT AND VALVE

33 10 00 N.T.S.

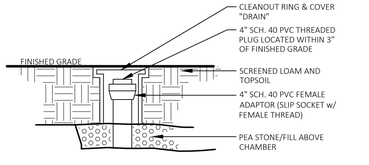
NOTES:

1. SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.




## WATER GATE VALVE (WG)

33 10 00 N.T.S.

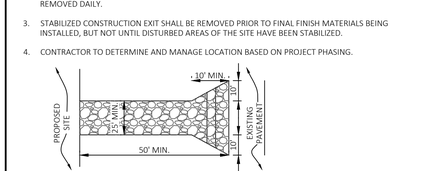



## CLEAN OUT / INSPECTION PORT

33 40 00 N.T.S.

NOTES:

1. ENTRANCE WIDTH SHALL BE TWENTY-FIVE (25) FOOT (MIN.), BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS/EGRESS OCCUR.
2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION TO PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE, AND REPAIR OR MAINTENANCE OF OTHER MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED DAILY.
3. STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED, BUT NOT UNTIL DISTURBED AREAS OF THE SITE HAVE BEEN STABILIZED.
4. CONTRACTOR TO DETERMINE AND MANAGE LOCATION BASED ON PROJECT PHASING.

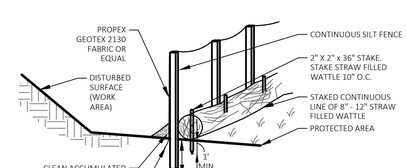



## TEMPORARY CONSTRUCTION ENTRANCE

31 25 00 N.T.S.

NOTES:

1. STEEL POST MAY BE SUBSTITUTED/ DISTANCE BETWEEN POSTS TO VARY AS REQUIRED BY TRIBUTARY AREA: 10' FOR 100 SF/LF FENCE
   6' FOR 500 SF/LF FENCE
2. DEPTH TO VARY WITH TRIBUTARY AREA: 2' FOR 100 SF. IF POST IS TO BE SET IN PEAT OR UNSTABLE SOILS, THEN 3' OR DEPTH NECESSARY TO PROVIDE A STABLE POST FOR LOADED FENCE CONDITIONS

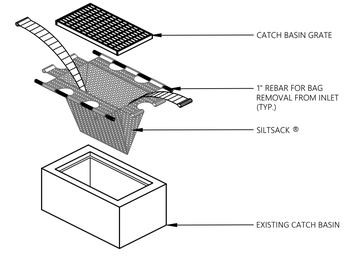



## ECB (SILT FENCE WITH STRAW WATTLE)

31 25 00 N.T.S.

NOTES:

1. SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
2. USE AFTER BINDER COURSE HAS BEEN PAVED, PRIOR TO STABILIZATION OF SURROUNDING UPGRADIENT TERRAIN.




## INLET SEDIMENT CONTROL DEVICE

31 25 00

THE CONTENT, INFORMATION AND DESIGN OF THIS PLAN ARE PROPRIETARY AND DUPLICATION AND/OR UTILIZATION FOR ANY PURPOSES IS STRICTLY PROHIBITED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM LAND DESIGN COLLABORATIVE. ONLY APPROVED, SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.
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Newton, MA 02459

Prepared For:
40 Highland Avenue, LLC
435 Dedham Street, Unit E
Newton, MA 02459

Project Title:
Definitive Subdivision Plan
40 Highland Ave.
Needham, MA
(Norfolk County)

Sheet Title:
DETAILS

Definitive Subdivision

Prepared By:
LAND DESIGN COLLABORATIVE
Chauncy Place | Terrace North | Suite 1
45 Lyman Street
Westborough, MA 01581
508.952.6300 | LDCollaborative.com

Project Surveyor:
Field Resources, Inc.
LAND SURVEYORS
P.O. Box 324
Auburn, MA
508.832.4332
281 Chestnut Street
Needham, MA
781.444.5936
office@fieldresources.net

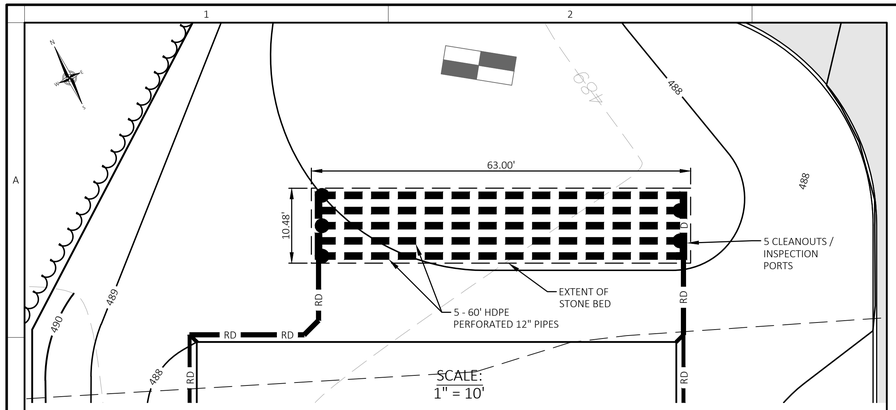
THE CONTENT, INFORMATION AND DESIGN OF THIS PLAN ARE PROPRIETARY AND DUPLICATION AND/OR UTILIZATION FOR ANY PURPOSES IS STRICTLY PROHIBITED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM LAND DESIGN COLLABORATIVE. ONLY APPROVED, SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.
© LAND DESIGN COLLABORATIVE, LLC.

| No: | Date: | Revision \| Issue: |
|---|---|---|
| 1 | 09/24/2024 | TOWN COMMENTS |

| | | | |
|---|---|---|---|
| Drawn By: | JTA | Checked By: | MJS |
| Date: | 04/26/2024 | Project No.: | 21-0089 |

Sheet No.:
7 OF 10

C:\Users\jtaranto\Land Design Collaborative\Land Design Collaborative - Documents_1 Projects\Needham\21-0089 - 40 Highland Avenue\DWG\21-0089 - 40 Highland Avenue DWG 11 x 17 - 1:500.dwg

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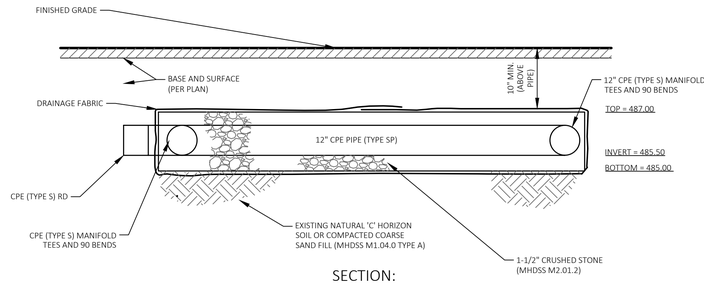


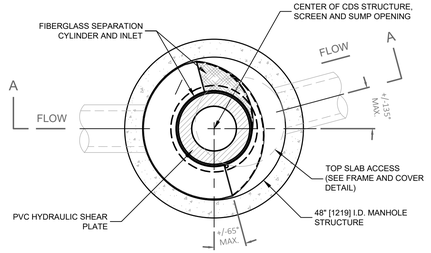

SECTION:
NOT TO SCALE

## STORMWATER INFILTRATION SYSTEM P 2P

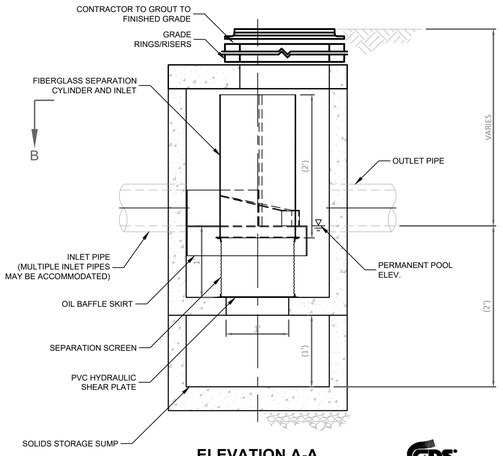
## CDS2015-4-C DESIGN NOTES

THE STANDARD CDS2015-4-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW, SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

| CONFIGURATION DESCRIPTION |
|---|
| GRATED INLET ONLY (NO INLET PIPE) |
| GRATED INLET WITH INLET PIPE OR PIPES |
| CURB INLET ONLY (NO INLET PIPE) |
| CURB INLET WITH INLET PIPE OR PIPES |
| SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION) |
| SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS |




**PLAN VIEW B-B**
N.T.S.




**ELEVATION A-A**
N.T.S.

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,759,308 6,027,639 7,425,262 7,470,362 AND RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CDS 2015-4

33 40 00 N.T.S.

I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS PLAN IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY THE SUBDIVISION REGULATIONS AND PROCEDURAL RULES OF THE NEEDHAM PLANNING BOARD.

COMMONWEALTH OF MASSACHUSETTS
MICHAEL J. SCOTT
CIVIL
No. 40863
REGISTERED PROFESSIONAL ENGINEER

09/24/2024
NAME REGISTRATION NO.

NEEDHAM PLANNING BOARD

APPROVED IN ACCORDANCE WITH SECTION 81-U OF CHAPTER 41 OF THE GENERAL LAWS AS AMENDED.

APPROVED SUBJECT TO TERMS AND CONDITIONS OF A COVENANT GIVEN IN ACCORDANCE WITH SECTION 81-U CHAPTER 41 OF THE GENERAL LAWS AS AMENDED.

NEEDHAM PLANNING BOARD

NEEDHAM DIRECTOR OF PUBLIC WORKS

SIGNATURE DATE

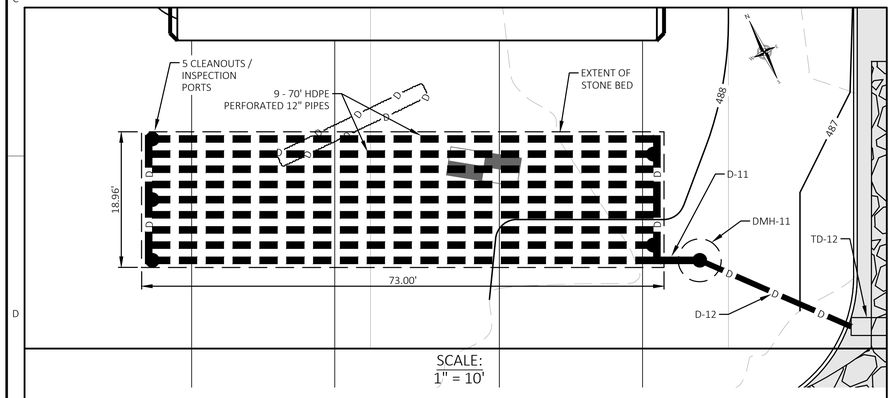
NEEDHAM TOWN ENGINEER

SIGNATURE DATE

NEEDHAM TOWN CLERK CERTIFICATION

"I, TOWN CLERK OF THE TOWN OF NEEDHAM, CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE NEEDHAM PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE

SIGNATURE DATE

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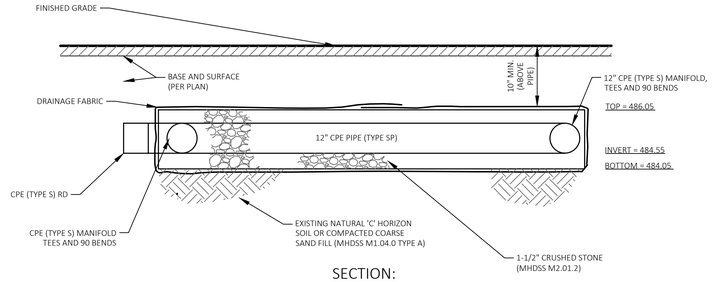
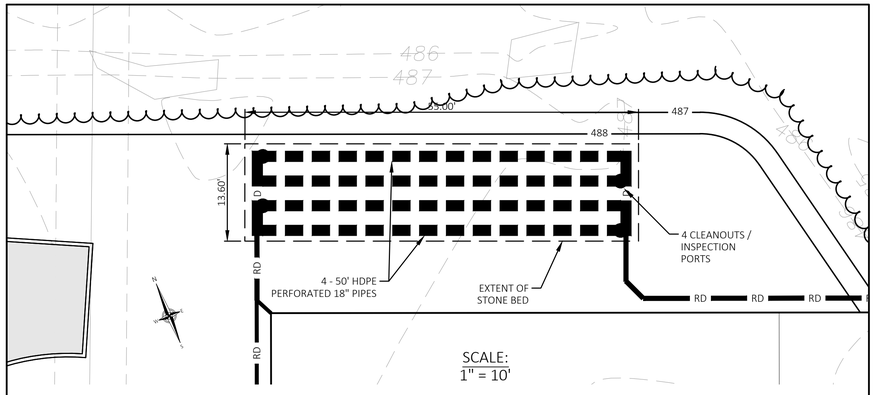
1" = 10'

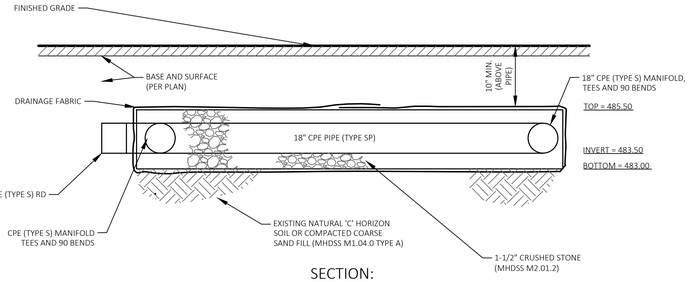



SECTION:
NOT TO SCALE

## STORMWATER INFILTRATION SYSTEM P 3P



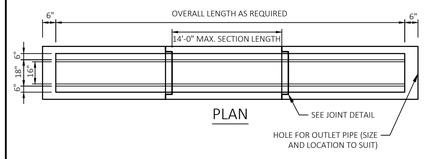

SCALE:
1" = 10'



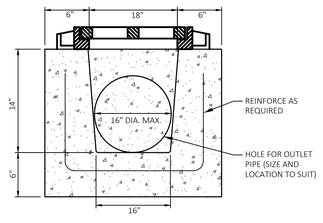

SECTION:
NOT TO SCALE

## STORMWATER INFILTRATION SYSTEM P 4P

NOTES:
1. SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
2. TRENCH DRAIN FRAMES AND GRATES TO BE SUPPLIED BY THE CONTRACTOR.
3. FRAMES AND GRATES TO BE INSTALLED ON TOP OF WALLS BY THE CONTRACTOR IN THE FIELD.




PLAN




SECTION

JOINT DETAIL

## TRENCH DRAIN (TD)

33 40 00 N.T.S.

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Project Owner:
40 Highland Avenue, LLC
435 Dedham Street, Unit E
Newton, MA 02459

Prepared For:
40 Highland Avenue, LLC
435 Dedham Street, Unit E
Newton, MA 02459

Project Title:
Definitive Subdivision Plan
40 Highland Ave.
Needham, MA
(Norfolk County)

Sheet Title:
DETAILS

Definitive Subdivision

Prepared By:
LAND DESIGN COLLABORATIVE
Chauncy Place | Terrace North | Suite 1
45 Lyman Street
Westborough, MA 01581
508.952.6300 | LDCollaborative.com

Project Surveyor:
Field Resources, Inc.
LAND SURVEYORS
P.O. Box 324, Auburn, MA 508.832.4332
281 Chestnut Street, Needham, MA 781.444.5936
office@fieldresources.net

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| No: | Date: | Revision \| Issue: |
|---|---|---|
| 1 | 09/24/2024 | TOWN COMMENTS |

| | | | |
|---|---|---|---|
| Drawn By: | ESM | Checked By: | MJS |
| Date: | 04/26/2024 | Project No.: | 21-0089 |

Sheet No.:
8 OF 10

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**TOWN OF NEEDHAM, MASSACHUSETTS**
**PUBLIC WORKS DEPARTMENT**
**500 Dedham Avenue, Needham, MA 02492**
**Telephone (781) 455-7550 FAX (781) 449-9023**

October 15, 2024

Needham Planning Board
Needham Public Service Administration Building
Needham, MA 02492

RE: Definitive Subdivision Application
40 Highland/ 14-16 Riverside Subdivision Special Permit Review

Dear Members of the Board,

The Department of Public Works has completed its follow up review of the above-referenced subdivision plan review. The applicant is proposing the demolition of an existing structure then subdividing the property to create two new duplex residential lots.

The documents submitted for review are as follows:

- Cover letter Prepared by George Giunta Jr. Dated October 7, 2024
- Updated Definitive Subdivision Plan prepared by Land Design Collaborative consisting of Sheets: 5 of 10, 7 of 10, and 8 of 10.

Our comments and recommendations are as follows:

- We have no more comments or recommendations. From previous letter:
  - As part of the Planning Board Decision's the DPW requests that Operation and Maintenance plan for the stormwater controls be incorporated into the homeowners association such that the operation and maintenance is funded, and that the reports are submitted to the DPW-Engineering by the end of April every year.
  - As part of the NPDES requirements, the applicant will need to comply with the Public Out Reach & Education and Public Participation & Involvement control measures. The applicant shall submit a letter to the DPW identifying the measures selected and dates by which the measures will be completed in order to incorporate it into the Planning Board's decision.

If you have any questions regarding the above, please contact our office at 781-455-7538.

Truly yours,

Thomas A Ryder
Town Engineer

**TOWN OF NEEDHAM**

**OCTOBER 21, 2024 SPECIAL TOWN MEETING**

The following motion is offered by: _____

Signature of Town Meeting Member

**ARTICLE 8: AMEND ZONING BY-LAW – MULTI-FAMILY OVERLAY DISTRICT (BASE COMPLIANCE PLAN)**

MOVED: That the main motion under Article 8 be amended by changing the maximum floor area ratio that may be authorized by special permit in the ASB-MF subdistrict, as set forth in footnote (b) to Section 3.17.5.3 Building Bulk and Other Requirements, from 1.7 to 1.4, so that footnote (b) reads as follows:

(b) In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board for an FAR of up to 1.4.

**TOWN OF NEEDHAM**

**OCTOBER 21, 2024 SPECIAL TOWN MEETING**

The following motion is offered by: _____

Signature of Town Meeting Member

**ARTICLE 8: AMEND ZONING BY-LAW – MULTI-FAMILY OVERLAY DISTRICT (BASE COMPLIANCE PLAN)**

MOVED: That the main motion under Article 8 be amended changing footnote (d) of Section 3.17.5.3 Building Bulk and Other Requirements, which currently states "In the ASB-MF subdistrict, Multi-family housing may exceed the maximum of 44 dwelling units per acre by special permit.", to add a maximum number of dwelling units per acre that may be authorized by special permit in the ASB-MF subdistrict, so that footnote (d) reads as follows:

(d) In the ASB-MF subdistrict, Multi-family housing may exceed the as of right maximum of 44 dwelling units per acre by special permit, up to a maximum of ___ dwelling units per acre.

# TOWN OF NEEDHAM
MASSACHUSETTS

2024 OCT -3 PM 12:53

PLANNING BOARD

500 Dedham Avenue
Needham, MA 02492
781-455-7550

APPLICATION FOR ENDORSEMENT OF PLAN
BELIEVED NOT TO REQUIRE APPROVAL

Submit three (3) copies. One copy to be filed with the Planning Board and one with the Town Clerk as required by Section 81-P, Chapter 41 of the General Laws. This application must be accompanied by the **Original Tracing** and **three (3) copies of the plan.**

To the Planning Board:

The undersigned, believing that the accompanying plan of land in the Town of Needham does not constitute a subdivision within the meaning of the Subdivision Control Law, for the reasons outlined below, herewith submits said plan for a determination and endorsement that Planning Board approval under the Subdivision Control Law is not required.

1. Name of Applicant Lawton South Development LLC

   Address 1 Crest Rd, Wellesley, MA 02482

2. Name of Engineer or Surveyor Field Resources, Inc

   Address 281 Chestnut St, Needham, MA

3. Deed of property recorded in Norfolk County Registry,
   Book _____, Page _____

4. Location and description of property Map 08 Parcel 59 BK 41816 pg. 231
   Map 08 Parcel 64 Book 41816 pg. 192
   Map 08 Parcel 62 Book 41816 pg 281.

5. Reasons approval is not required (check as applicable):

   a) Every lot shown has the area and frontage required by the Zoning By-Law on a way, as defined by Section 81-L, Chapter 41 of the General Laws.

   b) Land designated _____ shall not be used as separate building lot(s) but only together with adjacent lots having the required area and frontage.

   c) Lot(s) having less than required frontage or area resulted from a taking for public purpose or have been recorded prior to 3/26/1925, no land is available to make up the deficiency and the frontage and land area of such lots are not being reduced by the plan.

   d) _____

(If the applicant is not the owner, written authorization to act as agent must be attached)

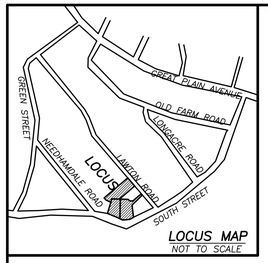
Signature of Applicant _____

Address 1 Crest Rd, Wellesley, MA 02482

By Brad Cangiamila, Manager (agent)

*Application accepted this* 8 *day of* Oct. 2024
*as duly submitted under the rules and regulations of the Planning Board.*

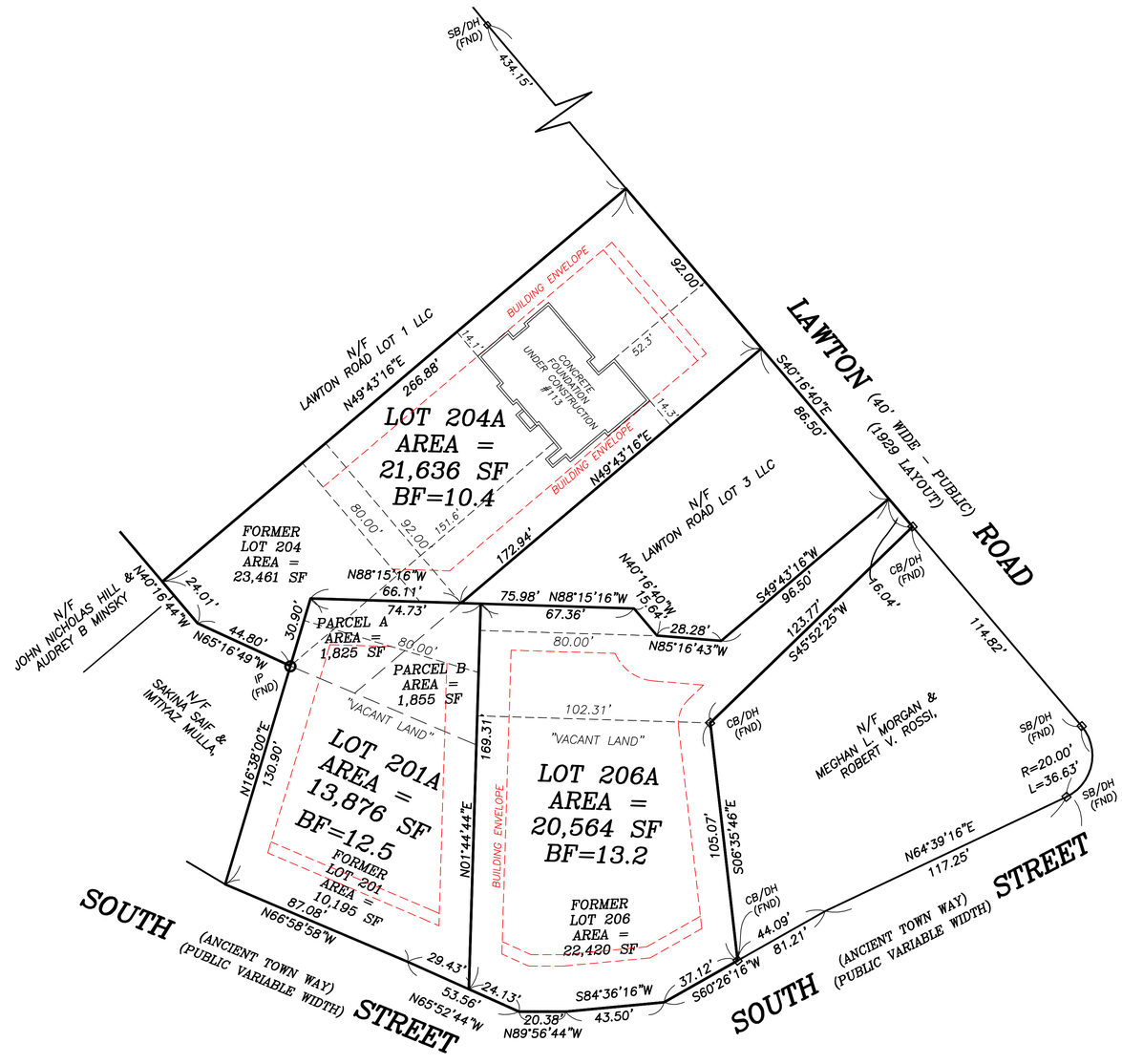
*By* _____




LOCUS MAP
NOT TO SCALE

REFERENCES:
NORFOLK COUNTY REGISTRY OF DEEDS
DEEDS
BOOK 9321 PAGE 384
BOOK 38155 PAGE 191
BOOK 41361 PAGE 102
BOOK 26949 PAGE 347
BOOK 23775 PAGE 098
BOOK 23893 PAGE 330
BOOK 41697 PAGE 573
BOOK 41576 PAGE 185
BOOK 41361 PAGE 102
BOOK 41816 PAGE 192
BOOK 41816 PAGE 231
BOOK 41816 PAGE 281

PLANS
PLAN BOOK 728 PLAN 59(LOCUS)
PLAN BOOK 725 PLAN 67(LOCUS)
PLAN BOOK 405 PAGE 290
PLAN 512 OF 1947
PLAN 868 OF 1958
PLAN BOOK 72 PAGE 3478
DEED BOOK 1593 PAGE 169
DEED BOOK 1842 PAGE 553 (LAWTON LAYOUT)
PLAN BOOK 729 PLANS 51&52 (SOUTH LAYOUT)




PB 72 PLAN 3478

FOR REGISTRY USE ONLY

APPROVAL UNDER THE SUBDIVISION CONTROL LAW NOT REQUIRED
NEEDHAM PLANNING BOARD

DATE:

NO DETERMINATION AS TO COMPLIANCE WITH ZONING REQUIREMENTS IS MADE OR INTENDED.

THE PURPOSE OF THIS PLAN IS TO CUT PARCEL A FROM LOT 204, LEAVING LOT 204A, ADDITIONALLY CUTTING PARCEL B FROM LOT 206 CREATING LOT 206A. LASTLY COMBINING PARCELS A AND B WITH LOT 201 TO CREATE LOT 201A.

LEGEND:

- IRON PIPE
- IRON ROD
- MONUMENT
- IP · · · · · IRON PIPE
- CB · · · · · CONCRETE BOUND
- SB · · · · · STONE BOUND
- FND. · · · · FOUND
- DH · · · · · DRILL HOLE

I CERTIFY THAT THIS PLAN CONFORMS WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

I CERTIFY THAT THIS PLAN IS BASED UPON AN ACTUAL FIELD SURVEY, AND THE LATEST PLANS AND DEEDS OF RECORD.

COMMONWEALTH OF MASSACHUSETTS
BRADLEY CANGIAMILA
#47581
REGISTERED PROFESSIONAL LAND SURVEYOR

ZONING INFORMATION: SINGLE RESIDENCE B (SRB)

| | REQUIRED | LOT 201A | LOT 204A | LOT 206A |
|---|---|---|---|---|
| MINIMUM LOT AREA | 10,000 SF | 13,876 SF | 21,636 SF | 20,564 SF |
| MAXIMUM BUILD FACTOR | 20 | 12.5 | 10.4 | 13.2 |
| MINIMUM LOT FRONTAGE | 80 FEET | 116.51 FEET | 92.00 FEET | 125.13 FEET |
| MINIMUM FRONT SETBACK | 20 FEET | | 52.3 FEET | |
| MINIMUM SIDE YARD | 14 FEET | | 14.1 FEET | |
| MINIMUM REAR YARD | 20 FEET | | 151.6 FEET | |
| MAXIMUM FAR | 0.36 IF >11,999 SF<br>0.38 IF <12,000 SF | | UNDER CONSTRUCTION | |
| MAXIMUM BUILDING COVERAGE | 25% | | UNDER CONSTRUCTION | |
| MAXIMUM BUILDING HEIGHT | 35 FEET | | UNDER CONSTRUCTION | |
| MAXIMUM BUILDING HEIGHT | 2 1/2 STORIES | | UNDER CONSTRUCTION | |

APPROVAL NOT REQUIRED
SUBDIVISION PLAN OF LAND
113 LAWTON ROAD,
125 SOUTH STREET & 133 SOUTH STREET
NEEDHAM, MASS.

TOWN OF NEEDHAM
MAP 08 PARCEL 59

NORFOLK COUNTY
REGISTRY OF DEEDS
BOOK 41816 PAGE 231
PLAN BOOK 725 PLAN 67

OWNER/APPLICANT:
LAWTON ROAD LOT 5 LLC
BRAD CANGIAMILA, MANAGER
1 CREST ROAD
WELLESLEY, MA 02481

TOWN OF NEEDHAM
MAP 08 PARCEL 64

NORFOLK COUNTY
REGISTRY OF DEEDS
BOOK 41816 PAGE 192
PLAN BOOK 728 PLAN 59

OWNER/APPLICANT:
LAWTON ROAD LOT 4 LLC
BRAD CANGIAMILA, MANAGER
1 CREST ROAD
WELLESLEY, MA 02481

TOWN OF NEEDHAM
MAP 08 PARCEL 62

NORFOLK COUNTY
REGISTRY OF DEEDS
BOOK 41816 PAGE 281
PLAN BOOK 728 PLAN 59

OWNER/APPLICANT:
LAWTON ROAD LOT 2 LLC
BRAD CANGIAMILA, MANAGER
1 CREST ROAD
WELLESLEY, MA 02481

GRAPHIC SCALE
30 0 15 30 60

JOB NO. 060-24

REVISED

Field Resources, Inc.
LAND SURVEYORS
OCTOBER 2, 2024 SCALE 1"=30'
P.O. BOX 324 281 CHESTNUT ST.
AUBURN, MA NEEDHAM, MA.
508 832 4332 781 444 5936
fieldresources@hotmail.com

**FOR PB USE ONLY**

# NEEDHAM
# ZONING BOARD OF APPEALS
# AGENDA

**THURSDAY, October 17, 2024 - 7:30PM**

| | |
|---|---|
| **Charles River Room**<br>**Public Service Administration Building**<br>**500 Dedham Avenue**<br>**Needham, MA 02492** | **Also livestreamed on Zoom**<br>**Meeting ID: 869-6475-7241**<br>**To join the meeting click this link:**<br>**https://us02web.zoom.us/j/86964757241** |

Minutes — Review and approve Minutes from September 19, 2024 meeting.

**7:30 PM** — **37 Moseley Avenue - Saybrook Construction, LLC**, *(Continued from September 19, 2024)* applied for a Variance pursuant to Sections 7.5.3, and MGL40A, Section 10, from the following provisions of Section 4.2.3 and any other applicable sections of the By-Law to permit the demolition of a deteriorated single family residential dwelling with detached garage and shed and to allow the construction of a new single-family residential dwelling with a side setback of 13.8 feet where 25 feet are required and a front yard setback of 20 feet where 30 feet are required. The lot contains 35,726 square feet, less than the required 43,560 square feet. The property is located at 37 Moseley Avenue, Needham, MA in the Single Residence A (SRA) Zoning District.

**7:30 PM** — **1132 Highland Avenue** – Total Eclipse Dance Studio, LLC. applied for a Special Permit to allow a private school use under Section 3.2.1 and to waive strict adherence to the number of required parking and the parking plan and design requirements under Sections 5.1.1.5, 5.1.2, 5.1.3 and any other applicable sections of the By-Law to allow the operation of a private dance school in the Christ Episcopal Church. The property is located in the Single Residence B (SRB) zoning district.

**7:45PM** — **858 Great Plain Avenue** – Arrais Ballet, LLC applied for a Special Permit to allow a private school use under Section 3.2.1 and to waive strict adherence to the number of required parking and the parking plan and design requirements under Sections 5.1.1.5, 5.1.2, 5.1.3 and any other applicable sections of the By-Law to allow the operation of a private dance school in the First Baptist Church. The property is located in the Single Residence B (SRB) zoning district.

**8:00PM** **378 Manning Street** – Driftwood Landing, LLC applied for a Special Permit under Sections 1.4.7.4, and any other applicable Sections of the By-Law to permit the demolition, extension, alteration, enlargement and reconstruction of the lawful, pre-existing, non-conforming two-family dwelling and its replacement with a new two-family residence. The property is located in the Single Residential B District.

GEORGE GIUNTA, JR.
ATTORNEY AT LAW*
281 CHESTNUT STREET
NEEDHAM, MASSACHUSETTS 02492
*Also admitted in Maryland

TELEPHONE (781) 449-4520 FAX (781) 465-6059

September 20, 2024

Town of Needham
Zoning Board of Appeals
Needham, Massachusetts 02492

Attn: Daphne M. Collins, Zoning Specialist

Re: Total Eclipse Dance Studio, LLC
1132 Highland Avenue, Needham, MA

Dear Ms. Collins,

Please be advised this office represents Total Eclipse Dance Studio, LLC (hereinafter the Applicant and "Total Eclipse") in connection with its operation of a dance school in the Christ Episcopal Church at the property known and numbered 1132 Highland Avenue, Needham, MA (hereinafter the "Premises"). In connection therewith, submitted herewith, please find the following:

1. Seven copies of a Completed Application for Hearing;

2. Seven copies of Memorandum in Support of Application of Total Eclipse Dance Studio, LLC; and

4. Check in the amount of $500 for the applicable filing fee.

For several years, Total Eclipse has operated a dance school in a portion of the Premises, which is in the Single Residence B Zoning District (SRB). Recently, it came to the attention of Total Eclipse that zoning relief is required for their operation. As a result, they are now making application for the requisite special permits.

In particular, a special permit for the use is required pursuant to Section 3.2.1 and a special permit pursuant to Section 5.1.1.5 waiving strict adherence with the off-street parking requirements of Sections 5.1.2 and 5.1.3 is also required.

Kindly schedule this matter for the next hearing of the Board of Appeals. If you have any comments, questions or concerns, or if you require any further information in the meantime, please contact me so that I may be of assistance.

Sincerely,

George Giunta, Jr.

# ZBA Application For Hearing

Applicants must consult with the Building Inspector prior to filing this Application. *Failure to do so will delay the scheduling of the hearing.*

## Applicant Information

| | | | |
|---|---|---|---|
| Applicant Name | Total Eclipse Dance Studio, LLC | | Date: 9/20/24 |
| Applicant Address | 1132 Highland Avenue, Needham, MA 02492 | | |
| Phone | 781-405-6198 | email | totaleclipsedance@gmail.com |

Applicant is ☐Owner; ☑Tenant; ☐Purchaser; ☐Other_____

If not the owner, a letter from the owner certifying authorization to apply must be included

| | | | |
|---|---|---|---|
| Representative Name | George Giunta Jr, Esq. | | |
| Address | 281 Chestnut Street, Needham, MA 02492 | | |
| Phone | 617-840-3570 | email | george.giuntajr@needhamlaw.net |

Representative is ☑Attorney; ☐Contractor; ☐Architect; ☐Other_____

Contact ☐Me ☑Representative in connection with this application.

## Subject Property Information

| | | | |
|---|---|---|---|
| Property Address | 1132 Highland Avenue, Needham, MA 02492 | | |
| Map/Parcel Number | Type text here<br>Map 226 / Parcel 44-01 | Zone of Property | Single Residence B (SRB) |

Is property within 100 feet of wetlands, 200 feet of stream or in flood Plain?
☐Yes ☑No

Is property ☑Residential or ☐Commercial (Occupied by Dover Amendment structure)

If residential renovation, will renovation constitute "new construction"?
☐Yes ☐No N/A

If commercial, does the number of parking spaces meet the By-Law requirement? ☐Yes ☐No
Do the spaces meet design requirements? ☐Yes ☐ No

Application Type (*select one*): ☑Special Permit ☐Variance ☐Comprehensive Permit ☐Amendment ☐Appeal Building Inspector Decision

# ZBA Application For Hearing

| **Existing Conditions:** |
|---|
| Existing Christ Episcopal Church facility with multiple tenants and uses. |
| |
| |

| **Statement of Relief Sought:** |
|---|
| 1. Special permit pursuant to Section 3.2.1 for a private school, namely, a dance school; |
| 2. Special permit pursuant to Section 5.1.1.5 waiving strict adherence to the requirements of Section 5.1.2 (Required Parking) and Section 5.1.3 (Parking Plan and Design Requirements) |
| 3. All other relief as may be necessary for the operation of a private dance school in the Christ Episcopal Chuch at 1132 Great Plain Avenue. |

| **Applicable Section(s) of the Zoning By-Law:** |
|---|
| |

**If application under Zoning Section 1.4 above, list non-conformities:**

| | **Existing Conditions** | **Proposed Conditions** |
|---|---|---|
| **Use** | | |
| **# Dwelling Units** | | |
| **Lot Area** *(square feet)* | | |
| **Front Setback** *(feet)* | | |
| **Rear Setback** *(feet)* | | |
| **Left Setback** *(feet)* | | |
| **Right Setback** *(feet)* | | |
| **Frontage** *(feet)* | | |
| **Lot Coverage** *(%)* | | |
| **FAR** *(Floor area divided by the lot area)* | | |
| *Numbers must match those on the certified plot plan and supporting materials* | | |

# ZBA Application For Hearing

| Date Structure Constructed including additions: | Date Lot was created: |
|---|---|
| | |

| Submission Materials | Provided |
|---|---|
| Certified Signed Plot Plan of Existing and Proposed Conditions *(Required)* | |
| Application Fee, check made payable to the Town of Needham Check holders name, address, and phone number to appear on check and in the Memo line state: "ZBA Fee – Address of Subject Property" *(Required)* | |
| If applicant is tenant, letter of authorization from owner *(Required)* | |
| Electronic submission of the complete application with attachments *(Required)* | |
| Elevations of Proposed Conditions *(when necessary)* | |
| Floor Plans of Proposed Conditions *(when necessary)* | |

Feel free to attach any additional information relative to the application. Additional information may be requested by the Board at any time during the application or hearing process.

❖❖❖❖

I hereby request a hearing before the Needham Zoning Board of Appeals. I have reviewed the Board Rules and instructions.

I certify that ~~I have~~ the Applicant has previously consulted with the Building Inspector_____
*date of consult*

Date: September 20, 2024 Applicant Signature Total Eclipse Dance Studio, LLC
George Giunta Jr
by its attorney, George Giunta, Jr, Esq.

*An application must be submitted to the Town Clerk's Office at townclerk@needhamma.gov and the ZBA Office at dcollins@needhamma.gov*

TO: THE MEMBERS OF THE BOARD OF APPEALS
TOWN OF NEEDHAM, MA September 20, 2024

MEMORANDUM IN SUPPORT OF
APPLICATION OF
TOTAL ECLIPSE DANCE STUDIO, LLC
1132 Highland Avenue, Needham, MA

The applicant, Total Eclipse Dance Studio, LLC (hereinafter, interchangeably, the "Applicant" and "Total Eclipse"), seeks a Special Permit pursuant to Section 3.2.1 of the Needham Zoning By-Law for a private school, a Special Permit pursuant to Section 5.1.1.5, waiving strict adherence with the off-street parking requirements of Section 5.1.2 (Required Parking) and Section 5.1.3 (Parking Plan and Design Requirements), and all other relief as may be necessary and appropriate in connection with the continued operation of a dance school in the Christ Episcopal Church at the property known and numbered 1132 Highland Avenue (the "Premises").

## PRESENT USE / EXISTING CONDITIONS

The Premises is shown as parcel 44-01 on sheet 226 of the Assessor's Map for the Town of Needham and is located within the Single Residence B Zoning District. It consists of approximately 48,616 square feet of land with over 313 feet of frontage on Highland Avenue and 209 feet of frontage on Rosemary Street. The Premises is currently occupied by a primarily one-story church building, and a small associated off-street parking area. According to the records of the Assessor's Department, the building was built in 1937. The building, which is used for worship services and other church related activities by the Christ Episcopal Church (the "Church"), is also used for other, additional activities, and has been the subject of at least one prior Board of Appeals Decision.[1]

[1] In particular, Decision dated January 20, 2022, issued to Needham ACE for use of a portion of the Premises for an afterschool enrichment program for children in kindergarten through 5th grade. A copy of such decision is provided herewith.

## PROPOSED USE / ACTIVITY

Total Eclipse, founded by former students of Radio City Music Hall, offers dance classes for toddlers through adults of all levels. Recreational and performance arts classes are taught across various styles, including ballet, jazz, tap, hip-hop, pointe, lyrical, modern, contemporary, and acro. Private lessons are available and dancers in the 11-18 age group have the opportunity to join Company 1 (advanced) or Company 2 (intermediate). Students are invited to join the Company when they have demonstrated proficient technique, musicality, range, and knowledge of dance.

Total Eclipse has operated its program of dance instruction at the Premises since 2018, without realization or understanding that a special permit was required. This appears to have arisen, at least in part, out of the exemption afforded to churches and other places of worship under the Dover Amendment. Both the Church and Total Eclipse seem to have been under the misunderstanding that all activities occurring inside a church building benefit from the protection afforded by the Dover Amendment. However, such is not the case, as it is only religious activities that are protected. This was discovered when Total Eclipse recently approached the Building Department relative to a small, contemplated expansion inside the Church. At that time, Total Eclipse learned not only that there was no record of their use, but that zoning relief was required. As a result, Total Eclipse now understands that a special permit pursuant to Section 3.2.1 of the Needham Zoning By-Law is required for their private dance school.

The program consists of multiple classes on weekday afternoons and Saturdays in a portion of the church building consisting of approximately 5,609 square feet of floor area on the lower level.[2] While the exact schedule varies by day, in general, during the school year (generally September through May / June, based on the Needham public schools calendar), classes are offered between 3 PM and 9:30 PM weekdays and 9 AM and 4:45 PM Saturdays. No classes are held on Sundays. Summer classes vary, but generally are held one evening per week, with a maximum of 20 students and one teacher, or two week-long morning sessions for preschoolers, with a maximum of 10 children and two staff.

At any given time, there are a maximum of three classes provided, with a total maximum of 40 students distributed throughout those classes. In addition, at any given time there are a

maximum of four staff on site.[3] While a limited number of classes are open to adults, the vast majority of students are children. In connection therewith, nearly all students are dropped off and picked up, with only a small handful using parking during their classes.

## PARKING

Section 5.1.1.1 of the Zoning By-Law provides that any change of a structure or use from a use or uses as described in the categories of Section 5.1.2 to another such category that requires additional off-street parking requires compliance with Sections 5.1.2 and 5.1.3 for the entire use of structure. In addition, Section 5.1.1.3 of the By-Law provides that any change or conversion of a use in a mixed-use structure, to a use which requires additional off-street parking requires compliance with Sections 5.1.2 and 5.1.3 for the entire structure.

Section 5.1.2 of the By-Law, Required Parking, sets forth various categories of uses and their associated parking demand. The closest category in the that section is "Colleges, vocational and high schools excluding boarding and office facilities which shall be computed separately in accordance with this section". However, based on the plain language of the By-Law, and the fact that nearly all students are dropped off and picked up, that category does not seem directly applicable.

An alternative and more appropriate standard would be that for after school programs, as applied to Code Whiz, Needham ACE and other private school / after school operations. That standard, for enrollments fewer than 45, is one space for every five students, plus one space for each employee. Applying that standard, Total Eclipse requires a total of 12 spaces, calculated as follows:

Maximum enrollment of 40 ÷ 5 = 8 spaces
Maximum 4 staff at any given time = 4 spaces
8 + 4 = 12 spaces required

Because the Church is a mixed use building, the parking associated with Total Eclipse would be in addition to the base parking required by the Church for worship services, administration and associated programming, as well as the parking demand associated with the Needham ACE

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[2] The space consists of the Fellowship Hall and renovated kitchen space, which provide room for 3 Dance Studios, as well as the stage area in the Fellowship Hall, used for storage, 2 restrooms and adjacent hallways. See Exhibit A attached hereto for rough floor plan of the space.

[3] Three dance instructors and one administrative / desk staff.

afterschool program that also operates at the Premises.[4] Considering just Total Eclipse and Needham ACE, the parking demand associated with the building is 19, just under the total available parking (as discussed below). However, when the parking demand associated with worship service and Sunday School is added, total parking demand is likely to increase substantially, in excess of available parking.[5]

There is a parking lot across Highland Avenue with a total of 85 parking spaces owned by the Church. However, 65 of those spaces are leased to the Town, leaving just 20 spaces available for use by Total Eclipse, Needham ACE and the Church. In addition, there is a small parking area to the north side of the church building, containing four parking spaces, and a driveway to the south side, off Rosemary Street, with no marked spaces, but room for approximately 2 vehicles. Both small areas adjacent to the Church building are for use solely by the Church and its staff, leaving only the 20 spaces on the other side of Highland Avenue available to serve the public. As a result, it appears that the total parking demand for the building exceeds the available parking, necessitating a parking waiver. Finally, because all three parking areas are long pre-existing, from before the adoption of off-street parking design requirements in the middle 1980s, they do not comply with all the requirements of Section 5.1.3 of the By-Law, and a design waiver is also required.

Notwithstanding the foregoing, the Applicant is of the opinion that there is adequate off-street parking to support its continued use of the Premises. When the Total Eclipse parking demand is added to the Needham ACE demand, the total is within the number of available spaces in the parking lot. Moreover, while the addition of worship service parking demand exceeds the available parking, services are currently offered only on Sundays, when both Total Eclipse and Needham ACE are closed. Finally, there is on-street, two-hour parking available in proximity to the Premises, along one side of Rosemary Street, as well as additional on-street parking further down Highland Avenue on both sides in front of Sudbury Farms.

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[4] That parking demand established pursuant to the Board's Decision, referenced in footnote 1 above, was 7 parking spaces.

[5] The parking standard for places of public assembly with seating facilities is 1 space per 3 seats of capacity. Thus, assuming Church attendance of 60 parishioners, the associated parking demand would be 20 spaces.

## LAW

Massachusetts General Laws, Chapter 40A, Section 9 states as follows: "Special Permits may be issued only for uses that are in harmony with the general purpose and intent of the ordinances of the by-law, and shall be subject to general or specific provisions set forth therein; and that such permits may also impose conditions, safeguards, and limitations on time and use."

Section 3.2.1 of the Town of Needham Zoning By-Laws (Schedule of Use Regulations) requires the issuance of a Special Permit for the operation of "other private school, nursery, or kindergarten" in the Single Residence B Zoning District.

Section 7.5.2.1 of the By-Laws (Finding and Determination), as applicable to the application of Total Eclipse, requires that prior to granting a special permit, the Board of Appeals must make a finding and determination that the proposed use of the Premises for a dance studio:

> (a) complies with the criteria or standards of section 3.2. of the By-Law which refers to the granting of the requested special permit;
>
> (b) is consistent with 1) the general purposes of the By-Law as set forth in paragraph 1.1,[6] and 2) the more specific objectives and purposes applicable to the requested special permit which may be set forth elsewhere in the By-Laws; and
>
> (c) is designed in a manner that is compatible with the existing natural features of the site and is compatible with the characteristics of the surrounding area.

Section 5.1.1.5 authorizes and allows the Board to waive strict adherence with the requirements of Sections 5.1.2 and 5.1.3 where a particular use, structure or lot, owing to special circumstances, does not warrant the application of the parking requirements of Section 5.1.2 or the design requirements contained in Section 5.1.3. In addition, pursuant to Section 5.1.1.5 the Board is directed to consider whether the issuance of the special permit would be detrimental to the Town or to the general character and visual appearance of the surrounding neighborhood and abutting uses and is further consistent with the intent of the Zoning By-Law.

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[6] Section 1.1 states that it is "The purpose of [the] By-Law [to] promote the health, safety, convenience, morals or welfare of the inhabitants of Needham; to lessen congestion in the streets; to conserve health; to secure safety from fire, panic and other dangers; to provide adequate light and air; to prevent overcrowding of land; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements; to conserve the value of land and buildings; to encourage the most appropriate use of land and buildings; to encourage the most appropriate use of land throughout the Town and to preserve and increase amenities under the provisions of General Laws, Chapter 40A. The use, construction, alteration, height, area and location of buildings and structures and the use of premises in the town of Needham are regulated as [provided by the By-Laws]"

## DISCUSSION / ANALYSIS

The applicant contends that the proposed use of a portion of the Premises for dance instruction complies with the requirements of Section 3.2.1 of the By-Laws and is further in harmony with the general purpose and intent of the Zoning By-Law. The proposed use is compatible with current uses in the area, the other uses within the building, and further does not interfere with the character of the neighborhood.

Section 3.2.1 requires a Special Permit for "Other private school, nursery, or kindergarten" in the Single Residence B Zoning District. However, no additional requirement is imposed. Therefore, the proposed use will comply with the criteria and standards of Section 3.2.1 upon the issuance of the requisite Special Permit. Furthermore, the proposed use of the subject premises is consistent with the requirements of Section 1.1, as the continued provision of dance instruction will promote the convenience and welfare of the inhabitants of the Town of Needham, especially the children of the Town, without creating any hazard or unwanted condition.

