



Building Blocks

An overview of fundamental building elements and concepts for your mikvah project



\$9.99 USD

Foreword

This guide is the first in a series of ‘mikvah essentials’ currently being developed as part of the Keren Hashluchim mikvah grant.

A beautiful mikvah for women was a priority the Rebbe conveyed time and time again. He explained how both the halachic and aesthetic details are important because a woman needs to feel encouraged and happy to accomplish this fundamental mitzvah.

Knowing the far-reaching effects of a mikvah as the very foundation of Jewish life, (one can sell a shul or even a sefer torah to fund the construction. The Rebbe actually sold 770 to fund the Crown Height women’s mikvah...) exhorts us, as shluchim, to do everything we can to create a masterpiece.

You might be feeling overwhelmed. There are innumerable concepts to master and details to retain. Funding is not easy (especially in a community where people do not understand the value of this mitzvah.) and the stories of money that was spent on the wrong building choices might cause you to overthink each phase of the way.

It with a deep sense of gratitude to ה' יתברך that we embark on a journey to provide you with a clearer sense of your first steps and an understanding of important mikvah concepts. While every step of the way needs to be carefully evaluated and planned together with your rav and mikvah expert, as well as with your contractors, designer and architect, this guide will provide you with the ‘know-how’ to ask the right questions to the right people. Ultimately, it is you that needs to take ownership of the project and ensure your vision comes to life.

We’d like to extend our heartfelt appreciation to a few individuals that were indispensable to the development of this guide: Rabbi Aizik Vogel, Rabbi Yosef Goldwasser, Rabbi Shmuly Shuchat, Rabbi Tzemach Feller, Rabbi Mendel Chaiton, and Mrs. Shayna Matusof. As well as to the many shluchim and shluchos that provided us with valuable insight as to the contents.

It is our fervent wish that this manual assists you in making your mikvah building project that much smoother and easier. Feel free to reach out with any comments or suggestions. Wishing you hatzlacha raba in your Shlichus.

Keren Hashluchim and Chazak



Introduction

This booklet serves as an introduction to the process of building a mikvah. It is *not* intended as a step-by-step guide, as the individual circumstances of each unique situation warrant very different approaches. Instead, the following is a general overview of the process, aimed at helping to create an understanding of the steps you will need to take and how best to set yourself up for success.

This booklet is divided into two general sections:

- Part 1 gives you an overview of the steps you will need to take when you commence your mikvah project.
- Part 2 delves into the actual building elements.

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Getting Started

Emunah & Bitachon

More than anything else, emunah and bitachon are crucial as you begin the process of building a mikvah. It's important to be prepared for potential challenges and maintain strong resolve throughout.

You will have to go between your mikvah expert, rav, and your contractors and smooth the way to a halachically functioning and beautiful mikvah. The process is long, complicated, and can be frustrating, funding is very often a struggle and your community members may not be very supportive. Every obstacle that comes up - and there will be many - can drag you down or delay the project.

Bear in mind that the success of the considerable manual labor, time and effort invested into your mikvah is directly intertwined with *siyata dishmaya*. Continuously write to the Rebbe; sharing updates at each stage of the journey and seeking the Rebbe's blessings and guidance. When you endeavor to do your best and assure yourself of the best spiritual support, you can complete your Mikvah project with revealed brachos.

Research

Researching and gathering information is essential when considering the construction of a mikvah. It is complex and nuanced from both a halachic and practical perspective, and requires a thorough understanding of the *dinim* and the engineering requirements.

One valuable resource providing an overview of the halachic guidelines for building a mikvah is the booklet "Understanding Mikvah" by Rabbi Schneur Zalman Lesches.

To make informed decisions about the process, it is advisable to consult with your rav, a mikvah expert, and chaverim who have recently gone through the mikvah-building process and can relate to your challenges. They can help you understand different types of mikvaos, various practical and aesthetic enhancements, as well as assist in determining your personal preferences and chumros.

Mikvah expert and Rav

The process of building a mikvah is long, complicated, and replete with technical and halachic requirements. It is imperative to have a *rav moreh horaah* to whom you can address the *shaalos* that will come up. The first question you can ask that *rav* is his recommendation for a mikvah expert.

A mikvah expert is more like an advisor. As someone who has extensive knowledge in **both** the technical and halachic aspects of building a mikvah, he should be in constant contact with the contractors as well as with your *rav*, and he should look over all of your plans throughout the building process.

Selecting the right mikvah expert and *rav* is a crucial first step. Involving them from the beginning avoids constantly evolving decision-making based on different conversations, and ensures clarity in the project. It also provides you with a clear vision of the mikvah you intend to build; allowing you to approach funding organizations with confidence.

Their expertise in construction - including land selection and material recommendations - is invaluable. Unlike local engineers and contractors who may lack experience in building mikvaos, the mikvah expert and *rav* should have final authority in the construction process, overriding the contractor's opinion: Your contractor may have built many structures, but likely not many mikvaos.

Here is a list of *rabbonim* and mikvah experts you can utilize; this list is by no means exhaustive or definitive.

