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Company Overview

Granite Inliner was formed in 2018 through a series of mergers and acquisitions of several of the industry’s leading wastewater infrastructure renewal companies and is a wholly owned subsidiary of Granite Construction, one of the nation’s largest diversified heavy civil contractors and construction materials producers.

Granite’s nearly 100-year success is due largely in part to the continued commitment to safety standards and practices.

As an established leader in the infrastructure renewal industry with 17 offices and more than 800 employees, Granite Inliner has the financial strength, industry expertise, staff leadership, and technical capabilities to meet nationwide demand.

With offices across the U.S., Granite Inliner proudly serves municipal, industrial and institutional clients with the experience and diversity of solutions designed to meet the unique needs of any rehabilitation effort. From our flagship Inliner® brand Cured-In-Place Pipe (CIPP), to our glass-reinforced Inliner STX® UV-cured liners, we can address a broad range of both gravity and pressure pipeline applications—selecting the RIGHT solution for your wastewater and stormwater infrastructure problems.

Granite Inliner champions Single Source Accountability in providing our customers with all services and associated materials, equipment, and labor to execute single or multiple projects of varying scope and size.

CORE SERVICES
• Cured-in-Place Pipe (water, steam and UV-cured)
• Manhole Renewal
• Lateral Lining
• Sectional Lining
• Water Main and Pressure Pipe Lining
• Geopolymer Installations
• Liner Tube Manufacturing and Supply (through our sister company, Liner Products)

SUPPLEMENTAL SERVICES
• CCTV and Pipe Cleaning
• GIS Integration
• Chemical Grout
• Rehabilitation Assessments

Headquartered in the Midwest, Granite Inliner serves all regions of the U.S. and Canada.

Granite Inliner operates 17 service offices throughout the U.S. and Canada.
Granite Construction’s journey into wastewater pipe rehabilitation began six years ago with the acquisition of Kenny Construction, and took a big leap forward with the 2018 acquisitions of LiquiForce and Layne Inliner.

From Kenny Construction’s near 100-year-old history and LiquiForce’s stronghold on the Canadian market, to Layne Inliner’s longtime position as a U.S. market leader in CIPP installations—the convergence of these three companies will undeniably reshape the trenchless rehabilitation market.

Providing even further added value is the incorporation of the Inliner Technologies R&D operations and Liner Products CIPP lining manufacturing to the Granite Inliner family of companies.

This vertical integration allows us to control the QA/QC of raw material purchasing, design, manufacturing and installation. With this organizational structure, we are able to provide our clients Single Source Accountability as well as added quality assurance and control.
Layne Inliner
At the time of the merger in 2018, Layne Inliner was a wholly owned subsidiary of Layne Christensen and the second largest Cured-in-Place Pipe (CIPP) lining company in the United States. Beginning as the first U.S. licensee of the Inliner® technology in 1991 as a division of Reynolds Inc., they later acquired the technology company, Inliner Technologies, and started their own lining tube manufacturing business, Liner Products. This vertical integration gave Layne Inliner the control of the Inliner® product from raw material purchases to product installation and set them on a track for steady growth throughout the Midwest, Northeast, Southeast, Texas and Colorado.

Kenny Underground Group
Headquartered in the Chicago suburb of Bedford Park, Illinois, the Kenny Underground Group was one of three business units of Kenny Construction Company and a wholly owned subsidiary of Granite Construction, Inc. since 2012. The Underground Group emerged as one of the national leaders in the underground infrastructure industry over the past 30 years and was an original licensed installer of Inliner® CIPP for nearly a decade.

LiquiForce
As a privately held company headquartered in Kingsville, Ontario, LiquiForce maintained Canadian operations, serving all provinces, as well as U.S. operations located in Romulus, Michigan. Over the last 30 years they became a leader in no-dig pipeline rehabilitation for clean water, wastewater and other pipeline systems in Canada and the Midwestern U.S.
Industry Service

Industry Dedication
Granite Inliner is dedicated to delivering added value to our customers by providing the most reliable solutions for the best economic value. Our single-source accountability through the vertical integration of our R&D, manufacturing and installation operations is key to the strategic advantages gained by our customers.

Benefits include increased project and cost efficiencies, greater control over schedules, a streamlined resolutions process, and greater communication fluidity between design, manufacturing and installation phases of the project.

Research & Development
Granite Inliner’s management and project teams are experienced, skilled and focused on improving the return on investment for each and every customer. It is the standard that Granite Inliner upholds with every customer on every project. Our pursuit of process and quality enhancements for benefiting our customers has also resulted in development of an extensive portfolio of services.

Granite Inliner’s commitment to research & development begins with Inliner Technologies, the technology developer of Inliner® CIPP. Inliner’s innovations are creating a bright new future for wastewater system renewal. Year after year, we invest significantly in new technologies, equipment, methods and materials to drive the advancement of cured-in-place pipe products for the betterment of the industry. Recent innovations include Inliner STX®, our UV cured-in-place pipe product. We’ve also recently made great strides in custom solutions for large-diameter steam-cured culverts and gravity pressure pipe applications. We continue to push and improve the product to perform higher than our customers’ greatest expectations.
Industry Service

Commitment to Industry Advancement
Through the support of educational endeavors and the investment in research and development, Granite Inliner is at the forefront of driving industry advancement. As active contributors over the past 30 years, our staff leads and supports technical education specific to the piping renewal industry and is actively engaged in multiple groups and committees within NASSCO, WEF, ASTM, and the AWWA.