The proposed use of a portion of the Premises for dance instruction does not warrant the application of the parking requirements of Section 5.1.2, and the issuance of the requested parking waiver will not be detrimental to the Town or to the general character and visual appearance of the surrounding neighborhood and abutting uses and will further be consistent with the intent of the Zoning By-Law. As mentioned above, the various activities at the Premises do not all occur simultaneously. As a result, actual parking demand is substantially less than the sum of all the uses computed together. Considering the two main uses in operation at the Premises on weekday afternoons, the calculated parking demand will be 19 spaces.[7] This is one less than the total number of spaces available in the parking lot across Highland Avenue.[8]

In addition, the calculated parking demand is not reflective of parking demand in practice. Both Total Eclipse and Needham ACE primarily serve children who are dopped off and picked up. As a result, the vast majority of the available spaces are only temporarily occupied, and only for a very short period. Therefore, practical demand will be substantially less than calculated on paper.

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[7] 12 spaces for Total Eclipse + 7 spaces for Needham ACE = 19 total spaces required.

[8] Both Needham ACE and Total Eclipse are allowed and required to use this lot pursuant the terms of their respective leases.

Since Total Eclipse first began to provide dance instruction at the Premises in 2018, it has not experienced or been aware of any significant incident or issue with parking related to its activities. To minimize any issues, Total Eclipse engages in regular communication with parents, students and staff and keeps a mindful watch relative to parking.[9] These efforts will continue going forward.

## CONCLUSION

Based on the facts and discussion set forth above, Total Eclipse asserts that its continued use of a portion of the Christ Episcopal Church will not affect the neighborhood, surrounding area or the Town in any adverse material or significant way. Since its opening in 2018, Total Eclipse has been a good and considerate neighbor and has operated without significant issue or incident. The operational details are not proposed or anticipated to change in any material way, and will allow for the continuation of quality dance instruction.

Moreover, while parking waivers are necessary due to the calculation required by the By-Law and the nature of the parking areas, the actual parking demand at the Premises during weekday afternoons is less than the total number of available spaces. And neither Total Eclipse nor Needham ACE operate on Sundays when worship services occur. Moreover, there is additional on and off-street parking available in the vicinity of the Premises. Therefore, in practice, the available parking is adequate to support the uses at the Premises.

The use of a portion of the Premises for dance instruction is in harmony with the general purpose and intent of the By-Law, and there are special circumstances that warrant the granting of a parking waiver. Therefore, Total Eclipse asserts that the issuance of the requested special permits is both proper and appropriate and should be granted.

Respectfully submitted,
Total Eclipse Dance Studio, LLC
by its attorney,

George Giunta, Jr., Esq.
281 Chestnut Street
Needham, Massachusetts 02492
781-449-4520

[9] See, for example, the letter provided to parents and students, attached hereto as Exhibit B.

EXHIBIT A
Rough Floor Plan
(Total Eclipse space outlined in orange)

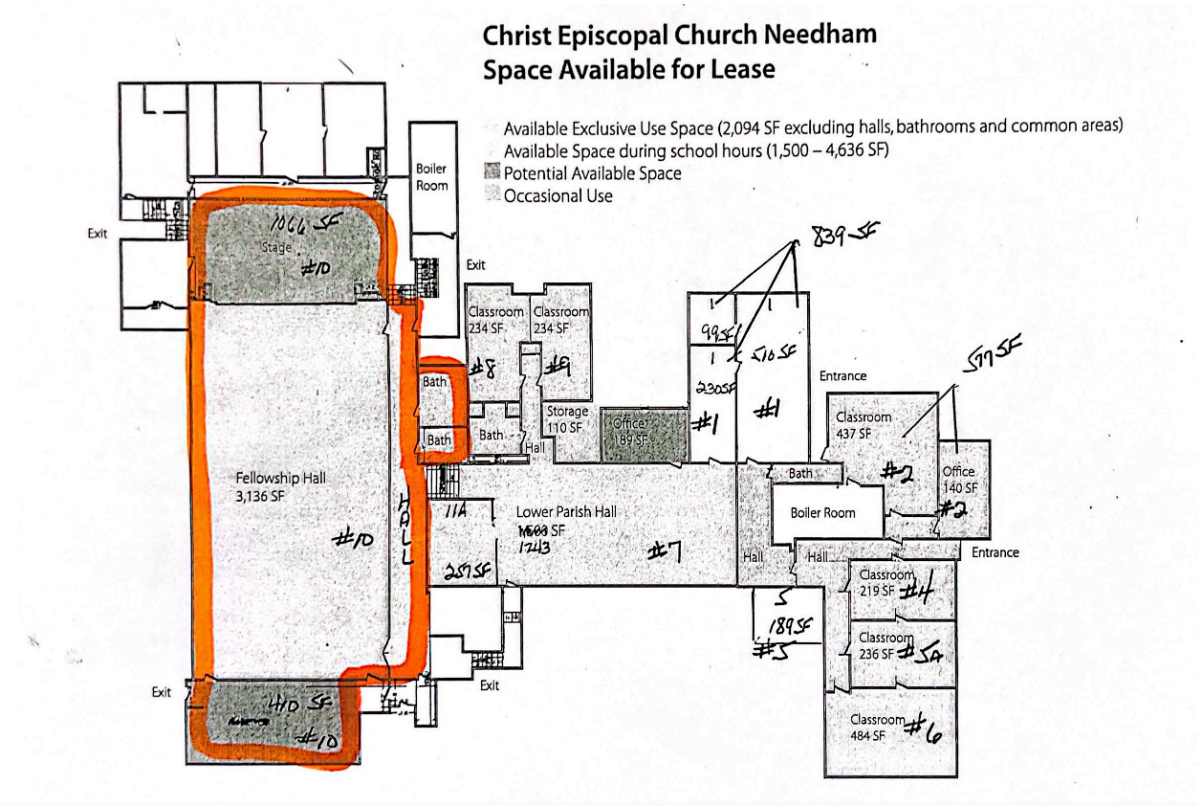


EXHIBIT B
Sample Letter to Parents and Students

Dear Students & Parents,

Our staff and instructors are excited ... and ready! ... to start Season 7 with all of you. A few protocols to refresh your memory:

**OUR LOCATION & ENTRANCE**:
We are located in the lower level of the Christ Episcopal Church in Needham. Our studio entrance is on ROSEMARY STREET, directly across from 80 Rosemary St.

**STUDIO DROP-OFF/PICK-UP PROCEDURE**:
Dancers should be dropped off 10 minutes before the start of class and picked up 10 minutes after class. Children under the age of 10 should be escorted in/out by a caregiver. We will not send young children out of the building without assurance that a responsible caregiver is present.

**PARKING**:
Our parking guidelines prioritize your safety. We are located at a busy intersection, which seems to get busier all the time. Punctuality is important, but not at the expense of safety. Take the time to park as indicated below and cross the streets carefully!

Needham Public Library, 1139 Highland Avenue, directly across the street from the Church. The church owns multiple free spaces toward the Needham Heights side of the parking lot, which you are welcome to use. Please use the controlled crossing at the intersection of Rosemary/Highland when walking to the studio. Do not jaywalk across Highland and discourage your children from ever doing so themselves.

Memorial Field Parking Lot, corner of Rosemary/Highland. These spaces have good/free availability during the afternoon and weekend hours.

Rosemary Street parking is available but limited. PLEASE be considerate of our neighbors and NEVER park or idle at the end of their driveways, even for just a few seconds. This IS a pain point for them, and we are committed to honoring their privacy. Please assist us with our commitment, and in upholding TEDS' reputation as polite, respectful neighbors. Thank you!

**PROPER COVER-UPS**:
Dancers should wear proper cover-ups when coming to and from the studio. It is inappropriate, particularly for our older students, to appear in leotards/tights alone in public, on church grounds, etc. We will reinforce this guideline with our students directly when we see them in class.

We so look forward to meeting you all this week, Gemma, Alicia and Staff at TEDS!

CHRIST CHURCH
EPISCOPAL
NEEDHAM

September 11, 2024

Needham Board of Appeals
Needham Town Hall
1492 Highland Avenue
Needham, MA 02492

Dear Members,

Please be advised that Total Eclipse Dance Studio has the permission of Christ Episcopal Church, 1132 Highland Avenue, Needham, Massachusetts, to apply for a ZBA Special Permit in association with the program and to use the parking lot owned by the Church for staff parking and customer pick-up/drop-off as indicated in the parking plan.

The parking lot is located on Highland Avenue, Needham, Massachusetts, directly opposite the church and situated between 1111 Highland Avenue and the Needham Public Library.

Sincerely,

Woody Hughes
*Facilities Manager*

GEORGE GIUNTA, JR.
ATTORNEY AT LAW*
281 CHESTNUT STREET
NEEDHAM, MASSACHUSETTS 02492
*Also admitted in Maryland

TELEPHONE (781) 449-4520 FAX (781) 465-6059

September 20, 2024

Town of Needham
Zoning Board of Appeals
Needham, Massachusetts 02492

Attn: Daphne M. Collins, Zoning Specialist

Re: Arrais Ballet, LLC
858 Great Plain Avenue, Needham, MA

Dear Ms. Collins,

Please be advised this office represents Arais Ballet, LLC (hereinafter the Applicant and "Arrais") in connection with its operation of a dance school in the First Baptist Church at the property known and numbered 858 Great Plain Avenue, Needham, MA (hereinafter the "Premises"). In connection therewith, submitted herewith, please find the following:

1. Seven copies of a Completed Application for Hearing;

2. Seven copies of Memorandum in Support of Application of Arrais Ballet, LLC; and

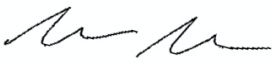
4. Check in the amount of $500 for the applicable filing fee.

For the past year Arrais has operated a dance school in a portion of the Premises, which is in the Single Residence B Zoning District (SRB). Recently, it came to the attention of Arrais that zoning relief is required for their operation. As a result, they are now making application for the requisite special permits.

In particular, a special permit for the use is required pursuant to Section 3.2.1 and a special permit pursuant to Section 5.1.1.5 waiving strict adherence with the off-street parking requirements of Sections 5.1.2 and 5.1.3 is also required.

Kindly schedule this matter for the next hearing of the Board of Appeals. If you have any comments, questions or concerns, or if you require any further information in the meantime, please contact me so that I may be of assistance.

Sincerely,



George Giunta, Jr.

# ZBA Application For Hearing

Applicants must consult with the Building Inspector prior to filing this Application. *Failure to do so will delay the scheduling of the hearing.*

## Applicant Information

| | | | |
|---|---|---|---|
| Applicant Name | Arrais Ballet, LLC | | Date: 9/20/24 |
| Applicant Address | 176 Marked Tree Road, Needham, MA 02492 | | |
| Phone | | email | admin@arraisballet.com |

Applicant is ☐Owner; ☑Tenant; ☐Purchaser; ☐Other_____

If not the owner, a letter from the owner certifying authorization to apply must be included

| | | | |
|---|---|---|---|
| Representative Name | George Giunta, Jr., Esq. | | |
| Address | 281 Chesnut Street, Needham, MA 02492 | | |
| Phone | 617-840-3570 | email | george.giuntajr@needhamlaw.net |

Representative is ☑Attorney; ☐Contractor; ☐Architect; ☐Other_____

Contact ☐Me ☐Representative in connection with this application.

## Subject Property Information

| | | | |
|---|---|---|---|
| Property Address | | | |
| Map/Parcel Number | Map 40 / Parcel 61 | Zone of Property | Single Residence B (SRB) |

Is property within 100 feet of wetlands, 200 feet of stream or in flood Plain?
☐Yes ☑No

Is property ☑Residential or ☐Commercial

If residential renovation, will renovation constitute "new construction"?
☐Yes ☐No N/A

If commercial, does the number of parking spaces meet the By-Law requirement? ☐Yes ☐No
Do the spaces meet design requirements? ☐Yes ☐ No

Application Type (*select one*): ☑Special Permit ☐Variance ☐Comprehensive Permit ☐Amendment ☐Appeal Building Inspector Decision

# ZBA Application For Hearing

| **Existing Conditions:** |
|---|
| Existing First Baptist Church building, with multiple tenants and uses. |
| |
| |

| **Statement of Relief Sought:** |
|---|
| 1. Special permit pursuant to Section 3.2.1 for a private school, namely, a dance school |
| 2. Special permit pursuant to Section 5.1.1.5 waiving strict adherence to the requirements of Section 5.1.2 (Required Parking); and |
| 3. All other relief as may be necessary for the operation of a private dance school in the First Baptist Church at 858 Great Plain Avenue |

| **Applicable Section(s) of the Zoning By-Law:** |
|---|
| |

**If application under Zoning Section 1.4 above, list non-conformities:**

| | **Existing Conditions** | **Proposed Conditions** |
|---|---|---|
| **Use** | | |
| **# Dwelling Units** | | |
| **Lot Area** *(square feet)* | | |
| **Front Setback** *(feet)* | | |
| **Rear Setback** *(feet)* | | |
| **Left Setback** *(feet)* | | |
| **Right Setback** *(feet)* | | |
| **Frontage** *(feet)* | | |
| **Lot Coverage** *(%)* | | |
| **FAR** *(Floor area divided by the lot area)* | | |
| *Numbers must match those on the certified plot plan and supporting materials* | | |

# ZBA Application For Hearing

| Date Structure Constructed including additions: | Date Lot was created: |
|---|---|
| | |

| Submission Materials | Provided |
|---|---|
| Certified Signed Plot Plan of Existing and Proposed Conditions *(Required)* | |
| Application Fee, check made payable to the Town of Needham Check holders name, address, and phone number to appear on check and in the Memo line state: "ZBA Fee – Address of Subject Property" *(Required)* | |
| If applicant is tenant, letter of authorization from owner *(Required)* | |
| Electronic submission of the complete application with attachments *(Required)* | |
| Elevations of Proposed Conditions *(when necessary)* | |
| Floor Plans of Proposed Conditions *(when necessary)* | |

Feel free to attach any additional information relative to the application. Additional information may be requested by the Board at any time during the application or hearing process.

❖❖❖❖

I hereby request a hearing before the Needham Zoning Board of Appeals. I have reviewed the Board Rules and instructions.

I certify that the Applicant has previously ~~I have~~ consulted with the Building Inspector_____
*date of consult*

Date: September 20, 2024 Applicant Signature Arrais Ballet, LLC George Giunta Jr
by its attorney, George Giunta, Jr., Esq.

*An application must be submitted to the Town Clerk's Office at townclerk@needhamma.gov and the ZBA Office at dcollins@needhamma.gov*

TO: THE MEMBERS OF THE BOARD OF APPEALS
TOWN OF NEEDHAM, MA September 20, 2024

MEMORANDUM IN SUPPORT OF
APPLICATION OF
ARRAIS BALLET, LLC
858 Great Plain Avenue, Needham, MA

The applicant, Arrais Ballet, LLC (hereinafter, interchangeably, the "Applicant" and "Arrais"), seeks a Special Permit pursuant to Section 3.2.1 of the Needham Zoning By-Law for a private school, a Special Permit pursuant to Section 5.1.1.5, waiving strict adherence with the off-street parking requirements of Section 5.1.2 (Required Parking) and all other relief as may be necessary and appropriate in connection with the continued operation of a dance school in the First Baptist Church at the property known and numbered 858 Great Plain Avenue (the "Premises").

## PRESENT USE / EXISTING CONDITIONS

The Premises is shown as parcel 61 on sheet 40 of the Assessor's Map for the Town of Needham and is located within the Single Residence B Zoning District. It consists of approximately 51,979 square feet of land with over 143 feet of frontage on Great Plain Avenue and over 263 feet of frontage on Warren Street. The Premises is currently occupied by a mostly two-story church building, and a small associated off-street parking area with approximately 13 parking spaces. According to the records of the Assessor's Department, the building was built in 1928. The building, which was previously used for worship services and other church related activities by the First Baptist Church (the "Church"), is currently used for childcare, nursery school and dance school purposes. It has also been the subject of prior Board of Appeals Decisions relative to wireless facilities contained therein.

## PROPOSED USE / ACTIVITY

Arrais Ballet was founded in 2023 by Paulo Arrais, after he retired as a Principal Dancer from Boston Ballet. He trained at prestigious schools like Paris Opera Ballet and London's Royal Ballet and was a Principal Dancer with the Norwegian National Ballet, Alonzo King's Lines Ballet in addition to the Boston Ballet. Paulo's story and ballet journey embody the essence of the school's vision. Paulo not only showcases unparalleled precision and artistry in his craft, but also a deep passion and commitment to guiding and teaching the next generation of young dancers, welcoming students from diverse backgrounds and beginnings.

Arrais Ballet offers dance instruction primarily to children, but also to adults. Age-appropriate curriculum and Pilates workouts cater to individuals of all levels, promoting core strength, flexibility, and a healthy body image. The training philosophy of Arrais Ballet is that rigorous training should be paired with artistic expression, creativity, individuality and risk taking in a supportive environment.

Arrais has operated its program of dance instruction at the Premises for approximately the past year, without awareness that any zoning relief was required. However, as a result of recent communications with the Building Department, Arrais has come to understand that a special permit pursuant to Section 3.2.1 of the Needham Zoning By-Law is required for their private dance school, and they are now seeking such relief.

Arrais uses approximately 4,716 square feet within the building.[1] Classes are currently divided into fundamentals, intermediate, intermediate advanced and advanced. Class size varies based on the nature of the instruction, with the largest class size at present being 23 students. Generally, only one class is offered at a time, although during the summer, two classes may be offered at once.[2] The maximum number of staff on site at any given time is three: two instructors and one administrative staff, although at times may be less. Classes are offered at different times throughout the week, as well as on Saturdays and Sundays, between the hours of 9 AM and 9 PM.[3]

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[1] The space is located in the Ballet Room, the Rock Room, an upstairs Office on the 2nd Floor and the basement of the building (not including the kitchen).

[2] Even when two classes are offered, the maximum number of students will be 20, divided between the two classes.

[3] The current schedule of classes, along with current class size information is attached hereto as Exhibit A.

## PARKING

Section 5.1.2 of the By-Law, Required Parking, sets forth various categories of uses and their associated parking demand. The closest category in that section is "Colleges, vocational and high schools excluding boarding and office facilities which shall be computed separately in accordance with this section". However, based on the plain language of the By-Law, and the fact that most students are dropped off and picked up, that category does not seem directly applicable.[4]

An alternative and more appropriate standard would be that for after school programs, as applied to Code Whiz, Needham ACE and other private school / after school operations. That standard, for enrollments fewer than 45, is one space for every five students, plus one space for each employee. Applying that standard, Arrais requires a total of 8 spaces, calculated as follows:

Maximum enrollment of 25[5] ÷ 5 = 5 spaces
Maximum 3 staff at any given time = 3 spaces
5 + 3 = 8 spaces required

While there are a handful of parking spaces on site, Arrais does not have the right to use them. Therefore, there is no off-street parking available to Arrais, and a parking waiver is required.

Notwithstanding the lack of on-site parking, there is ample parking in the area. Arrais is located within easy walking distance from the municipal parking lot on Dedham Avenue. In addition, there is on street parking in proximity to the Premises, along both sides of Great Plain Avenue and on one side of Pickering Street.

Between the availability of on-street and municipal parking, and the fact that most students are children that are dropped off and picked up, the Applicant is of the opinion that there is adequate parking available to support its continued use of the Premises.

## LAW

Massachusetts General Laws, Chapter 40A, Section 9 states as follows: "Special Permits may be issued only for uses that are in harmony with the general purpose and intent of the

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[4] As indicated in the current class schedule, referenced above, only two classes are currently offered for adults; Wednesday midday and Saturday midday.

[5] While the largest current class is 23, this has been increased to 25 for the purpose of parking calculation as a maximum size.

ordinances of the by-law, and shall be subject to general or specific provisions set forth therein; and that such permits may also impose conditions, safeguards, and limitations on time and use."

Section 3.2.1 of the Town of Needham Zoning By-Laws (Schedule of Use Regulations) requires the issuance of a Special Permit for the operation of "other private school, nursery, or kindergarten" in the Single Residence B Zoning District.

Section 7.5.2.1 of the By-Laws (Finding and Determination), as applicable to the application of Arrais, requires that prior to granting a special permit, the Board of Appeals must make a finding and determination that the proposed use of the Premises for a dance studio:

> (a) complies with the criteria or standards of section 3.2. of the By-Law which refers to the granting of the requested special permit;
>
> (b) is consistent with 1) the general purposes of the By-Law as set forth in paragraph 1.1,[6] and 2) the more specific objectives and purposes applicable to the requested special permit which may be set forth elsewhere in the By-Laws; and
>
> (c) is designed in a manner that is compatible with the existing natural features of the site and is compatible with the characteristics of the surrounding area.

Section 5.1.1.5 authorizes and allows the Board to waive strict adherence with the requirements of Sections 5.1.2 and 5.1.3 where a particular use, structure or lot, owing to special circumstances, does not warrant the application of the parking requirements of Section 5.1.2. In addition, pursuant to Section 5.1.1.5 the Board is directed to consider whether the issuance of the special permit would be detrimental to the Town or to the general character and visual appearance of the surrounding neighborhood and abutting uses and is further consistent with the intent of the Zoning By-Law.

## DISCUSSION / ANALYSIS

The applicant contends that the proposed use of a portion of the Premises for continued dance instruction complies with the requirements of Section 3.2.1 of the By-Laws and is further

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[6] Section 1.1 states that it is "The purpose of [the] By-Law [to] promote the health, safety, convenience, morals or welfare of the inhabitants of Needham; to lessen congestion in the streets; to conserve health; to secure safety from fire, panic and other dangers; to provide adequate light and air; to prevent overcrowding of land; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements; to conserve the value of land and buildings; to encourage the most appropriate use of land and buildings; to encourage the most appropriate use of land throughout the Town and to preserve and increase amenities under the provisions of General Laws, Chapter 40A. The use, construction, alteration, height, area and location of buildings and structures and the use of premises in the town of Needham are regulated as [provided by the By-Laws]"

in harmony with the general purpose and intent of the Zoning By-Law. The proposed use is compatible with current uses in the area, the other uses within the building, and further does not interfere with the character of the neighborhood.

Section 3.2.1 requires a Special Permit for "Other private school, nursery, or kindergarten" in the Single Residence B Zoning District. However, no additional requirement is imposed. Therefore, the proposed use will comply with the criteria and standards of Section 3.2.1 upon the issuance of the requisite Special Permit. Furthermore, the proposed use of the subject premises is consistent with the requirements of Section 1.1, as the continued provision of dance instruction will promote the convenience and welfare of the inhabitants of the Town of Needham, especially the children of the Town, without creating any hazard or unwanted condition.

The continued use of a portion of the Premises for dance instruction does not warrant the application of the parking requirements of Section 5.1.2, and the issuance of the requested parking waiver will not be detrimental to the Town or to the general character and visual appearance of the surrounding neighborhood and abutting uses and will further be consistent with the intent of the Zoning By-Law. As mentioned above, the vast majority of students are children that are dropped off and picked up. As a result, applicable parking is mostly short term only. Furthermore, there is ample parking available in the vicinity of the Premises. Finally, since Arrais first began to provide dance instruction at the Premises a year ago, it has not experienced or been aware of any significant incident or issue with parking related to its activities.

## CONCLUSION

Based on the facts and discussion set forth above, Arrais asserts that its continued use of a portion of the First Baptist Church will not affect the neighborhood, surrounding area or the Town in any adverse material or significant way. Since its opening approximately one year ago, Arrais has been a good and considerate neighbor and has operated without significant issue or incident. The operational details are not proposed or anticipated to change in any material way, and will allow for the continuation of quality dance instruction.

Moreover, while a parking waiver is necessary due to the lack of on-site parking, the most of the parking demand is short term only, driven by drop off and pick up, and there is

ample on and off-street parking available in the vicinity of the Premises. As a result, the available parking is adequate to support the uses at the Premises.

The use of a portion of the Premises for dance instruction is in harmony with the general purpose and intent of the By-Law, and there are special circumstances that warrant the granting of a parking waiver. Therefore, Arrais asserts that the issuance of the requested special permits is both proper and appropriate and should be granted.

Respectfully submitted,
Arrais Ballet, LLC
by its attorney,

George Giunta, Jr., Esq.
281 Chestnut Street
Needham, Massachusetts 02492
781-449-4520

EXHIBIT A
Current Class Schedule

| **Day/Time** | **Number of Students** |
|---|---|
| Monday, 5-8pm | **23** – Advanced (5), Intermediate Advanced + Intermediate (18) |
| Tuesday, 9-12pm | **5** - Day Students |
| Tuesday, 5:30-7:30pm | **4** - Intermediate |
| Tuesday, 6-7:30pm | **10** - Fundamentals 2 |
| Wednesday, 11-12:30pm | **4 to 8** - Adults |
| Wednesday, 5-8pm | **10** - Intermediate Advanced |
| Thursday, 9-12pm | **5** - Day Students |
| Thursday, 5:30-8pm | **8** - Intermediate |
| Thursday, 5-8pm | **12** - Advanced (5) + Intermediate Advanced (7) |
| Friday, 9-12pm | **5** - Day Students |
| Friday, 5-8pm | **6** - Advanced |
| Saturday, 11-12:30pm | **4 to 8** - Adults |
| Saturday, 1-2:30pm | **7** - Intermediate |
| Saturday, 2:30-3:30pm | **13** - F1 (5) + F2 (8) |
| Saturday, 3:30-6:30pm | **10** - Intermediate Advanced |
| Saturday, 3:30-7:30pm | **10** - Advanced |
| Sunday, 10-12pm | **22** - Intermediate (8) + F2 (14) |
| Sunday, 9-3pm | **20** - Intermediate (9) + Advanced (11) |

First Baptist Church
858 Great Plain Avenue
Needham, MA 02492

September 17, 2024

Town of Needham
Zoning Board of Appeals
Needham, Massachusetts 02492

Attn: Daphne M. Collins, Zoning Specialist

Re: 858 Great Plain Avenue, Needham, MA
Application for Zoning Relief

Dear Mrs. Collins,

Please accept this letter as confirmation that the First Baptist Church, owner of the property known and numbered 858 Great Plain Avenue, Needham, MA (the "Premises"), has authorized Arrais Ballet, LLC, tenant, acting on its own or through its attorney, George Giunta, Jr., Esquire, to make application for special permits and any and all other zoning, planning, general by-law and other relief that may be required or appropriate in connection with the use of a portion of the Premises for a school of dance instruction. In connection therewith, Arrais Ballet, LLC and Attorney Giunta are specifically authorized to execute, sign, deliver and receive all necessary documentation related thereto, including, without limitation, Application for Hearing.

Sincerely,

First Baptist Church

By:
Nancy Chamberlain
Moderator FBCTP

SAGA PARTNERS
your journey to a custom home

**Arthur Elzon**
**Managing Partner**
Driftwood Landing, LLC
127 Hanson Rd
Newton, MA 02459
617-209-9297

09/18/2024

Town of Needham
Zoning Board of Appeals
Needham, Massachusetts 02492

Attn: Daphne M. Collins, Administrative Specialist

Re: Driftwood Landing, LLC
378 Manning St, Needham, MA
Special Permit Request

Dear Ms. Collins,
We are requesting a Zoning Board of Appeals meeting for October 28, 2024 in connection to 378 Manning St, Needham, MA, submitted herewith, please find the following:

1. A Completed Application for Hearing

2. One copy of architectural plans titled "378 Manning Street Townhouses, Needham, MA", prepared by McKay Architects, consisting of six sheets: Sheet A-1.1, "Basement Plan", dated 08/07/24, Sheet A-1.2 "First Floor Plan", dated 08/07/24, Sheet A-1.3 "Second Floor Plan", dated 08/07/2024, Sheet A-2.1 "Front Elevation", dated 08/07/24, Sheet A-2.2 "Side Elevations", dated 08/07/24, and A-2.3 "Rear Elevation" dated 08/07/24;

3. One copy of Needham Assessors database records dating back to July1929, showing the property to be listed as a two family home;

4. One copy of "Zoning Board of Appeals, Plan of Land of Existing and Proposed Conditions for 378 Manning Street, Needham, Mass.", prepared by RAV & Associates, Inc., dated August 26, 2024,

5. Check in the amount of $500 for the applicable filing fee.

Driftwood Landing, LLC is requesting permission to demolish the existing two- family dwelling and garage at the Premises and replace with a new two-family dwelling as shown on the plans submitted. The existing dwelling, which by the registry of deeds shows to have been built around 1909, is non-conforming by use. The lot and setbacks are conforming, and will continue to conform with the new dimensional requirements. Whereas both the use of the existing dwelling for two-family purposes and the creation of the lot pre-date the adoption of Zoning in 1925, the aforesaid non-conformities are lawfully pre-existing. And, because the proposed replacement dwelling will also contain two units, a special permit pursuant to Section 1.4.7.4 is required.

Sincerely,

Arthur Elzon

# ZBA Application For Hearing

Applicants must consult with the Building Inspector prior to filing this Application. *Failure to do so will delay the scheduling of the hearing.*

## Applicant Information

| | | | |
|---|---|---|---|
| Applicant Name | **Driftwood Landing, LLC** | | Date: **09/18/2024** |
| Applicant Address | **127 Hanson Rd, Newton, MA 02459** | | |
| Phone | **617-209-9297** | email | **Builder@sagagc.com** |

Applicant is ☒Owner; ☐Tenant; ☐Purchaser; ☐Other_____

If not the owner, a letter from the owner certifying authorization to apply must be included

| | | | |
|---|---|---|---|
| Representative Name | **Arthur Elzon** | | |
| Address | **164 Broadmeadow Rd, Needham, MA 02492** | | |
| Phone | **617-209-9297** | email | **Arthur@sagagc.com** |

Representative is ☐Attorney; ☒Contractor; ☐Architect; ☐Other_____

Contact ☒Me ☐Representative in connection with this application.

## Subject Property Information

| | | | |
|---|---|---|---|
| Property Address | **378 Manning St, Needham, MA 02492** | | |
| Map/Parcel Number | **048 0123** | Zone of Property | **SRB** |

Is property within 100 feet of wetlands, 200 feet of stream or in flood Plain?
☐Yes ☒No

Is property ☒Residential or ☐Commercial

If residential renovation, will renovation constitute “new construction”?
☒Yes ☐No

If commercial, does the number of parking spaces meet the By-Law requirement? ☐Yes ☐No
Do the spaces meet design requirements? ☐Yes ☐ No

Application Type (*select one*): ☒Special Permit ☐Variance ☐Comprehensive Permit ☐Amendment ☐Appeal Building Inspector Decision

# ZBA Application For Hearing

| Existing Conditions: |
|---|
| Pre-existing, lawful non-conforming two family home, with a 2 car detached garage |
| |
| |

| Statement of Relief Sought: |
|---|
| Special permit pursuant to Section 1.4.7.4 of the Needham Zoning By-Law and a finding pursuant to Section 6 of M.G.L. c.40A, to permit the demolition, extension, alteration, enlargement, and reconstruction of the lawful, pre-existing, non-conforming, two-family dwelling as shown on the plans submitted with this application, and all other relief as may be necessary and appropriate in connection therewith. |
| |

| Applicable Section(s) of the Zoning By-Law: |
|---|
| 1.4.7.4 and 7.5.2 |

**If application under Zoning Section 1.4 above, list non-conformities:**

| | Existing Conditions | Proposed Conditions |
|---|---|---|
| **Use** | | |
| **# Dwelling Units** | 2 | 2 |
| **Lot Area** *(square feet)* | 10,414 | 10,414 |
| **Front Setback** *(feet)* | 41.6’ | 22’ |
| **Rear Setback** *(feet)* | 46’ | 25.5’ |
| **Left Setback** *(feet)* | 34.4’ | 16’ |
| **Right Setback** *(feet)* | 11.2’ | 26’ |
| **Frontage** *(feet)* | 135.42’ | 135.42’ |
| **Lot Coverage** *(%)* | 19% | 24% |
| **FAR** *(Floor area divided by the lot area)* | - | .38 |

*Numbers must match those on the certified plot plan and supporting materials*

# ZBA Application For Hearing

| Date Structure Constructed including additions: | Date Lot was created: |
|---|---|
| Approximately 1909 | 1909 |

| Submission Materials | Provided |
|---|---|
| Certified Signed Plot Plan of Existing and Proposed Conditions *(Required)* | |
| Application Fee, check made payable to the Town of Needham Check holders name, address, and phone number to appear on check and in the Memo line state: "ZBA Fee – Address of Subject Property" *(Required)* | |
| If applicant is tenant, letter of authorization from owner *(Required)* | |
| Electronic submission of the complete application with attachments *(Required)* | |
| Elevations of Proposed Conditions *(when necessary)* | |
| Floor Plans of Proposed Conditions *(when necessary)* | |

Feel free to attach any additional information relative to the application. Additional information may be requested by the Board at any time during the application or hearing process.

❖❖❖❖

I hereby request a hearing before the Needham Zoning Board of Appeals. I have reviewed the Board Rules and instructions.

I certify that I have consulted with the Building Inspector 08/05/2024
*date of consult*

Date: 09/18/2024 Applicant Signature _____

*An application must be submitted to the Town Clerk's Office at townclerk@needhamma.gov and the ZBA Office at dcollins@needhamma.gov*

# TOWN OF NEEDHAM, MASSACHUSETTS

## Building Inspection Department

Assessor"s Map & Parcel Number: 48 LOT 123

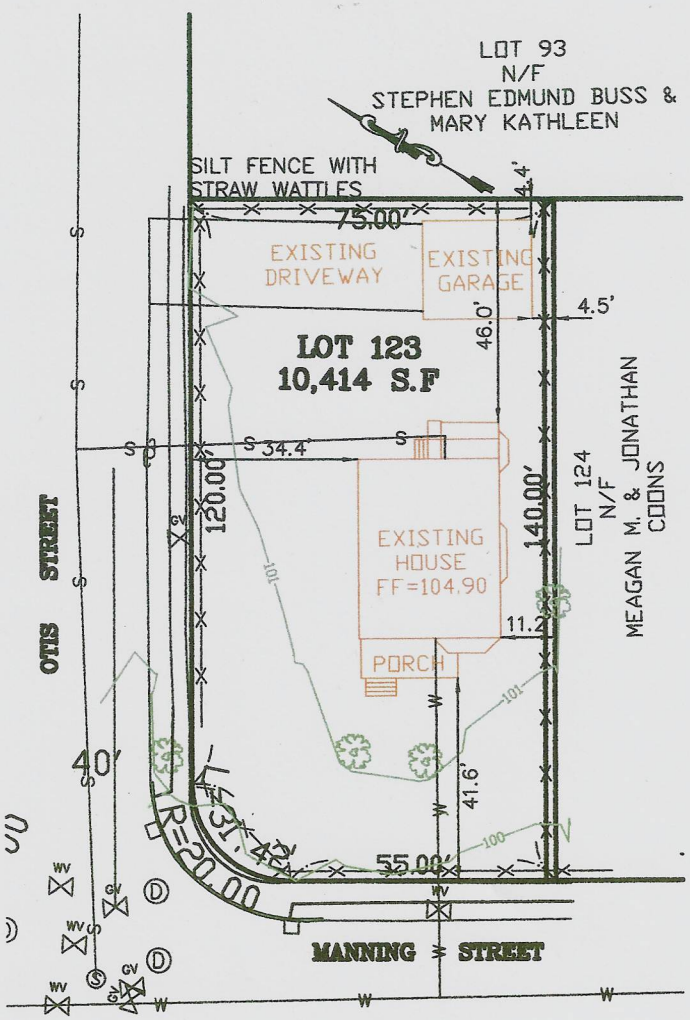
Building Permit No. _____ Zoning District: SRB 2 FAMILY

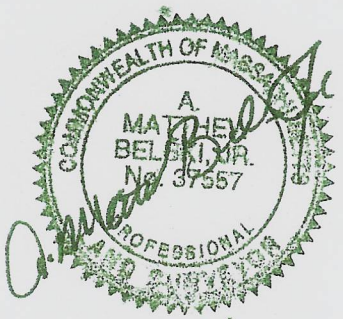
Lot Area 10,414 S.F. Address: 378 MANNING STREET

Owner _____ Builder: _____

**DEMO/PROPOSED PLOT PLAN/FOUNDATION AS-BUILT/FINAL AS-BUILT**

40' Scale




8/26/24

Note: Plot Plans shall be drawn in accordance with Sections 7.2.1 and 7.2.2 of the Zoning By-Laws for the town of Needham. All plot plans shall show existing structures and public utilities, including water mains, sewers, drains, gaslines, etc.; driveways, Flood Plain and Wetland Areas, lot dimensions, dimensions of proposed structures, sideline offsets and setback distances, (allowing for overhangs) and elevation of top of foundations and garage floor. For new construction, elevation of lot corners at streetline and existing and approved street grades shall be shown for grading along lot line bordering streetline. For pool permits, plot plans shall also show fence surrounding pool with a gate, proposed pool and any accessory structures*, offsets from all structures and property lines, existing elevations at nearest house corners and pool corners, nearest storm drain catch basin (if any) and, sewage disposal system location in unsewered area.
(*Accessory structures may require a separate building permit— See Building Code)

I hereby certify that the information provided on this plan is accurately shown and correct as indicated.
The above is subscribed to and executed by me this 26 day of AUGUST 2024.
Name A. MATTHEW BELSKI, JR. Registered Land Surveyor No. 37557
Address 35 MAPLE ST. City W. NEWBURY State MA Zip _____ Tel. No. (978) 363-8130
Approved _____ Director of Public Works Date _____
Approved _____ Building Inspector Date _____

# TOWN OF NEEDHAM, MASSACHUSETTS

## Building Inspection Department

Assessor"s Map & Parcel Number: 66 LOT 32

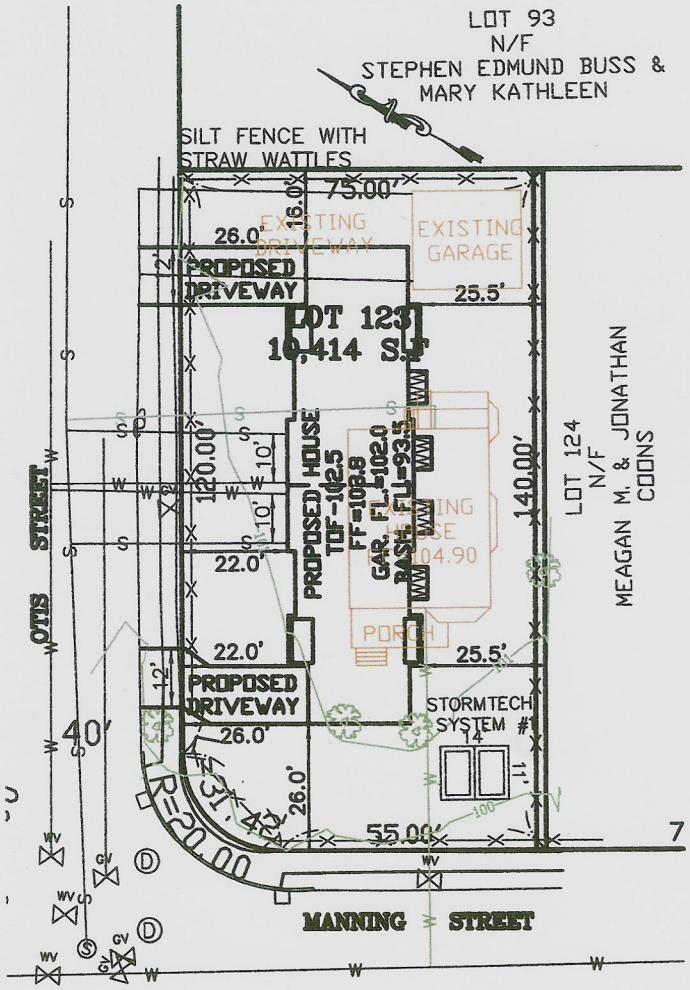
Building Permit No. _____ Zoning District: SRB 2 FAMILY

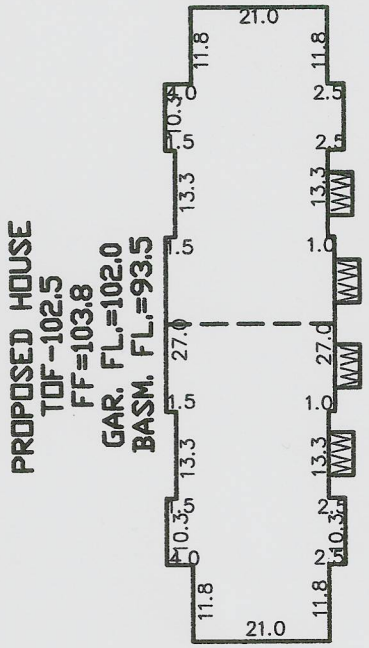
Lot Area 10,414 S.F. Address: 378 MANNING STREET

Owner _____ Builder: _____

DEMO/PROPOSED PLOT PLAN/FOUNDATION AS-BUILT/FINAL AS-BUILT

40' Scale




SCALE: 1"-30'

LOT COVERAGE= 24.0%
HEIGHT OF DWELLING 34.3'
FROM AVERAGE GRADE
TO THE RIDGE OF ROOF

COMMONWEALTH OF MASS.
A. MATTHEW BELSKI, JR.
No. 37557
PROFESSIONAL LAND SURVEYOR

8/26/24

Note: Plot Plans shall be drawn in accordance with Sections 7.2.1 and 7.2.2 of the Zoning By-Laws for the town of Needham. All plot plans shall show existing structures and public utilities, including water mains, sewers, drains, gaslines, etc.; driveways, Flood Plain and Wetland Areas, lot dimensions, dimensions of proposed structures, sideline offsets and setback distances, (allowing for overhangs) and elevation of top of foundations and garage floor. For new construction, elevation of lot corners at streetline and existing and approved street grades shall be shown for grading along lot line bordering streetline. For pool permits, plot plans shall also show fence surrounding pool with a gate, proposed pool and any accessory structures*, offsets from all structures and property lines, existing elevations at nearest house corners and pool corners, nearest storm drain catch basin (if any) and, sewage disposal system location in unsewered area.
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Address 35 MAPLE ST. City W. NEWBURY State MA Zip _____ Tel. No. (978) 363-8130
Approved _____ Director of Public Works Date _____
Approved _____ Building Inspector Date _____

mckay architects

# New Residences
## 378 Manning Street
## Needham, MA

**DESIGN SET 8.07.2024**

## GENERAL NOTES

1. THE GENERAL CONTRACTOR SHALL NOTIFY THE ARCHITECTS OF ALL DISCREPANCIES BETWEEN CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS.

2. THE GENERAL CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS THAT MAY APPLY TO THE CONSTRUCTION OF THE PROJECT.

3. ALL WORK OF THIS PROJECT SHALL COMPLY WITH ACCEPTED BUILDING PRACTICES AND ALL CODE HAVING JURISDICTION OVER THIS PROJECT.

4. REFER TO LIMITS OF WORK DRAWINGS FOR OVERALL DESCRIPTION OF WORK AREAS.

5. THE GENERAL CONTRACTOR SHALL LEAVE THE PROJECT SITE AND ALL SURROUNDING AREAS IN FINAL CLEAR CONDITION INCLUDING THE REMOVAL OF ALL DEBRIS RESULTING FROM CONSTRUCTION.

6. THE CONTRACTOR SHALL AT ALL TIMES DURING THE PROGRESS OF THE WORK REMOVE ALL CONSTRUCTION DEBRIS AND MAINTAIN A DUST FREE ENVIRONMENT FOR ALL ADJACENT AREAS.

7. THE CONTRACTOR SHALL COORDINATE THE WORK OF ALL TRADES AND VERIFY THAT ALL CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF ALL MATERIALS BY ALL TRADES IS PROPERLY EXECUTED.

8. THE CONTRACTOR SHALL UTILIZE THE AREAS WITHIN THE SCOPE OF WORK FOR STORAGE OF MATERIALS AND TOOLS.

9. ALL WRITTEN DIMENSIONS SHALL HAVE PRECEDENCE OVER ALL OTHERS. DO NOT SCALE DRAWINGS. IF THERE IS A QUESTION OR CONFLICT IN DIMENSIONS, NOTIFY THE ARCHITECT FOR CLARIFICATION.

10. VERIFY FIELD CONDITIONS PRIOR TO COMMENCEMENT OF EACH PORTION OF THE WORK. THE CONTRACT DRAWINGS ARE COMPLIMENTARY AND WHAT IS REQUIRED BY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. THE CONTRACTOR SHALL COORDINATE ALL PORTIONS OF THE WORK.

11. DIMENSIONS ARE TO CENTER LINES, EXISTING BUILDING GRID LINES OR TO FACE OF FINISHED SURFACE UNLESS OTHERWISE NOTED.

12. ALL GYPSUM WALL BOARD CONSTRUCTION SHALL CONFORM TO RECOMMENDATIONS, PRACTICES, STANDARDS AND INSTRUCTIONS PUBLISHED BY U.S. GYPSUM COMPANY IN THE GYPSUM CONSTRUCTION HANDBOOK.

13. ALL FINISHED WORK SHALL BE FREE OF DEFECTS. THE OWNER RESERVES THE RIGHT TO REJECT ANY MATERIALS AND WORKMANSHIP WHICH ARE NOT CONSIDERED TO BE AT THE HIGHEST STANDARDS OF THE VARIOUS TRADES INVOLVED.

14. NO CHANGES OR SUBSTATIONS ARE ALLOWED UNLESS APPROVED BY THE OWNER.

15. ALL DATA OUTLETS MUST BE ON A DEDICATED, ISOLATED CIRCUIT.

16. THE MECHANICAL PORTION OF THIS PROJECT ISSUE AS A DESIGN BUILD PACKAGE. THE GENERAL CONTRACT IS TO SUBMIT TO THE ARCHITECT FOR APPROVAL A SET OF STAMPED MECHANICAL DRAWINGS OUTLINING THE PROPOSED SLOPE OF WORK.

