Public Facilities Committee Agenda

City of Newton
In City Council

Wednesday, March 22, 2023

The Public Facilities Committee will hold this meeting as a virtual meeting on Wednesday, March 22, 2023 at 7:00 pm. To view this meeting using Zoom use this link: https://us02web.zoom.us/j/81669983458 or call 1-646-558-8656 and use the following Meeting ID: 816 6998 3458.

Item Scheduled for Discussion:

Chair's Note: *The following item will be a joint discussion with the Programs & Services Committee at the following link: https://us02web.zoom.us/j/81669983458*

Referred to Programs & Services and Public Facilities Committees

#104-23 **Requesting update regarding Gath pool design**
COUNCILORS ALBRIGHT, KRINTZMAN, KELLEY, AND LEARY requesting an update from Commissioner Banks regarding the Gath pool design.

Respectfully submitted,

Alison M. Leary, Chair

The location of this meeting is accessible and reasonable accommodations will be provided to persons with disabilities who require assistance. If you need a reasonable accommodation, please contact the city of Newton's ADA Coordinator, Jini Fairley, at least two business days in advance of the meeting: jfairley@newtonma.gov or (617) 796-1253. The city's TTY/TDD direct line is: 617-796-1089. For the Telecommunications Relay Service (TRS), please dial 711.

Newton Parks, Recreation & Culture Department
246 Dudley Road, Newton, MA 02459
Office: (617) 796-1500
parks@newtonma.gov
Nicole Banks, Commissioner

To: City Council

CC: Mayor Ruthanne Fuller, Design Review Committee, Parks & Recreation Commission, Community Preservation Committee, Commission on Disability, Public Buildings Commissioner Josh Morse

RE: New Gath Pool depth analysis

3/10/23

Dear City Councilors,

I am writing with an update on the Gath Pool design effort. I am excited that we are moving forward to having a new pool complex in place in time for the 2024 swim season. Our design provides for an incredible family-friendly, universally accessible, welcoming aquatics facility for people of all abilities and interests. The two-pool design allows for a zero-depth entry recreational pool with attached walking lanes, a fun slide, and varying depths for a pool experience for all ages and abilities. Next to the recreational pool will be a fully accessible 8-lane lap pool for our lap swimmers with diving blocks into 12 feet of water, (2) 1-meter diving boards, and ample space for swim lessons, aqua fitness classes, and swim league use. The design plan includes a large splash pad that can be opened for expanded season fun, ample deck space, seating, and shade opportunities. The bathhouse will also get accessibility, restroom, and changing room updates.

The design has been well received, with the one lingering question about the depth of the 8-lane lap pool; we have received emails from some community members requesting a deeper shallow end depth in the lap pool. In order for this pool to serve a wide variety of swimmers well, it has a shallow end of 4 feet increasing to a deep end of 12 feet. These depths work well for league swimmers/divers as well as recreational lap swimmers, people of all ages taking swim lessons, recreational users, and swimmers with disabilities.

<u>Gath Pool Design - A Community Driven Process</u>

The Gath Pool design team has listened carefully to all of the input that has come in on the pool design. We are delighted that so many people are following the project and helping improve the design. We have met with residents and groups, with the swim team having the most meetings. We're grateful for the input from the Bluefish Swim Team, residents with disabilities including the Commission on Disability, recreation camp leaders, the LGBTQ+ community, older residents, and community members. We kept improving the designs in response to the input and feedback received.

In looking back at past correspondences here is an example of some modifications that were incorporated due to input. The following quote is from a Bluefish Swim Team email from last April:

"The main thing is we do not want to lose any functionality for competition (at least State minimum 4' depth for diving at both ends), consistent depth in all lanes (like NN) and view for spectators along the fences for championship meets."

The shallow end depth of the 8-lane lap pool was redesigned from 3 ½' to 4' over a year ago in line with this request; we changed the pool floor to eliminate any cross slope to ensure consistent depth across the lanes per this request; and we maintained the spectator viewing area when we split the pool from a single connected pool to 2 separate pools by expanding the deck and shrinking the splash pad area.

We worked closely with our consultant to study the possibility of accommodating the recent request for a shallow end depth for all 8 lanes of 6'7". We met with swim team representatives. We explained that the accessible ramp must land at a depth between 3 ½' and 4' per ADA regulations.

After the meeting we received more correspondences from swim team members about the pool depth. These messages arrived in mid-February with a revised request for the first 2 lanes to remain at 4' deep at the shallow end and the other 6 lanes to have a 6'7" depth at the shallow end. We responded to each correspondence explaining the challenges of this request, particularly that the shallow end space is also planned to host other uses beyond competitive swim and that there are limits to the slope angle in the shallow end. We met with the swim team coaches to listen to what they were hoping to see in a revised pool design. Following this meeting (last Friday), we tasked our consultant with exploring a way to meet their request. The consultant, following pool design regulations, produced a design that honored the (2) lanes being at 4' to connect with the accessible ramp; the pool floor then slopes down to the requested 6'7" depth. Because of the regulations on slope steepness, only one lane of the eight achieved the 6'7" desired depth.

<u>Meeting Community Needs</u>

Our goal is to meet the needs of pool users. The requested design change results in much of the lap pool shallow end depth becoming deeper, and does not allow the swim league to use much of the shallow end for diving. Furthermore, the depth is over most everyone's heads. This design would prevent expanded programming for swim lessons. This is likely why no other community has built a recreation pool with a 6'7" shallow end. This design is insufficient in meeting community needs.

More details are provided below.

<u>Accessibility</u>

To ensure universal accessibility, both pools have multiple accessible options for entry/egress. Having a ramp and lift chair into each pool is incredibly important and will allow our older pool guests and those requiring assistance to enjoy the pools. As we decided on the 2-pool design, the overarching goal was to have usability for all swimmers. In addition to this goal, we are legally obligated to meet ADA accessibility regulations. An accessible ramp must land between 3' and 4' of water, so we cannot have all lanes be 6'7" deep in the shallow end as requested. The 6'7" request is linked to requirements for international championship meets (FINA) and Olympic championship meets, pools must have a 2-meter (6'7") depth that must be standard across the entire pool (these highest-level competitions would not accept a 12' deep end). FINA is also rigid in requiring consistency of each lane having the same exact slopes for non-championship meets meaning there can be no variation between any two lanes. This type of high-level competition is not in keeping with Newton's goals of having 2 pools that can be enjoyed by many different kinds of users, and by swimmers of varying abilities.

We acknowledge and appreciate that people requesting having 2 lanes at a 4' depth and the other 6 at the 6'7" depth recognize the importance of having an accessible ramp; which they understand must land at a 4' depth. The request, however, necessitates that the pool floor go from 4' immediately to 6'7", meaning there is a 2'7" vertical drop. For any depth change in under 5' of water, the slope cannot be steeper than 12:1, meaning any 1-foot drop must occur over a 12-foot span, and the slope must be consistent. We have shared this information with the Parks & Recreation Commission and the Design Review Committee.

Expanded Programming

As we undertook the design of the new Gath Pool, residents have asked for more programming in the afternoon and evenings for families who are unable to be at the pool in the morning or before 5pm. These parents would like children to have access to swim lessons in the evening when their schedule allows them to utilize the pool. We have not been able to offer evening swim lessons in the past. We believe that an expansion of swim lessons will be incredibly popular in Newton and increase our ability to provide youngsters with lifelong skills to be in and around water safely. The 4' depth in the shallow end of the lap pool is necessary to accommodate these programs. The alternative design significantly reduces the space in the lap pool where programming could be run to the point that it is unlikely evening programs could be offered.

Accommodating Everyone During Open Swim Times

Another reason to have a 4-foot shallow end depth in the 8-lane lap pool is to allow all types of users access to both pools during the busiest hours. Based on discussions with other community leaders who have recently opened new or refurbished pools, we anticipate seeing an approximate 30% increase in pool admittances throughout each day. Extensive input during community meetings tells us that the existing Gath Pool has been crowded. The two new pools will together be a little larger in area but may still sometimes be very busy given anticipated increased popularity. We welcome many individuals, families, and groups including campers from Parks & Recreation summer camps, Newton Public Schools Space Camp, the Boys and Girls Club, and other camps. Incorporating the sloped depth shallow end in the alternative design would result in losing more than ½ of the overall 4' swimming area. This will result in an unusually high use of the recreational pool and could ultimately mean that there is not enough pool capacity at shallower water depths for the majority of pool users. This could occur even if the lap pool is nearly vacant. With a 4' shallow end depth, pool guests will be able to navigate within and across both pools to find adequate space to enjoy the water. In the event of a temporary recreation pool closure, the lap pool could serve guests who wish to continue swimming. The alternative plan would significantly reduce usable swim space for pool guests.

Moving Forward with the Preferred Plan

The new Gath Pool will be a wonderful venue for the entire community, including the Bluefish Swim Team. The pool will have a similar layout to almost all community pools in the region, particularly newly designed pools.

A 4-Foot Depth Is Industry Standard

As part of our review of the 6'7" depth request, we researched other outdoor and indoor swimming pools to identify those that have a shallow end depth of 6'7". We were not able to identify any municipal pools that have this shallow end depth in the region, including several recently constructed pools.

Here are the depths of other community pools in the region at the shallow end of a lap pool:

CITY/TOWN	DEPTH - SHALLOW END
Acton	3.5
Belmont	4'
Brookline	4'
Canton	4'
Dedham	5'
Milford	4'
Needham	4.5
Newton	4'
Norwood	3'
Sudbury	3.5'
Walpole	2.5'
Wayland	4'
Wellesley	4'
Westboro	3.5
Weston	4'
Westwood	3.5'
Belmont (indoor)	4'
Canton (indoor)	4'
Concord (indoor)	4'
Newton North (in)	4'

Swim Team Practices and Meets

The good news is that the 12' depth of the starter block end of the lap pool functions well and safely for swim team practices and meets. Today's Gath Pool has dive blocks at each lane, meaning all dive entries from the starting blocks are into depths of less than 5 ½'. The starting dive blocks stand 29 ½ inches (about 2 ½ feet) above the water line. The new pool design meets USA-Swimming standards as well as those of the associations that oversee high school (NFHA) and collegiate (NCAA) swimming. They all require a minimum 4' depth from the starter blocks, our design far exceeds this minimum depth.

Some residents have written in regarding other, more stringent recommendations and regulations. New York State, for example, says diving must be into 8' of water. The American Red Cross recommends that diving occur in water 9' deep or greater. The deep end of the lap pool is 12', a very safe depth.

In speaking with the swim coaches, their team's preference is to have younger swimmers do deck starts (diving from the pool deck rather than the raised starter block). Other teams in the league allow their younger swimmers to use the starting blocks; they also allow kids who are not comfortable using the blocks to do a deck start right next to the starter block. This includes the Bluefish's winter swim team which has their youngest swimmers start off the blocks or next to them during their meets at NNHS. This idea was proposed to the swim team for their summer team; their concern is that swimmers would not be diving directly into the center of the lane, despite other teams doing this. We have offered to review starter block options that could allow for easy removal for events where they do not want to allow kids to use them.

Meeting Construction Code and Hosting the Championship Swim Meet

We love hosting the state swim meet in Newton at Gath Pool. The new design for the 8-lane lap pool is safer than what has been in use over the past 20+ years. The existing set-up is safe; the new design is safer. The new Gath Pool design has the same depth dimensions as the league's indoor winter championship meet pool in Milford, MA. It's actually even better as we will have 8 lanes rather than their 6 lanes. Milford's pool specs can be found here: https://mcs.milford.ma.us/indoor-pool/.

The lap pool is being designed to meet current State code and is anticipated to meet future code that is currently under discussion at the State level. The new Gath Pool will be among the best pools to host the championship swim meet, particularly given its 8 race lanes. Notably, there is no other pool that could be used to host the swim meet that has a 6'7" depth at both ends. There are also no pools that would meet the 6' depth at both ends. The summer swim league is a terrific league with several teams proudly using a lake or pond as their home swim venue. We look forward to working with the swim team if they are interested in ways to have all diving starts at the 12' end, such as removing and storing dive blocks during certain meet events (or have starts alongside the blocks) during the 5-6 swim meets hosted at Gath Pool. We look forward to working with the swim league so that we can welcome back the many swimmers from all communities who have come to enjoy Newton's Gath Pool as the summer championship meet swim venue.

Our team is excited to be moving the new Gath Pool project forward for the community. Our commitment has been to begin construction in late August 2023 so that the new facility will be ready for the usual season opening date next summer 2024.

Sincerely,

Nicole Banks

Commissioner of Parks, Recreation & Culture

Enclosure: Consultant memo on pool depths

#104-23

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memo

to:	Gath Pool Working Group
from:	Thomas A. Scarlata, CSI, CCS, CCCA, AIA Principal
date:	March 7, 2023
project name & number:	Gath Pool Improvements BH+A Project No. 3457
subject:	Lap Pool Depth Study
cc:	BH+A File
attachments:	Sketch P801 and P801.1

As requested, we have developed an option to increase the pool depth at the shallow end of the lap pool. The pool depth would be 4 feet at the entry side of the pool and decend to 6'-7" at the northeast corner.

Parameters:

- DPH regulations define water less than 5'-0" as "non-Swimming"; water over 5'-0" is defined as "swimming".
- The southeast corner of the pool must remain at 4 feet to accommodate the accessible lift operation.
- The 4 ft. depth requires a 51"-0" long ramp.
- Pool floors in water 5ft. or less cannot exceed a 1:12 (8%) slope.
- The 5 ft. depth in the pool is marked with a 4-inch wide contrasting tile line so the depth is visible to someone underwater. The MA DPH prefers red tiles.
- The 5ft. depth in the pool will have rope floats to demark the location of the 5ft. depth from the water.

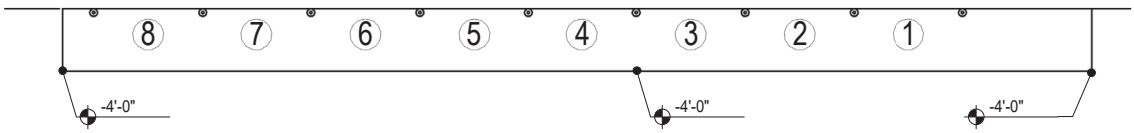
Current Design

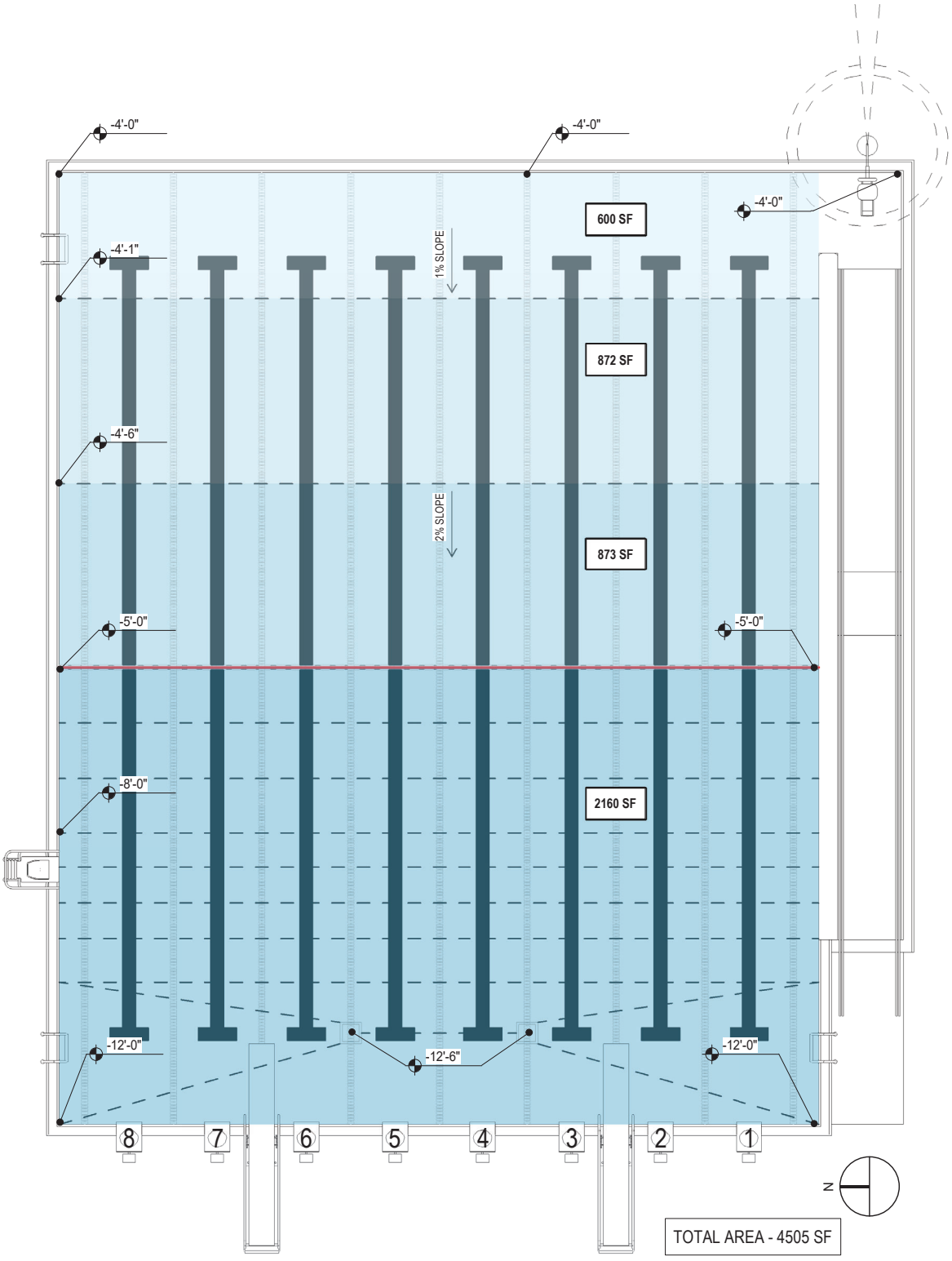
- The shallow wall along the entire length of the pool is 4ft.
- The first ten feet of pool floor slopes at 1%. This area shown shaded is 600 SF.
- The remainder of the non-swimming area slopes at 2%. This area is show with a diagonal cross hatch. The area is 1,745 SF.
- From the 5ft. depth, the pool slopes to 12 feet.
- The bottom of the pool has a continous 12 ft. depth around the perimeter, the main drains are set at 12"-6"inches to ensure full drain down of the pool.
- The pool bottom and lane markers are uniform in all 8 lanes.

Option1

- The shallow wall drops from 4feet at lane 1 to 6'-7" at the northeast corner of lane 8.
- A 1% slope is mantained at the shallow end of lanes 1 and 2 . The area shown shaded is 304 SF.
- The remainder of the non-swimming area slopes between 5 & 7%. This area is show with a diagonal cross hatch. The area is 1,140 SF.
- Lanes 5 and 6 slope from 5 ft. to 6 ft.
- Lanes 7 and 8 slope from 6 ft. to 6'-7".
- The bottom of the pool has a continous 12 ft. depth around the perimeter, the main drains are set at 12"-6"inches to ensure full drain down of the pool.
- The bottom tile lane markings are uniform in lanes 1 and 2; the markings in lanes 3 to 8 perpendicular to the floor bottom slope. The slope is shallow and the lane markers will be clearly visibile to swimmers. This condition is typical in many swimming pools.

#104-23





0 4' 8' 16'

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(617) 350 0450

Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

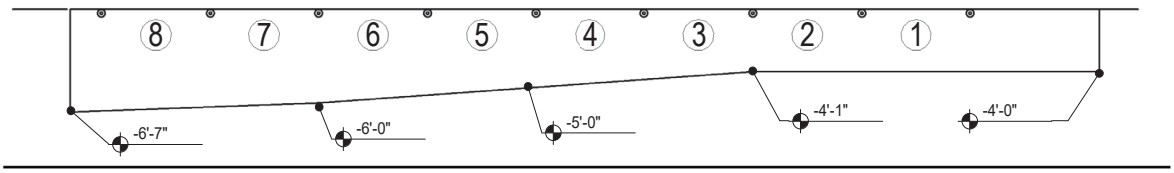
LAP POOL DEPTH CURRENT DESIGN

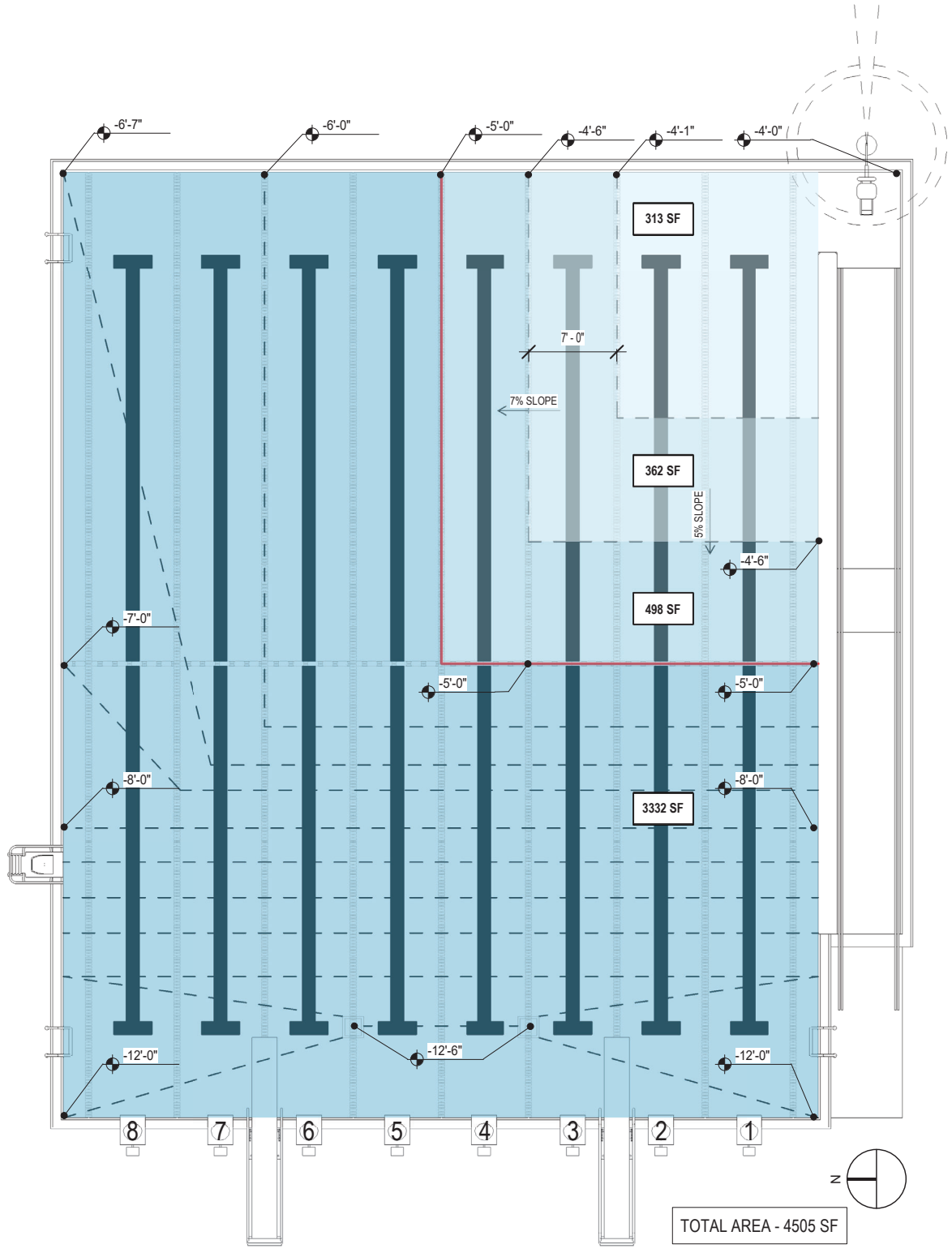
REFERENCE:

DATE: 03/07/23
SCALE: 1/8" = 1'-0"
PROJ. NO.: 3457
FILE NAME: revit.rvt

P801

#104-23





TOTAL AREA - 4505 SF

0 4' 8' 16'

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Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

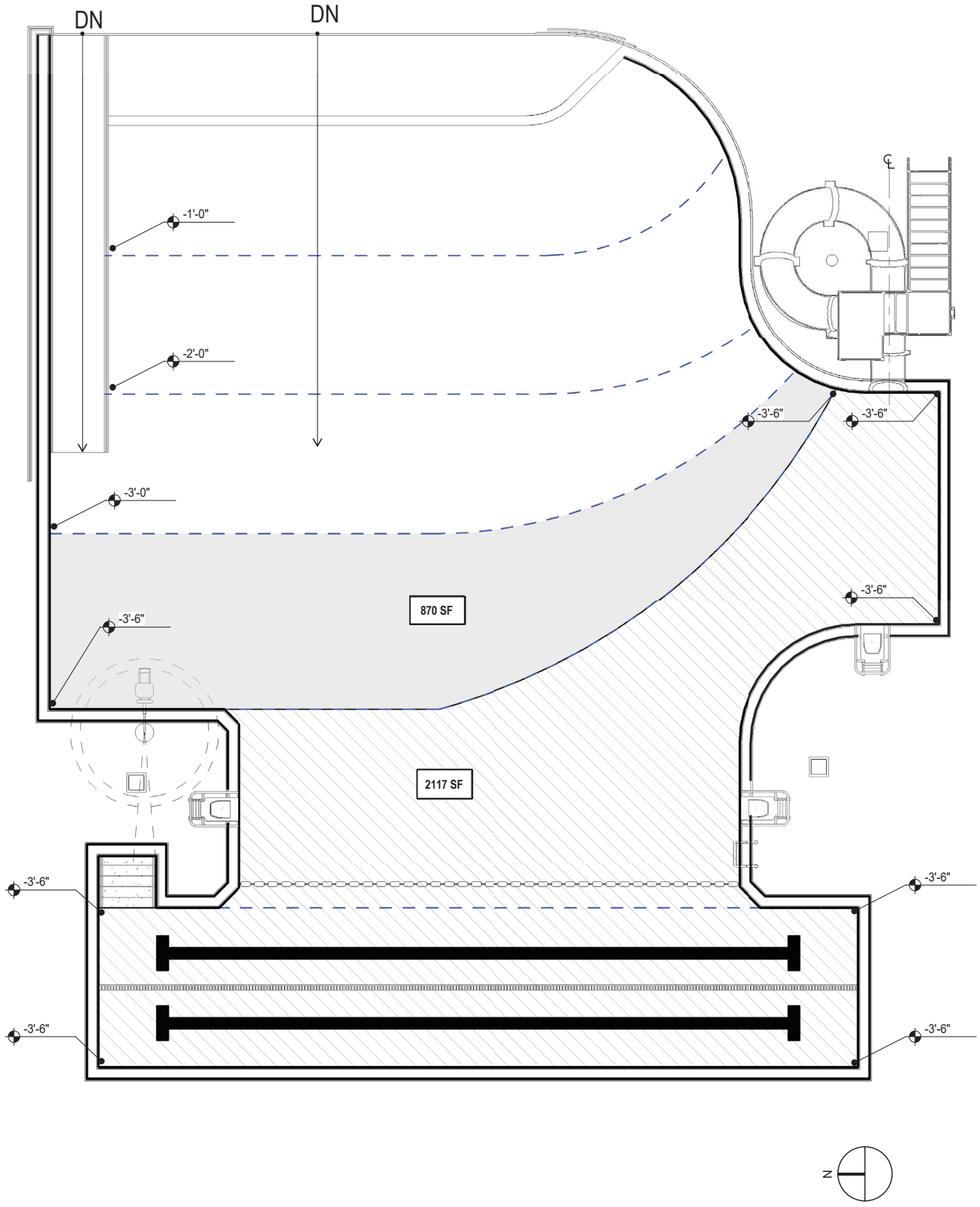
LAP POOL DEPTH OPTION 1

REFERENCE:

DATE: 03/07/23
SCALE: 1/8" = 1'-0"
PROJ. NO.: 3457
FILE NAME: revit.rvt

P801.1

#104-23



0 4' 8' 16'

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Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

ZERO DEPTH POOL

REFERENCE:

DATE: 03/07/23
SCALE: 1/8" = 1'-0"
PROJ. NO.: 3457
FILE NAME: revit.rvt

P802

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transmittal

to:	Josh Morse, Commissioner of Public Buildings City of Newton
from:	Thomas A. Scarlata, CSI, CCS, CCCA, AIA Principal
date:	March 10, 2023
project name & number:	Gath Memorial Pool Improvement Project BH+A Project No. 3457
subject:	Submission
cc:	BH+A Project File

Please find enclosed the following:

1. Site Plan Review Submission Memo dated 3/10/23
2. Geotechnical Report with Cover memo dated 3/10/23
3. Review Drawings dated 3/10/23
4. Lap Pool Study Memo dated 3/10/23

The documents are focused on the bathhouse, pools, and pool deck at this time. We are in the process of working on stormwater design, conservation permitting requirements include flood design and, utilities.