Advancing the industry’s technical profile has included, but is not limited to, our development and implementation of Prep-From-the-Main (PFM), lateral liner installation, inversion units and towers, catalyst mixers, UV deployment trucks and thermal imaging technology, and many other equipment and installation method improvements.

Strategic Industry Partnerships
The longstanding strategic relationships that we maintain with key industry partners serves to ensure total accountability for scope completion. Our strategic partners are held to the same high standards as Granite Inliner and they serve in essential support roles both on and off site. These time-tested relationships have added consistency to project workflow, increased efficiencies, and stabilized subcontract pricing.

In addition, Granite Inliner is strongly committed to the utilization, nurturing and growth of small and disadvantaged business enterprises. Throughout our organization, project teams have invested time and expertise in mentoring these diverse entities in establishing strong, highly effective companies.

Construction Management
In addition to a robust portfolio of services and engineering support, Granite Inliner offers construction management (CM) services. Our construction management teams specialize in a variety of trenchless technologies and provide our customers with project oversight, planning, and execution from pre-construction to project finish.

Project Team Support
In order to best serve our customers, support of our project teams is a cornerstone of our service portfolio. Granite Inliner provides in-house, complimentary technical and engineering support at all times. Regardless of project size or duration, our staff is prepared to provide expertise in the resolution of product or installation issues.

Post-Project Service
Our project teams are designed to be an extension of the customers we serve. As such, our crews are positioned to support customers after the project is completed. This service-oriented philosophy has led to numerous negotiated contract renewals and extensions of services to support internal maintenance groups.
Granite Inliner operates in diverse vertical markets.

Although primarily engaged in municipal projects nationwide, our teams also provide sustainable waste, process and storm water system renewal solutions for clients in institutional and industrial settings.

Regardless of market sector, Granite Inliner provides the operating flexibility and experience to accommodate the needs of public and private customers under traditional or alternative contracting methods.
Portfolio of Services

Granite Inliner maintains one of the most comprehensive service portfolios in the piping infrastructure renewal industry. Our investments in technology, training, equipment, and most importantly, people, has culminated into the development of a best-in-class organization.

Whether engaged in small short-term lining projects or large-scale lengthy ventures, our teams deliver consistent results regardless of renewal method or volume. Granite Inliner is a vertically integrated organization offering one of the most extensive portfolios in the industry.
Applications
Granite Inliner teams have successfully installed more than 35 million feet of Cured-in-Place Pipe (CIPP) throughout the United States and Canada. Performing project work in various geographic and climatic conditions, our teams have rehabilitated both circular and non-circular piping structures ranging from 4” to 120” in diameter.

Installation
CIPP technology allows for the rehabilitation of damaged underground wastewater and storm sewer pipes without excavation. The process minimizes disruption to the public by reducing noise, traffic disturbance, and road damage—and can be done within a far shorter time frame, and usually for less cost than replacement. With Inliner® CIPP, a felt tube saturated with resin is inserted into the pipe via inversion or the pulled-in-placed method of installation.

After the liner is in place, a suitable heat or UV light source is required to cure the pipe liner.

For traditional felt tube cured-in-place pipe projects, the equipment should be capable of delivering hot water or steam throughout the section to uniformly raise the water or steam temperature above the temperature required to affect a cure of the resin. The temperature profile is closely monitored to produce the optimum installed physical properties.

In the UV curing process, the liner is pressurized with air to ensure total expansion of the tube up against the host pipe. This allows the mechanical string of UV lights, commonly referred to as the light train, to move freely through the liner at a predetermined rate of speed, curing the liner in place.

Resin types include enhanced (filled), polyester, neat polyester, vinyl-ester, and styrene-free.
Liner curing is a very critical step in the process, with a limited margin of error. It is closely controlled by expert field leadership and experienced crews to ensure optimum installed physical properties. Curing is completed using hot water, steam, or ultraviolet light (UV-cured), based on project specifications and customer requirements.

Curing time is dependent upon a number of variables including pipe diameter, curing method (steam, water, UV-cured), liner thickness, and weather—to maintain uniform temperature throughout the liner while curing.

Maintaining the highest standards of workmanship within the industry has propelled our team to advance technological efforts to ensure the best possible installation results. This is especially true for our CIPP projects.

Granite Inliner teams have installed over 35 million feet of CIPP liner ranging from 4" to 120".

Inliner® CIPP - Benefits for Our Customers

The CIPP process is highly cost effective compared to traditional pipe replacement, with a realized cost savings of 40 to 50 percent. In some cases, the cost variance alone is a determinant as to whether or not a water or sewer system gets renewed.

The CIPP lining installation rate is five times faster than full pipe replacement. Granite Inliner crews maintain a small, efficient construction footprint at project sites, which helps to significantly reduce public inconvenience and environmental impacts.