## CODE

GOVERNMENT BUILDING CODE

THE MASSACHUSETTS BUILDING CODE, 9TH EDITION

## GRAPHIC SYMBOLS

- 3 / A-3.1 — BUILDING CROSS SECTION
- 5 — DOOR NUMBER
- 102 — ROOM NUMBER
- B — WINDOW NUMBER
- ELEVATION DESIGNATION
- 5 / A-3.3 — SECTION REFERENCE
- NEW DOOR TO BE INSTALLED
- EXISTING DOOR TO REMAIN
- PARTITION TYPE
- NEW CONSTRUCTION
- EXISTING CONSTRUCTION

## MATERIAL SYMBOLS

- BLOCKING
- CONCRETE
- EARTH
- BATT INSULATION
- GRAVEL
- WOOD
- DRYWALL
- TILE

## ABBREVIATIONS

| | |
|---|---|
| @ | AT |
| AFF | ABOVE FINISH FLOOR |
| ATTEN | ATTENUATING |
| BLDG | BUILDING |
| CH | CEILING HEIGHT |
| CL | CENTER LINE |
| CLR | CLEAR |
| COL | COLUMN |
| CONC | CONCRETE |
| CONT | CONTINUOUS |
| CPT | CARPET |
| CT | CERAMIC TILE |
| DIM | DIMENSION |
| DWG(S) | DRAWING(S) |
| EA | EACH |
| EIFS | EXT INSUL. FINISH SYSTEM |
| ELEC | ELECTRICAL |
| ELEV | ELEVATION |
| EQ | EQUAL |
| EWC | ELECTRICAL WATER COOLER |
| EXT | EXTERIOR |
| FC | FIRE CODE / FIRE CORE |
| FD | FLOOR DRAIN |
| FEC | FIRE EXTINGUISHER CABINET |
| FF | FINISHED FLOOR |
| FFE | FINISHED FLOOR ELEVATION |
| FIN | FINISH |
| FFL | FLUORESCENT LIGHTING |
| FOF | FACE OF FINISH |
| FOC | FACE OF CONCRETE |
| FOS | FACE OF STUD |
| FRT | FIRE RETARDANT TREATED |
| GC | GENERAL CONTRACTOR |
| GL | GLASS OR GLAZING |
| GWB | GYPSUM WALL BOARD |
| HC | HOLLOW CORE |
| HDWR | HARDWARE |
| HM | HOLLOW METAL |
| HOR | HORIZONTAL |
| HT | HEIGHT |
| HVAC | HEATING, VENT, A/C |
| HWH | HOT WATER HEATER |
| INSUL | INSULATION |
| INT | INTERIOR |
| L | LENGTH |
| LAV | LAVATORY |
| LH | LEFT HAND(ED) |
| MAX | MAXIMUM |
| MECH | MECHANICAL |
| MFR | MANUFACTURER |
| MD | MEDIUM DENSITY |
| MIN | MINIMUM |
| MO | MASONARY OPENING |
| MTL | METAL |
| NIC | NOT IN CONTRACT |
| NL | NIGHT LIGHT |
| NOM | NOMINAL |
| NTS | NOT TO SCALE |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| OH | OPPOSITE HANDED |
| P LAM | PLASTIC LAMINATE |
| PLYWD | PLYWOOD |
| PT | PRESSURE TREATED |
| PR | PAIR |
| PT | PAINTED |
| QT | QUARRY TILE |
| R | RISER |
| RAD | RADIUS |
| REQ | REQUIRED |
| REF | REFERENCE |
| REV | REVISION(S) |
| RH | RIGHT HAND(ED) |
| RO | ROUGH OPENING |
| RTU | ROOF TOP UNIT |
| SA | SOUND ATTENTION BATTS |
| SD | SMOKE DETECTORS |
| SIM | SIMILAR |
| SPEC | SPECIFICATION |
| SQ | SQUARE |
| SQ FT | SQUARE FEET |
| SS | STAINLESS STEEL |
| STL | STEEL |
| STN | STAIN |
| SV | SHEET VINYL |
| T | TREAD |
| THK | THICKNESS |
| TP | TOILET PAPER DISPENSER |
| TYP | TYPICAL |
| UNO | UNLESS NOTED OTHERWISE |
| VCT | VINYL COMPOSITION TILE |
| VIF | VERIFY IN FIELD |
| VTR | VENT THROUGH ROOF |
| W/ | WITH |
| WC | WATER CLOSET |
| WD | WOOD |
| X-REF | CROSS REFERENCE |


| | |
|---|---|
| T-1.1 | Title Sheet |
| T-1.2 | Zoning |
| F-1.1 | Fire Protection |
| A-1.1 | Basment Floor Plan |
| A-1.2 | First Floor Plan |
| A-1.3 | Second Floor Plan |
| A-1.4 | Attic Floor Plan |
| A-1.5 | Roof Plan |
| A-2.1 | Front Elevation |
| A-2.2 | Side Elevations |
| A-2.3 | Rear Elevation |
| A-3.1 | Finish, Door & Window Schedules & Specifications |
| S-1.1 | Foundation Plan |
| S-1.2 | First Floor Framing Plan |
| S-1.3 | Second Floor Framing Plan |
| S-1.4 | Attic Floor Framing Plan |
| S-1.5 | Roof Framing Plan |


**New Residences**

**378 Manning Street**
**Needham, Ma**

OWNER


mckay architects
35 Bryant Street
Dedham, MA 02026
ph:781.326.5400
www.mckayarchitects.net


REGISTERED ARCHITECT — MICHAEL L. McKAY — NO. AR 8947 — COMMONWEALTH OF MASSACHUSETTS

| REV # | DATE | ISSUANCE |
|---|---|---|
| | | |


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Contractor to verify all information and dimensions in the field prior to start of construction and is to notify McKay Architects of any discrepancies

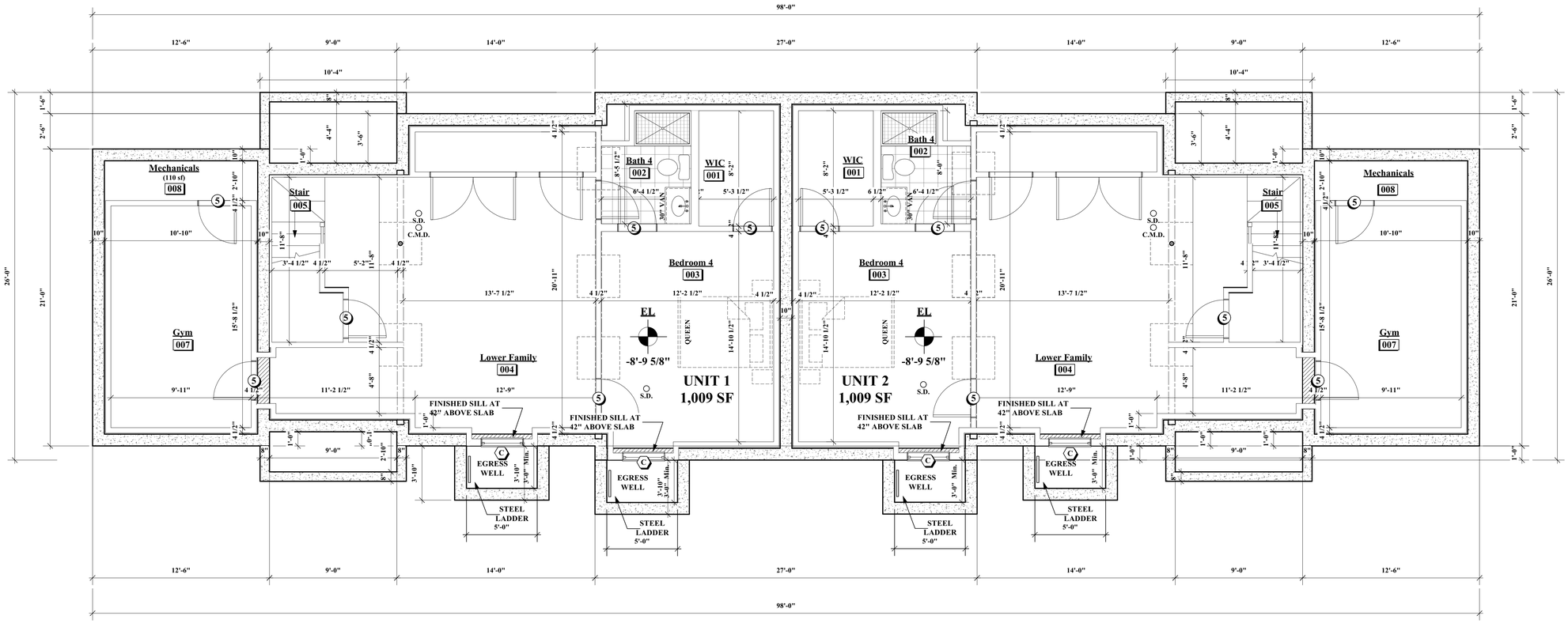

**Title Sheet**

| | |
|---|---|
| JOB NO | |
| DATE | 08.07.2024 |
| DWG BY | JB |
| CKD BY | MLM |
| SCALE | AS NOTED |

**T-1.1**

# Manning Street

## Otis Street




1 / A-1.1 Basement Plan
1/4" = 1'-0"

**LOT COVERAGE: LOT SIZE: 10,400 SF ****
**LOT COVERAGE ALLOWED: 2600 SF**
**LOT COVERAGE PROPOSED: 2227 SF**

**FAR SQUARE FOOTAGE SUMMARY**
**MAX. ALLOWED: 10400 X .38 = 3952 SF**
**FINISHED BASEMENT: 2018 SF (NOT INCLUDED IN FAR)**
**FIRST FLOOR LIVING: 1701 SF (NOT INCLUDING 524 SF GARAGE)**
**SECOND FLOOR LIVING: 2240 SF**
**TOTAL PROPOSED: 3941 SF**
**** LOT SIZE AND LOT COVERAGE TO BE VERIFIED SURVEYOR**

# New Residences

## 378 Manning Street
Needham, Ma

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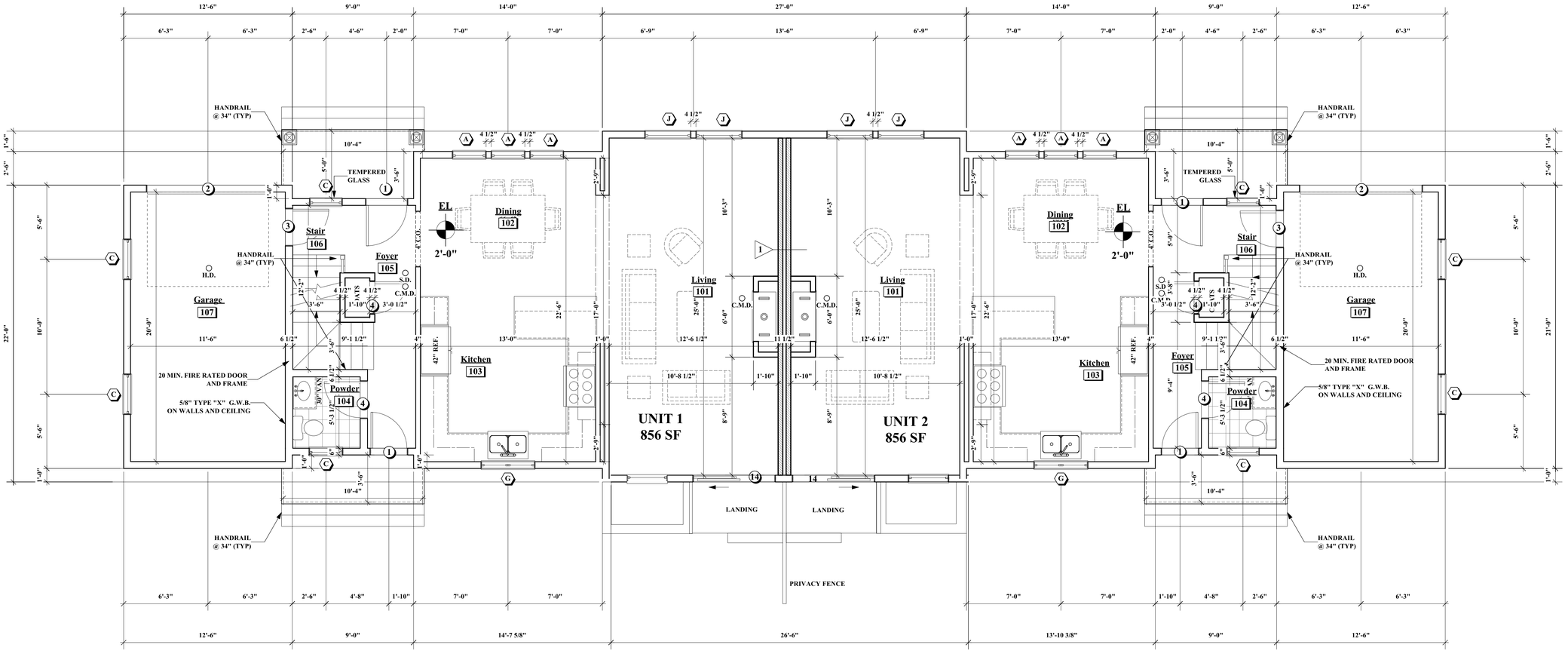
**Basement Floor Plan**

| | |
|---|---|
| JOB NO | |
| DATE | 08.07.2024 |
| DWG BY | JB |
| CKD BY | MLM |
| SCALE | AS NOTED |

**A-1.1**

# Manning Street




1 / A-1.2 First Floor Plan

1/4" = 1'-0"

**New Residences**

**378 Manning Street**
**Needham, Ma**

OWNER


mckay architects
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Dedham, MA 02026
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|---|---|---|
| | | |


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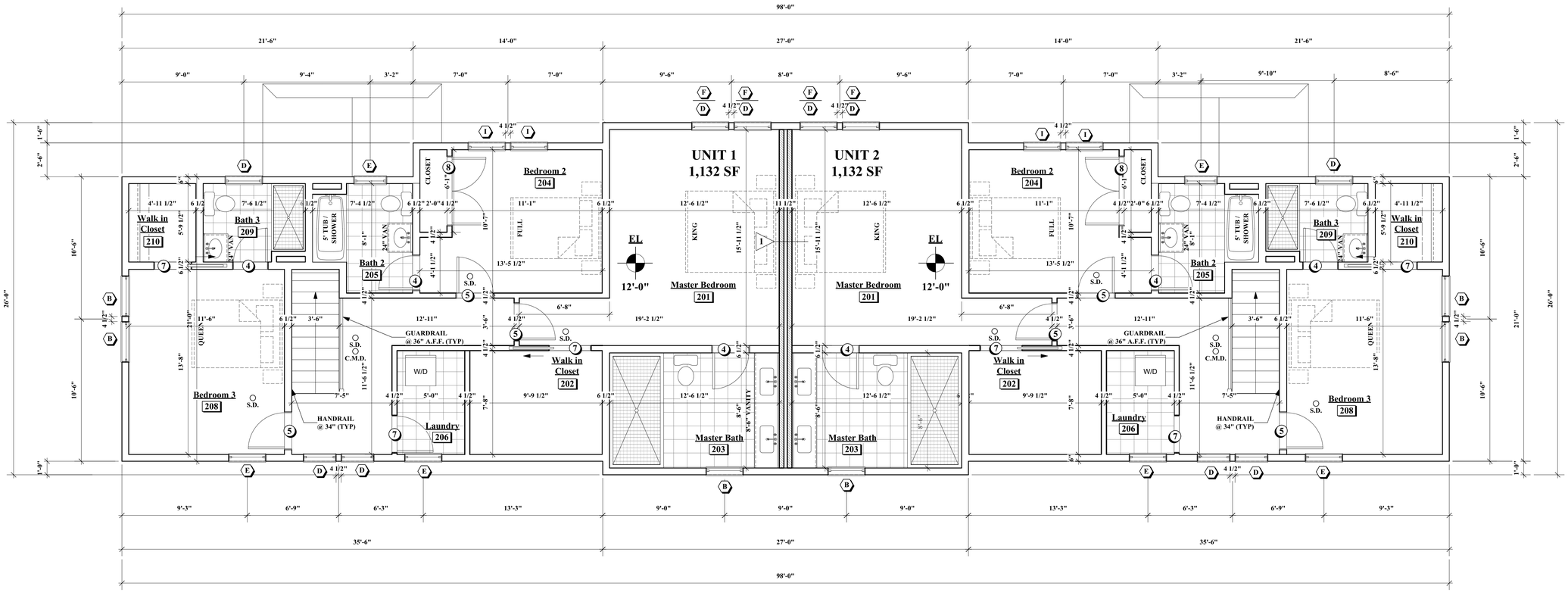
**First Floor Plan**

| | |
|---|---|
| JOB NO | |
| DATE | 08.07.2024 |
| DWG BY | JB |
| CKD BY | MLM |
| SCALE | AS NOTED |

**A-1.2**

# Manning Street

## Otis Street




1 / A-1.3 Second Floor Plan

1/4" = 1'-0"

**New Residences**

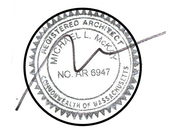
**378**
**Manning Street**
**Needham, Ma**

OWNER


mckay architects

35 Bryant Street
Dedham, MA 02026

ph:781.326.5400
www.mckayarchitects.net


| REV # | DATE | ISSUANCE |
|---|---|---|
| | | |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**Second Floor Plan**

| | |
|---|---|
| JOB NO | |
| DATE | 08.07.2024 |
| DWG BY | JB |
| CKD BY | MLM |
| SCALE | AS NOTED |

**A-1.3**

1 / A-2.1 Manning Street Elevation

1/4" = 1'-0"

# New Residences

## 378 Manning Street
Needham, Ma

OWNER


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REGISTERED ARCHITECT MICHAEL L. MCKAY NO. AR 6947 COMMONWEALTH OF MASSACHUSETTS

| REV # | DATE | ISSUANCE |
|---|---|---|
| | | |


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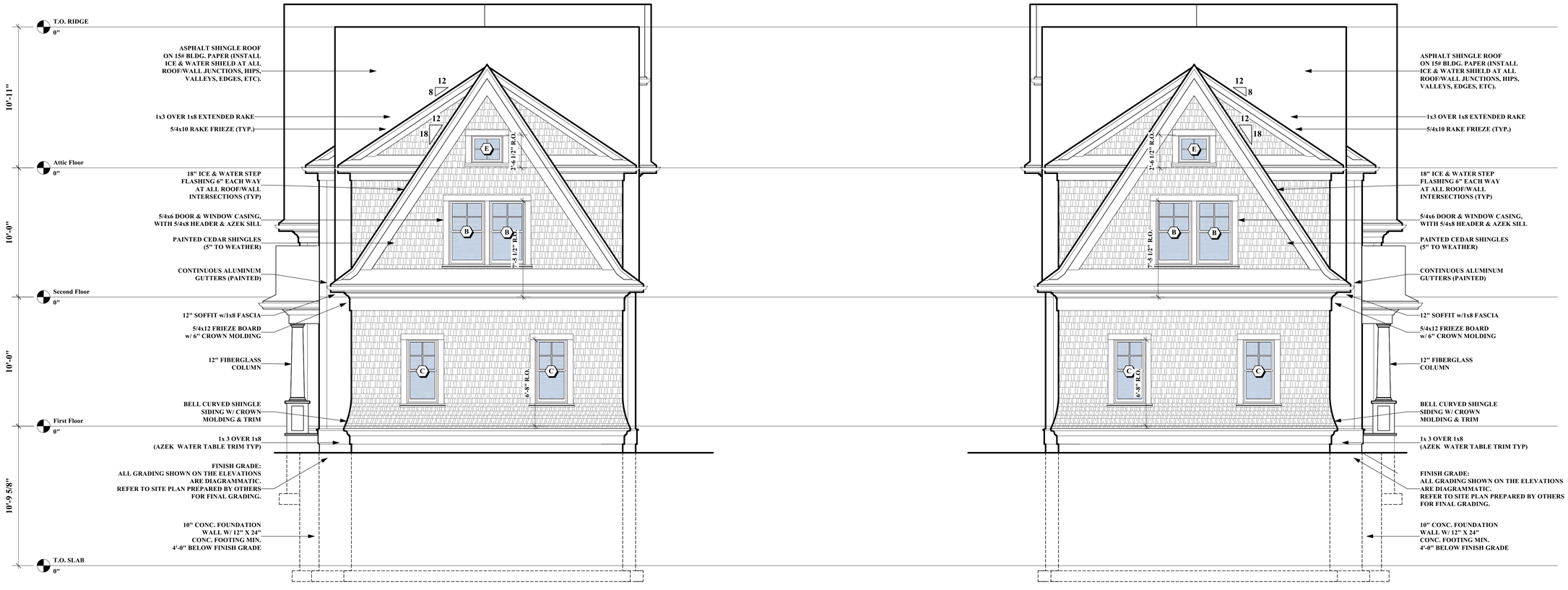
## Harvard Street Elevation

| | |
|---|---|
| JOB NO | |
| DATE | 08.07.2024 |
| DWG BY | JB |
| CKD BY | MLM |
| SCALE | AS NOTED |

**A-2.1**




1 / A-2.2 Right Side Elevation
1/4" = 1'-0"




2 / A-2.2 Left Side Elevation
1/4" = 1'-0"

# New Residences

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COMMONWEALTH OF MASSACHUSETTS

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|---|---|---|
| | | |


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## Left and Right Side Elevations

| | |
|---|---|
| JOB NO | |
| DATE | 08.07.2024 |
| DWG BY | JB |
| CKD BY | MLM |
| SCALE | AS NOTED |

A-2.2

1 / A-.2.3 Rear Elevation

1/4" = 1'-0"

**New Residences**

**378 Manning Street**

**Needham, Ma**

OWNER


mckay architects

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Dedham, MA 02026

ph:781.326.5400
www.mckayarchitects.net


REGISTERED ARCHITECT
MICHAEL L. McKAY
NO. AR 8947
COMMONWEALTH OF MASSACHUSETTS

| REV # | DATE | ISSUANCE |
|---|---|---|
| | | |


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**Rear Elevation**

| | |
|---|---|
| JOB NO | |
| DATE | 08.07.2024 |
| DWG BY | JB |
| CKD BY | MLM |
| SCALE | AS NOTED |

**A-2.3**

048-123
378 MANNING ST

No. 378 Street MANNING STREET

Card No.

# REAL PROPERTY RECORD

TOWN OF NEEDHAM — BOARD OF ASSESSORS

| PLAN | SEC. | BLOCK | LOT |
|---|---|---|---|
| 103 | | | |

| ZONING | |
|---|---|
| CLASS | |
| SINGLE | — |
| GENERAL | |
| INST. | |
| BUSINESS | |
| MANUF. | |
| AGE | |
| ACT. | |
| EST. | 1909 |
| CONDITION | |
| GOOD | |
| MEDIUM | |
| FAIR | — |
| POOR | |

| CLASS | 1 | 2 | 3 |
|---|---|---|---|
| COTTAGE | | | |
| BUNGALOW | | | |
| SINGLE D'W'LS | | | |
| DUPLEX | | | |
| MULTIPLE | 2 | | |
| APARTMENT | | | |
| STORES | | | |
| " AND FLATS | | | |
| " " OFFICES | | | |
| OFFICE | | | |
| HOTEL | | | |
| BANK | | | |
| THEATRE | | | |
| WAREHOUSE | | | |
| FACTORY | | | |
| GARAGE—PUBLIC | | | |
| " —PRIVATE | | 2 | |
| GAS STATION | | | |
| USE | | | |
| RESIDENTIAL | — | | |
| COMMERCIAL | | | |
| BUSINESS | | | |
| INDUSTRIAL | | | |
| UTILITY | | | |
| TRANSPORTATION | | | |
| BENEVOLENT | | | |
| RECREATIONAL | | | |
| CONSTRUCTION | | | |
| FRAME | — | | |
| BRICK AND FRAME | | | |
| BRICK—S.F.P. | | | |
| CONCRETE | | | |
| BLOCK | | | |
| METAL | | | |
| FIREPROOF | | | |

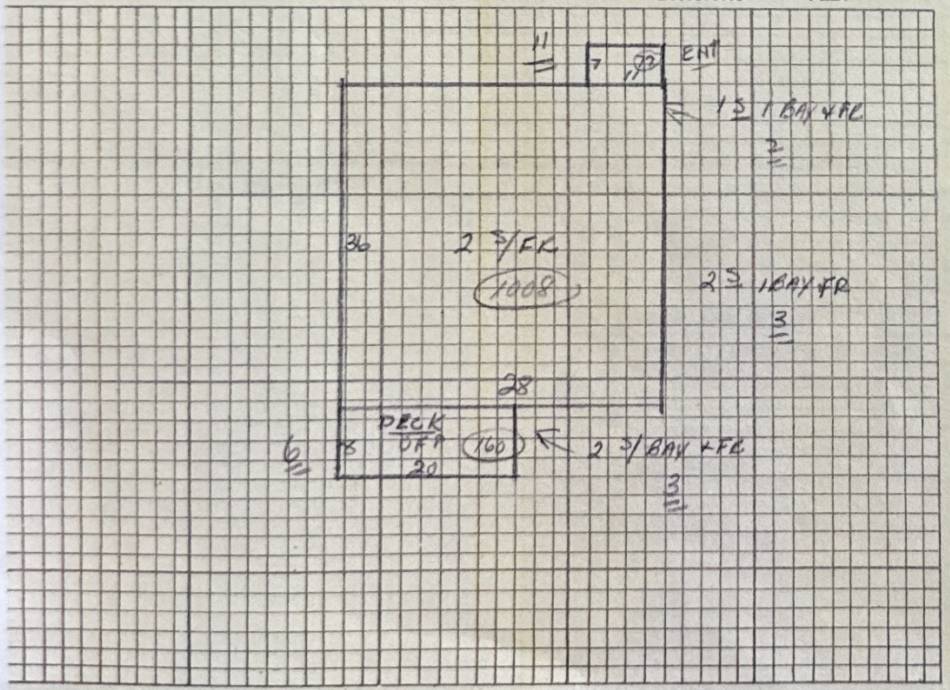
| FOUNDATIONS | 1 | 2 | 3 |
|---|---|---|---|
| STONE | | | |
| CONCRETE | — | | |
| " BLOCKS | — | | |
| BRICK | | | |
| POSTS | | | |
| MASONRY PIERS | | | |
| PILES | | | |
| EXT. WALLS | | | |
| FRAME | — | | |
| BRICK—SOLID | | | |
| " —VENEER | | | |
| CONCRETE | | | |
| " —BLOCK | | | |
| STONE | | | |
| TERRA COTTA | | | |
| METAL | | | |
| STUCCO | | | |
| CLAPBOARD | | | |
| SHINGLE | — | | |
| COMPOSITION | | | |
| FACE BRICK | | | |
| CAST STONE | | | |
| ROOF | | | |
| FLAT | | | |
| HIP | — | | |
| GABLE | | | |
| MANSARD | | | |
| MONITOR | | | |
| WOOD | | | |
| STEEL | | | |
| CONCRETE | | | |
| SHINGLE | | | |
| ASBESTOS | | | |
| COMPOSITION | — | | |
| SLATE | | | |
| TILE | | | |
| TAR AND GRAVEL | | | |

| BASEMENT | 1 | 2 | 3 |
|---|---|---|---|
| NONE | | | |
| PART | | | |
| FULL | — | | |
| CONCRETE FLOOR | — | | |
| WOOD " | | | |
| FINISHED | | | |
| UNFINISHED | | | |
| FLOORS | | | |
| TIMBER | | | |
| STEEL | | | |
| CONCRETE | | | |
| TILE | | | |
| MARBLE | | | |
| COMPOSITION | | | |
| HARD WOOD | — | | |
| SOFT " | | | |
| EARTH | | | |
| INT. WALLS | | | |
| FRAME | | | |
| BRICK | | | |
| CONCRETE | | | |
| TILE | | | |
| METAL | | | |
| UNFINISHED | | | |
| PLASTERED | — | | |
| WALL BOARD | | | |
| INT. TRIM | | | |
| HARD WOOD | — | | |
| SOFT " | | | |
| METAL | | | |
| CEILINGS | | | |
| PLASTER | | | |
| WALL BOARD | | | |
| METAL | | | |
| UNFINISHED | | | |

| HEATING | 1 | 2 | 3 |
|---|---|---|---|
| STOVE | | | |
| PIPELESS | | | |
| HOT AIR | | | |
| " WATER | | | |
| STEAM | — | | |
| VAPOR | | | |
| GAS | | | |
| OIL BURNER 1946 | — | | |
| FIRE PLACE | | | |
| PLUMBING | | | |
| NONE | | | |
| OLD STYLE | — | | |
| COMMON | | | |
| EXTRA | | | |
| TOILETS | | | |
| BATH TUB | | 2 | |
| SHOWER | | | |
| LAVATORY | | | |
| SEWER | | | |
| CESS POOL | | | |
| LIGHTING | | | |
| ELECTRIC | — | | |
| GAS COOKING | — | | |
| OIL | | | |
| MISC. AND EXTRAS | | | |
| ELEVATOR | | | |
| FIRE ESCAPE | | | |
| SPRINKLERS | | | |
| AIR CONDITION | | | |
| INSULATION | | | |
| INCINERATOR | | | |
| SPECIAL FRONT | | | |
| PORCH OPEN | | 2 | |
| " CLOSED | | | |
| SUN PARLOR | | | |
| BSMT. RECREATION | | | |

Permit No. Date

DIAGRAM OF STRUCTURES DIVISIONS FEET




## Rooms

| | LIVING | | | DINING | | | KITCHEN | | | TOILET | | | BED | | | STORES | | | OFFICES | | | APT'S | | | GARAGE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| BASEMENT: | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1ST | 2 | | | 2 | | | 2 | | | 1 | | | 4 | | | | | | | | | | | | | | |
| 2ND | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | |
| 3RD | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ATTIC | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL | | | | | | | | | | | | | | | | | | | | | | | | | | | |

REMARKS: PERMIT #5241 Replace 2-car garage.

PROPERTY DATA ON THIS CARD NOT UPDATED SINCE 1993.

COMPUTER LISTING IS CORRECT.

## LAND VALUE FACTORS

| | | | |
|---|---|---|---|
| FACING ON | Manning | ST. | |
| CORNER OF | Otis | ST. | |
| EXPOSURE | N E S (W) | | |
| ALLEY SIDE | REAR | | |
| DISTANCE FROM | | USE OF LAND | |
| CENTER OF CITY | | INDUSTRIAL | |
| CAR LINE | | COMMERCIAL | |
| BUS LINE | | RESIDENTIAL | ✓ |
| TRUNK HGHY. | | FARM | |
| SCHOOLS | | WOOD | |
| CHURCHES | | SHORE FRONT | |
| WATER | ✓ | CHARACTER | |
| SEWER | ✓ | ABOVE ST. | ✓ |
| GAS | ✓ | BELOW ST. | |
| ELECTRICITY | ✓ | LEDGE | |
| ST. PAVED | ✓ | GRAVEL | |
| " IMPROVED | ✓ | CLAY | |
| " UNIMPROVED | | SWAMP | |
| " ACCEPTED | ✓ | CULTIVATED | ✓ |
| " UNACCEPTED | | SEMI " | |
| SIDE WALK | ✓ | PASTURE | |
| ST. LIGHTING | ✓ | SCRUB | |
| S. H. CONN. | | | |

## OWNER RECORD

| ASSESSORS NUMBER | DATE | RECORDED OWNER | INST. | REGISTER BOOK | REGISTER PAGE | REGISTER STAMP | CONSIDERATION | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 8790 | 7/29 | Holt, George W. | QC | 1854 | 543 | | | |
| | 11/28/51 | Holt, Geo. W., A. Sterling & R. Ashley Holt, Trs. | Dkt. | 125,684 | | | | |
| 31903 | 7/10/61 | Holt, Joan L. - 2/16 interest | QC | 3909 | 602 | | | |
| 31904 | 7/10/61 | Holt, R. Ashley - 7/16 interest | QC | 3909 | 603 | | | |
| 31905 | 7/10/61 | Holt, A. Sterling Holt - 7/16 interest | QC | 3909 | 604 | | | |
| 31906 | 7/10/61 | Holt, A. Sterling Holt - 2/16 interest | QC | 3909 | 605 | | | |
| 31907 | 7/10/61 | Holt, A. Sterling Holt - 7/16 interest | QC | 3909 | 607 | | | |
| 36893 | 10/31/67 | Holt, A. Sterling & Marion M. | QC | 4471 | 89 | | | |
| 37995 | 6/16/69 | Place, George A. | QC | 4598 | 349 | 60.00 | Mtg. 20,000 | |
| 40979 | 7/25/73 | Kohlback, Clinton J. | QC | 4963 | 80 | $109.44 | Mtg. $38,000 | ($47,900) |

## LAND COMPUTATIONS

10,414 SQ. FT. @ ¢ ACRES @ $

SQ. FT. @ ¢ ACRES @ $

| FRONTAGE | DEPTH | AREA | DEPTH FACTOR | UNIT | CORNER INFLUENCE |
|---|---|---|---|---|---|
| | | | | | |

AMOUNT: 6,100

## RENTAL INFORMATION

| YEAR | FULL RENTAL VALUE | PER CENT VACANCY | ADJUSTED INCOME | 5 YEAR AVER. INCOME |
|---|---|---|---|---|
| | | | | |

## GENERAL INFORMATION

ASKING PRICE

PRICE OFFERED

BOOK VALUE

LATEST APPRAISED VALUE

WHEN BY WHOM

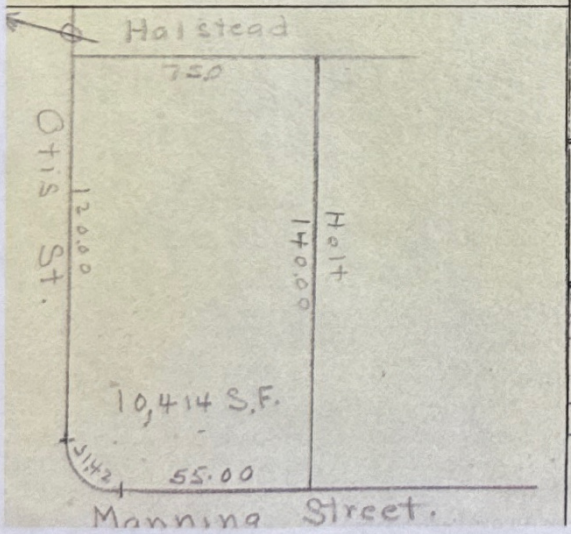
SALES TREND OF DISTRICT

UP DOWN STATIC

BUILDING PERMIT

DATE AMOUNT

## LOT DIAGRAM




## ASSESSMENT RECORD

| | | 19 42 | 19 47 | 19 64 | 19 65 | 19 67 | 19 81 | 19 | 19 | 19 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BASE VALUE | LAND | | | | | | | | | | |
| | BUILDINGS | | | | | | | | | | |
| | TOTAL REAL ESTATE | | | | | | | | | | |
| CHANGES | LAND INCREASE—DECREASE | | | | | | | | | | |
| | BUILDING- " " | | | | | | | | | | |
| | EXEMPTIONS | | | | | | | | | | |
| | NET CHANGE | | | | | | | | | | |
| CURRENT VALUE | LAND | 1225 | 1225 | 1225 | 1225 | 6,100 | 26517 | | | | |
| | BUILDINGS 2 Fam House | 6000 | 6600 | 6600 | 6600 | 17,900 | 70528 | | | | |
| | Gar. 2 C | 500 | 500 | — | 600 | 1,000 | 3562 | | | | |
| | TOTAL REAL ESTATE | 7,725 | 8,325 | 7,825 | 8,425 | 27,000 | 100637 | | | | |

REMARKS:

## Alexandra Clee

**From:** Lee Newman
**Sent:** Monday, October 7, 2024 12:14 PM
**To:** Alexandra Clee
**Subject:** FW: General By-law Review Committee

---

**From:** Kate Fitzpatrick <KFitzpatrick@needhamma.gov>
**Sent:** Monday, October 7, 2024 9:59 AM
**To:** Dan Gutekanst <dan_gutekanst@needham.k12.ma.us>; Lee Newman <LNewman@needhamma.gov>; Molly Pollard <mpollard@needhamma.gov>
**Cc:** Dave Davison <DDavison@needhamma.gov>; Katie King <kking@needhamma.gov>; Myles Tucker <mtucker@needhamma.gov>
**Subject:** General By-law Review Committee

Hello,

We are in the process of constituting the General By-Law Review Committee. Will you please let me know who from your board or committee (or former member) would like to serve.

Thanks.

**SECTION 1.16 PERIODIC GENERAL BY-LAW REVIEW**

1.16.1 In each year ending in a 5, a General By-Law Review Committee consisting of 7 members shall be established to review the General By-Laws and make a report, with any recommendations, to Town Meeting concerning any proposed amendments that the Committee may determine to be necessary or desirable, consistent with Section 1.16.3, below.

1.16.2 Each Committee established in accordance with Section 1.16.1 shall consist of: One (1) member or designee of the Select Board, one (1) member or designee of the School Committee, one (1) member or designee of the Planning Board, one (1) member or designee of the Finance Committee, the Town Moderator or designee, the Town Clerk and one Town Meeting Member appointed jointly by the remaining six (6) members. Members of the General By-Law Committee should have experience in Town government and Town Meeting and, except in the case of the Moderator, any designees appointed to the Committee shall be former members of the applicable board or committee.

1.16.3 The Committee shall conduct a holistic review of the By-Laws, with a particular emphasis on ensuring that the By-Laws remain current, clear, and well organized, without serving as a forum for advancing policy within the jurisdiction of another Town board, committee or commission.

1.16.4 The Committee shall set its own work plan, which shall commence in January of each year ending in a 5, and shall provide for the Committee to make any recommendations to the Annual Town Meeting in the spring of the following year, or to any Town Meeting that occurs sooner.

1.16.5 The Committee shall have the power to create subcommittees, which shall be public bodies in accordance with the Open Meeting Law.

1.16.6 The Committee will consult with Town staff and any board, committee or commission having jurisdiction over any particular by-law under review.

1.16.7 Each Committee established in accordance with Section 1.16.1 shall automatically dissolve, by operation of law, thirty (30) days after the conclusion of the Town Meeting at which it presents any recommendations, unless the Town Meeting has referred a proposed By-Law amendment back to the Committee for further consideration.

Kate

**Kate Fitzpatrick,** ICMA-CM
Town Manager
She/Her/Hers
Town of Needham
Town Hall
1471 Highland Avenue
Needham, MA 02492
781-455-7500 x0

# NEEDHAM PLANNING BOARD MINUTES

August 14, 2024

The Needham Planning Board meeting, held in the Charles River Room of the Public Services Administration Building and virtually using Zoom, was called to order by Natasha Espada, Chairman, on Wednesday, August 14, 2024, at 7:00 p.m. with Messrs. Alpert, Crocker, Block and McCullen, Planner, Ms. Newman and Assistant Planner, Ms. Clee.

Ms. Espada noted this is an open meeting that is being held in a remote manner per state guidelines. She reviewed the rules of conduct for all meetings. This meeting does not include any public hearings and public comment will not be allowed. If any votes are taken at the meeting the vote will be conducted by roll call.

**MBTA Communities (Section 3A of MGL c. 40A) Zoning Initiative**

- **Overview of Comments Received from Executive Office of Housing and Livable Communities (EOHLC), Lee Newman, Director of Planning and Community Development and Town Counsel, Christopher Heep.**
- **Presentation of staff recommended MBTA zoning by-law revisions required to address comments received from EOHLC and Attorney General, Town Counsel, Christopher Heep.**
- **Presentation of Revised Zoning Changes Requested for 100 West Street, Tim Sullivan**
- **Overview of Site Plan Approval Framework and Planning Board Permitting Authority, Town Counsel, Christopher Heep.**

Ms. Newman stated a letter was received from the state with comments regarding livable communities. She had a conversation with Town Counsel Christopher Heep and Assistant Town Manager Katie King, who were there to clarify responsibilities, and she feels they are in good shape. There were some discrepancies with labeling. With the 110-foot setback for 100 West Street she wanted to make sure the state would allow the full 187 units on that site. The state assured her that would not be a problem and did not see the setback as an impediment. There is no change to that. The Board set the affordable housing provision at 12½%. The state staff looked it over and were comfortable with that percentage.

Town Counsel Christopher Heep noted the definition of family. The existing definition in the Zoning By-Law caps the number of unrelated occupants to either 3 or 5 and allows for up to 2 others. The EOHLC's position is the MBTA zoning cannot include a cap on a number of occupants. Section 3A notes all housing under the MBTA Zoning needs to be suitable for families with children and cannot be capped. Mr. Alpert commented he is amenable to have a provision for children but does not want to jump and say any number of college students. A discussion ensued regarding what prevents this from becoming a rooming house. Mr. Crocker noted there was something like a half-way house on Webster Street with multiple people living there. Mr. McCullen noted that was licensed by the state. Mr. Alpert stated it was allowable as an exception to the By-Law. Mr. Heep stated that is protected by state and federal law and unrelated to the MBTA Zoning. He noted, under EOHLC, age, or the number of occupants, cannot be limited. He was told by EOHLC they cannot impose a cap, and they would need to address the definition of family in other respects. The easiest is to eliminate the cap on occupants in the MBTA Zoning.

Mr. Alpert noted the Board could pass the zoning with the current language and have the state come back saying the zoning does not comply. Mr. Heep stated a lot of work went into this and very few comments came back. It would be a shame to take all that work and still be out of compliance. Ms. Espada noted the Massachusetts Building Code, and the Health Department, has a limit on the number of people. Mr. Block noted the Board should proactively call out the restrictions at Town Meeting. It would be productive and helpful for Town Meeting to know what other controls there are to prevent this. Mr. Alpert stated he has never seen a provision that the size of a bedroom can be limited and asked why they are concerned about that. Other issues noted were the numbers in the model dwelling unit per acre should not have been there, there are fields missing in the GIS fields and Town Counsel was asked to look at the site plan approval process the town has. Mr.

Heep stated he reviewed it but did not find anything wrong. He asked the EOHLC and was informed that was a boilerplate comment. He reviewed it and is comfortable.

Ms. Espada reviewed the draft and did not see anything that stuck out. Mr. Heep walked through the changes from the EOHLC comments, and the Attorney General comments. He noted a definition is being added to 3.17.3 for multi-family housing. The Board already has a definition of multi-family dwellings. There was a comment to reconcile the 2 comments. He took out multi-family housing from 1.3 and put in a new Section 3.17. Everything is internally consistent and 3.17 only complies to the MBTA Communities. On page 6 there is a change to 3.17.5.5. Changes were made due to a comment regarding a cap on occupants from a prior discussion. The language as drafted says the Town of Needham cannot impose age restrictions. Mr. Alpert noted a developer can restrict age. The question is can a developer put in a senior living community in an MBTA Community. Mr. Heep will look into the question of whether an applicant can put in an age restricted project. This should not be drafted as an age restricted project now. Mr. Alpert stated the job right now is to pass a zoning by-law that complies with the guidelines in the statute. The rest can be dealt with if a site plan review comes in front of the Board. Mr. Crocker feels it is better to know up front. Mr. Block would like Town Counsel to speak with the state and resolve if it is compliant for a developer to choose to restrict age and what the authority is for determining the parking standard. He wants the state to comment as he feels that is important.

Mr. Alpert commented that he reads the statute as they cannot have age restrictions on multi-family housing in the MBTA Zoning. Mr. Crocker noted the Board has to find out, if an applicant comes in with age restrictions, what happens. It will be good to get clarity. Mr. Heep noted multi-family housing is the use allowed for this zoning and multi-family housing does not allow age restrictions. Mr. Block feels it should say multi-family projects shall prohibit age restrictions. Mr. Alpert noted the definition of multi-family housing will be in this By-Law. He would suggest in the definition it include multi-family housing that complies with MA General laws Ch. 40A, Section 3A and the rules and regulations there under. Mr. Heep feels that is sufficient to address this concern. He noted "a building with 3 or more residential dwelling units in each building, that complies with the requirements of MGL Ch. 40A, Section 3A and the regulations and rules there under."

Ms. Espada noted Section 3.17.9.1 on page 9. Mr. Heep stated the changes were in response to the Attorney General's comments. He wants to make it extra clear that site plan review is under Section 3.17 only and not under Section 7.4 of the existing Zoning-By-Law. There is no harm in making it clear. In Section 7.7, the Design Review Board (DRB) section, it is intended MBTA projects will be subject to design review. That needs to be made clear. There will be a time constraint, so the DRB need to get their comments back quickly. Mr. Heep noted there are 2 map change warrant articles. The MBTA Overlay District is changed to Multi-Family Overlay District for consistency. In the Neighborhood Plans, the definition of mixed-use building in Section 1.3 has been revised. The existing definition speaks to districts where you can do that. This needs to be added into the existing definition as it is allowed here.

Mr. Heep noted the changes in 3.17.4.1 and 3.17.4.2, for the use of personal fitness establishments, which copies exactly the use in the existing district now. It duplicates exactly how it appears in the underlying zoning. Mr. Block stated a concern he has is a mixed-use building with residential above and a commercial use on the first floor. There is a high likelihood a parking waiver would be required. He is ok requiring that as a function of a special permit but does not want to make the use effectively prohibited. Mr. Heep noted it does not prohibit as it is permissive with a special permit. Section 3.17.4.1(b) makes clear a mixed-use building in the MBTA Communities must have commercial only on the first floor and mixed-use housing on all upper floors. This is not necessarily true for other mixed-use districts, so he wanted to make that clear.

Mr. Alpert stated the definition of a mixed-use building in the mixed-use overlay and other districts states retail must be facing the street. Ms. Newman feels that should be left alone. That definition was created for other districts that we do not want to change. Mr. Block noted where Bertucci's is located is not street facing. Mr. Alpert stated if they want multi-family housing there it can only be done under the multi-family overlay and Bertucci cannot be there as it is not street facing. In 3.17.42 it should say "a mixed-use building containing commercial uses listed below on the ground floor whether facing the street or otherwise and provided that all upper floors shall be used as multi-family housing. In the revised definition of mixed-use in 1.3, a defined term subject to additional qualifications that may be included in the applicable overlay district. All members agree.

Upon a motion made by Mr. Block, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:
VOTED: to accept the recommendations with the changes made this evening.

Ms. Espada noted Attorney Tim Sullivan, of Goulston &Storrs, sent an email, dated 7/31/24, with some questions the Board had incorporated. Mr. Sullivan noted a number of things had been talked about, he revised the draft to address those and has submitted a revised draft. The first change incorporated was to clarify allowing for flexibility on the maximum front setback. It is 70% of the main datum line of the front façade and will maintain that 15 feet and, if more than that, it would need a special permit. Ms. Espada clarified the Board had the number recommendation at the last meeting. Mr. Sullivan noted there was a recommendation to require a special permit if there was a new curb cut on Highland Avenue or West Street proposed. He noted the requirement that the height overrun for roof top mechanicals be capped at 15 feet was put in so it is consistent with other districts. He noted an applicant can ask for a special permit for a fourth floor if peaked, stepped back or has another architectural element incorporated. In the prior draft it only referred to Highland Avenue, so he clarified it also applies to West Street. Ms. Espada noted that is also a recommendation the Board made.

Mr. Block stated this is the one site across town ready for change yet consultants for HONE stated it is unlikely to turn but we are imposing significant restrictions. He feels this is a defeat to the underlying principal act and could be problematic for the market. Ms. Espada stated the fabric of that area has to be followed. Mr. Block feels they should loosen the restrictions but Ms. Espada stated the Board has loosened restrictions. This is just clarifying some final issues. Mr. Block noted this pushes into the special permit process. Ms. Espada clarified only for the fourth floor and curb cuts. She noted at the last meeting the FAR was increased from 1.3 to the 1.7 that was requested and other things that were asked such as the height overrun and the datum line. These are some recommendations they requested to make it better and are now back to clarify. A discussion ensued.

Mr. Sullivan noted all changes talked about are for multi-family housing and not memory care/nursing. Mr. Alpert asked if, by having the fourth floor by special permit, is the Board violating the MBTA zoning law that says there cannot be a special permit. Mr. Sullivan stated no, as they are getting credit for only the 187 units that are as of right. Mr. Heep stated, to comply with the MBTA zoning, they need to set a floor for the amount of housing that can be built. If the Board wants to allow for more than that number, it can be done by special permit. Mr. Alpert noted all amendments are to Section 1.37 only. Mr. Heep stated there are a couple of options developers can choose from. They can choose one or the other but cannot mix.

Mr. Sullivan stated the initial comment on parking garages should be excluded for FAR. There was concern by the Board, if excluded in an as of right scenario, the garage would have to be screened. The change he proposed is garages that are screened, or parking in the interior portion of the building, would be excluded from FAR. If trying to exclude something else such as a portion of the garage that is not screened there would need to be a special permit requested. He feels they do need to carve a garage out of the FAR on this site due to how constrained it is. They are trying to work within that and address the Board's concerns with screening so that is what he is proposing. Ms. Espada feels that is fine because it is a small site and there is not much left of it. They should say "no part of the parking garage should be on either of the two streets." Mr. McCullen agrees with Mr. Block they are imposing restrictions counter to what is needed. He does not have a problem with any parking structures not being included in the FAR. He feels the garage would be along the tracks and not on Highland Avenue. Ms. Espada is fine with the way it is.

Mr. Alpert stated Highland Avenue is a pedestrian area. He agrees with Ms. Espada. With a screen people will still see a parking garage. Ms. Espada asked if the Board has a say in what the screening would look like. Mr. Heep noted that could be addressed a couple of ways. Mr. Crocker noted a minimum standard objective could be spelled out. He asked why the Board is giving an allowance for parking they do not really want. Ms. Espada stated most are ok with parking not included in the FAR. She does not want to say no parking garage on either Highland Avenue or West Street. Mr. Sullivan commented the garage is not going to be on Highland Avenue and the housing units on the tracks. The site is only so wide. There will need to be structured parking on this site but how is it determined if it is on Highland Avenue or not. Ms. Espada suggested saying "screening compatible with the building." Mr. Heep noted screening could be many things such as vegetation or slats between the floors. If there is something in mind it is better to include it in the instructions. Mr. Alpert does not like

to do that. Screening today may not be available in 3, 4 or 5 years from now. It is aesthetics. Mr. Sullivan suggested using the language Ms. Espada proposed "screening compatible with the building." Flexibility is important. It could be "screened in a manner compatible with the architecture of the building from Highland Avenue to West Street." Mr. Crocker commented he would have to see what the public says.

Upon a motion made by Mr. Block, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:
VOTED: to accept the changes as recommended by Attorney Tim Sullivan with the added changes tonight.

Upon a motion made by Mr. McCullen, and seconded by Mr. Block, it was by a vote of the five members present unanimously:
VOTED: to send the Article to the Select Board, as revised under 40A, for the purpose of holding a public hearing on 9/5/24 on zoning at the Broadmeadow School.

**Review and approve final MBTA Communities zoning language for transmittal to Select Board and initiation of the public hearing process.**

Ms. Espada gave an overview of the site plan approval framework. Mr. Heep gave a brief rundown of site plan review, how it works, what the Planning Board power and authority is and he flagged some differences between site plan review and special permit review. It is important for the purposes of MBTA zoning. The MBTA can require site plan review but not a special permit. There is long-standing practice in Needham of the Planning Board doing both at the same time. The special permit type of zoning relief authorized under 40A, Section 9 applies to a use that may be allowed in some cases and may be disallowed in other cases. It turns on the discretion of the permitting Board. A site plan review type of review is a use by right. It does not exist in 40A. It was invented by numerous local by-laws all over Massachusetts some time ago. This is a use by right and can only involve reasonable regulation of the use and it can just about never involve an actual denial or rejection of use. He gave a quick history noting Prudential versus Westwood. Reasonable regulation and not outright prohibition is the first thing to keep in mind.

Mr. Block asked what is reasonable regulation and what did the court mean when it refers to reasonable regulation? Mr. Heep stated it involves imposing conditions on a use that are responsive to specific impacts associated with the use on a particular piece of property and that does not go so far as to interfere with the use itself, the density of use allowed under the zoning or what is effectively the use allowed by right. He gave the example of Castlehill Apartments versus the Town of Holyoke in 2006. He noted there are 2 exceptions to the rule: 1) when the applicant fails to submit the information required under the By-Law and 2) which is very rare, the project presents a problem that is so big it cannot be solved through the imposition of conditions on the project. An intractable problem is the term for this type of issue.

