SAS SERVICES
For a Dry Healthy Home™

SAS Solutions For Your Home:

Basement Waterproofing • Crawl Spaces
Foundation Repair • Plumbing • Concrete • Brick Repair
Tuckpointing • Roofing • Gutters

Financing Available • License and Insured • Workmanship 100% Guaranteed
Servicing Southeast Michigan for over 30 years

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5800 East Ten Mile Road
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SAS SERVICES
For a Dry Healthy Home™

John F.
Crew Leader
since 1999

Over 25,000 Satisfied Customers In:
Basement Waterproofing,
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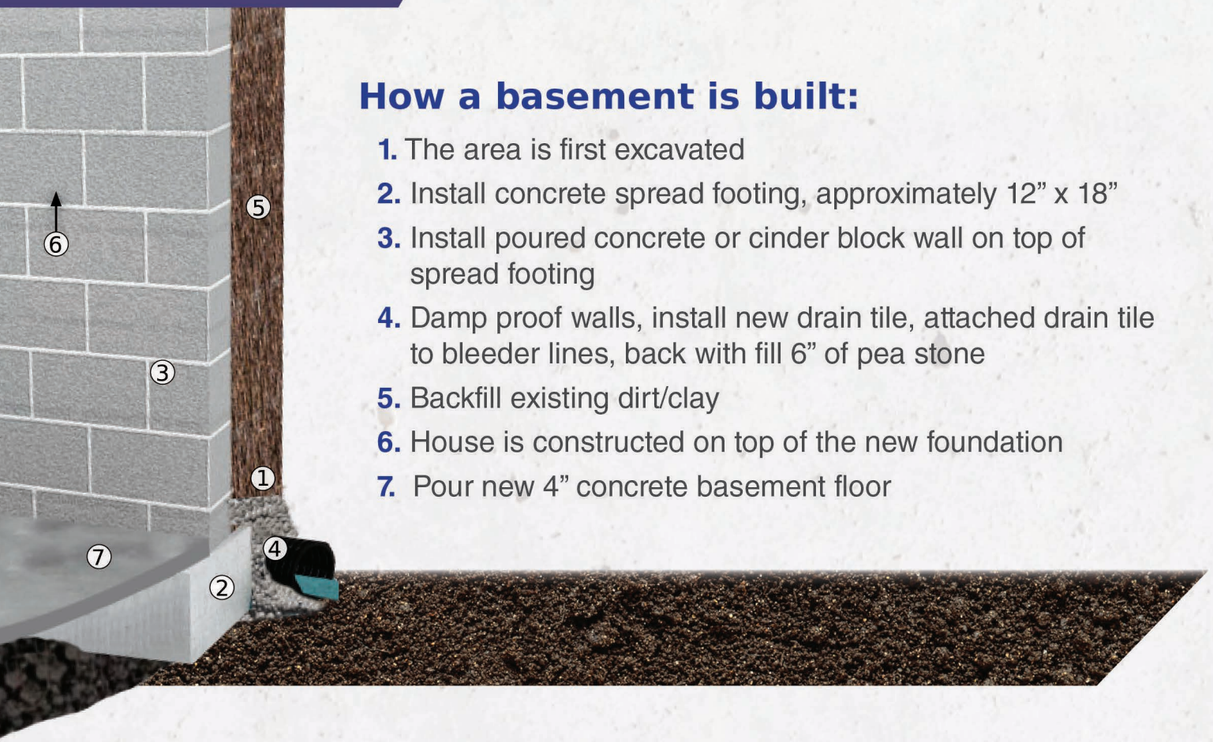
SMART Clean-Out SYSTEMS
PATENT NO: US 7,614,192 B2

BBB ACCREDITED BUSINESS

Handyman Show with Glenn Haege

Basements



How a basement is built:

1. The area is first excavated
2. Install concrete spread footing, approximately 12” x 18”
3. Install poured concrete or cinder block wall on top of spread footing
4. Damp proof walls, install new drain tile, attached drain tile to bleeder lines, back with fill 6” of pea stone
5. Backfill existing dirt/clay
6. House is constructed on top of the new foundation
7. Pour new 4” concrete basement floor

Types of Basements

There are basically three types of basement foundations, poured concrete and cinder block.

