TJB-INC's On-Site Consultation/Assessment Rates

TJB-INC bases our rates on the travel time involved in getting to & from our office in Hamden, Connecticut to your location and the fuel costs associated with this travel. However, with the cost of fuel, these prices are subject to change without notice. All fees are to be paid at the time of the consultation. We accept cash & checks only.

Note: If you know exactly what you want and are just looking for a price/estimate, we do not need to send a professional expert. Often, we can provide a quote right over the phone. Many times, however, we can find a cost-effective better solution that only a professional expert can give and for this money-saving information, we do charge a fee.

Custom Water Feature/Fountainscaping: A set fee is charged based upon your location and length of travel. When a construction contract is accepted within 60 days from the consultation date, TJB-INC will deduct the fee from your final balance.

TJB-INC Landscape & Drainage Contractor has been designing, installing, & repairing water features since 1995. We use products from several manufacturers but like to stick with Aquascape brand products since they are the time-tested leader in the industry. Since 1995, we have installed hundreds of custom water features throughout Connecticut (and beyond). We have worked on the (3) water features at the Shedd Aquarium and (2) at the Lincoln Park Zoo in Chicago to name a few.

This link will bring you to our video about our Eco-System Pond construction
https://www.youtube.com/watch?v=9CSaQj_nPfI&t=16s

We invite you to come by and visit our public outdoor display ponds & gardens which are open 24/7/365. We are located @ 12 Crest Way (off Sherman Avenue) in Hamden Connecticut 06514-1141. Parking is free and the displays are wheelchair accessible. See if our design/construction style is what you are looking for and is a good fit for your project.

We are proud to have our garden displays named & certified as a "Natural Wildlife Habitat" by the National Wildlife Federation. Our gardens are also a stop on the "Connecticut Garden & Landscape Trail" (one of only a few in Connecticut at a Landscape Company's Building).

Here you will see several different kinds of water features. (3) Stone Fountains, (1) Pondless Waterfall, & (3) different sized Ecosystem Koi Ponds complete with a total of (7) Waterfalls, (4) Streams, lots of different water plants and friendly fish.

Note: *From May 1 – November 1, bring some Cheerios (Honey Nut is their favorite) to hand feed our friendly Koi fish who will greet you by the stone bridge that crosses over one of our streams. Some of the Koi are over 20" long. (Don't worry, they don't have any teeth!) The Koi fish will suck the food from your hand like a vacuum cleaner. It will be an interaction with fish that the average person has*

never experienced. Great for kids & adults alike! (Note: If you bring younger children, please be sure they do not throw any rocks at the fish because it can possible severely injure or kill the fish.)

If you enjoy golfing or mini-golf, we have installed a demonstration 9/16" Omni-Directional Synthetic Premium Nylon Putting Green (15' x 35') with 1st cut & different Fringe turf featuring: (2) Regulation Holes, (3) different Synthetic Lawn Turf/Golf Fringes. Bring your own clubs/balls or use ours to check your short game skills. We install these greens throughout the Southern New England area.

Our beautiful garden beds have hundreds of annuals, perennials, shrubs, trees, & bulbs growing throughout that keep the gardens in ever-changing colorful blooms from April - November. It is our town's local public choice botanical garden spot.

Throughout the displays you will also see Interlocking Pavers in both traditional and permeable surfaces. From smooth to dimpled, flat edge to tumbled, paver to slabs. Explore the sampling of different styles and sizes of surfaces that can be used for walkways, patios, & driveways.

The Retaining Wall Displays consist of larger natural boulders, stacked river stones, segmental decorative concrete block, & pressure treated timbers. These walls are integrated throughout the entire display area. We also have (2) Outdoor Firepits, along with our collection of (6) installed PaverArt inlays. Our own **TJB-INC** 4" x 8" inlayed Solar Brick Paver Lights along with 12-volt lighting in the water features, add unique accents after the sun goes down!

So, while the kids are enjoying the fish in the pond, try your skills on our synthetic putting green or just sit and relax on the chairs & benches enjoying the sights and sounds of nature that surround you. Birds, butterflies, honeybees, dragon flies, hummingbirds, garter snakes, turtles, frogs & chipmunks are just some creatures that visit or live in the gardens on a daily basis. Bring a book and stay for a while relaxing while you think how much better this would all look, in your yard!

Brochures with sample pricing are available outside for your taking & review. A virtual as well as a drone tour is available at http://www.tjb-inc.com/about/#virtualtour

If you would like to schedule an on-site consultation to discuss your project(s), there is a charge of $265.00 for the first hour. If additional time is needed, it is pro-rated @ $82.50 per ½ hour. The fee covers transportation time as well as the 1 hour with the Pro/Expert to discuss the proper location, size, features & costs.

NOTE: Payment is to be made directly to the Pro after the consultation. We accept cash and checks only for this service

Natural (Earth Bottom) Pond/Lake Consultations:

Thank you for your inquiry. I want to make sure that you know upfront that all work in the State of Connecticut in any wetlands (including earth bottom ponds, natural streams, virtually any body of water and the area surrounding them) requires a permit. Even though you may own the land under the water, the actual water is owned & regulated by the government. The regulated area varies

from town to town but is usually 20' -80' from the edge of the water. The Wetlands Commission can let you know exactly.

If the body of water is greater than 5,000 sqft or considered a navigable waterway, the federal laws require review and possible permit from the U.S. Army Core of Engineers – New England District.

Definition: *Wetlands are areas where the frequent and prolonged presence of water at or near the soil surface drives the natural system meaning the kind of soils that form, the plants that grow and the fish and/or wildlife communities that use the habitat. Ponds, lakes, streams, swamps, marshes, and bogs are well-recognized types of wetlands. However, many important specific wetland types have drier or more variable water systems than those familiar to the general public. Some examples of these are vernal pools (pools that form in the spring rains but are dry at other times of the year.*

You must contact your town's Inland Wetlands Commission to obtain a permit before you start any work or disturb the areas described previously. Failure to do so can result in large civil penalties and fines plus, you may be responsible for hiring a wetlands restoration contractor to return the property back to where it was before it was disturbed. That alone can run thousands of dollars so, call your town first.

Good news! There are some services that do not require a permit that can help solve issues. They are ones that do not disturb but improve wetlands.

Once you obtained your proper permits and permission, TJB-INC provides the following services:

- On site consultations (fee applies) *(No Permit Required)*
- Cutting back edge/bank growth.
- Re-routing natural streams.
- Placement of rock/boulder edges for ponds & streams.
- Muck & Debris cleaning/excavation.
- Mechanical surface algae skimming and removal. *(No Permit Required)*
- Clearing & widening of inflow & outflow streams.
- Creating waterfalls in flowing water.
- Installation of water and shoreline plantings.
- Applications of Beneficial Nitrifying & muck digesting Aquatic Bacteria *(No Permit Required)*
- Installation of aeration unit(s). *(No Permit Required)*
- Guaranteed Canada Geese Control (Away-With-Geese Units). *(No Permit Required)*
- Sales and application of Vita-Stim MD Pellets to digest unwanted muck on the pond bottom.
- Adding circulation & filtration to your pond by construction of a man-made wetlands filter area. This is where the water is collected through a skimmer intake bay and then pumped up to the wetlands area where the plants & beneficial bacteria consume the excess nutrients which rob the algae of food. The water is then returned back to the pond by way of a man-made stream which creates added oxygen as well as sounds & beauty to the pond.

TJB-INC is not licensed for restricted chemical applications to ponds & lakes. These applications are very regulated and only provide temporarily control the unwanted growth but do not solve the underlying issues which is excess nutrients. In fact, by allowing the vegetation to sink and

decompose after being sprayed, it just adds additional nutrients from the decaying process to feed the next algae bloom. It becomes a vicious circle of spraying and regrowing.

By properly controlling the nutrient load with aeration, beneficial muck digesting bacteria, & additional water/marginal plants, proper fish selection, we can naturally control the nutrient levels over the long term by creating a less maintenance environment for you to enjoy. No more chemicals!

We offer an on-site consultation with our pond expert (Ted Greiner Ted@Pond.Expert) who has over 45+ years of experience in the field and can go over the different solutions including DIY (Do It Yourself) options if available. If the solution(s) are outside your DIY capabilities, TJB-INC will leave you a free written estimate for TJB-INC to complete the work

If you would like to schedule an on-site consultation to discuss your project(s), there is a charge of $165.00 for the first hour for local properties, more if farther away. If additional time is needed, it is pro-rated @ $82.50 per ½ hour. The fee covers transportation time as well as the 1 hour with the Pro/Expert to discuss the proper location, size, features & costs.

NOTE: Payment is to be made directly to the Pro after the consultation. We accept cash and checks only for this service

If an estimate for services from TJB-INC is desired, there is no charge for the time to write the estimate!

Paver/Retaining Wall Consultations:

We currently do not charge for an estimate, but we have a limited geographical area of service. We will travel for installations, but we must add in for current fuel & labor costs required to get to & from your location from our office in Hamden, CT.

How long do you plan to be in the house? More than 20 years? Less than 20 years? This will help determine what kind of materials should be utilized for the construction.

Pressure treated Timber walls run around $45.00 +/- (depending upon market price of wood) per sqft. installed. If budget is an issue, a timber wall/steps will be less expensive and will last around 20-25 years. To dress up timber stairs, they can be capped with bluestone to create an elegant look. You will see samples in the video links below.

Modular concrete retaining walls run around $80.00 +/- per sqft installed. With 1' of clean stone behind the wall, and when built correctly, they should last around 50 years. 2' of clean stone gets you closer to 100 years

Modular concrete blocks for retaining walls can be hollow or solid core. They come with .5' face ft up to 8+' face ft per block. If the wall is under 4' without a major sur-charge load, no geo-textile fabric is required for stabilization saving on additional cost. Walls greater than 4' in height require engineered plans that need to be signed off on by a licensed civil engineer per Connecticut & Local

Building Codes. This is to make sure the wall system is properly being designed & built to industry standards to prevent injury or death from a wall failure/collapse in the future.

Terraced walls require an additional 1-2 layers of modular block that is buried to support the rear walls adding to the amount of sqft required. The rear wall needs to be set back a minimum of twice the distance of the height of the front wall to be considered separate walls. Otherwise, it is all considered the same wall and must follow building codes for walls over 4' height if both heights added together meet the criteria.

Most modular wall block does not have a finished top, so a separate coping or top layer is required. This adds $20-$40 per linear ft (depending upon the style of stone chosen and number of cuts required).

Walkway, Patio, & Pool Deck construction can be done with a variety of materials. Natural or man-made products can be utilized to create a beautiful and lasting installation.

Natural Bluestone can be laser cut (more expensive but lays flatter) or regular cut. Cost with installation runs from $40-$60 per sqft depending upon the cut and thickness of the stone. *Note: Many of the paver manufacturers now produce slabs that mimic natural bluestone in looks, color & texture but install like a paver which costs less then natural bluestone.*

Cut natural stone slabs can vary from $40 - $100+ per sqft installed depending upon the type of stone, thickness, & availability.

Interlocking concrete paver/slab walkways, patios, pool decks, & driveways run $30 + per sqft installed depending upon the size of the installation, style of stone chosen, and the amount of special cutting required. These can be either traditional or permeable installations depending upon the choice of paver/slab chosen.

Most paver manufacturers have a lifetime warranty on their products. TJB-INC provides a 10-year "sink or settle" installation warranty on all new installations. One of the longest in the area because no steps are skipped to save on costs. We are one of the few locally national ICPI Certified Level One - Installation & Permeable Surface Contractors.

NOTE: Currently, paver manufacturers have cut down the number of different styles and colors due to excess demand. Always have a choice 1, 2, & 3 if possible. TJB-INC typically uses products from Ideal Block, Techo-Bloc, Unilock, &/or Nicolock.

Traditional stairs run on average $80.00 + per linear ft installed. There is the traditional style stair system that has side walls (we call them knee walls) for a more formal look or open slab stairs for a less formal look. Both are built to the current State & Federal Building code for safety but have a totally different look. Another option is slab stairs. Either slabs of natural stone or man-made stone can be stacked to create a beautiful stair system. These are usually open (no side walls) and create a beautiful and functional way to ascend and descend a sloped area. Depending upon the materials utilized, these slabs can run from several hundred dollars to several thousand dollars each plus installation. To view the man made version we use, go to:

https://www.idealconcreteblock.com/products/outdoor_living/steps-stairs-elevations/rockport-steps/

Demolition of the current surface & hauling of the debris are always separate line items that are not included in construction pricing. This usually runs $5 - $8 per sqft if it is old concrete or asphalt. TJB-INC hauls this old material to regional recycling facilities for disposal. ***NOTE: Recyclers do not want clay brick because it is not a good structural base material and charge more for disposal. It is resold as clean fill.***

I hope this answers your questions about pricing. If you would like an official estimate, please let me know and we can schedule a visit. If you are looking for a quick blowout job at the lowest price possible, we are not the contractor for you. We only install to ICPI & NCMA industry standards with no shortcuts so we can offer the longest warranty (10 Years) in the area. Go to www.ICPI.org for more information.

Can you send some photos of the project area(s) so we can get a better idea of the scope of your request? Please send the photos to: info@TJB-INC.com Make sure to include your contact information so we know whose photos they are and how to contact you back.

Facebook = TJB-INC-Landscape-Drainage-Contractors

Below are some samples of our work for you to review. We also have public displays that are open 24/7/365

Hardscapes Part #1 https://youtu.be/nDhonBtdnOA

Hardscapes Part #2 https://youtu.be/FylAxRqWaRw

Hardscapes Part #3 https://youtu.be/KgjN5vym4KQ

Hardscapes Part #4 https://youtu.be/9fEFrWvoV6E

Wallingford Porch/Stoop/Walkway https://youtu.be/oY771w2X-FU

Permeable Pave Workshop https://youtu.be/fqTEhCtl1dg

Orange Patio & Stoop https://youtu.be/b3tD0-BRZE4

Naugatuck Patio & Walkway https://youtu.be/At3aUkgzQcY

Mystic Walls & Stairs https://youtu.be/Nh_UER2rPYU

Middletown Drainage/Patio/Walkway/Sitting wall/Firepit https://youtu.be/6LF0EB_Sf24

Hamden Patio/walk/stairs/solar lights (Brown) https://youtu.be/TbdIHiJawdw

Flagstone Paver Walkway/Driveway/Drainage https://youtu.be/_FPgZVS2XJ8

Hamden Patio/Maya Stones/ Plantings (Hottin) https://youtu.be/y_jfZkNo504

Cheshire Paver Walkways, Patio, Fire Pit, Sitting Wall https://youtu.be/SDgvF8MprFc

Cheshire Belgium Block & Bluestone Rehab https://youtu.be/Te0Zcf2N5K4

Paver Patio, Timber Wall & Steps https://youtu.be/jeoJ_Ca13Ik

Woodbridge Timber walls, steps, bluestone https://youtu.be/pIN01bFWllc

Timber Walls, Steps, Patio, Maya Stones, Planter Boxes (Branford) https://youtu.be/GxyzHI7YzgE

Lg Timber Wall (Milford) https://youtu.be/FBuvnsCzy80

Timber Wall & Steps https://youtu.be/g2Y3dd7sNX0

Paver Patio, Timber Wall & Steps https://youtu.be/jeoJ_Ca13Ik

Woodbridge Timber walls, steps, bluestone https://youtu.be/pIN01bFWllc

Timber Walls, Steps, Patio, Maya Stones, Planter Boxes (Branford) https://youtu.be/GxyzHI7YzgE

Before & After Part #1 https://youtu.be/KqBl8PQijfI

Before & After Part #2 https://youtu.be/HDCbRONhtQc

Before & After Part #3 https://youtu.be/YRQWDS48Dt4

Before & After Part #4 https://youtu.be/GyHGIF8PkWM

Before & After Part #5 https://youtu.be/b9Og3gXnc74

Before & After Part #6 https://youtu.be/OiBXVHN_VNw

Before & After Part #7 https://youtu.be/TZx2PT-f4E8

Before & After Part #8 https://youtu.be/zHYsq0FA320

Before & After Part #9 https://youtu.be/94ohjAev3iI

Before & After Part #10 https://youtu.be/WBTsmXWmj_U

See thousands of photos of our work at http://www.houzz.com/pro/tjbinc/__public

Synthetic Putting Green/Turf Installation/Repair/Service:

If you are local to surrounding towns to Hamden, there is no fee for the site review. If you are outside of this area, then a $165.00 consultation charge will apply. When a contract is accepted within 60 days from the consultation date, then we will deduct the fee from your final balance.