The Board discussed storm water and traffic impacts on and off the property and what the Board can do to mitigate off site impacts. Mr. Heep noted the Board has some leverage through site plan review to require some off site traffic mitigation. The impacts would be if they are feasible and sufficiently affordable so as to not make the project uneconomical and something that can be achieved by the applicant, if responsive, to the specific impacts contributed to the road system by the particular project. This would be studied on an application by application basis. Mr. Block feels the need to provide the framework that Mr. Heep just identified which includes there be a professional that has identified a specific problem arising as a result of these plans or as a result of a particular development. Mr. McCullen does not feel the Board would ever be able to have a traffic analysis done during the site plan review timeframe. Ms. Newman noted there is a 6-month timeframe but the Planning Board is usually much quicker than that.

Mr. Alpert stated, once 100 West Street is built, the Board knows there may not be issues at Central and West but there will be issues at Highland and West, especially West and Hillside and to some extent the MBTA crossing. He feels all members should keep that in the back of their minds. These are problem intersections now and the building is empty. Ms. Espada commented they should include that the Board wants the project done by a professional engineer. Mr. Alpert feels the intersection of Hillside and West will be a huge issue. Mr. McCullen informed the Board the Select Board approved a 4-way stop, recommended by the Transportation Safety Board, last night. They are looking at the issue of whether doing a

study of the queue of cars would back up onto the MBTA right of way and are looking at grant money to have signals coordinated. This would be happening anyway even without 100 West Street.

**Board of Appeals – August 15, 2024**

6 Brook Road – Tail Waggerz Pet Care, Inc., applicant

Upon a motion made by Mr. Alpert, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:
VOTED: "No comment."

**Discussion of & Vote to approve Large House Study Committee charge and committee composition.**

Mr. McCullen stated he took a look at the membership and the number 13 is an unwieldy number. Ms. Espada stated the Board reviewed the charge and composition at the last meeting. It was agreed to take off the Historical Commission as information can still be received from them. Mr. Block stated he spoke with Town Counsel and the Ethics Office regarding his occupation and if he can participate. He has accepted a position as Director of Real Estate for a non-profit based in Boston that develops low-income housing. He is no longer an active Real Estate Agent so he is not trading in Needham. On that basis he feels he can participate without conflict. He also feels such a large committee is not needed. He would support reducing the number of people. He sees the role the Zoning Board of Appeals (ZBA) plays and the Board can consult with the Historical Commission but he is not sure about the Finance Committee. There would need to be a fiscal impact analysis on the value of the acquired lot and the value of the new home to be sold on the market. This is not affordability or sustainability. They are talking about reducing the size of a home.

Mr. Block stated he would strike the last sentence that says "to the detriment" on page 101 of the packet. A discussion ensued. Ms. Espada asked if the Board should say they heard from Town Meeting the town goals on affordability or per the Housing Study Master Plan. She would recommend referring to the Housing Plan rather than saying "detrimental to the Town." Mr. Alpert suggested "to the detriment of the housing goals as stated in the Housing Study Master Plan." Ms. Espada agreed. The Housing Plan has one whole section on large homes. Mr. Block stated the purpose is to reduce the size of the home and not to make them affordable. Ms. Espada noted the charge of the group is to try to incentivize people to not tear down homes. Mr. Block stated this Board needs to give clarity to the Housing Committee, so they know what their goals are. It does not sound like the members are clear as a Board. The Board needs to set out quantifiable goals. Mr. Alpert stated there is a committee to determine what those quantitative goals should be. Mr. Block feels the Board is giving ambiguous directions. Tying this into affordability and sustainability as goals is a mistake. He disagrees with that. Mr. Alpert suggested taking out "overly permissive." All agreed. It should say "may not appropriately regulate house size. This is to the detriment of the Town's goals as set forth in the Town of Needham Housing Plan previously adopted, December 2022." Ms. Espada noted the Large House Committee can then go through the housing plan. She is comfortable with the changes.

Ms. Espada noted the Finance Committee can be asked for information so they can be removed from the group. Mr. Alpert feels whether to have the Finance Committee is a political question. The Board did it for Muzi and for HONE. They felt having a member of the Finance Committee was important. He does not want the Finance Committee saying they were blindsided by this. Ms. Espada would recommend getting rid of the Historical Commission and one Citizen at Large. All agreed. Mr. Alpert would like to see Joe Matthews on this committee but not be the only Citizen at Large. Ms. Espada wants the members assigned by the Planning Board. Mr. Alpert wants diversity of opinion and feels 2 citizens makes sense. The Committee will have 12 members and "appointed by the Planning Board" will be added. Consultant services will be provided on an as needed basis. Ms. Newman stated she has an appropriation of $80,000. Mr. Block suggested adding "budget consulting expenses to the extent possible will be paid out of the department budget or such other appropriation as needed." All agreed.

Upon a motion made by Mr. McCullen, and seconded by Mr. Block, it was by a vote of the five members present unanimously:

VOTED: to accept the charter as amended.

**Minutes**

Upon a motion made by Mr. McCullen, and seconded by Mr. Alpert, it was by a vote of the five members present unanimously:
VOTED: to approve the minutes of 6/18/24 as written.

Upon a motion made by Mr. McCullen, and seconded by Mr. Alpert, it was by a vote of the five members present unanimously:
VOTED: to approve the minutes of 7/11/24 as written.

**Correspondence**

Ms. Espada noted the following correspondence for the record: a letter, dated 8/13/24, from Susan and Michael Herman regarding 100 West Street; an Open Meeting Law Complaint, dated 8/2/24, noting the law was not violated; and a press release on ADUs. There may need to be a few changes made.

**Report from Planning Director and Board members**

Ms. Newman stated GPI has completed a traffic study for the likely build out under HONE. She invited them to the next meeting for a presentation. There will be a public hearing at the Broadmeadow School on 9/5/24 for HONE.

Upon a motion made by Mr. Block, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:
VOTED: to adjourn the meeting at 9:56 p.m.

Respectfully submitted,
Donna J. Kalinowski, Notetaker

_____
Artie Crocker, Vice-Chairman and Clerk

DRAFT

DRAFT

# NEEDHAM PLANNING BOARD MINUTES

August 27, 2024

The Needham Planning Board meeting, held in the Charles River Room of the Public Services Administration Building, and virtually using Zoom, was called to order by Natasha Espada, Chairman, on Tuesday, August 27, 2024, at 7:00 p.m. with Messrs. Crocker, Block and McCullen, Planner, Ms. Newman and Assistant Planner, Ms. Clee. Mr. Alpert arrived at 7:05 p.m.

Ms. Espada noted this is an open meeting that is being held in a remote manner per state guidelines. She reviewed the rules of conduct for all meetings. This meeting includes two public hearings and public comment will be allowed. If any votes are taken at the meeting the vote will be conducted by roll call.

**Request to extend action deadline: Major Project Site Plan Special Permit No. 2022-02: 557 Highland, LLC, an affiliate of The Bulfinch Companies, Inc., 116 Huntington Avenue, Suite 600, Boston, MA, Petitioner (Property located at 557 Highland Avenue, Needham, Massachusetts).**

Ms. Newman noted there was a request to extend commencement of construction because of market conditions. The request is for 2 years with an extension from 12/22/24 to 12/22/26. She feels it is reasonable.

Upon a motion made by Mr. McCullen, and seconded by Mr. Crocker, it was by a vote of the four members present unanimously:
VOTED: to approve the request for an extension as requested.

Mr. Alpert arrived.

**Public Hearing:**

**7:00 p.m. – Amendment to Major Project Site Plan Special Permit No. 2011-04: Town of Needham, 1471 Highland Avenue, Needham, MA, Petitioner (Property located at the Center at the Heights, 300 Hillside Avenue, Needham, MA). Regarding request for the installation of a permanent emergency generator to serve the Center at the Heights as well as a reduction of 3 parking spaces.**

Upon a motion made by Mr. Crocker, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:
VOTED: to waive the reading of the public hearing notice.

Town Counsel Christopher Heep, representative for the Town, noted the emergency generator was not included when the project was built. The uses have changed, and it now requires an emergency generator. The generator will operate in cases of power outages or testing. The location will be along the east property line that abuts the MBTA rail line. There is no residential as it is all commercial to the east and north. The biggest concern was the nearby residential properties across the street but the building will serve as a barrier to block a lot of the noise when the generator is in use. A preconstruction sound study was done and submitted. All residences will be within acceptable noise limits. The policy is not more than 10 decibals above ambient. The applicant would be amenable to a post construction study. There will be a temporary reduction of 3 parking spaces from the current 65 spaces to 62 spaces. The Town is working with the MBTA to lease back 12 spaces for the site. There are 65 spaces for the Senior Center and 85 for the commuter lot. This will add back 12 spaces. He hopes the state will finalize that soon.

Mr. Heep noted the temporary generator is in place but was never permitted. Engineering has suggested sound attenuation. An attenuation fixture is part of the generator. Mr. Block noted Engineering was recommending fencing around the perimeter. Mr. Heep stated there may be some bollards or screening to prevent parking. Some fencing would be fine if the Planning Board wants it. The Board discussed fencing or a vegetative buffer which Mr. Block feels may look better and

act better than a fence. Mr. Heep wants to be mindful of not taking up too much space. He stated the generator could be screened consistent with other town buildings. Mr. Alpert asked if there would be testing in accordance with the manufacturer's specifications. Mr. McCullen stated he sits on the emergency planning committee. This is needed and he fully supports it. Mr. Alpert asked if there are other buildings in town that need emergency transformers. Mr. McCullen stated Newman has emergency generation. He is not sure if they are listed on the shelter plan. The Health Department is reevaluating the shelter plan after the storms of last year that caused last mile failure. It took a lot of time to restore. This was one of the items for mitigation. Mr. Crocker noted the buildings right behind used to be housing. He asked if it was all commercial now. Mr. Heep noted it is not residential. There were no public comments.

Upon a motion made by Mr. Alpert, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:
VOTED: to close the hearing.

Ms. Newman noted a decision will be issued at the 9/17/24 meeting.

**ANR Plan – Majorie A. Pine, Petitioner, (Property located at 321 Cartwright Road, Needham, MA).**

Mr. Block asked Ms. Newman to remind the Board of the scope for this ANR Plan. Ms. Newman noted the scope is to make a determination the lots that are being created have the minimum frontage that is required under the Zoning By-Law for the District and that there is suitable and adequate access to reach these lots. She is satisfied the lots meet the requirements given the history in that area. There is one lot with a single house on it. It is now being divided into 2 lots. Cartwright Road is a private way. Beyond Cartwright Road there were 2 house lots approved under a subdivision approval by this Board. There are numerous other lots on that street endorsed under ANR provisions.

Ms. Espada asked if there were any comments from other Board's. Ms. Newman noted this has been reviewed by Engineering and herself and the plan is in appropriate shape. Mr. Crocker commented one concern was that it is a narrow road. He asked if the Fire Department needs to comment. Ms. Newman noted the way provides adequate and suitable access to the lots. The Board has already historically approved lots along this way. There are 2 lots past this that the Fire Department has access to.

Upon a motion made by Mr. Block, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:
VOTED: to endorse the ANR Plan.

**Discussion of & Vote to Adopt Code of Conduct.**

Mr. McCullen noted Mr. Block asked the question of civility that has been clarified by Town Counsel Heep. The Supreme Court ruling regarding the definition of civility and whether the Board could codify it in 3.16. The members have to let a member of the public be as rude as long as they want. Mr. Alpert stated the public has a right to be rude to anyone even someone in the audience. It is unfortunate they need to discuss something like this. Ms. Espada stated she and Mr. Block discussed stopping the hearing and requiring the person stop. Mr. Block said they will maintain civility at all times effectively. Mr. McCullen noted it is nonbinding.

Mr. Block stated the procedure as he prescribed should be able to spell out specifics such as gaveling to order, inviting the speaker to refrain from demeaning or otherwise inappropriate language, informing the speaker of time limits and recessing the meeting if necessary. He understands from the case that none of those are counter to the judges' decision. Mr. Alpert clarified it would be a temporary recess and not an adjournment. The Board members would be violating the Code of Conduct if they are rude. It would behoove the Chair to call out the member. The members discussed the language Mr. Block suggested. Mr. Alpert noted it should say "the Chair may, in the Chair's discretion" and then continue with Mr. Block's language. He would add "temporary" in front of "recess."

Upon a motion made by Mr. Block, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:
VOTED: to move adoption of the Planning Board's Code of Conduct as further adjusted tonight.

**Public Hearing:**

**Definitive Subdivision: 40 Highland Ave, LLC, 435E Dedham Street, Newton, MA 02459, Petitioner (Property located at 40 Highland Avenue and 14-16 Riverside Street, Needham, MA). Regarding request to subdivide the Premises into three building lots, two of which will be used for residential purposes, having frontage on the new road, and the third of which will continue to be used for commercial purposes.**

Upon a motion made by Mr. McCullen, and seconded by Mr. Block, it was by a vote of the five members present unanimously:
VOTED: to waive the reading of the public hearing notice.

George Giunta Jr., representative for the applicant, stated this is 2 properties – one on Highland Avenue and one on Riverside Street. The property on Highland Avenue is a commercial building where Midas Muffler used to be and is currently automotive repair. That property is long and extends back from Highland Avenue. The other property on Riverside has an existing 2-family house and a garage. Both properties will be combined. The commercial property will be one conforming lot and the use remains the same. A stub road will be put in. A new lot will be created and 2 2-family homes will be built in a small development. He showed the lots on the plan. Most of the commercial lot is in the General Residence Zone and could not be used for commercial. This plan shows that a by right plan can be done. He showed a 50-foot-wide roadway and a 60-foot circle. He noted that can be done and the applicant could get 2 lots. He noted that is almost 11,000 square feet of pavement for one additional house.

Mr. Guinta Jr. stated instead there will be a 40-foot-wide road with a hammerhead or T turnaround. This has been vetted with the new Fire Chief and he was ok with it. This is allowed for smaller subdivisions. This will have almost 7,500 square feet of pavement with a 3,400 square foot reduction from the By-Right. He feels it is a better design and more attractive than a circle. Mr. Block asked if the frontage on Lot 102 is frontage vertically or horizontally. Mr. Giunta Jr. stated this needs to comply both ways on corner lots. There is adequate frontage on both. The proposal is 2 2-family houses. The interior of the lot will have access off the new road. The existing will have access off Riverside. He noted the road is only access for one house. Mr. Alpert stated the road is for Lot 103 only. The new state law for ADUs would allow detached ADUs. He sees plenty of room behind Lot 102 for a detached ADU. That would have access on the new road. Ms. Clee stated she went to a seminar regarding the new law. It is the opinion of the attorney presenting that ADUs would not be by right with regard to duplexes, only single-family homes. Mr. Giunta Jr. is not sure there will be enough lot left for anything else.

Mr. Giunta Jr. stated there will be 2 condominium associations. Mr. Crocker noted this is well within the 200-foot limit of the riverfront. He asked if the Conservation Commission had made any comments. Ms. Newman noted the Conservation Commission had no comments. Mr. Giunta Jr. stated he had been before the Conservation Commission for delineation determination as a good chunk is in the outer riparian. It is within 200 feet of the river but more than 100 feet and does not really go right up to the river. The applicant would have to go to the Conservation Commission to get an order of conditions. Mr. Crocker stated the owner of the Midas property went to the Conservation Commission years ago to say the lot had been previously disturbed and he should be able to build there. He thought the building was 25 feet from the river but it is actually 125 feet from the river. Mr. Crocker commented it was something to think about.

Mr. Block asked what the livable square footage would be in each duplex. The applicant does not know yet but he feels it would be around 2,500 square feet. Mr. Block has concern for compliance with the By-Law but to what extent will new construction affect drainage and storm water management for the street. Ms. Espada noted the Board is not approving development today. Mr. Alpert asked if the Board has learned from the South Street experience and will put conditions in regarding removal of trees and grading. He feels the Board may want to tighten the language up regarding grading during construction. He also feels the Tree Warden should be involved at this point. Mr. Giunta Jr. stated that has been done for single-family homes but has not been done before for larger lots. He is asking if the process is going to change. Mr. Alpert noted times change. The Board talked about a tree by-law 9 years ago but the Select Board shut them down saying it was in their purview. There is still no tree by-law. The Planning Board can control reasonable conditions on a subdivision. He feels it is reasonable to look at this for conditions before issuing a subdivision. He does understand Mr. Giunta Jr.'s point

for a 2-lot subdivision. Mr. McCullen asked, if approved, does it come back to the Planning Board again. Ms. Newman stated it would come back for construction of the street and installation of utilities but not construction of the houses.

Mr. McCullen is concerned with the reliance on the FEMA flood maps. People in this neighborhood have flooded. The Board needs to be cognizant of this going forward. Ms. Espada asked what the Board's purview is. Ms. Newman stated it is looking at approving a subdivision plan compliant with the town's subdivision rules and regulations, that utilities are provided, that storm water is managed according to the town's regulations and the infrastructure is being developed to support the lots. She noted the Fire and Police were ok with it. Ms. Espada stated Engineering had 2 comments and the Board of Health had comments on the bond. Mr. Block noted the hearing for South Street was almost reopened. They cannot go outside the legal framework. Mr. Alpert noted the legal framework includes storm water management. Mr. Block stated the Town has started a storm water management subcommittee for new requirements. He does not want to cause a delay, but he is hearing storm water management is a problem in the area. That does not mean the current standards are adequately reflecting conditions.

Mr. Crocker stated trees is part of the Planning Board's purview with subdivisions. There is no plan before the Board, but the members need to remember part of their purview is trees. Mr. Block stated one of the condo associations is conducting a civil engineering study. Mr. Giunta Jr. is not aware of that. Mr. Block suggested pausing to give Mr. Giunta Jr. an opportunity to understand what the conditions are and what the engineer has found. He would like engineering to look at this and if it is within the Board's legal purview, they should look at it. Mr. Giunta Jr. feels it is not a bad idea generally. The two issues are trees and storm water. Ms. Newman stated it is the Board's job to support regulations at the time the application comes in. Storm water management is part of that. Engineering has looked at it and is satisfied based on current rules and regulations. Mr. Alpert noted they are elected officials. They received 4 or 5 emails regarding flooding in this area. If allowed as it stands, and the developer goes in and does what he is legally allowed to do and the flooding gets worse, the constituents will be unhappy justifiably. Mr. Block feels this should be continued so the town Engineer can review the study. That may inform certain conditions that may be imposed.

Ms. Espada opened the hearing to the public. Leandra MacLennan, of 4 Pershing Road, made an observation that a new private road is going in and the dimensions are suitably made for fire engines. There will be a tendency for residents to have guests park in the T. She feels parking should not be allowed on the street. Ms. Newman noted that is a standard condition on private ways. Stephen VonStetina, of 37 Riverside Street, stated he is a member of the Association conducting the water study. They have indicated they feel each unit needs to have underdrains to drain the water away. The bedrock keeps the water high. Several people have sump pumps that run constantly. He will share the details when the study is completed. Mr. McCullen asked the timeframe for completion of the study. Mr. VonStetina stated it has been completed. They are getting the information together and have talked to the Town Engineer about what is being proposed. Mr. Crocker asked what addresses the association encompasses. Mr. VonStetina noted 10 units, 31-57 Riverside Street.

Patricia Baker, of 30 Highland Terrace, stated there needs to be common sense. It is great that it is not 11,000 square feet of pavement but she questioned why it cannot be a driveway. Why does it need to be a road? Both streets flood with the worst drainage in these streets. Building a couple of homes is fine but she does not know why the road is there. Drainage plans are not enough. With more asphalt there is more water. It is ludicrous a road is being built near the river. She asked the Board not to approve the plan until they have all the information. Derek Wade, of 41 Riverside Street, thanked Mr. Block for reaching out to solicit information. There are severe water issues on the street. He appreciates it is being given consideration. He agrees with developing that property, but water needs to be taken into consideration. Mr. Block feels it would be good to get Engineering's comments on the study.

Upon a motion made by Mr. Block, and seconded by Mr. Alpert, it was by a vote of the five members present unanimously:
VOTED: to continue the hearing to the meeting on 9/17/24 at 7:30 p.m. at Powers Hall.

Mr. Giunta Jr. commented he does not disagree with a road for one house. He would like members to think about lines of waiving construction for small subdivisions. Mr. Alpert feels they should be considering the size of driveways and calling it a road. Mr. Giunta Jr. noted some houses have 350-foot driveways and that is acceptable. Ms. Newman stated the Board has waived down to 16 to 18 feet in the past.

**MBTA Communities (Section 3A of MGL c. 40A) Zoning Initiative**

- **Presentation of Traffic Study, GPI.**

Ms. Newman gave a brief introduction. HONE did a lot of work and there are 2 scenarios. They have been able to do a fiscal impact study, have been able to identify a traffic study was warranted and engaged GPI, who additionally looked at a proposal for a zoning initiative and traffic impacts in addition to what has been done. The Town is required to create an MBTA District that allows multi-family by right, with no age requirements, 15 units per acre and within ½ mile from transit. This will need 50 acres for 1,784 units and 90% of the land has to be near transit. The 2 plans HONE came up with are the Base Housing Plan, which creates 1,868 units, and the Neighborhood Housing Plan, with increased heights and FAR and creates a density of 3,294 units. Ms. Espada clarified it does not create but allows for it. This is not development but rules and allowing it by right.

Ms. Newman reviewed the 4 zoning articles – the Base Housing Plan and map change and the Neighborhood Housing Plan and map change. She showed the areas GPI was asked to look at along Needham's commercial spine. RKG determined the probability of units being built over time, the propensity for change model with areas most likely to turn over and a financial feasibility model. The utilitized change in value greater than 50% were properties most likely to turn over a 10-year time horizon. The Base Plan has 222 units across varying districts and the Neighborhood Housing Plan has 1,099 units across varying districts. Mr. Block stated Avery Square has zero and asked if this is based on nothing happening on that site. John Diaz, of GPI, stated he worked with what RKG had. Mr. Block noted there is a proposal for roughly 200 units at that site with roughly one car per unit. Ms. Newman stated GPI was engaged back in June and working off HONE's recommendation. HONE had 187 units at that property and did not have that the property would flip. Mr. Block stated this is not an unknown issue. This is an anomaly that may have a significant impact.

Assistant Town Manager Katie King noted people should go through all the slides. They did not include the 100 West Street units. There is still validity in the analysis as it is still good data, directionally, and townwide planning wise. Ms. Espada feels they should have the current numbers if redone at some time. Mr. Diaz stated this was a general overview. It is not a traffic study but a planning study. He went through the study. Ben Gomes, Transportation Designer at GPI, noted the comprehensive traffic assessment for potential traffic impacts for zoning areas. He focused on 3 key areas – current traffic conditions, proposed traffic volumes and impact on local infrastructure. He reviewed the analysis of existing conditions, future conditions, trip generations utilizing ITE and trip generation methodology. He noted mode share (bikes, walk, transit) accounts for 19% of all trips and trip distribution, estimated based on US Census. He adopted a conservative approach. He described the analysis area which included 15 intersections. He reviewed the Level of Service results. Levels C and D are reasonable. He noted Level of Service E has traffic approaching capacity and needs monitoring. Level of Service F has significant delays, has more traffic flow and requires further analysis. The Level of Service presented is peak traffic conditions.

Mr. Gomes noted, at no build, there are currently 2 intersections that are Level of Service F – Hunnewell at Highland and West at Hillside. He projects 4 will degrade in the morning to have a Level of Service of F – Highland at May, Highland at Dedham, May at Webster and Highland at Webster. In the evening the 4 intersections will degrade with one extra at Highland at Chapel and May degrading to a Level of Service E. With build, Scenario A will have no change. Scenario B will have significant impacts at some intersections. At the evening peak there are additional implications with 2 more Level of Service F. He discussed proposed mitigations. Scenario A has little to no impact. Scenario B has localized impacts with most impacts a result of background growth. Mitigations could include signal timing, restriping, adjustment to pedestrian timings and new signalization.

Mr. Crocker asked for an example of restriping. Mr. Gomes stated on West Street it could be moving the parking lane and adding a turning lane. With mitigation there are improvements in all areas except one. In the morning, Great Plain at Highland and Dedham have a Level of Service E, Highland at Chapel and May has a Level of Service F in Scenario B and Highland at Webster has a Level of Service E. In the evening, all improve to a Level of Service E. His conclusion is an acceptable Level of Service will be maintained under Scenarios A and B. Ms. Espada asked who is performing mitigations and when. Carys Lustig, Director of Public Works, noted the DPW has, in the capital plan, proposed plans for the Great Plain Avenue Corridor from Linden Street to Warren Street. In the interim there is a small grant program to upgrade to smart signals at Chapel at Chestnut and Great Plain, Dedham at Great Plain and Highland and Highland at Chapel and May. She predicts by 2028 a buildable project in the Highland Avenue corridor area, with multiple modals to improve traffic flow

and promote accessibility to downtown. This is 25% designed. She is also looking at the Highland Avenue corridor toward the Webster Street addresses. Several intersections are included in this study.

Mr. Block asked who would pay for the mitigation. Ms. Lustig stated this is not predicated on development. This is being done for the town's needs and funded by a whole host of sources. The Town will apply for grants also. Mr. Crocker noted he is concerned with restriping and taking away parking spaces for the businesses. He asked if there is any scenario for no parking during this time of day. Ms. Espada noted that was just an example. Mr. Diaz stated they are talking high level concepts that may never fly. Ms. Espada noted Mr. Crocker is saying parking needs to be taken into account when making decisions. Ms. King stated 15 intersections were studied and of these, 9 were recommended for mitigation to get to a better Level of Service. The town was already planning to address 7 of the 9. This information was affirmative, and they are addressing appropriate areas. Mr. McCullen noted the DPW is working regardless of the zoning passing.

Ms. Newman asked Ms. King for an update of where they are with Town Meeting coming up. Ms. King noted she is working with Ms. Newman and the Planning Board is updating the zoning. She is working on updated materials for the 9/5/24 public hearing. The unit capacity is being updated and she has RKG re-running the propensity for change model. That changes 100 West Street to likely to be built. The student generation rates are being updated with a more conservative assumption for students in 2-bed apartments and she is keeping up coordination with the School Department. They started talking with them this time last year. They update the School Committee every Fall with enrollment projections, so she is using their information to update the numbers. The numbers can be expected to go up. The fiscal impact analysis will be re-run. They are working on it now and it will be available for the Planning Board next week.

**Request to review and approve Landscaping Plan and Subdivision documents: 920 South Street Definitive Subdivision: Brian Connaughton, 920 South Street, Needham, MA, Petitioner (Property located at 920 South Street, Needham, MA).**

George Giunta Jr., representative for the applicant, noted the Board approved a general treatment for the landscape plan. All plans have been revised and everything is complete and ready for sign off. Mr. Block asked if there is water. Brian Connaughton, applicant, stated he should have a tie in to the water in November. Mr. Block noted the neighbor to the north had some complaints. Mr. Giunta Jr. stated Mr. Connaughton had a conversation with the abutter and his attorney, Evans Huber. Attorney Huber sent over some documents. He has some critiques of those comments, but he is still working through them. The basics are the same and they are working on the fine details. Ms. Newman stated the next step is to execute the plan. Mr. Giunta Jr. stated, if the Board approves the revised plan, a mylar will be generated by the surveyor, he will get it signed by the Board and then it can go to land court for approval. Ms. Espada noted the one side with trees is in the plan and the documents drafted. The other side is being done separately and is not part of this decision. Mr. McCullen clarified it is being done privately. Mr. Giunta Jr. noted, originally, there was talk of 25 trees along that side, 6 feet on center. The surveyor laid them out and there are 26 trees so there is one extra. Mr. Block stated he did not see plantings on the east side. Ms. Espada stated that is not part of the decision but there is an agreement. Mr. Block asked the status of the dust. Mr. Connaughton stated there really is not any. The Board of Health has been out, everything is stabilized and all the dirt is covered with grass. No work has been done over there is 3 weeks.

Upon a motion made by Mr. Block, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:

VOTED: to, outside of a meeting, endorse the mylar version of the subdivision plan as represented in the plan as part of the applicant's packet.

**Planning Board appointment to Downtown Redesign Working Group.**

Upon a motion made by Mr. Block, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:

VOTED: to nominate Mr. Crocker to be on the Downtown Redesign Working Group.

**Planning Board appointment to Mobility Planning and Coordination Committee.**

Upon a motion made by Mr. Block, and seconded by Mr. Crocker, it was by a vote of the five members present unanimously:
VOTED: to nominate Mr. McCullen to be on the Mobility Planning and Coordination Committee.

**Report from Planning Director and Board members**

Ms. Newman noted Ms. Espada, Mr. Crocker and herself will be meeting with the Select Board for a Chair/Vice-Chair meeting to see how the zoning articles should be presented at Town Meeting. She noted the Housing Authority has filed an application. There will be a hearing on 9/5/24.

Upon a motion made by Mr. Block, and seconded by Mr. McCullen, it was by a vote of the five members present unanimously:
VOTED: to adjourn the meeting at 9:30 p.m.

Respectfully submitted,
Donna J. Kalinowski, Notetaker

_____
Artie Crocker, Vice-Chairman and Clerk

DRAFT

DRAFT

# NEEDHAM PLANNING BOARD MINUTES

September 5, 2024

The Needham Planning Board meeting, held in the Performance Center at Broadmeadow School, and virtually using Zoom, was called to order by Natasha Espada, Chairman, on Thursday, September 5, 2024, at 7:00 p.m. with Messrs. Crocker, Block, Alpert and McCullen, Planner, Ms. Newman and Assistant Planner, Ms. Clee.

Ms. Espada noted this is an open meeting that is being held in a remote manner per state guidelines. She reviewed the rules of conduct for all meetings. This meeting includes one public hearing and public comment will be allowed. If any votes are taken at the meeting the vote will be conducted by roll call.

**Public Hearing:**

**7:00 p.m. –** **Article 1: Amend Zoning By-law – Multi-Family Overlay District (Base Plan)**
**Article 2: Amend Zoning By-law – Map change for Multi-Family Overlay District (Base Plan)**
**Article 3: Amend Zoning By-law – Multi-Family Overlay District (Neighborhood Housing Plan)**
**Article 4: Amend Zoning By-law – Map change for Multi-Family Overlay District (Neighborhood Housing Plan)**

Upon a motion made by Mr. Block, and seconded by Mr. Crocker, it was by a vote of the five members present unanimously:
VOTED: to open the public hearing and waive the reading of the public hearing notice.

Ms. Espada gave an overview of the MBTA Communities Act and the Housing Needham Advisory Group (HONE), who the members of the group were and the process. She noted there was great community input. HONE and the Town Board's want what everyone wants and what is best for the community. She explained the HONE Charge and noted the fiscal impact analysis was completed by RKG Associates. She noted the Capital Impact Assessment. The methodology and traffic were done by GPI. She reviewed the timeline. The Housing Plan Working Group had community engagement from October 2021 to January 2023 and adopted the Housing Plan. From March 2022 to August 2023 the Planning Board and Select Board weighed in on State guidelines, created and appointed HONE, the Town secured state grants and procured consultants. She reviewed the timeline going forward.

Ms. Espada reviewed the existing zoning. Multi-family is allowed by right or special permit in all districts except Industrial and Business. Parking is 1½ spaces per unit, with 18 dwelling units per acre. The height is 2½ to 3 stories with up to 4 stories by special permit. FAR is .7 and ranges from .35 to 1.1 FAR depending on the district. There are a series of overlay districts that increase density in certain districts. She reviewed the overlay district regulations and noted only one project was created under the overlay district since 2009. Under the existing zoning scenario there can be 1,019 units by right and 1,636 by special permit. Two plans have been created – the Base Plan and the Neighborhood Housing Plan.

Planning Director Lee Newman walked through the details of zoning. The Base Compliance Plan follows closely to what the zoning boundaries and dimensional standards currently are and gets a little above the minimum of what the MBTA Communities Act requires. The Neighborhood Housing Plan sits on top of the Base Plan and allows for greater density and height and puts housing in areas where it was not allowed. The current zoning can create 1,784 units, with the Base Plan creating 1,924 and the Neighborhood Housing Plan creating 3,350 units. There are 4 zoning Articles. Article 1 creates zoning for the Base Compliance Plan, Article 2 is the map change for the Base Plan, Article 3, if the first Article is successful at Town Meeting, inserts the dimensionals of the Neighborhood Housing Plan and Article 4 is the map change to implement the Neighborhood Housing Plan.

Ms. Newman showed the locations of the affected districts which are basically along the spine of Needham along Highland Avenue. Counting the existing units on the ground allowed them to capture the Charles Court units. She showed the rules for the Base Compliance Plan and described the changes. She reviewed the Neighborhood Housing Plan dimensional standards and the different districts. The Apartment District includes the Avery School and Hamilton Highlands by St. Joseph's Church at Highland and May Streets, Rosemary Ridge/Rosemary Lake Apartments and the Charles Court Condos follow the same set of rules. Density does not change, and the parking standard changes from 1½ cars per unit to 1.0 car per unit. The Districts covered under the Neighborhood Housing Plan are the Highlands, Rosemary Ridge, Charles Courts and adds in Denmark Lane and Hunnewell Street at Highland. The proposed height goes to 4 stories from 3 stories, FAR goes up and the number of dwelling units per acre goes up for greater density and build out.

The Business District includes the Sudbury Farms block where multi-family is not allowed currently but is a proposed use to this area. The Base Plan follows current rules. With the Neighborhood Housing Plan there is an increased height to 4 stories, increased FAR and it offers incentives for greater density if there is first floor retail or if workforce housing is provided at 7½% of the units. Avery Square has one property at 100 West Street. The proposal is to increase FAR to 1.3 as of right and allow 4 stories by special permit with an increased FAR of 1.7. Currently the FAR can be 1.1 but the 4th story is limited. Chestnut Street Business District includes Garden Street. The existing height is 2½ stories and goes to 3 stories by special permit and the parking ratio changes. It will be an as of right process.

Ms. Newman stated, for Chestnut Street, the west side is bounded by the railroad and the east side is the hospital side that blends into residential. There needed to be a distinction. The Neighborhood Housing Plan allows 4 stories on the west side and 3 on the east side. There could be 4½ stories on the west side with mixed-use development and 3½ stories with mixed-use on the east side. The Hillside Avenue Business District is west to Hunnewell Street and includes the Senior Center and the MBTA. It follows the existing zoning, housing is allowed, density is going up to increase FAR and there are additional dwelling units per acre. The Industrial District includes Hillside and West to Rosemary, Crescent Road Industrial and Denmark Lane off Maple Street at Great Plain Avenue. Multi-family housing is not currently allowed but is being allowed and moving from lot coverage requirements to an FAR. In the Neighborhood Housing Plan Hillside Avenue and Crescent Road stay in the Industrial District and Denmark Lane moves to the Apartment District. There is a slight increase in density in those districts.

Ms. Newman gave an overview of the HONE scenarios. There are 775 units currently and the existing as of right potential build out is 1,019. There could be 1,636 with the current zoning, 1,924 with the Base Plan and 3,350 units with the Neighborhood Housing Plan. The overall increase between the Base Plan and the Neighborhood Housing Plan is coming mostly from the Chestnut Street corridor at a 70% increase, 25% comes from the Apartment District and all others marginally increase. She spoke of the Site Plan Review process. There are uses as of right and the Planning Board cannot deny if they meet all the requirements. The Board can impose reasonable conditions. The applicant needs to meet all building, fire and health codes and also DPW and wetland regulations. For housing affordability, 12½% of all new units need to be affordable. Ms. Espada showed examples of existing multi-family housing which range from 2 to 4 stories in height and what could be. Townhomes could be 3 to 4 story multi-family, or denser single-family homes and 3 story multi-family. There could be live and work townhomes, and she showed the possibilities of what could be built with this type of housing. Multi-family housing is currently 2 to 3 stories and could go to 3½ stories. She showed photos of how height would change in each district along the corridor with the Base Plan and the Neighborhood Housing Plan.

Deputy Town Manager Katie King reviewed updates on the analysis done since HONE, the Propensity for Change Model and the financial value of the property with the changes. Avery Square is the only district that has changed since April. An FAR change from 1.0 to 1.3 is likely to build a unit count of 243. This was originally 186. The likely build out unit counts have added 243 to both plans. She looked at school enrollment projections, which increased due to assumptions and the increased unit count. The School Master Plan would renovate Pollard to a 6 to 8 school, repurpose High Rock to a sixth elementary school and renovate Mitchell as a 3 or 4 section school. It could still accommodate additional students with the current capacity. She noted the Fiscal Impact Analysis. With the revenue from the new multi-family housing that would cover the costs incurred. The net fiscal impact is positive in all 4 scenarios.

Ms. Espada opened the hearing to public comment. Wells Blanchard, of 580 High Rock Street, thanks all for the hard work and noted Needham has to do this as it is the law. He had a question about student ratios and asked if the public could get the raw data and analysis that let to these assumptions. He feels it would be helpful to compare. Other towns have higher assumptions. Housing units brought up are not close to the MBTA and could potentially cause differences. He asked if they have looked at neighboring communities as it seems they have higher numbers. James Goldstein, of 40 Coolidge Avenue, is there on behalf of the Steering Committee for Progressive Needham. He is very impressed by how careful and thorough HONE has been. He appreciates the time and efforts taken and the responsiveness to the community input. He believes it is critical to develop an opportunity for a range of housing, sizes and prices and strongly supports the Neighborhood Housing Plan zoning. He understands the actual production of housing is projected to take many years.

Susan Hermann, of 13 Carey Road, noted 100 West Street is included in the MBTA zoning. The project should not move forward until the surrounding residents are aware of what is proposed. The proposed projected units far exceed what is required in the MBTA Zoning Act. A more modest development similar to 797 Highland Avenue has density that would work, would attract a diverse group, would help with Needham Heights and create more environmental equity. It would also create a more livable community in Needham Heights. She has not seen any proposals for any street facing retail. She asked the Planning Board to reimagine this portion of the MBTA Zone to make it more walkable, create green space and environmental equity.

Kevin Albert, of 63 Melrose Avenue, attended an earlier meeting and there were 3 options. He asked what the 2 options were. He would like to see the statistics of towns that have passed the zoning and how many have gone over the requirements. The affordable housing number is 80 to 120% of the median income. He asked the median income of what – town, state? Ms. Newman stated the Boston Metro Area. Mr. Albert does not agree with over compliance of this. He wants them to take time and see how things evolve. A lot are based on assumptions and could be wrong. There is no need to rush. He feels they should pass what is needed and revisit in a number of years. Rena, of 419 Webster Street, is a senior at Needham High School and Co-President of the Social and Political Activism Club. She and her peers have been working hard for the last year to advocate for housing and zoning reform throughout Needham. They have all agreed to adopt the Neighborhood Housing Plan over the Base Plan. It is a major step in the right direction. They want to live in a town that welcomes diversity. Needham needs to diversify and broaden the town zoning. Needham has resources to expand schools if need be and renovations are being done anyway. They are not worried about schools. Students want to thank the Board for doing this. This is a great opportunity, and they need to commit more than the Base Plan. She urged support of the full Neighborhood Housing Plan.

Sara Wilson, of 21 Oak Hill Road, is also on the Social and Political Activism Club and agrees with everything Rena said. She reiterated they understand people's concerns with over compliance but this is only zoning. This is not what is going to happen. It is a long process and they urge a push for the most they can have now so they do not have to do this again. Mark Shusterman, of 28 Blacksmith Drive, is also on the Social and Political Activism Club and agrees with Sara and Rena. Needham offers opportunities for people here. The town needs to open Needham up for as many as they can and offer diversities.

Joe Matthews, of 31 Rosemary Street, and a Town Meeting member, is supportive of the efforts. He supports housing affordability but feels Needham has moved too slowly. He is not really concerned with additional students or traffic and agrees with the Assistant Town Managers analysis there will be a net gain for the town. He is concerned with the part of the zoning regarding 100 West Street. Rezoning for a special permit was done after the conclusion of HONE finished work and was written by the owner's lawyer. There was no public hearing for outreach. There is no justification for making this change of the special permit at this time. That has nothing to do with the MBTA requirements and there is no need to rush. The Town has done everything asked for this parcel and more. He feels the owner has not done anything because he had no incentive to move forward knowing there could be more permissive zoning. In 2022, the Board said the owner could move under the current zoning with assisted living and memory care. He asked what the point was of all the public hearings for this parcel if the owner was going to be writing the zoning as a compromise. They should have what was proposed back in April 2024, then if Well Tower wants more they can have it as a separate article. He cannot support the Neighborhood Plan if this is included. It needs to be separated out.

Jeff Engler, of 100 Valley Road, appreciates all the time and effort. He is an affordable housing developer and has developed over 10,000 units in Massachusetts. He would like something more aggressive than the Neighborhood Housing Plan but is very supportive of the plan. He has some concern that the number of units shown is greatly misleading. There is no chance that number will be built. As a developer, the enticements are not that great. Many of the areas are highly functioning commercial. This is about providing housing for seniors, empty nesters and young professionals. Fiscal impacts are less than he feels would be developed. He is in support of the Neighborhood Housing Plan. Needham has a responsibility to allow this housing. Carol Patey, of 32 Linden Street, is President of the League of Women Voters. Her Board has not voted but previously endorsed the 2022 Housing Plan. This allows Needham to have more affordable housing units. She thanked the Board for their work and allowing the public to share their views.

Colleen Schaller, of 24 Avon Circle, Chair of the Council of Aging Board of Directors, supports the process and continues to do so. Upcoming seniors need to be able to stay in town and this plan with help them. Max Wolf, with Charles River Regional Chamber, emphatically supports the Neighborhood Housing Plan. This unlocks downtown Needham potential while developing housing seriously needed. One obstacle is the lack of multi-family housing. The lack of housing is an impediment to the ability to hire and retain workers. Many employees cannot afford to live in Needham. More multi-family development would make great workforce housing to staff businesses and also increase foot traffic in downtown. Both plans offer incentives to develop parcels into multi-family housing in downtown but the Base Plan does not offer the same incentives. He would urge the Board to go forward with both plans.

Jeanne McKnight, of 100 Rosemary Way, noted the needs of seniors who want to downsize. She spoke of her own experience. She sold her house in 2013 but could not find a place in Needham. She wanted to buy a condo in an elevator building and found the condo at Rosemary Ridge. She feels the statistics for children are high. The town needs condominiums. She has been working on the Housing and Redevelopment for years. The Neighborhood Housing Plan came out of all the work throughout the years. She expected so much more over the years. She hopes the Neighborhood Housing Plan would be successful in producing the kind of housing with commercial they envision for the community. Mike Fisch, of 419 Webster Street, commented for those thinking this is not an emergency situation, they should visit Trulia or Zillow and get a feel for the cost of a 3-bed home in Needham. Then start looking at other towns that were affordable 10 years ago. We are not in this alone. If all towns say they are going to do the minimum it would not address the emergency which is not allowing middle class people to live in Massachusetts. It is unwise to be in an emergency room type condition. Anne Hayek, of 116 Maple Street, talked from personal experience. Homes are so expensive that having condos is a good solution to first time buyers.

Robert Smart, of 25 Mayo Avenue, served on the Planning Board. He was involved with several efforts to rezone districts in town and efforts to promote redevelopment along lower Chestnut Street. He feels the Planning Board is careful in what they proposed but had almost no response from property owners and developers. They did not get the response they wanted. There is a significant shortage of housing in Greater Boston. Needham should help with that. The Base Plan is compliant, but he does not feel it will give enough. He is very supportive of the Neighborhood Housing Plan and feels it is a modest step beyond the Base Plan that can make a huge difference. He had some difficulty figuring out the Neighborhood Housing Plan and would suggest the plans be put together so there are clear Article Plans to look at.

Jill Kahn, of Brookline Street, and a 26-year Town Meeting member, talked about the median income. In Norfolk County, 80% for one person is $91,400 and 120% is $137,100. That seems pretty high to bring in young people and seniors and diversity. The numbers should be lowered if trying to encourage workforce. The number should be 60% at $68,550 to 100% at $114,250. She would like some input on the numbers from the Board. Ms. Espada stated the Board members are taking down all comments and will be looking into it. Gary Ajamian, of Meetinghouse Circle, had proposed an Article in May. He found the town was not doing an Engineering Infrastructure Study to see if the town had the infrastructure to support this. His dad bought the house in 1956 and said it was not affordable. He had to work several jobs to get back in Needham. He feels it is a highly desirable town and demand is high. He wanted to know how much it would cost. Many people supported his Article but Town Meeting stonewalled him. Other impacts a project could have are schools and portable classrooms. A lot of critical missing information could lead to unintended circumstances and unintended costs. It could make Needham even less affordable with an escalation in taxes no one wants to talk about. He cautioned the Board should move carefully. They need to make an informed vote. What would this cost to vote this in? Would the infrastructure

be able to handle it and would the pipes support this? Needham was built as a single-family town and every infrastructure has limits. There have been legal challenges with respect to these regulations today. There could be strong merits to these legal arguments. The Board should not rush headlong. The deadline is December 31. He asked the Board to pause, look at it and get information for the future of Needham.

Eileen Scanlon, of 48 Dartmouth Avenue, supports the idea of going slowly. The Base Plan should be the compliance plan. This is built on a lot of assumptions and the assumptions should really be tested. She supports Mr. Ajamian. She asked if the Articles are set in stone or could components be broken down in segments so it is not an all or nothing approach. What is the procedure from here and who has the authority to vote this? Ms. Newman stated the Planning Board will consider the comments and make a decision on recommendations for the Articles and any changes they want. The Article will be revised and put on the Town Meeting Warrant. It will go to Town Meeting for a vote on 10/21/24. The Planning Board has meetings 9/17/24 and 9/24/24 where this will be discussed more and finalized. Joshua Levy, of 1606 Great Plain Avenue, was on HONE. They talked about the site plan process. The Town is under no obligation to pay for any infrastructure improvements and neither is the developer. He would suggest a site plan review process and include language in 7.4.6(f) in the site plan review process.

Henry Ragin, of 26 Bennington Street, stated it is important to know the timeline for the likely build out. How many years was that based on? The number scares people. He is concerned about the assumption made regarding schools that voters would vote for $300 million for Pollard and money for the other schools. What would happen if that referenda does not pass? Needham is a good town to live but there is nothing wrong with change and more diversity. He thanked all for the hard work. Holly Clarke, of 1652 Central Avenue, and a Town Meeting member, thinks the devil is in the details. Housing is important. The town needs to maintain the ability to control housing in Needham. The consultant said to put criteria in the site plan review for these sections. Site plan review did not have that in 7.5.2. Criteria allows the Planning Board to set limitations on construction projects. It is incumbent on the Planning Board to have the tools to protect the town. A neighboring town is taking what the consultant suggested, taking language and putting it here. The project will be reviewed by the Design Review Board (DRB). It would be good to explicitly say the abutters or neighbors can also go to the DRB and raise concerns there. The earlier we find out the concerns the quicker they can get worked out. Some better approaches could be built in. She is concerned with the number of assumptions. For the schools is it max capacity or preferred capacity of 80%? The town needs to think carefully. This is a brand-new law. We need to be prudent. The Base Plan and the Neighborhood Housing Plan could be done under our own by-laws.

Ken Buckley, of 221 Warren Street, thanked the Board. He agrees with many previous speakers. They all love the town and want to see more housing. The problem is the MBTA Act was a simple 3 sentence law that exploded into 6 pages of guidelines by a non-electable group at the state. Now they are trying to comply and fit into that. A lot of the houses do not fit into what people truly think of as affordable. They are trying to comply with something that cannot really get done. He does not think the town will get the affordability we want and should not rush it. David Hruska, of 21 Rosemary Street, moved here in 2020. Housing opportunities are out of reach. We are pushing our future out of the state. The MBTA Communities Act realizes it is a regional problem that requires a regional solution where each community can do a small part to help all. The Neighborhood Housing Plan allows modest, thoughtful zoning changes that will create opportunities for desperately needed housing. It creates housing near transit. Supporting housing and walkable areas of town with convenient access to transport and business is exactly what we need. The Neighborhood Housing Plan supports continue vitality.

Ann Fox, of Edgewater Drive, always lived here. Transparency is a word she keeps hearing. Students were 8 per 100 households and now it is 13 according to this. The average in Needham is 50. She reads this law as you have to have at least 2 bedrooms, you cannot exclude children and you cannot make it senior housing. They said the expenses would be covered but we do not know what the expenses are. There is a lack of transparency and questions coming up that should have been coming up in the beginning. This is being rushed into when there are questions still coming up and legal cases coming up. She is concerned with transparency. Gary Petrie, of 60 Dana Place, noted 100 West Street. There were 187 units proposed. Ms. Espada noted it is now 243 units with a minimum of one car per unit. Mr. Alpert stated 243 parking spaces and there is no knowing if people who move in would have more than one car per unit. Mr. Petrie noted there is no

on street parking. If they assume all will have 2 cars, where will the extra cars be parked. He stated 243 units is too high and should be lowered to facilitate that space. The number is too aggressive.