We anticipate meeting the City Staff over the next few weeks to review the detailed site/civil design issues and be prepared to issue documents to DRC and Conservation review in April.

As you are aware, the project slowed for a while to review the revised two pool design. During this time, we advanced work on the building, pools, and site development beyond normal schematic design documents.

I will send a schedule under separate cover. As we discussed, the goal is to breakdown the first week of September and open the renovated pool complex in June of 2024.

#104-23

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memo

to:	Josh Morse, Commissioner of Public Buildings City of Newton
from:	Thomas A. Scarlata, CSI, CCS, CCCA, AIA Principal
date:	March 10, 2023
project name & number:	Gath Memorial Pool Improvement Project BH+A Project No. 3457
subject:	Site Plan Review Submission
cc:	BH+A Project File

Background
The Gath Memorial Swimming Pool constructed in 1965, has been well maintained but has passed its useful service life. Repairs are becoming more difficult and frequent. Components required to properly repair the pool are no longer available. The pool in recent years has been losing significant amounts of water. The pool facility is situated within the Russell J. Halloran Sports and Recreation Complex, a.k.a. Albemarle Park.

The pool operates seasonally from the second Monday in June to third week of August each Summer. The facility is used for many programs including general family swim, lap swim, swim lessons, competitive swim team, aqua aerobics, and special events. Over the past three seasons, the pool has seen an average of 30,000 bathers use the pool each summer. Approximately 40 staff including lifeguards, swim instructors, cashiers, and supervisors are hired each season to operate the facility and programs.

The proposed design is based on a feasibility study that included evaluation of the existing conditions, programming and design discussions with City staff and public meetings.

Proposed Project
The project replaces the existing main and kiddie swimming pools with two new swimming pools, expands the deck space around the pool and increases the number of shade structures. A spray is being constructed to the north of the pools. The spray deck is designed to allow usage while the pool is closed. Accessibility improvements are being made to the bathhouse including adding gender neutral facilities.

Bathhouse Description
- The existing bathhouse is not being expanded.
- An existing lifeguard room on the north side of the manager's office is being converted into circulation space. This will provide direct access from the lobby to the pool deck.
- Two existing support spaces on the south side of the manager's office are being combined into one space to create an appropriate lifeguard/first aid space.

- Unused open area in the men's locker room is being converted into two gender neutral toilet and shower rooms.
- Work includes replacement of doors, repair, shower partitions and millwork improvements in the manager's office.
- A new areaway is being constructed to allow access directly into the basement from grade. At the south side of the building. The areaway provides convenient access for service and delivers and a second means of egress.
- Basement level work includes removal of abandoned piping, wiring, and equipment.
- New filtration equipment for the lap pool, recreation pool, and spray deck will be located in the basement level.
- Work will include relocation and addition of emergency lighting and exit signs to accommodate the new configurations.

Building Code Bath House
Under the International Existing Building Code, the project is classified as a Level 2 Alteration and will follow requirements of Level 1 and Level 2 alterations. The existing lifeguard room is 88 SF. When the two existing rooms are combined, the total area will be 220 SF. The two gender neutral facilities are 155 SF.

Swimming Pools Description
After much discussion, the project includes two separate swimming pools. The two pools provide the requirements of recreational, fitness, and competitive swimming. The design offers pool management the ability to run multiple swimming programs simultaneously.

Lap Pool

- Eight (8), seven (7) ft wide, twenty-five yard long lap lanes meeting requirements of competitive swimming organizations.
- Pool depth at the deep end of the pool is 12 feet and features two diving boards and eight competitive swimming starting platforms.
- The depth of the shallow end is four (feet) at the ramp entrance and accessible lift. The depth along the length of the shallow end is still being studied.
- An accessible ramp is located on the south side of the pool to provide access for individuals with disabilities, beginner swimmers, and adults that are looking for a comfortable dignified way to enter the pool.

Recreation Pool

- A deck level "beach type' entry is located at the northeast corner of the pool. The location was selected because of its proximity to deck and shade areas.
- The center of the pool provides a large, relatively flat area ranging in depth from 3 to 3 ½ feet for general recreation and exercise.
- An alcove on the south side of the pool provides a splash down alcove for a code compliant water slide. The slide is located on the east side of the pool in order to maintain full view of the swimming pools from the manager/lifeguard spaces in the bathhouse. Placement could not diminish supervision of the pool.
- The west end of the pool includes two defined lanes intended for water walkers and lap swimmers.

General

- The pools will be on separate filtration systems. Separate filters are required by code; it also allows use of one pool in the event the other pool must be closed for cleaning or maintenance.
- Filtration will feature multiple high rate sand filters , UV sanitation, and automatic chemical control equipment.
- Both pools will have continuous stainless steel gutters around the perimeter provide 100% surface skimming.
- Both pools are accessible via MAAB/ADA compliant ramps and lifts.
- Pool tanks will be dry or wet mix shotcrete with plaster and tile finishes.

Pool Gutter

Typical Gutter: The pool gutter will be similar to the current gutter. A stainless steel, semi-recessed design.

- Full surface skimming around 100% of the pools.
- No splash back at end walls.
- Racing line anchors are recessed flush into the face of the gutter

End Walls at Lap Pool: The semi-recessed design profile has an added deck extension to create fully recessed gutter at the ends of the racing lanes. This improves the pool for competitive swimming and does not affect other pool uses.

Spray Deck

The spray deck located at the north end of the pool area features two levels of interactive, universally accessible spray water features. The features are being selected with City staff and are targeted towards toddlers through pre-teens.

- The spray deck contains an underground reservoir that recirculates and filters the water.
- A separate filter and UV system maintains water quality.
- There is no standing water and can be operated without lifeguards.
- The fence surrounding the spray deck is configured to allow access to the spray deck while the pool is closed. The spray deck surface is a seamless rubber that is impervious and low maintenance.

Pool Deck Improvements

The design of the pool deck and elements provide improved circulation, more deck and seating areas, connection to the park and more shade.

- Pool decks are concrete slab on grade pitched to a series of trench hand spot drains that will direct the water to a stormwater management system.
- Shade structures with metal roofs are provided along the north and east sides of the pool. These structures are a cantilever design to eliminate obstructions on the pool deck.
- Metal was selected to eliminate the need for staff to remove and reinstall fabric coverings each 4th of July. Metal roof structures will also support the potential of future solar panels.
- Two hip roof structures are located on the north and south ends of the bathhouse. The north structure provides additional space as well as stroller parking. The south structure provides secure pool storage for maintenance equipment and everyday items used for swimming lessons and other programming.
- Perimeter fencing and gates are vinyl coated, 1 ¼ inch weave, chain link fencing required by code.

- Two outdoor accessible rinse stations (showers) are located outside of the bathhouse for convenience and hygiene. Additional water misting columns are being studied along the east side of the pool to provide additional cooling to patrons.

Pool Deck Utilities

- *Power:* We will incorporate above ground waterproof, lockable, electrical receptables for the swim meet timing pads and other equipment. One will be placed on the north side beneath a lifeguard stand, one on the south side adjacent to the ramp railing. Additional boxes will be set around the perimeter for housekeeping.
- *Water:* Ground hydrants will be spaced around the pool deck for cleaning and maintenance.
- *Future Solar:* Conduit and blank boxes will be run for the bathhouse basement to the shade structures to provide a pathway for future solar panels on the shade structures.

Parking & Traffic

The project does not include modifications to the current parking, drop-off, or curb cuts. The existing no parking zone will remain opposite the entrance, accessible parking remains, and the curb cuts at the existing drive and Albemarle Fields path remain.

Construction logistics will be worked out the City staff to ensure the contractor has adequate space to work and store material while maintaining parking, parking access, and circulation around the pool complex. The anticipated construction period will be September to June. The parking and walkways along Albemarle Road are heavily used by Day Middle School staff and drop-off/pick-up of students.

Water Savings

Replacement of the existing aging pool tank and piping with a new pool structure will significantly reduce the current water loss and usage at the Gath Pool. During the 2022 season Gath Pool used over 6 million gallons of water. In addition to this obvious savings other water saving features include:

- Sand filters are selected to maximize the surface and depth of the filtering media to capture more particulates and reduce the volume of backwashing. Backwashing is the process that cleans the filters can and dumps a significant volume of water during the process. Fewer backwashes equal less volume of water sent to waste.
- Having small dual filters rather than one large single tank staggers backwashing and volume of water sent to waste.
- The two pools and spray deck each have independent filter systems, all operating at different turnover rates. The different turnover rates reflect the use of each pool and spray deck. The arrangement, which is governed by code for health reasons, has the unintended efficiency of circulating water at a rate specific to the pools use.
- The spray deck is designed with a water recirculating system that reuses and treats the water. The water flow at the features will be controlled by a minimum of 4 actuators that provide water on demand. The pumps are not running when the spray deck is not in operation. The State, and many other local municipalities have built flow through systems that take potable water and drain directly to storm after running it through the features.

Chemical Reduction
The spray deck and the two swimming pools are being equipped with additional UV sanitation. The UV chambers supplement the traditional filtering and chemical treatment and significantly reduces the amount of chlorine injected into the pool.

Energy Savings
The multiple pumps that provide recirculation for the filter systems and water feeds to the slide and water features will be multi-speed with variable frequency drives (VFD) specifically designed for aquatic applications.

Pool filtration system pumps are often oversized to prepare for a worst-case-scenario of a clogged pool filter. The pump needs to be big enough to be able to pump water through a completely clogged filter. Without a VFD, the oversized pump is constantly running at full speed which equates to wasted power, reduced lifespan of the pool filers and reduced lifespan of the pump itself. The hard starting and stopping of the pump motor also causes power surges which can be dangerous or harm equipment. Hard starting and stopping of the pool motor also causes wear and tear of the motor at an increased rate.

VFDs in pool pump applications are able to cut electricity and maintenance costs significantly. The VFD allows the pump to be run at slower speeds using less electricity. The VFD can easily change the pump speed depending on the pool's conditions. When filters get clogged and create more resistance on the pump, the VFD can ramp up the speed to maintain safe water circulation rates. The VFD will also be controlled by a timer so staff can ramp down the pump speed during off hours and when the pool is not in use on rainy days.

Solar Ready Canopies
The multiple canopy structures in the current design have been changed from fabric to metal after discussing the design with pool management and maintenance staff.

- The current fabric canopies are removed for the annual 4th of July fireworks in the park for safety. Having metal roofs provides significant labor savings and time for the City.
- The metal structures will be designed to accept lightweight solar panels in the future.
- Conduit and blank junction boxes will be installed as part of the Gath pool improvement project. This scope will provide a pathway from the shade structures to the mechanical room for the future addition of solar panels, wiring, and invertors. If solar panels are added, no concrete deck will be disturbed, no coring through building walls and slabs will be required.

#104-23

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memo

to:	Josh Morse, Commissioner of Public Buildings City of Newton
from:	Thomas A. Scarlata, CSI, CCS, CCCA, AIA Principal
date:	March 10, 2023
project name & number:	Gath Memorial Pool Improvement Project BH+A Project No. 3457
subject:	Geotechnical Report
cc:	BH+A Project File

BH+A engaged PSI-Intertek to prepare a Geotechnical Engineering Report of the existing Gath Memorial Pool Complex. Four borings were taken to capture below grade conditions in areas where the proposed design was expanding.

One of the borings was taken at the existing pool deck to determine the fill material used to elevate the existing pool. BH+A reviewed minutes of Recreation Committee Meetings from the 1964 and located conversations related to the current design and need to elevate the pool above the flood level of Cheesecake Brook.

Ground Water: The existing pool deck is set at Elevation 30.0. The Main Floor of the Bathhouse is elevation 30.5; filtration level is elevation 19.5 feet. Ground water was observed at elevations 14.5 to 10.0, more than 5 ½ feet below the filtration room floor.

Application of Report
Bathhouse Entry and Steps: These elements can be excavated and backfilled using the existing material.

Pool Decks, Retaining Walls, and Ramp/Stairs: Specifications will be developed to reuse as much of the existing on site material as possible. This will include the services of a geotechnical engineer on site to review subgrades during excavation, proof-rolling and, testing existing fill and supplementing were required.

Pool and Spray Deck Subgrade: Pools are typically built over a 12 inch layer of ¾ inch crushed stone over a non-woven geotextile. The stone provides a stable work base, addresses geotechnical concerns, and serves as a drainage plain in the event ground water is encountered. The deepest part of the excavation will be within a foot of the ground water. The 12 inch stone layer will be extended beyond the face of the pool wall and a vertical HDPE pipe installed from the stone layer to the pool deck. This assembly provides in-construction dewatering as well as permanent dewatering points for future pool maintenance.

The main drains of the pool are equipped with hydrostatic pressure relief valves to protect against buoyancy when the pool is drained for maintenance.

November 21, 2022

Mr. Thomas A. Scarlata
Bargmann Hendrie + Archetype, Inc.
9 Channel Center Street, Suite 300
Boston, MA 02210
Phone: 617-456-2222
E-mail: TScarlata@bhplus.com

Subject: **Geotechnical Engineering Report**
Harry Gath Memorial Pool Improvements
256 Albemarle Road
Newton, MA 02460
PSI Project No.: 04461180

Dear Mr. Scarlata:

Thank you for choosing Professional Service Industries, Inc. (PSI), an Intertek company, as your consultant for the above referenced project. PSI is pleased to submit this report presenting the results of the geotechnical engineering services regarding the proposed Harry Gath Memorial Pool Improvements in Newton, Massachusetts. Our services were conducted in accordance with PSI's Proposal No. 0446-385584 dated October 24, 2022.

PSI recommends that the geotechnical engineer and/or their representative be present during earthwork operations to observe the field conditions with respect to the design assumptions and specifications. PSI will not be held responsible for interpretations and field quality control observations made by others.

Should there be any questions regarding this report, please do not hesitate to call our office at (781) 821-2355. PSI would be pleased to continue providing geotechnical services throughout design and construction of the project, and we look forward to working with you and your organization on this and future projects.

Respectfully submitted,
Professional Service Industries, Inc.

Brianna Hansen	Paul McMichael	Philip G. Clark, P.E.
Project Manager	Principal Consultant	Senior Engineer

GEOTECHNICAL ENGINEERING REPORT

For the Proposed

Harry Gath Memorial Pool Improvements
256 Albemarle Road
Newton, MA 02460

Brianna Hansen
Project Manager

Prepared for

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Philip G. Clark, P.E.
Senior Engineer

PSI PROJECT NO. 04461180

November 21, 2022

TABLE OF CONTENTS

1.0 PROJECT INFORMATION

1.1 PROJECT AUTHORIZATION

Authorization to proceed with this project was provided by Mr. Thomas A. Scarlata with Bargmann Hendrie + Archetype, Inc. by signing the Proposal Authorization included with PSI's Proposal No. 0446-385584 on October 24, 2022.

1.2 PROJECT DESCRIPTION

Project information provided to PSI included the following:

- Newton Gath Pool Option 4 Overall Plan (dated 5/20/2022)
- 250 Albemarle Road Survey (dated 6/6/2022)
- Proposed Plan for the Installation of Shade Structure at Gath Pool (dated 5/11/2007)
- Swimming Pool & Bathhouse Site Plan: Drawing A-1 (dated 10/15/1964)
- Swimming Pool & Bathhouse Plans: Drawing A-3 (dated 10/15/1964)

The project consists of the demolition of the existing pool structures and surrounding concrete decks and the construction of a new pool configuration with new concrete decks. Both cut excavations and fill placements appear to be necessary to adapt the existing pool configuration to the new pool configuration The new pool will have similar depths as the existing pool with depths ranging from 1 foot to 12 feet. The new concrete decks will be expanded to the north, south, and east and raised 6 inches to align with the existing bathhouse floor level.

Additionally, a new ramp and entry steps to the existing bathhouse will be constructed as well as a possible areaway to the basement on the south side of the existing building. The basement of the bathhouse is approximately 5 feet below the front sidewalk.

Structural loading information was not provided. Therefore, this report is based on slab loads not exceeding 150-psf. Additionally, PSI has based our recommendations on grading cuts/fills not exceeding 2 feet from existing grades.

Should any of the information identified herein be incorrect or should supplemental information become available, PSI must be notified and have the opportunity to reassess conditions and amend the report where necessary. The modification of the old to new pool configuration may require fill placements up to 1/2-a-foot and cut excavations up to 12 feet are anticipated for the new pool configuration.

The objective of our services summarized herein was to provide subsurface information and geotechnical engineering recommendations to members of the design team for use in designing foundations for the proposed addition.

1.3 SITE DESCRIPTION

The referenced site (42° 21’ 27.50” N, 71° 12’ 56.50” W) is located at 256 Albemarle Road in Newton, Massachusetts, as shown in *Figure 1, USGS Site Location Plan*. The site consists of an existing 1-story bathhouse building with a basement and an existing outdoor pool and concrete deck to the east, which will be removed and replaced. There is associated pavement to the west.

Around the outdoor pool and concrete deck, the site is generally level to slightly sloping uphill to the east. The concrete pool deck is approximately 4 to 5 feet higher in elevation than the park. The existing pool depths range from 3 feet to 12 feet. Information contained on the 250 Albemarle Road Survey indicates existing surface grades of approximately EL 24 to 34 feet, NAVD within the project site.

1.4 EXPLORATION PROGRAM

PSI conducted a geotechnical exploration program at the site in conformance with generally accepted geotechnical engineering practices to provide subsurface information about the site. This information was utilized to develop geotechnical engineering recommendations for members of the design team for use on this project.

The subsurface exploration program consisted of the performance of four Standard Penetration Test (SPT) borings to assess the depth and characteristics of the underlying material. The exploration locations were marked out per the Client’s proposed boring locations and Dig Safe System, Inc. was notified for public utility clearance. The exploration locations were also scanned by a private utility locating service, Ground Penetrating Radar Systems LLC, prior to performing the explorations at the site.

Soil X Corporation of Leominster, MA drilled four soil test borings on November 3, 2022 at the approximate locations shown in *Figure 2, Boring Location Plan*. Borings B-1 and B-2 were drilled adjacent to the fenced in pool area, Boring B-3 was drilled within the fenced in pool area, and Boring B-4 was drilled in the area of the proposed new ramp and entry steps to the bathhouse. A PSI representative observed the exploration activities for this project, retrieved soil samples for classification and testing, and prepared the attached Soil Test Boring Logs.

The borings were advanced by flush joint casing using a Geoprobe 6610 drill rig, equipped with an automatic hammer, to depths of approximately 22 to 27 feet below the existing ground surfaces (bgs), where the borings were terminated at the planned termination depth.

Standard Penetration Tests (SPT) were performed and split spoon samples were retrieved at approximate 2-foot intervals to depths of approximately 12 to 17 feet bgs and at approximate 5-foot intervals thereafter. The number of hammer blows required to drive the sampler into the soil in 6-inch increments is recorded on the Soil Test Boring Logs attached in the Appendix for reference. The sum of the hammer blows for the second and third interval provides the Standard Penetration Resistance (N) and is a measure of soil strength. Three soil samples retrieved from the borings were selected for laboratory testing to assist in classifying the material. The remaining samples will be stored in our laboratory and disposed of after 6 months.

PSI classified the soil strata shown in the Soil Test Boring Logs based upon its interpretation of the subsurface conditions encountered at the boring locations. The stratifications shown on the Soil Test Boring Logs represent the conditions only at the actual boring locations and variations will occur and should be expected at other locations. It is also possible that there could be thin layers of material lying between the sampling intervals that are not described on the logs and which might not become known until construction. Likewise, the depth to each soil stratum is approximate and may be more gradual or different in the field.

2.0 SITE AND SUBSURFACE CONDITIONS

2.1 SUBSURFACE CONDITIONS

2.1.1 LOCAL GEOLOGY

Based on the "Surficial Materials Map of the Newton Quadrangle, Massachusetts" by Byron D. Stone and Mary L. DiGiacomo-Cohen in 2018, the surficial geology of the project site is coarse deposits, as shown in *Figure 3, Surficial Geology*. The subsurface conditions encountered below the Fill material at this site generally fits the geologic description.

Based on the "Bedrock Geologic Map of Massachusetts," compiled by Zen, E-an, Goldsmith, Richard, Ratcliffe, N.M., Robinson, Peter, Stanley, R.S., Hatch, N.L., Shride, A.F., Weed, E.G.A., and Wones, D.R. in 1983, the bedrock geology generally consists of Cambridge Argillite, which consists of gray argillite and minor quartzite. Bedrock, however, was not encountered to the depths explored at this site.

2.1.2 SOIL TEST BORINGS

The subsurface conditions encountered at the specific boring locations for the proposed improvements are presented as individual soil profiles and descriptions on the Soil Test Boring Logs in the Appendix. The stratifications presented are based on a visual assessment of the recovered soil samples and the interpretation of field logs by a PSI representative. The Standard Penetration Test values (N-values), which are shown on the Soil Test Boring Logs, have been empirically correlated with various soil properties and are indicative of the relative density of cohesionless soils.

A brief description of the soils encountered at the site is presented in this section. Details are shown in the Soil Test Boring Logs.

FILL – Approximately 2½ to 10 feet of material classified as Fill was encountered at the surface of the site. The Fill material is most likely the result of original site development (possibly site grading). The general material description is brown, dark brown, and grayish brown, fine to coarse sand, trace to little silt, with trace to some gravel. The Standard Penetration Test (SPT) N-values within the Fill ranged from 2 to 45 blows per foot (bpf), indicating very loose to dense relative densities. It should be stressed that in miscellaneous fill, the N-values can be erratic, reflecting the variable composition of the fill material. The presence of obstruction and/or cobbles within fill can result in locally high N-values, even in a very loose soil. Other obstructions may be present in a miscellaneous uncontrolled fill and may not be readily detectable with exploratory drill rig methods.

SAND – At the boring locations, Sand soils were encountered below the Fill and extending to depths of approximately 7 to 21 feet bgs. The general material description is light brown and brown, fine to coarse sand, trace silt, with trace gravel. The SPT N-values ranged from 5 to 20 bpf, indicating loose to medium dense relative densities, with the majority of the N-values in the loose relative density range.

SAND AND GRAVEL – At Borings B-1, B-2 and B-3, Sand and Gravel soils were encountered below the Sand soils, beginning at depths of approximately 15 to 21 feet bgs and extending to depths of approximately 22 to 27 feet bgs, where the borings were terminated. The general material description is brown, fine to coarse sand, trace to little silt, with trace to some gravel. The SPT N-values ranged from 11 to 19 bpf, indicating medium dense relative densities.

SILTY SAND TO SANDY SILT – Silty Sand to Sandy Silt soils were encountered at Boring B-4, beginning at a depth of approximately 7 feet bgs and extending to a depth of approximately 22 feet bgs, where the boring was terminated. The general material description is brown, fine to medium sand, some silt and brown, fine to medium sand and silt. The SPT N-values ranged from 6 to 12 bpf, indicating loose to medium dense relative densities, with the majority of the N-values in the loose relative density range.

2.2 GROUNDWATER CONDITIONS

At the time of our borings (November 2022), infiltrating groundwater was encountered during drilling and sampling operations at the depths shown in the following table. Ground elevation is based on information contained on the provided 250 Albemarle Road Survey (dated 6/6/2022). For safety purposes, the borings were backfilled upon completion of drilling and sampling.

Boring	Approximate Depth (ft.) of Groundwater (bgs)	Approximate Elevation of Groundwater
B-1	8 feet bgs	EL 20
B-2	6 feet bgs	EL 20.5
B-3	10 feet bgs	EL 20
B-4	6 feet bgs	EL 19.8

The observations represent the groundwater condition at the time of measurement and may not be indicative of other times. The level of groundwater below the ground surface fluctuates based on conditions such as season, temperature, and amount of precipitation that might be different from the time when the observations were made. Therefore, the groundwater levels can be higher or lower during construction and during the life of the structure. This fact must be taken into consideration when developing earthwork procedures.

2.3 SOIL LABORATORY TESTING

PSI tested soil samples for moisture content and gradation to assist in classifying the material and determining the percent fines (percent passing the Number 200 sieve). The material test reports for the samples are in the Appendix of this report and results are summarized in the following table.

Boring No.	Sample No.	Sample Depth (feet)	USCS Classification[1]	Moisture Content (%)	Fines Content (%)
B-2	S1	½' – 2½'	Well-Graded Sand with Silt and Gravel (SW-SM)	5.9	11
B-3	S2	2½' – 4½'	Silty Sand with Gravel (SM)	9.3	13
B-4	S4	7' - 9'	Silty Sand (SM)	20.1	28
[1]For USCS Soil Classification definitions, refer to the Soil Classification Chart in the APPENDIX					

3.0 RECOMMENDATIONS

3.1 GENERAL

The following geotechnical design recommendations have been developed for the proposed Harry Gath Memorial Pool improvements based on the previously described project information and subsurface conditions encountered at this site. If there are any changes in the project criteria, PSI should review the changes to determine if modifications to these recommendations are necessary.