Thank you for your interest in our Synthetic Putting Greens. TJB-INC Landscape & Drainage Contractor primarily installs top of the line, 100% nylon, 9"/16" omni-directional, synthetic putting green turf. There is lesser expensive sand filled polypropylene greens available, but we have found they do not hold up anywhere near as well as the nylon greens do over time both in fiber strength and color retention.

- The cost of the putting greens installed runs around $20.00 +/- per sqft. on average.
- Installed costs include Design, Excavation, Base Material, Compaction, "Break Layer", Putting Green surface, 1st Cut Material (if chosen), Fringe/Rough Material (if chosen), Cup holes with drainage, 6" Regulation Cups, Jr. Marker with easy grab knobs & ball lifter disk, Choice of Solid, Numbered, or Checkered Flags, Cup Covers, Seeding & Strawing of any disturbed areas.
- Chipping stations, Sand Bunkers, Ball Washers, Cleat Cleaners, Low-Voltage Lighting all available at additional cost.
- Nylon Putting Green material comes in 15' widths and can only be seamed from the sides. This means when you are planning out your green, make one of the measurements a multiple of 15' to eliminate excessive waste. (IE: **15'** x 20, **30'** x 20', **45'** x 36', **60'** x 70')
- If possible, TJB-INC needs an 8' access to get our equipment in to do the proper installation. We do have smaller equipment if the access area is smaller, but this adds to the installation time and associated costs.

We invite you to stop by our public displays and try your shots on our nylon green. Our displays are open 24/7/365 for you to come visit. To see some of our installations, go to:

Synthetic Putting Greens Part #1 https://youtu.be/Fy6AR2M1Tm4

Photos of TJB-INC Greens https://www.houzz.com/hznb/projects/synthetic-putting-greens-pj-vj~176292

Milford 15x30 Putting Green https://youtu.be/voRITJEegxI

TJB-INC Golf Cup Covers https://youtu.be/In1FPpNcgEg

If this sounds like something you would like more information on, we can do on-site consultation to help you design and proper placement of the practice golf putting green of your dreams in your own yard. Depending upon the distance from our office in Hamden, the cost of this visit is from $165.00. If you hire TJB-INC to install a putting green, we will deduct the consultation cost from the finished project cost.

We will bring samples of the Omni-Directional turf, 1st cut, and rough (fringe) to leave with you.

Whether you only have room for small Putt-Putt, Bump & Run, all the way up to a Par 3, TJB-INC can design and install it for you.

Can you send some photos of the project area(s) so we can get a better idea of the scope of your request? Please send the photos to: info@TJB-INC.com Make sure to include your contact information so we know whose photos they are and how to contact you back.

Synthetic Lawn/Pet Turf: As one of the few installers of synthetic turf in Connecticut, we get a lot of calls wondering if it would be a good alternative to real grass.

Synthetic turf in our area is best used for:

1. Around pools where lawn mowers are not feasible due to limited access.
2. Dog runs where real grass cannot survive due to traffic and dog waste damage.
3. Smaller lawn areas where the benefits out way the costs.

First the cost: Premium Synthetic Turf is around $10x more expensive than natural sod and $100x more than grass seed. But … it has its special applications where the other natural solutions will not work. It is going to run around $20.00 +/- per sqft installed depending upon the style of turf selected & construction access.

Here is what is involved in that cost:

1. Step one is removing all organic soil from the installation area. This means cutting all tree roots that are in the installation area which may cause damage to the affected trees. Failure to remove the organic material will mean the surface of the synthetic turf will move over time either from expanding tree roots, settling of the soil, worm activity, or rodents burrowing underneath.
2. In some applications, a wood or plastic "nailer" board is installed along the outside border of the installation. It is used to secure the edges of the synthetic turf from lifting up.
3. Then a 4"-6" minimum layer of ¾" or ½" processed angular drainage stone is spread and compacted to 95% proctor (very hard). This provides a drainage layer for liquids like water and urine to drain down into and be absorbed by the earth. The synthetic turf has pre-punched holes in the backing material usually on a 4"x4" or 6"x6" grid that allow surface water to drain through into the stone below.
4. Next comes a layer of ¼" minus stone which is spread on top of the base material. It is graded & compacted. This makes the drainage stone surface smoother to walk on.
5. Now the synthetic turf can be laid down. If any seaming is to be done, it would be done now combining multiple pieces into one cohesive carpet.
6. Then comes the stretching of the turf. One side is anchored by spikes into the ground or into a nailer board. Then the turf is stretched to the opposite side with knee-kickers or powered carpet stretchers to remove any wrinkles. Once stretched, the other sides are secured down tight.
7. After the stretching is complete, If it is required, infill is swept into the turf to help the fibers stand upright and help weigh the turf down. This infill can be silica sand, rubber crumb, Zeo-Fill (for dog urine), or a combination of several different materials.
8. After a good clean-up & rinsing, your synthetic turf is now ready for use!

- All most synthetic lawn & dog turf material comes in 15' widths and can only be seamed from the sides. This means when you are planning out your yard, make one of the measurements a multiple of 15' to eliminate excessive waste. (IE: **15**' x 20, **30**' x 20', **45**' x 36', **60**' x 70')
- If possible, TJB-INC needs 8' access to get our equipment in to do the proper installation. We do have smaller equipment if the access area is smaller, but this adds to the installation time and associated costs.

Second: Synthetic turf is **not** maintenance free. Follow up maintenance of the turf is primarily keeping organic matter (poop, leaves, grass clippings, tree pollen, evergreen needles) from getting down between the fibers and rotting. Over time, the buildup of this decaying organic debris will form compost which will be able to support unwanted seeds that land on the turf and germinate. Then you will have live plants growing out of your synthetic turf. Weed/vegetation controls will kill the growth but if not removed, the dying plants just add more organic material between the fibers which will allow more unwanted growth to germinate & grow. Over time, real plants will overgrow the synthetic turf. Cleaning of the turf can be done with a hand or backpack blower. Sometimes a simple vacuum cleaner or shop-vac can be used to clean the turf to help suck out the organic matter.

NOTE: If you have dogs, deer, or other wildlife that leave poop on the turf, you will want to clean-up the solid waste as quickly as possible. For liquid waste, use a biological denitrifying spray and water (available online) to help breakdown and dilute the urine. Failure to do so will have turf with an unpleasant strong ammonia smell.

Third: Synthetic turf can get quite hot in the summertime if is direct sunlight. Large installations like athletic fields have water cannons to spray the turf to cool it down before kids play on it. For smaller applications, wetting down with a garden hose on very hot days would be adequate to reduce the surface temperature. Some clients use their in-ground sprinklers systems to mist the synthetic turf during the hot summer months to cool the turf. If pets are allowed to urinate on the turf, these areas should be hosed down to dilute and wash the urine down into the sub-base material. As noted above, denitrifying sprays are available to break down the urine but not hurt the synthetic turf.

We invite you to stop by our public displays to see several types of install synthetic turf. Our displays are open 24/7/365 for you to come visit. www.TJB-INC.com for more information & directions.

If this sounds like something you would like more information on, we can do on-site consultation to help you design and proper placement of synthetic turf in your own yard. Depending upon the distance from our office in Hamden, the cost of this visit is from $165.00. If you hire TJB-INC to install the turf, we will deduct the consultation cost from the finished project cost. We will bring several different samples of synthetic turf for you to compare.

NOTE: If the area where you would like to install the synthetic turf is very shady and there is very little natural grass growing with lots of moss on the ground, synthetic turf is not the no maintenance answer for you. Moss, mold, & mildew (3Ms) grow on surfaces, not from surfaces. If the conditions are right to grow any of the 3Ms currently and you do not change the environmental factors (shade & low air circulation), the 3Ms will very quickly grow on whatever surface you put there whether it be wood decking, interlocking pavers, or synthetic turf. If this is your situation, before you spend money on any new surface, hire a local tree company to remove branches and/or trees so the area can dry out preventing the 3Ms from growing. Otherwise, you will be very disappointed in a short amount of time!

One more thing, synthetic turf is plastic. This means it is made from petroleum. All synthetic turf is treated with a fire repellant but will easily melt if cigarette, cigar, or hot pipe ashes are allowed to come in contact with the fibers. We have had one case where the reflection from a house window with a storm window concentrated the sunlight like a magnifying glass and melted some of the soft polyethylene turf fibers. Also, if you use a gas-powered blower to clean the surface, do not place the blower on the surface of the turf if the muffler is hot or the engine in running. The heat from the muffler can melt the turf fibers!

Lawn Treatment Program: No fee for estimate (South Central New Haven County only)

TJB-INC Traditional Lawn Treatment Program

1. Early Spring (April - May)

- Granular Fertilizer [19-0-6 w/30% SCU] with 25% Bio-Solids & 3% Iron
- Pre-Emergent Crabgrass Control (Dimension 0.15%)
- Broadleaf Weed Control (Lesco 3-Way Low odor) (Blanket Coverage)

Purpose
Stimulate new growth and color, Controlling annual grasses and broadleaf weeds.

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2. Late Spring (May - June)

- Granular Fertilizer [17-0-6 SCU] (2% Iron)
- Post-Emergent Crabgrass Control (Quincept) (IPM)**
- Season Long Grub Control (Allectus 0.225%) (Blanket Coverage)
- Surface Insect Control (Allectus 0.225%) (Blanket Coverage)
- Broadleaf Weed Control (Lesco 3-way) (Blanket Coverage)

Purpose
Enhance color; Prevent annual weed germination; Control broadleaf weeds; Control surface insects; Control sub-surface grubs. The 2% iron will darken the turf to a rich green color.

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3. Summer (July - August)

- Granular Fertilizer (Screaming Green) + 45% Bio-Solids [16-2-3] (w/1% Iron)
- Post-Emergent Crabgrass Control (Q4) (IPM)**
- Broadleaf Weed Control (Q4) (IPM)**
- Yellow Nutsedge Control (Q4) (IPM)**
- Insecticides (if needed) (Talstar, Dylox) (IPM)**

Purpose
Enhance color; Control broadleaf weeds; Control turf insects; Provide slow-release nutrients for continued dark green color; Control ugly Yellow Nutsedge. Bio-Solids to help build the soil structure. The 1% iron will darken the turf to a rich green color.

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4. Early Fall (September - October)

- Granular Fertilizer (Screaming Green) + 45% Bio-Solids [16-2-3] (w/1% Iron)
- Broadleaf Weed Control (Primera Triplet) (IPM)**
- Insecticides (if needed) (Talstar, Dylox) (IPM)**
- **Soil Test** for pH & Nutrient Levels (see below)

Purpose
Nutrients applied to stimulate root recovery from summer stress; Control broadleaf weeds & insects; Provide information for next year's lawn care program. Bio-Solids to continue building the soil structure. The 2% iron will darken the turf to a rich green color.

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5. Winter/Dormant (November - December depending upon snow-cover)

- Granular Fertilizer [28-0-3] (20% PolyPlus +35% Bio-Solids & 0.7% Iron)
- Pelletized Dolomitic Limestone (if the soil test calls for it & customer has approved the additional expense based upon our written estimate)

Purpose
Nutrients applied to stimulate root development, provide an early spring green-up, and stronger plants. Bio-Solids to continue building the soil structure. The 0.7% iron will keep the turf a rich green color.

***** ***(IPM) = Integrated Pest Management*** *is the practice of monitoring the pest levels and only applying the control products in the selected areas where they are needed which helps to* ***reduce excess pesticides in the environment****.*

TJB-INC. uses fertilizer in a granular form. We have chosen granular over liquid so we can better customize a program to your particular turf requirements. We can alter the nutrient compounds as needed on a per lawn basis instead of a per tank basis as with liquid lawn care companies. Our fertilizer granules act like tiny time capsules releasing nutrients as temperature, moisture, and microorganisms slowly break down the

granules over an 8 – 12-week time period. This leads to longer-lasting greenness and a more regular mowing schedule for **TJB-INC.** lawn customers.

Per EPA regulations. we are using fertilizers with no potassium unless your soil test recommends adding it.

Bio-Solids are a beneficial resource, containing essential plant nutrients and organic matter and are recycled as a fertilizer and soil amendment that help build heathier soil.

Soil samples are taken to the Connecticut Agricultural Station in New Haven for testing. These tests are used to customize our treatment plan for your property. Changes in fertilizer compounds will be made at no additional charge to you. If pH levels are too low and call for an application of limestone to be applied, then this will be done at an additional cost for which a **written estimate** will be provided to you first.

Wherever possible, **TJB-INC.** has chosen the least toxic chemicals to provide adequate control of turf pests. **TJB-INC.** uses fertilizers that are carbon based or "Organic" encapsulated to provide healthy soil building organic matter and for a safer environment for all of us to enjoy.

TJB-INC.'s Service Policy - 48 to 72 hrs. We'll be back on property to inspect or make recommendations when called.

Our current service area is **South Central Connecticut** which is along the Connecticut shoreline from Stratford to Madison and inland to Wallingford. We use State-of-the-Art application equipment for most of our properties, & traditional walk-behind spreaders/sprayers where required.

Note: Actual products used are subject to change depending upon availability and new chemistry or restrictions.

We put a safe water-soluble **blue marker dye** in with our liquid weed control applications to let you know that the weed has been treated and as a place marker for our applicator.

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The current cost of this plan is $0.065 per sqft. We charge a 6,000 sqft minimum for properties under 6,000 sqft.

We offer a 6% pre-payment discount, or the payments are broken down into (5) payments for the year. One payment as a deposit, then one payment after each of the first four treatments. The final treatment (#5) is prepaid by the deposit and no additional payment is due.

Since our treatments run for the calendar year, if you sign up during the season, a deposit is taken, and we follow the same as above with payment due after each treatment except #5 which is prepaid with your deposit.

Lawn Maintenance: No fee for estimate (South Central New Haven County only)

We check each lawn weekly to determine if the mowing service is needed for the property. (Best practices call for no more than 1/3 of the grass blade to be removed for optimal plant health.) If it is determined the grass needs mowing, then we will:

- Cut the lawn with our Walker brand mowers with **Clipping Containment Systems** (we alternate cutting directions to give your lawn a professional ballpark appearance) or use

Walker Quad-Blade high tech mulching decks.

- Line trim areas where the mowers cannot reach.
- Mechanically edge walkways (Bi-Weekly if applicable).
- Blow off steps/walks/driveways for a neat professional look.
- Additional services available upon request (Shrub Pruning, Mulching, Weed Control, Fertilizer Programs, Spring & Fall Clean-up, New Plantings, Hardscape Repair & Installation, Drainage, Snow Removal, & On-Site Consultations).
- We ask that children's & pet toys to be moved off the lawn prior to cutting as well as any poop piles. TJB-INC is not responsible for damage to any toys left on the areas to be mowed.

NOTE: If your yard is fenced in, we need access of at least 5' in width or we cannot service your property.

If we determine the lawn does not need cutting due to excess heat, lack of adequate water, colder weather, or any other factors, we will skip cutting for that week and return the following week to re-access the condition of the lawn. (We only charge if we provide mowing services.)

For times of excess growth due to lots of rain, heavy fertilization, or conditions out of our control, we may have to cut the lawn more than once to achieve a perfect cut. For these times (if ever), we will charge an additional fee to cover the additional time spent.

TJB-INC follows best practices and uses a fresh set of sharpened blades each day we mow grass to provide our customers with the best possible cut. We set the height of our cut based upon environmental and seasonal conditions. The cut height is set at 2.5" up until Memorial Day when we raise the height to 3.5". This helps keep the grass green during the hot summer months as well as blocking the sunlight from reaching potential weeds. Around Labor Day, we drop back down to 2.5" until the leaves start to change color in the fall. Then we lower the mowing height to 2" for the rest of the season. This conserves the plant's energy storage in the root system instead of the leaves.