Christine Urban, of Webster Street and Precinct D, brought slides this afternoon. This needs further study as the school assumptions are a little shaky. There needs to be a real in-depth analysis of the school numbers. The focus should be on costs and not the concept of zoning. Student enrollment is the biggest issue. She has 4 questions. Is it realistic there are no kids in a one-bedroom apartment especially at these kinds of cost? Even a 3 bed only assumes a half a kid. What is a realistic student projection? Needham has 49 students per 100. Other towns have 50+ per 100. This would not be replicated in multi-family housing and is not the future reality. A more reasonable number is 29 students per 100. The Needham Report for 2025 said 17 students per 100. The old and new RKG projections are so far out of range from other sources. She asked when we have to start paying for growth? The new number of 13 per 100 make sense. At 19 per 100 the numbers go negative. What is the realistic range for student enrollment? She noted 13 is too low so she feels the town should look at a 17 to 29 range.

Fred Sewall, of 1554 Central Avenue, thanked the Board and all the others who worked on this proposal. There needs to be more information. All the information has not been collected and digested yet. He asked why the town is rushing forward by mid-October when it is not known if the law forcing us to do this is constitutional. The Supreme Judicial Court has agreed to take it up and have an answer this Fall. Towns have until December to comply. He asked why the town is rushing this. There could be irreversible consequences. He is concerned we do not know enough yet. The town should wait to approve if they have to. Otherwise, we should do the zoning the town wants to do without state mandates. Paula Dickerman, of 20 Burnside Road, is glad he asked why not wait. There is a severe housing shortage in Massachusetts. Part of the history of zoning in Massachusetts was suburbs built wonderful houses from the 40s to the 70s. Waiting does not make sense to her. Good questions have been asked. People working on this since 2022 have also asked those questions and worked through them. The Neighborhood Housing Plan is a reasonable compromise of everything heard from the community. The state was slow to implement this law. All are in it together as it is a regional problem. It is not an affordable housing law. Affordable housing takes money. Waiting for the town to take action and do other zoning has not happened in the past. This needs to be done now. The town should and can do it.

Barbara McDonald, of Pickering Street, asked to postpone the vote from 10/21/24 until after the Supreme Judicial Court has ruled on the legality of the issue. Housing developments in Needham have been well thought out, been designed and fine tuned to fit well. Oscar Mertz, of Rybury Hillway, is encouraged by all this community input. This is the tipping point trying to understand what we should do. There is not really an opportunity to wait. It is urgent. A significant majority, 177 towns, are looking at ways to do this as it is the right thing to do. The right move now is to support the Neighborhood Housing Plan. Keeping the Base Plan would keep it as is. The Town has analyzed all impacts. He stated to have respect for the work done and make a decision on how welcoming we want to be.

Upon a motion made by Mr. Alpert, and seconded by Mr. Block, it was by a vote of the five members present unanimously:
VOTED: to close the hearing.

**Report from Planning Director and Board members**

There was no report.

**Correspondence**

Ms. Espada noted the following correspondence for the record: an email from Karen Partridge, dated 8/24/24, regarding multi-family zoning; an email from Kathryn Soderholm, dated 8/28/24, in support of the Neighborhood Housing Plan; an email from Bill King, dated 8/28/24, with suggestions; an email from Mark Grabiner, dated 8/29/24, with MBTA Communities Act feedback; an email from Paula Dickerman, dated 9/3/24, in support of the Neighborhood Housing Plan; an email from David Hruska, dated 9/4/24, with comments regarding the 9/5/24 public hearing; an email from Joe Matthews, dated 9/4/24, regarding the MBTA Communities zoning and 100 West Street, an email from Wells Blanchard, dated 9/4/24, regarding the MBTA rezoning and student projections; an email from Randi Lite, dated 9/5/24, regarding multi-family

zoning proposals; an email from Eli Soderholm, dated 9/5/24, supporting the Neighborhood Housing Plan and an email from the Needham Housing Coalition, dated 9/5/24, supporting the Neighborhood Housing Plan.

Upon a motion made by Mr. Crocker, and seconded by Mr. Alpert, it was by a vote of the five members present unanimously:
VOTED: to adjourn the meeting at 9:30 p.m.

Respectfully submitted,
Donna J. Kalinowski, Notetaker

_____
Artie Crocker, Vice-Chairman and Clerk

DRAFT

# TOWN OF NEEDHAM

# SPECIAL TOWN MEETING WARRANT

MONDAY, OCTOBER 21, 2024

7:30 P.M.

JAMES HUGH POWERS HALL, NEEDHAM TOWN HALL

1471 HIGHLAND AVENUE

Additional information on particular warrant articles will be made available from time to time at www.needhamma.gov/townmeeting during the weeks leading up to the Special Town Meeting.

**COMMONWEALTH OF MASSACHUSETTS**

Norfolk, ss.

To either of the constables in the Town of Needham in said County, Greetings:

In the name of the Commonwealth of Massachusetts, you are hereby required to notify the qualified Town Meeting Members of the Town of Needham to meet in the Needham Town Hall on:

**MONDAY, THE TWENTY FIRST DAY OF OCTOBER 2024**

At seven thirty o'clock in the afternoon, then and there to act upon the following articles, viz.:

## FINANCE ARTICLES

### ARTICLE 1: APPROPRIATE FOR ROADWAY IMPROVEMENTS (EVERSOURCE)

To see if the Town will vote to raise and/or transfer and appropriate $255,855 for roadway improvements, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be raised from the Tax Levy; or take any other action relative thereto.

INSERTED BY: Select Board
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: The Town has negotiated with Eversource on several projects where roads have been disturbed through off-season work, or in areas where the Town had intended to pave the road in the upcoming year. The Town has allowed the work, and in return Eversource provided the Town with monetary compensation to enable the Town to repave the roads. Funds appropriated in this article will be used to supplement the Town's infrastructure funds to either perform the work on the actual roads disturbed, or to reimburse the funding for roads that were disturbed and have already been paved using infrastructure funds. Funds will then be available for additional work. The roads subject to payment from Eversource in this article include: Tanglewood Road, Damon Road, Tillotson Road, Hollow Ridge Road, Pythias Circle, Sunnyside Road, and Nichols Street.*

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### ARTICLE 2: APPROPRIATE FOR COMMUNITY OPIOID SETTLEMENT FUND PROGRAM

To see if the Town will vote to raise and/or transfer and appropriate $82,000 for the Community Opioid Settlement Fund Plan program, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from the Opioid Settlement Stabilization Fund; or take any other action relative thereto.

INSERTED BY: Select Board
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information: This funding request will allow for the use of $82,000 from the Opioid Settlement Stabilization Fund for its legally required purpose of preventing substance misuse, implementing harm reduction programs, and supporting the treatment and recovery of persons who misuse substances, particularly opioids. The Town's efforts will be led by the Health & Human Services Department, and will*

*reflect close collaboration with other Town departments, Needham Public Schools, and community partners. Funding will be allocated to converting the part-time Behavioral Health Peer Support Specialist to full-time status, expanding the deployment of opioid overdose reversal kits with AEDs throughout the Town of Needham, and continuing education programs aimed at youth, those experiencing substance use, and loved ones of those experiencing substance use. This funding will support the program through FY2025. Requests for funding for FY2026 and beyond will now be on an annual cycle at the Annual Town Meeting in May. The balance in the fund prior to appropriation is $329,858.89.*

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**ARTICLE 3: APPROPRIATE FOR STEPHEN PALMER PLANNING**

To see if the Town will vote to raise and/or transfer and appropriate $150,000 for consulting services related to the Stephen Palmer ownership conversion, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be raised from the Tax Levy; or take any other action relative thereto.

INSERTED BY: Select Board
FINANCE COMMITTEE RECOMMENDS THAT: Recommendation to be Made at Town Meeting

*Article Information*: *The Stephen Palmer building is a former elementary school constructed in 1914 that currently houses 28 apartments. The November 12, 1975 Town Meeting voted to authorize the sale of the Stephen Palmer School and ground lease of the land. Upon expiration of the lease, the property and any and all improvements revert to the Town. The expiration of the lease is May 2, 2027. The proposed funding will support two separate initiatives – a relocation framework and a development planning framework. The relocation services are estimated at $50,000 and the development services at $100,000. The relocation consultant will provide the Town with expertise and a roadmap for working with the existing tenants and providing them with the best possible housing options. The relocation framework will allow the Town to plan for and engage a relocation service provider who will handle the actual tenant relocation process. Funding is needed now in order to complete the relocation process prior to the expiration of the lease. The development planning consultant will complete an existing conditions assessment and guide a land use planning process, including developing land use concepts; generating land use scenario; identifying opportunities, constraints, and costs of different scenarios; and engaging the community and all relevant stakeholders in the formation of a final plan. Beginning the development planning process now will provide the time necessary to determine next steps to be in place when the building reverts to the Town. Having a building of this size, age, and condition sit empty for any period of time is inadvisable.*

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**ARTICLE 4: AMEND THE FY2025 SEWER ENTERPRISE FUND BUDGET**

To see if the Town will vote to amend and supersede certain parts of the fiscal year 2025 Sewer Enterprise Fund Budget adopted under Article 14 of the 2024 Annual Town Meeting by reducing the amounts of money appropriated under some of the line items and appropriating new amounts as follows:

| Line Item | Appropriation | Changing From | Changing To |
|---|---|---|---|
| 201A | Salary & Wages | $1,194,443 | $1,218,870 |
| 201D | MWRA Assessment | $7,084,841 | $7,445,411 |

And to meet this appropriation that $384,977 be raised from Sewer Enterprise Fund receipts; or take any other action relative thereto.

INSERTED BY: Select Board & Finance Committee
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information*: *This article provides funding for the salary and wage increases for sewer enterprise personnel that were approved at the 2024 Annual Town Meeting in the amount of $24,427, and for the increase in the MWRA sewer assessment of $360,570. The Town received the final assessment after the adoption of the Sewer Enterprise Fund budget. The MWRA budget line was level funded in May. The net change to the overall budget is an increase of $384,997, which is 3.87% more.*

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**ARTICLE 5: AMEND THE FY2025 WATER ENTERPRISE FUND BUDGET**

To see if the Town will vote to amend and supersede certain parts of the fiscal year 2025 Water Enterprise Fund Budget adopted under Article 15 of the 2024 Annual Town Meeting by reducing the amounts of money appropriated under some of the line items and appropriating new amounts as follows:

| Line Item | Appropriation | Changing From | Changing To |
|---|---|---|---|
| 301A | Salary & Wages | $1,632,768 | $1,672,073 |
| 301D | MWRA Assessment | $1,887,130 | $1,212,985 |

or take any other action relative thereto.

INSERTED BY: Select Board & Finance Committee
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information*: *Similar to the Sewer Enterprise Fund Budget article, this article is to provide funding for the salary and wage increases for water enterprise personnel that were approved at the 2024 Annual Town Meeting in the amount of $39,305, and an adjustment to the MWRA Assessment. The final MWRA water assessment for FY2025 is $674,145 less than the amount budgeted in May. The reduction resulted from the decline in the use of MWRA water during calendar year 2023, which is the basis the MWRA uses to calculate the annual assessment after its budget is approved. The net change to the total budget is a decrease of $634,840 which is 9.3% less.*

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**ARTICLE 6: APPROPRIATE FOR UNPAID BILLS OF A PRIOR YEAR**

To see if the Town will vote to raise and/or transfer and appropriate, or otherwise provide $518 for the payment of unpaid bills of previous years, incurred by the departments, boards and officers of the Town of Needham, and to meet this appropriation that said sum be raised from the Tax Levy; or take any other action relative thereto.

| Department | Vendor | Description of Goods/Services | Fiscal Year | Amount |
|---|---|---|---|---|
| OTM/Human Resources | BID - Needham | Medical Services | 2022 | $518.00 |

INSERTED BY: Select Board
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: State law requires Town Meeting action for the Town to make payment for bills received after the close of the fiscal year or bills in excess of appropriation.*

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**ARTICLE 7: APPROPRIATE FOR PUBLIC, EDUCATIONAL, AND GOVERNMENT (PEG) PROGRAMMING**

To see if the Town will vote to raise and/or transfer and appropriate $143,998 for the purpose of funding and supporting public, educational, and government (PEG) programming provided by the Needham Channel, said sum to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from the PEG Access and Cable Related Fund; or take any other action relative thereto.

INSERTED BY: Select Board
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: The purpose of this article is to appropriate funds to make payments to the Needham Channel during the year. Included in every cable bill from the cable operators is a line item to provide for the costs of local cable television services. These monies are retained in a special revenue account (Public, Educational, and Governmental (PEG) Access and Cable Related Fund) created pursuant to the provisions of Massachusetts General Laws Chapter 44, section 53F¾ and approved at the May 8, 2023 Special Town Meeting under Article 10, and are to be used to support local cable programming for the Town's PEG channels. These funds will be used to continue these informational and educational services, which may include, but are not limited to, equipment purchases, contracted services, construction services, and labor expenses.*

## ZONING/LAND USE ARTICLES

**ARTICLE 8: AMEND ZONING BY-LAW – MULTI-FAMILY OVERLAY DISTRICT (BASE COMPLIANCE PLAN)**

To see if the Town will vote to amend the Needham Zoning By-Law as follows:

1. By amending Section 1.3, Definitions by adding the following terms:

   **Applicant** – A person, business, or organization that applies for a building permit, Site Plan Review, or Special Permit.

2. By amending Section 2.1, Classes of Districts by adding the following after ASOD Avery Square Overlay District:

   MFOD – Multi-family Overlay District

3. By inserting a new Section 3.17 Multi-family Overlay District:

   **3.17 Multi-family Overlay District**

**3.17.1 Purposes of District**

The purposes of the Multi-family Overlay District include, but are not limited to, the following:

(a) Providing Multi-family housing in Needham, consistent with the requirements of M.G.L. Chapter 40A (the Zoning Act), Section 3A;
(b) Supporting vibrant neighborhoods by encouraging Multi-family housing within a half-mile of a Massachusetts Bay Transit Authority (MBTA) commuter rail station; and
(c) Establishing controls which will facilitate responsible development and minimize potential adverse impacts upon nearby residential and other properties.

Toward these ends, Multi-family housing in the Multi-family Overlay District is permitted to exceed the density and dimensional requirements that normally apply in the underlying zoning district(s) provided that such development complies with the requirements of this Section 3.17.

**3.17.2 Scope of Authority**

In the Multi-family Overlay District, all requirements of the underlying district shall remain in effect except where the provisions of Section 3.17 provide an alternative to such requirements, in which case these provisions shall supersede. If an Applicant elects to develop Multi-family housing in accordance with Section 3.17, the provisions of the Multi-family Overlay District shall apply to such development. Notwithstanding anything contained herein to the contrary, where the provisions of the underlying district are in conflict or inconsistent with the provisions of the Multi-family Overlay District, the terms of the Multi-family Overlay District shall apply.

If the applicant elects to proceed under the zoning provisions of the underlying district (meaning the applicable zoning absent any zoning overlay) or another overlay district, as applicable, the zoning bylaws applicable in such district shall control and the provisions of the Multi-family Overlay District shall not apply.

**3.17.2.1 Subdistricts**

The Multi-family Overlay District contains the following sub-districts, all of which are shown on the MFOD Boundary Map and indicated by the name of the sub-district:

(a) A-1
(b) B
(c) ASB-MF
(d) CSB
(e) HAB
(f) IND

**3.17.3 Definitions**

For purposes of this Section 3.17, the following definitions shall apply.

**Affordable housing** – Housing that contains one or more Affordable Housing Units as defined by Section 1.3 of this By-Law. Where applicable, Affordable Housing shall include Workforce Housing Units, as defined in this Subsection 3.17.3 Definitions.

**As of right** – Development that may proceed under the zoning in place at time of application without the need for a special permit, variance, zoning amendment, waiver, or other discretionary zoning approval.

**Compliance Guidelines** – *Compliance Guidelines for Multi-Family Zoning Districts Under Section 3A of the Zoning Act* as further revised or amended from time to time.

**EOHLC** – The Massachusetts Executive Office of Housing and Livable Communities, or EOHLC's successor agency.

**Multi-family housing** – A building with three or more residential dwelling units or two or more buildings on the same lot with more than one residential dwelling unit in each building and that complies with the requirements of M.G.L. c.40A, §3A and the rules and requirements thereunder.

**Open space** – Contiguous undeveloped land within a parcel boundary.

**Parking, structured** – A structure in which parking spaces are accommodated on multiple stories; a parking space area that is underneath all or part of any story of a structure; or a parking space area that is not underneath a structure, but is entirely covered, and has a parking surface at least eight feet below grade. Structured parking does not include surface parking or carports, including solar carports.

**Parking, surface** – One or more parking spaces without a built structure above the space. A solar panel designed to be installed above a surface parking space does not count as a built structure for the purposes of this definition.

**Residential dwelling unit** – A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking. and sanitation.

**Section 3A** – Section 3A of the Zoning Act.

**Site plan review authority** – The Town of Needham Planning Board.

**Special permit granting authority** – The Town of Needham Planning Board.

**Sub-district** – An area within the MFOD that is geographically smaller than the MFOD district and differentiated from the rest of the district by use, dimensional standards, or development standards.

**Subsidized Housing Inventory (SHI)** – A list of qualified Affordable Housing Units maintained by EOHLC used to measure a community's stock of low-or moderate-income housing for the purposes of M.G.L. Chapter 40B, the Comprehensive Permit Law.

**Workforce housing unit** – Affordable Housing Unit as defined by Section 1.3 of this By-Law but said Workforce Housing Unit shall be affordable to a household with an income of between eighty (80) percent and 120 percent of the area median income as defined.

**3.17.4 Use Regulations**

**3.17.4.1 Permitted Uses**

The following uses are permitted in the Multi-family Overlay District as a matter of right:

(a) Multi-family housing.

**3.17.4.2 Accessory Uses**

The following uses are considered accessory as of right to any of the permitted uses in Subsection 3.17.4.1:

(a) Parking, including surface parking and structured parking on the same lot as the principal use.

(b) Any uses customarily and ordinarily incident to Multi-family housing, including, without limitation, residential amenities such as bike storage/parking, a swimming pool, fitness facilities and similar amenity uses.

**3.17.5 Dimensional Regulations**

**3.17.5.1 Lot Area, Frontage and Setback Requirements**

The following lot area, frontage and setback requirements shall apply in the Multi-family Overlay District sub-districts listed below. Buildings developed under the regulations of the Multi-family Overlay District shall not be further subject to the maximum lot area, frontage, and setback requirements of the underlying districts, as contained in Subsection 4.3.1 Table of Regulations, Subsection 4.4.1 Minimum Lot Area and Frontage, Subsection 4.4.4 Front Setback, Subsection 4.6.1 Basic Requirements, and Subsection 4.6.2 Front and Side Setbacks.

| | A-1 | B | ASB-MF | CSB | HAB | IND |
|---|---|---|---|---|---|---|
| Minimum Lot Area (square feet) | 20,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Minimum Lot Frontage (feet) | 120 | 80 | 80 | 80 | 80 | 80 |
| Minimum Front Setback (feet) from the front property line | 25 | 10 | Minimum 10 Maximum 15 [e,] | 20 feet for buildings with frontage on Chestnut Street 10 feet for all other buildings | 20 | 25 |
| Minimum Side and Rear Setback (feet) | 20 | 10 [a, b] | 10 [a, c] | 20 (side) [a, b,d] | 20 [a, b] | 20 [a, b] |

(a) The requirement of an additional 50-foot side or rear setback from a residential district as described in Subsection 4.4.8 Side and Rear Setbacks Adjoining Residential Districts or Subsection 4.6.5 Side and Rear Setbacks Adjoining Residential Districts shall not apply.

(b) Any surface parking, within such setback, shall be set back 10 feet from an abutting residential district and such buffer shall be suitably landscaped.

(c) The rear and side setbacks are 20 feet along the MBTA right-of-way. With respect to any lot partially within an underlying residential district, (i) no building or structure for a multi-family

residential use shall be placed or constructed within 110 feet of the lot line of an abutting lot containing an existing single family residential structure and (ii) except for access driveways and sidewalks, which are permitted, any portion of the lot within said residential district shall be kept open with landscaped areas, hardscaped areas, outdoor recreation areas (e.g., swimming pool) and/or similar open areas.

(d) On the west side of Chestnut Street, the rear setback shall be 20 feet. On the east side of Chestnut Street, the rear setback shall be 30 feet.

(e) Seventy percent (70%) of the main datum line of the front facade of the building shall be set back no more than 15 feet, except that periodic front setbacks greater than fifteen (15) feet are allowed if activated by courtyards, landscaping, drive aisles, amenity areas, or other similar site design features that enhance the streetscape. In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board if less than seventy percent (70%) of the main datum line front facade of the building is set back 15 feet.

**3.17.5.2 Building Height Requirements**

The maximum building height in the Multi-family Overlay District sub-districts shall be as shown below. Buildings developed under the Multi-family Overlay District shall not be further subject to the maximum height regulations of the underlying district, as contained in Subsection 4.3.1 Table of Regulations, Subsection 4.4.2 Maximum Building Bulk, Subsection 4.4.3 Height Limitation, Subsection 4.6.1 Basic Requirements, and Subsection 4.6.4 Height Limitation.

| | A-1 | B | ASB-MF | CSB | HAB | IND |
|---|---|---|---|---|---|---|
| Maximum Building Height (stories) | 3.0 | 3.0 | 3.0 [c] | 3.0 | 3.0 | 3.0 |
| Maximum Building Height (ft) [a,b] | 40 | 40 | 40 [c] | 40 | 40 | 40 |

(a) Exceptions. The limitation on height of buildings shall not apply to chimneys, ventilators, towers, silos, spires, stair overruns, elevator overruns, mechanical equipment, roof parapets, architectural screening, or other ornamental features of buildings, which features (i) are in no way used for living purposes; (ii) do not occupy more than 25% of the gross floor area of the building and (iii) do not project more than 15 feet above the maximum allowable height.

(b) Exceptions: Renewable Energy Installations. The Site Plan Review Authority may waive the height and setbacks in Subsection 3.17.5.2 Building Height Requirements and Subsection 3.17.5.1 Lot Area, Frontage and Setback Requirements to accommodate the installation of solar photovoltaic, solar thermal, living, and other eco-roofs, energy storage, and air-source heat pump equipment. Such installations shall be appropriately screened, consistent with the requirements of the underlying district; shall not create a significant detriment to abutters in terms of noise or shadow; and must be appropriately integrated into the architecture of the building and the layout of the site. The installations shall not provide additional habitable space within the development.

(c) In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board for a height of four stories and 50 feet, provided that the fourth story along Highland Avenue and West Street incorporates one or more of the following design elements: (i) a pitched roof having a maximum roof pitch of 45 degrees; (ii) a fourth story recessed from the face of the building by a

minimum of 12 feet; and/or (iii) such other architectural design elements proposed by the Applicant and approved by the Planning Board during the Special Permit process.

**3.17.5.3 Building Bulk and Other Requirements**

The maximum floor area ratio or building coverage and the maximum number of dwelling units per acre, as applicable, in the Multi-family Overlay District sub-districts shall be as shown below, except that the area of a building devoted to underground parking shall not be counted as floor area for purposes of determining the maximum floor area ratio or building coverage, as applicable. Buildings developed under the regulations of the Multi-family Overlay District shall not be subject to any other limitations on floor area ratio or building bulk in Subsection 4.3.1 Table of Regulations, Subsection 4.4.2 Maximum Building Bulk, and Subsection 4.6.3 Maximum Lot Coverage.

| | A-1 | B | ASB-MF | CSB | HAB | IND |
|---|---|---|---|---|---|---|
| Floor Area Ratio (FAR) | 0.50 | N/A | 1.3[b, c] | 0.70 | 0.70 | 0.50 |
| Maximum Building Coverage (%) | N/A | 25% | N/A | N/A | N/A | N/A |
| Maximum Dwelling Units per Acre[a] | 18 | N/A | 44[d] | 18 | N/A | N/A |

(a) The total land area used in calculating density shall be the total acreage of the lot on which the development is located.

(b) In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board for an FAR of up to 1.7.

(c) In the ASB-MF subdistrict, the following shall not be counted as floor area for purposes of determining the maximum floor area ratio: (i) interior portions of a building devoted to off-street parking; (ii) parking garages, structured parking or deck/rooftop parking that are screened from Highland Avenue as required by Section 3.17.6 inclusive of any waiver thereof and from West Street in a manner compatible with the architecture of the building. In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board to exclude additional areas from floor area for purposes of determining the maximum floor area ratio.

(d) In the ASB-MF subdistrict, Multi-family housing may exceed the maximum of 44 dwelling units per acre by special permit.

**3.17.5.4 Multiple Buildings on a Lot**

In the Multi-family Overlay District, more than one building devoted to Multi-family housing may be located on a lot, provided that each building complies with the requirements of Section 3.17 of this By-Law.

**3.17.5.5 Use of Dwelling Units**

Consistent with the Executive Office of Housing and Livable Communities' Compliance Guidelines for Multi-family Zoning Districts Under Section 3A of the Zoning Act, and notwithstanding anything else contained in the Zoning By-Law to the contrary, Multi-family housing projects shall not be

required to include units with age restrictions, and units shall not be subject to limit or restriction concerning size, the number or size of bedrooms, a cap on the number of occupants, or a minimum age of occupants.

**3.17.6 Off-Street Parking**

(a) The minimum number of off-street parking spaces shall be one space per dwelling unit for all subdistricts within the Multi-family Overlay District.

(b) Parking areas shall be designed and constructed in accordance with Subsection 5.1.3 Parking Plan and Design Requirements. The remaining provisions of Section 5.1 Off Street Parking Regulations shall not apply to projects within the Multi-family Overlay District.

(c) In the ASB-MF subdistrict, the façade(s) of all parking garages, structured parking and deck/rooftop parking visible from Highland Avenue shall be designed to be generally indistinguishable from the façade(s) of the residential portion of the building(s), and shall allow no view of parked vehicles from Highland Avenue except where such view is intermittent and incidental to the operation of the parking area, such as a view afforded by the opening of an automated garage door.

(d) Enclosed parking areas shall comply with Subsection 4.4.6 Enclosed Parking.

(e) No parking shall be allowed within the front setback. Parking shall be on the side or to the rear of the building, or below grade.

(f) The minimum number of bicycle parking spaces shall be one space per dwelling unit.

(g) Bicycle storage. For a multi-family development of 25 units or more, no less than 25% of the required number of bicycle parking spaces shall be integrated into the structure of the building(s) as covered spaces.

**3.17.7 Development Standards**

(a) Notwithstanding anything in the Zoning By-Law outside of this Section 3.17 to the contrary, Multi-family housing in the Multi-family Overlay District shall not be subject to any special permit requirement.

(b) Buildings shall be designed with due regard to their relationship to open spaces, existing buildings, and community assets in the area.

(c) Building entrances shall be available from one or more streets on which the building fronts and, if the building fronts Chestnut Street, Garden Street, Highland Avenue, Hillside Avenue, Rosemary Street, or West Street, the primary building entrance must be located on at least one such street.

(d) The site shall be designed so that all collection and storage areas for residential refuse shall be internal to the building(s), or otherwise shall not be visible from any public way and appropriately screened from abutting properties, and adequate management and removal of refuse shall be provided for.

(e) Site arrangement and driveway layout shall provide sufficient access for emergency and service vehicles, including fire, police, and rubbish removal.

(f) Plantings shall be provided and include species that are native or adapted to the region. Plants on the Massachusetts Prohibited Plant List, as may be amended, are prohibited.

(g) All construction shall be subject to the current town storm water bylaws, regulations, and policies along with any current regulations or policies from DEP, state, and federal agencies.

(h) Control measures shall be employed to mitigate any substantial threat to water quality or soil stability, both during and after construction.

(i) There shall be adequate water, sewer, and utility service provided to serve the project.

(j) Off-site glare from headlights shall be controlled through arrangement, grading, fences, and planting. Off-site light over-spill from exterior lighting shall be controlled through luminaries selection, positioning, and mounting height so as to not add more than one foot candle to illumination levels at any point off-site.

(k) Pedestrian and vehicular movement within and outside the project site shall be protected, through selection of egress points, provision for adequate sight distances, and through reasonable mitigation measures for traffic attributable to the project.

(l) Site arrangements and grading shall minimize to the extent practicable the number of removed trees 8" trunk diameter or larger, and the volume of earth cut and fill.

(m) No retaining wall shall be built within the required yard setback except a retaining wall with a face not greater than four (4) feet in height at any point and a length that does not exceed forty (40) percent of the lot's perimeter. Notwithstanding the foregoing, retaining walls may graduate in height from four (4) to seven (7) feet in height when providing access to a garage or egress entry doors at the basement level, measured from the basement or garage floor to the top of the wall. In such cases, the wall is limited to seven (7) feet in height for not more than 25% of the length of the wall.

(n) Retaining walls with a face greater than twelve (12) feet in height are prohibited unless the Applicant's engineer certifies in writing to the Building Commissioner that the retaining wall will not cause an increase in water flow off the property and will not adversely impact adjacent property or the public.

(o) Construction activity shall be consistent with Section 3.8 of the General By-Laws and any reasonable conditions on construction activity that are warranted at a particular site and included in the applicable site plan approval, including but not limited to hours during which construction activity may take place, the movement of trucks or heavy equipment on or off the site, measures to control dirt, dust, and erosion and to protect existing vegetation to be preserved on the site.

**Special Development Standards for the A-1 Subdistrict**

The following requirements apply to all development projects within the A-1 subdistrict of the Multi-family Overlay District:

(a) 4.3.2 Driveway Openings

(b) 4.3.3 Open Space

(c) 4.3.4 Building Location, with the substitution of "Multifamily Dwelling" for "apartment house."

**Special Development Standards for the B and IND Subdistricts of the Multi-Family Overlay District:**

(a) The requirements of the first paragraph of 4.4.5 Driveway Openings shall apply to all development projects within the Multi-family Overlay District within the B and IND subdistricts.

**Special Development Standards for the ASD-MF Subdistrict of the Multi-Family Overlay District:**

(a) Multi-family housing in the ASD-MF subdistrict shall employ existing curb cuts on Highland Avenue and West Street to the extent feasible. Existing curb cuts may be improved, reconstructed and modified. Additional curb cuts may be added subject to site plan review.

**3.17.8 Affordable Housing**

Any multi-family building with six or more dwelling units shall include Affordable Housing Units as defined in Section 1.3 of this By-Law and the requirements below shall apply.

**3.17.8.1 Provision of Affordable Housing**

Not fewer than 12.5% of housing units constructed shall be Affordable Housing Units. For purposes of calculating the number of Affordable Housing Units required in a proposed development, any fractional unit shall be rounded up to the nearest whole number and shall be deemed to constitute a whole unit.

In the event that the Executive Office of Housing and Livable Communities (EOHLC) determines that the calculation detailed above does not comply with the provisions of Section 3A of MGL c.40A, the following standard shall apply:

Not fewer than 10% of housing units constructed shall be Affordable Housing Units. For purposes of calculating the number of Affordable Housing Units required in a proposed development, any fractional unit shall be rounded up to the nearest whole number and shall be deemed to constitute a whole unit.

**3.17.8.2 Affordable Housing Development Standards**

Affordable Units shall be:

(a) Integrated with the rest of the development and shall be compatible in design, appearance, construction, and quality of exterior and interior materials with the other units and/or lots;

(b) Dispersed throughout the development;

(c) Located such that the units have equal access to shared amenities, including light and air, and utilities (including any bicycle storage and/or Electric Vehicle charging stations) within the development;

(d) Located such that the units have equal avoidance of any potential nuisances as market-rate units within the development;

(e) Distributed proportionately among unit sizes; and

(f) Distributed proportionately across each phase of a phased development.

(g) Occupancy permits may be issued for market-rate units prior to the end of construction of the entire development provided that occupancy permits for Affordable Units are issued simultaneously on a pro rata basis.

**3.17.9 Site Plan Review**

**3.17.9.1 Applicability**

Site Plan Review, as provided for in this Section 3.17, is required for all Multi-family housing projects within the Multi-Family Overlay District. Notwithstanding any other provision contained in the Zoning By-Law, except as expressly provided for in this Section 3.17, Multi-family housing projects are not subject to site plan or special permit review pursuant to Section 7.

**3.17.9.2 Submission Requirements**

The Applicant shall submit the following site plan and supporting documentation as its application for Site Plan Review, unless waived in writing by the Planning and Community Development Director:

(a) Locus plan;

(b) Location of off-site structures within 100 feet of the property line;

(c) All existing and all proposed building(s) showing setback(s) from the property lines;

(d) Building elevation, to include penthouses, parapet walls and roof structures; floor plans of each floor; cross and longitudinal views of the proposed structure(s) in relation to the proposed site layout, together with an elevation line to show the relationship to the center of the street;

(e) Existing and proposed contour elevations in one-foot increments;

(f) Parking areas, including the type of space, dimensions of typical spaces, and width of maneuvering aisles and landscaped setbacks;

(g) Driveways and access to site, including width of driveways and driveway openings;

(h) Facilities for vehicular and pedestrian movement;

(i) Drainage;

(j) Utilities;

(k) Landscaping including trees to be retained and removed;

(l) Lighting;

(m) Loading and unloading facilities;

(n) Provisions for refuse removal; and

(o) Projected traffic volumes in relation to existing and reasonably anticipated conditions based on standards from the Institute of Transportation Engineers and prepared by a licensed traffic engineer and including, if applicable, recommended traffic mitigation measures based on the traffic attributable to a particular project.

**3.17.9.3 Timeline**

Upon receipt of an application for Site Plan Review for a project in the MFOD, the Site Plan Review Authority shall transmit a set of application materials to the Department of Public Works, Town Engineer, Police Department, Fire Department, Design Review Board, and to any other Town agency it deems appropriate, which shall each have thirty five (35) days to provide any written comment. Upon receipt of an application, the Site Plan Review Authority shall also notice a public hearing in accordance with the notice provisions contained in M.G.L. c.40A, §11. Site plan review shall be performed expeditiously and in general shall be completed, with a decision rendered and filed with the Town Clerk, no later than 6 months after the date of submission of the application.

**3.17.9.4 Site Plan Approval**

Site Plan approval for uses listed in Subsection 3.17.3 Permitted Uses shall be granted upon determination by the Site Plan Review Authority that the following criteria have been satisfied. The Site Plan Review Authority may impose reasonable conditions, at the expense of the applicant, to ensure that these criteria have been satisfied.

(a) the Applicant has submitted the information as set forth in Subsection 3.17.9.2 Submission Requirements; and

(b) the project as described in the application meets the dimensional and density requirements contained in Subsection 3.17.5 Dimensional Regulations, the parking requirements contained in Subsection 3.17.6 Off-Street Parking, the development standards contained in Subsection 3.17.7 Development Standards, and Subsection 3.17.8.2 Affordable Housing Development Standards.

**3.17.9.5 Waivers**

When performing site plan review, the Planning Board may waive the requirements of Subsection 3.17.6 hereof and/or Subsection 5.1.3 Parking Plan and Design Requirements, or particular submission requirements.

When performing site plan review for a Multi-family Housing project that involves preservation of a structure listed in the National Register of Historic Places, the Massachusetts Register of Historical Places, the Inventory of Historic Assets for the Town of Needham, or is in pending for inclusion in any such register or inventory, the Planning Board as part of site plan review may reduce the applicable front, side or rear setbacks in this Section 3.17 by up to 40%.

**3.17.9.6 Project Phasing**

An Applicant may propose, in a Site Plan Review submission, that a project be developed in phases subject to the approval of the Site Plan Review Authority, provided that the submission shows the full buildout of the project and all associated impacts as of the completion of the final phase. However, no project may be phased solely to avoid the provisions of Subsection 3.17.8 Affordable Housing.

**3.17.10 Design Guidelines**

The Planning Board may adopt and amend, by simple majority vote, Design Guidelines which shall be applicable to all rehabilitation, redevelopment, or new construction within the Multi-family Overlay District. Such Design Guidelines must be objective and not subjective and may contain graphics illustrating a particular standard or definition to make such standard or definition clear and understandable. The Design Guidelines for the Multi-family Overlay District shall be as adopted by the Planning Board and shall be available on file in the Needham Planning Department.

**3.17.11 Special Permits**

In those specific occasions where this Section 3.17 authorizes relief in the form of a special permit only, applications shall be reviewed and decided by the Planning Board in accordance with Section 7.5.2.

4. By amending the first sentence of Section 7.6.1, Special Permit Granting Authority, to add Section 3.17 to the list of Sections for which the Planning Board is the Special Permit Granting Authority, so that this sentence reads as follows:

   The Planning Board shall act as a Special Permit Granting Authority only where so designated in Sections 3.4, 3.8, 3.9, 3.10, 3.14, 3.16, 3.17, 4.2.10, 4.2.11, 4.2.12, 4.4.5, 4.4.9, 4.4.10, 5.1.1.6, 6.6, 6.8 and 7.4 of this By-Law.

5. By amending the first paragraph of Section 7.7.2.2, Authority and Specific Powers, to add site plan reviews under Section 3.17 to the jurisdiction of the Design Review Board, so that this paragraph reads as follows:

   The Design Review Board shall review requests for site plan review and approval submitted in accordance with Section 3.17 Multi-family Overlay District, Section 7.4 Site Plan Review and requests for special permits in accordance with Section 4.2.11 Planned Residential Development, Section 4.2.10 Flexible Development and Section 6.11 Retaining Walls and, for a minor project that only involves a change in the exterior facade of a building in the Center Business District, shall review and may approve such facade change.

6. By amending Section 7.7.3, Procedure, by inserting in the second paragraph, after the second sentence, a new sentence to read as follows:

   Within fifteen (15) days of the meeting, a final advisory design review report shall be sent both to the applicant and to the Planning Board, when a site plan review is required under Section 3.17.

   so that this paragraph reads as follows:

   Within twenty (20) days of receipt of a Design Review application, the Design Review Board shall hold a meeting, to which the applicant shall be invited, for the purpose of conducting a review of the proposed project or activity. Within fifteen (15) days of the meeting, a preliminary design review report shall be sent to both the applicant and to the Planning Board, when a special permit is required under Sections 7.4, 4.2.11 and 4.2.10. Within fifteen (15) days of the meeting, a final advisory design review report shall be sent both to the applicant and to the Planning Board, when a site plan review is required under Section 3.17. However, if the proposed project or activity involves only a building permit or sign permit from the Building Commissioner, or is a “Minor Project” under Site Plan Review (all as

described in Subsection 7.7.2.2), no preliminary report is required and the written advisory report of the Design Review Board to the applicant and the Building Commissioner shall be a final report.

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDED THAT: Recommendation to be made at Town Meeting

*Articles 8-11 Introduction: The MBTA Communities Law, M.G.L. c.40A, §3A was passed by the Massachusetts Legislature in January 2021. This statute states:*

> *(a) An MBTA community shall have a zoning ordinance or by-law that provides for at least 1 district of reasonable size in which multi-family housing is permitted as of right; provided, however, that such multi-family housing shall be without age restrictions and shall be suitable for families with children. For the purposes of this section, a district of reasonable size shall: (i) have a minimum gross density of 15 units per acre, subject to any further limitations imposed by section 40 of chapter 131 and title 5 of the state environmental code established pursuant to section 13 of chapter 21A; and (ii) be located not more than 0.5 miles from a commuter rail station, subway station, ferry terminal or bus station, if applicable.*
>
> *(b) An MBTA community that fails to comply with this section shall not be eligible for funds from: (i) the Housing Choice Initiative as described by the governor in a message to the general court dated December 11, 2017; (ii) the Local Capital Projects Fund established in section 2EEEE of chapter 29; (iii) the MassWorks infrastructure program established in section 63 of chapter 23A, or (iv) the HousingWorks infrastructure program established in section 27 of chapter 23B.*
>
> *(c) The executive office of housing and livable communities, in consultation with the executive office of economic development, the Massachusetts Bay Transportation Authority and the Massachusetts Department of Transportation, shall promulgate guidelines to determine if an MBTA community is in compliance with this section.*

*The law was intended as a means to address the Commonwealth's housing shortage and the impact that shortage was having on the state's ability to compete for business and talent, ensure our residents can live affordably regardless of their income, and to better link housing, jobs, and transportation to address climate change and help reduce greenhouse gas emissions.*

*For purposes of the law, Needham is categorized as a commuter rail community. Commuter rail communities are required to comply with the law by December 31, 2024. To meet its compliance requirements, Needham's MBTA Communities districts and zoning must meet the following criteria: (1) The districts must have a minimum total land area of 50 acres. (2) 45 acres must be located within a half-mile of any of Needham's commuter rail stations. (3) One district must be at least 25 acres in size. (4) No single district can be less than 5 acres in size. (5) The zoning capacity of the districts must meet or exceed 1,784 units. (6) 1,606 of those units must be within a half-mile of any of Needham's commuter rail stations. (7) The districts must have zoning that allows for an average of at least 15 dwelling units per acre.*

*In response to the MBTA Communities Law, two compliant zoning scenario options are being presented to Town Meeting. These scenarios are referred to as the "Base Compliance Plan" and the "Neighborhood Housing Plan." The first of these scenarios, the Base Compliance Plan (presented under Articles 8 and 9), adheres very closely to the underlying zoning district boundaries and dimensional standards found in Needham's current Zoning By-Law. This scenario is intended to meet the minimum compliance requirements of the MBTA Communities Law and proposes zoning that would allow for a total of 1,870*

*units. The second of these scenarios, the Neighborhood Housing Plan (presented under Articles 10 and 11), is designed to increase the dimensional standards and the number of units that can be built on a parcel of land to encourage housing production greater than the minimum compliance requirements, and to respond to goals contained in Needham's 2022 Housing Plan. This scenario is intended to meet and exceed the minimum compliance requirements of the MBTA Communities Law and proposes zoning that would allow for a total of 3,296 units. The compliance metrics under the MBTA Communities Law for the Base Compliance Plan and the Neighborhood Housing Plan are noted in the table below.*

| | ***Needham Requirement*** | ***Base Compliance Plan*** | ***Neighborhood Housing Plan*** |
|---|---|---|---|
| *Acreage included in proposed zoning (net)* | *50* | *100.3* | *92.5* |
| *Unit capacity allowed by right* | *1,784* | *1,870* | *3,296* |
| *Average residential density allowed in overlay district (units/acre)* | *15* | *18.6* | *35.6* |
| *Percent in Transit Area* | *90%* | *93%* | *92%* |

*The Base Compliance Plan is presented under Articles 8 and 9 of this warrant and the Neighborhood Housing Plan is presented under Articles 10 and 11. Each article is designed to build on the preceding article as follows. Article 8: Multi-Family Overlay District (Base Compliance Plan) creates a Multi-Family Overlay District following the recommended district boundaries and dimensional standards in the Base Compliance Plan. Article 9: Map Change for Multi-Family Overlay District (Base Compliance Plan) implements the zoning map change for the Base Compliance Plan by describing the geographical area of the Multi-Family Overlay District anticipated under Article 8. Article 10: Multi-Family Overlay District (Neighborhood Housing Plan) amends the Multi-Family Overlay District established in Article 8 and inserts the dimensional standards of the Neighborhood Housing Plan. Article 11: Map Change for Multi-Family Overlay District (Neighborhood Housing Plan) amends the zoning map as adopted under Article 9 by describing the geographical area of the Multi-Family Overlay District anticipated under Article 10 to reflect the boundaries of the Neighborhood Housing Plan. A detailed description of each of the 4 articles follows.*

*Article Information: Article 8, in combination with Article 9, proposes to create the "Multi-Family Overlay District." Article 8 lays out the regulatory framework for the new district while Article 9 describes its geographical boundaries. For purposes of clarity, for distinguishing this set of proposed zoning amendments from that being advanced for consideration by Town Meeting under Articles 10 and 11 below, this set of zoning amendments is being referred to as the Base Compliance Plan.*

*This Article proposes the creation of a new zoning district called the "Multi-Family Overlay District (MFOD)". The proposed zoning amendments would add a new Section 3.17 to the Zoning By-Law for the purpose of establishing the Multi-Family Overlay District. The purposes of this new overlay district include providing for multi-family housing as of right consistent with the requirements of the MBTA Communities Law. The proposed amendments will allow for multi-family housing within the overlay district that adheres very closely to the underlying zoning district boundaries and dimensional standards found in Needham's current Zoning By-Law. The overlay district will include multiple sub-districts (titled A-1, B, ASB-MF, CSB, HAB and IND), each of which will have its own set of applicable density and dimensional*

*requirements as itemized in tables contained in the proposed amendments. The proposed amendments include parking standards, development standards, affordability requirements, and a process for site plan review that will apply to multi-family housing projects within the new overlay district. The proposed amendments also include revisions to Section 1.3 (Definitions) and Section 7.4 (Design Review) of the Zoning By-Law to address the addition of the new overlay district.*

*Since Article 8 involves the creation of an overlay district, property owners will have the option of developing multi-family housing subject to the requirements of the new zoning. They will also retain the option of using and/or developing property under the rules applicable in the pre-existing, underlying zoning district. The Multi-Family Overlay District creates additional choices by placing alternative provisions to those which already exist. The Multi-Family Overlay District's key provisions are summarized below.*

*Designation of the District*

*The Multi-family Overlay District contains the following sub-districts, all of which are shown on the MFOD Boundary Map and indicated by the name of the sub-district: A-1, B, ASB-MF, CSB, HAB, and IND. A complete description of the geographical boundaries for the Multi-Family Overlay District and the A-1, B, ASB-MF, CSB, HAB and IND sub-districts to be contained within the Multi-Family Overlay District can be found in Article 9.*

*Purpose of District*

*The purposes of the Multi-family Overlay District include, but are not limited to, the following: (a) providing Multi-family housing in Needham, consistent with the requirements of M.G.L. Chapter 40A (the Zoning Act), Section 3A; (b) supporting vibrant neighborhoods by encouraging Multi-family housing within a half-mile of a Massachusetts Bay Transit Authority (MBTA) commuter rail station; and (c) establishing controls which will facilitate responsible development and minimize potential adverse impacts upon nearby residential and other properties.*

*Definitions*

*New terms that appear in the package of zoning amendments but not elsewhere in the zoning bylaw are presented in alphabetical order as follows: affordable housing; as of right; compliance guidelines; EOHLC; multi-family housing; open space; parking, structured; parking, surface; residential dwelling unit; Section 3A; site plan review authority; special permit granting authority; sub-district; subsidized housing inventory (SHI); and workforce housing unit.*

*Permitted Uses*

*In the Multi-family Overlay District, multi-family housing is permitted as a matter of right. The following uses are considered accessory as of right to any multi-family housing use: (a) Parking, including surface parking and structured parking on the same lot as the principal use; and (b) Any uses customarily and ordinarily incident to Multi-family housing, including, without limitation, residential amenities such as bike storage/parking, a swimming pool, fitness facilities and similar amenity uses.*

*Lot Area and Frontage and Setback Requirements*

*The following lot area, frontage and setback requirements shall apply in the Multi-family Overlay District sub-districts listed below.*

| | A-1 | B | ASB-MF | CSB | HAB | IND |
|---|---|---|---|---|---|---|
| *Minimum Lot Area (square feet)* | *20,000* | *10,000* | *10,000* | *10,000* | *10,000* | *10,000* |
| *Minimum Lot Frontage (feet)* | *120* | *80* | *80* | *80* | *80* | *80* |
| *Minimum Front Setback (feet) from the front property line* | *25* | *10* | *Minimum 10 Maximum 15* [e,] | *20 feet for buildings with frontage on Chestnut Street 10 feet for all other buildings* | *20* | *25* |
| *Minimum Side and Rear Setback (feet)* | *20* | *10* [a, b] | *10* [a, c] | *20 (side)* [a, b,d] | *20* [a, b] | *20* [a, b] |

*(a) The requirement of an additional 50-foot side or rear setback from a residential district as described in Subsection 4.4.8 Side and Rear Setbacks Adjoining Residential Districts or Subsection 4.6.5 Side and Rear Setbacks Adjoining Residential Districts shall not apply.*

*(b) Any surface parking, within such setback, shall be set back 10 feet from an abutting residential district and such buffer shall be suitably landscaped.*

*(c) The rear and side setbacks are 20 feet along the MBTA right-of-way. With respect to any lot partially within an underlying residential district, (i) no building or structure for a multi-family residential use shall be placed or constructed within 110 feet of the lot line of an abutting lot containing an existing single family residential structure; and (ii) except for access driveways and sidewalks, which are permitted, any portion of the lot within said residential district shall be kept open with landscaped areas, hardscaped areas, outdoor recreation areas (e.g., swimming pool) and/or similar open areas.*

*(d) On the west side of Chestnut Street, the rear setback shall be 20 feet. On the east side of Chestnut Street, the rear setback shall be 30 feet.*

*(e) Seventy percent (70%) of the main datum line of the front facade of the building shall be set back no more than 15 feet, except that periodic front setbacks greater than fifteen (15) feet are allowed if activated by courtyards, landscaping, drive aisles, amenity areas, or other similar site design features that enhance the streetscape. In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board if less than seventy percent (70%) of the main datum line front facade of the building is set back 15 feet.*

*Building Height Requirements*

*The maximum building height in the Multi-family Overlay District sub-districts shall be as shown below.*

| | ***A-1*** | ***B*** | ***ASB-MF*** | ***CSB*** | ***HAB*** | ***IND*** |
|---|---|---|---|---|---|---|
| *Maximum Building Height (stories)* | *3.0* | *3.0* | *3.0* [c] | *3.0* | *3.0* | *3.0* |
| *Maximum Building Height (ft)* [a,b] | *40* | *40* | *40* [c] | *40* | *40* | *40* |