Rabbonim:

Rabbi Yitschok Trieger
 Rabbi Yosef Feigelstock
 Rabbi Sholom Ber Shuchat
 Rabbi Yirmiyahu Katz
 Rabbi Eli Landau
 Rabbi Pollack

Mikvah experts/ contractors:

Rabbi Gershon Grossbaum
 Rabbi Mendel Grossbaum
 Rabbi Elozor Raichik
 Rabbi Pesach Sperlin
 Rabbi Shmuli Shuchat

Budget

Budget is another vital factor. The cost of a mikvah project can range from around \$60,000 for a basic mikvah in an existing garage, to as much as \$1 million or more for a more extravagant one. Deciding how much to invest requires careful consideration of your needs and financial resources.

The process is generally less complicated if opting for a basic mikvah in a garage.

You can directly engage a contractor and connect them with a mikvah expert, potentially bypassing the need for zoning and engineering processes.

If you're custom-building the entire structure however, or gut-renovating an existing building, the process can be long, complicated, and pricey.

It is therefore important to anticipate future needs. Once the mikvah is built, you may become aware of the necessity of a separate kelim mikvah or a men's mikvah, though at the time of the building, you didn't think either was a necessity. Plan in advance!

The Cost Triangle

Contractors and architects often prioritize their own profitability, which can lead to a "penny wise, pound foolish" approach. When working with professionals, it's important to ensure their cost-saving suggestions align with your goals rather than solely serving their financial interests.

In project management, the **'Cost Triangle'** represents the interconnected aspects of **time, money, and quality** — you can pick any two: fast, cheap, or good. Completing a project quickly may impact quality and require additional financial resources. Prioritizing high quality may extend the timeline and increase costs. Trying to reduce expenses can compromise both quality and time.

Understanding this dynamic is crucial for decision-making, striking a balance between time, money, and quality to achieve the desired outcome. When it comes to a mikvah, it's important to realize that cutting costs now may lead to tremendous added expense and headache later. For example, if the *bor* is not properly sealed or if there is not adequate drainage and ventilation, you may be looking at years of stopgap repairs to fix things that could have been avoided by spending a bit more from the get-go.

Maintenance

Maintenance plays an important role in the smooth operation of a mikvah; often demanding a significant amount of time, effort, and funds.

Fixes aren't easy either. Introducing external elements that are not readily available locally can pose challenges in terms of servicing and troubleshooting, requiring additional time for understanding and resolution. As you plan, it is important to consider the maintenance expenses associated with such additions. Simply put: you may not be able to buy spare parts for everything in the mikvah from your local hardware store, and the more complex the design, the more difficult the maintenance.

For example: a waterfall may enhance the aesthetics of the mikvah, however, it can lead to increased electricity consumption in the long run. Furthermore, if the waterfall malfunctions or breaks down, it can create additional complications and maintenance concerns which will not be easy to resolve. The simpler the design, the easier the maintenance.

Volunteer Contributions in Mikvah Construction

You may have *balebatim* in the construction industry who, when approached as part of your building campaign, offer to chip in with materials or man-hours to assist in the project.

When involving volunteers in the construction process, it's important to be cautious and ensure their **contributions are limited and clearly defined** in terms of time, scope and requirements.

For example, if someone offers to provide mechanical or electrical engineering expertise, you need to specify the expected time commitment and deliverables, such as a set of drawings for building and construction plans. These contributions should be well-defined, allowing for easy review and approval by city inspectors.

When it comes to longer-term contributions, such as architectural or contracting services, caution is advised. You may end up losing far more than you gain in these instances. Many individuals may offer discounted or pro-bono services, but such arrangements can lead to conflicts and disruptions during the long, drawn-out and frustrating process. You may end up getting what you paid for... When the contractor is answering to your mikvah expert, these tensions can typically be easily resolved. But when the contractor or architect is a community member, and the project moves in a direction they did not anticipate, with a rabbi from out of town telling them that their carefully designed plans are no good, it can easily cause congregational rifts or push them to leave the project unfinished.

Seeking specific contributions from suppliers, such as plumbing materials, can also be a sensible approach. They can assess the project's requirements and provide a cost estimate, allowing you to acquire the necessary materials without complications. However, when contributions become complex and difficult to manage, it's important to exercise caution, as once again it can be a risky area to navigate. While there may be exceptions where a member of the community successfully contributes, these cases are not the norm.

Zoning

Zoning considerations are indispensable to mikvah construction and should be addressed early on, even before purchasing the property. **Every area and neighborhood has specific laws as to what the land can be used for** (for example, residential, commercial and more). The specific zoning laws can significantly impact your project's feasibility and cost. Zoning permissions can account for approximately 5% of the overall building cost.

Do not start the process of acquiring a property, applying for a permit and beginning construction without being certain that you can get zoning approval for your mikvah. Understand that the city is not likely to consider a mikvah as a residential project, and may not even see it as a religious one (like a synagogue). You're essentially trying to get what is usually a small house (ideally one that is on a nice, quiet, residential block) zoned for commercial use.