NOTE: A bonus effect is with the lower cutting height, the fall leaves blow off to the neighbor's property who left their lawn long reducing the amount of fall clean-up needed!

As we maintain the lawn through the fall months, our mowers will chop up any fallen leaves on the lawn keeping your property looking neat and tidy. If there are a large number of leaves to clean up during these cuttings, we will pro-rate the charge for the additional time spent cleaning the property and the debris hauling (if necessary).

TJB-INC Landscape & Drainage Contractor has been in business since 1976. We are one of the

oldest landscape companies in the area. We are CT DEEP Licensed (B#652 & S-1710) for both Trees, Turf & Ornamentals for pesticide applications. We are fully insured (COI available on request). Our in-house maintenance department keeps our machines in proper working order with numerous back-up machines available at a moment's notice.

We send out invoices at the end of the month for all services performed during the previous 30 days. We accept cash, check, PayPal, & all major charge cards as payment for services. Our terms are 2/10-Net 30.

NOTE: Our minimum charge is $85.00 (+CT Tax)

Sod Installation: Sod is instant lawn but requires follow up care by the homeowner. If you do not have an in-ground sprinkler system, manual moving of water sprinklers for daily or twice a day watering will be required following the installation of the sod and throughout any hot months where nature does not provide enough water. Failure to do this watering can lead to the demise of the sod and is not covered under any warranty.

We recommend a free soil test of the soil under where the sod is to be growing. The link for this test is: https://portal.ct.gov/CAES/Soil-Office/Soil-Office/Soil-Testing-Offices-Instructions

You will want to make sure that any changes that need to be done to the soil are done before the sod is laid down. If you are on the shoreline and have damage to the lawn because of sea water, you will have to remove the salt from the soil before putting down the sod or it will not survive.

The sod we use is 90% Bluegrass + 10% perennial Ryegrass and free of weeds. If your dirt has dormant seeds in the soil, these weeds can still germinate and work their way up through the sod over time. Grubs seem to favor good healthy lawns so depending upon the date of installation, you will want to make sure to put down an approved grub control to help prevent an infestation.

NOTE: If the area you want to install the sod does not have **at least 8 hours of sunlight** during the growing season, then you are wasting your money. Without the proper amount of available sunlight, the sod will ultimately fail. No, shade tolerant sod is not sold in our area.

For budget purposes, sod installation runs around $2.00 per sqft with no surface preparation. If the current surface is not cultivated dirt, then surface preparation will be required at an additional cost which can run from $0.25 - $1.00 + per sqft depending upon what is required.

Please send a photo or two of the area to be sodded to: info@TJB-INC.com

If you would like a formal estimate, please let us know.

Seeding Shady and/or Mossy Areas

If you have a lawn that is not performing well and there is moss growing in it, your problem is not bad soil, lack of fertilizer, or inferior grass type. The problem is lack of available sunlight to the grass plants. Journey back to 4th grade where we learned about photosynthesis and how plants use sunlight to create sugar and starches that the plant uses for food. Lack of sunlight will reduce the plant's growth either by stunting it or starving it until it dies. This is when the soil turns bare and tree roots seem to rise out of the ground.

What is actually happening is, with no root structure to hold the soil together, it just washes away exposing buried stones and roots. Soils in the shady area do not dry out as quickly leaving mucky dirty yards. Moss will eventually establish in these areas as long as conditions remain the same or worse. Spraying the moss only kills the current crop. If the environmental conditions stay the same, the moss will regrow again, and again. Adding new soil, seed or sod is a waste of time any money. The problem is not poor soil or lack of it but sunlight. Spending money on soil and fertilizer will not help unless the area can receive at least a minimum of 6 hours of sunlight.

If you want plants to thrive, then trees or branches need to be removed by a local licensed arborist to increase the available light to the areas. If you do not to cut the trees, then you have two options. Live with the moss and mud or plant a shade garden utilizing plants that thrive in low light/wet conditions. Grass or sod is not the solution. Moss, mold, & mildew (3M's) grow on surfaces, not from surfaces. That is why you will see the 3M's on roofs, trees, rocks, fences, & soil. If the environmental conditions do not change, the 3M's will grow on any surface you put down to try to correct/hide the shady area. This includes pavers, concrete, asphalt, or decking.

NOTE: If you think sod is the answer, you are wrong. If the area you want to install the sod does not have at least 8+ hours of sunlight during the growing season, then you are wasting your money. Without the proper amount of available sunlight, the sod will ultimately fail. And no, shade tolerant sod is not sold.

Snow Removal Services: No fee for estimate (Parts of Hamden, North Haven, & New Haven only).

TJB-INC can provide a price estimate for snow removal services for your property based upon the total depth of a snow or ice event for a single complete clearing of the areas you have contracted for, and the level of service selected.

Here are some examples of our (3) Service Levels for a 12" Snow Event:

Level 1: Single Plowing: We have a 12" snow event that starts after the close of business and ends before you open the following day. We will clear the property as contracted and you will be charged based upon a 12" depth. *This is suitable for most residential customers and small businesses.* *NOTE: We will not plow a property where the public street has not been cleared first.*

Level 2: Open Plowing & Final Plowing: We have a 12" snow event that starts after close of business but continues into the next business day and does not stop until late the following day and you have asked that your property be open for business by a stated time (IE: 7 am), then we will completely open your property by that time and you will be charged based upon the depth of snow at that time. (IE: If the snow depth cleared is 5.5" then you will be charged based upon your 0" - 6" charge.) If the next clearing is after the storm has stopped, then we will charge based upon the depth of snow at that time. (IE: If the snow depth cleared is 6.5" then you will be charged based upon your 6" - 9" charge.) *This is suitable for residential customers that do not have a 4-wheel drive vehicle and have to be able to leave their property. This is also good for small businesses.*

Level 3: Continuous Plowing: We have a 12" snow event that starts after close of business but continues into the next business day and does not stop until late the following day and you have asked that your property be open for business by a stated time (IE: 7 am), then we will completely open your property by that time and you will be charged based upon the depth of snow at that time. (If the snow depth cleared is 5.5" then you will be charged based upon your 0" - 6" charge.) If we need to return throughout the event, (say every additional 2" depth) then we will charge based upon services provided for each visit. If you require a full clearing, then we will charge based upon snow depth at the time of service. If all you require is partial plowing or sidewalk clearing, then we will pro-rate our charge based upon the area(s) requiring attention. If we can wait until the end of the storm to clean the property for the next business day after our first clearing, then we will charge based upon the actual depth at the time of the second clearing. (IE: 6.5" would result in a 6" - 9" charge). *This level of service is best for properties that require access 24 hrs. a day or that stay open during winter weather events and is the costliest because of all the return trips and services supplied.*

Season Contracts (Snow Insurance): All snow plowing of your lot(s), along with all pre-treating and de-icing applications are covered under the seasonal charge. Payments for seasonal contracts are due on the first of the month (November - March). If we have an early or late snow event (Oct & April), you are covered by the season contract. **TJB-INC** does not have any minimum or maximum snow depth on our seasonal contracts. Snow Relocation/Removal off Site is not covered under a Seasonal Contract and will be charged additional if services are authorized. Charges are based upon the site's requirements and level of service chosen. ***NOTE: This option must be selected at the beginning of the season. No switching allowed mid-season.***

Commercial Closures: If you are going to close your building(s) and send your employees home, please let **TJB-INC** know ASAP. If needed, we can come and make a couple of passes to make sure they can get out of your lot safely. If you decide to close your building before your normal opening time, please let **TJB-INC** know before we plow your property open so we can send our resources elsewhere and clear your property at the end of the storm.

Salting/Deicing/Pretreat: Applications are charged per application. **TJB-INC** will treat all areas, but if a partial treatment is all that is necessary, then we will pro-rate the charge based upon the amount of material used and time spent in the application.

Post Storm Clean-Up: If cars are in your lot(s) during our clearing services and leave after we finish, return trips to clear these areas and/or if your driveway aprons get filled in by the state/town, we will return to clear these areas at no additional charge to you after the storm ends.

Call backs/Follow up trips: Our crews will monitor the property during a winter event and provide services based upon the level chosen. If your property needs additional services (IE: Apron or sidewalks blocked by town/state plow; Plowed in vehicle finally moves; Blowing and drifting snow; Melting and refreezing after the event; Snow slides off roof filling sidewalk/driveway; Clogged or blocked drainage areas, etc.) please contact us at 203-288-3711 and we will dispatch a service truck/crew. Be advised, if it is after the winter event is over, it may take a little while to get a vehicle to your location if no crews are on the road or finally sleeping. Please give us as much time as possible to respond to your request by letting us know the issues **ASAP!**

Snow Relocation/Removal Off-Site: During a winter season that we have lots of accumulated snowfall, if you run out of places to put the snow, we offer snow relocation and snow removal services at an additional charge. Many times, we can bring in a piece of equipment and relocate the snow on-site to make more room. This charge is based upon the type of equipment required and length of time needed to complete the service. This service will require authorization by you first. If the snow needs to be trucked off-site, **TJB-INC** can provide this service as well.

Billable Snowfall Depth: Is to be determined by the Connecticut Weather Center (www.CTWeather.com). They are the N.W.S. Climatological Data Collection Center for Connecticut and provide us with detailed weather forecasts for our service areas and official post-storm snowfall totals. We hire this company to also provide detailed forecasts for the areas we plow, so we can be on top of the weather events at all times. Snow Depth Reports used for billing purposes are available from **TJB-INC** upon request.

Contact Info: tjb@TJB-INC.com can be used for any non-urgent updates or concerns. We are not in the office during snow events and will not receive your messages until a day or two later. 203-287-0636 is our main office telephone #. If we are out of the office, the calls will be forwarded to our 24/7 answering service (203-288-3711) who will take your message. Since we receive hundreds of calls during a large winter event, we have instructed our answering service to tell everyone "we are not accepting any new customers". Tell the service you are a "Contracted Customer" and on our contract list. Please provide your name, property address, and describe your concern(s). They will text page us in the field with your information. If you require service, we will find the closest truck/crew and dispatch them to your site as soon as possible. If you are not on our list, we will not respond to the call until after our contracted customers have been fully serviced & we are rested.

Payments: **TJB-INC** will send out invoices for completed work. Accounts must pay within 30 days or risk having their services discontinued. Any past due amounts will be subject to a 2% per month statement charge.

Insurance: A certificate of insurance will be sent to you (if requested) after receipt of the signed agreement and before starting any services. This certificate will show validation of our coverage and limits.

Staking/Marking: Property owners are requested to place reflective markers as needed to highlight edges of driveway(s) & lot(s). **TJB-INC** will do our best to limit curb and lawn damage, but sometimes it

is unavoidable, especially if you have requested, we push the snow back to clear parking areas. Curbs that are not properly backed with soil will most likely be affected. **TJB-INC** is available for an additional fee to come out and stake your property if desired. Please contact our office for more information at info@TJB-INC.com

Damage: TJB-INC will video record each location noting condition of property prior to the commencement of services to protect each of us from any miscommunication. TJB-INC will reseed any lawn damage in the spring when weather conditions permit at no additional charge. **TJB-INC** is not responsible for any curbs that are not backed with soil or concrete. We will re-position any broken curb pieces or concrete curb stops back to their original location after the winter season is over at no additional charge.

If you would like to be added to our Snow Removal List, please let us know and we will forward a contract for you to sign and return back to TJB-INC.

* Thank you for considering TJB-INC as your Professional Snow Removal Contractor for this winter season! *

Our equipment is available for on-site inspection and verification if more proof is needed than the photo below. We are not a 1 or 2 truck operation that shuts down when the snowfall is heavy and trucks breakdown. We have back-up trucks available on site as well large loader/backhoes, skid steer, & tractors along with sidewalk sized machines to clear the heaviest snowfall events. TJB-INC also stockpiles our own treated Magic Salt under cover so there is no waiting in line to pick up materials at a vendor when we need to be on the road servicing our clients. We have gasoline & diesel fuel on site to power our equipment when service stations are closed

HOUR WITH A PRO - Landscape ID/Care/Education/Solutions:

TJB-INC offers a unique on-site educational service, we call it " **An Hour with A Pro**". Our Pro, Ted Greiner (Founder & CEO), has years' experience in all facets of landscape design & construction. Areas of expertise include Drainage, Retaining Walls, Interlocking Pavers, Water Features, Turf, Planting Designs, Trees, Shrubs, and more!

Instead of retiring, Ted continues sharing his wealth of knowledge with clientele eager to learn about their landscape and/or how to properly solve their outdoor issues without the pressure of a sales pitch.

You may ask any questions or express any concerns and in return, receive honest answers and/or plan of action. It is a paid informational session to help you solve problems or issues, create designs, learn how to care for your property with the best methods possible whether they be DIY projects or require professional help.

Here are some of Ted Greiner's Registrations, Certifications, & Licenses:

- CT Home Improvement Contractor (HIC) Registration #507853
- CT DEEP Business Registration #652
- CT DEEP "Turf & Ornamental Supervisory License-3A" (#S-1710)
- CT DEEP "Licensed Arborist-3D" (#S-1710)
- Agronomic Advisor for Meadowbrook Golf Course
- Northeast Organic Farmers Association (NOFA) "Certified Organic Landcare Professional"
- UConn "Certified Master Gardener"
- Interlocking Concrete Pavement Institute (ICPI) "Level 1 - Paver Installer"
- ICPI "Certified Installer - Permeable Pavement"
- Porous Pavement "Certified Installer"
- National Concrete Masonry Association (NCMA) "Certified Retaining Wall Contractor"
- NCMA "Silica Train-the Trainer"
- NicolockPro "Paver Contractor"
- Techo-BlocPro "Paver Contractor"
- IPSA "Master Pond Builder"
- Aquascape "Certified Master Aquascape Contractor" for water management solutions
- Aquascape "Top Frog Award" (for being #1 in 2014 & 2015 out of 89,000 worldwide installers)
- Natural Lake Bio Sciences "Certified Aquatic Professional"
- Mauget "Certified Injector" (#90-58)
- NDS "Certified Drainage Professional"
- Bronx Botanical Gardens "Certificate in Perennial Gardening"
- Former WTNH News Channel 8 "Garden Guru" on Your Weekend Today
- Voted "Top Landscaper for 2023" by readers of the New Haven Register
- Connecticut Grounds Keeper Association (CGKA) "Past Executive Board Member"
- Legal Compliance Officer for CGKA
- Toro University "Irrigation & Low Voltage Lighting"
- 52+ years of in the field experience

We charge $165.00 for the hour for local appointments. For properties outside our local area, the charge will be higher. If additional time is needed, it is pro-rated @ $82.50 per ½ hour. The fee covers transportation time as well as the 1-hour with the Pro. Payment is to be made directly to the Pro after the consultation. We accept cash and checks only for this service.

Note: If requested, TJB-INC can also provide an estimate if it is in an area we service. <u>We do not charge for the time to write up the estimate!</u>

Please read our on-line reviews to see what others have discovered about this unique & special service to know if it would be a good fit for you!

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Make sure to visit www.TJB-INC.com and learn more about our company. If you live in, or plan to visit the local area, we invite you to come by and visit our public display gardens which are open 24/7/365. We are located @ 12 Crest Way (off Sherman Avenue) in Hamden Connecticut 06514-1141.

We are proud to have our garden displays named & certified as a "Natural Wildlife Habitat" by the National Wildlife Federation. Our gardens are also a stop on the "Connecticut Garden & Landscape Trail" (one of only a few in Connecticut at a Landscape Company's Building).

Here you will see several different kinds of water features, Pond & Pondless, (11) Waterfalls, (6) Streams, (15' x 35') 9/16" Omni-Directional Synthetic Putting Green with 1st cut & (2) Regulation Holes, (3) different Synthetic Lawn Turf/Golf Fringe, Hundreds of plants and flowers, Interlocking Paver & Retaining Wall Displays, Permeable Surfaces, Outdoor Firepits, & our collection of installed PaverArt inlays.