Poured Concrete Wall

Poured concrete walls are formed on top of a concrete footing. Metal rebar is set in the concrete for added strength or tie rods are placed during the pouring to maintain the wall’s form while it cures. Poured walls are more expensive to construct, but have superior strength than cinder block walls.

Cinder Block Wall

Cinder block basements, like poured concrete, are also built upon a concrete footing. Once the footing is created; the blocks are stacked in a row and held together with a cement mortar. After the construction of the walls, concrete or metal re-bars may be added for extra strength.

Monolithic Foundation

Monolithic basements are unlike most of the foundations, the walls do not sit on any sort of footing. Instead, a solid slab of concrete is first poured, extra concrete is poured in the load bearing areas. Then the walls of the basement are laid with cinder blocks held together with concrete cement.

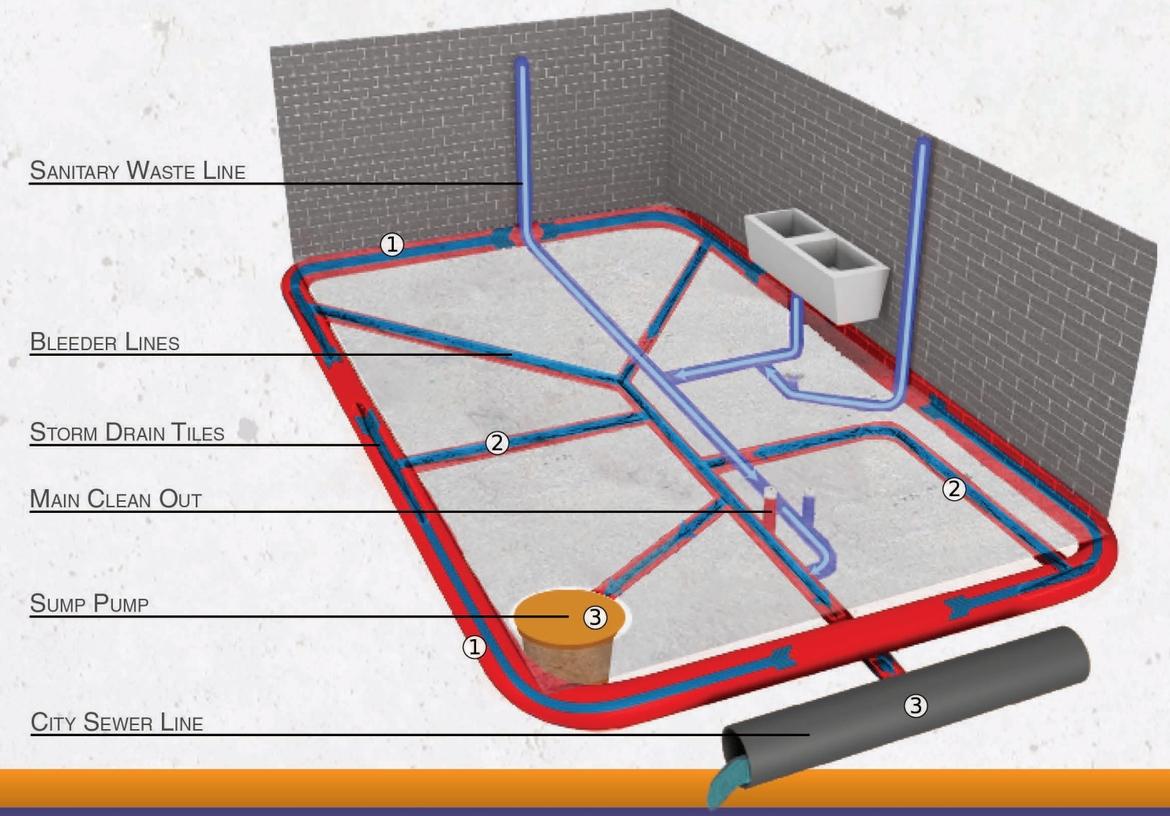
How Basements Work

How a basements existing drain tiles work

Basement drainage systems are composed of two different pipe arrangements, sanitary and storm. Sanitary is for the waste water collected from the house. The storm is an exterior/interior original drain system that was installed during the construction of the home.