Most cities require specific documentation, including a plot plan and architectural designs for zoning-related tasks. These plans provide information on the building's size in relation to the land and its exterior appearance and would necessitate engagement with an architect (see below - page). Collaborating with an architect helps ensure compliance with zoning regulations and assists in navigating the permit approval process.

Zoning procedures often involve public hearings, where neighbors and community members may voice their opinions. It is advisable to document these hearings using a video camera to record any potential conflicts or important discussions. Such recordings may serve as valuable evidence or references later in the project. Ensure that locals in favor of the project attend such hearings and make their voices heard.

By proactively managing zoning requirements, you can mitigate potential challenges and ensure a smoother progression of your project.

Acquiring a Property for Mikvah Construction and Building Positive Relations with Neighbors

Securing a property for your mikvah project lends credibility and demonstrates seriousness to potential investors. Without a designated location, it becomes challenging to garner support as investors prefer a tangible investment opportunity.

When searching for a suitable property, it is crucial to consider the following two factors:

Water table

Pockets of water, called aquifers, exist beneath the ground at various depths depending on the geography, geology and weather conditions of the ground you may be looking to buy, or

build on. **A water table assesses and indicates where the saturated ground ends and where the unsaturated ground or soil starts.**

The water table directly affects your construction plans as saturated ground increases risks for flooding during difficult weather conditions and your blueprints need to be planned accordingly. If in a water saturated area, you might need to construct the bor partially above ground to avoid expensive water pumping and associated issues. Keep in mind that the water table can differ from one location to another, even on the same property, so testing is vital, particularly when buying new real estate.

HOA

If the property falls within a residential area governed by a homeowners association (HOA), it is important to review the HOA bylaws. Check for any restrictions or guidelines related to building, renovating, or adding a mikvah. Rather than directly approaching residents about the mikvah, consult a knowledgeable friend or seek legal advice on how to tactfully address the matter. For instance, you can inquire about constructing an indoor pool, ensuring compliance with regulations and avoiding potential accusations of deception.

Neglecting neighbor relations can lead to conflicts, delays, and an overall challenging experience. Therefore it is so important to build positive relationships with neighbors. Take the initiative to introduce yourself and share your plans for the mikvah. Explain that by design, the mikvah will never be crowded; it is used quietly and discreetly, one person at a time. Open and transparent communication can help address any concerns and foster a sense of goodwill. Throughout the construction phase, maintain consideration for neighbors' convenience by informing them about construction timelines and potential disruptions. Demonstrating respect and proactive measures to mitigate inconveniences will contribute to positive neighborly relations; creating a harmonious environment and contributing to the success of your mikvah project.

Fundraising

- Begin by compiling a list of potential donors who may be interested in supporting your cause, and seek guidance from individuals who already contribute to mikvah projects. Consider reaching out to organizations to kickstart your fundraising efforts as well.
- Design an appealing brochure that effectively highlights the importance of your mikvah project. Include pertinent details that explain the need: for example, the proximity of the nearest mikvah, the anticipated increase in mikvah usage, and the envisioned scale of the facility; including the number of preparation rooms and other notable features.
- Seek assistance from an experienced fundraiser or consultant who can provide valuable guidance on the most effective fundraising strategies.

- Strive to raise as much money as possible — more than the anticipated budget — as over time, there will be additional expenses such as purchasing essential items like washers, dryers, towels, and bathrobes.

Blueprints

There are different approaches to consider when obtaining blueprints for your mikvah project:

- **You can collaborate with an architect who can accurately translate your requirements into detailed drawings.** It is crucial to involve a mikvah expert in the process to ensure the blueprints align with the necessary halachic specifications.
- Alternatively, **you can transfer existing blueprints from someone who recently constructed a mikvah to your engineer.** The engineer can then make any necessary adjustments to comply with the local building codes specific to your city. It is crucial to note that not all blueprints will be suitable for every location due to factors such as local water levels and structural compatibility.

Consider practicality when determining the size of your mikvah, taking into account the anticipated number of users and any additional features desired. Remember, larger facilities not only incur higher construction costs but also require more ongoing maintenance.

When submitting the blueprints, it is advisable not to personally pull the construction permits (which would put the responsibility for adhering to building codes on you). Instead, the contractor hired for the project should apply for the permits. This ensures that the necessary permits are obtained; mitigating the risk of assuming liability if the contractors fail to adhere to building codes, and providing assurance to potential donors that you have the required approvals in place.

Architects

Architects play a crucial role in the construction process by creating comprehensive and precise architectural drawings that adhere to the necessary building codes and regulations.

It is important to note that architects who excel in design may not necessarily be proficient in project administration, which involves overseeing the project's progression through each stage. And when it comes to a mikvah, overseeing the project is crucial.

The primary responsibility of your architect should be to develop a well-thought-out layout for the structure; prioritizing functionality, and then aesthetics. Let your mikvah expert get into the specifics once you're certain that the overall blueprint is in keeping with what you envision.

Engineers

An engineer specializing in construction, often referred to as a construction engineer, will review the architect's design and choose the materials needed to bring the design to life. They are responsible for supervising the construction process; prioritizing safety and ensuring that teams adhere to established standards. Additionally, they may contribute to the design of infrastructure systems to support the overall functionality of the project.