From May 1 – November 1, bring some Cheerios (Honey Nut is their favorite) to hand feed our friendly Koi fish who will greet you by the stone bridge that crosses over one of our streams. Some of the Koi are over 20" long. (Don't worry, they don't have any teeth!) The Koi fish will suck the food from your hand like a vacuum cleaner. It will be an interaction with fish that the average person has never experienced. Great for kids & adults alike! (Note: If you bring younger children, please be sure they do not throw any rocks at the fish because it can possible severely injure or kill the fish.)

To schedule an on-site consultation, contact us by email or call 203-287-0636.

See thousands of photos of our work at http://www.houzz.com/pro/tjbinc/__public

Drainage/Storm Water Solutions:

Thank you for contacting **TJB-INC Landscape & Drainage Contractor** for your drainage issues.

If you can send over some photos and/or videos of the area(s) effected and a description of the drainage problems, that would be helpful, so **TJB-INC Landscape & Drainage Contractor** can get an idea of what is involved and start engineering some preliminary solutions for you. Send to: Ted@Drainage.Expert

Part #1.
We offer an on-site consultation with our in-house drainage expert Ted Greiner (Ted@Drainage.Expert) who has over 45+ years' experience in the field and is also a NDS "Certified Drainage Contractor". Show him the problem(s) and he will engineer for you the best cost-effective solution(s) using his vast knowledge and experience. This visit is about knowledge & finding practical solutions and how to implement them, not a sales call. Many times, a lesser expensive or less invasive solution than what other contractors have proposed can be found to solve your water issues. (***Check our on-line reviews to see what others have experienced with the visit.)***

We charge $165.00 for the on-site consultation (cash or check only) for the Hamden area. Outside this area, an additional charge fee is added (up to $325.00) to cover the travel cost, 1-hour on-site time, & his extensive knowledge. If additional time is needed, it is pro-rated @ $82.50 per ½ hour. Mr. Greiner is available by appointment Monday – Saturday from 9 am – dusk. What works best for your schedule?

NOTE: Correcting drainage issues outside a structure can save you thousands of dollars that you will have to spend for a specialty company to come into your house and install a basement water collection/sump system.

Part #2.
Many of the engineered solutions may be simple DIY (Do It Yourself) projects. If the solution(s) are outside your DIY capabilities, then Mr. Greiner can leave you a written estimate for **TJB-INC Landscape & Drainage Contractor** to implement the solution(s). Because you have paid for the on-site consultation. you are welcome to use the final solutions/estimate to shop other contractors in your area, so everyone is bidding the same solutions (apples to apples).
NOTE: We do not work on septic systems or clogged sewage pipes. Only storm water management & water drainage issues!

TJB-INC also has a video inspection camera system that can view up to 131' of pipe to view in full color what is clogging your pipes as well as locate the exact location (on the surface) of where the repair needs to be made. This saves lots of unnecessary exploratory digging of the property trying to find the problem. We can pinpoint the problem and even let you know how deep the pipe is so you will know how far needs to be dug down to fix the problem.

NOTE: There is an additional charge above and beyond the consultation fee for the use of this technology and the time spent locating the problem but, can save you hundreds or even thousands of dollars in excavation costs and yard repair.

TJB-INC Landscape & Drainage Contractor
12 Crest Way
Hamden, CT 06514
203-287-0636
Ted@Drainage.Expert
www.Drainage.Expert

***** BELOW ARE SOME SOLUTIONS THAT MAY HELP UNDERSTAND YOUR SITUATION. They are a collection of 45+ years of client questions & answers/solutions *****

Water has (3) main characteristics. Understanding these will help you in solving most if not all drainage/water issues on your property.

1. **Water will move from wet to dry. This is called wicking or capillary action.**
2. **Water follows topography and will want to move from a higher elevation to a lower elevation especially when the soil is saturated, frozen, or during heavy downpour situations when flash flooding is possible because the water is coming down faster than the ground and sewers can absorb it.**

3. **Water likes to follow the easiest path of resistance. (IE: It is easier to move through a properly installed drainage pipe than the soil profile.)**

Water that enters the structure the same day as the rain (overland water) means there is a problem with elevation of the soil around the foundation. This could be gutter downspouts discharging too close, sunken areas around the foundation, clogged window well drainage, poor seal on bulkhead or casement windows.

Water that only enters the structure 1-4 days after the end of the rain (Subterranean water) means there is hydrostatic pressure built up next to and/under the foundation. Cracks in wall or floor, seeping up between floor and wall, nonfunctioning sump pump system, damaged seals around pipes (septic, water, & gas), clogged or broken footing drains.

WET YARD - Solving Common Drainage Problems

If your yard dries out within a day or two after a rainstorm, that is considered normal. A yard with a wetness problem has puddles or soggy areas that persist for several days after storms or are always present.

If you have heavy flows of stormwater passing over your property during storms, but not persistent sogginess afterwards, a flow re-direction plan is in order. The water can be collected and then piped to a suitable discharge area, or the yard can be graded to channel the excess water within the channel area only. The base of the channel can be healthy plantings or stone to prevent erosion.

When the ground is frozen or totally saturated, surface water will flow over the top of the soil moving from higher to lower elevation. This situation can be corrected by creating swales or installing sub-surface drainage to collect and re-direct the overland water. **TJB-INC INC Landscape & Drainage Contractor** can create several solutions that can correct these issues. Go to www.Drainage.Expert for more information.

MY YARD IS WET FOR SEVERAL DAYS AFTER RAIN OR SNOW

Wet areas that persist for several days after rain or snow are commonly caused by poor infiltration of water into the soil or improper grading (low spots or depressions) that have created “bowls” that hold water.

• Grading problems on your property will prevent water from quickly flowing away into a storm drain or another outlet. Areas around the foundation should always slope away from the foundation walls; swales or other flow diversions between neighboring houses should be properly graded so that runoff does not stagnate on your property.

• Poor infiltration (also known as percolation) can be caused by compacted soils, soils with high clay content or soils with a shallow depth to bedrock. Water can perch on top of these materials, either at the ground surface or slightly below it, causing sogginess. In addition to the solutions below, consider amending the soil.

In wet areas after storms, poor grading prevents stormwater from flowing off the yard. Instead, stormwater is held in small to large, well-defined depressions (bowls) until evaporation or infiltration into the soil eliminates the wetness. If the areas stay wet for much longer, then one of the suggestions below would be recommended.

A practical and environmentally beneficial option is to replant the wet area with water-tolerant plant species, preferably native. If you wish to eliminate the soggy depression, you can do so by filling or re-grading the depression (bowl).

Widespread sogginess near landscaping that is too large or difficult to simply fill in, re-grade or replant, there are other solutions. Runoff can be redirected or captured to minimize water accumulation. (See Redirect Runoff below)

Redirecting runoff safely takes it to a suitable area. This can be done using swales, French drains, catch basins, downspout extensions, or combinations of all the above.

1. **REPLANT WITH WATER-TOLERANT SPECIES**

A soggy spot can be improved by replanting with water-tolerant plants. Not Grass! These plants will aesthetically improve the soggy spot, soak up the remaining water (during the growing season), attract beneficial pollinators, and they can also slowly improve drainage by loosening the soil with their roots and organic matter. **TIP:** *Adding nightcrawler earthworms to the soggy areas can help add natural percolation as the worms create passageways through the soil that can absorb and drain water.*

2. **FILL IN THE DEPRESSION (BOWL)**

To eliminate wetness in depressions, the depression can be filled in and graded. Here's how:

A. Remove all leaves, plants (including grass) and other loose material from the depression.

B. Fill the depression with topsoil (or if near the foundation of the house, with fill soil) and compact using a tamper or a similar device. Use soil with relatively high clay content.

C. Grade the filled-in depression so that water will not stagnate. Soil should be graded so that water flows away from the foundation walls to prevent any water damage.

D. Cover the depression with sod, grass seeds or other vegetation. If sod is used, make sure the final elevation does not cause water to collect on the up-slope side. (Note: Sod will only survive if it gets at least 8 hours of sunlight.) If grass seeds are used, consider protecting the seeds with a thin layer of topsoil (approximately ¼ of an inch) followed by a thin layer of straw. This thin layer of soil and straw will help protect the seeds from birds and enhance germination by retaining some surface moisture.

3. **CREATE UNDERGROUND VOIDS TO STORE EXCESS WATER**

A. When the soil profile allows, underground rechargers are installed to create open void space in the soil where water is stored and allowed to slowly filter back into the soil. These rechargers are structural in design to create a void that will not collapse. They are made from concrete boxes with holes or re-enforced plastic tubes that are backfilled with gravel to increase the amount of storage. The visible area on top can be stone, grass, pavers, asphalt or any other usable surface.

B. Capturing and storing excess runoff helps protect streams and rivers and reuses the water. This can be done using rain barrels, cisterns, dry wells, soil amendment or rain gardens. **TJB-INC** installs Rainwater Harvesting systems from 30 gallons to 30,000 + gallons

4. INSTALL A DRAIN AT THE BOTTOM TO REMOVE THE WATER

A. Installing a surface drain(s) in low spots can collect all the standing water and relocate it through a system of buried pipes to another suitable area. This could be a lower elevation, storm drain, stream, or an underground recharger system. If there is no lower elevation, an electric sump pump in a basin can be installed to move the water to another location.

MY YARD IS WET FOR MONTHS AT A TIME OR ALL THE TIME

Wet areas that last for months or are always present are commonly caused by leaks from damaged water pipes & other sources or naturally occurring high groundwater.

A. Groundwater that is naturally close to the surface can also cause wet conditions. High groundwater is generally found in low lying parts of the landscape, especially in floodplains next to perennial streams, and water seepage can also be found on slopes from natural springs. Wetness and puddles in this scenario may not be as closely associated with rainfall. Groundwater is closest to the surface in colder months, but wetness can occur throughout the year.

B. Poor soil conditions can happen when the property was first developed. Extra fill may have been brought in to raise the natural soil levels. Many times, this extra fill is heavy in clay which does not percolate as well as other soil types. This causes the topsoil layer to become mushy after heavy rains because the water has nowhere to go. **TJB-INC** has found that sometimes, drilling down vertically in the soil through this fill layer, there may be permeable soil found underneath. If there is, then we install pipes vertically from the surface down to the permeable soil layer allowing the surface water to drain away naturally.

C. Leaky water pipes, lawn sprinkler systems, outdoor faucets, water supply lines or valves, ponds, pools, fountains, or other damaged water-related features can be a cause for yards that are always wet. Be aware that the actual source of the wetness may not be at the same place where you see wetness on the surface. You may need to investigate carefully to find the true source of your wetness problem.

D. Is it a wetland or Resource Protection Area? You must follow all laws, rules, and guidelines. Inland wetlands areas are controlled by the local, state, & federal government. In the USA, you may own the land, but the government owns the water and controls what can be done on and near the wetland's areas. These areas are called "buffer zones" and can vary from 10' – 100' depending upon the town or district. Always check with local authorities before commencing any work. Failure to do so can result in fines and penalties to you as the landowner.

REDIRECT RUNOFF

Intercepting and redirecting runoff provides an opportunity to safely discharge the volume to a place beyond the problem area. This can be done using swales, French drains, catch basins or downspout and sump pump extensions. These methods of rerouting can be combined with capture and storage practices (see below).

Whenever you are redirecting runoff, you must send it to a suitable outlet. Discharging runoff to an unsuitable area will just move the problems downhill. Be aware that redirecting runoff without soaking it into the soil can negatively impact neighboring properties. Most towns & cities **do not allow** discharge directly on to sidewalks or roadways because of safety concerns. They also do not allow you to bring a pipe to daylight at the property line. Check with your local town engineer to see what is allowed in your situation. Failure to do so can result in fines and civil penalties that can get very expensive!

1" of rain = 0.623 gallons of water per sqft. When most people install dry wells without doing the calculation of exactly how much water will need to be collected, the result is system failure and flooding. When the ground is frozen or saturated, surface water the follows topography, high to low. When constructing a drainage system, one must include the uphill square footage that drains on to the property as well as the total roof and lawn area to be collected. Only then can a proper system be designed.

For super rain events that overwhelm normal drainage systems, the only surefire way is to install a mechanical barrier that can divert the water away from the property. Unfortunately, this usually means redirecting it to an abutting neighbor's property. This barrier can be made from soil, wood, or stone.

MY GUTTER DOWNSPOUTS ARE TOO CLOSE TO THE FOUNDATION

If water is collecting at the base of your downspouts causing the soil/mulch to erode and/or filling up your garden beds with water, then you need to relocate the water away from the foundation, so it does not seep into the basement and cause more damage. This can be done by digging a trench from the downspout into the yard and installing PVC pipe that is connected from the downspout and into the yard. The discharge can come out either a NDS pop-up emitter or into an engineered unground recharger system that returns water back into mother earth over time. The cost of this type of downspout extension runs between $25 - $30 per linear foot installed. A pop-up emitter runs $40 - $50 installed where an engineered recharge system can cost $200 - $2000 + depending on size of the water storage.

MY YARD SLOPES DOWNHILL TOWARDS MY HOUSE

Many times, in yards with yards that slope towards the house, the area at the toe (bottom) of the slope is always wet and unusable for a good portion of the year. This is because the slope is like a giant sponge and the collected water from uphill needs to flow out somewhere. The toe of the slope has the least amount of soil resistance so that is where there seems to be a constant flow of water making the area unusable. The same thing would happen if you put a wet sponge on a table and waited for the sponge to dry. The collected water would leave the sponge and the bottom edges just like the sloping hill in your yard does. A simple perforated PVC drainpipe (with or without gravel) installed at the toe of the slope will provide an easier path for the water to flow so the water is directed into the drainage solution and discharged at a better location keep the toe of the slope dry and the area usable. This type of drainage solution runs $25 - $50+ per installed linear foot depending upon the size and construction.

I AM GETTING WATER IN MY BASEMENT

First step is to determine where the water is coming from. Is it come up through cracks in the floor? Is it coming in between the base of the wall and the floor? Is it coming through a crack or hole in the basement wall? Is the water coming in from the basement window? Is it coming from where a pipe goes through the wall? Once the location(s) of the water infiltration are determined, then a plan of action can be put in place.

Getting water out of your basement and fixing the underlying problems are two of the most important things you can do to protect the value of your home and the health of your family.

Not only does a wet basement feel and smell nasty, it poses a great risk to your home's value. Left unchecked, basement moisture can ruin floors and walls, encourage mold, even damage roofing.

Some wet basements are easy to cure simply by clearing the gutters and by diverting gutter water away from the foundation. But if the problem comes from other sources—water flowing toward the house on the surface, seeping in from underground, or backing up through municipal storm drains—you must take more aggressive action.

Here are nine strategies to keep water out of your basement.

1. Add Gutter Extensions

If downspouts are dumping water less than 5 feet away from your house, you can guide water farther out by adding plastic or metal gutter extensions.

But extensions aren't the neatest or most effective long-term solution, especially if you're likely to trip over them or run over them with a lawn mower. A permanent, underground drainpipe is invisible and capable of moving large quantities of gutter runoff much farther from your house.

For about $30 -$40 a foot, a landscaper or waterproofing contractor will dig a sloping trench and install 4" pipe to carry the water safely away. The addition of a pop-up emitter on the outflow side will complete the installation, keep ankles safe and animals out of the pipe.

2. Plug Gaps & Seal Cracks

If you see water dribbling into the basement through cracks or gaps around plumbing pipes, you can plug the openings yourself with hydraulic cement or polyurethane caulk for less than $50. Make sure to prep the concrete first open up microscopic pores in the concrete so the plug will be able to grip and hold into the wall. Just like painting a wall. The paint will only secure to a clean surface. Concrete prepping is how you clean. You can find this concrete etching solution at all local home centers. We recommend **DRYLOK Etch** as an alternative to muriatic acid. https://www.drylok.com/products/drylok-etch (scroll down the page to "Videos" and watch the "how to" video for proper use instructions).