Depending on how or when your house was built, the rain water will end up in the sewer line, storm drain, or sump pump. Waste water will go to the either the main sewer line or septic tank.

1. Heavy rain and groundwater are collected by the drain tile that surrounds the foundation of the house
2. Water travels through bleeder lines which are located under the footing of the foundation
3. Water travels through existing drain tiles beneath the basement floor outside to the main sewer line, storm drain, or sump pump



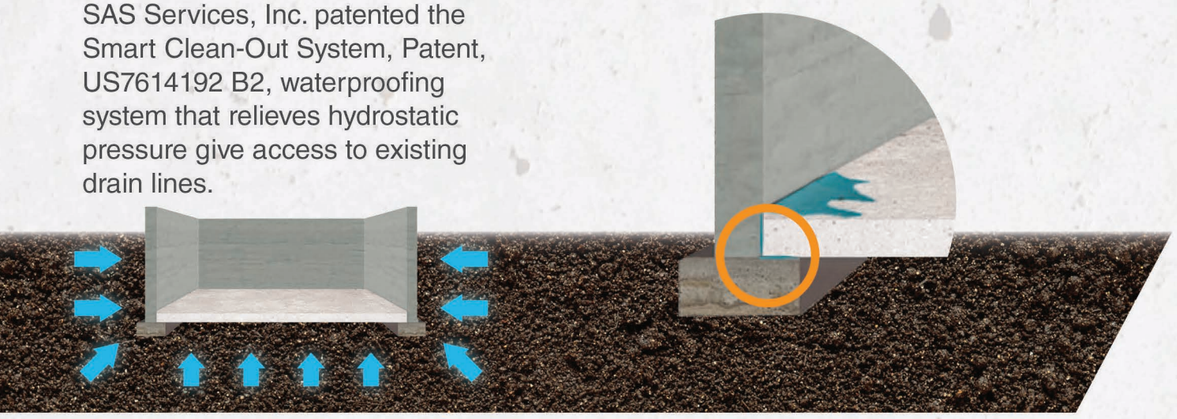
Why Basements Leak

Hydrostatic Pressure

Even a perfectly constructed basement foundation can't provide a perfect barrier against hydrostatic pressure. Small cracks and gaps can allow a major volume of water into your basement. That's why SAS Services, Inc. patented the Smart Clean-Out System, Patent, US7614192 B2, waterproofing system that relieves hydrostatic pressure give access to existing drain lines.

Cold Joint

This is the area where the basement footing and wall meet. The wall and the floor sit on the footing without any type of bond, this creates a natural point of entry for water.



Where Water Enters a Basement

1. Top of the Wall
2. Window Wells
3. Wall Cracks
4. Tie Rod Holes
5. Honeycomb
6. Chimney Clean-Out
7. Mortar Joints
8. Floor Cracks
9. Sump Pump
10. Floor Drain
11. Floor & Wall Joint
12. Plugged Drain Tile

Exterior Waterproofing

Choosing the right system

Sometimes it is impractical or undesirable to waterproof a basement from the interior. Common examples include seepage over the top of the foundation, porous concrete walls or instances where the basement is finished.

Exterior waterproofing methods address the problem from the "positive side" by excavating and applying a thick coat of tar, drainage board, and adding new drain tiles with the SAS Services Patented Smart Clean-Out System, Patent, US7614192 B2, to help alleviate excess water around the foundation.