Don't skimp on the engineer, as a mikvah is a highly technical project and a good engineer will go a long way towards its successful construction. Your mikvah expert should be the one coordinating with the engineer to ensure the process runs smoothly from a technical standpoint.

Designer

Designers play a crucial role in creating visually appealing and functional spaces. They possess expertise in designing layouts, determining spatial flow, selecting materials, and enhancing overall aesthetics.

However, designers tend to prioritize aesthetics and may overlook certain practical aspects. For example, they might opt for white floor tiles that look stunning when clean but are prone to showing dirt and stains.

Rabbonim and mikvah experts can provide valuable advice and suggestions for the practicality of aesthetics as they work with many mikvaos all over the world. Ultimately, however, it will be up to you to strike a balance between aesthetics and practicality — with a priority on practicality — while ensuring top halachic standards.

Maintaining open communication between the designer, your rav, and your mikvah expert will help you with this. Collaboration ensures that all aspects of the design are thoroughly reviewed and considered; incorporating the necessary input and guidance from those with different expertise and perspectives.

Hiring a Contractor

When undertaking a construction project, a competent general contractor is indispensable.

Here are key points to consider when selecting a contractor for your mikvah project:

Responsibilities of a General Contractor:

A general contractor is responsible for daily operations; collaborating with the engineers, architects, interior designers, and other experts involved in your project. They enter into a contract with the property owner and ensure quality control and timely completion.

Think of them as serving as the main point of communication between all subcontractors and vendors.

Licensing and Qualifications:

Ensure that the general contractor holds the necessary licensing and meets state requirements; guaranteeing their work complies with code regulations and standards. Verify their credentials and track record before making a selection. This is a great example of where *not* to cut corners; your funders don't want to hear that you hired an unlicensed and potentially unreliable contractor just to save money.

Finding the Right Contractor:

Selecting the ideal contractor for your mikvah project may involve evaluating multiple candidates. You have two options:

1. **Hiring a general contractor who can oversee subcontractors** (the people who will run every aspect of the construction, such as plumbing, electrical and so on). This will cost around 20-30% more than option two but will save you time and stress.
2. **Personally selecting the subcontractors yourself.** Keep in mind that if you personally retain and oversee your subcontractors, you must have some experience as well as the knowledge and resources to manage them effectively. This option can potentially save on costs while ensuring quality work. However, it can also be challenging and time-consuming. You must weigh the pros and cons; considering the size and complexity of your project before engaging.

Defining your Project:

Before finalizing a contract, ensure that this individual thoroughly understands the intricacies of your project. **Facilitate discussions between the contractor and your rav or mikvah expert to ensure that every detail is as it should be in terms of halachah, functionality and aesthetics.** This will minimize unexpected expenses. Request a detailed, final price from the contractor based on these consultations.

Clarifying the Contractor's Proposal:

It is crucial to have a clear understanding of the contractor's proposal. Seek clarification on specific aspects, such as:

- the allocated budget for materials like tiles (keeping in mind that more expensive options may impact the overall cost)
- the provision of a suitable and rust-resistant railing (for example - stainless steel 316)
- the type of water heater and its proper installation
- separate plumbing for the heat exchanger and for the prep room

- the choice between an insert or custom tile for the shower/bath
- the selection of appropriate lighting and plumbing fixtures

Each choice will impact the cost of your project, and they should all be reflected in the quote. Engage in detailed discussions with the contractor to ensure that all agreed-upon aspects are explicitly stated in the contract.

Engaging a Lawyer

When you reach the stage of finalizing contracts, it is highly advisable to seek the assistance of a lawyer to thoroughly review the agreement. **They will verify details they deem essential, such as the contractor's insurance coverage and proper licensing. The lawyer will also ensure that the contract specifies a reasonable payment schedule that aligns with project milestones.** Ensure the final payment is allocated for a significant portion of the total amount and is due only after the completion of the job.

It is worth noting that contractors may attempt to request payment ahead of schedule. Inform the contractor that checks will only be issued according to the predetermined payment schedule outlined in the contract.

Signing the Contract and Commencing Construction

Once you have selected a contractor, it's time to sign the contract and embark on the construction phase. Remember to keep your donors informed about the progress by providing regular updates and sharing pictures of specific developments.



Building Elements

There are many details involved in the actual building of a mikvah. Simple decisions, such as building a roof, are complicated halachically, and your rav and mikvah expert will need to be involved every step of the way. One very important thing to keep in mind is that anything that may be considered a 'kli', cannot come into contact with the rainwater from the moment it lands on your roof until it reaches the bor.

We will be explaining a lot of technical terms and this section will probably require reading multiple times. It is essential that you understand the general concepts so as to facilitate communication with your contractor and workers.

We will work our way down from the roof, to clarify the various decisions that may come into play at each stage:

Roof

Rainwater for your bor is usually collected via the roof. (in certain climates, you might need to fill the bor using snow or ice blocks)

The way the roof is constructed directly affects the kashrus of your mikvah as any contact between the rainwater and something considered a 'kli' must be prevented. Your rav or mikvah expert must be involved in every decision concerning your roof.