Plugs work when the problem is simply a hole that water oozes through, either from surface runoff or from wet soil. But if the water is coming up through the floor, or at the joint where floor and walls meet, the problem is groundwater, and plugs won't do the trick. Sometimes, these cracks or seam leaks can be repaired by acid washing the area and using a special sealing caulk or 2-part epoxy that is made to resist hydrostatic pressure from the water. Home Centers sell a product or something similar called "DryLok" that is a great pigment able sealer to use on walls and on the floor/wall joint. You can find more information at www.DryLok.com

3. Restore the Crown of the Garden Beds

If the gutters are working and you've plugged obvious holes, but water still dribbles into your basement or crawl space from high off the foundation walls, then surface water isn't draining away from the house as it should.

Your house should sit on a "crown" of soil that slopes at least 4- 6 inches over the first 10 feet in all directions.

Over time, the soil around the foundation settles. You can build it back with a shovel and dirt. One cubic yard of a water-shedding clay-loam mix from a landscape supply house costs around $40 (plus delivery & spreading) and is enough for a 2-foot-wide, 3-inch-deep layer along 50 feet of foundation.

4. Reshape the Landscape

Since your home's siding slightly overlaps its foundation, building up the crown could bring soil--and rot and termites--too close to siding for comfort: 6 inches is the minimum safe distance. In that case, create a berm (a mound of dirt) or a swale (a wide, shallow ditch), landscape features that redirect water long before it reaches your house.

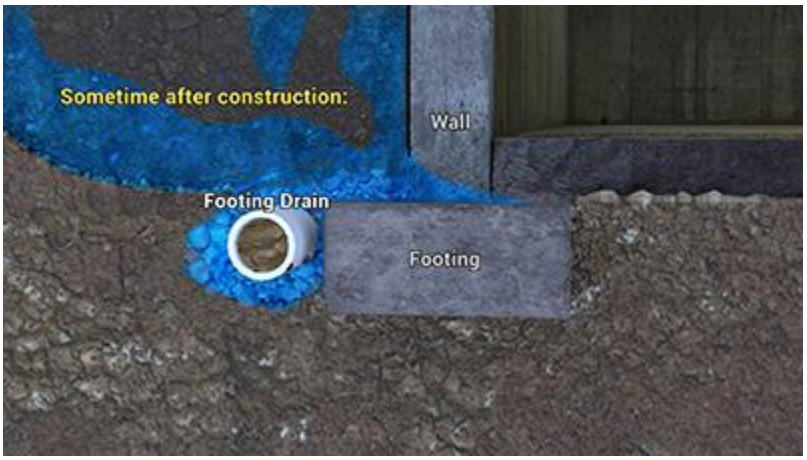
In small areas, berms are easy; a landscape contractor can build one for a few hundred dollars. On bigger projects, berms make less sense because you'll have to truck in too much soil. In that case, dig a swale (about $1,000). Once landscaping grows in, berms and swales can be attractive features in your yard.

5. Repair Footing Drains

If water is leaking into your basement low on the walls or at the seams where walls meet the floor, your problem is hydrostatic pressure pushing water up from the ground because of a high-water table.

First, check whether you have footing drains, underground pipes installed when the house was built to carry water away from the foundation. (Look for a manhole or drain in the basement floor or a cleanout pipe capped a few inches above the floor.) Older homes may have clay or black tar paper pipes where newer homes use PVC pipes. Over time, sand, soot, and/or roots can clog these pipes, so they no longer remove the rising water causing water to push into the basement through seams and cracks in the floor and/or walls.

If the drains are clogged, open the cleanout, and flush the pipes with a garden hose and a shop-vac. If that doesn't work, a drain cleaning augur or jetting nozzle on a pressure washer can sometimes do the job. Most plumbers and local drain cleaning companies do this type of service. If you have total failure due to broken, collapsed, or root clogged pipes, an alternative solution would be less expensive than digging up the soil around the structure and replacing the footing drains. (See Exterior Sump Pit below)



6. Install a Curtain Drain

If you don't have working footing drains, install a curtain drain to divert water that's traveling underground toward your house.

A type of French drain, a curtain drain is a shallow trench--2 feet deep and 1.5 feet across—sometimes filled with gravel and perforated piping that intercepts water uphill of your house and carries it down the slope a safe distance away.

If the drain passes through an area with trees or shrubs, consider switching to solid pipe to reduce the risk of roots growing into the piping and clogging it. Cost: $40-60 per linear foot installed.

7. Pump the Water

If you cannot keep subsurface water out, you will have to channel it from the inside. This is what most basement system companies do to control water in a basement area.

To create an interior drain system, saw a channel around the perimeter of the floor, chip out the concrete, and lay perforated pipe in the hole. The pipe drains to a collection tank at the basement's low spot, where a sump pump shoots it out of the house.

Starting at about $6,000 +, an interior system is the best and least disruptive option in an unfinished basement with easy access. It's also a good choice if your yard is filled with mature landscaping that digging an exterior drainage system would destroy.

7b. Battery Back-up Sump Pump

WHY SHOULD YOU GET A COMBO SYSTEM?

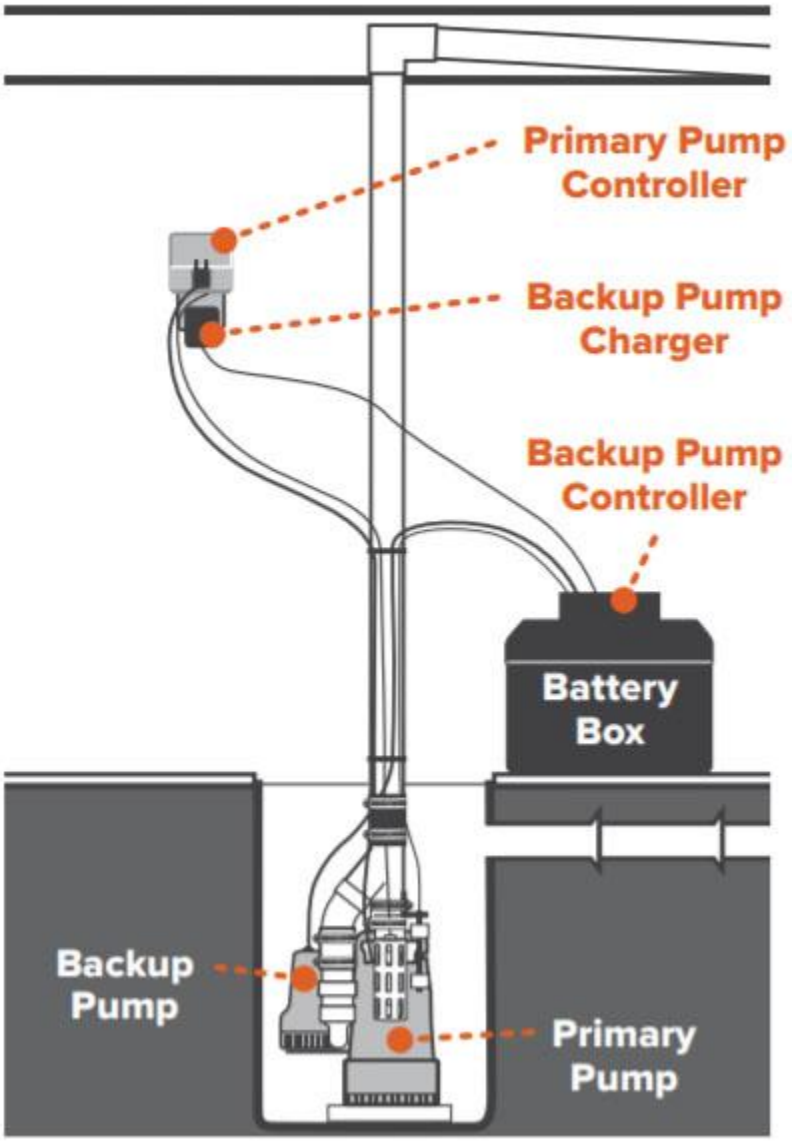
Preassembled for easy installation. The combination sump pump system offers primary and battery backup pump capabilities. The compact design fits into pits with diameters as small as 12 inches. It is an AC-powered primary pump that operates as long as power is available. The Backup sump

pump automatically begins pumping when: The power is interrupted, the main pump fails, or more water is coming into the sump than the primary pump can handle.

User-friendly controller: Sounds an alarm, Illuminates a warning light, & describes what to do for easy maintenance. Dual float switches are provided for added protection as well as 4 floats for added redundancy.

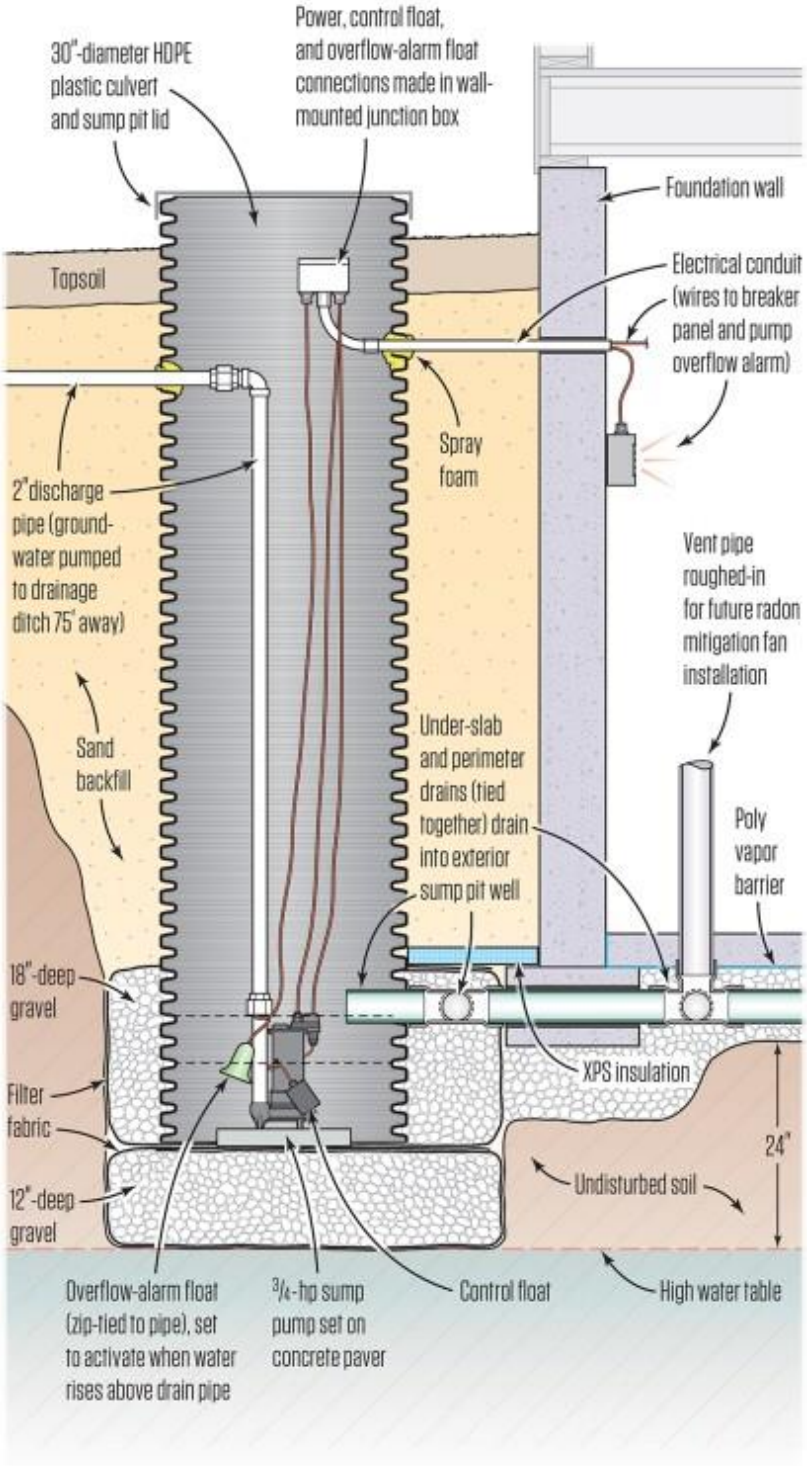
Protective cage for the primary pump, prevents debris or wires from interfering with float operation - won't get "hung up" as happens with many installations.

Gain peace of mind by using a Basement Watchdog Battery Combination System. Go to https://www.basementwatchdog.com/store/combination-pumps/ and watch the video for more information.



NOTE: *Another less expensive option is to dig a hole along the outside of the foundation down below the base of the floor and install an exterior sump pump to remove the excess water causing the hydrostatic pressure. Water moves to the point of least resistance so the water under the foundation will naturally flow toward the sump chamber where the sump pump takes it out away from the foundation. Sometimes, just the pressure relief pipe is enough if it vents to daylight.*

Exterior Sump Pit



The purpose of a sump pit is to prevent the ground water from rising against the floor of the structure and migrating into the basement. Most companies will want to cut a hole in the basement floor, install a pump, & pipe the discharge up and out of the structure. If the pump ever fails, water will rise up from the hole and flood the basement.

Another option is to dig a hole along the outside of the foundation down below the base of the floor and install an exterior sump pump to remove the excess water causing the hydrostatic pressure. Water moves to the point of least resistance so the water under the foundation will naturally flow toward the sump chamber where the sump pump takes it out away from the foundation. The water discharge needs to be 10'-15' downhill of the foundation.

If there is enough change in elevation on the property, the sump pump can be replaced with a simple 4" PVC pipe that drains the water to daylight at the lower portion of the property. The pipe is installed into the sump chamber below the height of the footing. Any water that rises up in the sump chamber will be rerouted into the PVC pipe. This would be a gravity forced drainage system and does not require any electrical components. It is not affected by power outages.

Cost for an exterior sump pump system can run from $3,000.00 to $6,000 + depending upon what is needed for proper installation.

8. Waterproof the Exterior Walls

Installing an interior drainage system gets the water out but doesn't waterproof the walls. For that, you need an exterior system: a French drain to relieve hydrostatic pressure and exterior waterproofing to protect the foundation.

It's a big job that requires excavating around the house, but it may be the best solution if you have a foundation with numerous gaps. It also keeps the mess and water outside, which may be the best choice if you don't want to tear up a finished basement.

The downside, besides a price tag that can reach $20,000+, is that your yard takes a beating, and you may need to remove decks, walkways, patios, landscape plantings, retaining walls and more.

9. Leaking Window Wells

Water filling up window wells and leaking into a basement can cause extensive damage and create hazardous mold conditions behind walls. Most recessed window wells have a galvanized metal frame and a gravel bottom. Over time, organic debris collects in the well and decomposes filling the spaces between the stones. This prevents water from draining and can lead to the well filling with water and leaking into the basement between the foundation and window frame. If the bottom holds water and/or you have vegetative growth coming from the gravel bottom, your gravel is clogged and needs to be replaced. Dig out and remove the old gravel down to where it meets the dirt bottom.

Use an auger to bore through the ground to the gravel under your foundation. Augers are large drills that help dig straight holes in the ground. Position the end of the auger in the center of the hole you just dug to place your drain. Turn the auger on and push it slowly into the ground so it bores down about 1 foot (30 cm). Pull the auger out from the ground to clean off any dirt on the blades. Continue digging out 1 foot (30 cm) at a time until you reach a layer of gravel under your home.

If you don't have an auger, then you can use a shovel, l but it may be more difficult to break through the ground. Put a perforated tube with a drain cap in the hole so the well can drain. Look for a perforated tube with a 4–5 in (10–13 cm) diameter at your local hardware store. Measure the depth of the drain hole and get a tube that's the same length. Place the tube in the center of the drain hole and drain cap on top so dirt and gravel can't get inside and clog it.

If you can't find a pipe with perforation, then cut 2 in (5.1 cm) long slits on each side every 1 ft (30 cm) along the pipe's length.

The drain tube will help divert water out of the well toward your home's weeping tile, which is the underground drainage pipe that moves water away from your home.

Backfill the hole around the tube with gravel. Make sure the tube is centered in the drain hole and hold it in place. Pour gravel around the outside of the tube to provide better drainage for the well and to hold the tube in place. Continue packing gravel into the hole until it's level with the drain cap.