If you have a finished basement or your basement walls bowing or severely fractured, waterproofing from the exterior may be a favorable method.

What SAS Services Will Do:

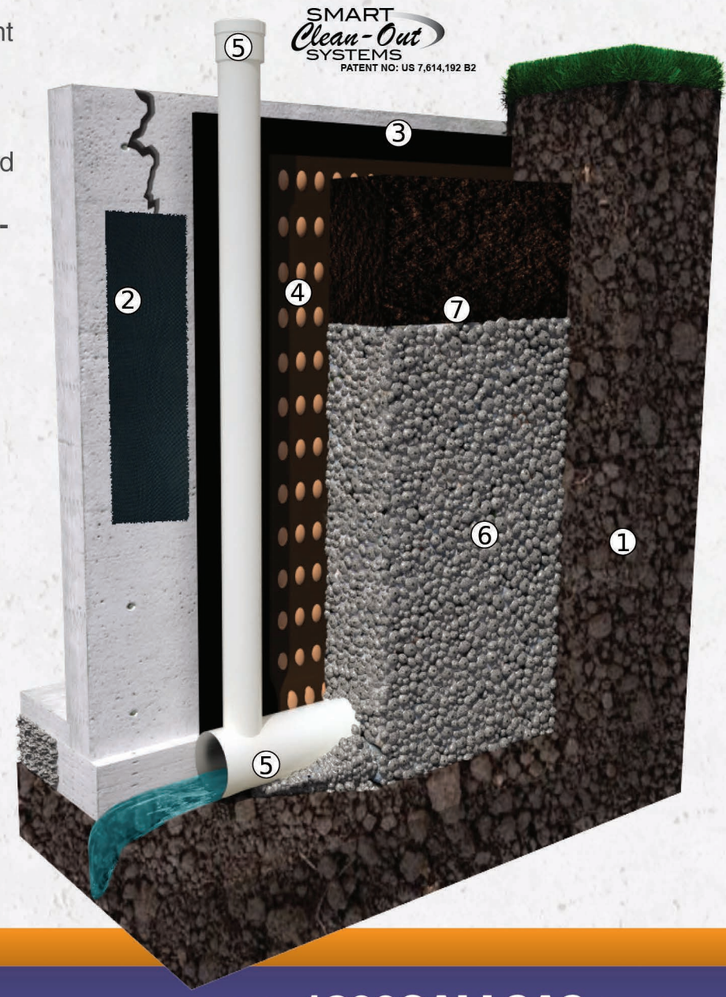
1. Excavate soil next to the basement down to the footer and clean wall
2. Hydraulically cement cracks
3. Apply mastic tar adhesive
4. Apply DELTA®-MS drainage board
5. Install new drain tile with **SAS Services Patented Smart Clean-Out System, Patent, US7614192 B2**
6. Back filled with up to 75% stone
7. Finish with landscaping fabric and top soil

DELTA®-MS

DELTA®-MS is a highly effective foundation protection system, based on a uniquely shaped air-gap membrane. It reliably keeps ground moisture away from the foundation wall – a key factor in achieving a permanently dry basement.

The Results

SAS Services Patented Smart Clean-Out System, Patent, US7614192 B2, will provide you with a dry healthy home.



Interior Waterproofing

SAS Weather Shield System

One of the most common basement waterproofing problem is when the source of seepage is at the cold joint, where the floor and wall meet. Often this is caused by hydrostatic pressure, which occurs when the water table rises after prolonged rain or snow melt and forces water underneath the footing and up into the basement.