When building a new structure, you have the option of building either a slanted or a flat roof:

- Flat Roof - There are a lot of different options when making a flat roof. Very often, a water entry hole will be prepared before roof installation.
- Slanted Roof - Certain shingles are considered a kli and would therefore render your mikvah unkosher. Your choice of shingles will depend on climate, engravings and company names. Wooden shingles should be avoided. Care should be taken with plastic roofing corners.

When transforming an existing structure into a mikvah, you may need to modify the roof to fit specific guidelines.

Aside from the shape of the roof, certain materials can impact the kashrus of your mikvah:

- Metal - Some rabonim would rather you not build a metal roof and if you must use metal, they'll ask you to cover it.
- Small nails, screws, and screw heads could trap water; these should be adequately covered as they could be considered a kli.
- Exhaust fans, air-conditioning equipment, and the like, are not permitted on the roof. These objects retain water, sheuvim, that later flows onto the roof.
- Similarly, metal "necks" for the exhaust fan, and similar objects should be avoided.

In circumstances where equipment must be placed on the roof, the roof should be divided into two sections with a divider between them, ensuring that water from the equipment (fallen rainwater or condensate) will not mingle with the rainwater used for your mikvah.

Ideally, all pipes and fixtures should be placed at the back of the roof for aesthetic reasons.

The collected rainwater is often filtered before going down to the bor. You can do that by using rocks as a natural filter or by drilling holes in a suitable material and placing it over the hole.

Avoid using traditional gutter nets as a filter as they can be halachically problematic.

Gutters

The gutters are what help the water flow down from the roof to your pipes. Multiple choices exist for gutter design, and each rav will have their preferred method of implementation.

Pipes and gutters used for conveying rainwater to a mikvah must be securely attached to the structure and special care taken at the pipe connections to ensure that there are no grooves or threads where water can accumulate.

Following are 2 common methods:

1. **Half PVC Pipes:** This method involves using half PVC pipes. They generally have fewer halachic issues but may face scrutiny from inspectors.
2. **Regular Gutters:** Traditional gutters are another option. The design can be a single long gutter extending to the downpipe or two separate gutters meeting in the middle near the pipe. It's essential not to have end caps on the gutters, as they can trap water, creating a kli.

Many mikvaos prefer plastic gutters to metal, as they have fewer issues. However, your choices must be validated with your rav.

You can attach the gutters to the roof by:

1. Securing the gutters with clips positioned underneath them.
2. Securing the gutters with the clips placed on top of them. This provides a more secure hold but can potentially trap water, turning the gutters into a kli. You can drill holes where water could accumulate in the clips to avoid this problem.

Pipes

It is a hiddur not to use pipes that curve at any angle (a “knee/elbow” look). This is the case even if the pipe is mounted in a manner in which there is no place for the water to gather.

For effective rainwater collection for your mikvah, consider the following recommendations:

1. **A single continuous pipe:** If possible, use a single, long pipe that runs from the roof to the ‘hamshocho’ (see below to clarify the term hamshocho). This minimizes potential water accumulation points.
2. **Pipe size transition:** Ensure that water flows from a thinner pipe into a wider one when using multiple pipes. Avoid the reverse scenario, as it can lead to water pooling where the thicker pipe meets the thinner one.
3. **Direct flow:** Create a setup where water can flow directly into the hamshocho without stopping. Cut a hole near the upper end of a pipe to accommodate the roof drain and another hole a few inches from the bottom end to fit the pipe entering the mikvah. Place this pipe on a slant so that rainwater from the roof falls inside and smoothly travels down into the hamshocho.
4. **Catch Box:** Alternatively, if you have a larger mikvah with multiple boros, you can direct rainwater from the roof to a “catch box”, which then channels the water to different hamshochos as needed.
5. **Post-Mikvah Water Diversion:** After the mikvah is filled, to ensure that the mikvah doesn't overflow, one should redirect the water away from the hamshocho. Leave some space (about a foot or two) between the pipe and the hamshocho so that you can attach another pipe to carry the water to a drainage system.

Cement

For the mikvah bor, a thick mix of concrete with a strength rating of 4000 PSI (pounds per square inch) is commonly used along with waterproofing additives to ensure water integrity.

Consult with your rov for precise cement mixing instructions for the hamshocho.

Hamshocho

Hamshocho is derived from the term “nimshach al gabai karka,” — (water) flowing across some earth. It is an area of floor with a ½ inch overlay of absorbent cement or earth measuring a minimum of three tefachim long and one tefach wide.

All water flowing into any bor, whether tap water or water from the roof, should run across this area of earth or cement and from there into the boros.