Next add a layer of clean gravel across the bottom of the well. Fill up to a level that is 4-6” below the window frame. Make sure in the future to remove leaves and other organic debris so the new stone does not get clogged.

TIP: It is a good idea to check and/or replace the stone every 8-10 years or so to make sure there is no accumulated debris down in the stone blocking the water from draining.

To check to see if surface water is getting around the window well and causing the water to fill up the well, pour some food coloring or dairy product (milk, cream, or half and half) around the top outside of the where the window well meets the house/building. Do this before a rainstorm. Check during the rain. If the water in the window well is the color of what you put down, then the seal between the window well and the house has failed and needs to be repaired. Usually, you would clean where the two meet and apply a bead of silicone to make a new seal.

MY DRIVEWAY PITCHES TOWARDS MY GARAGE & FLOODS MY GARAGE

Driveways with drainage issues pose a threat to the home's foundation and take away from the overall appearance with puddles, waterlogged areas, and erosion. Driveways on a slope naturally direct water to low-lying areas, which is a major problem if the slope runs toward the home instead of away from it. Managing water accumulation as it runs off a sloped driveway is a challenge.

Many times, the grass & soil along the sides of the driveway near the garage has built up over the years cause a blockage of the drainage. Make sure there is a clear path for water to flow instead of ponding. When the water ponds against the garage, it will find a way into the structure. Check your rubber gaskets on the bottom of the garage doors. It you have areas missing from rodent chewing or dry rot, then this will not provide any barrier to the incoming water and should be replaced. Check the wood near the ground level with an awl to see if it has become soft or rotted. If yes, this is another place where water can get into a garage and should be addressed.

If the above solutions do not work and the driveway slope runs toward the home or deposits water into a flat section, you will need to install a strip or trench drain. You would cut a trench through the width of the problem area. Dig a trench as wide and deep as the drain channel plus an additional 6" on all sides. Pitch the bottom of the trench toward the lowest side of the driveway and place a drain channel inside so it sits level with the driveway. Install the drain and cement around the bottom and sides. Install underground drainpipes to carry the water from the output side of the drain to the street (if allowed by

law) or a low-lying area in the yard to discharge the water. The cost of trench drains runs from $200 - $300+ per installed linear foot.

Another option is to install a threshold seal. They come in different thicknesses and are an easy DIY solution. The installation area is clean and dried. Then the adhesive is applied, and the threshold seal is put down on top of the adhesive. These come in kits that include a seal and adhesive. Search "Threshold Seal" on Google for more information or go to www.GaraDry.com

I HAVE DRAINAGE PIPES BUT WHERE DO THEY GO OR ARE THEY CLOGGED?

A simple way to locate where a drainage pipe discharges to is to add a colorant to the beginning of the pipe, then add water. This colorant can be plumbers' dye, food coloring, or even dairy products (milk, half & half, cream) that will color the water so it can be seen wherever it exits to ground level. If you find an output but want to know if multiple drains are connected, use blue dye in one pipe and red dye in another. If the output is purple, then you know the pipes are connected.

A more complicated way is to have a contractor use a long camera inspection system that allows viewing of the inside of the pipes but also has a special tip that can be located above ground using a special matching detector. This is mainly used to discover the location of breaks or clogs in a pipe. TJB-INC has one of these inspection systems.

WHY DOES MY DRIVEWAY KEEP WASHING AWAY DURING HEAVY RAIN?

If you have a crushed stone driveway or parking area that is always left with deep furrows after heavy rain, then you have several options.

1. Create a rip rap rock lined swale on the uphill side to redirect and slow the force of the water. Installing piles of rock that go from side to side in several places along the path of the water will help slow the force of the water and limit erosion. NOTE: The size of the rip rap should be matched to the expected water flow. Bigger is better and it must be crushed angular rock, not rounded. The outsource of the swale should be constructed covert the flow of water from point source to sheet flow.

2. A culvert is a length of drainpipe that goes under the driveway and provides a path for water on the higher side to flow downhill. Although you can use 3- or 4-inch pipe as a culvert, remember that small-diameter pipes will quickly clog with leaves and debris and need frequent clearing. It's usually more efficient to use 6-inch or wider pipe. When digging the trench, remember to keep it sloped toward the downhill side of the driveway.
3. Choose the Right Gravel. The driveway may be losing gravel simply because you aren't using the right kind. Gravel with round edges, such as pea gravel, won't stay in place no matter how well the driveway drains. The best driveway gravel is angled, which allows individual rocks to lock together instead of slipping around each other. NOTE: Frequent regrading as necessary to prevent low spots from forming which will channel the water and cause erosion of the surface stone.

MY YARD WASHES AWAY EVERY TIME IT RAINS

To control erosion, you plant vegetation. The roots of the vegetation bind and lock the soil together. Turf grass is the most common and inexpensive plant to use. A healthy stand of grass requires at least 6-8 hours of sunlight to thrive. If moss is growing and grass is not and/or tree roots are popping out of the ground, you have an area that is too shady for turf grass and alternative plants need to be used. There are many ground covers available that will survive in low light conditions and provide the necessary vegetation coverage to prevent erosion. Sod will be only good for areas receiving full sun all day. It will not survive in low light conditions. Sometimes a layer of angular stone called “Rip Rap” is used to slow and spread out the force of water preventing erosion. You will see this on sides/turns of streams and rivers as well as steep embankments along roads & highways.

MY YARD FLOODS FROM A STREAM THAT OVERFLOW ITS BANK

When the water is overflowing its banks, then there is not a lot you can do. It comes down to your neighbors who are downstream from your property to not put sticks, leaves, or any other debris into the water or on its embankments. Most people have the mentality that they can use a stream, brook, creek, river as a convenient disposal area. The problem with this is during heavy precipitation events, this dumped debris can break loose and clog passageways like culverts, drainage pipes, and even the body of water. Once the rushing water has nowhere to flow, it starts to back up on the upstream properties causing lots of potential damage.

Another issue that causes flooding is the narrowing of the water passage from not only dumped debris, but overgrown vegetation and/or silt build-up over time. You may be tempted to just go and clean out the debris yourself but, in Connecticut, you may own the land, but the government owns and controls the flow of water. They also regulate the areas on either side of the banks for 10’ – 60’ (depending upon the town). This means you need to get permission from your town’s in-land wetlands commission in order to do any work in this area. Failure to do so can result in criminal & civil penalties.

You should contact your town engineer to explain the problem(s). The government has the right to go into the regulated zones and correct the problems that caused the flooding. Since they control the water flow, it is their responsibility to make sure it is correct and not causing flooding issues. They can clear out debris, remove accumulated silt deposits, make the channel deeper and wider, increase the size of the culverts or drainage pipes, and stabilize the embankments. But … most towns do not have the funds to cover this expense and do not look for state or federal grants to help cover the costs. This leaves you stuck with continued flooding without town help.

If you get no help from the town, some possible solutions are to talk to downstream neighbors and explain how and why the water flow must not be restricted. If they are guilty of dumping debris and do not want to help, report them to the wetlands commission. The commission can compel the neighbor to clean up their debris and possibly issue fines and penalties.

You can create a soil berm/dike/levy that helps protect your property against rising water. You will need to vegetate the soil to prevent erosion and may need to use riprap (angular stones) on the water side to protect the berm during fast water events.

The ultimate solution is to raise the entire level of the yard to above flood stage, but this is usually the most expensive way to go. This solution may still require a permit from the town so I would recommend checking before going this route. Timing will be very important because you will want to get grass to grow to prevent erosion. Grass seeds can only be planted successfully during certain times of the year.

WATER LEAK IN AROUND MY BULKHEAD/BILCO DOOR

Leakage from a bulkhead usually comes from a bad or fail gasket between the poured concrete bulkhead foundation and the foundation of the house. The first thing to check is to make sure the soil on the outside of the bulkhead foundation is sloped away from both the house and bulkhead foundation so no water can collect against the foundations and seep down to the bad/failed seal. Since you cannot easily replace the bad/failed seal, the next step is to use a pick to remove as much of the bad/failed gasket as possible from the inside of the bulkhead. Then using a concrete etching solution, pour this solution in between the two foundations to clean the concrete by chemically making thousands of microscopic holes. Rince the area with clean water. Once dry, use a concrete sealing caulk to push into the now clean joint. Remember to push, not pull the caulk, so it can penetrate deep into the crack. Once dry, leak is sealed.

Another option is to clean the joint as described above, but also go an additional 3-4” out on the foundation walls with the etching solution. Rinse with clean water. Once dry, use a product like DryLoK to cover the seam and the 3”-4” on both wall surfaces. This will create a watertight bond

and will stop water from coming in. This works on both side and bottom seams of the bulkhead foundation.

If your bulkhead foundation is not poured concrete, but instead built out of mortared cinderblocks, follow the steps above, but also etch & rinse the inside walls. Once dry, apply DryLok to the walls as well as the seams to create a watertight bond.

MY DRYWELL IS CLOGGED & WON'T HOLD WATER

A dry well is a subsurface storage facility that receives and temporarily stores stormwater runoff from roofs of structures. Discharge of this stored runoff from a dry well occurs through infiltration into the surrounding soils. Older versions were just holes in the ground where the dirt was replaced by stone. The void spaces between the stone held the water. These systems can get easily clogged with organic debris. Using a product that has super concentrated blend (billions of bacteria count per gram) of bacteria and grease splitting enzymes can be useful in digesting the clog(s) and restoring the drywell back to working condition. These products are available at your local home center and/or plumbing supply house.

Newer drywells are actually called "recharger systems" and they use concrete boxes or plastic structures to create void space. These systems can store many times the amount of water as a same sized older system using only stone. Maintenance is still required but at a much lower level of necessity.

Many drywells now have an overflow relief that allows excess water in the drywell to flow out to daylight by means of a vent pipe connected to a pop-up emitter or just an open pipe. This way, if the drywell is undersized and/or clogged and will not store the water, it can release the excess from the system. If your system does not have one, it is a simple project to install one. Just locate the drywell and dig a hole from the surface down to the top of the drywell. Add a PVC pipe to vent excess water and backfill around the pipe. Cut the vent pipe at the soil surface and install a pop-up emitter to keep debris & ankles from getting into the pipe.

WHAT IS THE LAW IN CONNECTICUT IN REGARD TO SURFACE WATER

1. Hutchinson v. Town of Andover, 49 Conn. App. 781, 786, 715 A.2d 831 (1998). "The common-law rule provides that a person cannot gather surface water on his or her own land in an artificial volume and turn it onto a neighbor's land in an increased volume to the neighbor's injury. This rule also applies to governmental agencies engaged in highway maintenance. [General Statutes of Connecticut] Section 13a-138 (a) limits the liability for such water diversion only where the party charged with maintaining the highway complies with

the statute by draining the water in a manner that causes the least damage to the affected land."

2. Taylor v. Conti, 149 Conn. 174, 177, 177 A.2d 670 (1962). "A landowner cannot use or improve his land so as to increase the volume of the surface waters which flow from it onto the land of others, nor can he discharge surface waters from his land onto the land of others in a different course from their natural flow, if by so doing he causes substantial damage". https://www.jud.ct.gov/lawlib/Notebooks/Pathfinders/SurfaceWater.pdf

3. Most towns do not allow you to discharge your excess water over a city sidewalk or into a street. Towns will allow water to be discharged directly into a city storm sewer but only with proper permits and fees. If your pipe goes under a sidewalk, a surety bond will need to be pulled as well as a special permit and fee. This includes both drainage water as well as sump pump discharge. Not following proper protocol can result in fines and penalties from the town and/or the state.

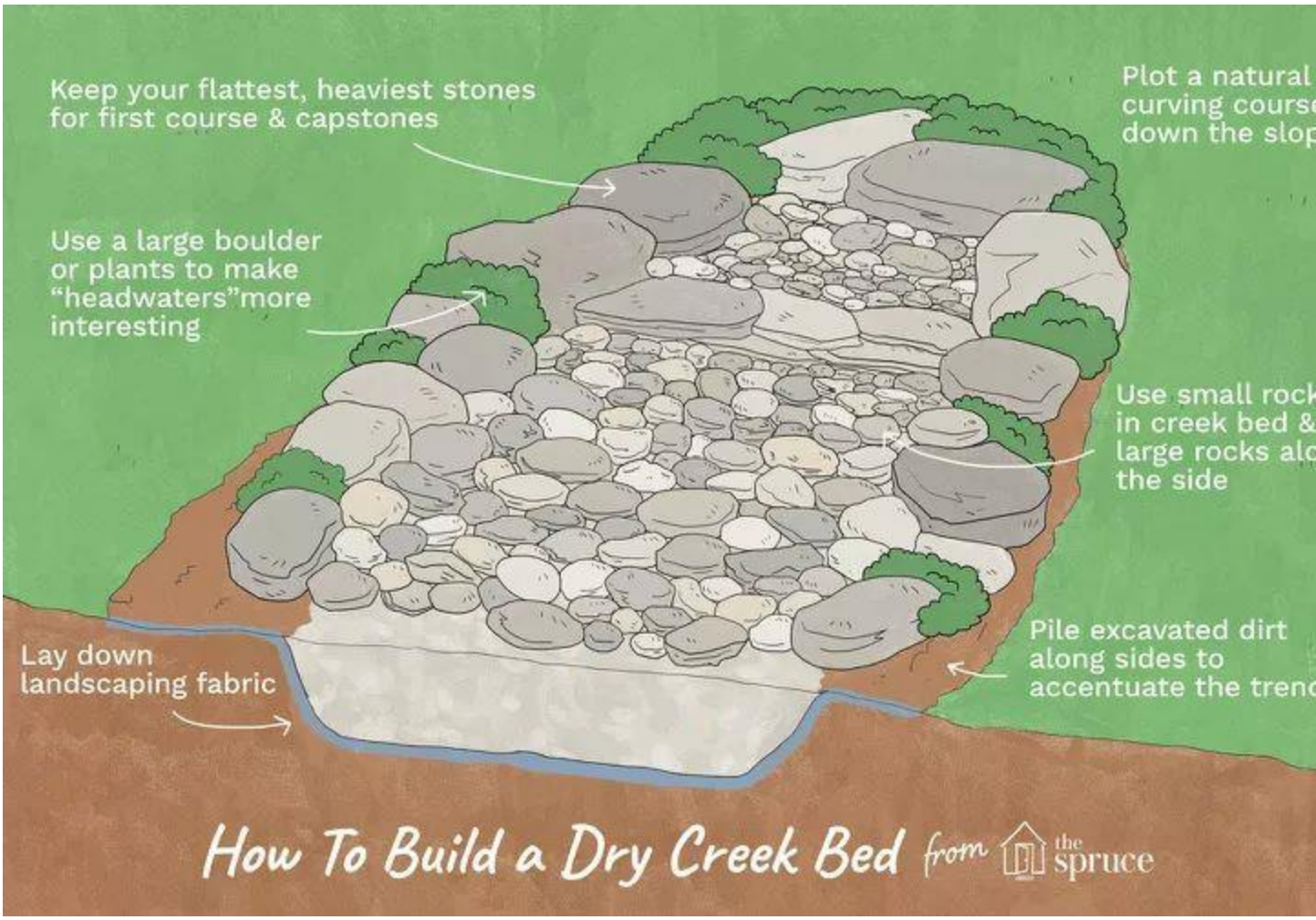
4. It is also illegal to put your discharge line to daylight at the properties edge, so the water goes directly onto a neighbor's property. Any discharge pipe that daylights need to be 10' from a property line.

GLOSSARY

1. **SWALE**

A swale is a wide, shallow ditch in which water can flow to a suitable outlet. The channel should be protected with grass or other vegetation. It also can be lined with appropriately sized stone to prevent erosion within the swale.

Stone is preferable in swales in which grass does not grow well due to shade or that are too steep or long for grass to prevent erosion. A swale lined with stone is sometimes called a dry creek bed. Stones used can be of varying sizes, with larger ones acting as stabilizers and smaller ones as fillers. Generally, the heavier the flows the larger the stones should be. Tightly woven landscape fabric should be placed below the stone lining.