The subsurface conditions encountered at this site within the test borings consisted of approximately 2½ to 10 feet of very loose to dense Fill material underlain by loose to medium dense Sand soils and then medium dense Sand and Gravel soils and loose to medium dense Silty Sand to Sandy Silt soils to the depths explored.

The Fill material is undocumented and may be associated with previously placed, general fill placed to attain the design finished subgrades. Undocumented fill is fill material in which no information was provided regarding the procedures that might have been used to backfill and compact the material to satisfactory engineering standards. Due to the potential variability and potential for deleterious inclusions of human-placed fill, total and differential settlement predictions for grade-supported concrete slabs supported on undocumented fill carry with it less confidence and, therefore, more risk.

The existing Fill material can be evaluated to be suitable or stable during construction provided the Owner understands there is some risk for settlement of grade supported slabs and foundations, if applicable, for undocumented fill materials. Construction procedures such as observing the material during construction, proof-rolling the material with a vibratory compactor followed by selective compaction testing should be performed during construction. This would be based on field judgements and the required field testing of the existing soil during construction.

Conversely, it is possible that the material when exposed and proof-rolled could be unsatisfactory, requiring removal. Therefore, the alternative with the least degree of risk is to plan on removing all existing Fill within the pool area footprint. However, the existing Fill below the existing concrete deck was encountered to a significant depth of 10 feet below grade and the groundwater was measured at approximately 10 feet bgs (EL 20), making methods to completely remove and replace the existing Fill not economically feasible because of the depth of excavation and dewatering may be required. Given the granular composition and predominantly medium dense to dense relative density of the Fill observed in the borings below 2 to 4 feet bgs, a program of partial undercutting of the Fill combined with inspection during construction is proposed. If the proposed excavation program exposes excessive debris in the Fill or other unsuitable conditions, a more extensive removal and replacement program will be required. Additionally, a ground improvement system may also be considered as a risk-adverse alternative for implementation of grade-supported slabs for the new improvements. The degree of acceptable risk of excessive total and differential settlement must be evaluated and accepted by the Owner.

3.2 EARTHWORK

The recommendations provided herein which should be followed to attain subgrades.

1. Following initial demolition (removal of existing pavements, concrete, and utilities to be abandoned/relocated) and removal of all surficial vegetation, topsoil, root mat, shrubbery, and trees (including root systems and root balls) at the design finished subgrades in planned cut areas and prior to placement of new fill (if needed), the exposed subgrades should be proof-rolled using a minimum 10-ton, smooth-drum roller. Proof-rolling should be performed in the presence of a representative of PSI. Subgrade materials exhibiting yielding and/or rutting conditions should be scarified, aerated, and re-compacted, removed and replaced, or stabilized in place through addition of geo-grid and/or coarse aggregate.

2. Soil compaction criteria requires compaction of at least 95 percent of the maximum dry density determined in accordance with ASTM D1557 at plus/minus 2% of the optimum moisture content. Lifts must be controlled so that they do not exceed 6 inches in confined areas and 12 inches in open areas where larger compactors can be utilized. Use hand-operated equipment within 10 feet behind retaining walls and do not over-compact the backfill material. All fill placed within and below the structure must be compacted in accordance with ASTM D1557.

3. All excavations shall be stabilized by cutting back the side slopes or using shoring and bracing as required by 29 CFR 1926 Subpart P, Excavations. Plans and specifications should refer to this requirement so that contractors are aware of their responsibility.

4. Drainage must not be directed onto adjacent property either during construction or as part of the design grading, especially if this would affect groundwater and / or moisture conditions on the adjacent parcel.

3.3 FILL MATERIALS

PSI recommends that the following material gradations and names be used for consistency on the drawings and in the earthwork specifications. All material must be well graded between the limits shown herein and be capable of being compacted to the required degree of density. The material shall have sufficient fines so that it does not shove and remains stable.

PSI also recommends that the specifications not allow the use of recycled material such as reprocessed building demolition material. Material having more than 30 percent retained on the ¾-inch sieve may be difficult to test for compaction. Therefore, PSI recommends that the material selected also be satisfactory for compaction testing purposes.

Common Borrow

Friable, natural soil containing no gravel greater than 2/3 loose lift thickness and free of trash, snow, ice, organics, roots, and tree stumps and no more than 35 percent passing the No. 200 sieve. Common borrow can be used as general site backfill provided it can be compacted and stabilized for the intended purpose.

Structural Fill (recommended for over-excavation backfill below footing grade):

Natural or processed materials meeting the following grading ranges.

Sieve Size	Percent Finer
3-inches	100
½-inches	50 - 100
No. 4	30 - 85
No. 10	20 - 75
No. 40	5 - 35
No. 200	0-10

Granular Fill (recommended for general site fill and backfill above footing grade):

Natural or processed materials meeting the following grading ranges.

Sieve Size	Percent Finer
2-inches	100
No. 10	30 - 95
No. 40	10 - 70
No. 200	0 - 15

Dense Graded Crushed Stone (recommended as the granular base for floor slabs):

Dense graded crushed rock meeting the following grading ranges.

Sieve Size	Percent Finer
2-inch	100
1½-inch	70 - 100
¾-inches	50 - 85
No. 4	30 - 55
No. 50	8 - 24
No. 200	3 - 10

Crushed Stone:

The crushed stone should meet the requirements for material M2.01.4 (3/4-inch gradation) stated in the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

3.3.1 Reuse of Excavated Soil

Based on the results of the laboratory testing, PSI anticipates that shallow excavated Fill soils may not meet the specific gradation requirements for Structural Fill due to the fines content. However, the material may meet the requirements for Granular Fill, which could be used below the slab subgrade and above footing bearing levels, and as general site fill provided that the material continues to meet the project specifications and can be compacted to the required degree of compaction. The material can also be reused as common borrow in landscaped areas.

3.4 Pool Excavation/Construction

PSI understands that an exterior in-ground pool will be constructed to the east of the existing bathhouse building. We have assumed that a specialty contractor will design and install the pool.

Soil conditions at the pool and concrete deck area consist of an approximately 5 to 10 feet of very loose to dense Fill material underlain by loose to medium dense Sand soils and then medium dense Sand and Gravel soils. Moreover, the groundwater may be encountered during excavation and the contractor should be prepared for dewatering and subgrade stabilization measures during construction. Where dewatering is necessary for deeper foundation undercuts, PSI recommends that a stable platform be constructed to facilitate backfill compaction. This may consist of a geotextile filter fabric (e.g. Mirafi 140N) wrapped coarse aggregate (AASHTO #1 aggregate).

Exposed subgrades should be proof-rolled under the observation of a representative of PSI. Where unsuitable/unstable Fill materials are present, then materials will need to be removed and replaced with Structural Fill; however, actual field conditions will dictate the actual extent of removal and replacement.

Proof-rolling and placement/compaction of new fill should be performed in accordance with Section 3.2 of this report. Following subgrade stabilization (as needed), new fill meeting the Granular gradation recommendation presented in Section 3.3 of this report should be placed and compacted to attain the design finished soil subgrade elevation.

The slab subgrade should be proof-rolled to check that the soil is firm prior to constructing the slab base course layer. PSI recommends that the pool floor slab be constructed over a freely draining medium, such as ¾-inch crushed stone or dense graded crushed stone, to avoid undrained groundwater conditions below and around the pool. The material must be tamped into firm interlock (crushed stone) or compacted (freely draining granular soil) so that it is firm and stable. Base course soil material must be compacted to at least 95% of the maximum dry density determined in accordance with ASTM D1557.

The pool structure designed in accordance with these recommendations is expected to have a total settlement less than 1 inch provided that the subgrade soil has not been disturbed and remains compact.

Sufficient drainage medium should be placed behind the pool walls so that water cannot accumulate behind the walls. PSI recommends placing ¾-inch crushed stone, encased in filter fabric, along the back of the walls. The drainage layer should extend to 1-foot horizontally along the walls.

We have assumed that the pool walls will be designed for the “at-rest” soil condition where rotation will not occur. Recommendations for pressures are included in Section 3.4.

Given the relatively shallow groundwater at this site that may be above the bottom of the pool level at different times of the year or vary from year to year, the pool designer should consider buoyancy uplift forces when the pool is empty and implement any necessary permanent dewatering and/or tied down measures to resist them. The designer should consider a more conservative or higher groundwater elevation than was encountered within our soil test borings at the site at the time of our exploration.

3.5 CONCRETE SLAB

Provided the risk of settlement of unremoved Fill is accepted by the Owner and all subgrade soils exhibiting yielding or rutting under proof-roll equipment loads are corrected, the concrete slabs may be designed as grade-supported slabs and the existing Fill may be densified rather than being over-excavated and replaced. Fill required to raise the site to the slab base course grade should be compacted Structural or Granular Fill.

The slab subgrade should be proof-rolled to verify that the soil is firm prior to constructing the slab base course layer. A vibratory drum compactor (10-ton minimum weight at the drum) should be used, making at least 5 passes over the subgrade at the bottom of the excavation. Soft soils exhibiting yielding and/or rutting conditions under proof-roll equipment loads should be overexcavated to a dense underlying stratum and replaced with compacted Structural or Granular Fill.

To reduce the possibility of capillary rise of groundwater and moisture into the floor slab, PSI recommends that the concrete floor slabs be constructed over a 4-inch thick layer of compacted, freely draining base course material such as the ¾-inch angular Crushed Stone or a 6-inch thick layer of Dense Graded Crushed Stone, both as specified herein. Base course soil material must be compacted to at least 95% of the maximum dry density determined in accordance with ASTM D1557. Crushed Stone must be tamped into firm interlock so that it is firm and stable.
PSI recommends that a continuous vapor retarder of at least 10-mil thick, or as specified by the structural engineer, be installed between the slab and the base course to reduce migration of moisture.

For subgrade prepared as recommended and properly compacted Granular or Structural Fill, a modulus of subgrade reaction, *k* value, of 150 pounds per cubic inch (pci) may be used in the grade slab design based on values typically obtained from 1 ft. x 1ft. plate load tests. However, depending on how the slab load is applied, the value will have to be geometrically modified. The value should be adjusted for larger areas using the following expression for cohesive and cohesionless soil:

Modulus of Subgrade Reaction, $k_s = \left(\frac{k}{B}\right)$ for cohesive soil and

$k_s = k\ \left(\frac{B+1}{2B}\right)^2$ for cohesionless soil

where: k_s = coefficient of vertical subgrade reaction for loaded area
k = coefficient of vertical subgrade reaction for 1x1 square foot area
B = width of area loaded, in feet

3.6 LATERAL EARTH PRESSURE

Lateral earth pressure is developed from the soils present within a wedge formed by the vertical wall and an imaginary line extending up and away from the bottom of the wall at an approximate 45° + Φ/2 angle. The lateral earth pressures are determined by multiplying the vertical applied pressure by the appropriate lateral earth pressure coefficient K. Below-grade / retaining walls may be designed based on at-rest (K_o) conditions.

Recommended parameters for use in below-grade / retaining wall designs are presented in the following table.

Recommended Parameters for use in Retaining Wall Design

Material Type	Drained Friction Angle (Φ'), degrees	Total Density Ɣ (pcf)	Earth Pressure Coefficient **		
			At-Rest (K_o)	Active (K_a)	Passive (K_p)
On-Site Soils	30	120	0.50	0.33	1.50
Wall Drainage Aggregate	35	110	0.43	0.27	2.46
Granular Backfill	33	125	0.46	0.29	2.26

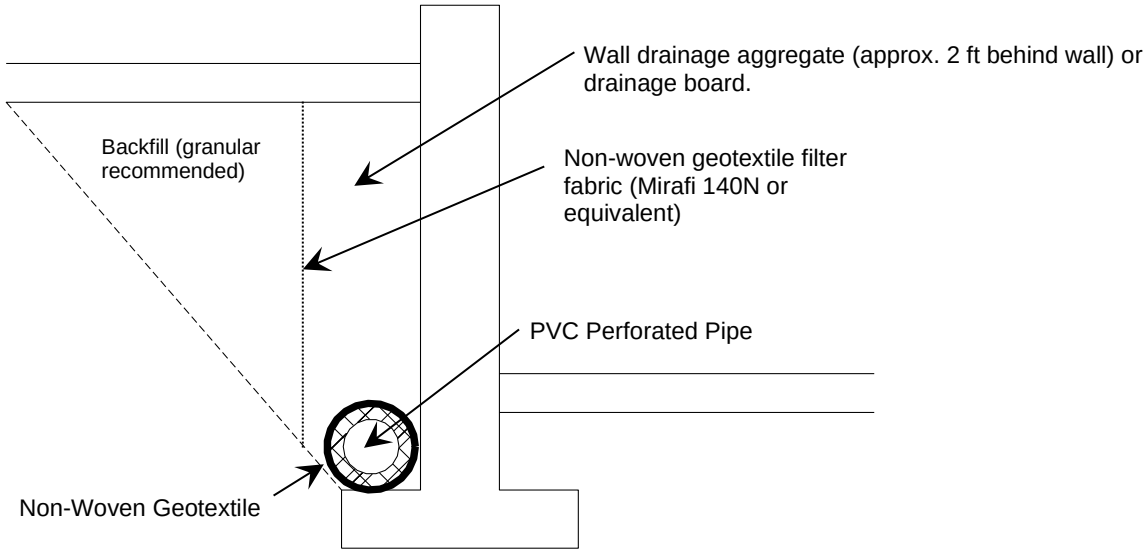
*** Earth pressure coefficients valid for level and drained backfill conditions.*
These values may be used for design only if the aggregate backfill extends back from the wall certain distances. These are a horizontal distance approximately equal to or greater than the total height of the wall at the surface, and at least one-foot beyond the heel of the wall footing. A Factor of Safety of 1.5 has been applied to passive pressure coefficients.

The values presented in the previous table were calculated based on positive foundation drainage being provided to prevent the buildup of hydrostatic pressure. An “equivalent fluid” pressure can be obtained from the above table values by multiplying the appropriate K-factor times the total unit weight of the soil. This applies to unsaturated conditions only. If a saturated “equivalent fluid” pressure is needed, the effective unit weight (total unit weight minus unit weight of water) should be multiplied times the appropriate K-factor and the unit weight of water added to that resultant. However, PSI does not recommend that the walls be designed with a hydrostatic load and PSI does recommend that drainage should be provided to relieve the pressure.

3.7 RETAINING WALL BACKFILL RECOMMENDATIONS

The backfill materials should be placed in lifts that do not exceed 4 to 6-inches loose. The lift thickness may need to be reduced to thinner lifts immediately behind the walls to achieve the desired compaction without overstressing the wall with the compaction process. The backfill materials should be compacted to at least 95% of the Modified Proctor maximum dry density (ASTM D1557). If granular materials (USCS Classifications SM, SP, GM, GP) are selected for the wall backfill in lieu of approved on-site or imported clayey soils and do not exhibit a well-defined moisture-density relationship curve per ASTM D1557, they should be compacted to at least 70% relative density per ASTM D4253/4254.

Backfill that is placed within 5 feet of the walls, should be placed in thinner lifts with hand compaction equipment to achieve the specified density. Heavy compactors and grading equipment should not be allowed to operate within these limits during the backfilling of the retaining wall to reduce the developing of excessive temporary or long-term lateral soil pressures from the installation process. PSI recommends that a representative of the geotechnical engineer be present to monitor the below grade wall excavation, construction, and backfilling processes. Care should be exercised during the backfilling operation to prevent overstressing and damaging the wall. A typical wall cross-section is as follows:



The placement of a limited amount of granular material behind a site retaining wall does not appreciably change the coefficient of lateral earth pressure acting on that wall. The lateral earth pressure acting on a retaining structure is a function of the weight of the soil that exists above the theoretical plane projecting up from the heel of the wall footing (the back of the footing at the base of the wall). The soil above this plane is held in place by two forces, the strength of the soil itself and the lateral resistance of the wall. Therefore, a thin layer of granular material behind the wall (such as a vertical drain on the back of the wall) is of little consequence on the soil forces acting on the wall; however, it will have significant consequences for wall drainage and therefore hydrostatic pressures.

3.8 BATHHOUSE ENTRY STEPS AND RAMP

In general, the existing Sand soils encountered below the 2½-foot layer of Fill are suitable for supporting the entry steps and ramp foundations. We recommend that all excavations for new foundations be extended below the existing Fill to the underlying Sand soils. Based on the Department of the Army Technical Manual (TM 5-852-3), the existing shallow soils are classified as Group F2 materials (sands containing between 3 to 15 percent fines). These materials exhibit a low to medium degree of frost susceptibility. However, PSI recommends that the foundations be constructed over a suitable base course material, such as the Structural Fill or Dense Graded Crushed Stone described in Section 3.3 of this report.

Where excavations to attain the elevation of the Sand soils result in overexcavations below the design bearing levels or those required for a base course material below the foundations, backfill should consist of Structural Fill or Dense Graded Crushed Stone. Backfill materials should be placed and compacted in accordance with Section 3.3 of this report.

In this geographic area, the typical design bearing depth for frost protection is 4 feet below the lowest adjacent exterior finished grade. PSI recommends that the foundations be designed as frost-protected shallow foundations for the local conditions.

New foundations bearing in the properly compacted backfill materials as discussed above or natural Sand soils may be proportioned using a maximum allowable net bearing pressure of 3,000 psf. For this pressure, maximum settlements of 1-inch are anticipated and the settlement is expected to occur during construction and shortly thereafter. Therefore, long-term settlement is not expected. Based on the information provided, we anticipate that the bearing pressure will be substantially less than 3,000 psf and, consequently, settlements will likely be less than 1 inch. If the actual loads are greater than expected or design conditions change, PSI must be notified to determine if alterative recommendations are warranted.

For any planned at-grade slab subgrades, prepared as recommended above, a Modulus of Subgrade Reaction, k value, of 150 pounds per cubic inch (pci) may be used, based on a presumed value for a 1-foot by 1-foot plate load test. If the software used to model the equipment pads requires a subgrade modulus based on the full footprint of the pad, the modulus of subgrade reaction should be reduced in accordance with the following equation for the actual foundation dimensions selected.

Kr = K {(B+1)/2B}2

where: Kr = reduced subgrade modulus (pci)
K = unit subgrade modulus (pci)
B = foundation width (feet)

All excavations and overexcavations (if necessary) should be observed by a representative of PSI prior to placement of backfill materials to confirm and document that the materials are consistent with the materials described in the report. Proof-rolling using walk-behind or driven, smooth-drum rollers (if excavation dimensions permit) should be performed to identify loose/yielding conditions. Where such conditions are observed, additional overexcavation to a denser stratum and placement of one of the aforementioned backfill materials should be performed.

3.9 SEISMIC CONSIDERATIONS

Subsurface conditions beginning at the surface of the site within the boring locations consist of approximately 2½ to 10 feet of very loose to dense Fill material underlain by loose to medium dense Sand soils and then medium dense Sand and Gravel soils and loose to medium dense Silty Sand to Sandy Silt soils to the depths explored.

Therefore, it is PSI's opinion that the site should be classified as Site Class D as defined in the Building Code and using the available information, if necessary, for design. Seismic values based on Site Class D are presented in the following table.

2015 International Building Code and Massachusetts Amendments	Reference	Equation	Value
City – Newton, MA			
Site Class Definition	1613.3.2	D	
Earthquake Design Factors (short)	Table 1604.11	S_S	0.208
Earthquake Design Factors (1 -sec)	Table 1604.11	S_1	0.068
Site Coefficient - F_a	Table 1613.3.3(1)	F_a	1.6
Site Coefficient - F_v	Table 1613.3.3(2)	F_v	2.4
Max EQ spectral response - S_{MS}	Eq 16-37	F_a*S_S	0.333
Max EQ spectral response - S_{M1}	Eq 16-38	F_v*S_1	0.163
Design spectral response acceleration - S_{DS}	Eq 16-39	2/3*S_{MS}	0.222
Design spectral response acceleration - S_{D1}	Eq 16-40	2/3*S_{M1}	0.109

The subsurface conditions to the depths explored at the site were also assessed for its liquefaction potential using the guidance provided in the 2015 International Building Code and Massachusetts Amendments. It is PSI's opinion that the site is not susceptible to liquefaction to the depths explored.

4.0 CONSTRUCTION CONSIDERATIONS

4.1 EXCAVATION CONSIDERATIONS

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, Part 1926, Subpart P". This document was established to better enhance the safety of workers entering trenches or excavations.

Federal regulation mandates that all excavations, whether they be utility trenches, basement or footing excavations or others (i.e. underground storage tanks), be constructed in accordance with the OSHA requirements. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the Owner and the contractor could risk injury to workers and be liable for substantial financial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's responsible person, as defined in “29 CFR Part 1926”, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination or excavation depth, including utility trench excavation depth, exceed those specified in local, state and federal safety regulations.

We are providing this information solely as a service to our Client. PSI is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

4.2 CONSTRUCTION DEWATERING

The depth at which groundwater was observed within the boreholes during drilling operations was at approximately 6 to 10 feet below surface grade (EL 19.8 to 20.5) during the field exploration program at the site.

Should groundwater or wet conditions be encountered, it is PSI’s opinion that dewatering can be handled by pumping from gravel-lined, cased sumps to lower the water 1 to 2 feet. Additional groundwater lowering will likely require the use of wellpoints or deep wells. If dewatering is necessary, the contractor is solely responsible for designing all dewatering systems and maintaining a groundwater level that is at least 24 inches below the bottom of the excavation so that the bottom of the excavation remains firm and dry to allow placing and compacting of fill.

The contractor is responsible for maintaining a dewatered and firm subgrade condition and is solely responsible for selecting the method of groundwater control, designing, and maintaining the system. PSI recommends that this requirement be stated in the project specifications.

5.0 GEOTECHNICAL RISK

The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. Site exploration identifies actual subsurface conditions only at those points where samples are taken.

A geotechnical report is based on conditions that existed at the time of the subsurface exploration. The analytical tools which geotechnical engineers use are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soils and the proposed structure will perform as planned.

The engineering recommendations presented in the preceding sections constitute PSI's professional estimate of those measures that are necessary for the proposed structure to perform according to the proposed design based on the information generated and referenced during this evaluation, and PSI's experience in working with these conditions.

6.0 REPORT LIMITATIONS

PSI's professional services have been performed and our findings presented in accordance with generally accepted geotechnical engineering principles and practices. PSI is not responsible for the conclusions, opinions, or recommendations made by others based on this data. No other warranties are implied or expressed. As stated previously, our recommendations are made based on the limited information available.

The scope of explorations was intended to assess soil conditions within the influence of the proposed foundations. The analyses and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated. If subsoil variations become evident during this project, a re-assessment of the recommendations contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature, or location of the proposed structure.

The scope of our services does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our Client.

PSI did not provide any service to investigate or detect the presence of moisture, mold or other biological contaminate in or around any structure, or any service that was designed or intended to prevent or lower the risk of the occurrence of the amplification of the same. Mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. Site conditions are outside of PSI's control, and mold amplification will likely occur, or continue to occur, in the presence of moisture. As such, PSI cannot and shall not be held responsible of the occurrence or recurrence of mold amplification.

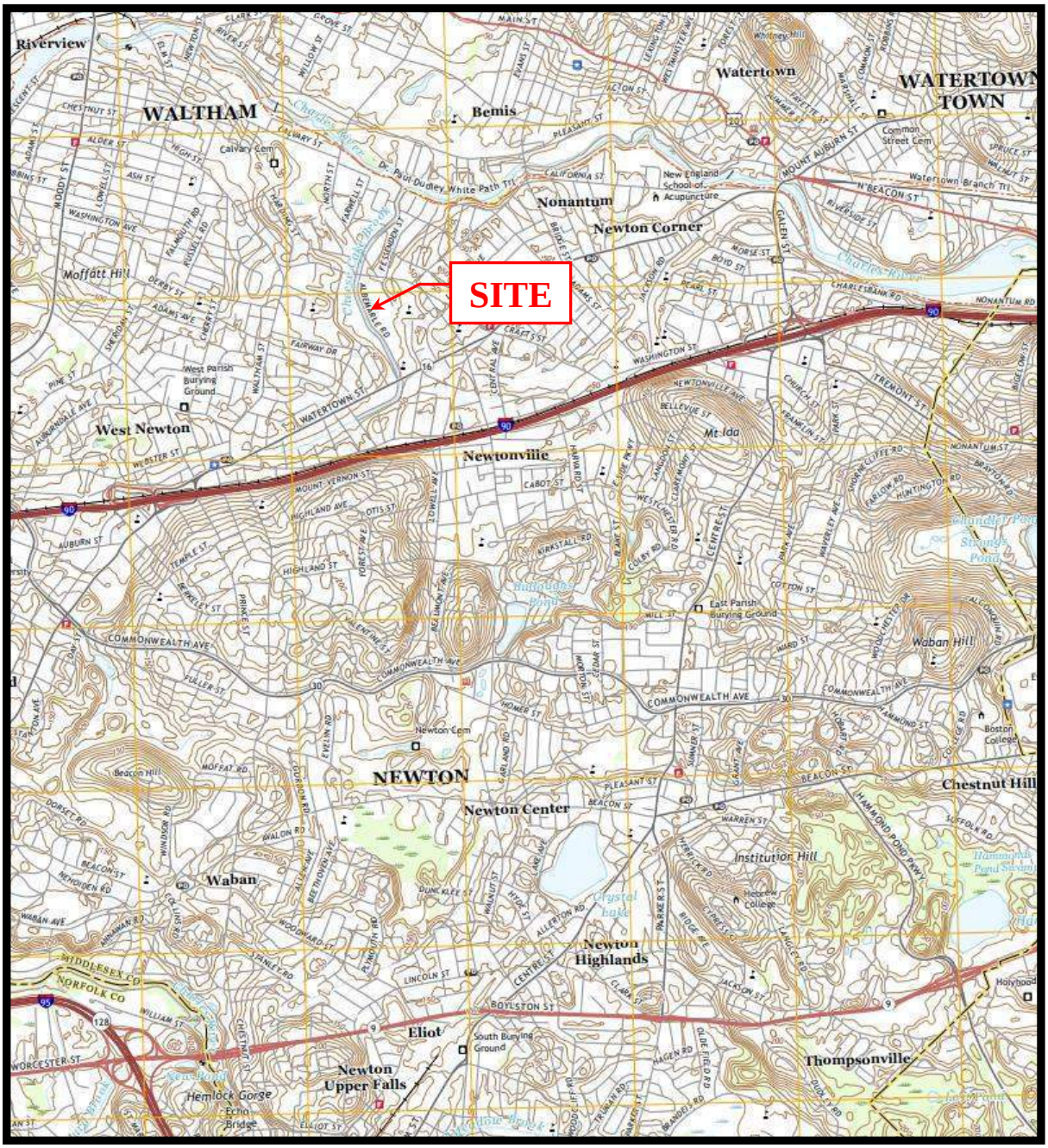
After the plans and specifications are more complete, the geotechnical engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplementary recommendations.