Following are some important facts you will need to know when building your hamshocho:

- The hamshocho process halachically causes the water to be nullified to the surface it flows over. Therefore, if laid on the floor which acts as an extension of the ground, and not on a box or vessel, the water is rendered valid — like spring water.
- It is not okay to *pump* water through the hamshocho as the water needs to flow naturally for it to be kosher.
- A pipe or a tap used as a hamshocha and partially filled with soft cement, is not halachically ok as the pipe is considered a kli.
- Rainwater that comes into contact with items that may be mekabel tumah, such as a metal pipe not fastened onto the structure of the building, retains its qualification of rainwater as long as there is a gap or space of air ('hefsek avir') between the pipe and the mikvah. A hamshocho is equivalent to an 'hefsek avir', and water that flows through it retains the status of rainwater.
- In practice, it is preferable to build a hamshocha that extends beyond the minimum length of 3 tefachim. This precaution is necessary because, on occasion, water can encounter heightened pressure, leading it to “jump” - skipping a part of the required 3 tefachim the water needs to flow through.
- Some rabbonim allow the hamshocha to be permanently covered while others require a removable covering for access.
- To keep the 'bor min hatzad' and the hamshocha inconspicuous and to reduce the risk of accidental interference, it's advisable to position them in a less-trafficked area - ideally on the far side of the mikvah opposite the entrance or steps, possibly covering the entire floor with large stone slabs with recessed handles attached to allow for easy access to the bor when needed. Alternatively, you can place them in a separate room.
- Some mikvaos may have several separate hamshochos. The purpose of using separate channels is to direct the flow of water to the desired bor, specifically when there are multiple side boros. Having distinct hamshochos allows for better control and management of water distribution within the mikvah. For example, one hamshacha may lead from the roof to the rainwater bor, while another leads from the filtration system to the bor tevilah.

The technicalities behind the construction of a hamshocho are an excellent example as to why having a mikvah expert that is both knowledgeable in halacha *and* savvy in the practical and technical aspects of the mikvah is so important!

Otzar

Otzar literally means a storage (of rainwater). The otzar serves as a collection and storage system for rainwater throughout the year and is typically filled by a carefully-constructed drainage system from the roof of the building.

The rainwater on the bottom of the bor slowly gets diluted as it mixes with the regular water from the tevilah bor. (nosen se'ah, vinotel se'ah) It is therefore best to change the water in the boros at least once a year. The otzar serves to quickly refill your boros when you change the water so there is no waiting involved.

Some important information to keep in mind when building your otzar:

- It is important to have sufficient space for the otzar, and it is advisable to position the otzar in close proximity to the mikvah for practicality and convenience. This arrangement ensures efficient water management and enables the smooth operation of the mikvah while adhering to the practice of changing the water annually.
- To prevent the otzar from overflowing, a stopper system must be put in place using elements that are not mekabel tumah.
- A human being is mekabel tumah and is therefore unable to assist the flow of water. Attention must be given to the way you remove the stopper. Some rabbonim suggest including a bend in the hamshocho to take away the 'koach adam' that's caused by pulling the stopper of the otzar.

It is known that the Rebbe Rashab instructed an otzar to be built together with his mikvah.

Cradle

Some rabbonim are of the opinion that while the conventional mikvah structure is considered halachically and practically sound, it is preferable to incorporate a cradle.

The cradle is an additional concrete structure that surrounds the mikvah structure. It provides structural support; securely holding the bor itself in place and preventing any potential cracking or shifting. Initial excavation is typically deeper than the planned pool to create space for the cradle.

In addition to its structural role, the cradle also plays a crucial part in waterproofing the mikvah. Its solid foundation and support helps minimize the risk of ground shift, cracking, and water leakage from the bor. The cradle also acts as a barrier, ensuring the bor remains watertight and maintaining the integrity of the mikvah.

Bor

When it's time to pour the cement for the bor, it is essential to have a mikvah expert or rov present for guidance. This task cannot be explained adequately to the contractor and you should never rely solely on him.

The Rebbe Rashab taught that a mikvah be built bor al gabai bor; literally 'one bor on top of another bor'. The boros would be constructed as follows:

A single, deep bor is dug during construction and the cement is poured in one shot.

Most rabbonim position the steel rods (rebar) used to reinforce the concrete as far away from the water as feasible, placing them closer to the exterior and leaving around 5 inches of no-rebar cement towards the inside of the cement structure.

Next, a divider of cement is built, forming an upper bor and a lower bor. The walls below the divider can project into the bor to support the divider, or a keyway can be formed in the wall and the divider cast into it. The divider serves as a floor for the upper bor and as a ceiling for the lower bor.

Some important information about the boros:

- The lower bor need to contain [two times] forty se'ah (1500 liters). It usually averages about 5 feet deep. Its width and length can vary, but standard measurements fall within the range of 8 feet by 8 feet to 6 feet by 7 feet.
- An opening large enough for a person to pass through is left in the divider and it is then closed with a cover panel.
- Most place the opening to the bottom bor underneath the steps.
- A variety of materials can be used to cover the entrance to the bottom bor, including stone, plexiglas, and other alternatives.
- Before filling the mikvah, a person must enter the bottom bor to be sure that the surface is completely dry.
- The opening cover should have two holes, each measuring a square tefach. The holes unite both bodies of water; the tap water in the upper bor with the lower rainwater, giving the tap water the needed validation for immersion.
- The second hole assures that the water connects even if one of them gets blocked. Blockage can occur when the person immersing places a foot on the hole; preventing the water from flowing between the boros.
- The holes are built apart from each other in order to ensure that the feet of the person immersing cannot block both holes simultaneously.
- There should not be any holes or drains in the lower bor.