SAS Services Patented Smart Clean-Out System: (Patent, US7614192 B2.), along with our interior drain tiles, help relieve hydrostatic pressure around the homes foundation. This system provides an easy path for water to escape to the existing bleeder lines, storm drain or sump pump. **This patented system has a lifetime warranty.**

What SAS Services Will Do:

1. Prep job by covering items, floor and carpet, etc.
2. Open the floor approximately one foot from the wall
3. Remove concrete and dirt next to the footing
4. Install a bed of natural stone
5. Install new drain tiles and pitch towards existing bleeder line, storm sewer line, or sump basin
6. Install, **SAS Services Patented Smart Clean-Out System**,**Patent, US7614192 B2**
7. Back fill with natural 6A stone on top of the drain tile
8. Drill weep holes into cinder block
9. Install cove plate where the wall and floor meet
10. Re-pour basement floor with concrete using hydraulic cement for added strength

Exterior Drain

Mold Control

Mildew or mold grows on natural and damp organic materials and can begin to grow in as little as 24-48 hours after water gets into contact with these materials. The cause of dampness could be flooding, water leaks, and higher levels of humidity. Poor ventilation is the main reason basements are always damp and more susceptible to mildew growth than other places in the house.

Tie Rod Holes

SAS Services will locate all tie rod holes that are leaking.
We will clean them out using hammer drill or screw driver. We will then apply a combination of polyurethane and tie back-stop to the tie rod hole. Once tie rod hole has been successfully plugged, the process is finished polyurethane masonry sealant.

Structural Cracks

SAS Services will seal all wall cracks with a specialized bonding agent. Once sealed, brass ports will be installed near the crack and injected with a water resistance two part polyurethane that expands and solidifies using and high pressure injection machine up to 3000 psi to ensure the entire crack is filled.

Perforated Sump Basin
Perforated basin collects ground water, alleviating hydrostatic pressure.

Sump Pump
Made of cast iron and clog resistant. This pump is entirely pressure tested after assembly.

SumpJet
This unique product is powered by your municipal water supply and requires no electricity to operate.

Sump Pump Alarm
Alerts you when your main sump pump is not powered and water back up is activated

Back Water Valve
This device effectively protects sewer and storm drain water from entering your home.

SAS Smart Clean-Out with Draintile
Perforated PVC pipe collects excess water from the ground, alleviating hydrostatic pressure.

Cove Plate
Plastic molding that prevents water from entering through the cove joint (where floor and wall meet).

SAS Seal
Plastic molding that prevents water from entering through cracks and rod holes protecting basement finishings.

Crack Injection & Tie Rod Holes

Tie Rod Holes

Tie rod holes result from the original construction of your home.

Concrete forms are hand built from wood and held together during the cement pour with 5/8 steel rods every 18 inches by two rows being approximately one foot high from the floor and five feet high. Aligned vertically with each other, the two rows are left after the removal of the forming walls and rods. These holes (commonly called rod holes) are one of the most common of all basement leak problems. If your home has tie rod hole leaks, they can be repaired permanently with our proprietary approach.

What SAS Services Will Do:

1. Locate all tie rod holes that are leaking
2. Bore defective rod holes
3. Apply a combination of polyurethane and tie back-stop to the tie rod hole
4. Once tie rod hole has been successfully plugged, the process is finished polyurethane masonry sealant

Cracks and Structural Cracking

These can be the results of a single or a combination of factors such as drying shrinkage, thermal contraction, restraint (external or internal) to shortening, sub grade settlement, and applied loads. Cracking cannot be prevented but can be significantly reduced (or controlled) when the preventative steps are taken.

What SAS Services Will Do:

HIGH PRESSURE INJECTION REPAIR

1. Cracks are first sealed with a specialized bonding agent
2. Brass ports are installed near the crack and injected with a water resistance two part polyurethane that expands and solidifies using and high pressure injection machine up to 3000 psi to ensure the entire crack is filled

Rob K. - Injection Special since 1995

STRUCTURAL REPAIR

Some structural cracks are best repaired with an epoxy method.

1. The epoxy is injected at a low pressure and takes a few hours to cure
2. Once cured, the epoxy has a compressive strength of 12,000 psi, higher than that of most concrete basement walls

Crawl Spaces

SAS Services crawl space solutions:

You may need one or more of the following solutions to correctly solve your crawl space issue.