FIGURES

Figure 1: USGS Site Location Plan

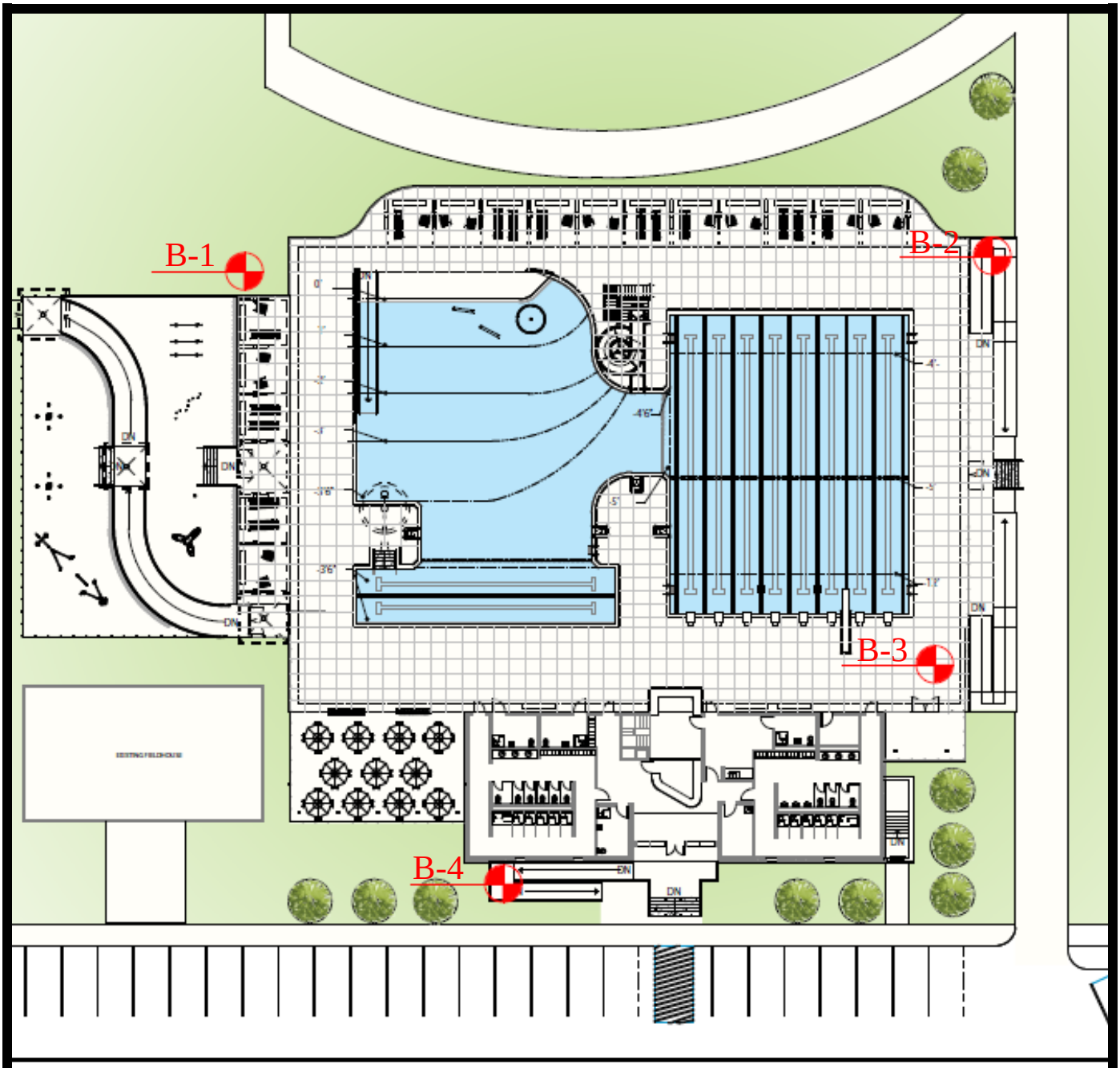
Figure 2: Boring Location Plan

Figure 3: Surficial Geology



REFERENCE: U.S.G.S. "NEWTON, MA" 7.5' QUADRANGLE MAP
ISSUED: 2021

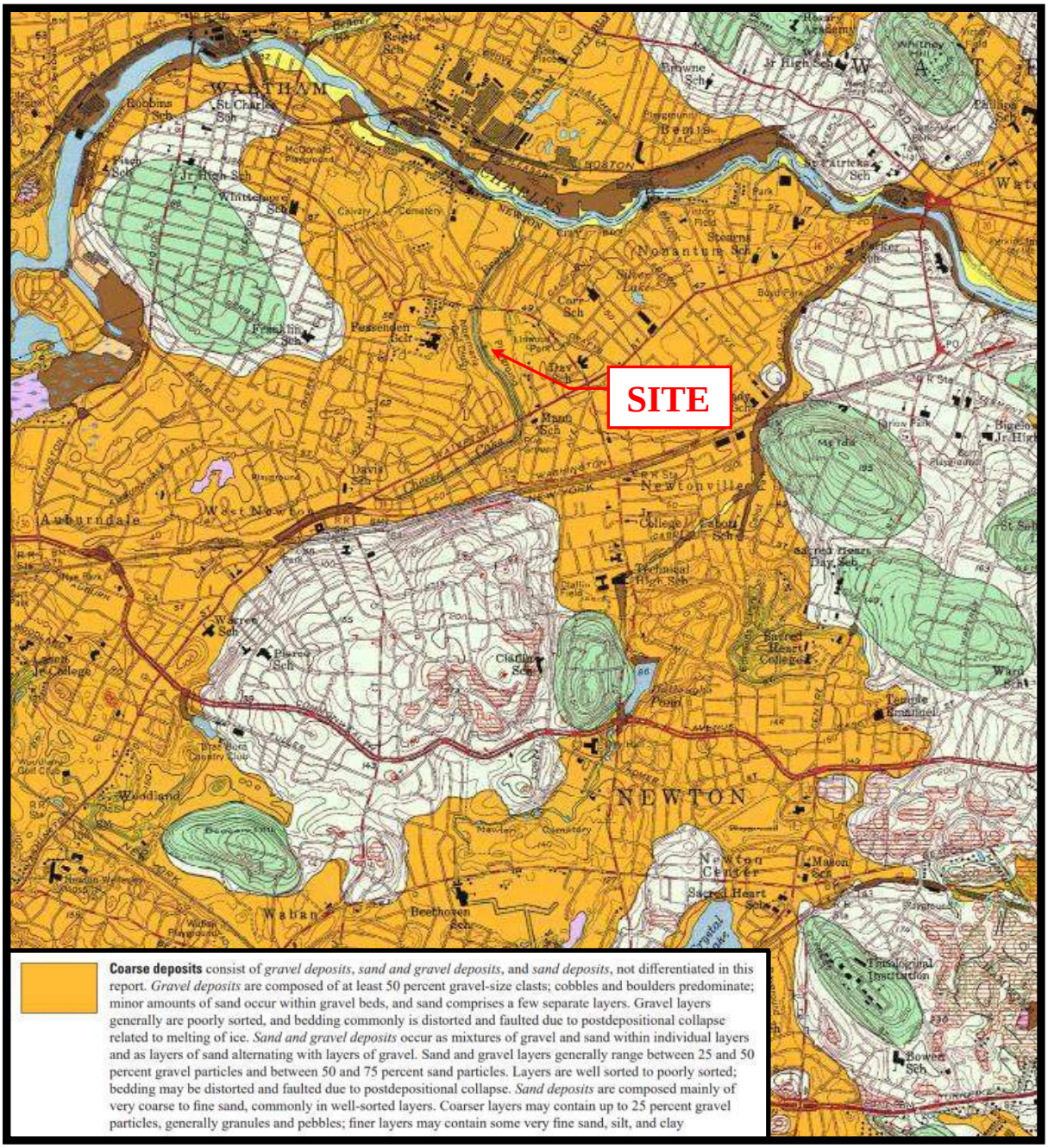
FIGURE 1: USGS SITE LOCATION PLAN		PSI Project No.	Date	Scale
PROJECT NAME: Harry Gath Memorial Pool 256 Albemarle Road Newton, MA 02460		04461180	November 2022	N.T.S.



Boring Location

- Base Plan is Overall Plan (dated 5/20/22) provided by the Client.
- Borings were located in the field by PSI. Locations are approximate.
- Borings were drilled on November 3, 2022 by Soil X Corporation of Leominster, MA.

FIGURE 2: BORING LOCATION PLAN	PSI Project No.	Date	
PROJECT: Harry Gath Memorial Pool 256 Albemarle Road Newton, MA 02460	04461180	November 2022	



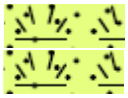
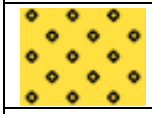
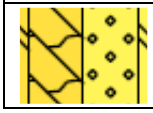
REFERENCE: "Surficial Materials Map of the Newton Quadrangle, Massachusetts"
Compiled by Byron D. Stone and Mary L. DiGiacomo-Cohen - 2018

FIGURE 3: SURFICIAL GEOLOGY		PSI Project No.	Date	Scale
PROJECT NAME: Harry Gath Memorial Pool 256 Albemarle Road Newton, MA 02460		04461180	November 2022	N.T.S.

APPENDIX

Boring Logs

Legend for Graphic Log

	**Topsoil**
	**Bituminous Concrete**
	**Concrete**
	**Fill**
	**Sand**
	**Sand and Gravel**
	**Silty Sand to Sandy Silt**

#104-23

BORING B-1

DATE STARTED:	11/3/22	**DRILL COMPANY:**	Soil X Corp.
DATE COMPLETED:	11/3/22	**DRILLER**	Michael Tisdale
COMPLETION DEPTH	22.0 ft	**LOGGED BY:**	Intertek-PSI
BENCHMARK:	N/A	**DRILL RIG:**	Geoprobe 6610
ELEVATION:	28 ft	**DRILLING METHOD:**	Flush Joint Casing
LATITUDE:		**SAMPLING METHOD:**	SS
LONGITUDE:		**HAMMER TYPE:**	Automatic
STATION:	N/A	**EFFICIENCY**	N/A
OFFSET:	N/A	**REVIEWED BY:**	Brianna Hansen

Water While Drilling 8 feet

BORING LOCATION:

REMARKS: Ground elevation is based on information contained on provided 250 Albemarle Road Survey (dated 6/6/2022) and is approximate.

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0			Approximately 6" of topsoil			
		1	15	Very loose, brown, fine to coarse sand, trace to little silt, trace gravel **(Fill)**		woh-woh-2-3	
		2	19	Dense Top 4"- brown, fine to coarse sand, trace to little silt **(Fill)** 5"- dark brown, fine to medium sand, little silt, little gravel **(Fill)**		4-16-17-17 N=33	
	5	3	18	Brown, fine to coarse sand, trace to little silt, little to some gravel **(Fill)** Loose, light brown, fine to coarse sand, trace silt		8-4-3-3 N=7	
		4	21	Loose, light brown, fine to coarse sand, trace silt		4-3-3-2 N=6	
	10	5	20	Loose, light brown to brown, fine to coarse sand. trace silt, trace fine gravel		woh-2-4-4 N=6	
	15	6	18	Loose, brown, fine to coarse sand, trace to little silt, trace fine gravel		17-4-5-15 N=9	
	20	7	9	Medium dense, brown, fine to coarse sand, trace silt, little to some gravel		6-7-11-10 N=18	
				Boring terminated at ~22 feet bgs			

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

Additional Remarks

intertek psi

Professional Service Industries, Inc.
480 Neponset Street, Suite 9C
Canton, MA 02021
Telephone: (781) 821-2355

PROJECT NO.: 04461180
PROJECT: Harry Gath Memorial Pool Improvements
LOCATION: 256 Albemarle Road
Newton, MA 02460

The stratification lines represent approximate boundaries. The transition may be gradual.

#104-23

BORING B-2

DATE STARTED:	11/3/22	**DRILL COMPANY:**	Soil X Corp.
DATE COMPLETED:	11/3/22	**DRILLER**	Michael Tisdale
COMPLETION DEPTH	22.0 ft	**LOGGED BY:**	Intertek-PSI
BENCHMARK:	N/A	**DRILL RIG:**	Geoprobe 6610
ELEVATION:	26.5 ft	**DRILLING METHOD:**	Flush Joint Casing
LATITUDE:		**SAMPLING METHOD:**	SS
LONGITUDE:		**HAMMER TYPE:**	Automatic
STATION:	N/A	**EFFICIENCY**	N/A
OFFSET:	N/A	**REVIEWED BY:**	Brianna Hansen

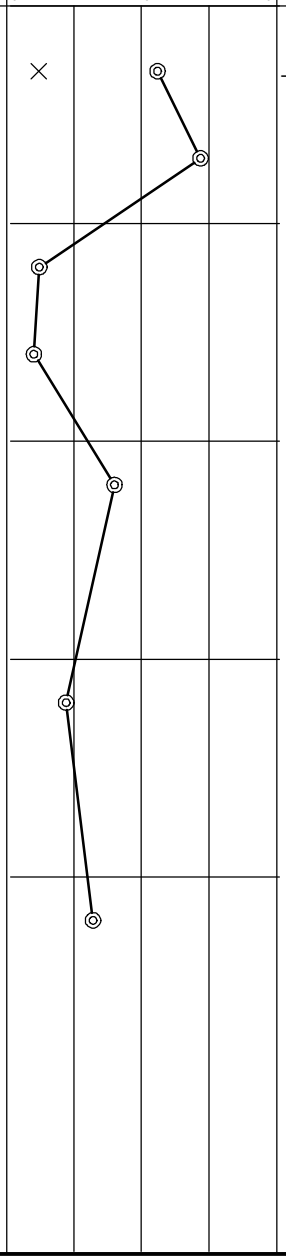
Water While Drilling 6 feet

BORING LOCATION:

REMARKS: Ground elevation is based on information contained on provided 250 Albemarle Road Survey (dated 6/6/2022) and is approximate.

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	Additional Remarks
	0			Approximately 2" of bituminous concrete				
25		1	11	Medium dense, brown, fine to coarse sand, trace to little silt, little to some fine gravel **(Fill)**		6-11-17-14 N=28	6	-200 = 11%
		2	16	Dense Top 3"- grayish brown, fine to coarse sand, trace silt, little gravel **(Fill)** 3" lense of stone		20-16-20-19 N=36		
	5			Brown, fine to coarse sand, trace to little silt, little to some gravel **(Fill)**				
20		3	13	Loose, light brown, fine to coarse sand, trace silt Lenses of fine sand		7-3-3-2 N=6		
		4	18	Loose, light brown, fine to coarse sand, trace silt, trace to little gravel		2-3-2-5 N=5		
	10							
15		5	13	Medium dense, light brown, fine to coarse sand, trace silt, trace fine gravel Lense of fine sand		11-9-1-13 N=20		
	15							
10		6	11	Medium dense, brown, fine to coarse sand, trace silt, little gravel		4-4-7-9 N=11		
	20							
5		7	11	Medium dense, brown, fine to coarse sand, trace silt, little to some gravel		10-11-5-7 N=16		
				Boring terminated at ~22 feet bgs				

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0



intertek psi

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480 Neponset Street, Suite 9C
Canton, MA 02021
Telephone: (781) 821-2355

PROJECT NO.: 04461180
PROJECT: Harry Gath Memorial Pool Improvements
LOCATION: 256 Albemarle Road
Newton, MA 02460

The stratification lines represent approximate boundaries. The transition may be gradual.

#104-23

BORING B-3

DATE STARTED:	11/3/22	**DRILL COMPANY:**	Soil X Corp.
DATE COMPLETED:	11/3/22	**DRILLER**	Michael Tisdale
COMPLETION DEPTH	27.0 ft	**LOGGED BY:**	Intertek-PSI
BENCHMARK:	N/A	**DRILL RIG:**	Geoprobe 6610
ELEVATION:	30 ft	**DRILLING METHOD:**	Flush Joint Casing
LATITUDE:		**SAMPLING METHOD:**	SS
LONGITUDE:		**HAMMER TYPE:**	Automatic
STATION:	N/A	**EFFICIENCY**	N/A
OFFSET:	N/A	**REVIEWED BY:**	Brianna Hansen

Water While Drilling 10 feet

BORING LOCATION:

REMARKS: Ground elevation is based on information contained on provided 250 Albemarle Road Survey (dated 6/6/2022) and is approximate.

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	Additional Remarks
	0			Approximately 6" of bituminous concrete				
		1	9	Loose, dark brown, fine to coarse sand, little silt, little gravel **(Fill)**		9-5-5-4 N=10		
		2	13	Loose, dark brown, fine to coarse sand, little silt, little to some fine gravel **(Fill)**		3-3-2-5 N=5	9	-200 = 13%
25	5	3	16	Dense, grayish brown, fine to coarse sand, trace silt, little to some gravel **(Fill)**		24-24-21-17 N=45		
		4	16	Medium dense, grayish brown, fine to coarse sand, trace silt, little to some gravel **(Fill)**		19-13-9-7 N=22		
20	10	5	16	Loose, light brown, fine to coarse sand, trace silt		5-3-3-3 N=6		
		6	22	Loose, light brown, fine to coarse sand, trace silt; 5" lense of medium to coarse sand, trace to little fine sand, trace silt, trace fine gravel		2-4-3-5 N=7		
15	15	7	13	Loose, light brown, fine to coarse sand, trace silt		woh-4-4-4 N=8		
10	20	8	10	Loose, light brown, fine to coarse sand, trace silt		5-4-5-6 N=9		
				Loose, brown, fine to coarse sand, trace silt, little gravel				
5	25	9	12	Medium dense, brown, fine to coarse sand, little silt, trace to little gravel		4-7-12-12 N=19		
				Boring terminated at ~27 feet bgs				

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

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Newton, MA 02460

The stratification lines represent approximate boundaries. The transition may be gradual.

#104-23

BORING B-4

DATE STARTED:	11/3/22	**DRILL COMPANY:**	Soil X Corp.
DATE COMPLETED:	11/3/22	**DRILLER**	Michael Tisdale
COMPLETION DEPTH	22.0 ft	**LOGGED BY:**	Intertek-PSI
BENCHMARK:	N/A	**DRILL RIG:**	Geoprobe 6610
ELEVATION:	25.8 ft	**DRILLING METHOD:**	Flush Joint Casing
LATITUDE:		**SAMPLING METHOD:**	SS
LONGITUDE:		**HAMMER TYPE:**	Automatic
STATION:	N/A	**EFFICIENCY**	N/A
OFFSET:	N/A	**REVIEWED BY:**	Brianna Hansen

Water While Drilling 6 feet

BORING LOCATION:

REMARKS: Ground elevation is based on information contained on provided 250 Albemarle Road Survey (dated 6/6/2022) and is approximate.

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	Additional Remarks
25	0			Approximately 2" of bituminous concrete				
		1	7	Loose Top 4"- brown, fine to coarse sand, trace to little silt, little gravel **(Fill)** Dark brown, fine to coarse sand, little silt, little gravel **(Fill)**		5-3-7-4 N=10		
		2	17	Loose, light brown, fine to coarse sand, trace silt		5-4-4-3 N=8		
20	5	3	20	Very loose, brown, fine to coarse sand, trace silt		4-2-2-2 N=4		
		4	24	Loose, brown, fine to medium sand, some silt		3-3-4-3 N=7	20	-200 = 28%
15	10	5	24	Loose, brown, fine to medium sand, some silt		woh-3-3-4 N=6		
10	15	6	24	Loose, brown, fine to medium sand and silt		3-2-5-5 N=7		
5	20	7	22	Medium dense, brown, fine to medium sand and silt		5-6-6-6 N=12		
				Boring terminated at ~22 feet bgs				

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

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The stratification lines represent approximate boundaries. The transition may be gradual.

#104-23

FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

COHESIONLESS SOILS

(Silt, Sand, Gravel and Combinations)

Density

Very Loose	4 blows per foot or less
Loose	5 - 10 blows per foot
Medium Dense	11 - 30 blows per foot
Dense	31 - 50 blows per foot
Very Dense	51 blows per foot or more

Relative Properties

Descriptive Term	Percent
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

Particle Size Indentification

Boulders		8 inch diameter or more
Cobbles		3 - 8 inch diameter
Gravel	Coarse	1 - 3 inches
	Medium	1/2 - 1 inch
	Fine	1/4 - 1/2 inch
Sand	Coarse	0.6 mm - 1/4 inch (diameter of pencil lead)
	Medium	0.2 mm - 0.6 mm (diameter of broom straw)
	Fine	0.05 mm - 0.2 mm (diameter of human hair)
Silt		0.002 mm - 0.05 mm (cannot see particles)

COHESIVE SOILS

(Clay, Silt and Combinations)

Consistency

Very soft	2 blows per foot or less
Soft	3 - 4 blows per foot
Medim Stiff	5 - 8 blows per foot
Stiff	9 - 15 blows per foot
Very Stiff	16 - 30 blows per foot
Hard	31 blows per foot or more

Plasticity

Degree of Plasticity	Plasticity Index
None to slight	0 - 4
Slight	5 - 7
Medium	8 - 22
High to very high	over 22

CLASSIFICATION ON LOGS ARE MADE BY VISUAL EXAMINATION OF SAMPLES.

Standard Penetration Test — Driving a 2.0" O.D., 1 3/8" I.D., sampler a distance of 2.0 feet into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. The number of hammer blows required to drive the sampler into the soil in 6-inch increments is recorded. The sum of the hammer blows for the second and third interval provides the Standard Penetration Resistance (N) and is a measure of soil strength. The reader is referenced to ASTM D1586.

Strata Changes — Boundaries between soil layers are considered approximate based upon observed changes during the drilling operations or noted changes within representative samples.

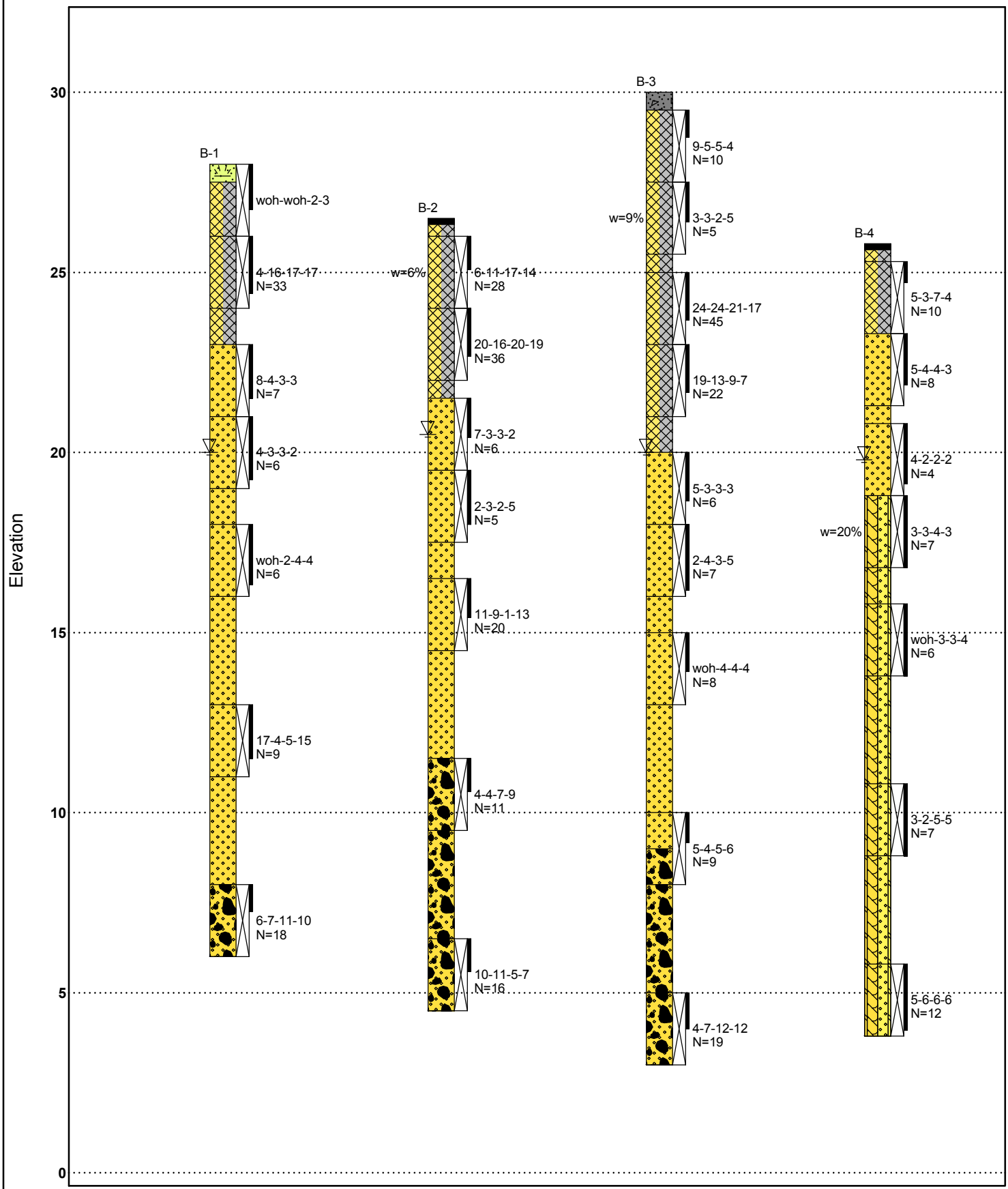
Groundwater — Observations were made to determine either the depth or elevation of water at the times indicated on the Soil Exploration Logs. The water so encountered may be groundwater or perched water. The depth or elevations indicated for water may fluctuate due to seasonal changes or other unknown factors.

intertek psi

Soil Profiles

#104-23

Profile



intertek psi

Professional Service Industries, Inc.
480 Neponset Street, Suite 9C
Canton, MA 02021
Telephone: (781) 821-2355

Harry Gath Memorial Pool Improvements
PSI Project Number: 04461180

Material Test Reports

Professional Service Industries, Inc.
480 Neponset Street, Suite 9C
Canton, MA 02021

Phone: (781) 821-2355
Fax: (781) 821-6276

#104.23

Report No: MAT:04461180-1-S1
Issue No: 1

Material Test Report

Client: BARGMANN HENDRIE ARCHETYPE
9 CHANNEL CENTER STREET,
SUITE 300
BOSTON, MA 02210
CC:

Project: GATH MEMORIAL POOL IMPROVEMENT
NEWTON, MA

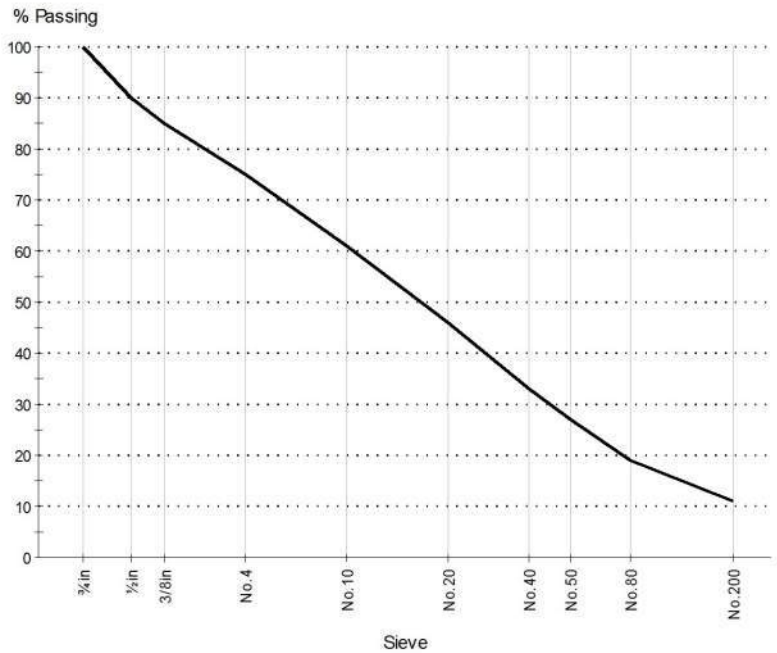
Approved Signatory: Yannick Lastennet (Department Manager)
Date of Issue: 11/15/2022

Sample Details

Sample ID:	04461180-1-S1
Client Sample ID:	
Date Sampled:	11/03/22
Sampled By:	PSI
Specification:	No Spec. Sieve
Supplier:	
Source:	On-site Boring
Material:	
Sampling Method:	Soil Boring Split Spoon Sample
General Location:	B-2 (0.5'-2.5')
Location:	
Lift:	

Sample Description:

Particle Size Distribution



COBBLES	GRAVEL		SAND			FINES (10.8%)	
(0.0%)	Coarse (0.0%)	Fine (24.7%)	Coarse (13.9%)	Medium (28.2%)	Fine (22.5%)	Silt	Clay

Grading: ASTM C 136, ASTM C 117

Date Tested: 11/9/2022
Tested By: Gary Brooks

Sieve Size	% Passing	Limits
¾in (19.0mm)	100	
½in (12.5mm)	90	
3/8in (9.5mm)	85	
No.4 (4.75mm)	75	
No.10 (2.0mm)	61	
No.20 (850µm)	46	
No.40 (425µm)	33	
No.50 (300µm)	27	
No.80 (180µm)	19	
No.200 (75µm)	11	

D85: 9.5000 **D60:** 1.8891 **D50:** 1.0679
D30: 0.3571 **D15:** 0.1162 **D10:** 0.0672
Cu: 28.10 **Cc:** 1.00

Professional Service Industries, Inc.
480 Neponset Street, Suite 9C
Canton, MA 02021

Phone: (781) 821-2355
Fax: (781) 821-6276

#104.23

Report No: MAT:04461180-1-S1
Issue No: 1

Material Test Report

Client: BARGMANN HENDRIE ARCHETYPE
9 CHANNEL CENTER STREET, SUITE 300
BOSTON, MA 02210

CC:

Project: GATH MEMORIAL POOL IMPROVEMENT
NEWTON, MA

Approved Signatory: Yannick Lastennet (Department Manager)
Date of Issue: 11/15/2022

Sample Details

Sample ID: 04461180-1-S1
Client Sample ID:
Date Sampled: 11/03/22
Sampled By: PSI
Specification: No Spec. Sieve
Supplier:
Source: On-site Boring
Material:
Sampling Method: Soil Boring Split Spoon Sample
General Location: B-2 (0.5'-2.5')
Location:
Lift:

Other Test Results

Description	Method	Result	Limits
Water content (%)	ASTM D 2216	5.9	
Method		B	
Tested By		Pritesh Solanki	
Date Tested		11/4/2022	

Comments

N/A

Professional Service Industries, Inc.
480 Neponset Street, Suite 9C
Canton, MA 02021

Phone: (781) 821-2355
Fax: (781) 821-6276

#104.23

Report No: MAT:04461180-1-S2
Issue No: 1

Material Test Report

Client: BARGMANN HENDRIE ARCHETYPE
9 CHANNEL CENTER STREET,
SUITE 300
BOSTON, MA 02210
CC:

Project: GATH MEMORIAL POOL IMPROVEMENT
NEWTON, MA

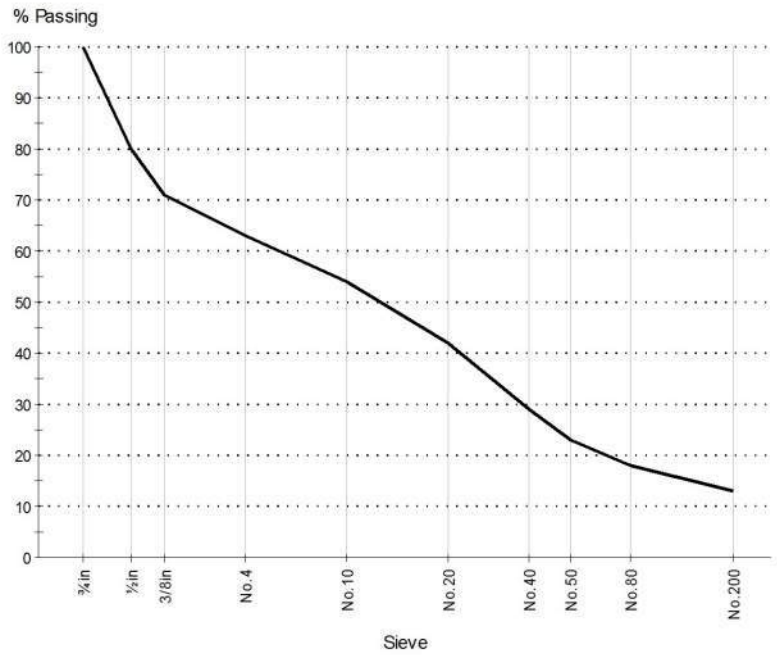
Approved Signatory: Yannick Lastennet (Department Manager)
Date of Issue: 11/15/2022

Sample Details

Sample ID: 04461180-1-S2
Client Sample ID:
Date Sampled: 11/03/22
Sampled By: PSI
Specification: No Spec. Sieve
Supplier:
Source: On-site Boring
Material:
Sampling Method: Soil Boring Split Spoon Sample
General Location: B-3 (2.5'-4.5')
Location:
Lift:

Sample Description:

Particle Size Distribution



COBBLES	GRAVEL		SAND			FINES (13.1%)	
(0.0%)	Coarse (0.0%)	Fine (36.8%)	Coarse (9.6%)	Medium (24.9%)	Fine (15.6%)	Silt	Clay

Grading: ASTM C 136, ASTM C 117

Date Tested: 11/9/2022
Tested By: Gary Brooks

Sieve Size	% Passing	Limits
¾in (19.0mm)	100	
½in (12.5mm)	80	
3/8in (9.5mm)	71	
No.4 (4.75mm)	63	
No.10 (2.0mm)	54	
No.20 (850µm)	42	
No.40 (425µm)	29	
No.50 (300µm)	23	
No.80 (180µm)	18	
No.200 (75µm)	13	

D85: 13.8794 **D60:** 3.5602 **D50:** 1.5037
D30: 0.4483 **D15:** 0.1065 **D10:** N/A

Professional Service Industries, Inc.
480 Neponset Street, Suite 9C
Canton, MA 02021

Phone: (781) 821-2355
Fax: (781) 821-6276

#104.23

Report No: MAT:04461180-1-S2
Issue No: 1

Material Test Report

Client: BARGMANN HENDRIE ARCHETYPE
9 CHANNEL CENTER STREET, SUITE 300
BOSTON, MA 02210

CC:

Project: GATH MEMORIAL POOL IMPROVEMENT
NEWTON, MA

Approved Signatory: Yannick Lastennet (Department Manager)
Date of Issue: 11/15/2022

Sample Details

Sample ID: 04461180-1-S2
Client Sample ID:
Date Sampled: 11/03/22
Sampled By: PSI
Specification: No Spec. Sieve
Supplier:
Source: On-site Boring
Material:
Sampling Method: Soil Boring Split Spoon Sample
General Location: B-3 (2.5'-4.5')
Location:
Lift:

Other Test Results

Description	Method	Result	Limits
Water content (%)	ASTM D 2216	9.3	
Method		B	
Tested By		Pritesh Solanki	
Date Tested		11/4/2022	

Comments

N/A

Professional Service Industries, Inc.
480 Neponset Street, Suite 9C
Canton, MA 02021

Phone: (781) 821-2355
Fax: (781) 821-6276

#104.23

Report No: MAT:04461180-1-S3
Issue No: 1

Material Test Report

Client: BARGMANN HENDRIE ARCHETYPE
9 CHANNEL CENTER STREET,
SUITE 300
BOSTON, MA 02210
CC:

Project: GATH MEMORIAL POOL IMPROVEMENT
NEWTON, MA

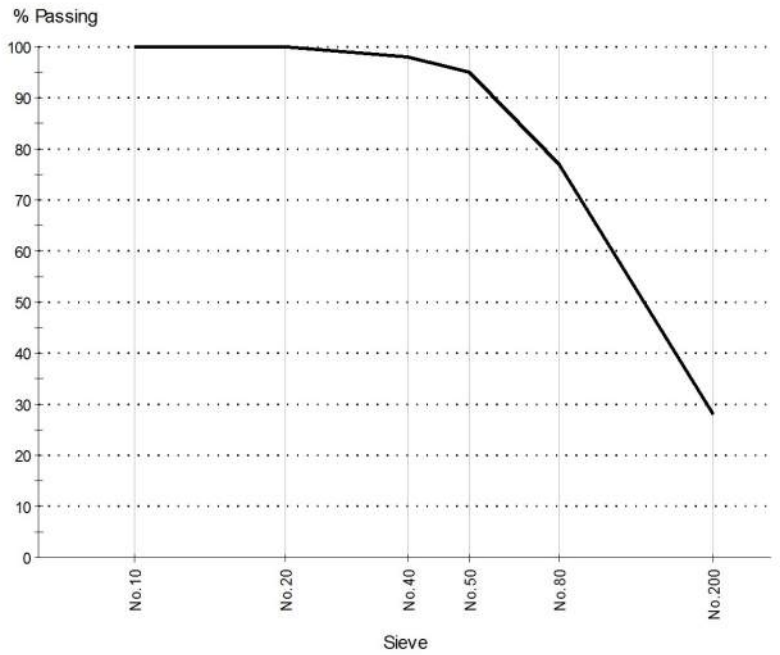
Approved Signatory: Yannick Lastennet (Department Manager)
Date of Issue: 11/15/2022

Sample Details

Sample ID:	04461180-1-S3
Client Sample ID:	
Date Sampled:	11/03/22
Sampled By:	PSI
Specification:	No Spec. Sieve
Supplier:	
Source:	On-site Boring
Material:	
Sampling Method:	Soil Boring Split Spoon Sample
General Location:	B-4 (7'-9')
Location:	
Lift:	

Sample Description:

Particle Size Distribution



COBBLES	GRAVEL		SAND			FINES (28.5%)	
(0.0%)	Coarse (0.0%)	Fine (0.0%)	Coarse (0.0%)	Medium (1.6%)	Fine (70.0%)	Silt	Clay

Grading: ASTM C 136, ASTM C 117

Date Tested: 11/9/2022
Tested By: Gary Brooks

Sieve Size	% Passing	Limits
No.10 (2.0mm)	100	
No.20 (850µm)	100	
No.40 (425µm)	98	
No.50 (300µm)	95	
No.80 (180µm)	77	
No.200 (75µm)	28	

D85: 0.2259 **D60:** 0.1329 **D50:** 0.1111
D30: 0.0777 **D15:** N/A **D10:** N/A

Professional Service Industries, Inc.
480 Neponset Street, Suite 9C
Canton, MA 02021

Phone: (781) 821-2355
Fax: (781) 821-6276

#104.23

Report No: MAT:04461180-1-S3
Issue No: 1

Material Test Report

Client: BARGMANN HENDRIE ARCHETYPE
9 CHANNEL CENTER STREET, SUITE 300
BOSTON, MA 02210

CC:

Project: GATH MEMORIAL POOL IMPROVEMENT
NEWTON, MA

Approved Signatory: Yannick Lastennet (Department Manager)
Date of Issue: 11/15/2022

Sample Details

Sample ID: 04461180-1-S3
Client Sample ID:
Date Sampled: 11/03/22
Sampled By: PSI
Specification: No Spec. Sieve
Supplier:
Source: On-site Boring
Material:
Sampling Method: Soil Boring Split Spoon Sample
General Location: B-4 (7'-9')
Location:
Lift:

Other Test Results

Description	Method	Result	Limits
Water content (%)	ASTM D 2216	20.1	
Method		B	
Tested By		Pritesh Solanki	
Date Tested		11/9/2022	

Comments

N/A

#104-23

Gath Memorial Pool Improvements

DRAWING LIST

ARCHITECTURAL

EX-1	OVERALL SITE SURVEY
EX-2	SITE SURVEY
D100	DEMO SITE PLAN
D101	BUILDING DEMO PLAN AND ELEVATION
A100	OVERALL SITE
A101	PROPOSED OVERALL PLAN
A102	BATHOUSE PLAN
A103	BATHHOUSE PLANS
A200	OVERALL ELEVATIONS
A210	ENLARGED SECTION
A211	ENLARGED SECTION
A400	INTERIOR ELEVATIONS
A401	INTERIOR ELEVATIONS
A402	INTERIOR ELEVATIONS
A801	LAP POOL PLAN
A802	ZERO DEPTH POOL
A811	POOL SECTIONS
A820	SPRAY DECK OPTION 3
A821	SPRAY DECK - OPTION 3 PLAN AND SECTION
A900	3D VIEW - OVERALL SITE

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

PROJECT NAME
Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT
City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE
COVER SHEET

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

SCALE

M.D.
DRAWN BY

3457
PROJECT #

revit.rvt
FILE NAME

DRAWING NUMBER
A000

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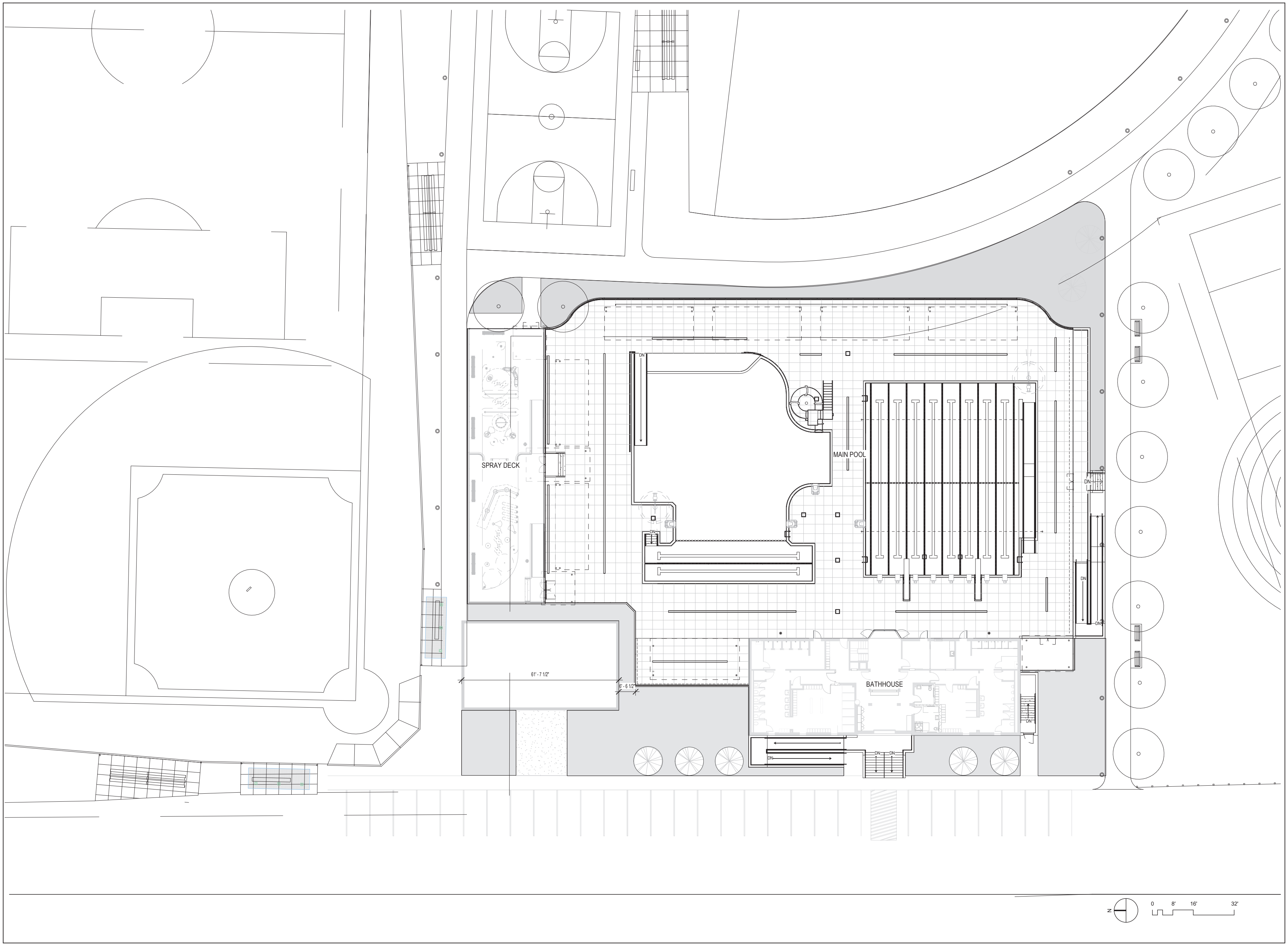
#104-23



ARCHITECT

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

PROJECT NAME

Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

OVERALL SITE

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/16" = 1'-0"
SCALE

M.D.
DRAWN BY

3457
PROJECT #

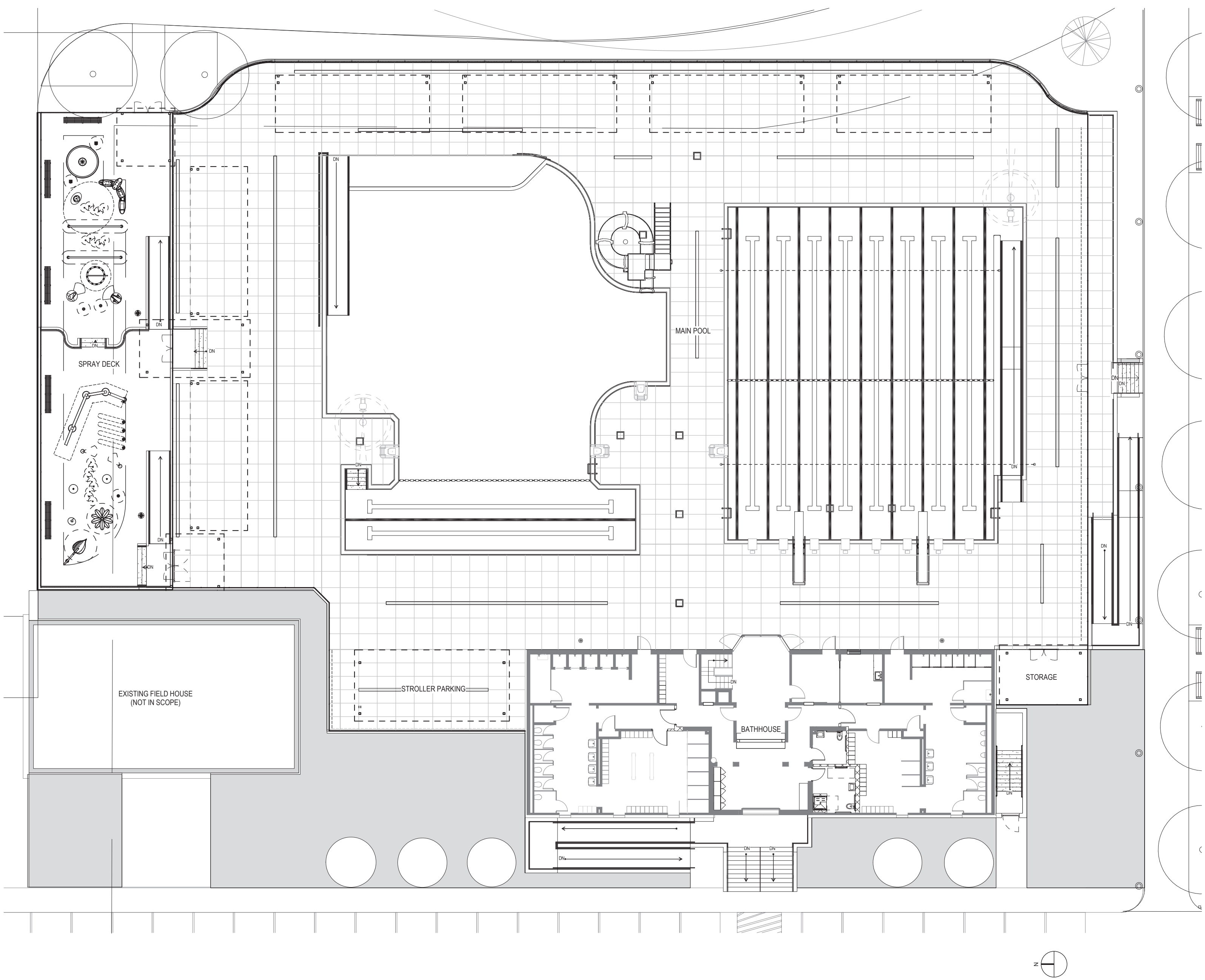
revit.rvt
FILE NAME

DRAWING NUMBER

A100

 V.2.1

#104-23



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3/10/2023 2:58:28 PM

M.D.

ARCHITECT

bh+a

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

PROJECT NAME

Gath Memorial Pool Improvements

256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton

1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

PROPOSED OVERALL PLAN

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1" = 10'-0" — SCALE
M.D. — DRAWN BY

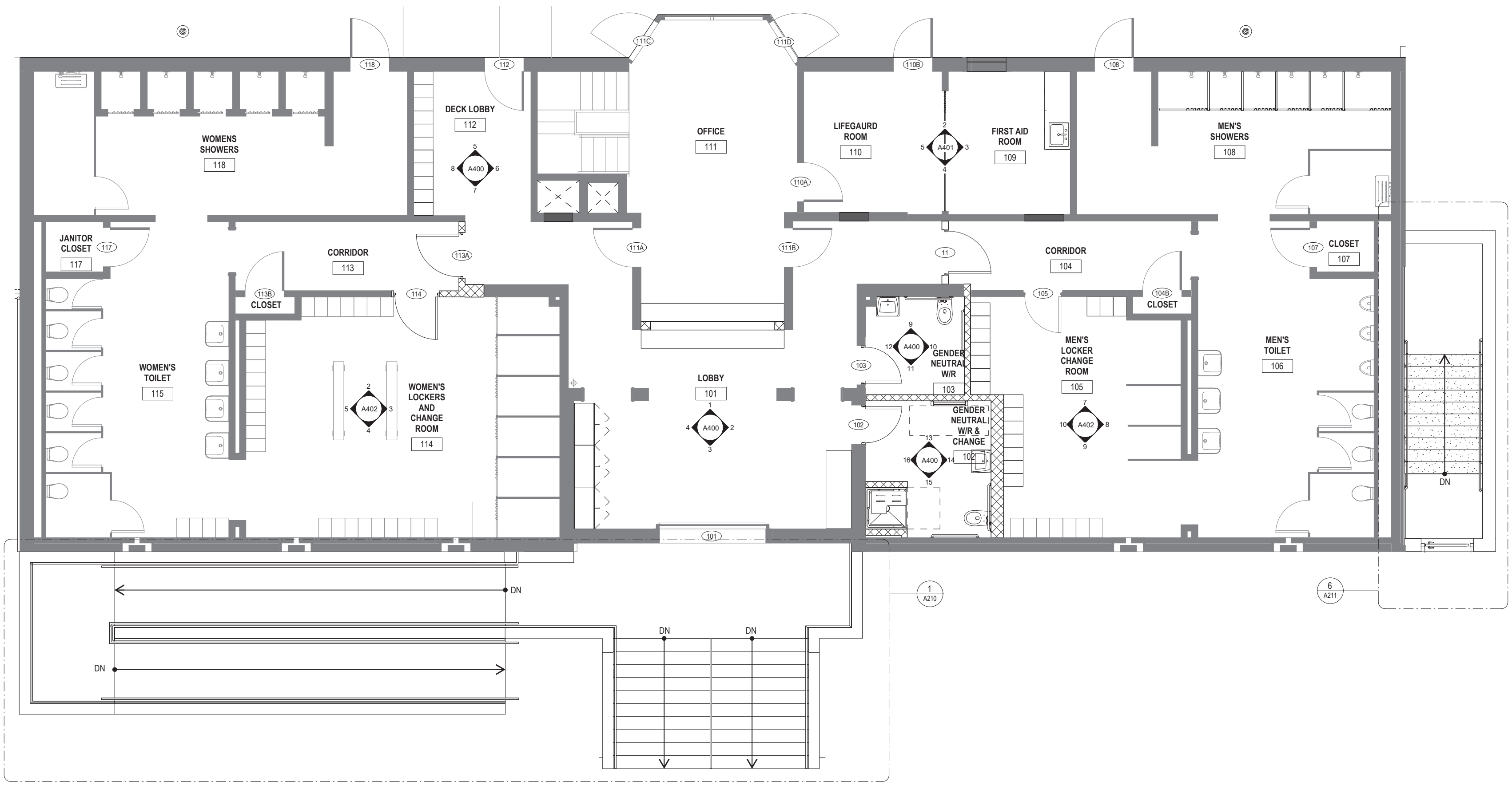
3457 — PROJECT #
revit.rvt — FILE NAME

DRAWING NUMBER

A101

 V.2.1

#104-23



1 BATHOUHOUSE PLAN
1/4" = 1'-0"

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

PROJECT NAME
Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT
City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE
BATHOUSE PLAN

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE
DRC SUBMISSION PRELIMINARY
DESCRIPTION
1/4" = 1'-0" SCALE
M.D. DRAWN BY
3457 PROJECT #
revit.rvt FILE NAME

DRAWING NUMBER
A102

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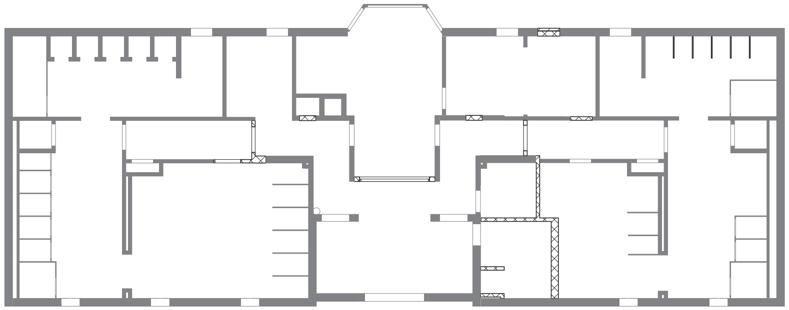
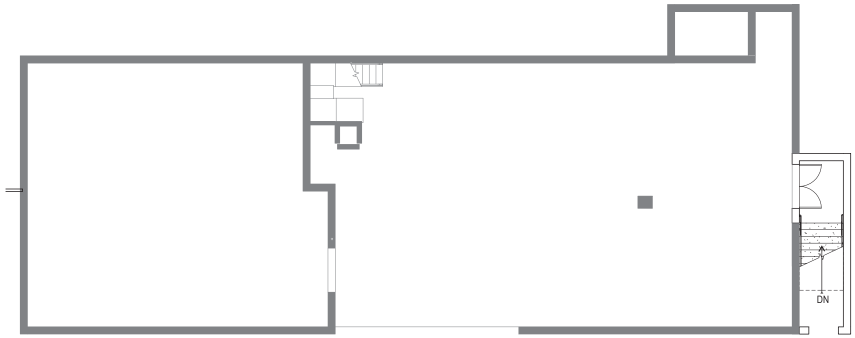
M.D.