- The upper bor becomes the bor hatvilah. Steps are built for the user to descend and immerse.
- It's preferable to have tap water flowing directly above one of the holes.
- When filling the mikvah, rainwater pours into the lower bor until it is full. Tap water is then added through the hamshocho into the upper bor hatvilah directly above either hole.

The procedure is different if the tap water does not flow directly over the holes:

- First, fill the lower bor with rainwater until it overflows and covers the floor of the upper bor.
- Then, add ordinary water into the upper bor. Since the rainwater preceded the tap water, this is also a form of zriah. Now the mikvah is valid and ready to be used. When the waters of the upper bor become dirty, you only need to pump out the upper bor and refill it.

The rooms need to be locked when filling the bor with rain water to ensure no one adds any regular water to the pit.

Waterproofing

Waterproofing is where building a mikvah can differ from a pool: small amounts of leakage in a swimming pool are typically of no concern, but **even the smallest leak can make a mikvah passul**. Your contractor's standards may not be ok when it comes to building a mikvah.

Waterproofing can be achieved by either mixing waterproofing agents with the cement before pouring or by applying them separately after the cement has been poured and dried. You may need multiple attempts to achieve the desired waterproofing effect.

Stairs

Stairs should measure 30 to 36 inches in width, but it's a good idea to consider making them larger if you anticipate that extremely large individuals will be using them.

Choosing straight stairs over curved ones improves the general ease of navigation for everyone, especially those who typically wear glasses. To further enhance visibility for individuals descending the stairs without corrective eyewear, apply a contrasting color to the stair edges.

The placement of the stairs will depend on the natural design of your room and should be adjusted accordingly.

As with anything related to the bor, a mikvah expert must be consulted for the pouring of the stairs.

Drains

Common practice is to empty a mikvah with an electric pump, pumping the water up and then out into the drain. In this manner the waters are not contained in the mikvah by materials that have the capacity to be mekabel tumah. Alternatively, some mikvaos use a siphon to drain the water.

Tiles

Floor tiles used in a mikvah should not have any inscriptions or designs on their back and it is preferable that the wall tiles be smooth as well. This is particularly crucial to avoid any resemblance to a 'beis kibbul', which implies containment or confinement.

Generally, the issue of having inscriptions or designs on the back of tiles is more prevalent with smaller tiles. As such, your rav may recommend using small tiles held together by plastic or paper on the front and avoiding a mesh backing. He will be able to guide you to the best decision for you.

You can also cover the concrete with an alternative product called 'Diamond Brite' instead of using tiles. It is often used for pool surfaces below the waterline. It offers excellent and long-lasting results when installed correctly, maintaining an attractive appearance over time. However, it's crucial to hire a skilled installer who can apply it properly for optimal results. It also needs to be exposed to water relatively quickly after installation, as it may begin to deteriorate if left without water for a few days.

Diamond brite might not be an ideal choice for a mikvah without an otzar, so careful consideration is necessary.

Railings

It is best to use materials like 316 stainless steel or assorted glass options as a railing for your mikvah. They are more durable and resistant to corrosion. Avoid attaching railings to the wall below the waterline. Instead, attach them to the stairs or position them above the waterline.

As with anything in the bor, a mikvah expert must be consulted.

Filter

You have two primary choices when considering filtration options for a Mikvah:

- a kosher filter
- a regular pool filter.

A kosher filter filters the water from inside of the actual bor, thus avoiding the concerns associated with regular filters. Many hold that a kosher filter can run even while the mikvah is in use. Prices range from \$1,000 to \$20,000, and several companies offer the following products:

1. **Montreal Filter (\$1,000):** This filter uses air for filtration. It can work effectively if perfectly installed, however, some people have reported issues with its performance.
2. **Lakewood Filter (\$1,000):** This filter uses air for filtration. It's similar to the Montreal filter.
3. **May Galim (\$5,000):** This filter features an electric motor mounted on top of the filter with a shaft extending to the bottom. Its filtration ability is generally satisfactory, but some users have experienced difficulties with repair due to challenges in obtaining parts from abroad.
4. **MikvahTech (\$5,000):** This filter utilizes an immersible electric motor positioned at the bottom of the filter. It has been on the market for a few years, and most users report minimal issues. It is approved by Edah HaChareidis and other authorities.
5. **Rabkin Filter (\$20,000):** This filter was specifically designed for high-usage mikvaos and is constructed using stainless steel. It employs a hydraulic motor for power. While it offers excellent filtration performance and reliability, it comes at a higher cost.
(Note: A hydraulic motor produces a significant amount of noise. It is best to place the motor in a different room.)

Having a kosher filter offers the benefits of widespread acceptance among rabbinical authorities and continuous water cleansing. However, local pool technicians may encounter difficulties when servicing due to its specialized nature and unusual parts.

A regular pool filter, typically prices at \$600 and up. The advantage of this option is that local pool technicians can handle maintenance and repairs and it is relatively easy to find replacement parts. However, it can not be used during tevilah and a rav will instruct you on ways (such as an indicator light) to ensure that people don't accidentally toivel while it is functioning.