*(a) Exceptions. The limitation on height of buildings shall not apply to chimneys, ventilators, towers, silos, spires, stair overruns, elevator overruns, mechanical equipment, roof parapets, architectural screening, or other ornamental features of buildings, which features (i) are in no way used for living purposes; (ii) do not occupy more than 25% of the gross floor area of the building and (iii) do not project more than 15 feet above the maximum allowable height.*

*(b) Exceptions: Renewable Energy Installations. The Site Plan Review Authority may waive the height and setbacks in Subsection 3.17.5.2 Building Height Requirements and Subsection 3.17.5.1 Lot Area, Frontage and Setback Requirements to accommodate the installation of solar photovoltaic, solar thermal, living, and other eco-roofs, energy storage, and air-source heat pump equipment. Such installations shall be appropriately screened, consistent with the requirements of the underlying district; shall not create a significant detriment to abutters in terms of noise or shadow; and must be appropriately integrated into the architecture of the building and the layout of the site. The installations shall not provide additional habitable space within the development.*

*(c) In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board for a height of four stories and 50 feet, provided that the fourth story along Highland Avenue and West Street incorporates one or more of the following design elements: (i) a pitched roof having a maximum roof pitch of 45 degrees; (ii) a fourth story recessed from the face of the building by a minimum of 12 feet; and/or (iii) such other architectural design elements proposed by the Applicant and approved by the Planning Board during the Special Permit process.*

*Building Bulk and Other Requirements*

*The maximum floor area ratio or building coverage and the maximum number of dwelling units per acre, as applicable, in the Multi-family Overlay District sub-districts shall be as shown below, except that the area of a building devoted to underground parking shall not be counted as floor area for purposes of determining the maximum floor area ratio or building coverage, as applicable.*

| | ***A-1*** | ***B*** | ***ASB-MF*** | ***CSB*** | ***HAB*** | ***IND*** |
|---|---|---|---|---|---|---|
| *Floor Area Ratio (FAR)* | *0.50* | *N/A* | *1.3*[b, c] | *0.70* | *0.70* | *0.50* |
| *Maximum Building Coverage (%)* | *N/A* | *25%* | *N/A* | *N/A* | *N/A* | *N/A* |
| *Maximum Dwelling Units per Acre*[a] | *18* | *N/A* | *44*[d] | *18* | *N/A* | *N/A* |

*(a) The total land area used in calculating density shall be the total acreage of the lot on which the development is located.*

*(b) In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board for an FAR of up to 1.7.*

*(c) In the ASB-MF subdistrict, the following shall not be counted as floor area for purposes of determining the maximum floor area ratio: (i) interior portions of a building devoted to off-street parking; (ii) parking garages, structured parking or deck/rooftop parking that are screened from Highland Avenue as required by Section 3.17.6 inclusive of any waiver thereof and from West Street in a manner compatible with the architecture of the building. In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board to exclude additional areas from floor area for purposes of determining the maximum floor area ratio.*

*(d) In the ASB-MF subdistrict, multi-family housing may exceed the maximum of 44 dwelling units per acre by special permit.*

*Off-Street Parking*

*Multi-family housing projects will be required to provide a minimum of one parking space per dwelling unit in all subdistricts. Parking areas must be designed and constructed in accordance with the current Zoning By-Law parking plan and design requirements.*

*In the ASB-MF subdistrict, the zoning regulates the visibility of parking structures from Highland Avenue and West Street. In the ASB-MF subdistrict, the façade(s) of all parking garages, structured parking and deck/rooftop parking visible from Highland Avenue must be designed to be generally indistinguishable from the façade(s) of the residential portion of the building(s), and shall allow no view of parked vehicles from Highland Avenue except where such view is intermittent and incidental to the operation of the parking area, such as a view afforded by the opening of an automated garage door.*

*Affordable Housing*

*The Multi-family Overlay District requires affordable housing in developments with six or more dwelling units. In such cases, not fewer than 12.5% of housing units constructed shall be set aside as deed restricted affordable housing units for those households with an income at or below 80% of the area median income that applies to subsidized housing in the Town of Needham. For purposes of calculating the number of affordable housing units required in a proposed development, any fractional unit shall be rounded up to the nearest whole number and shall be deemed to constitute a whole unit consistent with Needham's existing zoning. Setting the affordability requirement at 12.5% is intended to help Needham stay above the state requirement under M.G.L. c.40B, §§20-23 that 10% of a town's housing stock qualify as affordable. Lastly, the Town's Economic Feasibility Analysis (EFA) indicates that the 12.5% set aside included in the proposed zoning will not render multi-family housing projects uneconomic. The Town is required to make this showing to EOHLC in support of any local zoning requiring that more than 10% of multi-family housing units be affordable.*

*Site Plan Review*

*The proposed zoning provides for site plan review, to be performed by the Planning Board, of all multi-family housing projects within the Multi-Family Overlay District. The requirement in §3A that multi-family housing be allowed "as of right" means that the proposed zoning cannot require other forms of zoning relief such as special permits or variances. See Compliance Guidelines for Multi-family Zoning Districts Under Section 3A of the Zoning Act §4 ("To comply with Section 3A, a multi-family zoning district must allow multi-family housing 'as of right,' meaning that the construction and occupancy of multi-family housing is allowed in that district without the need for a special permit, variance, zoning amendment, waiver, or other discretionary approval.")*

*Pursuant to Massachusetts case law, the Planning Board cannot deny a site plan review application for a by-right use that complies with the zoning (including the permissible number of units, building dimensions, height, setbacks and development standards). However, the Board can apply reasonable conditions on the project, which may include modifying lighting, adding fencing, reviewing stormwater design for*

*compliance with applicable standards, and adjusting the parking layout and other structural elements on the site plan. When performing site plan review for a use allowed by right, conditions can also be used to shape a project, but cannot go so far as to unreasonably interfere with or effectively prohibit the project.*

*All projects will need to comply with the development standards of the Mult-Family Overlay District, Building Code, Fire Code, Health Code, Department of Public Works regulations, state and local wetlands and other environmental regulations. The applicant will be required to demonstrate availability of adequate water, sewer, and utilities to serve a project. The Town is under no obligation to make investments in public infrastructure to make an individual project viable.*

*Development Standards*
*The Multi-family Overlay District establishes development standards for the Planning Board to consider when conducting site plan review. The following matters are to be considered: (a) provision of adequate water, sewer, and utility service to the project; (b) protection of pedestrian and vehicular movement within the project site, through the selection of egress points, provision for adequate site distances, and through reasonable mitigation measures for traffic attributable to the project; (c) adequacy of the arrangement of parking and loading spaces in relation to the proposed use; (d) control of off-site light over-spill through controlled luminaires selection, position, and mounting height; (e) adequacy of the methods of disposal of refuse and other wastes resulting from the use of the site; and (f) limitations on construction activities, such as but not limited to, the hours during which construction activity may take place, the movement of heavy equipment on or off the site, measures to control dirt, dust, erosion and to protect existing vegetation on the site.*

*Design Guidelines*
*The Planning Board may adopt and amend, by simple majority vote, Design Guidelines which shall be applicable to all rehabilitation, redevelopment, or new construction within the Multi-family Overlay District. Such Design Guidelines must be objective and not subjective and may contain graphics illustrating a particular standard or definition to make such standard or definition clear and understandable.*

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**ARTICLE 9: AMEND ZONING BY-LAW – MAP CHANGE FOR MULTI-FAMILY OVERLAY DISTRICT (BASE COMPLIANCE PLAN)**

To see if the Town will vote to amend the Needham Zoning By-Law by amending the Zoning Map as follows:

(a) Place in the A-1 Subdistrict of the Multi-family Overlay District a portion of land now zoned Apartment A-1 and located directly to the south of Hamlin Lane as shown on Needham Town Assessors Map 200, Parcels 1 and 31, superimposing that district over the existing Apartment A-1 district, said description being as follows:

Beginning at the point of intersection of the easterly sideline of Greendale Avenue and the northerly sideline of Charles River; thence running westerly by the easterly line of Greendale Avenue, four hundred forty-two and 36/100 (442.36) feet, more or less; northeasterly by the southerly line of Hamlin Lane, five hundred thirty-five and 44/100 (535.44) feet, more or less; southeasterly by the southerly line of Hamlin Lane, twenty and 22/100 (20.22) feet, more or less; southeasterly by the land of the Commonwealth of Massachusetts, State Highway I-95, five hundred thirty-nine 11/100 (539.11) feet, more or less; southwesterly by the land of the Commonwealth of Massachusetts, State Highway I-95, four hundred sixty-six (466) feet, more or less; northwesterly by the northerly sideline of Charles River, two hundred seventy-six (276) to the point of beginning.

(b) Place in the CSB Subdistrict of the Multi-family Overlay District a portion of land now zoned Chestnut Street Business and Single Residence B and located directly to the east and west of Chestnut Street as shown on Needham Town Assessors Map 47, Parcels 54, 72, 74-03, 74-04, 76, 77, 78, 79, 80, 83, 84, 85, 86, 87, 88, and 91, Needham Town Assessors Map 46, Parcels 12, 13, 14, 15, 16, 17, 18, 19, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 58, 59, 60, and 61 and Needham Town Assessors Map 45, Parcel 6, superimposing that district over the existing Chestnut Street Business and Single Residence districts, said description being as follows:

Beginning at the point of intersection of the easterly sideline of M.B.T.A and the southerly sideline of Keith Place; thence running southeasterly by the southerly sideline of Keith Place to the intersection with northerly sideline of Chestnut Street; southwesterly by the northerly sideline of Chestnut Street to the intersection with northerly sideline of Freeman Place; northeasterly to a point on the southerly sideline of Chestnut Street, approximately four hundred and ninety-five 88/100 (495.88) feet from the intersection with southerly sideline of School Street; southeasterly by the southerly property line of Deaconess-Glover Hospital Corporation, one hundred and eighty-seven 68/100 (187.68) feet, more or less; southwesterly by the easterly property line of Deaconess-Glover Hospital Corporation, ninety-six 74/100 (96.74) feet, more or less; southwesterly by the westerly property line of Chaltanya Kadem and Shirisha Meda, eighty-two 80/100 (82.80) feet, more or less; southwesterly by the westerly property line of Huard, eighty-two 80/100 (82.80) feet, more or less; southwesterly by the westerly property line of Reidy, ninety-seven 40/100 (97.40) feet, more or less; northeasterly by the northerly property line of L. Petrini & Son Inc, fifteen 82/100 (15.82) feet, more or less; southwesterly by easterly property line of L. Petrini & Son Inc, one hundred and seventy-seven 77/100 (177.77) feet, more or less; northeasterly by the easterly property line of L. Petrini & Son Inc, one hundred and two 59/100 (102.59) feet, more or less; southwesterly by the easterly property line of L. Petrini & Son Inc, fifty 16/100 (50.16) feet, more or less; northeasterly by the easterly property line of L. Petrini & Son Inc, seven 39/100 (7.39) feet, more or less; southwesterly by the easterly property of Briarwood Property LLC, seventy-five (75.00) feet, more or less; northeasterly by the easterly property of Briarwood Property LLC, one hundred (100) feet, more or less; southwesterly by the easterly property of Briarwood Property LLC, two hundred and forty-nine 66/100 (249.66) feet, more or less; southeasterly by the southerly property of Briarwood Property LLC, two hundred ninety-three (293.28) feet, more or less; southwesterly by the easterly property of Veterans of Foreign Wars, one hundred and fifty (150) feet, more or less; northeasterly by the southerly property line of Veterans of Foreign Wars, eighty-five (85) feet, more or less; southwest by the easterly property of M.B.T.A, one hundred and sixty (160) feet, more or less; southeasterly by the northerly sideline of Junction Street to intersection with westerly sideline of Chestnut; southwesterly by the westerly sideline of Chestnut Street to intersection with northerly sideline of property of M.B.T.A; southwesterly by the southerly property line of Castanea Dentata LLC, two hundred and twenty-eight 81/100 (228.81) feet, more or less; southwesterly by the southerly property line of Castanea Dentata LLC, one hundred and eight 53/100 (108.53) feet, more or less; northwesterly by the southerly property line of Castanea Dentata LLC, one hundred and thirty-six 6/100 (136.06) feet, more or less; northwesterly by the southerly property line of Castanea Dentata LLC, one hundred and ten 10/100 (110.10) feet, more or less; thence running northeasterly by the easterly sideline of M.B.T.A. to the point of beginning.

(c) Place in the IND Subdistrict of the Multi-family Overlay District a portion of land now zoned Industrial and Single Residence B and located directly to the south and east of Denmark Lane as shown on Needham Town Assessors Map 132, Parcel 2, superimposing that district over the existing Industrial and Single Residence B districts, said description being as follows:

Beginning at the point of intersection of the westerly sideline of M.B.T.A. and the southerly sideline of Great Plain Ave; thence running southwesterly by the westerly line of M.B.T.A, four hundred thirty-seven 24/100 (437.24) feet, more or less; southwesterly by the southerly property line of Denmark Lane Condominium, one hundred and eleven 17/100 (111.17) feet, more or less; northeasterly by the easterly property line of Denmark Lane Condominium, two hundred (200) feet, more or less; northwesterly by the southerly property line of Denmark Lane Condominium, one hundred and thirty-nine 75/100 (139.75) feet, more or less; northeasterly by the easterly sideline of Maple Street, one hundred and thirty-five (135) feet, more or less; southeasterly by the northerly property line of Denmark Lane Condominium, one hundred and forty (140) feet, more or less; southwesterly by the northerly property line of Denmark Lane Condominium, fifteen 20/100 (15.2) feet, more or less; northeasterly by the northerly property line of Denmark Lane Condominium, two 44/100 (2.44) feet, more or less; southwesterly by the northerly property line of Denmark Lane Condominium, thirty-three 35/100 (33.35) feet, more or less; northeasterly by the northerly property line of Denmark Lane Condominium, seventy-nine (79) feet, more or less; northwesterly by the northerly property line of Denmark Lane Condominium, thirteen 28/100 (13.28) feet, more or less; northeasterly by the northerly property line of Denmark Lane Condominium, forty-seven 50/100 (47.50) feet, more or less; northeasterly by the northerly property line of Denmark Lane Condominium, eighty-one 91/100 (81.91) feet, more or less; northeasterly by the southerly sideline of Great Plain Ave, twelve 28/100 (12.28) feet to the point of beginning.

(d) Place in the CSB Subdistrict of the Multi-family Overlay District a portion of land now zoned Chestnut Street Business and located directly to the east of Garden Street as shown on Needham Town Assessors Map 51, Parcels 17, 20, 22, 23, superimposing that district over the existing Chestnut Street Business district said description being as follows:

Beginning at the point of intersection of the westerly sideline of M.B.T.A. and the northerly sideline of Great Plain Ave; thence running southwesterly by the northerly sideline of Great Plain Ave, nine 32/100 (9.32) feet, more or less; northeasterly by the westerly property line of Town of Needham, fifty-three 17/100 (53.17) feet, more or less; northeasterly by the westerly property line of Town of Needham, fifty-six 40/100 (56.40) feet, more or less; northeasterly by the westerly property line of Town of Needham, fifty-six 92/100 (56.92) feet, more or less; northwesterly by the westerly property line of Town of Needham, on an arch length one hundred and twelve 99/100 (112.99) feet, more or less; northeasterly by the westerly property line of Town of Needham, fifteen 10/100 (15.10) feet, more or less; northeasterly by the westerly property line of Town of Needham, one hundred and thirty-eight 83/100 (138.83) feet, more or less; southeasterly by the northerly property line of Town of Needham, thirty-three 42/100 (33.42) feet, more or less; northwesterly by the southerly property line of Eaton Square Realty LLC, forty (40) feet, more or less; northwesterly by the southerly property line of Eaton Square Realty LLC, eighty-one 99/100 (81.99) feet, more or less; northwesterly by the southerly property line of Eaton Square Realty LLC, fifty-eighty 31/100 (58.31) feet, more or less; northeasterly by the easterly sideline of Garden Street to intersection with May Street; northeasterly by the southerly sideline of May Street, sixty-one 33/100 (61.33) feet, more or less; southwesterly by the westerly sideline of M.B.T.A to the point of beginning.

(e) Place in the B Subdistrict of the Multi-family Overlay District a portion of land now zoned Business and Single Residence B and located directly to the west of Highland Avenue as shown on Needham Town Assessors Map 52, Parcels 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12, and Needham Town Assessors Map 226, Parcels 56, 57, and 58, superimposing that district over the existing Business and Single Residence B districts, said description being as follows:

Beginning at the point of intersection of the easterly sideline of M.B.T.A. and the northerly sideline of May Street; thence running northeasterly by the easterly sideline of M.B.T.A. to the intersection

with southerly sideline of Rosemary Street; southeasterly by the southerly sideline of Rosemary Street to the intersection with easterly sideline of Highland Ave; southwesterly by the westerly sideline of Highland Avenue to the intersection with the northerly sideline of May St; southwesterly by the northerly sideline of May Street to the point of beginning.

(f) Place in the A-1 Subdistrict of the Multi-family Overlay District a portion of land now zoned Apartment A-1 and located directly to east of Highland Avenue and north of May Street as shown on Needham Town Assessors Map 53, Parcels 1, 2 and 3, superimposing that district over the existing Apartment A-1 district, said description being as follows:

Beginning at the point of intersection of the northerly sideline of May Street and the westerly sideline of Oakland Avenue; thence running easterly by the northerly sideline of May Street to the intersection with easterly sideline of Highland Avenue; northeasterly by the easterly sideline of Highland Avenue to the intersection with southerly sideline of Oakland Avenue; southeasterly by the southerly sideline of Oakland Avenue: southerly by the westerly sideline of Oakland Avenue to the point of beginning.

(g) Place in the A-1 Subdistrict of the Multi-family Overlay District a portion of land now zoned Apartment A-1 and located directly to the west of Hillside Avenue and north of Rosemary Street as shown on Needham Town Assessors Map 100 Parcels 1, 35, and 36, and Needham Town Assessors Map 101, Parcels 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, and 26, superimposing that district over the existing Apartment A-1 district, said description being as follows:

Beginning at the point of intersection of the northerly sideline of Rosemary Street and the easterly sideline of Concannon Circle; thence running northwesterly by the easterly sideline of Concannon Circle, one hundred and sixty (160) feet, more or less; northwesterly by the easterly property line of 15 Concannon Circle Realty Trust, two hundred and thirty-two 75/100 (232.75) feet, more or less; northwesterly by the easterly property line of L. Petrini and Son Inc, one hundred and forty-five 84/100 (145.84) feet, more or less; northeasterly by the northerly property line of L. Petrini and Son Inc, one hundred and twenty-five (125) feet, more or less; northwesterly by the westerly sideline of Tillotson Road, one hundred and twelve (112) feet, more or less; northeasterly across Tillotson Road to the northeasterly corner of the property of L. Petrini and Son Inc, forty (40) feet, more or less; northeasterly by the northerly property line of L. Petrini and Son Inc, one hundred and twenty-five (125) feet, more or less; northwesterly by the easterly property line of Petrini Corporation, one hundred and nineteen 94/100 (119.94) feet, more or less; northeasterly by the southerly property line of L. Petrini and Son Inc, one hundred and sixty-two (162) feet, more or less; northwesterly by the easterly property line of Rosemary Ridge Condominium, three hundred and twenty-eight (328) feet, more or less; northeasterly by the northerly property line of Rosemary Ridge Condominium, two hundred and ninety (290) feet, more or less; northeasterly by the northerly property line of Rosemary Ridge Condominium, one hundred and sixty-two 19/100 (162.19), more or less; northwesterly by the northerly property line of Rosemary Ridge Condominium, one hundred and thirty (130), more or less; southeasterly by the northerly property line of Rosemary Ridge Condominium, two hundred and forty-one 30/100 (241.30), more or less; southeasterly by the northerly property line of Pop Realty LLC, ninety-four 30/100 (94.30), more or less to westerly side of Hillside Avenue; southeasterly by the westerly sideline of Hillside Avenue to intersection with northerly sideline of Rosemary Street; southeasterly by the northerly sideline of Rosemary Street to the point of beginning.

(h) Place in the IND Subdistrict of the Multi-family Overlay District a portion of land now zoned Industrial, Hillside Avenue Business, and Single Residence B and located directly to the east of Hillside Avenue and north of Rosemary Street as shown on Needham Town Assessors Map 100,

Parcels 3, 4, 5, 7, 8, 9, 10, 11, 12, and 61, and Needham Town Assessors Map 101, Parcels 2, 3, 4, 5 and 6, superimposing that district over the existing Industrial, Hillside Avenue Business, and Single Residence B districts, said description being as follows:

Beginning at the point of intersection of the northerly sideline of Rosemary Street and the westerly sideline of M.B.T.A; thence running northwesterly by the northerly sideline of Rosemary Street to the intersection with easterly sideline of Hillside Avenue; northeasterly by the easterly sideline of Hillside Avenue to the intersection with southerly sideline of West Street; northeasterly by the southerly sideline of West Street to the intersection with the westerly sideline of M.B.T.A; southeasterly by the westerly sideline of M.B.T.A. to the point of beginning.

(i) Place in the ASB-MF Subdistrict of the Multi-family Overlay District a portion of land now zoned Avery Square Business and Single Residence B and located directly to the west of Highland Avenue and south of West Street as shown on Needham Town Assessors Map 63, Parcel 37, superimposing that district over the existing Avery Square Business and Single Residence B districts, said description being as follows:

Beginning at the point of intersection of the easterly sideline of M.B.T.A. and the southerly sideline of West Street; thence running southeasterly by the southerly sideline of West Street, one hundred and sixty-one 48/100 (161.48) feet, more or less; southeasterly on arch, twenty-nine (27/100) 29.27 feet to a point on the easterly sideline of Highland Avenue; southeasterly by the easterly sideline of Highland Avenue seven hundred and sixty-one (761.81) feet, more or less; northeasterly by the easterly sideline of Highland Avenue ten (10) feet, more or less; southeasterly by the easterly sideline of Highland Avenue seventy (70) feet, more or less; northwesterly by the southerly property line of HCRI Massachusetts Properties Trust II, one hundred and fifty (150) feet, more or less; southeasterly by the southerly property line of HCRI Massachusetts Properties Trust II, seventy (70) feet, more or less; southwesterly by the southerly property line of HCRI Massachusetts Properties Trust II, one hundred and two 57/100 (102.57) feet, more or less; northeasterly by the easterly sideline of M.B.T.A., three hundred and seventy-one 56/100 (371.56) feet, more or less; northwesterly by the easterly sideline of M.B.T.A., three 54/100 (3.54) feet, more or less; northeasterly by the easterly sideline of M.B.T.A., three hundred and ninety-three 56/100 (393.56) feet, more or less; northeasterly by the easterly sideline of M.B.T.A., one hundred and seventy-five 46/100 (175.46) feet to the point of beginning.

(j) Place in the HAB Subdistrict of the Multi-family Overlay District a portion of land now zoned Hillside Avenue Business and located directly to the east of Hillside Avenue and north of West Street as shown on Needham Town Assessors Map 99, Parcels 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14, superimposing that district over the existing Hillside Avenue district, said description being as follows:

Beginning at the point of intersection of the westerly sideline of M.B.T.A and the northerly sideline of West Street; thence running northwesterly by the northerly sideline of West Street to the intersection with easterly sideline of Hillside Avenue; northwesterly by the easterly sideline of Hillside Avenue to the intersection with northerly sideline of Hunnewell Street; northwesterly by the easterly sideline of Hillside Avenue, twenty-four 1/100 (24.01) feet to the angle point; northeasterly by the easterly sideline of Hillside Avenue, ninety-five 61/100 (95.61) feet, more or less; northeasterly by the northerly property line of Hillside Condominium, two hundred and twenty-one 75/100 (221.75) feet, more or less; northeasterly by the northerly property line of Hunnewell Needham LLC, eighteen 48/100 (18.48) feet, more or less; southwesterly by the westerly sideline of M.B.T.A. to the point of beginning.

(k) Place in the IND Subdistrict of the Multi-family Overlay District a portion of land now zoned Industrial and Single Residence B and located at Crescent Road as shown on Needham Town Assessors Map 98, Parcels 40 and 41, and Needham Town Assessors Map 99, Parcels 38, 39, 40, 61, 62, 63, and 88, superimposing that district over the existing Industrial and Single Residence B districts, said description being as follows:

Beginning at the bound on easterly side of Hunnewell Street, approximately three hundred and thirty-two 35/100 (332.35) feet from the intersection with Hillside Avenue; thence running southwesterly by the easterly property line of Microwave Development Laboratories Inc, one hundred and ninety-one 13/100 (191.13) feet, more or less; southeasterly by the easterly property line of Microwave Development Laboratories Inc, sixty-eight 68/100 (68.75) feet, more or less; southeasterly by the easterly property line of Microwave Development Laboratories Inc, one hundred and thirty (130) feet, more or less; southeasterly by the easterly property line of Drack Realty LLC, seventy-three (73) feet, more or less; southwesterly by the easterly property line of Drack Realty LLC, one hundred and forty (140) feet, more or less; northeasterly by the northerly property line of Lally, forty-one (41) feet, more or less; southeasterly by the easterly property line of Lally, seventy-five (75) feet, more or less; southwesterly by the southerly property line of Lally, one hundred (100) feet, more or less; southwesterly to the center of Crescent Road, twenty (20) feet, more or less; southeasterly by the center of Crescent Road, twenty-nine (29) feet, more or less; southwesterly to a bound located twenty-nine feet from the angle point on the easterly side of Crescent Road; southwesterly by the southerly property line of 66 Crescent Road LL, four hundred and fifteen 60/100 (415.60) feet, more or less; northwesterly by the easterly property line of Town of Needham, fifty-two 37/100 (52.37) feet, more or less; northwesterly by the easterly property line of Town of Needham, one hundred and sixty-two 37/100 (162.37) feet, more or less; southwesterly by the easterly property line of Town of Needham, forty-five 76/100 (45.76) feet, more or less; northwesterly by the easterly property line of Town of Needham, one hundred and forty-three 92/100 (143.92) feet, more or less; northwesterly by the easterly property line of Town of Needham, fifteen 71/100 (15.71) feet, more or less; southwesterly by the easterly property line of Town of Needham, two hundred and forty-eight 40/100 (248.40) feet, more or less; northwesterly by the easterly property line of Town of Needham, fifty-three 33/100 (53.33) feet, more or less; northeasterly by the northerly property line of 166 Crescent Road LLC, five hundred and fifty-five 68/100 (555.68) feet, more or less; northeasterly to the center of Crescent Road, twenty (20) feet, more or less; northwesterly by the center of Crescent Road, fifty-six 47/100 (56.47) feet, more or less; northeasterly to the bound located four 38/100 (4.38) feet from the end of the Crescent Road; northeasterly by the northerly property line of Microwave Development Laboratories Inc, one hundred and forty-six 29/100 (146.29) feet, more or less; southeasterly by the northerly property line of Microwave Development Laboratories Inc, fifty-four 82/100 (54.82) feet, more or less; northeasterly by the northerly property line of Microwave Development Laboratories Inc, fifty-four 21/100 (54.21) feet, more or less; southeasterly by the easterly property line of Microwave Development Laboratories Inc, one hundred and ninety-five 81/100 (195.81) feet, more or less; northeasterly by the easterly property line of Microwave Development Laboratories Inc, seven (7) feet, more or less; southeasterly by the easterly property line of Microwave Development Laboratories Inc, ninety-one (91) feet, more or less; northeasterly by the easterly property line of Microwave Development Laboratories Inc, one hundred and forty-two (142) feet, more or less; southeasterly by the easterly sideline of Hunnewell Street, twenty (20) feet to the point of beginning.

(l) Place in the A-1 Subdistrict of the Multi-family Overlay District a portion of land now zoned Apartment A-1 and Single Residence B and located east and west of Highland Avenue at Cottage Avenue as shown on Needham Town Assessors Map 70, Parcels 24 and 25, superimposing that

district over the existing Apartment A-1 and Single Residence B districts, said description being as follows:

Beginning at the point on the westerly sideline of Highland Avenue, two hundred and seventeen 63/100 (217.63) from the arch on Webster Street; thence running southwesterly by the westerly sideline of Highland Avenue, three hundred and seventeen (317) feet, more or less; southeasterly across Highland Avenue, fifty (50) feet to a point on the easterly sideline of Highland Avenue; southeasterly by the northerly property line of Avery Park Condominium, two hundred and seventy-eight 75/100 (278.75) feet, more or less; northeasterly by the northerly property line of Avery Park Condominium, sixty-one (61.51) feet, more or less; northeasterly by the northerly property line of Avery Park Condominium, one hundred and seventy-nine 70/100 (179.70) feet, more or less; southwesterly by the westerly sideline of Webster Street, thirty-one 16/100 (31.16) feet, more or less; southwesterly by the southerly property line of Avery Park Condominium, one hundred and sixty-six 51/100 (166.51) feet, more or less; southwesterly by the southerly property line of Avery Park Condominium, one hundred and five 59/100 (105.59) feet, more or less; southwesterly by the southerly property line of Avery Park Condominium, one hundred and forty-four 62/100 (144.62) feet, more or less; northwesterly by the southerly property line of Avery Park Condominium, two hundred and seventy-seven 29/100 (277.29) feet, more or less; northwesterly across Highland Avenue, fifty (50) feet to a point on the westerly side of Highland Avenue: northwesterly by the southerly property line of Hamilton Highlands LLC, one hundred and fifty-nine 45/100 (159.45) feet, more or less; southwesterly by the southerly property line of Hamilton Highlands LLC, ninety-seven 33/100 (97.33) feet, more or less; northwesterly by the northerly sideline of Cottage Avenue, forty (40) feet, more or less; southwesterly by the southerly property line of Hamilton Highlands LLC, fifteen (15) feet, more or less; northwesterly by the southerly property line of Hamilton Highlands LLC, twenty-five 54/100 (25.54) feet, more or less; northeasterly by the easterly sideline of M.B.T.A., five hundred and seventy-five 57/100 (575.57) feet, more or less; southeasterly by the northerly property line of Hamilton Highlands LLC, one hundred and forty-five 2/100 (145.02) feet, more or less; northeasterly by the northerly property line of Hamilton Highlands LLC, one hundred and one 57/100 (101.57) feet, more or less; southeasterly by the northerly property line of Hamilton Highlands LLC, one hundred and eighty 18/100 (180.18) feet, more or less; southeasterly by the northerly property line of Hamilton Highlands LLC, fifty-six 57/100 (56.57) feet to the point of beginning.

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDED THAT: Recommendation to be made at Town Meeting

*<u>Article Information</u>: Article 9 describes the geographical area of the Multi-Family Overlay District under the Base Compliance Plan. The proposed zoning amendments would amend the Zoning By-Law and the Zoning Map to add the Multi-Family Overlay District and the A-1, B, ASB-MF, CSB, HAB and IND sub-districts to be contained within the Multi-Family Overlay District. These amendments to the Zoning Map accompany the proposed set of zoning amendments under Article 8 the Base Compliance Plan for purposes of complying with the MBTA Communities Law. The Multi-family Overlay District under the Base Compliance Plan contains approximately 100.3 acres.*

**ARTICLE 10: AMEND ZONING BY-LAW – MULTI-FAMILY OVERLAY DISTRICT (NEIGHBORHOOD HOUSING PLAN)**

To see if the Town will vote to amend the Needham Zoning By-Law, inclusive of those amendments adopted under Article 8 and Article 9, as follows, and to act on anything related thereto:

1. Amending the definition of Mixed-Use Building in Section 1.3 to include the Multi-family Overlay District, so that the definition reads as follows:

   **Mixed-Use Building –** A building in the Needham Center, Chestnut Street, Garden Street or Multi-family Overlay District in which the ground floor facing the street is used for such retail or restaurant uses as may be permitted by right or by special permit in the applicable overlay district, and other ground-floor and upper-floor space is used for other commercial use(s) or dwelling units(s), and subject to any additional qualifications provided for in the applicable overlay district.

2. Amending Section 3.17 Multi-family Overlay District by revising Subsection 3.17.2.1 Subdistricts to read as follows:

   The Multi-family Overlay District contains the following sub-districts, all of which are shown on the MFOD Boundary Map and indicated by the name of the sub-district:

   (a) A-1
   (b) B
   (c) ASB-MF
   (d) CSB-E (Chestnut Street Business – East)
   (e) CSB-W (Chestnut Street Business – West)
   (f) CSB-GS
   (g) HAB
   (h) IND
   (i) IND-C (Industrial – Crescent)

3. Amending Subsection 3.17.1 Purposes of District by amending the last paragraph to read as follows:

   Toward these ends, Multi-family housing and mixed-use development (where allowed) in the Multi-family Overlay District is permitted to exceed the density and dimensional requirements that normally apply in the underlying zoning district(s) provided that such development complies with the requirements of this Section 3.17.

4. Amending Subsection 3.17.4. Use Regulations, by adding the following paragraph (b) to Subsection 3.17.4.1 Permitted Uses:

   **3.17.4.1 Permitted Uses**

   (b) In the B and CSB subdistricts: A Mixed-Use Building containing commercial use(s) on the ground floor, whether facing the street or otherwise, is permitted by right, provided that all upper floors shall be used as Multi-family Housing. Commercial uses are limited to the uses listed below:

      i. Retail establishments serving the general public containing less than 5,750 gross square feet of floor area. In multi-tenanted structures the provisions of the section will individually apply to each tenant or use and not to the aggregate total of the structure.

ii. Retail trade or shop for custom work or the making of articles to be sold at retail on the premises.

iii. Offices and banks.

iv. Craft, consumer, professional or commercial service establishment dealing directly with the public and not enumerated elsewhere in this section.

v. Personal fitness service establishment, provided all required off-street parking is provided on-site for all land uses located on the subject site and in adherence with the requirements of Section 5.1.2, Required Parking, absent any waivers from the provisions of Subsection 5.1.1.5 and 5.1.1.6.

vi. Manufacturing clearly incidental and accessory to retail use on the same premises and the product is customarily sold on the premises.

vii. Laundry; coin operated or self-service laundry or dry-cleaning establishment.

5. Amending Subsection 3.17.4. Use Regulations, by adding the following after Subsection 3.17.4.1 Permitted Uses and renumbering Subsection 3.17.4.2 Accessory Uses to 3.17.4.3:

**3.17.4.2 Special Permit Uses in the B and CSB Subdistricts**

The following uses are permitted by Special Permit from the Planning Board in the B and CSB sub-districts of the Multi-family Overlay District:

(a) A Mixed-Use Building containing commercial use(s) listed below on the ground floor, whether facing the street or otherwise, and provided that all upper floors shall be used as Multi-family Housing:

i. Restaurant serving meals for consumption on the premises and at tables with service provided by waitress or waiter.

ii. Take-out operation accessory to the above.

iii. Take-out food counter as an accessory to a food retail or other non- consumptive retail establishment.

iv. Retail sales of ice cream, frozen yogurt, and similar products for consumption on or off the premises.

v. Take-out establishment primarily engaged in the dispensing of prepared foods to persons carrying food and beverage away for preparation and consumption elsewhere.

vi. Personal fitness service establishment, where there is insufficient off-street parking on-site to serve all land uses located thereon in adherence with the requirements of Subsection 5.1.2 Required Parking but where it can be demonstrated that the hours, or days, of peak parking for the uses are sufficiently different that a lower total will provide adequately for all uses or activities served by the parking lot.

6. Amending Section 3.17 Multi-family Overlay District by replacing the tables in Subsection 3.17.5 Dimensional Regulations with the tables below, with all other text, including footnotes, contained in Subsection 3.17.5 to remain unamended unless noted below:

**3.17.5. Dimensional Regulations**

**Replace the table in Subsection 3.17.5.1 Lot Area, Frontage and Setback Requirements with the tables below:**

Table 1A. Lot Area, Frontage and Setback Requirements

| | A-1 | B | ASB-MF | HAB | IND |
|---|---|---|---|---|---|
| Minimum Lot Area (square feet) | 20,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Minimum Lot Frontage (feet) | 120 | 80 | 80 | 80 | 80 |
| Minimum Front Setback (feet) from the front property line | 25 | 10 | Minimum 10 Maximum 15 [d] | 20 | 25 |
| Minimum Side and Rear Setback (feet) | 20 | 20[a, b] | 10[a,c] | 20 [a,b] | 20 [a,b] |

Table 1B. Lot Area, Frontage and Setback Requirements

| | CSB-E | CSB-W | CSB-GS | IND - C |
|---|---|---|---|---|
| Minimum Lot Area (square feet) | 10,000 | 10,000 | 10,000 | 10,000 |
| Minimum Lot Frontage (feet) | 80 | 80 | 80 | 80 |
| Minimum Front Setback (feet) from the front property line | Minimum of 5 feet or average of setbacks within 100 feet, whichever is smaller | Minimum of 5 feet or average of setbacks within 100 feet, whichever is smaller | Minimum of 10 feet or average of setbacks within 100 feet, whichever is smaller | 25 |
| Minimum Side and Rear Setback (feet) | 20 (side) 30 (rear) [a, b] | 20 [a, b] | 20 [a, b] | 20 [a, b] |

And delete footnote (d).
And renumber footnote (e) as footnote (d).

**Replace the table in Subsection 3.17.5.2 Building Height Requirements with the tables below:**

Table 2A. Building Height Requirements

| | A-1 | B | ASB-MF | HAB | IND |
|---|---|---|---|---|---|
| Maximum Building Height (stories)[d] | 4.0 | 4.0<br>4.5 with commercial ground floor or see 3.17.8.1 | 3.0[c] | 3.0 | 3.0 |
| Maximum Building Height (feet) [a, b, d] | 50 | 50<br>55 with commercial ground floor or see 3.17.8.1 | 40 [c] | 40 | 40 |

Table 2B. Building Height Requirements

| | CSB-E | CSB-W | CSB-GS | IND - C |
|---|---|---|---|---|
| Maximum Building Height (stories) [d] | 3.0<br>3.5 with commercial ground floor or see 3.17.8.1 | 4.0<br>4.5 with commercial ground floor or see 3.17.8.1 | 3.0<br>3.5 with commercial ground floor or see 3.17.8.1 | 3.0 |
| Maximum Building Height (feet) [a, b, d] | 40<br>45 with commercial ground floor or see 3.17.8.1 | 50<br>55 with commercial ground floor or see 3.17.8.1 | 40<br>45 with commercial ground floor or see 3.17.8.1 | 40 |

And add new footnote (d):

(d) The requirements of Subsection 4.4.7 Business Use in Other Districts are not applicable to commercial ground floor uses in the MFOD.

**Replace the table in Subsection 3.17.5.3 Building Bulk and Other Requirements with the tables below:**

Table 3A. Building Bulk and Other Requirements

| | A-1 | B | ASB-MF | HAB | IND |
|---|---|---|---|---|---|
| Floor Area Ratio (FAR) | 1.0 | 2.0 | 1.3[b, c] | 1.0 | 1.0 |
| Maximum Building Coverage (%) | N/A | N/A | N/A | N/A | N/A |
| Maximum Dwelling Units per Acre[a] | 36 | 48 | 44[d] | 24 | 24 |

Table 3B. Building Bulk and Other Requirements

| | CSB-E | CSB-W | CSB-GS | IND - C |
|---|---|---|---|---|
| Floor Area Ratio (FAR) | 2.0 | 2.0 | 2.00 | 0.75 |
| Maximum Building Coverage (%) | N/A | N/A | N/A | N/A |
| Maximum Dwelling Units per Acre [a] | N/A | N/A | N/A | 24 |

7. Amending Section 3.17 Multi-family Overlay District by inserting in Subsection 3.17.6 a new subsection (b), to read as follows:

   (b) In addition to the parking required under section (a), above, each and every non-residential component of a Mixed-Use Building shall be required to provide a minimum number of off-street parking spaces calculated in accordance with Section 5.1. In cases where an Applicant seeks a special permit to waive strict adherence to the requirements of Section 5.1.2 and/or 5.1.3 for a Mixed-Use Building or any component thereof, the Planning Board shall serve as the special permit granting authority.

   and to re-letter existing subsections (b) through (g) in appropriate alphabetical order to account for this insertion.

8. Amending Section 3.17 Multi-family Overlay District by adding the following to Subsection 3.17.7 Development Standards, to read as follows:

   (p) For a mixed-use building, entrances to ground-floor dwelling units shall be located on the side or rear of the building, not from any side facing the street, or the entrances may be from a first-floor lobby serving other uses in the building.

   (q) For a mixed-use building, the ground floor of the front facade shall contain only retail or restaurant uses allowed by right or by special permit.

9. Amending Section 3.17 Multi-family Overlay District by adding a new paragraph to Subsection 3.17.8.1 Provision of Affordable Housing, immediately following the first paragraph, to read as follows:

   **3.17.8.1 Provision of Affordable Housing.**

   In the B and CSB subdistricts, an Applicant may provide an additional 7.5% of units as Workforce Housing Units in place of the requirement for a commercial ground floor to achieve the additional allowable height listed in Tables 2A and 2B under Subsection 3.17.5.2 Building Height Requirements.

10. Amending Section 3.17 Multi-family Overlay District by modifying the first line of Subsection 3.17.8.2 Affordable Housing Development Standards to read as follows:

    Affordable Units, including Workforce Housing Units, shall be:

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDED THAT: Recommendation to be made at Town Meeting

*Article Information: Article 10, in combination with Article 11, proposes to further amend the "Multi-Family Overlay District" established under Articles 8 and 9 above. Article 10 lays out the regulatory framework for the district, while Article 11 describes its geographical boundaries. For purposes of clarity, for distinguishing this set of proposed zoning amendments from that being advanced for consideration by Town Meeting under Articles 8 and 9 above, this set of zoning amendments is being referred to as the Neighborhood Housing Plan.*

*This Article 10 would amend Section 3.17 of the Zoning By-Law, as adopted under Article 8, which article will have established the "Multi-Family Overlay District (MFOD)". This set of proposed zoning amendments would amend the Multi-Family Overlay District by revising the sub-districts (to be titled A-1, B, ASB-MF, CSB-E, CSB-W, CSB-GS, HAB, IND and IND-C), and by inserting dimensional tables for the newly created sub-districts and by revising the dimensional tables for the existing sub-districts. The proposed amendments would also allow for mixed-use buildings within the Business and Chestnut Street sub-districts of the overlay district; would establish parking standards for permitted as of right and special permit uses allowed in the Business and Chestnut Street sub-districts; would include revisions to the definition of mixed-use building in Section 1.3 (Definitions); and would allow for increased building height where a proposal includes 7.5% of its units as workforce housing, in addition to the minimum 12.5% of units required to be designated as affordable. The Multi-Family Overlay District's key provisions are summarized below.*

*Designation of the District*

*The Multi-family Overlay District contains the following sub-districts, all of which are shown on the MFOD Boundary Map and indicated by the name of the sub-district: A-1, B, ASB-MF, CSB-E, CSB-W, CSB-GS, HAB, IND and IND-C. A complete description of the geographical boundaries for the Multi-Family Overlay District and the A-1, B, ASB-MF, CSB-E, CSB-W, CSB-GS, HAB, IND and IND-C sub-districts to be contained within the Multi-Family Overlay District under the Neighborhood Housing Plan can be found in Article 11.*

*Permitted Uses*

*In the Multi-family Overlay District, Multi-family housing is permitted as a matter of right. In the Business and Chestnut Street subdistricts of the overlay district, mixed-use buildings containing commercial use are permitted on the ground floor provided all upper floors are used for multi-family housing. The Multi-family Overlay District lists the commercial uses that are allowed as of right or by special permit. The following uses are permitted as of right: a retail establishment serving the general public and having less than 5,750 square feet; a retail trade or shop for custom work or for the making of articles to be sold on the premises; offices and banks; a craft, consumer, professional or commercial service establishment dealing directly with the public; a personal fitness service establishment provided all required off-street parking is provided on-site; a manufacturing use that is clearly incidental to and accessory to a retail use on the same premises; and a laundry or dry-cleaning establishment. The following uses are permitted by special permit: a restaurant serving meals for consumption on the premises and at tables with service provided by waitress or waiter; the retail sale of ice cream, frozen yogurt, and similar products for consumption on and off the premises; a take-out establishment primarily engaged in the dispensing of prepared foods for consumption elsewhere; and a personal fitness establishment where sufficient parking is not provided on-site to serve the use.*

*Lot Area and Frontage and Setback Requirements*

*The following lot area, frontage and setback requirements shall apply in the Multi-family Overlay District sub-districts listed below. The applicable footnotes are also noted for informational purposes.*

*Table 1A. Lot Area, Frontage and Setback Requirements*

| | ***A-1*** | ***B*** | ***ASB-MF*** | ***HAB*** | ***IND*** |
|---|---|---|---|---|---|
| *Minimum Lot Area (square feet)* | *20,000* | *10,000* | *10,000* | *10,000* | *10,000* |
| *Minimum Lot Frontage (feet)* | *120* | *80* | *80* | *80* | *80* |
| *Minimum Front Setback (feet) from the front property line* | *25* | *10* | *Minimum 10 Maximum 15* [d] | *20* | *25* |
| *Minimum Side and Rear Setback (feet)* | *20* | *20* [a, b] | *10* [a,c] | *20* [a,b] | *20* [a,b] |

*Table 1B. Lot Area, Frontage and Setback Requirements*

| | ***CSB-E*** | ***CSB-W*** | ***CSB-GS*** | ***IND - C*** |
|---|---|---|---|---|
| *Minimum Lot Area (square feet)* | *10,000* | *10,000* | *10,000* | *10,000* |
| *Minimum Lot Frontage (feet)* | *80* | *80* | *80* | *80* |
| *Minimum Front Setback (feet) from the front property line* | *Minimum of 5 feet or average of setbacks within 100 feet, whichever is smaller* | *Minimum of 5 feet or average of setbacks within 100 feet, whichever is smaller* | *Minimum of 10 feet or average of setbacks within 100 feet, whichever is smaller* | *25* |
| *Minimum Side and Rear Setback (feet)* | *20 (side) 30 (rear)* [a, b] | *20* [a, b] | *20* [a, b] | *20* [a, b] |

*(a) The requirement of an additional 50-foot side or rear setback from a residential district as described in Subsection 4.4.8 Side and Rear Setbacks Adjoining Residential Districts or Subsection 4.6.5 Side and Rear Setbacks Adjoining Residential Districts shall not apply.*

*(b) Any surface parking, within such setback, shall be set back 10 feet from an abutting residential district and such buffer shall be suitably landscaped.*

*(c) The rear and side setbacks are 20 feet along the MBTA right-of-way. With respect to any lot partially within an underlying residential district, (i) no building or structure for a multi-family residential use shall be placed or constructed within 110 feet of the lot line of an abutting lot containing an existing single family residential structure; and (ii) except for access driveways and sidewalks, which are permitted, any portion of the lot within said residential district shall be kept open with landscaped areas, hardscaped areas, outdoor recreation areas (e.g., swimming pool) and/or similar open areas.*

*(d) Seventy percent (70%) of the main datum line of the front facade of the building shall be set back no more than 15 feet, except that periodic front setbacks greater than fifteen (15) feet are allowed if activated by courtyards, landscaping, drive aisles, amenity areas, or other similar site design features that enhance the streetscape. In the ASB-MF subdistrict, the Applicant may apply for a*

*Special Permit from the Planning Board if less than seventy percent (70%) of the main datum line front facade of the building is set back 15 feet.*

*Building Height Requirements*

*The maximum building height in the Multi-family Overlay District sub-districts shall be as shown below. The applicable footnotes are also noted for informational purposes.*

*As noted in the table below, additional building height and stories are authorized in the Business and Chestnut Street Business districts for mixed-use buildings containing commercial use on the ground floor and where multi-family housing is provided on all upper floors. Further, additional building height and stories are authorized in the Business and Chestnut Street Business districts where an applicant provides 7.5% of its units as workforce housing, in addition to the minimum 12.5% of units required to be designated as affordable. For purposes of the Multi-family Overlay District, a workforce housing unit shall be affordable to a household with an income between 80 percent and 120 percent of the area median income. The additional height and number of stories is offered as an incentive to encourage mixed use development and the provision of workforce housing units in the noted districts.*

*Table 2A. Building Height Requirements*

| | ***A-1*** | ***B*** | ***ASB-MF*** | ***HAB*** | ***IND*** |
|---|---|---|---|---|---|
| *Maximum Building Height (stories)[d]* | *4.0* | *4.0<br>4.5 with commercial ground floor or see 3.17.8.1* | *3.0[c]* | *3.0* | *3.0* |
| *Maximum Building Height (feet) [a, b, d]* | *50* | *50<br>55 with commercial ground floor or see 3.17.8.1* | *40 [c]* | *40* | *40* |

*Table 2B. Building Height Requirements*

| | ***CSB-E*** | ***CSB-W*** | ***CSB-GS*** | ***IND - C*** |
|---|---|---|---|---|
| *Maximum Building Height (stories) [d]* | *3.0<br>3.5 with commercial ground floor or see 3.17.8.1* | *4.0<br>4.5 with commercial ground floor or see 3.17.8.1* | *3.0<br>3.5 with commercial ground floor or see 3.17.8.1* | *3.0* |
| *Maximum Building Height (feet) [a, b, d]* | *40<br>45 with commercial ground floor or see 3.17.8.1* | *50<br>55 with commercial ground floor or see 3.17.8.1* | *40<br>45 with commercial ground floor or see 3.17.8.1* | *40* |

*(a) Exceptions. The limitation on height of buildings shall not apply to chimneys, ventilators, towers, silos, spires, stair overruns, elevator overruns, mechanical equipment, roof parapets, architectural screening, or other ornamental features of buildings, which features (i) are in no way used for*

*living purposes; (ii) do not occupy more than 25% of the gross floor area of the building and (iii) do not project more than 15 feet above the maximum allowable height.*

*(b) Exceptions: Renewable Energy Installations. The Site Plan Review Authority may waive the height and setbacks in Subsection 3.17.5.2 Building Height Requirements and Subsection 3.17.5.1 Lot Area, Frontage and Setback Requirements to accommodate the installation of solar photovoltaic, solar thermal, living, and other eco-roofs, energy storage, and air-source heat pump equipment. Such installations shall be appropriately screened, consistent with the requirements of the underlying district; shall not create a significant detriment to abutters in terms of noise or shadow; and must be appropriately integrated into the architecture of the building and the layout of the site. The installations shall not provide additional habitable space within the development.*

*(c) In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board for a height of four stories and 50 feet, provided that the fourth story along Highland Avenue and West Street incorporates one or more of the following design elements: (i) a pitched roof having a maximum roof pitch of 45 degrees; (ii) a fourth story recessed from the face of the building by a minimum of 12 feet; and/or (iii) such other architectural design elements proposed by the Applicant and approved by the Planning Board during the Special Permit process.*

*(d) The requirements of Subsection 4.4.7 Business Use in Other Districts are not applicable to commercial ground floor uses in the MFOD.*

*Building Bulk and Other Requirements*

*The maximum floor area ratio or building coverage and the maximum number of dwelling units per acre, as applicable, in the Multi-family Overlay District sub-districts shall be as shown below, except that the area of a building devoted to underground parking shall not be counted as floor area for purposes of determining the maximum floor area ratio or building coverage, as applicable. The applicable footnotes are also noted for informational purposes.*

*Table 3A. Building Bulk and Other Requirements*

| | ***A-1*** | ***B*** | ***ASB-MF*** | ***HAB*** | ***IND*** |
|---|---|---|---|---|---|
| *Floor Area Ratio (FAR)* | *1.0* | *2.0* | *1.3[b, c]* | *1.0* | *1.0* |
| *Maximum Building Coverage (%)* | *N/A* | *N/A* | *N/A* | *N/A* | *N/A* |
| *Maximum Dwelling Units per Acre[a]* | *36* | *48* | *44[d]* | *24* | *24* |

*Table 3B. Building Bulk and Other Requirements*

| | ***CSB-E*** | ***CSB-W*** | ***CSB-GS*** | ***IND - C*** |
|---|---|---|---|---|
| *Floor Area Ratio (FAR)* | *2.0* | *2.0* | *2.00* | *0.75* |
| *Maximum Building Coverage (%)* | *N/A* | *N/A* | *N/A* | *N/A* |
| *Maximum Dwelling Units per Acre [a]* | *N/A* | *N/A* | *N/A* | *24* |

*(a) The total land area used in calculating density shall be the total acreage of the lot on which the development is located.*

*(b) In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board for an FAR of up to 1.7.*

*(c) In the ASB-MF subdistrict, the following shall not be counted as floor area for purposes of determining the maximum floor area ratio: (i) interior portions of a building devoted to off-street parking; (ii) parking garages, structured parking or deck/rooftop parking that are screened from Highland Avenue as required by Section 3.17.6 inclusive of any waiver thereof and from West Street in a manner compatible with the architecture of the building. In the ASB-MF subdistrict, the Applicant may apply for a Special Permit from the Planning Board to exclude additional areas from floor area for purposes of determining the maximum floor area ratio.*

*(d) In the ASB-MF subdistrict, multi-family housing may exceed the maximum of 44 dwelling units per acre by special permit.*

*Off-Street Parking*

*Within the Multi-family Overlay District, the minimum number of required off-street parking spaces shall be one parking space per dwelling unit for all subdistricts. Parking areas shall be designed and constructed in accordance with the current Zoning By-Law parking plan and design requirements. In addition, each and every non-residential component of a Mixed-Use Building is required to provide a minimum number of off-street parking spaces calculated in accordance with the current parking provisions of the Needham Zoning By-law as pertains to a like use.*

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**ARTICLE 11: AMEND ZONING BY-LAW – MAP CHANGE FOR MULTI-FAMILY OVERLAY DISTRICT (NEIGHBORHOOD HOUSING PLAN)**

To see if the Town will vote to amend the Needham Zoning By-Law by amending the Zoning Map, inclusive of those changes adopted under Article 9, as follows:

(a) Place in the CSB-W Subdistrict of the Multi-family Overlay District a portion of land now zoned Chestnut Street Business and located directly to the west of Chestnut Street as shown on Needham Town Assessors Map 47, Parcels 72, 74-03, 74-04, 76, 77, 78, 79, 80, 83, 84, 85, 86, 87, 88, and 91, and Needham Town Assessors Map 46, Parcels 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 58, 59, 60, and 61, superimposing that district over the existing Chestnut Street Business district and removing the existing CSB Subdistrict of the Multi-family Overlay District, said description being as follows:

Beginning at the point of intersection of the easterly sideline of M.B.T.A and the southerly sideline of Keith Place; thence running southeasterly by the southerly sideline of Keith Place to the intersection with westerly sideline of Chestnut Street; southwesterly by the westerly sideline of Chestnut Street to the intersection with northerly sideline of property of M.B.T.A; northeasterly by the northerly sideline of M.B.T.A; northeasterly by the easterly sideline of M.B.T.A. to the point of beginning.