2. **FRENCH DRAIN**

A French drain is an underground drainage device. It consists of a perforated pipe sometimes surrounded by gravel and lined with sturdy landscape fabric. A French drain conveys runoff underground to a suitable outlet. Downspout pipes and sump pump pipes can be connected to it, and a catch basin can be combined with it to help remove standing water. Deeper French drains can also be used to drain groundwater. Water in the pipe flows to a lower elevation and discharges.

Tips for building a French drain. Pre-assembled French drain options (such as NDS EZ-Drain) can save time and effort in installation.

A. Dig out a ditch where your French drain will go. A standard French drain ditch is about 1.5 feet deep and 10-12 inches wide, varying based on the size of the pipe chosen (usually 4-6 inches) and the desired depth.

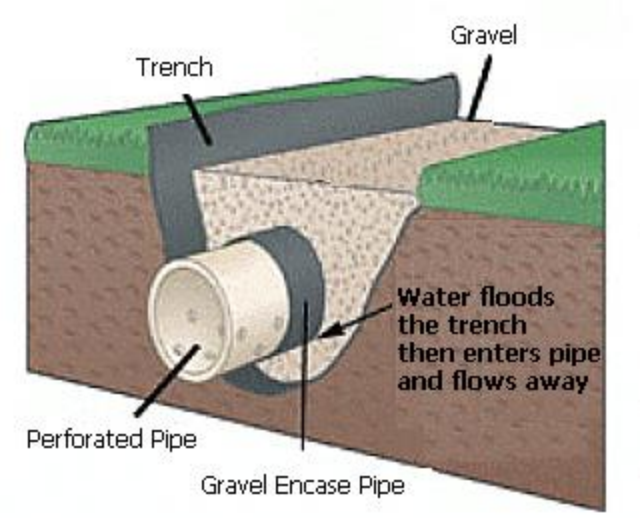
B. Line the ditch on all sides with landscape fabric to prevent soil erosion.

C. Place a layer of gravel at the bottom of the ditch.

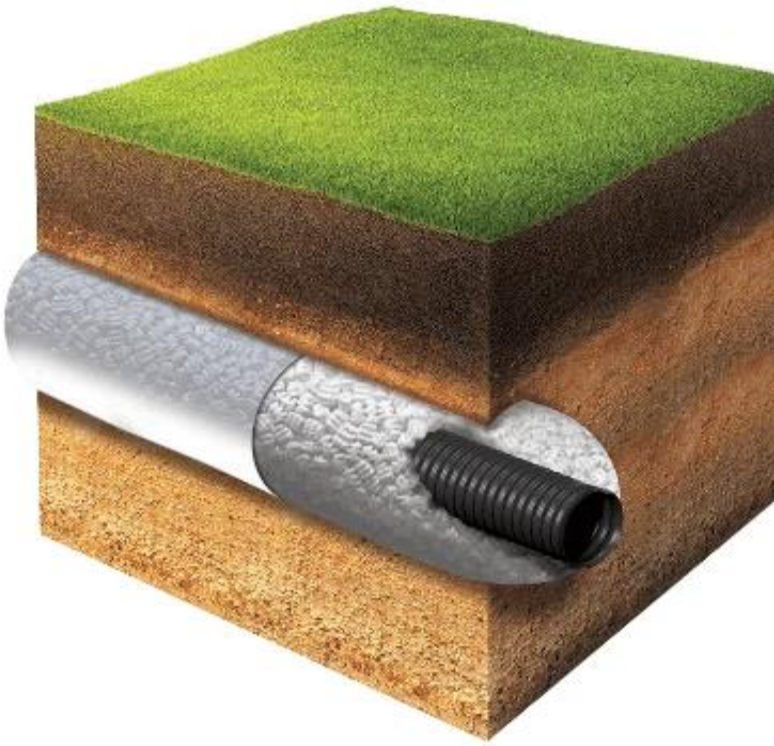
D. A perforated plastic pipe is laid on top of the gravel and surrounded by gravel on the sides and top. If there are 2 rows of holes, make sure they are facing down at the 5 & 7 o'clock position. This will prevent debris from entering the pipe and creating a buildup that can cause a clog down the road.

E. If topsoil and sod will be used to cover the French drain, the landscape fabric should be pulled over the top of the gravel before adding the topsoil to prevent the topsoil from eroding through the gravel and into the pipe.

F. If the gravel will be left exposed at the ground surface, the landscape fabric does not need to be pulled over the top of the gravel, but the edges should be protected to prevent sediment from entering the French drain system.



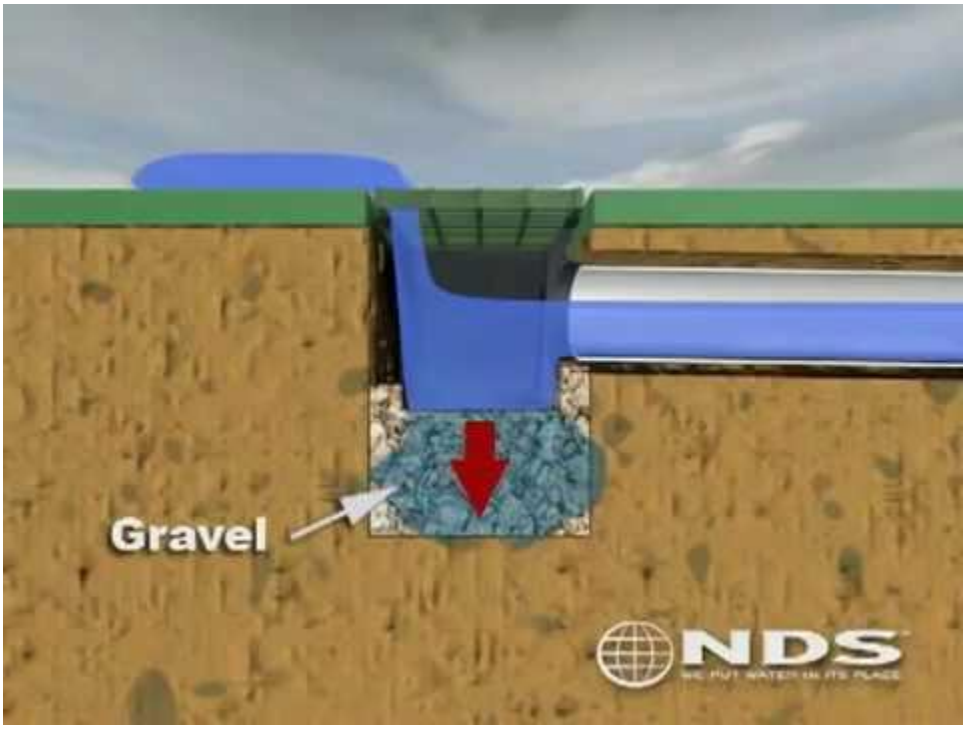
Engineered flow channels increase void space, creating improved water flow and greater storage.



3. **CATCH BASIN**

A catch basin is a collection box with a slotted drain at the top and a drainage outlet at the bottom or along the sides if it has a debris sump. Surface runoff enters the inlet, passes through the collection box,

and exits through the outlet into a buried drainpipe. The catch basin should be placed at a low spot on the property so that water naturally runs to it (a grassy swale can be built to direct runoff to the basin). The buried drainpipe should discharge to a suitable outlet.



4. **SPLASH BLOCKS AND DOWNSPOUT EXTENSIONS**

Splash blocks/diffusers and corrugated plastic pipe also can be used to direct roof runoff from downspouts or sump pumps away from foundation walls to a suitable area. These are available at all hardware and big box stores near you.

5. **POP-UP EMITTER**

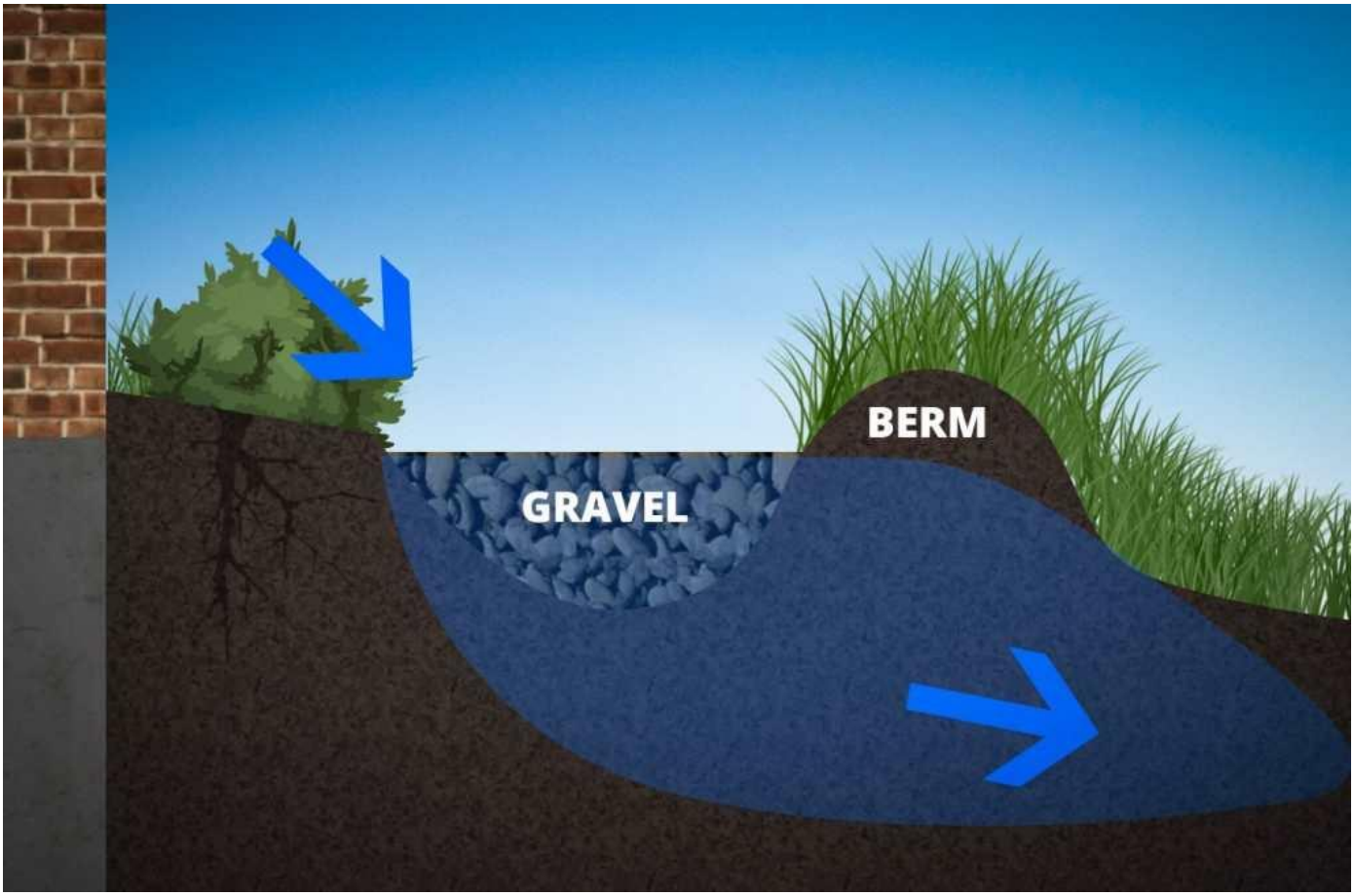
In most towns it is illegal to daylight a drainpipe onto a neighbor's property, on to a public sidewalk, or into a public roadway. One solution is to install a pop-up emitter at the end of a drainpipe near the edge of the property. The emitter blends very nicely into lawns. The top of the emitter is green colored, sits on the surface of the ground and is around 6" in diameter. If the drainpipe is carrying excessive amounts of water (like during a downpouring rain), the center of the emitter will pop up allowing the excess water to flow out onto the land where it will follow elevation downhill.

6. BERM

A berm is an easy way to redirect surface water from flowing into unwanted areas. They add interest and height to the landscape, especially in dull, flat lawn areas. Berms are simply mounded hills of dirt constructed for many reasons such as blocking out unwanted or unsightly views, directing or redirecting foot traffic or drainage, creating subtle and natural-looking privacy, adding raised elements to the garden, or simply emphasizing an area or focal point. They can be planted with grass or other plants, then covered in mulch or stone to prevent erosion.

Creating a Berm Creating a berm is not that difficult. Berms are often constructed using some type of fill, such as sand, plant debris, rubble or asphalt, and soil. Use the fill material for the bulk of the berm, if desired. Recycled objects can also be used in place of fill as long as the material is capable of retaining stability without deteriorating. Simply use the soil to form the berm around the object, firmly tamping as you go. You can use the soil taken when you dug out holes, but for more vigorous plant growth, the soil should also be amended with compost.

There are no special rules to creating berms; however, there are a few simple guidelines to follow that might make this endeavor easier. Before you begin construction of the berm, plan accordingly. Always consider drainage within the area surrounding the proposed berm as it may affect drainage patterns by redirecting runoff to other areas or if done incorrectly, encourage pooling after heavy rains by trapping water. Berms should observe the 1:4 rule. For every 1' you build up, the total width should be no less than 4' wide. This will make the berm blend into the landscape verses looking like a volcano.



7. **POINT SOURCE ERROSION**

This is where water is discharged or directed out of a pipe, culvert, swale and causes excess erosion. It is illegal in Connecticut to discharge a point source (pipe, culvert, swale) at the property line on to another property. Most towns require a 10' discharge setback to allow the point source water to become a sheet flow. Point source flow is more likely to move sediment and pollutants downstream. Care should be taken to help slow the water by use of angular stone called rip rap.

8. **WHAT IS SHEET FLOW DRAINAGE?**

It is a term used in the hydrology and civil engineering fields that simply refers to water flow or drainage over surfaces (either paved or unpaved, planted, or unplanted), rather than being diverted into channels, culverts, or pipes. Sheet flow does not cause anywhere near the type of erosion that point source does because, the force of the water is spread out over a larger area flowing in a thin, continuous film over relatively smooth soil or rock surfaces and not concentrated into a stream.