Heating

There are a number of available heating options:

Pouring hot water through a hamshocho to heat the water:

Here, the bor hatvilah will have two siphons (or pump outlets). The higher siphon is used to drain a large portion of water leaving forty se'ah of valid water remaining in the bor hatvilah.

It is then used to refill the mikvah with hot water until water level via a hamshocho) since it is permissible to pour hot water through the hamshacha process to heat the water. (

The lower siphon is used only to empty all the water in the bor when needed.

Installing a heat exchanger (Radiator):

Assuming that the mikvah water is treated with chlorine or bromine, you can attach a heat exchanger to the wall inside of the water of the bor tevilah.

The heat exchanger behaves like a radiator and is controlled by an aquastat. It should be installed as close as possible to the mikvah floor to ensure the water near the floor heats as well.

It should not be placed near any of the hashoko holes as that may allow it to draw some of the original rainwater that is stored in the neighboring bor, leading to 'noson se'ah venotal se'ah' - a halachically problematic situation.

The heat exchanger itself can be scalding to touch and it is best to place a shield in front of it.

Using an electric or gas spa heater that works through a pool filter:

Where a filter system is installed, the water heats up outside the mikvah during circulation.

Of all three choices, a heat exchanger is the most commonly preferred choice.

Boiler

An average mikvah requires a boiler with a capacity of 180,000 BTU. However, a larger mikvah will need a more powerful boiler.

Humidity and Temperature

It's essential to establish an effective dehumidification system throughout the entire building - and not only the bathroom - to prevent moisture issues. Proper drainage, extractor fans, and vents are a must, as the mikvah's inherently high humidity environment (regardless of the climate) can lead to rapid mold growth and other moisture-related deterioration if left unaddressed. Humidity can also create an uncomfortable environment for the women using the mikvah and the rooms.

Some preventative measures might be:

- Utilizing moisture-resistant materials.
- Securely enclosing the boros with a well-sealed barrier.
- Maintaining relative humidity levels at a maximum of 60% through proper ventilation and / or, depending on the climate, the use of a dehumidifier.
- Having an exhaust system in place, though not necessarily in constant operation

Some HVAC (heating, ventilation and air-conditioning) systems come equipped with built-in humidifiers, while others do not.

Several higher-end HVAC systems designed for spa environments come with integrated dehumidifiers. It is recommended to set these systems at 82 degrees fahrenheit with a humidity level of 50%.

Keep in mind that lower humidity levels can make 82 degrees feel cooler than it actually is.

לזכות הרה"ח ר' מנחם מענדל קאטלארסקי שי'
בהוקרה על עבודתך המסורה
נדבת בית חב"ד טאיוואן



לזכות השלוחים שצריכים ברכה בנוגע לזרעא חייא וקיימא
ויהי רצון שהקב"ה ישפיע לכאו"א מהם בתוככי כלל ישראל רב טוב בטוב הנראה
והנגלה, בבני חיי ומזוני רויחא ובקרוב ממש

לזכות
גבריאל ראובן בן שיינדל
שטערנא שרה בת חיה דבורה לאה
חיים דוד בן יוכבד
אלה בת תרצה
שמואל יהודה בן חיה
יהודית שרה טושנא בת רודא גיטל
ימלא הקב"ה משאלות לבבם לטובה בכל המצטרך
ובפרט בנוגע לזרעא חייא וקיימא



לחיים ולברכה לעם ישראל!



לזכות הרה"ת שלום דובער ומרת מיכלא לוי'ן שיחיו
שיזכו לאריכות ימים ושנים טובות מתוך בריאות הנכונה
ושפע נחת מכל יוצאי חלציהם שי'

לעילוי נשמת
מרת רחל ע"ה פינסאן
בת הרה"ח התמים המשפיע הנודע לתהלה ר' אברהם ז"ל דריזין (מאיאר)
נפטרה י"ב כסלו ה'תשע"ב
ת.נ.צ.ב.ה

נדבת בעלה הרה"ח ר' נחום פינסאן
ובניהם ובנותיהם
הרה"ח ר' אפרים ומרת חנה וואונטש וב"ב, הרה"ח ר' דובער ומרת רחל פינסאן וב"ב,
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הרה"ח ר' מנחם מענדל ומרת לובא גרינבערג וב"ב,
הרה"ח מנחם מענדל ומרת שרה פינסאן וב"ב,
הרה"ח שניאור זלמן ומרת יהודית לוריא וב"ב,
הרה"ח ר' מרדכי ומרת חי' גראנער וב"ב
שיחיו

נדבת

מקוה מי חי' מושקא



לזכות כל שלוחי כ"ק אדמו"ר נשיא דורנו
להצלחה רבה ומופלגה במילוי שליחותם
מתוך בריאות הנכונה והרחבת הדעת
ושפע נחת מכל יוצאי חלציהם שיחיו
ומילוי כל משאלות לבבם לטובה

ע"י הרוצה בעילום שמו



KEREN HASHLUCHIM
קרן השלחים