Flooded and damp crawl spaces can quickly lead to major problems in the home. Resulting in unhealthy air circulating in the home, such as mold, mildew, and allergens; on top of that, a home with a wet crawl space is going to be extremely difficult to sell at a good value.

The water built up in the crawl space can cause the floors to sag, leading to permanent foundation damage and can invite unwanted pests in to your home.

Replacing a rotting crawl space is extremely expensive. If they're repaired before the damage is severe it will be a fast and cost-effective repair.

Interior Waterproofing

SAS Services will install interior drain system with a new sump pump, removing excess water from the foundation of the house.

Insulation

SAS Services will insulate with non-water sensitive insulation. This insulation barrier will prevent the encapsulation from contacting the surface of the walls and keeping the area temperature controlled.

Encapsulation System

Install a SAS Seal to the floor and walls of the crawl space, completely separating ground moisture from the rest of your house and preventing the soil beneath your home from over drying that causes foundation settling.

Stabilizing System

Straightening and adding floor joists to the center beam of the house or where needed to support to the floor above the crawl space.

A functioning crawl space will create a healthier living environment, protect the foundation, and increase the value of your home.

Foundation Repair

Signs of Foundation Issues

Stair-step cracking or any type of cracking in your brick or concrete block wall is a sign of foundation settlement. Allowing your home to settle further, vertical crack may widen, signifying that your walls are rotating outward.

SAS Services foundation solutions:

Helical Pile

CHANCE

Turning helical (screw) piles or in to stable soil to accommodate the excess load around the foundation. The piles are selected and spaced at proper intervals to support each specific area. This is a proven solution for foundation repair.

SAS Services has been awarded certification from Chance (R) Helical Pile Foundation Systems. Since 1912, Chance has been the international leader in earth anchoring.

Carbon Fiber Straps

FORTRESS STABILIZATION SYSTEMS

This is a highly effective way of adding strength to a concrete or block wall. Bonding carbon fiber straps to a wall will help prevent further cracking and bowing in the foundation.

SAS Services is a certified installer of Fortress Stabilization Systems of carbon fiber/kevlar products.

i-Beam Installation

Securing steel beams to the foundations footing and the above structure. I-Beams are ideal for straightening and stiffening a foundation wall that has bowed or tilted inward. Securing steel beams to the foundations footing and the above structure. I-Beams are ideal for straightening and stiffening a foundation wall that has bowed or tilted inward.

Block Wall Replacement

When your block wall is too damaged to repair with the alternatives mentioned. The house is safely raised and supported while the damaged wall is removed and replaced with reinforced block wall. SAS Services standard is to grout the wall every 4 feet using .5” re-rod.

By repairing your foundation will eliminate any further damage and uphold the value of your home. SAS Services has been repairing foundations for over 30 years.

Pumping Systems

Sump Pumps

ZOELLER PUMP COMPANY MADE IN USA

Zoeller sump pump - Cast iron switch case with motor and pump housing. No sheet metal parts to rust or corrode. No screens that will clog. This pump is entirely pressure tested after assembly.

Battery Back-up Sump Pumps

In the event of a main pump failure or power outage your battery powered back up sump will automatically activate.

SumpJet Water Powered Back-Up Pump

LibertyPumps

Liberty Pumps’ SJ10 SumpJet is powered by your municipal water supply and requires no electricity to operate! With a compact high efficiency design, This water pump removes 2 gallons of sump water per 1 gallon used.

SumpJet Water Powered Back-Up Pump

When the main sump pump, battery back-up or water back up shuts off, an alarm warns you when your water-powered back-up pump is activated.

Sump Pump Basin

SAS Services supplies perforated sump pump basins surrounded by natural stone for maximum water flow. This helps alleviate hydrostatic pressure.

Back Water Valve

This unique device offers effective protection against the backflow of sewage and storm water into homes and businesses. Under Normal Operation, the lightweight flapper opens and allows waste water to exit to sewer line.

During a backflow, the flapper seals closed, stopping the flow of sewer water from reaching interior drains entering the basement.