(b) Place in the CSB-E Subdistrict of the Multi-family Overlay District a portion of land now zoned Chestnut Street Business and Single Residence B and located directly to the east of Chestnut Street as shown on Needham Town Assessors Map 46, Parcels 12, 13, 14, 15, 16, 17, 18, 19, 32, 33 and

34 superimposing that district over the existing Chestnut Street Business and Single Residence districts and removing the existing CSB Subdistrict of the Multi-family Overlay District, said description being as follows:

Beginning at the point on the easterly sideline of Chestnut Street, approximately four hundred and ninety-five 88/100 (495.88) feet from the intersection with southerly sideline of School Street; southeasterly by the southerly property line of Deaconess-Glover Hospital Corporation, one hundred and eighty-seven 68/100 (187.68) feet, more or less; southwesterly by the easterly property line of Deaconess-Glover Hospital Corporation, ninety-six 74/100 (96.74) feet, more or less; southwesterly by the westerly property line of Chaltanya Kadem and Shirisha Meda, eighty-two 80/100 (82.80) feet, more or less; southwesterly by the westerly property line of Huard, eighty-two 80/100 (82.80) feet, more or less; southwesterly by the westerly property line of Reidy, ninety-seven 40/100 (97.40) feet, more or less; northeasterly by the northerly property line of L. Petrini & Son Inc, fifteen 82/100 (15.82) feet, more or less; southwesterly by easterly property line of L. Petrini & Son Inc, one hundred and seventy-seven 77/100 (177.77) feet, more or less; northeasterly by the easterly property line of L. Petrini & Son Inc, one hundred and two 59/100 (102.59) feet, more or less; southwesterly by the easterly property line of L. Petrini & Son Inc, fifty 16/100 (50.16) feet, more or less; northeasterly by the easterly property line of L. Petrini & Son Inc, seven 39/100 (7.39) feet, more or less; southwesterly by the easterly property of Briarwood Property LLC, seventy-five (75.00) feet, more or less; northeasterly by the easterly property of Briarwood Property LLC, one hundred (100) feet, more or less; southwesterly by the easterly property of Briarwood Property LLC, two hundred and forty-nine 66/100 (249.66) feet, more or less; southeasterly by the southerly property of Briarwood Property LLC, two hundred ninety-three (293.28) feet, more or less; southwesterly by the easterly property of Veterans of Foreign Wars, one hundred and fifty (150) feet, more or less; northeasterly by the southerly property line of Veterans of Foreign Wars, eighty-five (85) feet, more or less; southwest by the easterly property of M.B.T.A, one hundred and sixty (160) feet, more or less; southeasterly by the northerly sideline of Junction Street to intersection with easterly sideline of Chestnut; northeasterly by the easterly sideline of Chestnut Street to the point of beginning.

(c) Place in the CSB-E Subdistrict of the Multi-family Overlay District a portion of land now zoned Chestnut Street Business and located at 433 Chestnut Street as shown on Needham Town Assessors Map 45, Parcel 6, superimposing that district over the existing Chestnut Street Business district and removing the existing CSB Subdistrict of the Multi-family Overlay District, said description being as follows:

Starting at the point of intersection of the westerly sideline of Chestnut Street and the southerly sideline of M.B.T.A.; southerly by the westerly sideline of Chestnut Street to the intersection with northerly sideline of M.B.T.A; southwesterly by the southerly property line of Castanea Dentata LLC, two hundred and twenty-eight 81/100 (228.81) feet, more or less; southwesterly by the southerly property line of Castanea Dentata LLC, one hundred and eight 53/100 (108.53) feet, more or less; northwesterly by the southerly property line of Castanea Dentata LLC, one hundred and thirty-six 6/100 (136.06) feet, more or less; northwesterly by the southerly property line of Castanea Dentata LLC, one hundred and ten 10/100 (110.10) feet, more or less; running northeasterly by the easterly sideline of M.B.T.A. to the point of beginning.

(d) Place in the CSB-GS Subdistrict of the Multi-family Overlay District a portion of land now zoned Chestnut Street Business and located directly to the east of Garden Street as shown on Needham Town Assessors Map 51, Parcels 17, 20, 22, 23, superimposing that district over the existing Chestnut Street Business district and removing the existing CSB Subdistrict of the Multi-family Overlay District, said description being as follows:

Beginning at the point of intersection of the westerly sideline of M.B.T.A. and the northerly sideline of Great Plain Ave; thence running southwesterly by the northerly sideline of Great Plain Ave, nine 32/100 (9.32) feet, more or less; northeasterly by the westerly property line of Town of Needham, fifty-three 17/100 (53.17) feet, more or less; northeasterly by the westerly property line of Town of Needham, fifty-six 40/100 (56.40) feet, more or less; northeasterly by the westerly property line of Town of Needham, fifty-six 92/100 (56.92) feet, more or less; northwesterly by the westerly property line of Town of Needham, on an arch length one hundred and twelve 99/100 (112.99) feet, more or less; northeasterly by the westerly property line of Town of Needham, fifteen 10/100 (15.10) feet, more or less; northeasterly by the westerly property line of Town of Needham, one hundred and thirty-eight 83/100 (138.83) feet, more or less; southeasterly by the northerly property line of Town of Needham, thirty-three 42/100 (33.42) feet, more or less; northwesterly by the southerly property line of Eaton Square Realty LLC, forty (40) feet, more or less; northwesterly by the southerly property line of Eaton Square Realty LLC, eighty-one 99/100 (81.99) feet, more or less; northwesterly by the southerly property line of Eaton Square Realty LLC, fifty-eighty 31/100 (58.31) feet, more or less; northeasterly by the easterly sideline of Garden Street to intersection with May Street; northeasterly by the southerly sideline of May Street, sixty-one 33/100 (61.33) feet, more or less; southwesterly by the westerly sideline of M.B.T.A to the point of beginning.

(e) Place in the A-1 Subdistrict of the Multi-family Overlay District a portion of land now zoned Industrial and Single Residence B and located directly to the south and east of Denmark Lane as shown on Needham Town Assessors Map 132, Parcel 2, superimposing that district over the existing Industrial and Single Residence B districts, and removing the existing IND Subdistrict of the Multi-family Overlay District, said description being as follows:

Beginning at the point of intersection of the westerly sideline of M.B.T.A. and the southerly sideline of Great Plain Ave; thence running southwesterly by the westerly line of M.B.T.A, four hundred thirty-seven 24/100 (437.24) feet, more or less; southwesterly by the southerly property line of Denmark Lane Condominium, one hundred and eleven 17/100 (111.17) feet, more or less; northeasterly by the easterly property line of Denmark Lane Condominium, two hundred (200) feet, more or less; northwesterly by the southerly property line of Denmark Lane Condominium, one hundred and thirty-nine 75/100 (139.75) feet, more or less; northeasterly by the easterly sideline of Maple Street, one hundred and thirty-five (135) feet, more or less; southeasterly by the northerly property line of Denmark Lane Condominium, one hundred and forty (140) feet, more or less; southwesterly by the northerly property line of Denmark Lane Condominium, fifteen 20/100 (15.2) feet, more or less; northeasterly by the northerly property line of Denmark Lane Condominium, two 44/100 (2.44) feet, more or less; southwesterly by the northerly property line of Denmark Lane Condominium, thirty-three 35/100 (33.35) feet, more or less; northeasterly by the northerly property line of Denmark Lane Condominium, seventy-nine (79) feet, more or less; northwesterly by the northerly property line of Denmark Lane Condominium, thirteen 28/100 (13.28) feet, more or less; northeasterly by the northerly property line of Denmark Lane Condominium, forty-seven 50/100 (47.50) feet, more or less; northeasterly by the northerly property line of Denmark Lane Condominium, eighty-one 91/100 (81.91) feet, more or less; northeasterly by the southerly sideline of Great Plain Ave, twelve 28/100 (12.28) feet to the point of beginning.

(f) Place in the A-1 Subdistrict of the Multi-family Overlay District a portion of land now zoned Single Residence B and located directly to the west of Highland Avenue and north of Hunnewell Street as shown on Needham Town Assessors Map 69, Parcel 37, superimposing that district over the existing Single Residence B district, said description being as follows:

Beginning at the point of intersection of the easterly sideline of the M.B.T.A and the northerly sideline of Hunnewell Street; thence running northwesterly by the easterly sideline of the M.B.T.A., on an arch one hundred and twenty-one 22/100 (121.22) feet, more or less; southeasterly by the northerly property line of The Suites of Needham LLC, one hundred and sixty 23/100 (160.23) feet, more or less; southwesterly by the easterly sideline of Highland Avenue to the intersection with northerly sideline of Hunnewell Street; northwesterly by the northerly sideline of Hunnewell Street to the point of beginning.

(g) Remove from the A-1 Subdistrict of the Multi-family Overlay District a portion of land now zoned Apartment A-1 and Single Residence B and located east and west of Highland Avenue at Cottage Avenue as shown on Needham Town Assessors Map 70, Parcels 24 and 25, said description being as follows:

Beginning at the point on the westerly sideline of Highland Avenue, two hundred and seventeen 63/100 (217.63) from the arch on Webster Street; thence running southwesterly by the westerly sideline of Highland Avenue, three hundred and seventeen (317) feet, more or less; southeasterly across Highland Avenue, fifty (50) feet to a point on the easterly sideline of Highland Avenue; southeasterly by the northerly property line of Avery Park Condominium, two hundred and seventy-eight 75/100 (278.75) feet, more or less; northeasterly by the northerly property line of Avery Park Condominium, sixty-one (61.51) feet, more or less; northeasterly by the northerly property line of Avery Park Condominium, one hundred and seventy-nine 70/100 (179.70) feet, more or less; southwesterly by the westerly sideline of Webster Street, thirty-one 16/100 (31.16) feet, more or less; southwesterly by the southerly property line of Avery Park Condominium, one hundred and sixty-six 51/100 (166.51) feet, more or less; southwesterly by the southerly property line of Avery Park Condominium, one hundred and five 59/100 (105.59) feet, more or less; southwesterly by the southerly property line of Avery Park Condominium, one hundred and forty-four 62/100 (144.62) feet, more or less; northwesterly by the southerly property line of Avery Park Condominium, two hundred and seventy-seven 29/100 (277.29) feet, more or less; northwesterly across Highland Avenue, fifty (50) feet to a point on the westerly side of Highland Avenue: northwesterly by the southerly property line of Hamilton Highlands LLC, one hundred and fifty-nine 45/100 (159.45) feet, more or less; southwesterly by the southerly property line of Hamilton Highlands LLC, ninety-seven 33/100 (97.33) feet, more or less; northwesterly by the northerly sideline of Cottage Avenue, forty (40) feet, more or less; southwesterly by the southerly property line of Hamilton Highlands LLC, fifteen (15) feet, more or less; northwesterly by the southerly property line of Hamilton Highlands LLC, twenty-five 54/100 (25.54) feet, more or less; northeasterly by the easterly sideline of M.B.T.A., five hundred and seventy-five 57/100 (575.57) feet, more or less; southeasterly by the northerly property line of Hamilton Highlands LLC, one hundred and forty-five 2/100 (145.02) feet, more or less; northeasterly by the northerly property line of Hamilton Highlands LLC, one hundred and one 57/100 (101.57) feet, more or less; southeasterly by the northerly property line of Hamilton Highlands LLC, one hundred and eighty 18/100 (180.18) feet, more or less; southeasterly by the northerly property line of Hamilton Highlands LLC, fifty-six 57/100 (56.57) feet to the point of beginning.

(h) Place in the IND-C Subdistrict of the Multi-family Overlay District a portion of land now zoned Industrial and Single Residence B and located at Crescent Road as shown on Needham Town Assessors Map 98, Parcels 40 and 41, and Needham Town Assessors Map 99, Parcels 38, 39, 40, 61, 62, 63, and 88, superimposing that district over the existing Industrial and Single Residence B districts, and removing the existing IND Subdistrict of the Multi-family Overlay District, said description being as follows:

Beginning at the bound on easterly side of Hunnewell Street, approximately three hundred and thirty-two 35/100 (332.35) feet from the intersection with Hillside Avenue; thence running southwesterly by the easterly property line of Microwave Development Laboratories Inc, one hundred and ninety-one 13/100 (191.13) feet, more or less; southeasterly by the easterly property line of Microwave Development Laboratories Inc, sixty-eight 68/100 (68.75) feet, more or less; southeasterly by the easterly property line of Microwave Development Laboratories Inc, one hundred and thirty (130) feet, more or less; southeasterly by the easterly property line of Drack Realty LLC, seventy-three (73) feet, more or less; southwesterly by the easterly property line of Drack Realty LLC, one hundred and forty (140) feet, more or less; northeasterly by the northerly property line of Lally, forty-one (41) feet, more or less; southeasterly by the easterly property line of Lally, seventy-five (75) feet, more or less; southwesterly by the southerly property line of Lally, one hundred (100) feet, more or less; southwesterly to the center of Crescent Road, twenty (20) feet, more or less; southeasterly by the center of Crescent Road, twenty-nine (29) feet, more or less; southwesterly to a bound located twenty-nine feet from the angle point on the easterly side of Crescent Road; southwesterly by the southerly property line of 66 Crescent Road LL, four hundred and fifteen 60/100 (415.60) feet, more or less; northwesterly by the easterly property line of Town of Needham, fifty-two 37/100 (52.37) feet, more or less; northwesterly by the easterly property line of Town of Needham, one hundred and sixty-two 37/100 (162.37) feet, more or less; southwesterly by the easterly property line of Town of Needham, forty-five 76/100 (45.76) feet, more or less; northwesterly by the easterly property line of Town of Needham, one hundred and forty-three 92/100 (143.92) feet, more or less; northwesterly by the easterly property line of Town of Needham, fifteen 71/100 (15.71) feet, more or less; southwesterly by the easterly property line of Town of Needham, two hundred and forty-eight 40/100 (248.40) feet, more or less; northwesterly by the easterly property line of Town of Needham, fifty-three 33/100 (53.33) feet, more or less; northeasterly by the northerly property line of 166 Crescent Road LLC, five hundred and fifty-five 68/100 (555.68) feet, more or less; northeasterly to the center of Crescent Road, twenty (20) feet, more or less; northwesterly by the center of Crescent Road, fifty-six 47/100 (56.47) feet, more or less; northeasterly to the bound located four 38/100 (4.38) feet from the end of the Crescent Road; northeasterly by the northerly property line of Microwave Development Laboratories Inc, one hundred and forty-six 29/100 (146.29) feet, more or less; southeasterly by the northerly property line of Microwave Development Laboratories Inc, fifty-four 82/100 (54.82) feet, more or less; northeasterly by the northerly property line of Microwave Development Laboratories Inc, fifty-four 21/100 (54.21) feet, more or less; southeasterly by the easterly property line of Microwave Development Laboratories Inc, one hundred and ninety-five 81/100 (195.81) feet, more or less; northeasterly by the easterly property line of Microwave Development Laboratories Inc, seven (7) feet, more or less; southeasterly by the easterly property line of Microwave Development Laboratories Inc, ninety-one (91) feet, more or less; northeasterly by the easterly property line of Microwave Development Laboratories Inc, one hundred and forty-two (142) feet, more or less; southeasterly by the easterly sideline of Hunnewell Street, twenty (20) feet to the point of beginning.

Or take any other action relative thereto.

INSERTED BY: Planning Board
FINANCE COMMITTEE RECOMMENDED THAT: Recommendation to be made at Town Meeting

*<u>Article Information</u>: Article 11 describes the geographical area of the Multi-Family Overlay District under the Neighborhood Housing Plan. The proposed zoning amendments would amend the Zoning By-Law and Zoning Map by amending the boundaries of the Multi-Family Overlay District and the designation of the sub-districts contained within the overlay, which will include the A-1, B, ASB-MF, CSB-E, CSB-W, CSB-GS, HAB, IND and IND-C sub-districts. These amendments to the Zoning Map accompany the proposed*

*set of zoning amendments under Article 10 being referred to as the Neighborhood Housing Plan for purposes of complying with the MBTA Communities Law. The Multi-family Overlay District under the Neighborhood Housing Plan contains approximately 92.5 acres.*

## COMMUNITY PRESERVATION ACT ARTICLES

### ARTICLE 12: APPROPRIATE FOR HIGH SCHOOL TENNIS COURTS

To see if the Town will vote to raise and/or transfer and appropriate $3,000,000 for improvements to the Needham High School tennis courts, said sum to be spent under the direction of the Town Manager, and to meet this appropriation that $1,100,000 be transferred from the CPA General Reserve, $300,000 be transferred from CPA Free Cash, $1,100,000 be transferred from the Athletic Facility Stabilization Fund, and $500,000 be transferred from Overlay Surplus; or take any other action relative thereto.

INSERTED BY: Community Preservation Committee
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: This article will fund the replacement of the existing four tennis courts and construction of four new tennis courts at Needham High School. This past July, the Planning Board approved an amendment to the major project site plan special permit for the High School. The permit included changes from the submitted plans, including removal of the shade structure, addition of trees and plantings between the tennis courts and the neighbors, the layout of the additional four courts, and confirmed that no changes will be made to the parking lot. The project also includes improved stormwater management, fencing upgrades, signage, and ADA accessible walkways.*

## CAPITAL ARTICLES

### ARTICLE 13: APPROPRIATE FOR TOWN HALL REPAIRS AND UPGRADES

To see if the Town will vote to raise, and/or transfer and appropriate the sum of $100,000 for engineering and design for the Town Hall HVAC systems and generator, to be spent under the direction of the Town Manager, and to meet this appropriation that said sum be transferred from Overlay Surplus; or take any other action relative thereto.

INSERTED BY: Select Board
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: This article will fund engineering and design for the replacement of certain HVAC systems and the generator at Town Hall. This funding will enable the Town to explore options and develop alternatives to the manner in which the Town Hall HVAC systems and generator currently function. The air conditioning system has failed on several occasions recently, impacting critical systems at Town Hall and contributing to the loss of equipment. The current system has been problematic and expensive to maintain due to the age of its technology. Funding is being sought now so that the replacement process can start as soon as practicable - the current system is unreliable.*

## TOWN RESERVE ARTICLES

**ARTICLE 14: AMEND STABILIZATION FUND**

To see if the Town will vote to amend the special stabilization fund adopted under Article 58 of the 2004 Annual Town Meeting called the Capital Improvement Fund to now be known as the Capital Equipment Fund to reserve funds for future appropriation for capital equipment and in accordance with the fourth paragraph of M.G.L. Chapter 40, Section 5B which allows the dedication, without further appropriation, of 100% of the Sale of Surplus Equipment collected into the fund for capital equipment purchases, effective for FY2026 beginning on July 1, 2025; or take any other action relative thereto.

INSERTED BY: Select Board
FINANCE COMMITTEE RECOMMENDS THAT: Article be Adopted

*Article Information: The intent of this article is to update the purpose and funding of the Capital Improvement Fund. This fund was originally created in 2004 as a reserve for equipment replacement and lower cost facilities improvements when traditional funding sources were not available, but the capital request could not be deferred. Since that time, Town Meeting has established a Capital Facility Stabilization Fund, making the purpose of this fund duplicative for facility purposes. The proposed change clarifies that this reserve, now to be called the Capital Equipment Fund, is intended only for capital equipment purchases when funding is not otherwise available. Town Meeting action is required for the use of the funds. The funding target is based on the cost to replace two large specialty equipment vehicles, such as fire engines. This article includes a provision designating that proceeds from the sale of surplus equipment will be credited directly to the fund beginning in fiscal year 2026.*

And you are hereby directed to serve this Warrant by posting copies thereof in not less than twenty public places in said Town at least fourteen (14) days before said meeting.

Hereof fail not and make due return of this Warrant with your doings thereon unto our Town Clerk on or after said day and hour.

Given into our hands at Needham aforesaid this 10th day of September, 2024.

Kevin Keane, Chair

Heidi Frail, Vice Chair

Catherine Dowd, Clerk

Marianne B. Cooley, Member

Joshua W. Levy, Member

**SELECT BOARD OF NEEDHAM**

A TRUE COPY
Attest:
Constable:

## Alexandra Clee

**From:** David Harmon <dvhar95@gmail.com>
**Sent:** Tuesday, September 24, 2024 4:53 PM
**To:** Planning
**Subject:** MBTA

This MBTA plan is poorly thought out for Needham and other towns. The financial impact is severe. The school impact is poorly documented. There are other problems.
I will vote against the plan.
Dave Harmon

Sent from my iPad

September 25th, 2024

Ms. Natasha Espada, Chair
Needham Planning Board

The Mobility Planning and Coordination Committee has reviewed the traffic study as it relates to the proposed MBTA Communities Act zoning changes and found that the impact to the transportation network in Needham would be minimal.

- The majority of intersections included in the study have planned transportation improvement projects.
- These planned DPW projects in the identified intersections include provisions for improving multimodality of the corridor including considerations for enhanced walkability and bicycle accommodations as traffic mitigation measures.
- According to the traffic study, traffic volumes and level of service would be impacted in these areas regardless of whether development related to the Base Plan or Neighborhood Plan were to take place.
- The traffic study did not include projected traffic data that considered housing close to transit. The proposed zoning map for both the Base Plan and Neighborhood Plan is served directly by both the Commuter Rail and MBTA Bus 59.

Due to the above mentioned reasons the Committee recommends adopting the articles as presented. In addition, suggest that the Town continue to support multimodal projects with a focus on improvements in the proposed MBTA Communities Act zoning areas.

We also recognize that transit oriented development is a traffic mitigation measure in and of itself and the proposed zoning changes may reduce pressure on the transportation system of the Greater Boston Region. The Neighborhood Housing Plan and associated map change has the potential to provide a significant positive impact on the transportation system in the Greater Boston Region (not to mention promoting much-needed housing development). Therefore, the Mobility Planning and Coordination Committee offers strong support for the Neighborhood Housing Plan.

Thank you,

Tim Bulger
Chair of the Mobility Planning and Coordination Committee

**From:** Wells Blanchard
**To:** Planning
**Cc:** chrisurban@aol.com; jbulian@rcn.com
**Subject:** MBTA student estimate assumptions and collecting more data
**Date:** Saturday, September 28, 2024 9:44:02 PM
**Attachments:** image.png
image.png
image.png
image.png

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Hi Planning Board team,

Wells Blanchard here, town meeting member, writing you again in regards to the MBTA zoning proposal. I have been doing a bunch of research and today posted the below on facebook. To summarize the post, the data to backup our student estimates with actual current Needham multi-family data is based on three Needham multi-family developments. However it seems likely that the Modera development could be a more representative type of development than the other two, which are far from town and based in an industrial park. Modera sits at a student generation rate of 0.309, more than two times the current estimate we are using to predict the student enrollment numbers from the prospective MBTA zoning developments. There are very significant implications if Modera is, in fact, representative of what we are to expect from our new developments. The new developments, being right in town, seem more likely to fit the Modera model rather than the industrial park on the edge of town model.

So now to my request. Our sample of data is extremely small. Given the importance of the student assumption, we should increase the sample size of the data. Can we please share/present publicly, prior to the meeting where the town votes on the proposal, the raw data for the other multi-family housing in Needham?

This would include:

- Hamilton Highlands / Webster Green Apartments (757 Highland Ave)
- Rosemary Ridge (100 Rosemary Way)
- Rosemary Lake Apartments (187 Rosemary Street)

The data should include the same information as the data that was shared in the planning board documents for Modera, Charles River and Kendrick, so we are able to compare apples to apples:

- Actual student enrollment from FY21 through FY25 and average
- Total number of units
- Breakdown of units, studio+1 bed, 2 bed, 3 bed
- Student generation rate per unit

If we increase the sample size it will give us valuable information. We can see if those complexes more closely match the Modera number or the numbers from the other two data points we have (or somewhere in between).

Best,
Wells Blanchard

**Facebook Post with Data Analysis for Reference:**

Wells Blanchard
21m ·

Hello everyone. I'm someone, like many of us here in town, who wants to increase affordability in Needham. This is something the MBTA communities act zoning will help us to achieve. However, I'm also cognizant of the potential risks and have been analyzing the data and poring through planning board documentation to understand our assumptions. I'm pasting an image here of page 58 of the September 17th Planning Board packet, which shares details of the student enrollment assumptions. Given that we already have multi-family housing here in Needham, it makes sense that our assumptions should be in line with what we have already built/seen. The town looked at our three developments, Charles River Landing, Kendrick, and Modera and took an average of the student generation rate per unit to compare to their assumptions based on RKG student rates. They found the average of our three developments to be 0.124 students generated per unit, vs. the current assumption of 0.13. However, looking at the data more closely, Charles River Landing and Kendrick, both located in an industrial park on the edge of town very close to Newton, have 0.048 and 0.128 rates respectively, whereas Modera, located much closer to town and to the Mitchell School, has a rate of 0.309. This makes me extremely nervous, because if it turns out that Modera, for whatever reason, is truly representative of the students we would expect in our new multi-family units, we are far underestimating the number of new students we will have coming into our schools. It seems to me not unlikely that the characteristics of the Modera development will more closely match our expected build outs, so we should use a student generation rate that is at or close to the 31% level. That would lead me to believe we should pass the more conservative of the two plans, the Base Plan. The issue is compounded by the fact that the MSBA recently sent a letter (page 259 of the Sept 24th Planning Board packet) informing the town that their estimates for the Pollard school are 1,335 students, which might force the town to build for that estimate, much lower than our initial hope to build for 1,624 students. I included a screenshot of an analysis I put together of expected students for each of the three developments using the RKG student rates for each type of unit. It shows that the RKG model underestimates the number of students at Modera, and overestimates the number of students at the other two developments, which also supports some fundamental difference in the developments themselves (is it proximity to schools, cost of the units, proximity to Newton vs. Needham? we don't really know) that is causing the number of students per unit to differ. Would love people's thoughts on the implications of this data. Lastly, I included a screenshot of the potential impacts of a "Modera" scenario on our Base Plan Likely Build out Scenario (modified from page 60 of the Sept 17 planning meeting packet).

MBTA Communities Act Zoning
Student Projections vs. Actuals 09/2024

◊ In September 2024, RKG Associates updated student enrollment projections to (1) apply a more conservative student generation rate to 2-bedroom units and (2) to account for increased unit capacity in the Avery Square Business District due to a change in the allowed building size.

◊ The updated projections are consistent with the student generation rates that Needham has experienced over the last five years from the three largest multi-family housing developments in town.

◊ The Town conferred with McKibben Demographics, the consultant responsible for annual enrollment projections for the Needham Public Schools. McKibben agreed with the assumptions below.

| RKG Projections (09/2024 update) | Units | Students |
|---|---|---|
| Base Plan - Likely Build | 465 | 62 |
| Base Plan - Full Build | 1924 | 243 |
| Neighborhood Housing Plan - Likely Build | 1342 | 171 |
| Neighborhood Housing Plan - Full Build | 3350 | 422 |

| Actuals: Children Attending NPS from Specific Developments | FY21 | FY22 | FY23 | FY24 | FY25 | Average | Units | student generation rate per unit |
|---|---|---|---|---|---|---|---|---|
| Charles River Landing (300 2nd Avenue) | 18 | 14 | 14 | 17 | 21 | 16.8 | 350 | 0.048 |
| Kendrick (275 2nd Avenue) | 46 | 50 | 58 | 50 | 45 | 49.8 | 390 | 0.128 |
| Modera (700 Greendale Ave) | 41 | 41 | 38 | 45 | 45 | 42 | 136 | 0.309 |
| **Total** | 105 | 105 | 110 | 112 | 111 | 108.6 | 876 | **0.124** |

*Source: Needham Public Schools*

Page 58 of the September 17 Planning Board meeting packet

Modera is at roughly 31% student generation rate, vs. Charles River Landing and Kenrick.

## Modera

| | Units | Market RKG Student Rate | 75% Market | Market Students | Affordable RKG Student Rate | 25% Affordable | Affordable Students | Total Expected Students Based on RKG Rates | |
|---|---|---|---|---|---|---|---|---|---|
| Studio & 1 bed | 19 | 0.00 | 0.75 | 0 | 0.00 | 0.25 | 0 | 0 | Studio & 1 bed |
| Two bed | 103 | 0.16 | 0.75 | 12.36 | 0.38 | 0.25 | 9.785 | 22.145 | Two bed |
| Three bed | 14 | 0.50 | 0.75 | 5.25 | 1.20 | 0.25 | 4.2 | 9.45 | Three bed |
| | | | | | | | | 31.6 | Total Expected |
| | | | | | | | | 42 | Actual Average Modera Students |
| | | | | | | | | 33% | Underestimate percentage |

## Charles River Landing

| | Units | Market RKG Student Rate | 75% Market | Market Students | Affordable RKG Student Rate | 25% Affordable | Affordable Students | Total Expected Students Based on RKG Rates | |
|---|---|---|---|---|---|---|---|---|---|
| Studio & 1 bed | 244 | 0.00 | 0.75 | 0 | 0.00 | 0.25 | 0 | 0 | Studio & 1 bed |
| Two bed | 106 | 0.16 | 0.75 | 12.72 | 0.38 | 0.25 | 10.07 | 22.79 | Two bed |
| Three bed | 0 | 0.50 | 0.75 | 0 | 1.20 | 0.25 | 0 | 0 | Three bed |
| | | | | | | | | 22.8 | Total Expected |
| | | | | | | | | 16.8 | Actual Average Charles River Landing Students |
| | | | | | | | | -26% | Overestimate percentage |

## Kendrick

| | Units | Market RKG Student Rate | 75% Market | Market Students | Affordable RKG Student Rate | 25% Affordable | Affordable Students | Total Expected Students Based on RKG Rates | |
|---|---|---|---|---|---|---|---|---|---|
| Studio & 1 bed | 202 | 0.00 | 0.75 | 0 | 0.00 | 0.25 | 0 | 0 | Studio & 1 bed |
| Two bed | 149 | 0.16 | 0.75 | 17.88 | 0.38 | 0.25 | 14.155 | 32.035 | Two bed |
| Three bed | 39 | 0.50 | 0.75 | 14.625 | 1.20 | 0.25 | 11.7 | 26.325 | Three bed |
| | | | | | | | | 58.4 | Total Expected |
| | | | | | | | | 49.8 | Actual Average Kendrick Students |
| | | | | | | | | -15% | Overestimate percentage |

| BASE PLAN LIKELY BUILD | Elementary | | Middle | | High School | |
|---|---|---|---|---|---|---|
| McKibben peak enrollment projection (FY25-39) | 2628 | | 1349 | | 1725 | |
| additional RKG enrollment projection | 148 | ~~62~~ | 148 | ~~62~~ | 74 | ~~31~~ |
| Total Enrollment Projection | 2776 | ~~2690~~ | 1497 | ~~1411~~ | 1799 | ~~1756~~ |
| | | | | | | |
| School Master Plan C1A Capacity | 2854 | | 1355 | ~~1624~~ | 1800 | |
| C1A Capacity vs. total enrollment projection | 164 | | 213 | | 44 | |
| | | | | | | |
| School Master Plan C2 Capacity | 2983 | | 1624 | | 1800 | |
| C2 Capacity vs. total enrollment projection | 293 | | 213 | | 44 | |

**Base Plan Likely Build**

**How do student impacts change if we use Modera as the model for expected student numbers in our most conservative build out model?**

**Note our Pollard Capacity based on new MSBA estimates is only 1355**

## Alexandra Clee

**From:** Irene <agape4z@yahoo.com>
**Sent:** Sunday, October 6, 2024 11:35 PM
**To:** Planning; Jameszafferes@gmail.com
**Subject:** Proposed MBTA Mandated Rezoning - Needham

Dear Planning Board,

We are disheartened to learn of this massive rezoning mandate that will change the suburban nature and appearance of our beloved Needham. How can you even think to accept this? Why would it be considered? Do you not care about the quality of life in town and the small-town beauty of Needham?

My husband and I are retired, living on a fixed income, and already find it financially burdensome to afford our taxes and cost of living that seems to go up each year, whether through town, state, or federal taxes. We make ends meet by forgoing unnecessary expenses for the love of living in this community. We have lived in town for 45 years and love that our grandchildren visit the Needham in which their mothers were raised, went to school, made life-long friends. We remain residents so that our grandchildren enjoy the same community feel of the town we have known for 45 years. Massive, unrestricted housing development will cause our roads that are already congested to become unbearable. Chestnut St, Highland Ave, and especially Needham St are already over-developed and terribly congested. And you are thinking to expand on this congestion? Ruin the quality of life in town? Raise taxes and increase town debt? We can't afford higher taxes; we would have to move from the one and only house we have ever owned and relocate to a more affordable town or state.

We beg you not to accept this rezoning and to strike it down as was done in Milton. PUT NEEDHAM AND ITS RESIDENTS FIRST!!! Don't give in to developers; their only interest is profit. They care nothing for Needham. Put Needham first!

Doing the right thing is always right. Thinking of greed and unbridled development is not right for the town nor for its citizens (your own families and friends) that you supposedly represent.

SAVE NEEDHAM!
~Irene and Jim Zafferes

## Alexandra Clee

**From:** Joanne harrington <joanneharrington817@gmail.com>
**Sent:** Saturday, October 5, 2024 1:45 PM
**To:** Planning
**Subject:** Housing

I have been a Needham resident for 58 years. My kids & and myself & my husband all went to NHS. I still love the character & charm of Needham. This would change Needham forever. My 4 kids & 10 grandchildren love Needham.

Please don't make our beautiful town a city. This plan is over the top

Joanne & John Harrington

October 8, 2024

Natasha Espada, Planning Board Chair
Town of Needham Planning Board
500 Dedham Ave
Needham, MA 02492

Re: Climate Action Committee Letter of Support for MBTA Communities Act Proposed Zoning Changes

Dear Ms. Espada,

On behalf of the Climate Action Committee, we write to express our support for the Town of Needham's compliance with the MBTA Communities Act.

Increasing public transit ridership and reducing transit-related emissions is one of the goals of Needham's Climate Action Roadmap. About one-third of Needham's greenhouse gas emissions come from vehicles. One of the key actions identified in Needham's Climate Action Roadmap is to "Revise local zoning requirements to ensure compliance with MBTA Communities zoning law" (TR.2.2.C, page 15). These proposed changes can make it easier for Needham residents and workers to be less dependent on individual automobile usage and reduce our vehicle-related emissions. Residents of this transit-oriented housing will be able to use the MBTA for work and pleasure while accessing more of Needham without a personal vehicle.

Changing our zoning to allow for increased levels of multifamily housing in appropriate areas will reduce our per-capita carbon emissions and contribute to the preservation of green space. The areas that have been selected for rezoning under the proposed warrant articles are largely already developed. The rezoning seeks to promote redevelopment that can use the existing utilities infrastructure and building footprints, limiting the need to add additional impervious surfaces.

Because Needham opted-in to the Specialized Energy Code (implementation began July 1, 2024), any new multifamily housing over 12,000 square feet will need to meet Passive House standards. Any new multifamily housing under 12,000 square feet will need to be all-electric or, if using fossil fuel combustion systems, will need to be pre-wired for future electric appliances and install solar to offset energy usage.

Compliance with the MBTA Communities Act will also ensure that Needham remains eligible for state and federal funding opportunities. Needham has already taken advantage of several outside funding opportunities, such as Green Communities grants, which enable the Town to fund measures that support our climate goals for the community.

The Climate Action Committee unanimously supports adopting zoning which will enable the Town to be in compliance with the MBTA Communities Act. We recognize that the Neighborhood Plan most strongly supports the climate goals that are articulated in the Climate Action Roadmap. The Neighborhood Plan will provide housing for a larger number of new residents, boosting public transit ridership and enabling more multifamily housing which will meet the standards of the Specialized Energy Code.

Sincerely,

Nick Hill, Climate Action Committee, Chair
Paul Molta, Climate Action Committee, Vice-Chair

NEEDHAM HOUSING COALITION

Advocacy for More Attainable Housing Choice

October 2024

Dear Town Meeting Members—

We are members of the Needham Housing Coalition (NHC), a group of Needham residents who support the creation of new multifamily housing. At the October 21 Town Meeting, Town Meeting will vote on zoning options that could help create new housing in Needham.

We are sending this packet of materials to provide easy-to-digest information about the upcoming Special Town Meeting vote related to compliance with the MBTA Communities Act. The HONE Committee and their consultants have worked diligently to create thoughtful rezoning strategies to allow for the gradual creation of new housing close to shops and restaurants and other businesses near our local train stations. Our group has carefully reviewed the material and created this summary of the HONE information, and addressed some of the hot topics below. Additional information is in this packet and online.
*(Scan QR code below for the list of HONE reference materials.)*

**What stays the same? What changes with the two proposed plans?**
The MBTA-CA plans will be defined as an overlay district on land that is already zoned for other uses including commercial, industrial, and multifamily. It does not include land zoned for single-family homes. The underlying zoning will remain the same, but new zoning continues or adds multifamily use, all of which will be by right. There is no mandate to change any parcels or existing uses.

**Are there any plans for affordable housing?**
Yes. 12.5% of any new units must be available at affordable rents or purchase prices. *(Packet page 31)*

**Will there be enough parking?**
Yes. Developers must provide parking for their projects, with a minimum requirement of one car per unit, which reflects the trend in the marketplace. However, a developer will ultimately provide parking according to what the project's target market demands. *(Packet page 23)*

Scan QR code for links to source and reference materials.

**Will this make traffic worse?**

There will be additional traffic at the entrance(s) to any new development. However, residential traffic patterns are typically not as peak-driven as commercial/office uses which can cause peak congestion. In general, residential traffic will dissipate into surrounding streets with activity spread out during day and evening hours.

Experience in Needham with Modera and other smaller residential projects, have proven that, in spite of significant neighborhood concern and the completion of traffic reports, little added traffic impact is ever realized. Much of Needham's traffic issues in higher traffic areas are due to higher volumes of through traffic, and the latest traffic report indicated the town is already planning traffic control measures in the MBTA project areas and stated that any incremental increases from new residential development would be included and manageable during the implementation of these improvements planned for the coming years. *(Scan QR code below for the Full Traffic Report)*

**Will the schools be overcrowded and need more funds?**

No. The HONE consultants have assured the town that there will be adequate resources from the new tax revenue to pay for any additional costs the schools may incur. *(Packet page 25)*

**Is there a review process for new developments?**

Yes. Following recent public comments, the town is refining the details of the Site Plan Review process with the Planning Board and Town Counsel to ensure that Needham has rigorous safeguards written into the zoning language that will comply with the state requirements. Following these refinements to the process, the Planning Board and the Design Review Board will conduct a Site Plan Review for any by-right project proposed in the MBTA District.

Please contact us at needhamhousingcoalition@gmail.com with any questions or comments. For more discussion of the MBTA zoning, please come to the NHC's open discussion about the MBTA Communities Act plans at the **Needham Public Library** and on Zoom on **Thursday, October 17,** at 7:00 pm.

Thank you,

**Needham Housing Coalition**
Paula Dickerman
Jim Flanagan
David Hruska
Cathy Mertz
Oscar Mertz
Margaret Murphy
Magda Schmalz
Jan Soma

Scan QR code for links to source and reference materials.

# MBTA Communities Act

## Town Meeting Member Information Packet

(Warrant Articles 8, 9, 10 and 11)

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Scan QR code for links to source and reference materials.

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## 1. History of the MBTA-CA and Housing Needham Advisory Committee (HONE)

***MBTA-CA History:***

As our regional economy grows, we need more housing at a wider range of price points. But the state has left most housing policy decisions up to local governments that are not focused on our state or region's shared needs. This mismatch of interests has led many communities with valuable transit access to adopt single-family-exclusive zoning rules that ban the construction of modest, diverse housing options like townhomes, duplexes, and triple-deckers. In addition to rising housing costs, this has contributed to persistent residential segregation by race and income and higher $CO_2$ emissions from car-centric development patterns. We have an intensifying housing shortage with costs rising as a result.

To meet this challenge, the state legislature passed a law in January of 2021 requiring that all "MBTA communities" develop at least one zoning district within a ½ mile of transit that legalizes multifamily housing construction. While it leaves significant latitude to individual city and town governments, this law represents an important shift, with the state taking action to ensure that most eastern Massachusetts cities and towns contribute to addressing our regional housing shortage.

***HONE Summary:***

The Housing Needham (HONE) Advisory Group was established jointly by the Select Board and Planning Board in 2023. The group was tasked with leading the community engagement process to create multifamily zoning that complies with the MBTA Communities Act (M.G.L. ch. 40A, § 3A). The group served as advisors to the Select Board and Planning Board on proposed zoning that will come before Town Meeting in October 2024, informed by their individual expertise, group deliberations, and feedback received from the public.

The HONE Committee:

1. Led a broad public engagement effort for the Needham community to envision and shape zoning that allows multifamily housing that complies with the MBTA Communities Act.
2. Utilized the recommendations in the Town of Needham's 2022 Housing Plan as a starting point.
3. Evaluated buildouts, projections, and analyses of fiscal, school enrollment, and infrastructure impacts provided by staff and consultants.



Scan QR code for links to source and reference materials.

4. Considered related zoning elements that are allowed, but not required, under the MBTA Communities Act, including but not limited to inclusionary zoning (affordable housing requirements) and parking minimums.
5. Updated the Select Board, Planning Board, and Finance Committee throughout the process on group deliberations and community feedback.
6. Recommended draft zoning to the Select Board and Planning Board to submit to EOHLC and Town Meeting.

The MBTA Communities Act, passed by the Massachusetts Legislature in January 2021, serves as the backdrop to the work undertaken by HONE. The law has three primary tenets as the basis for the guidelines issued by EOHLC:

1. MBTA zoning districts must have a minimum total density of 15 units per acre.
2. MBTA zoning districts cannot be located not more than ½ mile from a commuter rail station, subway station, ferry terminal, or bus station, if applicable.
3. MBTA zoning cannot include age restrictions and cannot prevent housing that is suitable for families with children.



Scan QR code for links to source and reference materials.

## 2. Building on the Needham 2022 Housing Plan

In 2021, the Town of Needham formed the Housing Plan Working Group to update its 2006 Housing Plan. The 2022 Housing Plan was written by a diverse group of Needham residents, staff, and consultants. The purpose of the Housing Plan is "***to provide a pathway for creating housing opportunities in the Town of Needham."***

After 15 months of work together, the Working Group concluded that **the town needs to pursue opportunities to provide housing that is affordable to residents of different income levels.** We believe the implementation of this 2022 Housing Plan to preserve, and hopefully increase, both moderate-income and affordable housing is **critical to maintaining the diversity and economic prosperity of Needham.**

The zoning changes proposed in the 2022 Housing Plan formed a strong base from which HONE was able to work. ***(Scan QR code below for a summary of the proposed zoning changes and illustrative maps.)***

To come to their conclusions, the Working Group did comprehensive research into Needham's demographic and economic characteristics and trends, as well as our housing characteristics and trends. They found that:

- Current housing prices and rents in Needham are "unprecedentedly high" and there are significant affordability gaps.
- 12.8% of Needham homeowner households and 40.9% of renter households spend more than 30% of their income on housing costs. By definition, this means that they are "cost burdened."
- Housing supply in Needham is inadequate to meet demand.
- The population of Needham is aging, and most young individuals and families are unable to afford to move to Needham.
- The town should "Enhance the vitality of our commercial areas to encourage walkability, commuting, shopping, services, socializing, and health."

The 2022 Housing Plan presents seventeen major recommendations in three categories: Zoning; Development and Preservation Strategies; and Capacity Building Strategies. These are listed in the Executive Summary (pages 1-3) and explained in detail starting on page 32 of the Plan.