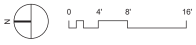
#104-23



1 BATHHOUSE RCP
1/8" = 1'-0"



2 FILTRATION ROOM PLAN
1/8" = 1'-0"



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ARCHITECT

bh+a

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

PROJECT NAME

Gath Memorial Pool Improvements

256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton

1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

BATHHOUSE PLANS

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

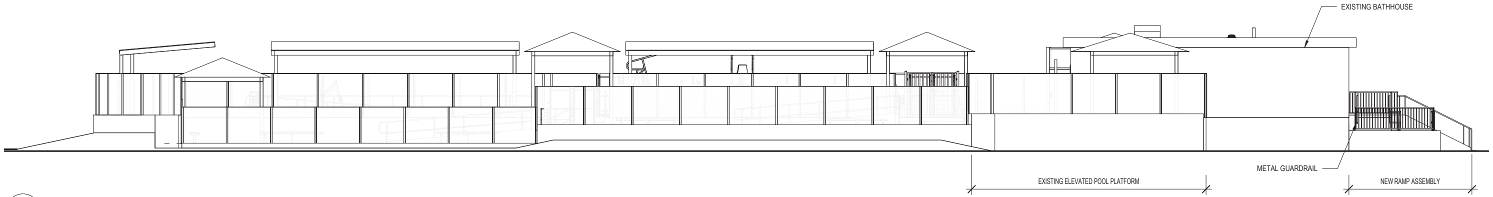
1/8" = 1'-0"	M.D.
SCALE	DRAWN BY
3457	revit.rvt
PROJECT #	FILE NAME

DRAWING NUMBER

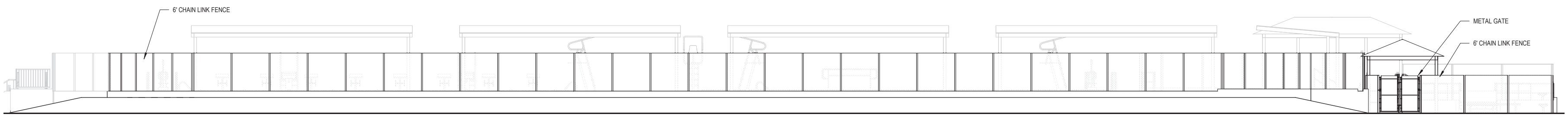
A103

 V.2.1

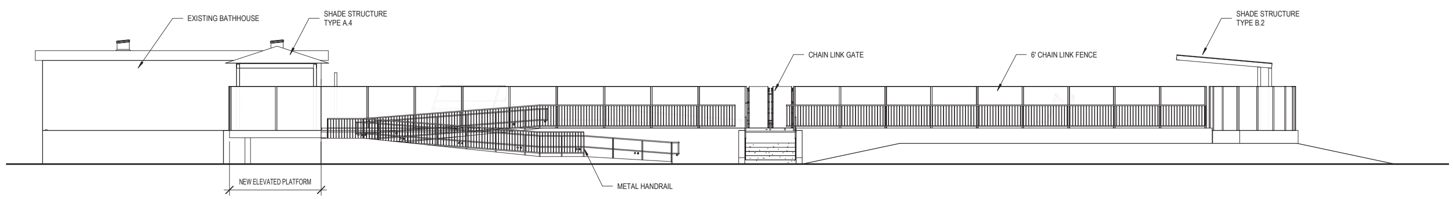
#104-23



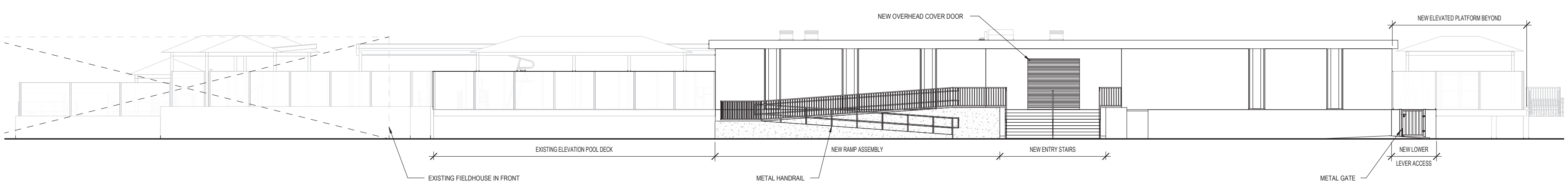
1 OVERALL ELEVATION - WEST EAST
1/8" = 1'-0"



2 OVERALL ELEVATION - NORTH SOUTH
1/8" = 1'-0"



3 OVERALL ELEVATION - EAST WEST
1/8" = 1'-0"



4 OVERALL ELEVATION - SOUTH NORTH
1/8" = 1'-0"

0 4' 8' 16'

C:\Local Revit\3457_Newton Gath Pool_2020_Option 4 - Pool_mdelsocor...

3/10/2023 2:58:45 PM M.D.

ARCHITECT

bh+a

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

PROJECT NAME

Gath Memorial Pool Improvements

256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton

1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

OVERALL ELEVATIONS

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/8" = 1'-0" SCALE

M.D. DRAWN BY

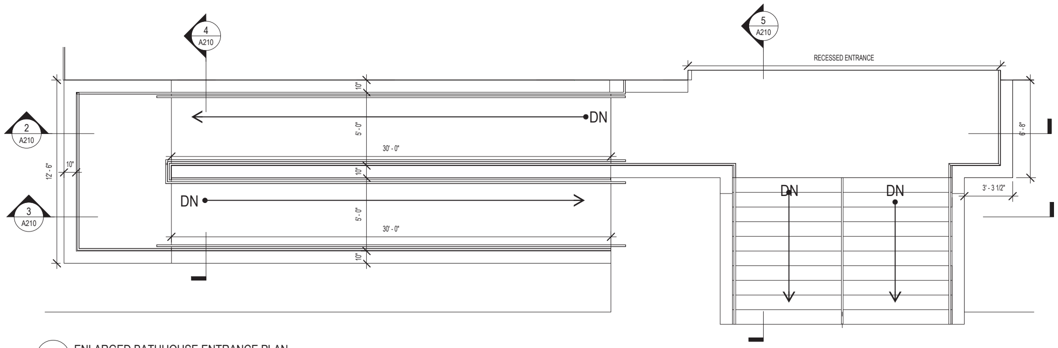
3457 PROJECT #

revit.rvt FILE NAME

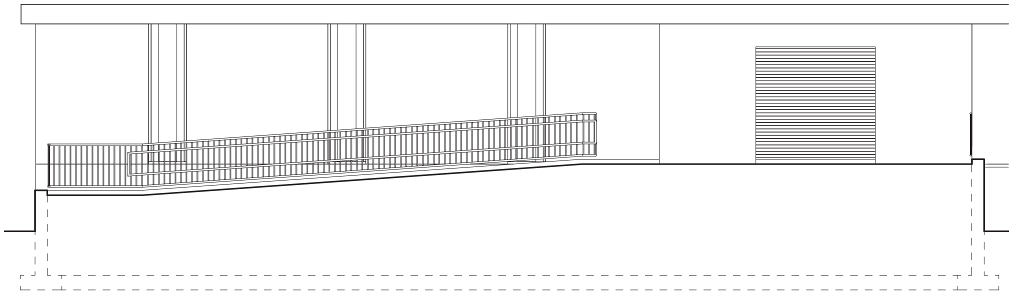
DRAWING NUMBER

A200

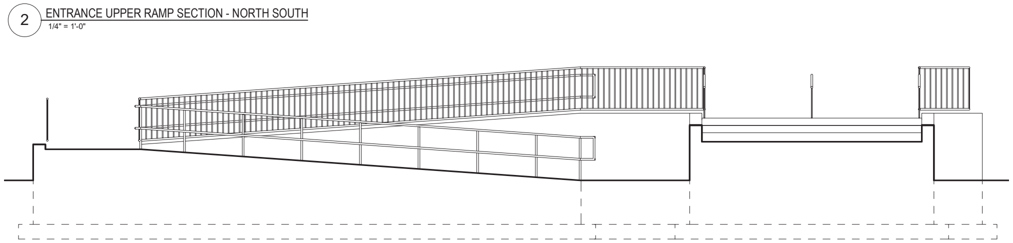
#104-23



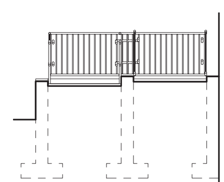
1 ENLARGED BATHHOUSE ENTRANCE PLAN
1/4" = 1'-0"



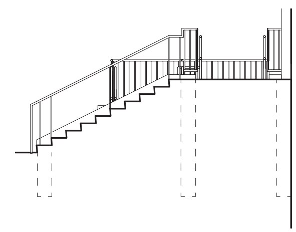
2 ENTRANCE UPPER RAMP SECTION - NORTH SOUTH
1/4" = 1'-0"



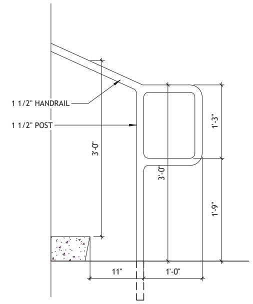
3 ENTRANCE RAMP SECTION - NORTH SOUTH
1/4" = 1'-0"



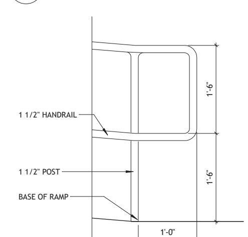
4 ENTRANCE RAMP SECTION - WEST EAST
1/4" = 1'-0"



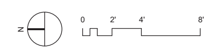
5 ENTRANCE STAIR SECTION - WEST EAST
1/4" = 1'-0"



6 STAIR HANDRAIL
1" = 1'-0"



7 RAMP HANDRAIL
1" = 1'-0"



ARCHITECT

bh+a

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

PROJECT NAME

Gath Memorial Pool Improvements

256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton

1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

ENLARGED SECTION

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

As indicated	M.D.
SCALE	DRAWN BY
3457	revit.rvt
PROJECT #	FILE NAME

DRAWING NUMBER

A210

 V.2.1

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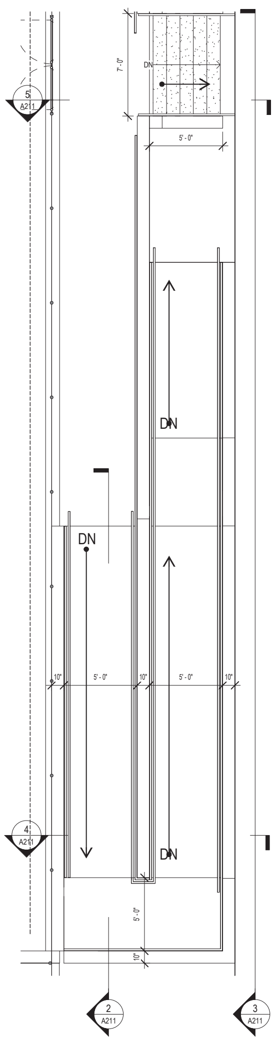
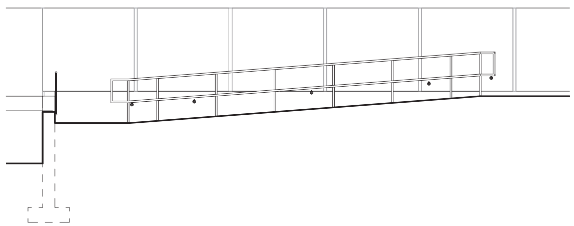
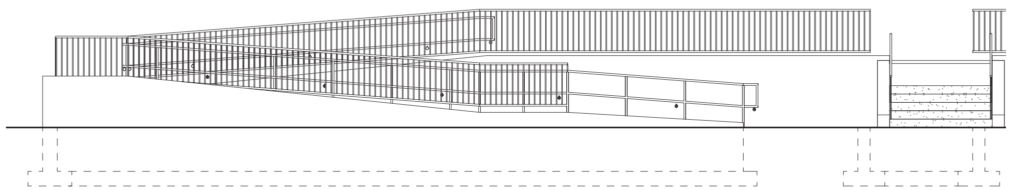
3/10/2023 2:58:48 PM
M.D.



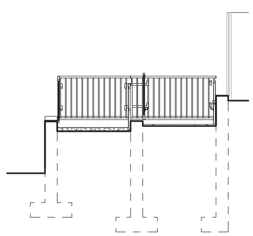
1 ENLARGED PLAN - POOL ENTRANCE RAMP AND STAIRS
1/4" = 1'-0"



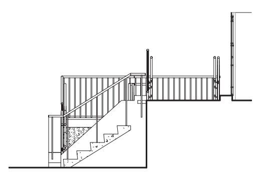
2 POOL SIDE ENTRANCE UPPER RAMP SECTION
1/4" = 1'-0"



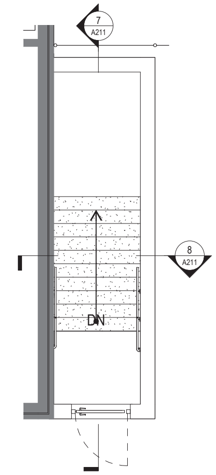
3 POOL SIDE ENTRANCE LOWER RAMP SECTION
1/4" = 1'-0"



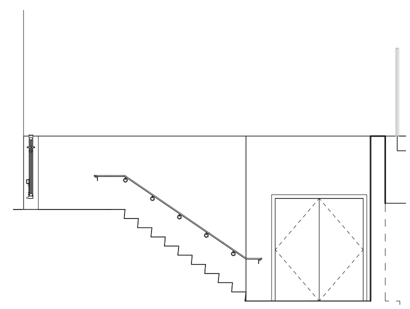
4 POOL SIDE ENTRANCE SECTION - NORTH SOUTH
1/4" = 1'-0"



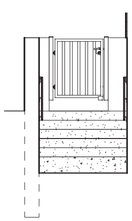
5 POOL SIDE ENTRANCE STAIR SECTION
1/4" = 1'-0"



6 ENLARGED PLAN - FILTRATION ROOM ENTRANCE
1/4" = 1'-0"



7 BASEMENT ENTRY STAIR SECTION - WEST EAST
1/4" = 1'-0"



8 BASEMENT ENTRY STAIR SECTION - NORTH SOUTH
1/4" = 1'-0"

N

0 2' 4' 8'

ARCHITECT

bh+a

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9 Channel Center Street, Suite 300
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(617) 350 0450

PROJECT NAME

Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

ENLARGED SECTION

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/4" = 1'-0" SCALE
M.D. DRAWN BY

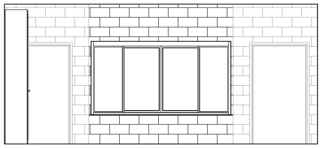
3457 PROJECT #
revit.rvt FILE NAME

DRAWING NUMBER

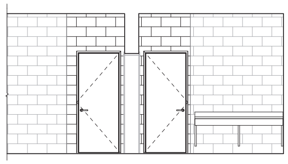
A211

 V.2.1

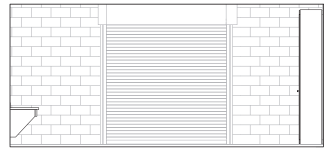
#104-23



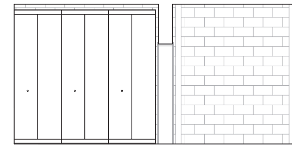
1 LOBBY 101
1/4" = 1'-0"



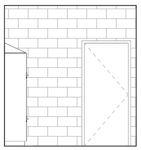
2 LOBBY 101
1/4" = 1'-0"



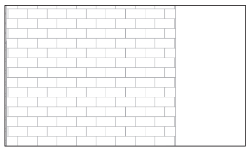
3 LOBBY 101
1/4" = 1'-0"



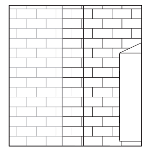
4 LOBBY 101
1/4" = 1'-0"



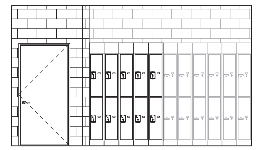
5 ACCESS DECK 112
1/4" = 1'-0"



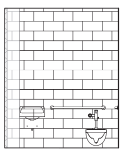
6 ACCESS DECK 112
1/4" = 1'-0"



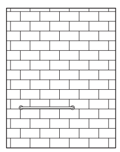
7 ACCESS DECK 112
1/4" = 1'-0"



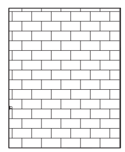
8 ACCESS DECK 112
1/4" = 1'-0"



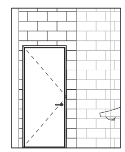
9 GENDER NEUTRAL WASHROOM 103
1/4" = 1'-0"



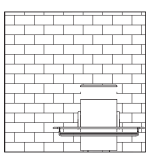
10 GENDER NEUTRAL WASHROOM 103
1/4" = 1'-0"



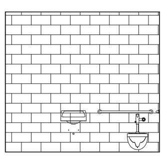
11 GENDER NEUTRAL WASHROOM 103
1/4" = 1'-0"



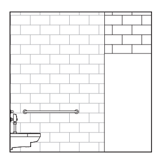
12 GENDER NEUTRAL WASHROOM 103
1/4" = 1'-0"



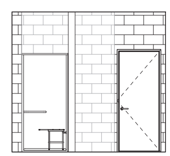
13 GENDER NEUTRAL W/R & CHANGE
1/4" = 1'-0"



14 GENDER NEUTRAL W/R & CHANGE
1/4" = 1'-0"



15 GENDER NEUTRAL W/R & CHANGE
1/4" = 1'-0"



16 GENDER NEUTRAL W/R & CHANGE
1/4" = 1'-0"

0 2' 4' 8'

C:\Local Revit\3457_Newton Gath Pool_2020_Option 4 - Pool_mdelsocomFZXFS.rvt
3/10/2023 2:58:56 PM
M.D.

ARCHITECT

bh+a

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

PROJECT NAME

Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

INTERIOR ELEVATIONS

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/4" = 1'-0"
SCALE

M.D.
DRAWN BY

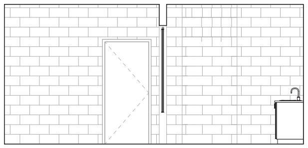
3457
PROJECT #

revit.rvt
FILE NAME

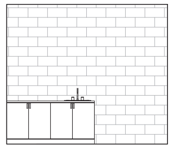
DRAWING NUMBER

A400

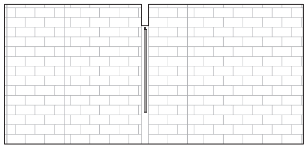
 V.2.1



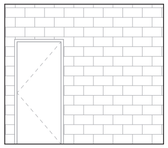
2 LIFEGAURD & FIRST AID ROOM 110 & 109
1/4" = 1'-0"



3 LIFEGAURD & FIRST AID ROOM 110 & 109
1/4" = 1'-0"



4 LIFEGAURD & FIRST AID ROOM 110 & 109
1/4" = 1'-0"



5 LIFEGAURD & FIRST AID ROOM 110 & 109
1/4" = 1'-0"

0 4' 8' 16'

ARCHITECT
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PROJECT NAME
Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT
City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE
INTERIOR ELEVATIONS

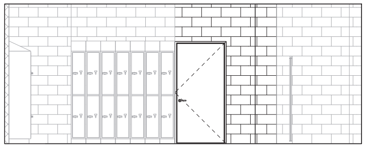
DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

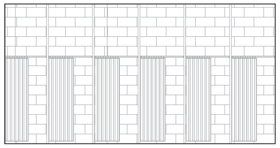
DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/4" = 1'-0" — SCALE
M.D. — DRAWN BY
3457 — PROJECT #
revit.rvt — FILE NAME

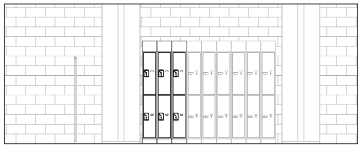
DRAWING NUMBER
A401



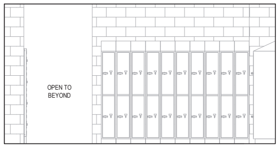
2 WOMANS'S LOCKER ROOM 114
1/4" = 1'-0"



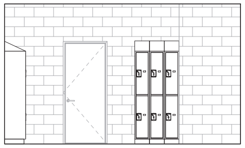
3 WOMANS'S LOCKER ROOM 114
1/4" = 1'-0"



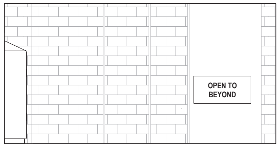
4 WOMANS'S LOCKER ROOM 114
1/4" = 1'-0"



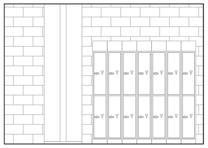
5 WOMANS'S LOCKER ROOM 114
1/4" = 1'-0"



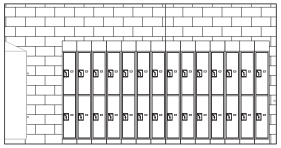
7 INTERIOR ELEVATION - MEN'S LOCKER ROOM 1
1/4" = 1'-0"



8 INTERIOR ELEVATION - MEN'S LOCKER ROOM 2
1/4" = 1'-0"



9 INTERIOR ELEVATION - MEN'S LOCKER ROOM 3
1/4" = 1'-0"



10 INTERIOR ELEVATION - MEN'S LOCKER ROOM 4
1/4" = 1'-0"

0 2' 4' 8'

3/10/2023 2:59:02 PM M.D.

ARCHITECT

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

PROJECT NAME

Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

INTERIOR ELEVATIONS

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

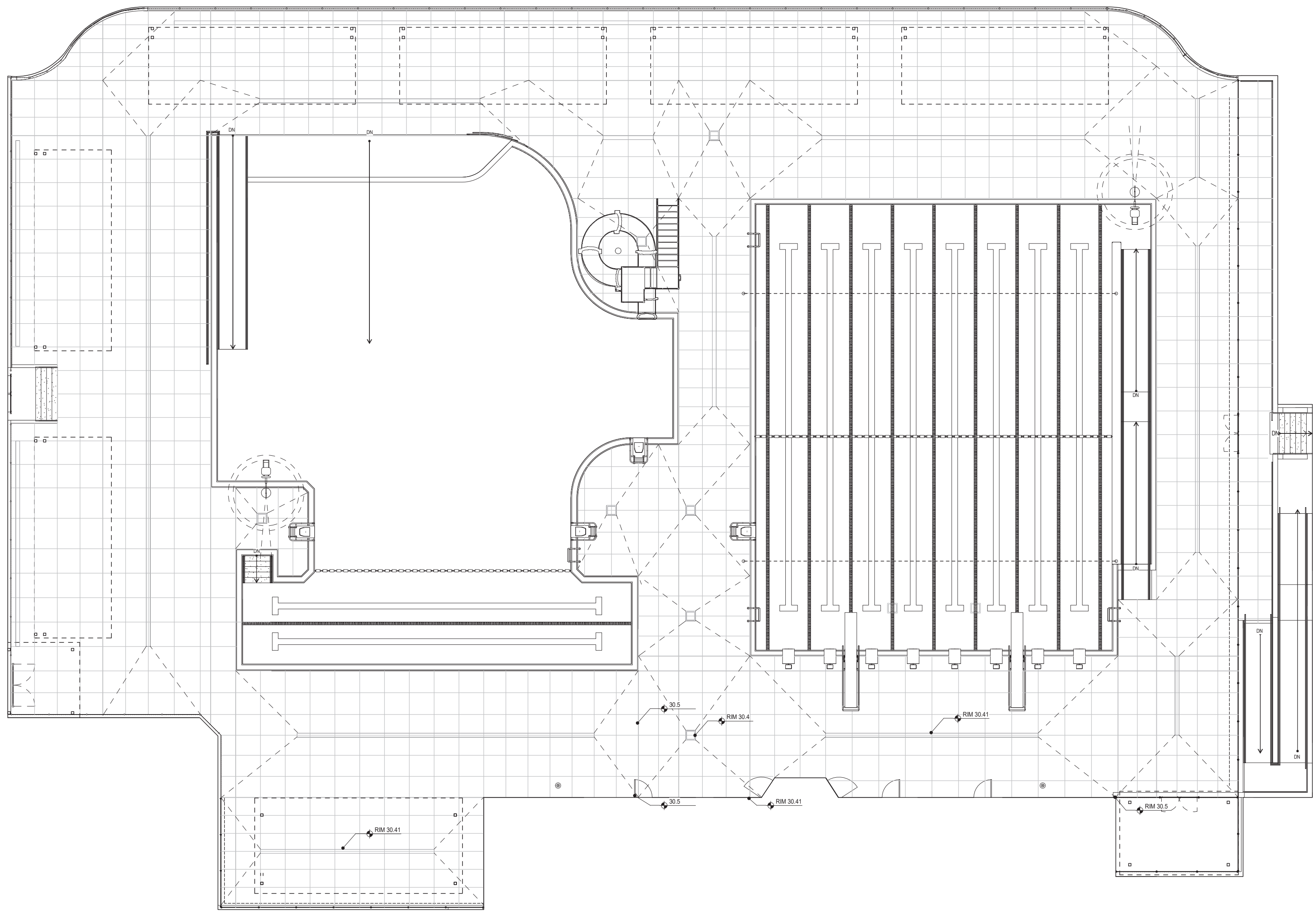
1/4" = 1'-0" SCALE | M.D. DRAWN BY

3457 PROJECT # | revit.rvt FILE NAME

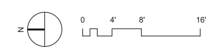
DRAWING NUMBER

A402

 V.2.1



1 DECK PLAN
1/8" = 1'-0"



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3/10/2023 2:59:06 PM
M.D.