9. WHAT IS DRYLOK?

DryLok (or similar products) are a versatile masonry water proofer that can be applied interior, exterior, above or below grade. Guaranteed to stop water up to 15 psi and resists cat 4 (140+ mph) hurricane winds. Resists mildew on the dry paint film. It is available at most Home Centers nationwide. For more detailed information, go to the manufacturer's website www.DRYLOK.com

Coats: Minimum 2 coats Clean up: Soap and Water Coverage: 75 – 100 square feet per gallon

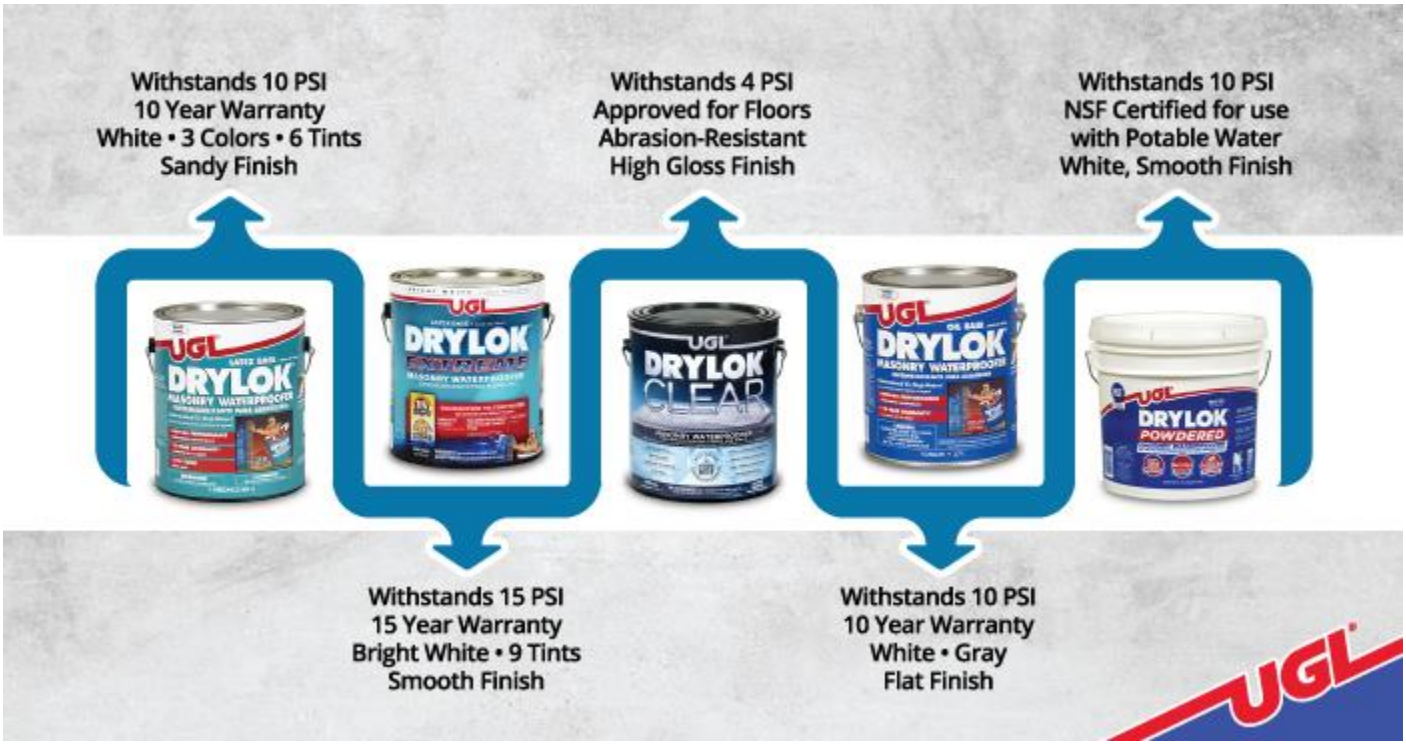
Dry Time: 45 minutes to touch, 2 – 3 hours to dry, 2 hours to recoat

Warranty: Fully transferable 15 Year Warranty Latex base (cleans up with soap water while wet)

Semi-Impermeable coating - keeps water and vapor out (<1 perm rating)

Can be top coated after 24 hours Tintable Application by brush, roller, or sprayer

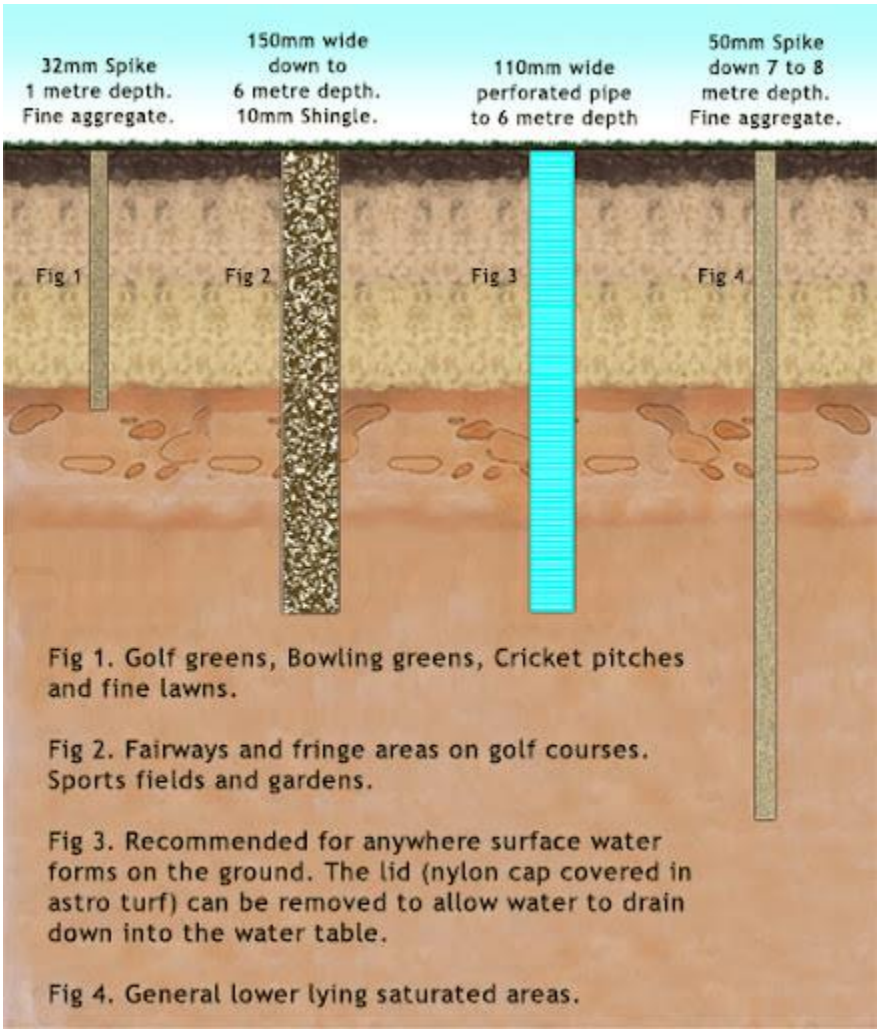
Reduces radon gas penetration



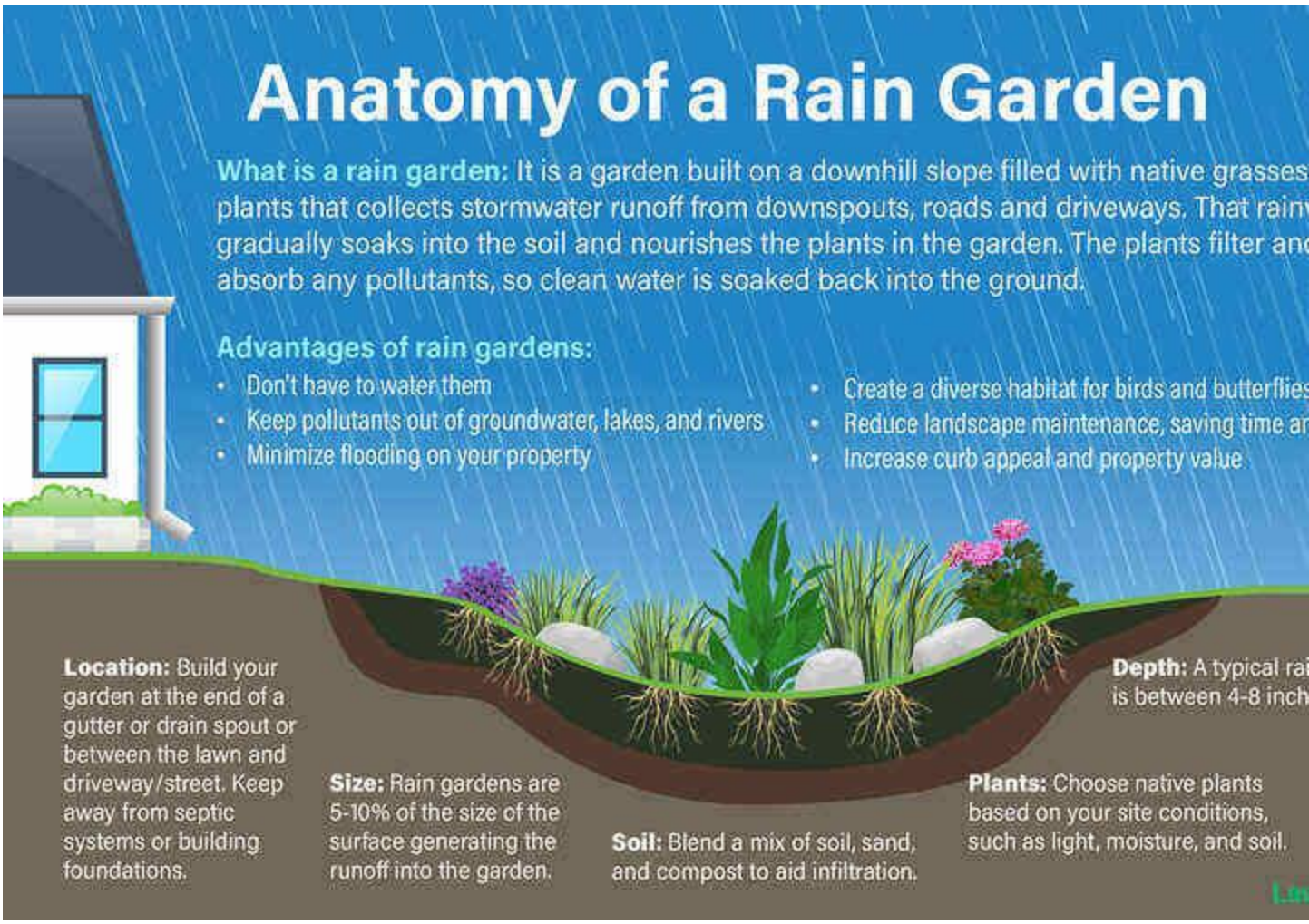
10. WHAT IS A VERTICAL DRAIN?

Vertical drain is created by digging a hole in the soil that goes down vertically 4'+. The soil is removed leaving a deep hole. Next a perforated PVC pipe (drill holes along the length of the pipe) that is slightly smaller in diameter of the hole that is dug. Wrap the pipe with 1 layer of nonwoven landscape fabric around the pipe to prevent dirt from getting into the pipe. Insert the wrapped pipe into the hole. Cut the top of the pipe so it is ½'" lower than the adjoining soil. Next install a surface drain over the top of the pipe. Now surface water will drain into the pipe and drop down into the

pipe where it will slowly leach into the soil. Since the bottom of the pipe is below frost line, this drain will also work in frozen weather. Use a shop vac to clean out any accumulated organic material as it builds up over time to prevent the drain from clogging.



11. WHAT IS A RAIN GARDEN?



FUN FACTS

1" of rain falling on 1 acre of ground is equal to about 27,154 gallons and weighs about 113 tons.

To calculate the runoff from any given rainfall:

1. Take the dimensions of the footprint of your roof/yard and convert them to inches. For our example: a 50' x 20' roof/yard is 600" x 240" = 144,000 inches
2. Multiply the roof dimensions by the number of inches of rainfall.
3. Next, divide by 231 to get the number of gallons (because 1 gallon = 231 cubic inches).
4. There is 623 gallons of water that will be produced from our example roof on a 1" rainfall event.
5. This is important to calculate because it dictates the volume of water that a "dry well" or "Recharger System" must be able to store or redirected.
6. This is why a buried single 50-gallon container for a drywell will fail. **Not enough volume of storage space**.

Another cool Fact:

If you dig a hole large enough to hold 1,000 gallons of water, but then fill the hole with crushed stone, the stone displaces 85% of the volume leaving storage room for only 150 gallons of water. This is why "drywells" or "Recharger" systems use re-enforced boxes, ½ pipes, or AquaBlox to create larger structural void spaces with lower displacement rates which can hold larger volumes of water in the same 1,000-gallon hole.

Go to https://www.youtube.com/watch?v=9ipkEmwxT5k to get a great visual of how much water comes from the sky.

Last Cool Fact:

To calculate what size pipe to use for your drainage system, use the information below for maximum gravity flow rates. (ID = Inside Diameter of the pipe GPH = Gallons Per Hour)

2" ID = 3,300 GPH 3" ID = 8,400 GPH 4" ID = 14,400 GPH 6" ID = 33,000 GPH

Mulching:

There are several types of "mulch" available in our area.

1. Pine or Redwood Bark Nuggets are only available in bags at local garden centers. They are on the expensive end but look very nice. The problem comes when the leaves fall. It is very difficult to clean the mulched beds without removing most of the nuggets.
2. Shredded Bark Mulch is the next in line for cost but is available in bulk or bagged. Some are dyed black, brown, or red. We do not supply or spread the dyed material due to color leaching during rain or irrigation events. **TJB-INC Landscape & Drainage Contractor only uses 100% Natural Hemlock Bark Mulch**.
3. Shredded Wood Mulch is the least expensive but is considered a waste product. Any non-timber wood, stumps, construction debris is put into a large tub grinder and shredded then dyed brown, black, red, blue, or green. This material is put into bags and sold at gas stations or home centers for $3.00 a bag. It is also available in bulk at some nurseries.

NOTE: If you have ever seen a dead tree, the white wood in the middle is the first to rot away and be consumed by wood loving insects. The bark is the last to go. Wood mulch that is sold is the white wood part of the tree (with some root material added in). This wood mulch is exactly what the carpenter ants and termites like to eat. Much to the delight of the pest control industry, homeowners love to put this product around their homes (because it is so cheap) but then call and complain about Carpenter Ants & Termites which keeps the pest control companies with continuing business. Another issue with wood mulch is there is (2) separate decay fungi that like this mulch.

1. The first is a slime mold that is called "dog vomit fungus". Dog vomit slime mold (Fuligo septica) might appear to be a fungus, but it's not. It's part of the protist, not fungi, kingdom. So, it's actually more closely related to an amoeba than a fungus. It is also known by another nickname—scrambled egg slime mold—because the fruiting body (the part you see) is light yellowish in color and looks a bit like scrambled eggs.

Dog vomit and other slime molds are saprophytic, which means they feed on decaying organic matter. You'll most often find them in moist, shady areas and on materials such as wood mulch, rotting logs, leaf litter, and untreated lumber. They're most likely to show up during warm, wet periods—sometimes seeming to pop up overnight. They are not diseases and won't harm your plants. Still, they are not something most people go out of their way to plant because they're not visually appealing. Plus, the spores can spread quickly and easily infest other areas, and they can survive for years.

2. The second is Artillery Fungus. You may have seen artillery fungus (Sphaerobolus stellatus) and not even know it. The fungus resembles scaly dirt or mud spots and is found on light colored housing, cars, and exterior surfaces. The name is derived from the Greek for “spear thrower” because of its ability to propel spores at quite some distance. Those annoying black spots that creep up your siding or splash along the side of your car may not be mud spatters but artillery fungus. What is artillery fungus? It is Sphaerobolus, a common fungus that sticks firmly to light or white colored surfaces and resembles spots of tar. Its adhesion properties are legendary, and the spots can be difficult or even impossible to remove without damaging the surface. This common fungus is often found in wood mulch, especially hardwood mulch, too.

   There is some suggestion that artillery fungus in mulch such as cedar and pine bark nuggets may occur less frequently than hardwood. It is most prevalent on the north side of a building and shoots spores towards bright light. This fungus produces a cup-shaped peridiole which contains fruiting bodies. When the cup fills with water, it inverts and shoots out the fruiting bodies. These are most obvious when attached to a light-colored surface, such as white housing siding. Once they attach, the fungus is very difficult to get off. It does no real damage to surfaces and is not a toxic mold. It is, however, unsightly, and difficult to remove.

TJB-INC uses a granular pre-emergent herbicide called “CREW” (similar to the consumer product called “PREEN” but much longer and wider control). This product is put down after the garden beds have been weeded and ready for mulch. It works by preventing seeds in the garden bed from germination. CREW contains dithiopyr and isoxaben as its two active ingredients. CREW effectively controls and kills a wide range of broadleaf weeds and grasses. This pre-emergent herbicide works against over 120 types of grassy and broadleaf weeds. Its ultra-low dust granules leave no stain after use. Preemergence herbicides prevent germinated weed seedlings from becoming established; either by inhibiting the growth of the root, the shoot, or both. The herbicide must be incorporated into the soil via rainfall or irrigation and be present when the weed seeds are germinating to be effective. The application will not affect any established plants, only seeds saving hours of unwanted weeding of your garden beds.

To calculate how much mulch you will need, measure the square footage of your garden beds. 1 cubic yard of mulch will cover 100 sqft/3” thick or 162 sqft/2” thick or 108 sqft/1” thick.

100% Natural Hemlock Bark runs $160.00 per cubic yard delivered & Spread with a 4-yard minimum
CREW Herbicide is put down at a rate of 0.344 lbs. per 100 sqft at a cost of $25 per 100 sqft applied ($100.00 minimum)