The Needham Housing Coalition supports the great majority of recommendations made in the 2022 Housing Plan, including those that "merit further study." ***(Scan QR code below to see selected summaries and the full 2022 Housing Plan.)***



Scan QR code for links to source and reference materials.

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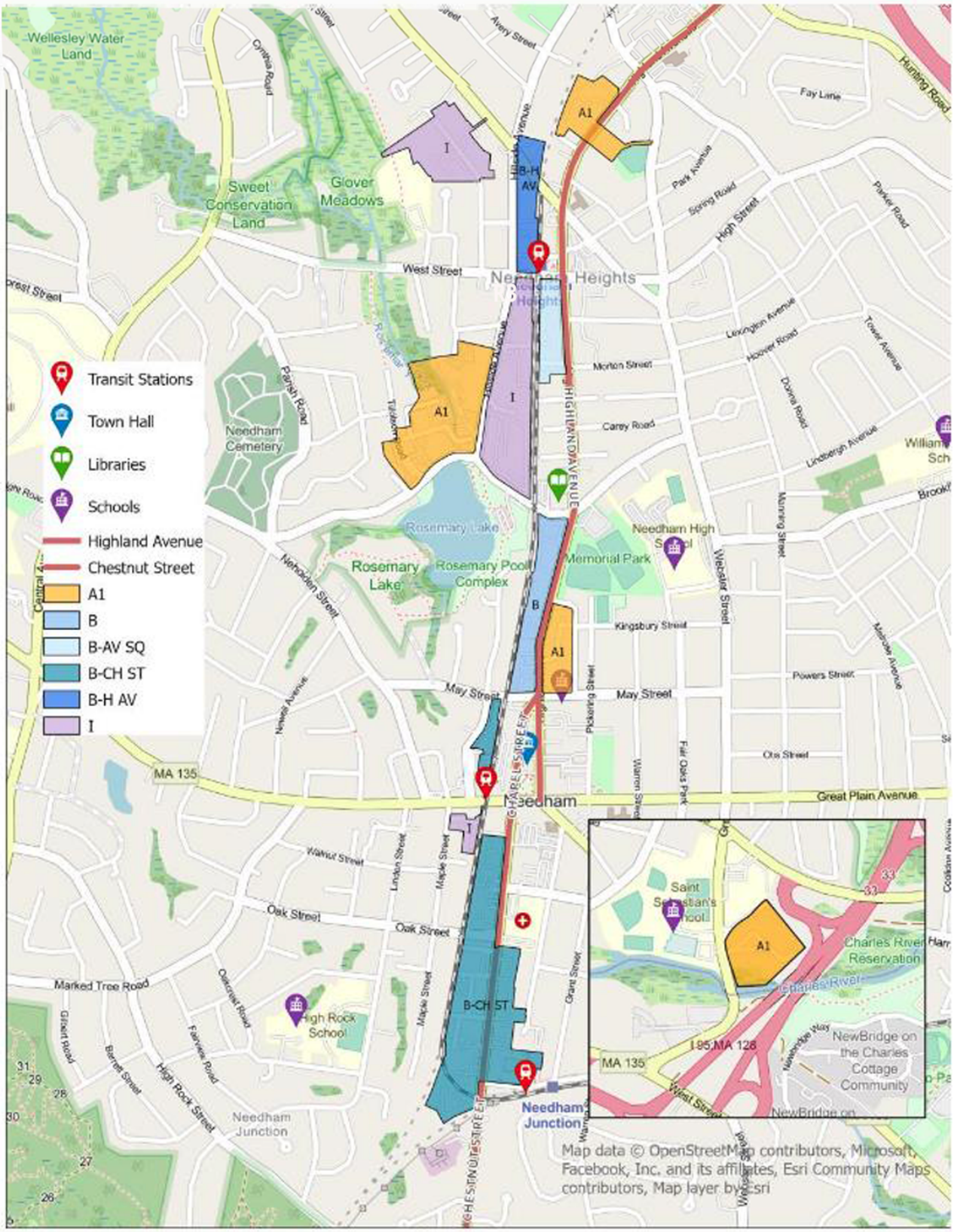
## 3. Base Compliance Plan Map




**Town of Needham:** MBTA Communities Act / Multifamily Zoning Map



Scan QR code for links to source and reference materials.

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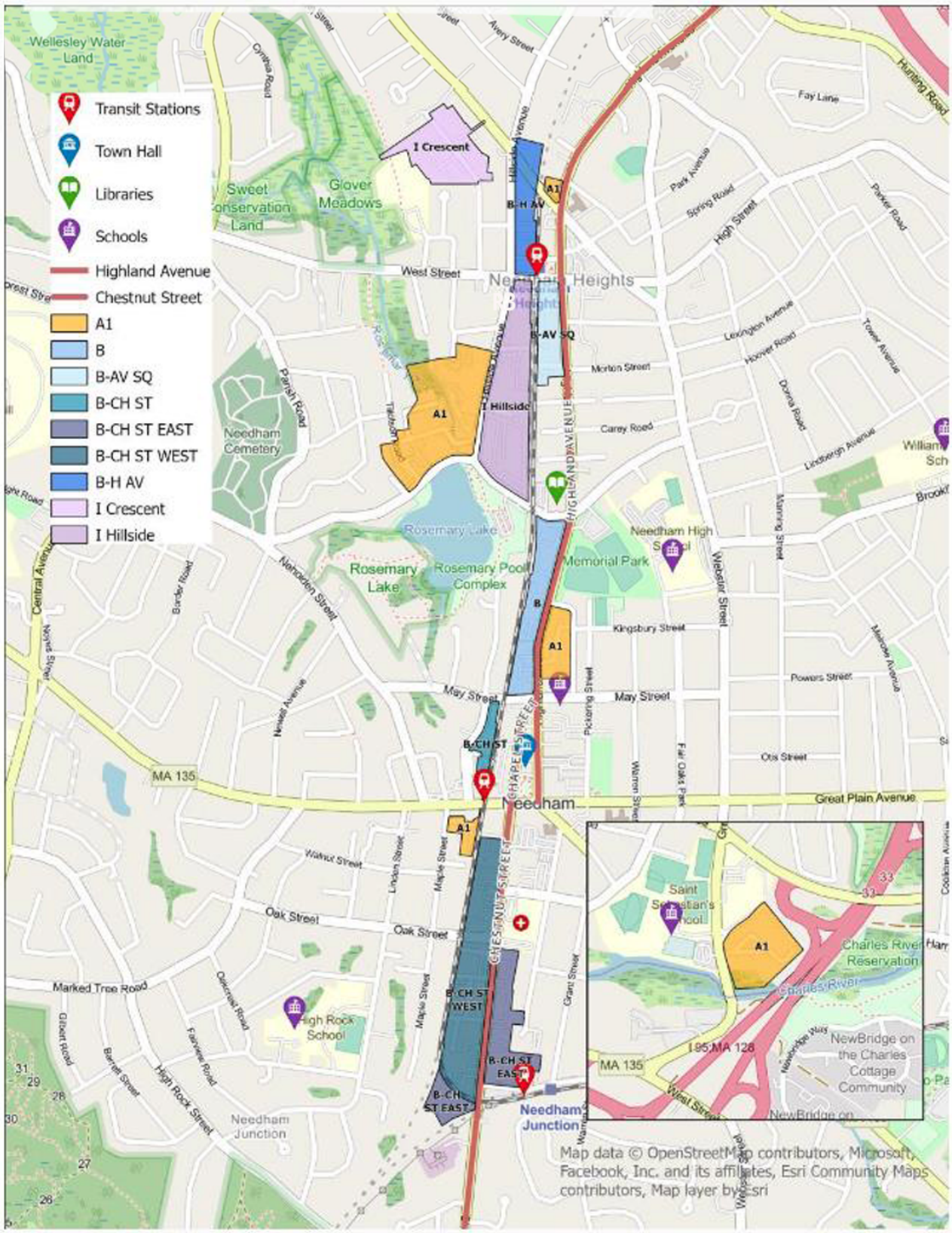
## 4. Neighborhood Housing Plan Map




**Town of Needham:** MBTA Communities Act / Multifamily Zoning Map

Scan QR code for links to source and reference materials.

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## 5. Zoning District Parameters – *Development Thresholds*

| BASE COMPLIANCE PLAN | | | | | | |
|---|---|---|---|---|---|---|
| | **Apartment A1** | **Business** | **Avery Square Business** | **Chestnut St. Business** | **Hillside Ave. Business** | **Industrial** |
| **Minimum Lot Size (Sq. feet)** | 20,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| **Height (Stories)** | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| **Floor Area Ratio (FAR)** | 0.50 | | 1.30 | 0.70 | 0.70 | 0.50 |
| **Max Lot Coverage** | | 25% | | | | |
| **Max Dwelling Units Per Acre** | 18 | | | 18 | | |
| **Parking per Unit** | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | | | 4 stories and an FAR of 1.7 allowed by Special Permit. | | | |

| NEIGHBORHOOD HOUSING PLAN | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Apt A1** | **Business** | **Avery Sq Business** | **Chestnut St. Business** | | **Hillside Ave. Business** | **Industrial** | |
| | | | | **West** | **East & Garden St.** | | **Crescent** | **Hillside** |
| **Minimum Lot Size (sq. feet)** | 20,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| **Height (Stories)** | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| **Floor Area Ratio (FAR)** | 1.00 | 2.00 | 1.30 | 2.00 | 2.00 | 1.00 | 0.75 | 1.00 |
| **Max Lot Coverage** | | | | | | | | |
| **Max Dwelling Units Per Acre** | 36 | 48 | | | | 24 | 24 | 24 |
| **Parking per Unit** | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| **Note** | | 4.5 stories allowed if commercial space on first floor or 7.5% workforce housing. | 4 stories and an FAR of 1.7 allowed by Special Permit. | 4.5 stories allowed if commercial space on first floor or 7.5% workforce housing. | 3.5 stories allowed if commercial space on first floor or 7.5% workforce housing. | | | |

**Town of Needham:** MBTA Communities Act / Multifamily Zoning Chart



Scan QR code for links to source and reference materials.

## 6. Unit Capacity Comparisons

Unit cap reduction was confirmed by Planning Board on 09/24/24

**Unit Capacity: Comparison with Existing Zoning**

| Zoning District | Scenario Name: Unit Capacity | | | | |
|---|---|---|---|---|---|
| | Existing Units | Existing Zoning Unit Capacity | Existing Zoning with Overlay Special Permit Unit Capacity | Base Compliance Plan Unit Capacity | Neighborhood Housing Plan Unit Capacity |
| Apartment A1 | 588 | 526 | 526 | 526 | 877 |
| Business | 4 | N/A | N/A | 210 | 305 |
| Avery Square Business | 72 | 77 | 77 | ~~243~~ 190 | ~~243~~ 190 |
| Chestnut St. East | 46 | 370 | 987 | 370 | 547 |
| Chestnut St. West | | | | | 732 |
| Chestnut St./Garden St. | | | | | 75 |
| Hillside Ave Business | 44 | 46 | 46 | 80 | 62 |
| Industrial – Crescent | 21 | N/A | N/A | 495 | 184 |
| Industrial – Hillside | | | | | 325 |
| **TOTAL UNITS** | **775** | **1,019** | **1,636** | ~~1,924~~ 1,871 | ~~3,350~~ 3,297 |

**Unit Capacity: Likely and Full Build Out Projection**

| Zoning District | Scenario Name: Unit Capacity | | | |
|---|---|---|---|---|
| | Base Compliance Likely Build | Base Compliance Full Build | Neighborhood Housing Plan Likely Build | Neighborhood Housing Plan Full Build |
| Apartment A1 | 0 | 526 | 82 | 877 |
| Business | 43 | 210 | 111 | 305 |
| Avery Square Business | ~~243~~ 190 | ~~243~~ 190 | ~~243~~ 190 | ~~243~~ 190 |
| Chestnut St. East | 50 | 370 | 137 | 547 |
| Chestnut St. West | | | 560 | 732 |
| Chestnut St./Garden St. | | | 33 | 75 |
| Hillside Ave Business | 8 | 80 | 6 | 62 |
| Industrial – Crescent | 121 | 495 | 79 | 184 |
| Industrial – Hillside | | | 91 | 325 |
| **TOTAL UNITS** | ~~465~~ 412 | ~~1,924~~ 1,871 | ~~1,342~~ 1,289 | ~~3,350~~ 3,297 |



Scan QR code for links to source and reference materials.

## 7. Likely projection for new apartment homes and condos built on the proposed MBTA zoned land.

**Where did the numbers come from?**

The total unit numbers — 1,871 for the Base Compliance Plan and 3,297 for the Neighborhood Housing Plan — were derived from a complicated formula used by the state. It unrealistically assumes that the land is vacant, and does not account for current ownership or current uses. It calculates how many units *could* be built on the empty rezoned land, given the parameters of the new zoning. It is only hypothetical.

**What is currently on the land**

There are already 775 apartments and condominiums on this land. Therefore, if new apartments were built on this land, they would either replace, or supplement, what is already there. On Rosemary Street and Lower Hillside alone, there are 205 apartments (Rosemary Lake Apartments) and 105 condos (Rosemary Ridge).

There are multiple long-term uses on this land including existing apartments and condos, Sudbury Farm, Roche Bros, The CATH, St. Joseph Catholic Church, and commercial buildings. Since many of these businesses are profitable, it is unlikely that they will all be replaced.

**Current zoning**

- The existing zoning allows for 1,636 housing units in the area being rezoned under MBTA-CA.
- Currently there are 775 housing units in the proposed MBTA Community Act district.
- According to current zoning, there is capacity for another 861, for a total of 1,636 units. They have not been built due to market conditions, complicated ownership, smaller parcels of the land, and zoning restrictions.

**The main differences between the Base Compliance Plan and the Neighborhood Housing Plan are:**

- The Neighborhood Housing Plan is far more likely to incentivize badly needed housing development.
- The Base Compliance Plan uses slightly more land than the Neighborhood Housing Plan.
- More units per acre (higher density) are allowed in the Neighborhood Housing Plan.
- Higher Floor Area Ratios (FAR) are allowed in the Neighborhood Housing Plan.
- In a few locations in the Neighborhood Housing Plan, buildings can be 4 or 4.5 stories instead of 3 stories.

Scan QR code for links to source and reference materials.

**The Base Compliance Plan***

- The main difference between the Base Compliance Plan and current zoning is that a special permit would not be necessary, though proposed developments would be subject to site plan review and all other applicable zoning and building requirements.
- Development would be incremental, modest in numbers, and take years and decades to be realized.
- The maximum capacity number of 1,871 is hypothetical, and it is unrealistic to think this number would ever be reached, knowing the land is already developed and given current market realities.

**The Neighborhood Housing Plan***

- This plan, with higher zoning thresholds for height and density, is far more likely to incentivize multifamily housing development that will meet the needs of our residents.
- The maximum capacity number of 3,297 is hypothetical and it is unrealistic to think this number would ever be reached, knowing the land is already developed and given current market realities.

***See table on page 11 for comparison of likely and full-capacity housing projections, and the next section (below) for why housing development takes a long time to realize.***



Scan QR code for links to source and reference materials.

**8. Why Housing Development Takes a Long Time to Happen**

**It typically takes several years to build a multifamily development in Needham because of the long process of land acquisition, planning, approvals, and financing that needs to be completed. Any developer must be prepared financially for a 3–7 year endeavor.**

**Following are the steps:**

- The proponent must have a multi-year control of an appropriate parcel of land. Often the parcel will need to be assembled**.** The land can be owned or the proponent can pay a monthly option payment. Finding and controlling an appropriate parcel can take years.
- The proponent must have the ability to finance or pay for the land, lawyers, and consultants to permit the project and manage any appeals, necessary consultants, construction docs, and construction. There must be enough profit in the deal to subsidize any local issues and affordable units (12.5% in Needham).
- Many developers are waiting to proceed on developments until the interest rates go down.
- The proponent must assemble his team and work on the permitting material. They must design the development and understand any solutions to local issues such as traffic, fiscal impact, and stormwater management.
- The proponent will often meet with neighbors and other stakeholders to get feedback.
- The proponent must file with the city/town for the necessary approvals required by the town. Local permitting can range from site plan approval to a Town Meeting vote. This could be several months or a few years depending on what is required.
- After any approval, there is an option for an appeal which could take several months.
- The proponent must prepare the construction documents which are reviewed by the town, which can take 6-8 months.
- Construction can be close to two years for any complicated development.
- The proponent can start the lottery for the affordable units, which can take six months.
- The proponent can start leasing or selling the units.
- The building receives a Certificate of Occupancy and can then be occupied.

Scan QR code for links to source and reference materials.

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on the page

## 9A. MBTA District Conceptual Views - *Chestnut Street*

**Existing Site Photo:**

**lot:** .67 acres
**use:** parking/Comm
**height:** 0
**area:** 25,700 sf
**density:** 0
**FAR:** 0
**date:** 1997

S2 **237 Chestnut** *(BID)*

**Site Development possibilities:**

NHC Conceptual View: Chestnut Street looking south - MXU with multifamily above retail *(3.0 stories)*

NHC Conceptual View: Chestnut Street looking south - MXU with multifamily above retail *(4.0 stories)*

Scan QR code for links to source and reference materials.

## 9B. MBTA District Conceptual Views – *Highland Avenue*

**Existing Site Photo:**

**lot:** 1.46 acres
**use:** parking/Comm
**height:** 1
**area:** 25,350 sf
**density:** n/a
**FAR:** .40
**date:** 2000

**S1** **1257-1299 Highland** *(Bertucci's plaza)*

**Site Development possibilities:**

NHC Conceptual View: Highland Avenue looking south - Stand alone multifamily residential *(3.5 stories)*

NHC Conceptual View: Highland Avenue looking south - stand-alone multifamily residential *(4.0 stories)*

Scan QR code for links to source and reference materials.

**10. Benefits of the Neighborhood Housing Plan**

The **Neighborhood Housing Plan** provides the best possible path for building, over time, the housing Needham needs for our downsizing seniors, young adults and families, and local employees.

**The Neighborhood Housing Plan:**

- Opens up opportunities for new homes for seniors looking to downsize but who want to stay in the community where they've raised their families.
- Creates opportunities for young people who grew up in Needham to stay or move back to town and raise their own families here.
- Allows for the gradual creation of small, multifamily homes close to the shops, restaurants, and other businesses we love, near our local train stations.
- Supports our small independent merchants, bringing new customers and vibrancy to our shops, restaurants, and other businesses and enticing new businesses to come to Needham.
- Creates thoughtful guidelines that allow for gradually creating new multifamily homes in carefully selected parts of town.
- Brings new resources to Needham to be used for local needs.
- Provides housing the local employers tell us they need in order to attract and retain workers.
- Improves streetscapes along Hillside Avenue, Highland Avenue, Rosemary Street, and Chestnut Street.
- Creates an opportunity for affordable/moderately priced homes because 12.5% of new multifamily housing units must be available for residents earning at or below 80% of Area Median Income (AMI) (i.e., $91,000 max for one person).
- Creates an opportunity for new and expanded resources and revenue streams to come into our local economy.
- Implements the recommendations of the Needham 2022 Housing Plan *(scan QR code below)*, which was developed over fifteen months of study and community input. "Compliance with recent state guidelines for communities to rezone for by-right, multifamily housing near transit is also a significant component of this Housing Plan."
- The **Neighborhood Housing Plan** is the result of months of careful, inclusive, and deliberative engagement that included many community meetings and robust public input. The HONE committee's careful and thorough efforts should not be disregarded or squandered. The Neighborhood Housing Plan complies with the state-mandated MBTA Communities Act.
- The **Base Compliance Plan** does not do enough to unlock meaningful opportunities to meet Needham's needs or the objectives of the 2022 Needham Housing Plan.

Scan QR code for links to source and reference materials.

**The Neighborhood Housing Plan does not make any changes to existing single-family neighborhoods.**

- The HONE committee did NOT include any changes to single-family zoned neighborhoods in the areas recommended for the new multifamily zoning.
- The Hersey Station neighborhood was NOT included because it is mostly single-family homes and because the neighborhood commercial land size is too small to comply with the MBTA Communities Act.
- The HONE committee's rezoning effort does NOT include rezoning the mixed-use commercial areas in Needham Center and Needham Heights. In the future, we will have opportunities to zone for more multifamily housing over commercial ground floors, which would bring vitality and support to these important small business areas of town.



Scan QR code for links to source and reference materials.

## 11. Development Standards and Design Guidelines

***(This summary is based on the draft zoning article dated 09/05/24. Some refinements may occur in the final version.)***

The new overlay zoning proposed for the MBTA Communities Act parcels is focused mostly along portions of Highland Avenue, Rosemary Street, Highland Avenue, and Chestnut Street. Most of the district parcels are occupied by existing housing, and commercial and industrial uses.

Multifamily housing will now be allowed along with the other existing uses. Although multifamily housing will now be allowed by-right, there will be a site plan review process and Development Standards and Design Guidelines *(scan QR code below)* that new projects in the district will be required to follow.

**3.17.7 Development Standards *(draft dated 09/05/24):***

1. (a) Notwithstanding anything in the Zoning By-Laws outside of this Section 3.17 to the contrary, Multifamily housing in the multifamily overlay district shall not be subject to any special permit requirement.
2. (b) Building entrances shall be available from one or more streets on which the building fronts and If the building fronts Chestnut Street, Garden Street, Highland Avenue, Hillside Avenue, Rosemary Street, or West Street, the primary building entrance must be located on at least one such street.
3. (c) Site arrangement and driveway layout shall provide sufficient access for emergency and service vehicles, including fire, police, and rubbish removal.
4. (d) Plantings shall be provided and include species that are native or adapted other region Plants on the Massachusetts Prohibited Plant List, as may be amended, are prohibited.
5. (e) All construction shall be subject to the current town stormwater bylaws, regulations and policies along with any current regulations or policies from DEP, state, and federal agencies.
6. (f) Control measures shall be employed to mitigate any substantial threat to water quality or soil stability, both during and after construction.
7. (g) Off-site glare from headlights shall be controlled through arrangement, grading, fences, and planting. Off-site light over-spill from exterior lighting shall be controlled through luminaries selection, positioning, and mounting height so as to not add more than one foot candle to illumination levels at any point off-site.
8. (h) Pedestrian and vehicular movement shall be protected, both within the site and egressing from it, through selection of egress points and provisions for adequate sight distances.



Scan QR code for links to source and reference materials.

9. (i) Site arrangements and grading shall minimize to the extent practicable the number of removed trees 8" trunk diameter or larger, and the volume of earth cut and fill.
10. (j) No retaining wall shall be built within the required yard setback except a retaining wall with a face not greater than four (4) feet in height at any point and a length that does not exceed forty (40) percent of the lot's perimeter. Notwithstanding the foregoing, retaining walls may graduate in height from four (4) to seven (7) feet in height when providing access to a garage or egress entry doors at the basement level, measured from the basement or garage floor to the top of the wall. In such cases, the wall is limited to seven (7) feet in height for not more than 25% of the length of the wall.
11. (k) Retaining walls with a face greater than twelve (12) feet in height are prohibited unless the Applicant's engineer certifies in writing to the Building Commissioner that the retaining wall will not cause an increase in water flow off the property and will not adversely impact adjacent property or the public.

**3.17.10 Design Guidelines** ***(draft dated 09/05/24):***

The Planning Board may adopt and amend, by simple majority vote, Design Guidelines which shall be applicable to all rehabilitation, redevelopment, or new construction within the Multifamily Overlay District. Such Design Guidelines must be objective and not subjective and may contain graphics illustrating a particular standard or definition to make such standard or definition clear and understandable. The Design Guidelines for the Multifamily Overlay District shall be as adopted by the Planning Board and shall be available on file in the Needham Planning Department.

- The Design Review Board shall review requests for site plan review and approval submitted in accordance with Section 3.17 Multifamily Overlay District, Section 7.4 Site Plan Review.
- Within fifteen (15) days of the meeting, a final advisory design review report shall be sent both to the applicant and to the Planning Board, when a site plan review is required under Section 3.17.
- Within twenty (20) days of receipt of a Design Review application, the Design Review Board shall hold a meeting, to which the applicant shall be invited, for the purpose of conducting a review of the proposed project or activity. Within fifteen (15) days of the meeting, a final advisory design review report shall be sent both to the applicant and to the Planning Board, when a site plan review is required under Section 3.17.
- However, if the proposed project or activity involves only a building permit or sign permit from the Building Commissioner, or is a "Minor Project" under Site Plan Review (all as described in Subsection 7.7.2.2), no preliminary report is required and the written advisory report of the Design Review Board to the applicant and the Building Commissioner shall be a final report. Or take any other action relative thereto.



Scan QR code for links to source and reference materials.

**12. Site Plan Review**

***(This summary is based on the draft zoning article dated 09/05/24. Some refinements may occur in the final version.)***

- Applications will be reviewed by the Planning Board, with a public hearing process.
- The Planning Board cannot deny an application that complies with the zoning (including building dimensions, height, setbacks, and development standards) because the use of multifamily housing is allowed as of right.
- The Board can apply limited, reasonable conditions, which may include modifying lighting, adding fencing, reviewing stormwater design for compliance with applicable standards, and adjusting parking layout and other structural elements on the site plan.
- Conditions can be used to shape a project, but conditions cannot go so far as to unreasonably interfere with or effectively prohibit the project.
- All projects will need to comply with Building Code, Fire Code, Health Code, Department of Public Works regulations, state and local wetlands and other environmental regulations.
- The accompanying Development Standards and Design Guidelines will be part of the zoning bylaw to be followed by any development proposal in the MBTA district.
- Given the limited nature of site plan review for a by-right use, the applicant cannot be required to fund major off-site public infrastructure improvements as a condition of approval, beyond the requirements of code and non-zoning regulations noted above.
- Conversely, the town is under no obligation to make investments in public infrastructure to make an individual project viable.

Scan QR code for links to source and reference materials.

## 13. Fiscal Impacts

**What are the fiscal impacts (revenue and expenses) on the town and schools?**
The town's consultants, RKG Associates, constructed a fiscal impact model to understand the potential tax revenues from new housing developments compared to the municipal and school operating costs to support those housing units. The analysis concludes that, on a per unit basis, newly built multifamily units will generate more tax revenue than operating costs for the town.

The full HONE Fiscal Impact Analysis is available as part of HONE's final recommendations *(scan QR code below)*. The full report includes a second analysis comparing the property tax revenue the town is receiving from the existing parcels with potential revenue it would receive if new housing were built under the proposals.

**Background**
After modeling both the full build-out of both MBTA district scenarios and the "propensity for change" models for both scenarios, HONE wanted to understand the potential fiscal impact of new multifamily housing on the operations of municipal services and the school department. This request included measuring the potential fiscal impact to the town to determine if there would be a financial benefit or loss when comparing gross property tax revenue of new multifamily development and the municipal service costs new residents may require.

Over the course of several months, the consultant team worked closely with the municipal departments and the school district to quantify the potential fiscal impact of the MBTA districts and new zoning. This included the creation of a fiscal impact model measuring the net fiscal benefit or loss of the build-out of each MBTA scenario. RKG utilized an industry standard incremental fiscal impact methodology which measures the incremental impact on the town's general fund budget with each new unit of housing constructed. The increment is derived by determining fixed costs and incremental costs across each department using the most recently available town budget.

Fixed costs are defined as those that are not expected to increase with the addition of a new housing unit, while incremental costs are expected to increase the town's overall costs to support new housing units. For example, while it is unlikely the town would hire a new police chief with each new incremental housing unit, there may be a need to hire additional police officers and equip those new staff as significant amounts of new housing is constructed and occupied. Once all town costs are categorized as fixed or incremental, the consultant team then compares incremental costs to potential gross property tax revenue to determine if new development is a net positive or negative to Needham.



Scan QR code for links to source and reference materials.

## 14. Traffic and Parking Information for Multifamily Housing

### Traffic

New multifamily housing will create additional traffic near the entrance to the new housing. Depending on the location and number of units, the new traffic often has little impact on existing traffic. Unlike commercial traffic rush hour patterns, new multifamily trips are less concentrated and often during the morning and evening peak hours. Traffic counts can be done at existing multifamily locations of similar size to estimate new impacts. Traffic to and from the new housing is usually spread throughout the various roads near the development.

The number of car trips per unit in apartments and condos is usually lower than car trips for single-family homes. The Institute of Transportation Engineers (ITE) makes suggestions regarding expected traffic and any necessary mitigation. They estimate ten new trips for single family homes and six new trips for apartments. Since more people now work from home part of the time, some residents can choose to travel when the traffic is lighter.

### Development near public transportation

It is expected that car trips will be lower for units that are close to public transportation, employment, and amenities such as restaurants and retail. Creating new housing near three of our train stations and our commercial mixed-use areas in Needham will create an opportunity for employees of the hospitals, schools, and businesses to live close to where they work. More people are walking and biking to the train stations and local amenities. Housing in downtown areas increases customers for area businesses.

### Parking

Most housing communities provide parking for their residents at a rate of one space per unit. Fewer parking spaces are needed in housing developments near public transportation and employment. Many people like covered parking, but that is costly to provide since it is often built underground.

### Updated Information

Greenman-Pedersen, Inc. (GPI) has prepared a new technical memo providing a comprehensive summary of the traffic analysis conducted to evaluate the potential impacts of the proposed MBTA rezoning presented in the  Needham MBTA Communities Summary Report, April 2024, prepared by RKG Associates and Innes Associates, Ltd. The rezoning aims to facilitate the development of additional housing units in compliance with the MBTA Communities Act. The analysis encompasses current traffic conditions, projected traffic volumes, and the anticipated effects on local transportation infrastructure. The goal of the report is to present data-driven insights to inform decision-making processes, ensuring that the rezoning aligns with community goals while mitigating adverse traffic impacts.

Scan QR code for links to source and reference materials.

**Summary of Findings**

To present a worst-case scenario, the traffic operations analysis conducted was conservative and likely overestimates future traffic levels. This approach included a higher-than-expected future growth rate, a larger-than-expected trip generation rate for the proposed development, and a higher-than-expected auto mode share (commuting by car) for a transit-oriented development.

Due to this conservative approach, many study area intersections are anticipated to experience high delays in future conditions, primarily due to background traffic growth rather than traffic generated by the proposed projects. Scenario A (Base Compliance Plan) is expected to have little to no impact, while Scenario B (Neighborhood Housing Plan) is expected to cause localized impacts at key intersections.

Potential mitigation measures identified include signal timing optimizations, roadway restriping to add a turn lane, adjustments to pedestrian timings, and new signalization. The mitigation analysis shows improvements in the Level of Service (LOS) and decreased delays across the network of intersections when comparing the No-Build scenario to Build Scenarios A and B. During the AM peak hour, many intersections that would operate at an unacceptable LOS F in the No-Build scenario improve to LOS D or better in the Build Mitigated Scenarios. Similarly, during the PM peak hour, the network sees LOS improvements with the implementation of Build Mitigated Scenarios A and B. In fact, seven of the nine intersections warranting mitigation are already planned for improvement by the town in the coming years due to the traffic growth of the town.

Overall, the Build Scenarios A and B with mitigation demonstrate a positive impact on traffic performance, reducing delays and improving LOS across the network of intersections during peak hours despite the increase in vehicle trips from the developments.

Scan QR code for links to source and reference materials.

**15. School Age Children in Multifamily Housing**

***There will be some children living in most new non-age-restricted multifamily housing. The number of new school age children in multifamily housing depends on:***

**Apartment mix of the building:**

- There are very few children in one-bedroom units.
- There are some children in two-bedroom units and more in three-bedroom units.
- Due to the lack of affordable family housing, children often live in affordable two- and three-bedroom apartments.
- Charles River Landing has 350 units and no three-bedroom units, with 68 students, (approx. 5 children per grade). Rosemary Ridge has 120 condos and three students. Modera has 136 units ranging from townhouses to 3-bedroom units with an average of 42 students a year. The Kendrick has 390 units ranging from studios to 3-bedroom units and an average of 50 students a year. *(A recent analysis was completed with updates of school enrollment projections. Scan QR code below to see memo from Katie King dated September 20, 2024.)*

**The impact on the school children depends on:**

- Number of children who were already in the Needham schools but may have lost their housing due to divorce or financial issues.
- Percent of "local preference" affordable units:
    - The state allows 70% of the affordable units to be designated to Needham local preference. Therefore, many of these children will already be in the school system.
- Existing Needham families who may need housing while their home is being renovated or built.

**Impact to the Needham schools:**

- Children are spread out through all 14 grades. Therefore, there will be a few additional students per grade.
- Additional new buildings, teachers, or administration are rarely needed.
- Some school-age children attend private school and will have no impact on the Needham public schools. Needham has a private elementary school and high school.
- Number of children who live with one parent part-time and go to school in another town due to divorce.
- Some apartment/condo communities are not attractive to families and are Naturally Occurring Retirement Communities (NORC). Example: Charles Court East offers no child amenities and houses few or no children.
- Cost of market-rate housing.
- If the market-rate units are expensive, the families may choose more child-friendly housing such as two-family or townhome rentals.



Scan QR code for links to source and reference materials.

**16. Stormwater Management in new Multifamily Housing Development in Needham**

Over the last few years, Needham has experienced heavy rainfall that has caused flooding in several locations. There has always been some flooding due to heavy rainfall and melting snow, but it has become more frequent.

The town is looking at these storm events and what the town can do to prevent issues on public land and streets. Needham's Stormwater Bylaw Working Group is currently updating their stormwater management zoning and building department requirements to ensure developers of construction projects manage all stormwater on their own property. Another task will be to assess the town's stormwater infrastructure to highlight areas for improvement.

There are several techniques that will help to capture and channel stormwater. Before a project receives site plan approval, the developer must present a plan to the town regarding how they will manage any stormwater on the property. All water must be managed on site. The town will review the plan and it must be approved before any construction starts.

Many of the proposed locations in the MBTA plan already are covered with buildings and hardscape. If new housing is proposed on the property, better stormwater management will be required to be included in the plans.



Scan QR code for links to source and reference materials.

**17. Capital Impact Assessments**

One component of the Housing Needham (HONE) Advisory Group's charge, as it created multifamily zoning that complies with the MBTA Communities Act, was to "evaluate build-outs, projections, and analyses of fiscal, school enrollment, and infrastructure impacts provided by staff and consultants." The town's consultant, RKG Associates, with input from town departments, prepared multiple analyses to answer various questions from HONE and the community; these findings are summarized below. *(Scan QR code below for the updated report prepared for FinCom, dated 9/25/24.)*

**Schools**

**Conclusion:** Based on the best available information, the additional students projected under the "likely" and "full" build-out scenarios for the Base Compliance Plan and the Neighborhood Housing Plan can be accommodated within the Needham School Committee's preferred master plan scenarios. *(Scan QR code below to see the memo update from Katie King, dated 9/20/24.)*

Over the next several years, the Needham Public Schools and the town will assess the impact of the MBTA Communities Act on school enrollment as developments materialize. In the short term, if enrollment increases at individual schools, the district could consider temporary classrooms, redistricting, and/or higher class sizes, as needed. In the long term, the School Committee can adjust its plans for a renovated Mitchell School to accommodate updated student projections.

**Police and Fire**

**Conclusion:** Needham Police and Needham Fire do not anticipate any significant impact on their current operations. There may be a need for a small increase in staff over time as the town's population grows, which is something that both departments regularly monitor. There are no anticipated public safety capital needs (e.g., new stations or equipment) as a result of these proposals. Proposed developments would be required to comply with all fire code and building codes under the Massachusetts State Building Code.

New multifamily buildings with three or more units will be required to have fire sprinklers. To properly design the system, the project applicant must ascertain, through flow tests, that there is sufficient water pressure available for the system to work. If the flow tests show there is not, the applicant must identify alternatives, such as an on-site water tank, to ensure the fire suppression system meets code.

Scan QR code for links to source and reference materials.

**Water**

**Conclusion:** The town believes it has enough water capacity to support housing developments that may result from the proposed zoning. Needham has capacity in its local water supply in the off-season and augments that local supply with additional water available through the Massachusetts Water Resources Authority.

Irrespective of this zoning, the town is working on redundancy systems for its local water supply, and the MWRA is undertaking a redundancy project for their regional supply system. The Needham Department of Public Works (DPW) has requested $300,000 in FY2026 for a water distribution system master plan to study and prioritize potential water distribution system improvements townwide. This study will inform future water capital projects and how they will be prioritized. At this time, the DPW does not anticipate any new capital projects resulting from the proposed zoning, but may adjust the scope of projects (e.g., replace with a larger diameter pipe) to factor in any anticipated population growth. For any proposed new development, the property owner/developer would be required to pay for the materials and construction to complete utility connections from the town's existing water system to their project building(s).

**Sewer**

**Conclusion:** Sewer infrastructure is in place throughout the areas proposed for rezoning. DPW has requested $1M in FY2026 for a town wide sewer system infiltration and inflow assessment to identify priority capital projects with cost estimates. At this time, DPW does not anticipate any new sewer capital projects resulting from the proposed zoning, but may adjust the scope of priority projects identified in the Inflow/Infiltration (I/I) assessment if they fall in the area of the proposed rezoning. Current conditions require the town's investment in rehabilitating the Rt.128 sewer interceptor. The proposed zoning will not impact the scope, timeline, or estimated cost of that project. Individual housing developments will be subject to DPW's Sewer System Impact Program Regulations to reduce I/I.

**Stormwater**

**Conclusion:** As projected flood risk continues to increase, addressing stormwater quality and capacity will be a town priority for the foreseeable future. There has been flooding throughout Needham, including in some of the areas proposed for multifamily housing zoning. DPW has a variety of stormwater improvement projects completed, in process, and planned for throughout town. These and future investments will be informed by a townwide master plan and individual project scopes will be adjusted based on any zoning changes.

Under this proposed zoning, housing developments are subject to the town's Stormwater Utility Fee and Stormwater Bylaw, and to any future amendments of the Stormwater Bylaw adopted by Town Meeting to strengthen on-site requirements for stormwater retention. New

developments will also be subject to local and state wetlands regulations and the town's Flood Plain District requirements.

**Roadways**

**Conclusion:** Major roadway improvement projects of two of the three main arterials running through the proposed zoning areas are underway. Improvements to Chestnut Street are not currently in the town's FY25–29 capital improvement plan and may become a priority, depending on where multifamily development occurs.

There has not been a feasibility study nor design of what a major roadway improvement project of this corridor would cost, but the Department of Public Works (DPW) has suggested $10–20 million as an order-of-magnitude estimate to undertake a major redesign of Chestnut Street, including drainage infrastructure, wider sidewalks, new pavement, and other amenities. The town has also studied the build-out of additional segments of the Rail Trail, between High Rock Street to Needham Junction and from Needham Heights to Newton. Funding for these projects, or alternative networks of bicycle accommodations on our roadways, are not currently in the town's FY25–29 capital improvement plan and may become a higher priority with an increase in nearby transit-oriented development.

**Parking**

**Conclusion:** The parking requirement of a minimum of one space per unit is expected to be sufficient. A multifamily housing developer may choose to build additional parking if they believe that a higher ratio is necessary to successfully rent or sell each unit based on market demand.

**18. Senior Housing in Needham**

As of September 2024, there were approximately forty homes for sale in Needham, five under $1 million. There are well over 11,000 homes (11,891 used for MBTA calculations) in Needham. Many homes in Needham are owned and occupied by people over 55 who are empty nesters. They may wish to move, but they don't because:

- They want to stay in Needham close to friends, church, medical services, etc.
- They have limited options in Needham to downsize, like condos, apartments and senior communities.
- They cannot afford the high-end senior housing developments. They may have equity in their home, but it may not be enough to live on for several years.
- Available apartments are mostly on the other side of Route 128 and are small one- or two-bedroom units.
- There is a limited supply of condominiums.
- Small or inexpensive homes are rarely on the open market.

Older people who live in modest homes on good lots receive letters, emails, and phone calls from developers and realtors who want to buy their homes with no contingencies. The homes are torn down and much larger $2–3+ million dollar homes are being built.

Scan QR code for links to source and reference materials.

**19. Affordable Housing — Frequently Asked Questions**

**Q. How many affordable units will be created as a result of the MBTA zoning?**
12.5% of the total units created.

**Q. Will any of them be set aside for Needham residents?**
Yes. Up to 70% of the affordable units can be set aside for people with certain ties to Needham, such as Needham residents. The Select Board decides who will qualify.

**Q. Who decides who gets the affordable units?**
There will be a regulatory agreement between the developer, the Town of Needham, and the state, which will lay out the process. There will be a lottery with strict guidelines to select affordable residents.

**Q. What will be the rent for the affordable units?**
The rents will be set before the units are finished. They are established using income guidelines promulgated by HUD at the time. If they were available now, a one-bedroom unit would rent for close to $2,154. A two-bedroom unit would rent for close to $2,566. Income eligibility requirements would allow one person to make up to $91,200 and two people up to $117,250.

**Q. What are the income guidelines for the units?**
The 2024 income guidelines are 80% of the area median income (AMI) in March 2025. A resident's rent can be no more than 30% of their income.

**Q. Will the affordable units go on the Needham Subsidized Housing list?**
Yes.

**Q. Will the residents of the affordable units be able to use all of the housing amenities.**
Yes.

**Q. Is there a state or federal subsidy to make more units affordable?**
No. The market-rate unit rents subsidize the affordable rents.

Scan QR code for links to source and reference materials.

**Q. Could the developer make more units affordable?**
Yes; however the cost of the other units would pay for the difference.

**Q. Is there affordable housing in Needham?**
Yes, 40B developments like Charles River Landing and Modera have affordable apartments. The town also has affordable apartments such as Cook's Bridge, High Rock Estates, and the Chamber Street apartments that are managed by the Housing Authority.

**Q. Are the incomes of residents in the affordable units checked every year to see if they still qualify?**
Yes. The apartment owner is required to recertify the residents' incomes every year.

**Q. If the income of the affordable resident goes up, can they stay in the affordable unit?**
At this time, residents can make up to 140% of median income and stay in the affordable units. Over that number, they must pay market rents and/or move to a market-rate unit.

**Q. What are the rents for the market-rate units?**
The market rate rents will be set when the apartment community is near lease-up. They will be similar to other apartments in the area. The apartments will start around $3,000.



Scan QR code for links to source and reference materials.

**20. MBTA Walking Tours**
(Held during July–August 2024)

Over the summer, the Needham Housing Coalition (NHC) conducted three walking tours of the MBTA district. These informative tours provided an opportunity to better understand the district areas being proposed for rezoning for multifamily housing near our public transit stations to comply with MBTA Communities Act.

**Why did we tour the district?**

To evaluate the two plans: the Base Compliance Plan and the Neighborhood Housing Plan that will be discussed and voted on at the October Town Meeting.

**Here's what we want to share:**

These tours helped residents to envision the scale of future development across the district by showing examples of existing multifamily housing that illustrate varying densities similar to the MBTA required density. In addition, we looked at a sampling of sites to discuss whether they are good candidates to be redeveloped to allow multifamily housing. It is important to understand that all the land in the MBTA district is already built out to some degree and that every site has a number of factors that impact how likely it would be to change or remain as is.

***Scan the QR codes below for videos of the three walks and the accompanying information packets.***

**NHC MBTA Zoning District Walking Tours—Videos**

**NHC MBTA Zoning District Walking Tour—Resource Packets**



Scan QR code for links to source and reference materials.

**Links to Source and Reference Materials in this Summary Packet:**

2022 Housing Plan *(Full Document):*

Needham-Housing-Plan-2022-Final_r3 (needhamma.gov)

2022 Housing Plan *(Exec. Summary):*

https://drive.google.com/file/d/1W4yKHIZudHYLW6Ogluxo62qLgMWKwct2/view?usp=drive_link

2022 Housing Plan *(Detailed Recommendations section):*

https://drive.google.com/file/d/1kXuMcUBXqwR6sY6tJabNSXqfru1qIPlz/view?usp=drive_link

2022 Housing Plan *(Zoning Changes and Maps):*

https://drive.google.com/file/d/1htMtM5w97SsTAlWKHWZJTYc6f_LfooVJ/view?usp=drive_link

HONE Report *(full document):*

Bar Harbor Housing Analysis (needhamma.gov)

HONE Capital Impact section:

HONE-Capital-Impacts-Assessment-Memo-09252024 (needhamma.gov)

HONE Fiscal Impact section:

https://drive.google.com/file/d/1ugVJnyXEfiEOvFOe7Gu7u1ZNCscCj1iD/view?usp=drive_link

HONE School Capacity Analysis section:

https://drive.google.com/file/d/1FBdTi_wiW1fVOKPre4l6iAlqPyQsRm4B/view?usp=drive_link

HONE Propensity for Change section:

https://drive.google.com/file/d/1F753Fwjszs0Xzc9TCcUYEzvgebCn3WSs/view?usp=drive_link

HONE Traffic Consultant Report:

Microsoft Word - 2024-08-22_Traffic Analysis_clean (needhamma.gov)

HONE FAQs:

HONE-FAQ-Updated-922024 (needhamma.gov)

HONE Visualizations:

04.30.2024 HONE deck final.pdf (needhamma.gov)

Planning Board Zoning Articles (latest 09/24/24):

https://drive.google.com/file/d/1gcMeB_Pp7Pa3RfaDQc_Fb703t6X5pY9k/view?usp=drive_link

Planning Board Administration / Site Plan Review (latest 09/24/24):

https://drive.google.com/file/d/1pFVWS62-n2C2I3rxU2ChpXAzjnti_Qi3/view?usp=drive_link

***Scan the QR code for clickable links to these materials.***

Beth Israel Lahey Health
Beth Israel Deaconess Needham

Needham Town Meeting
1471 Highland Ave.
Needham, MA 02492

Dear Town Meeting members,

At Beth Israel Deaconess Hospital Needham, we're proud to provide a hospital that serves Needham and surrounding towns with world-class care closer to home. I am writing to let you know that additional housing in Needham will help our organization attract needed direct care providers as well as support staff that form the heart of our hospital.

The quality of care we give our patients depends on the quality of our staff. While we stand by the care we provide, the lack of nearby housing options is a central issue when hiring new staff. Only 6% of our employees live in Needham. Many of our staff cannot afford to own a home in Needham and there are few rental options, especially near the hospital.

I understand when the Special Town Meeting convenes on October 21 you will be asked to consider two options for zoning changes that may produce some new housing over time.

I urge you to support the four amendments needed to approve the Neighborhood Housing Plan since that is the plan that is most likely to lead to the development of much-needed multifamily housing that will greatly benefit our ability to staff the hospital as well as other jobs in the medical field and other sectors.

Thanks you for your consideration and your service to Needham.

Sincerely,

John M. Fogarty, FACHE
President
Beth Israel Deaconess Hospital–Needham

October 14, 2024

Needham Planning Board
Public Services Administration Building
500 Dedham Avenue
Needham, MA 02492

**RE: Support for Neighborhood Housing Plan**

Dear Needham Planning Board,

We are writing express Progressive Needham's support for the proposed Neighborhood Housing Plan in order to comply with the MBTA Communities Act and encourage the thoughtful development of multi-family housing in Needham. As a chapter of Progressive Mass, Progressive Needham is a grass roots, non-profit organization of Needham residents that promotes progressive policies in the Town and at the state level.

Progressive Needham has been consistently involved in the Town's planning process for the rezoning required by the MBTA Communities Act. We have attended almost all of the Housing Needham (HONE) Advisory Group meetings over the past year and our members have submitted comments to HONE on several occasions. Progressive Needham has been very impressed by how thorough and careful HONE has been in this complex process of meeting the requirements of the MBTA Communities Act in a way that is sensitive to Needham's existing land use and character. Progressive Needham deeply appreciates the time and effort that the members of HONE and the Planning Board have devoted to this process as well as their openness and responsiveness to community input.

We at Progressive Needham are well aware of the housing crisis in Town and throughout the region. We believe it is critical for Needham to create opportunity for the development of a range of multi-family housing in Needham at a variety of price points and sizes that will be more attainable for more people. More housing choices are critical to help serve seniors, young people and families, and our regional workforce.

Progressive Needham strongly supports the proposed Neighborhood Housing Plan rezoning and urges Town Meeting Members to support Warrant Articles 8, 9, 10, and 11 at the October 21, 2024 Special Town Meeting. We believe the Neighborhood Housing Plan is a thoughtful and balanced plan to promote additional multi-family housing in appropriate locations near MBTA transit corridors.

We are well aware that rezoning does not equate to housing production. Creating new housing is left to the private market and depends on overcoming a number of important factors including: owners' willingness to develop their land as housing or to sell their land (the vast majority of the land in the rezoning areas is already developed), financing availability, favorable market conditions, and others. Therefore, even with the proposed zoning changes associated with the Neighborhood Housing Plan, actual production of new housing is projected to take many years and be modest in terms of the total number of units created.

We encourage the Planning Board and Town Meeting members to support the MBTA Neighborhood Plan zoning that will allow for needed housing in our town.

Sincerely,

Progressive Needham Steering Committee

Chris Balmer
Robin Colgrove
James Goldstein
Jan Soma
Andy Wizer

**From:** Mark Lane
**To:** Planning
**Date:** Monday, October 14, 2024 4:38:32 PM

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I am totally against the MBTA Communities Act Zoning Bylaw
It is overreach by governent and needs to be pushed back
If approved it could have a big negative impact on our Town

Mark Lane
Business owner and 50 year resident

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