ARCHITECT

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Bargmann Hendrie + Archetype, Inc.
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Boston, MA 02210
(617) 350 0450

PROJECT NAME

Gath Memorial Pool Improvements

256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton

1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

DECK PLAN

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

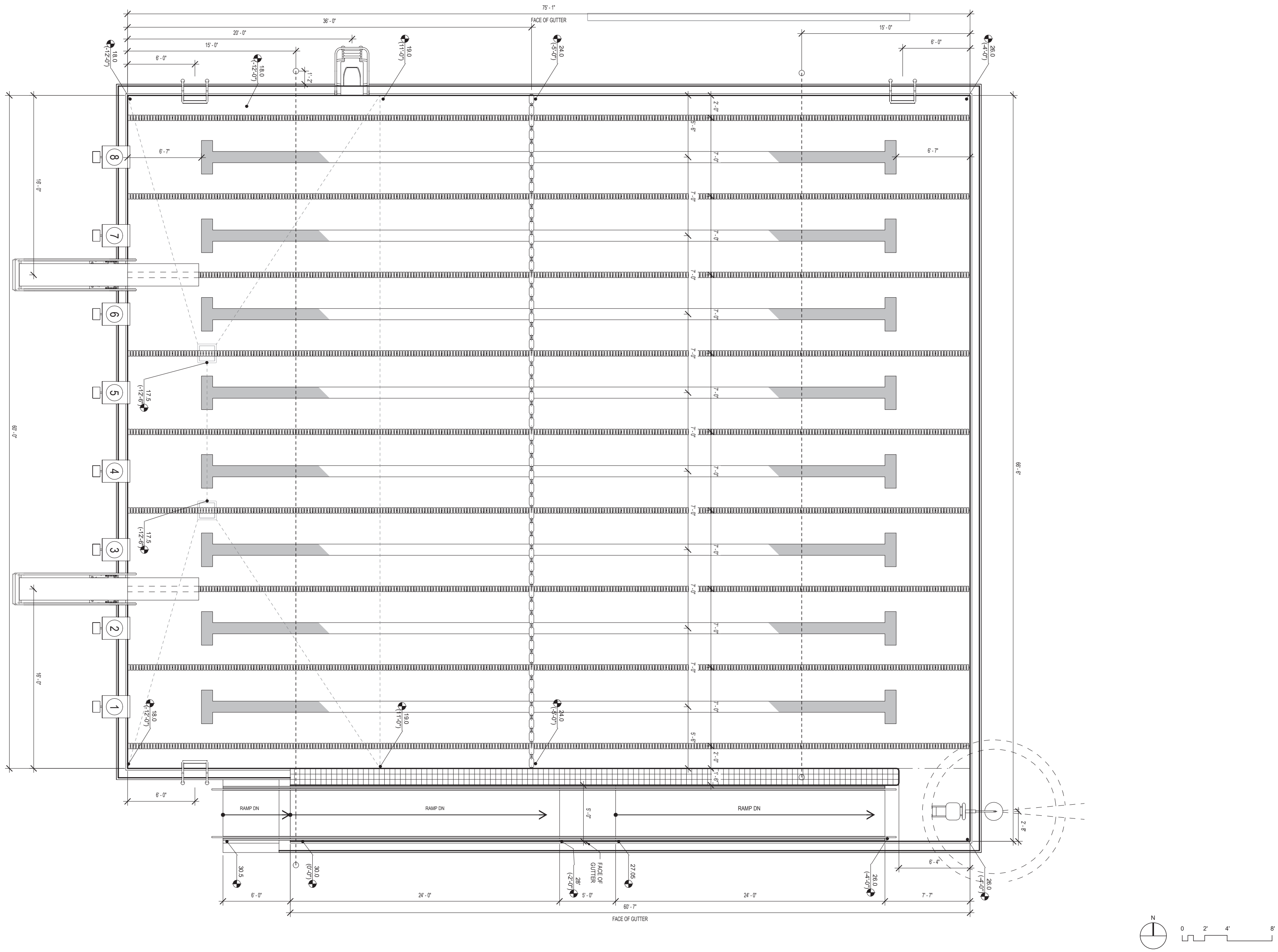
1/8" = 1'-0" — SCALE
M.D. — DRAWN BY
3457 — PROJECT #
revit.rvt — FILE NAME

DRAWING NUMBER

A800

 V.2.1

#104-23



ARCHITECT

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Boston, MA 02210
(617) 350 0450

PROJECT NAME

Gath Memorial Pool Improvements

256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton

1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

LAP POOL PLAN

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/4" = 1'-0"
SCALE

M.D.
DRAWN BY

3457
PROJECT #

FILE NAME

DRAWING NUMBER

A801

 V.2.1

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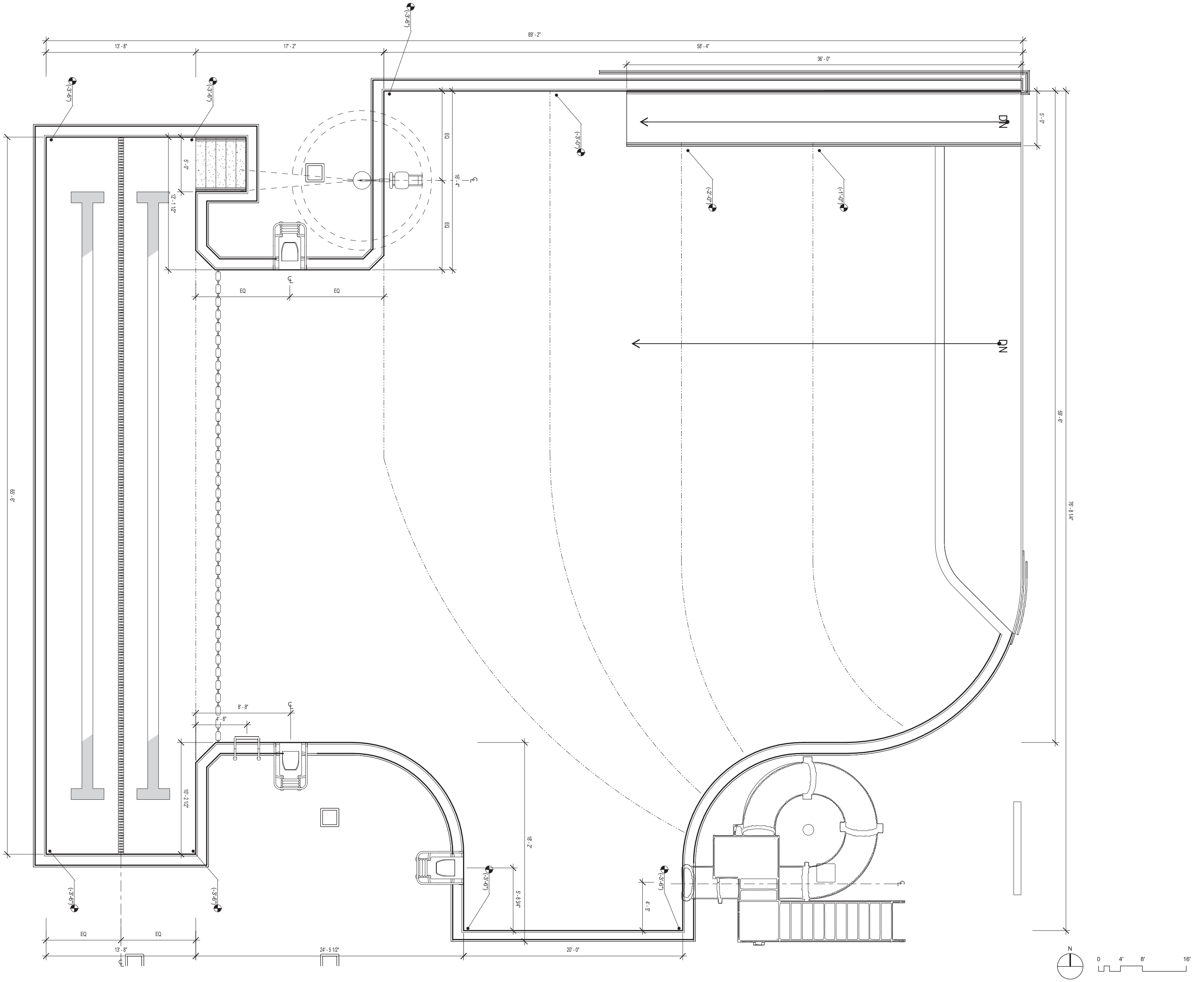
3/10/2023 2:59:12 PM M.D.

#104-23



ARCHITECT

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(617) 350 0450

PROJECT NAME

Gath Memorial Pool Improvements

256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton

1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

ZERO DEPTH POOL

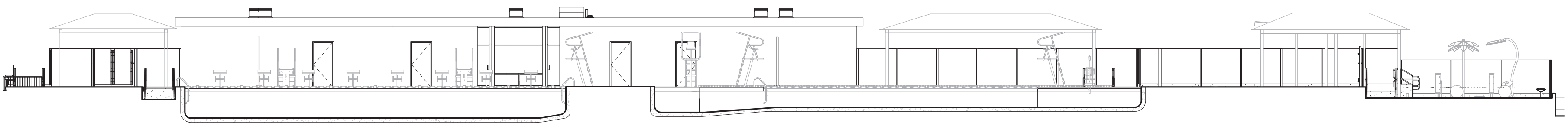
DRAWING INFORMATION

March 10, 2023	
DATE OF ISSUE	
DRC SUBMISSION PRELIMINARY	
DESCRIPTION	
1/4" = 1'-0"	M.D.
SCALE	DRAWN BY
3457	revit.rvt
PROJECT #	FILE NAME

DRAWING NUMBER

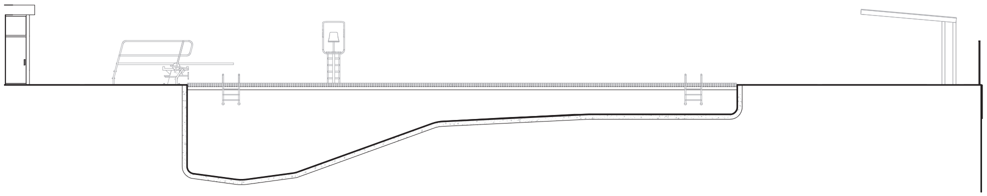
A802

#104-23

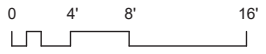


1 POOL SECTION - NORTH SOUTH
1/8" = 1'-0"

2 POOL SECTION - WEST EAST
1/8" = 1'-0"



3 COMPETITOR POOL SECTION - WEST EAST
1/8" = 1'-0"



ARCHITECT

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(617) 350 0450

PROJECT NAME

Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

POOL SECTIONS

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

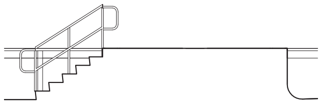
DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/8" = 1'-0"	M.D.
SCALE	DRAWN BY
3457	revit.rvt
PROJECT #	FILE NAME

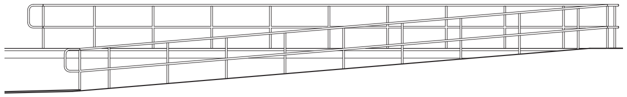
DRAWING NUMBER

A810

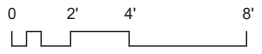
#104-23



1 POOL STAIRS SECTION
1/4" = 1'-0"



2 POOL RAMP SECTION
1/4" = 1'-0"



ARCHITECT
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PROJECT NAME
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Newton, MA 02460

CLIENT
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PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE
POOL SECTIONS

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

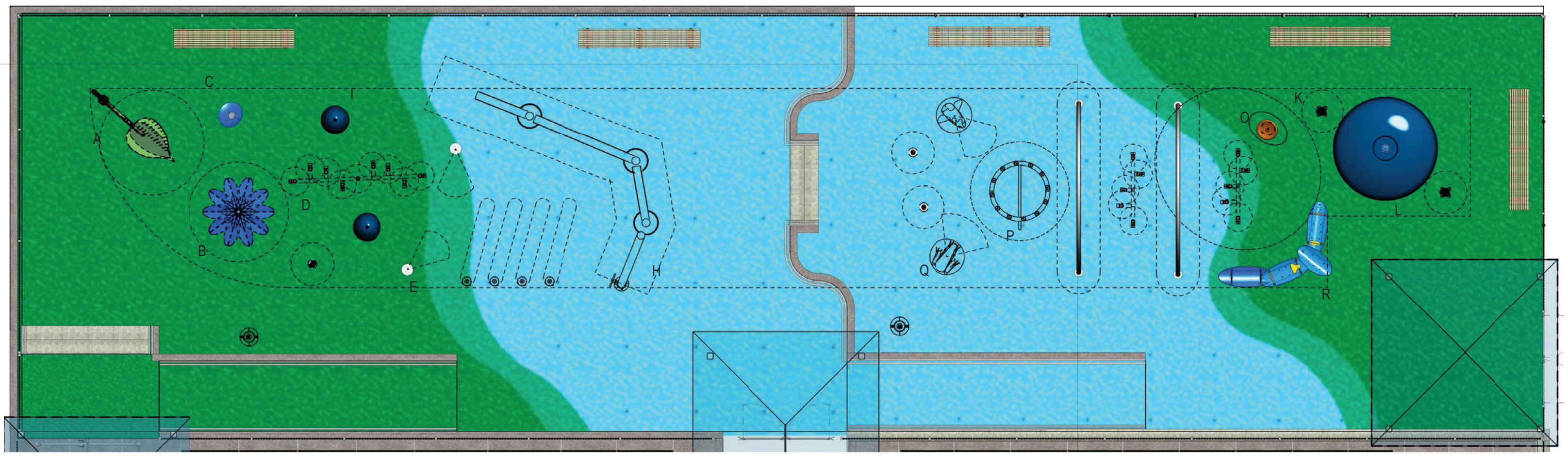
1/4" = 1'-0"
SCALE

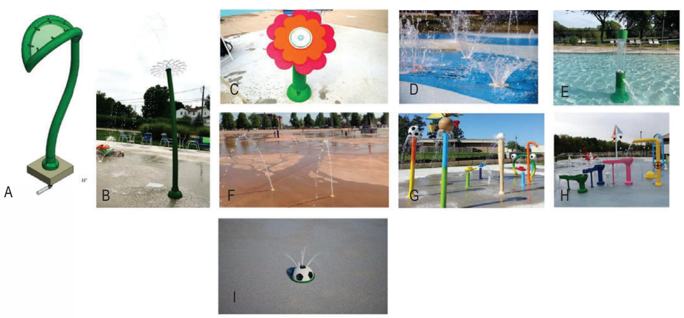
M.D.
DRAWN BY

3457
PROJECT #

revit.rvt
FILE NAME

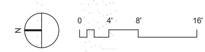
DRAWING NUMBER
A811





PARK THEME

SACLE 1/4" = 1'



ARCHITECT

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

PROJECT NAME

Gath Memorial Pool Improvements

256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton

1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

SPRAY DECK OPTION 3

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/4" = 1'-0"	M.D.
SCALE	DRAWN BY
3457	revit.rvt
PROJECT #	FILE NAME

DRAWING NUMBER

A820

 V.2.1

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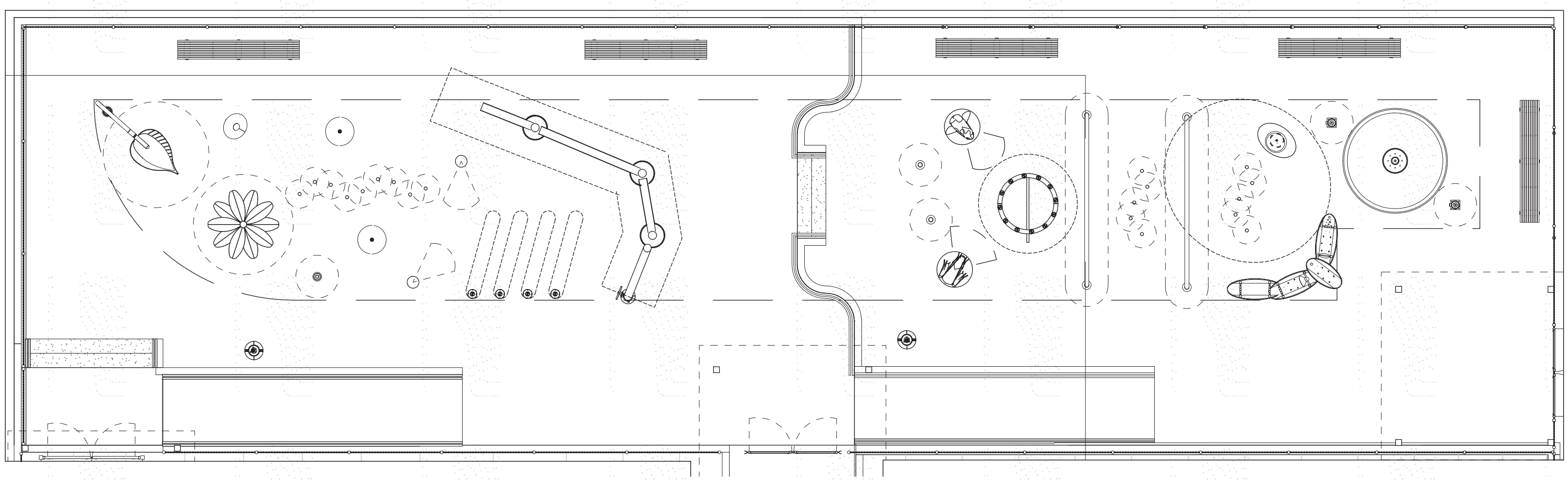
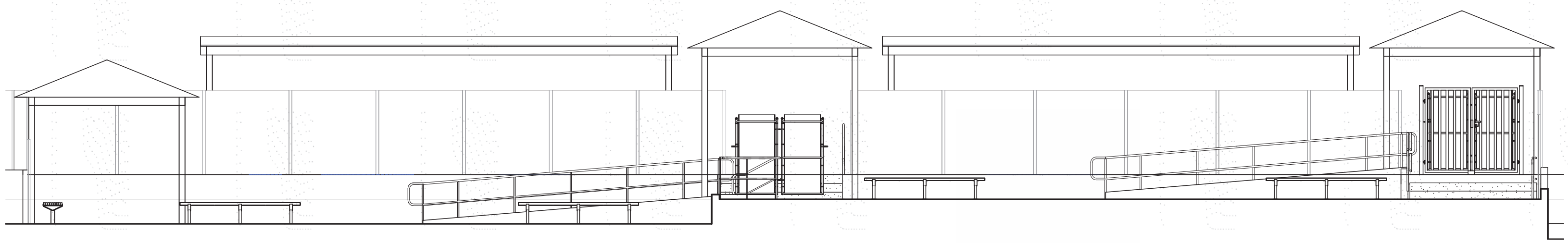
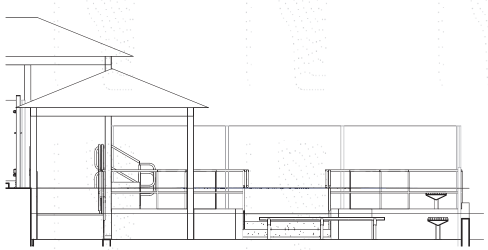
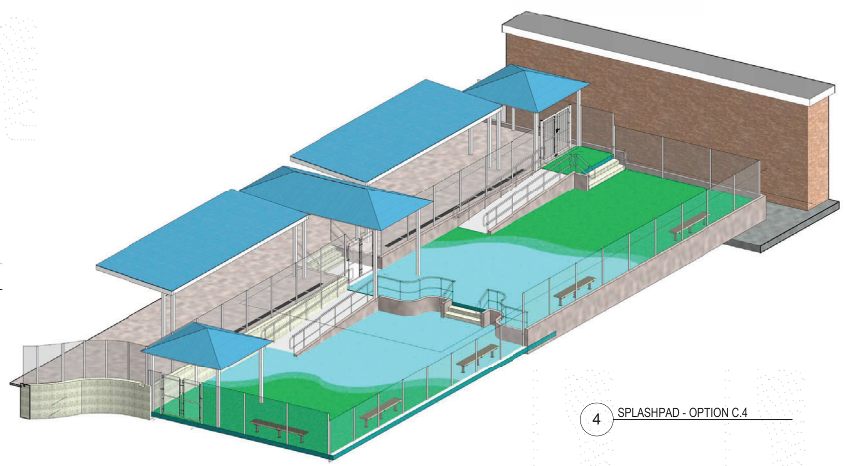




2 SPRAY DECK ELEVATION C.4 - WEST EAST
1/4" = 1'-0"



3 SPRAY DECK ELEVATION C.4 - NORTH SOUTH
1/4" = 1'-0"



4 SPLASHPAD - OPTION C.4

N

0 2' 4' 8'

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Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT
City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE
SPRAY DECK - OPTION 3 PLAN AND SECTION

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/4" = 1'-0" SCALE
M.D. DRAWN BY

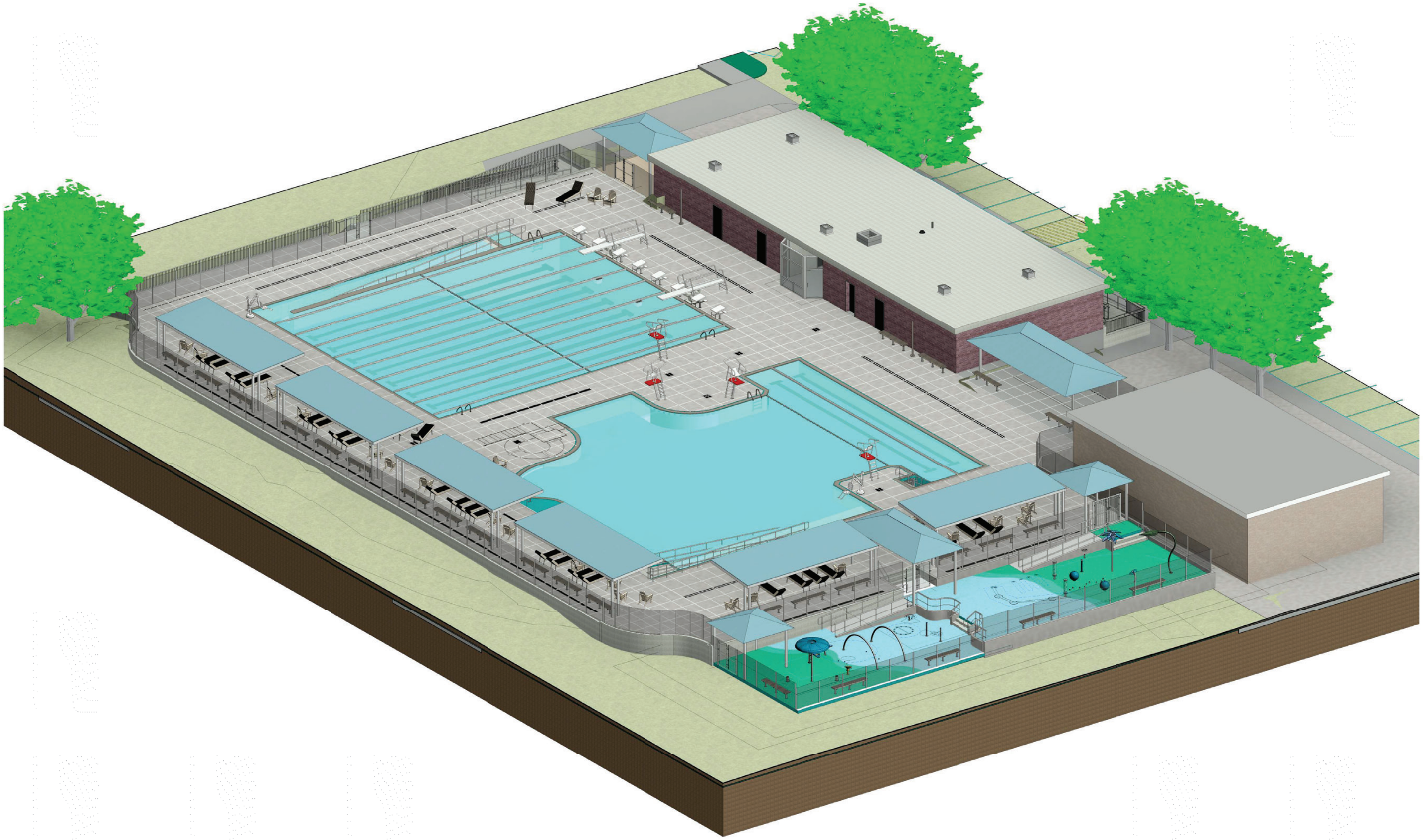
3457 PROJECT #
revit.rvt FILE NAME

DRAWING NUMBER
A821

 V.2.1

3/10/2023 3:03:40 PM
M.D.

#104-23



1 3D VIEW - ORTHO NORTH EAST VIEW

N

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PROJECT NAME

Gath Memorial Pool Improvements

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Newton, MA 02460

CLIENT

City of Newton

1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

3D VIEW - OVERALL SITE

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

SCALE

M.D.
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3457
PROJECT #

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FILE NAME

DRAWING NUMBER

A900

 V.2.1

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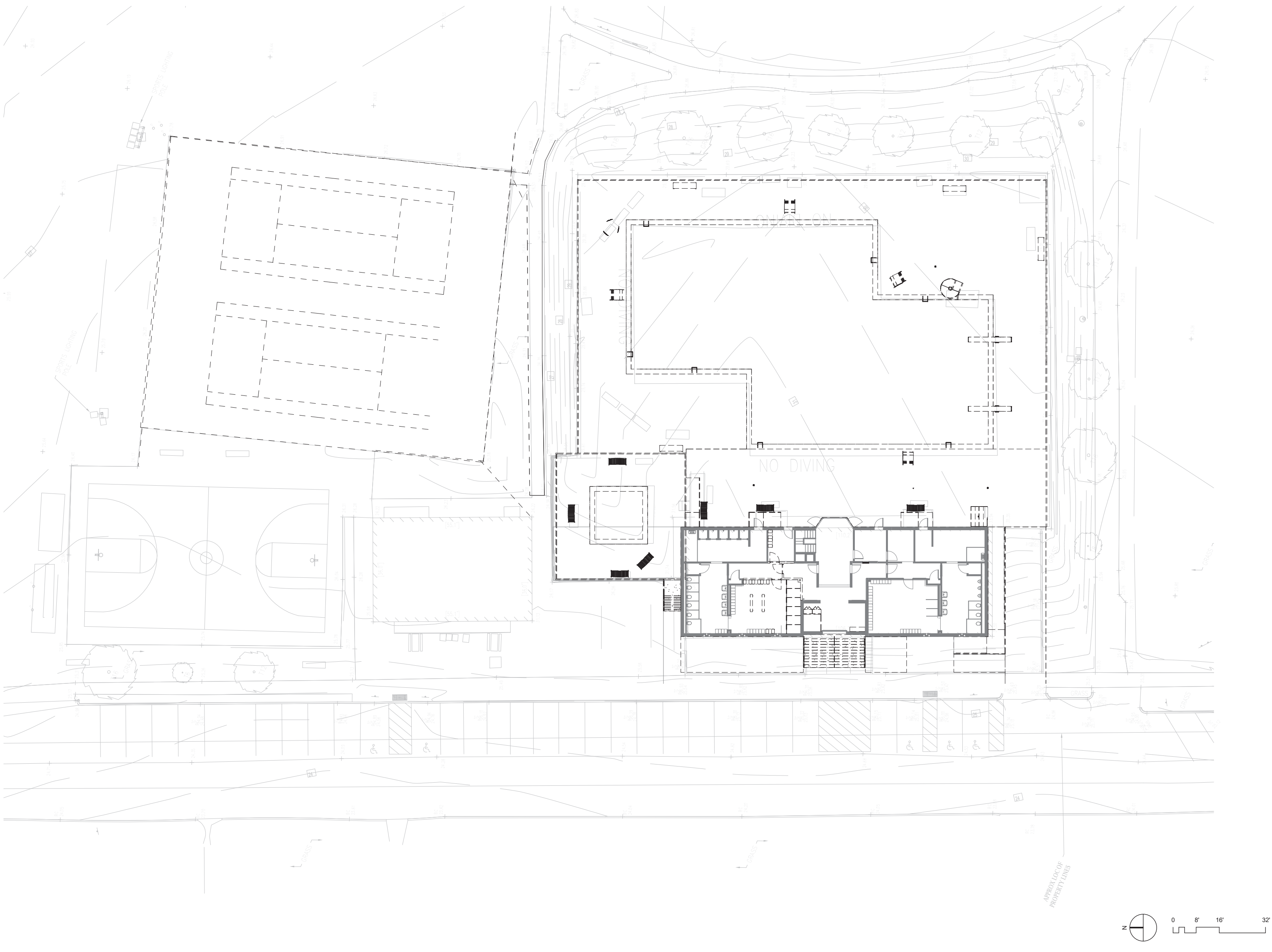
#104-23



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Gath Memorial Pool Improvements

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CLIENT

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PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

DEMO SITE PLAN

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/16" = 1'-0"
SCALE

M.D.
DRAWN BY

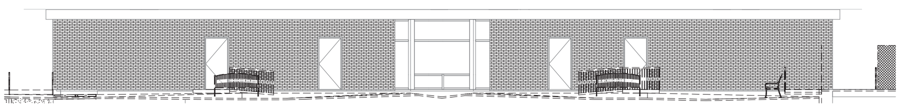
3457
PROJECT #

revit.rvt
FILE NAME

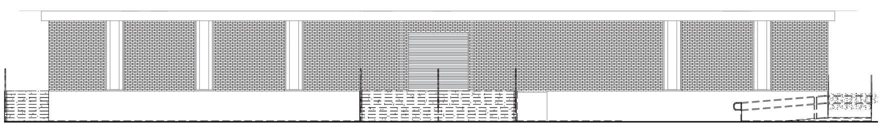
DRAWING NUMBER

D100

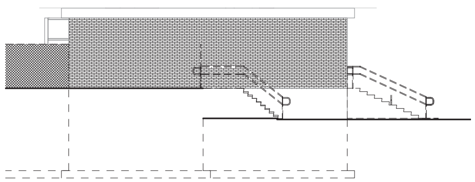
 V.2.1



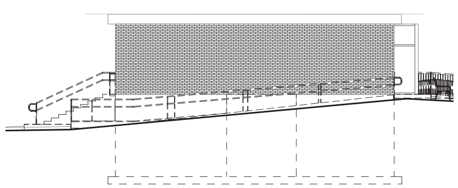
3 BUILDING DEMO ELEVATION - EAST
1/8" = 1'-0"



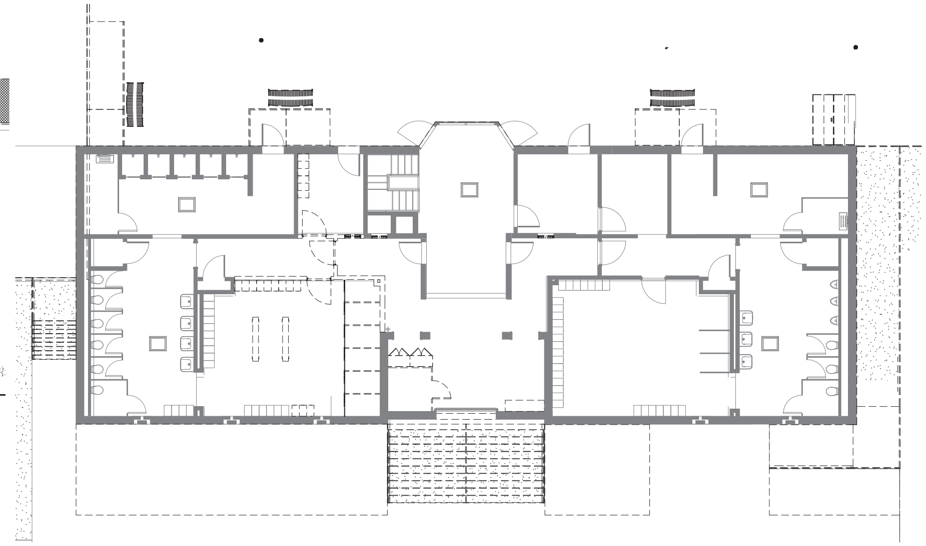
4 BUILDING DEMO ELEVATION - WEST
1/8" = 1'-0"



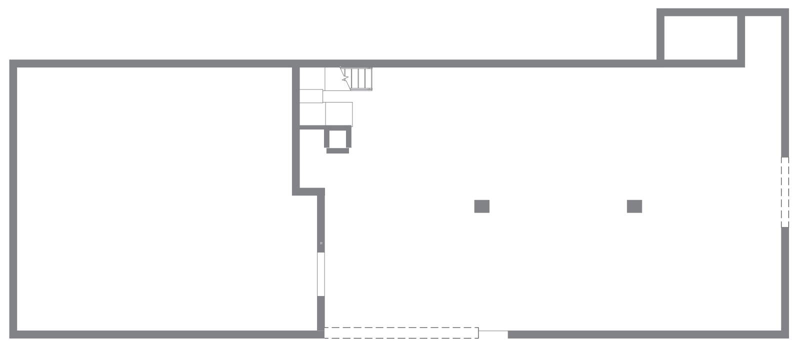
5 BUILDING DEMO ELEVATION - NORTH
1/8" = 1'-0"



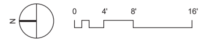
6 BUILDING DEMO ELEVATION - SOUTH
1/8" = 1'-0"



1 BUILDING DEMO PLAN
1/8" = 1'-0"



2 BUILDING DEMO PLAN FILTER ROOM
1/8" = 1'-0"



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PROJECT NAME

Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT

City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

BUILDING DEMO PLAN AND ELEVATION

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/8" = 1'-0"
SCALE

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PROJECT #

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FILE NAME

DRAWING NUMBER

D101

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3/10/2023 3:09:02 PM M.D.

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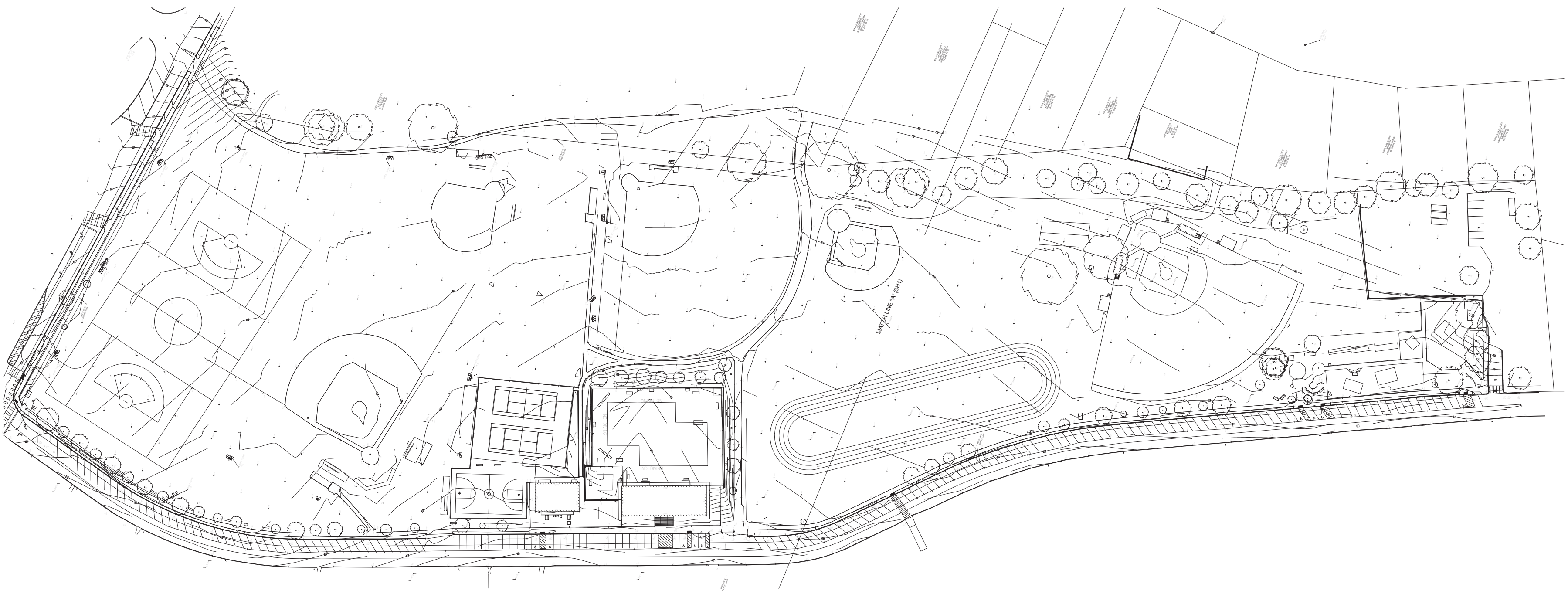

1 EXISTING SURVEY OVERALL SITE
1/64" = 1'-0"

0 32' 64' 128'

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PROJECT NAME
Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

CLIENT
City of Newton
1000 Commonwealth Ave.
Newton Centre, MA 02459.

PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE
OVERALL SITE SURVEY

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE
DRC SUBMISSION PRELIMINARY
DESCRIPTION
1/64" = 1'-0"
SCALE
M.D.
DRAWN BY
3457
PROJECT #
revit.rvt
FILE NAME

DRAWING NUMBER
EX-1

 V.2.1

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3/10/2023 3:09:02 PM M.D.

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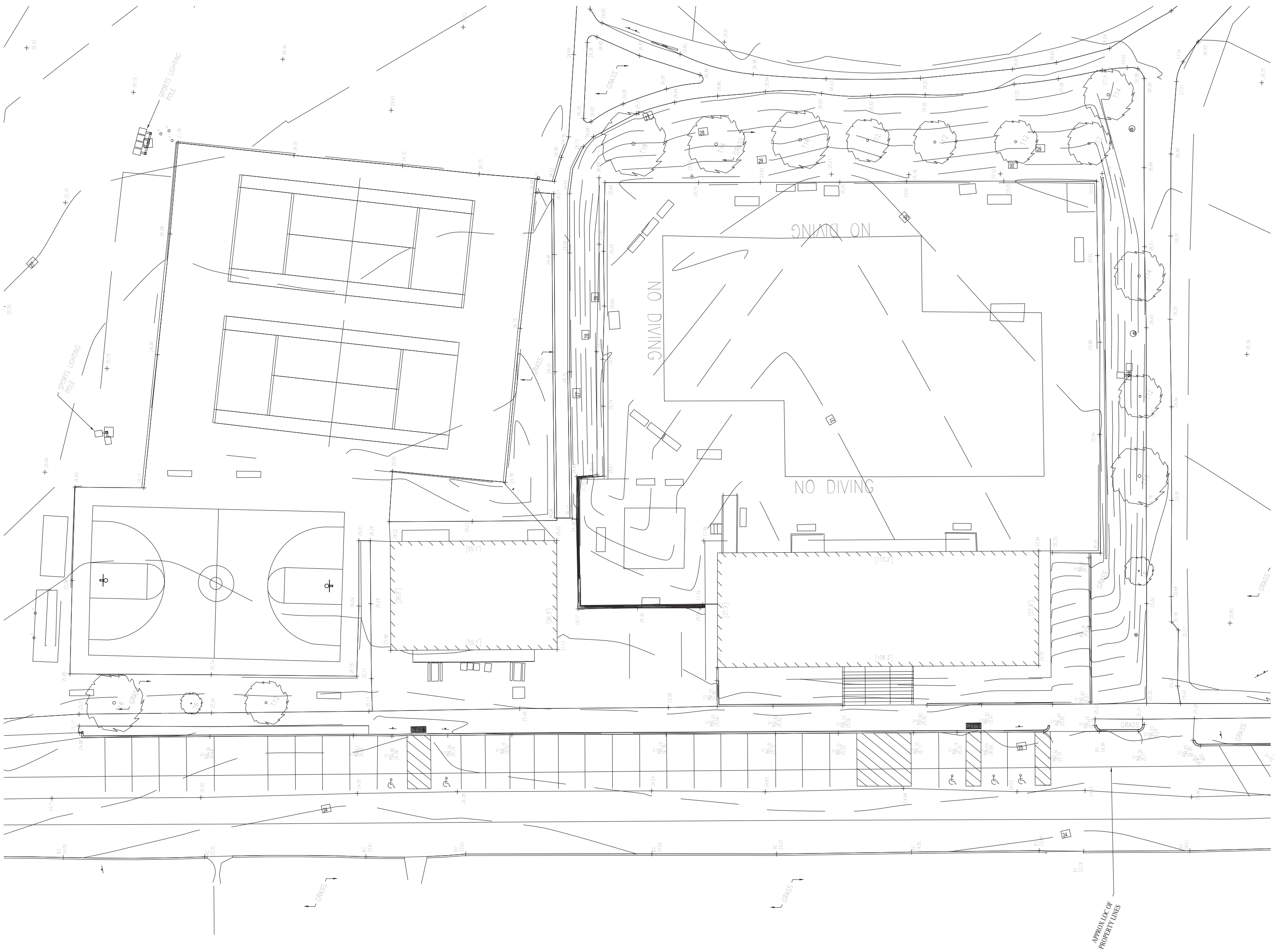

1 EXISTING SURVEY
1/16" = 1'-0"

0 8' 16' 32'

C:\Local Revit\3457_Newton Gath Pool_2020_Option 4 - Pool_mdelacoomFZ9FS.rvt
3/10/2023 3:09:02 PM M.D.

ARCHITECT

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PROJECT NAME

Gath Memorial Pool Improvements

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CLIENT

City of Newton

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PROJECT TEAM

REVISIONS

DATE

DRAWING TITLE

SITE SURVEY

DRAWING INFORMATION

March 10, 2023
DATE OF ISSUE

DRC SUBMISSION PRELIMINARY
DESCRIPTION

1/16" = 1'-0"
SCALE

M.D.
DRAWN BY

3457
PROJECT #

revit.rvt
FILE NAME

DRAWING NUMBER

EX-2

#104-23

BARGMANN HENDRIE + ARCHETYPE, INC.
Architecture | Planning | Interior Design

9 Channel Center Street
Suite 300
Boston, MA 02210

617 350 0450
bha@bhplus.com
www.bhplus.com

memo

to:	Josh Morse, Commissioner of Public Buildings City of Newton
from:	Thomas A. Scarlata, CSI, CCS, CCCA, AIA Principal
date:	March 10, 2023
project name & number:	Gath Pool Improvements BH+A Project No. 3457
subject:	Lap Pool Depth Study
cc:	BH+A File
attachments:	Sketch P801 and P801.1

The depth at the shallow end of the lap pool is being reviewed internally by the City. The depth will need to be finalized before we begin preparing final construction documents of the pool; the depth of the pool does not affect other site related issues currenlty being developed. As requested, BH+A paired an option to increase the pool depth at the shallow end of the lap pool. The pool depth would be 4 feet at the entry side of the pool and decend to 6'-7" at the northeast corner.

Design Parameters:

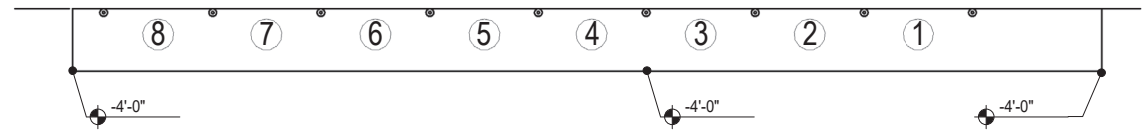
- DPH regulations define water less than 5'-0" as "non-Swimming"; water over 5'-0" is defined as "swimming".
- The southeast corner of the pool must remain at 4 feet to accommodate the accessible lift operation.
- The 4 ft. depth requires a 51"-0" long ramp.
- Pool floors in water 5ft. or less cannot exceed a 1:12 (8%) slope.
- The 5 ft. depth in the pool is marked with a 4-inch wide contrasting tile line so the depth is visible to someone underwater. The MA DPH prefers red tiles.
- The 5ft. depth in the pool will have rope floats to demark the location of the 5ft. depth from the water.

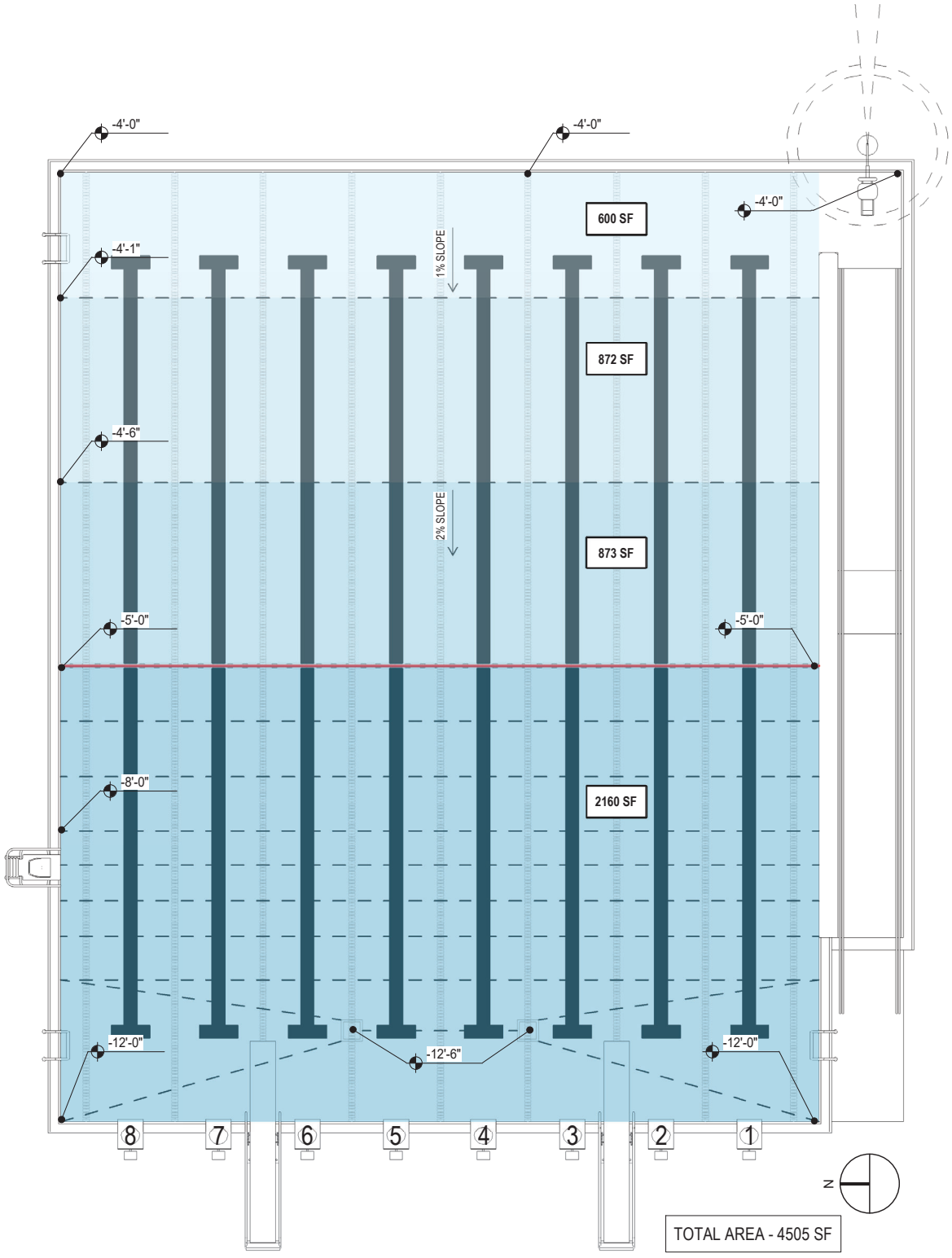
Design Option

The attached sketches compare the current design and a slightly deeper option. The diagrams show the pool depths floor configurations and square footage at each depth.

	4'-0"	4' to 4'-6"	4'-6"-5'-0"	Over 5'-0'
Current Design	600 SF	872 SF	873 SF	2,160 SF
Option 1	313 SF	362 SF	498 SF	3,332 SF

#104-23





0 4' 8' 16'

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Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

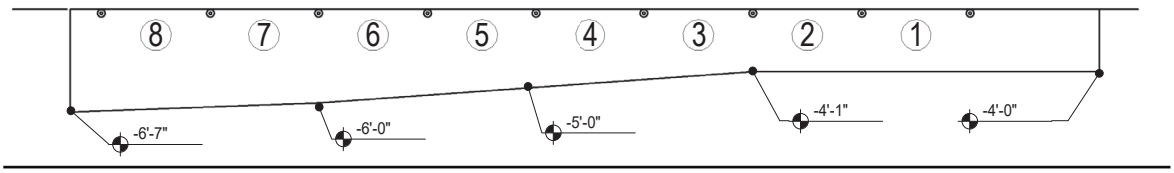
LAP POOL DEPTH
CURRENT DESIGN

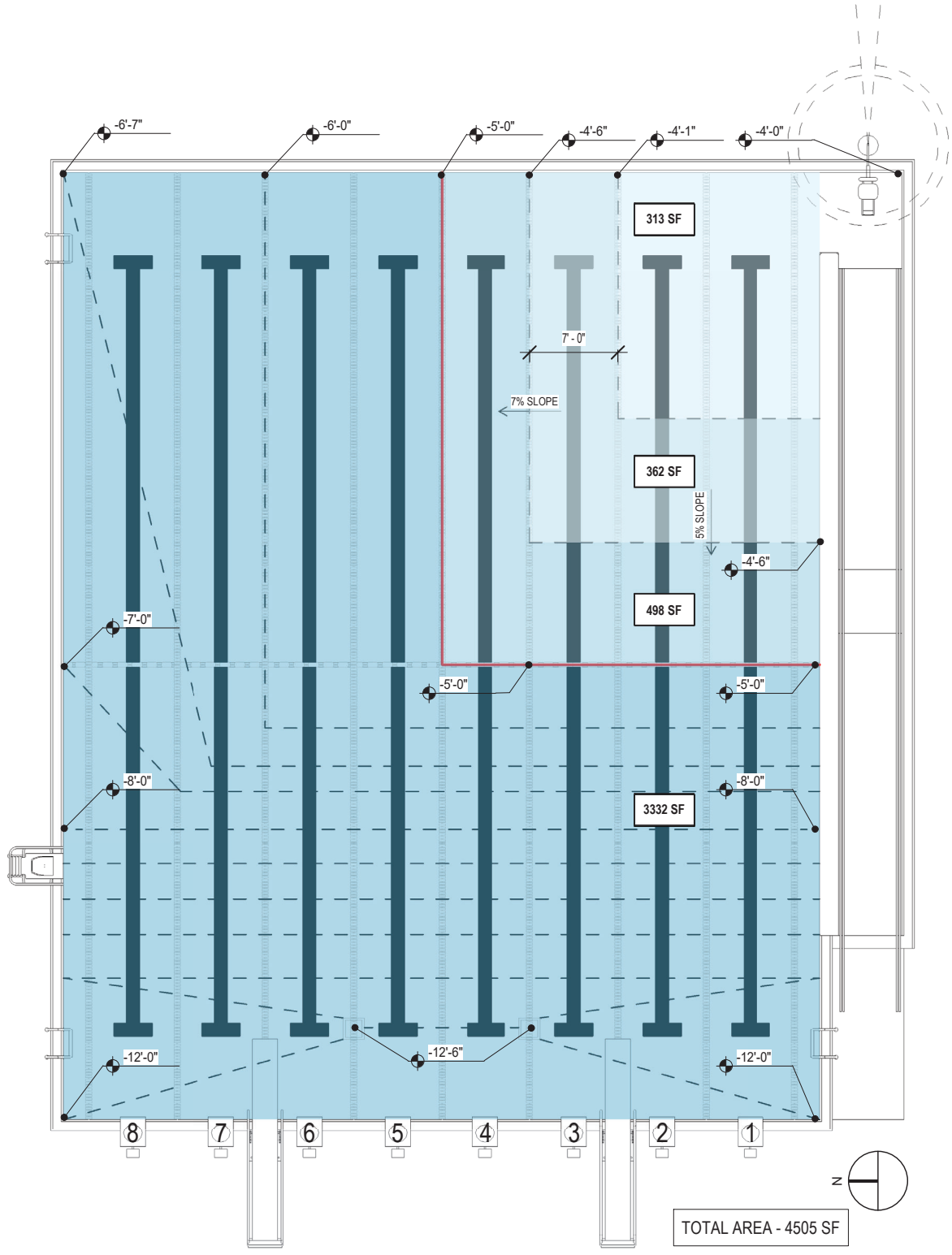
REFERENCE:

DATE: 03/07/23
SCALE: 1/8" = 1'-0"
PROJ. NO.: 3457
FILE NAME: revit.rvt

P801

#104-23





0 4' 8' 16'

bh+a
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Gath Memorial Pool Improvements
256 Albemarle Rd,
Newton, MA 02460

LAP POOL DEPTH OPTION 1

REFERENCE:

DATE: 03/07/23
SCALE: 1/8" = 1'-0"
PROJ. NO.: 3457
FILE NAME: revit.rvt

P801.1