One of the most value-added benefits for our customers is the increased protection of persons and property within their communities. Since CIPP lining is completed underground, from manhole to manhole, it greatly reduces the risk associated with traditional pipe replacement.
Eliminating the unknown subsurface conditions during liner curing has greatly increased our installation quality control. In addition to continual monitoring of temperature readings at boiler trucks, our team has implemented new fiber optic monitoring technology. Where earlier efforts provided readings at intervals of 200 to 300 feet using thermocouple measuring devices at manhole access locations, our thermal imaging system now enables the monitoring of the curing process along the entirety of the pipe run at 6-inch intervals.
Applications
Keeping pace with industry demand for services and technological advancement, the Granite Inliner team has provided sustainable UV-cured solutions for a number of rehabilitation applications for sanitary, stormwater, industrial and pressure pipelines.

Installation and Timing
Using Inliner STX®, a fiberglass, ultraviolet light-cured liner, the UV-curing process can be applied to pipes with diameters in the range of 6” to 48”.

Inliner® UV-Cured CIPP Lining

Benefits for Our Customers
Our proven UV-cure lining technology is eco-friendly, eliminates the cool-down time associated with traditional thermal cure liners, allows for increased hydraulic capacity, and provides liners with uniform wall thickness.

Environmental Benefits
- Reduced water use
- Small carbon footprint
- Styrene barriers in place

Physical Properties
- Fiberglass reinforced tubes
- Reduced wall thickness designs
- Flex Modulus of 1,000,000 psi +

Installation
- Pre-cure visual inspection of tube in place
- Shelf storage life of six months
- Operating system allows for extensive data collection

ASTM F2019-11
Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)
Applications
Granite Inliner’s lateral lining service is a key process of our trenchless technology portfolio. Our process entails cleaning the existing lateral connection, measuring it for a new custom liner and installing the new liner from the main connection to the lateral.

Installation and Timing
Preparation is a critical part of our lateral lining installations. Our PFM (Prep-From-the-Main) tools are inserted into the lateral from within the mainline sewer to remove the roots, calcite, blockages, obstructions and other debris. The PFM uses a combination of reamers, flushers, nozzles, and CCTV cameras to clean the laterals through remote means.

The PFM tools also consist of a remote measuring process for determining the diameter of a lateral at every point along its length. This allows our teams to build a customized CIPP liner for a specific residence or business address. The PFM does not require a bypass of the mainline sewer, cleanout access or residential access to facilitate the process. All work is completed through existing manholes in the municipal right-of-way.

Granite Inliner’s Measure from the Main (MFM) process utilizes a linear variable displacement transducer (LVDT). Combined with a 4-20mA current loop, data is transmitted back to the control system. Running hundreds of diameter checks per linear foot, the LVDT system averages the sizing and determines the appropriate lateral tube sizing for manufacturing.
Installation is completed using our Line from the Main (LFM) system. As a flow-through system, the need for bypass pumping is eliminated in most cases. This cutting-edge technology enables crews to line laterals from mainline sewers up to 36” in diameter.

Following verification that the current condition of the pipe has not changed when compared to the original inspection state, the tube is vacuum-saturated using a thermosetting resin. The saturated tube and inversion bladder are then loaded into a launching device that is winched into place.

The resin-saturated mainline liner is supported on the launcher and is elevated above the invert by a rotating skid system. The liner is ambient-cured and does not require other energy sources such as hot water or steam to achieve full cure.

Lateral reinstatement is not needed with the junction liner installation process. Once the liner is installed, the installation bladder is removed and the line is placed back into service.

Benefits for Our Customers

In addition to being a low-cost option over traditional dig and replacement methods, our lateral lining installations reduce both social and environmental costs, as well as minimize inconvenience to local residents and businesses.

Our lateral lining renewal eliminates root growth in pipe lines, improving the hydraulic characteristics. By creating a pipe within a pipe and sealing open joints, we are able to mitigate infiltration and inflow issues.
Manhole Renewal

Manhole Renewal Applications
Dependent upon customer requirements and/or preferences, Granite Inliner performs manhole renewal installations using both Cured-In-Place Manhole (CIPMH) and a variety of cementitious, epoxy-based applications.

In addition to renewal capabilities, Granite Inliner provides extensive manhole inspections, which is the first step in determining the best application(s) for improving sewer system performance. These comprehensive inspections provide a concise evaluation of the state of the structure, spanning from the cover/frame to the bench and base. Our key manhole renewal superintendents have been certified through the NASSCO Inspector Training and Certification Program.

CIPMH Applications
Engineered for a service life of 50 years, Cured-in-Place Manhole Lining (CIPMH) restores structural integrity, eliminating infiltration and inflow. Our CIPMH installations produce a cured-in-place seal that resists freeze and thaw conditions and creates a watertight, corrosion-resistant structural lining.

CIPMH Installation and Timing
Our CIPMH liners are customized to fit manholes and related structures constructed of brick and mortar, pre-cast concrete or block.

Granite Inliner crews can complete preparation and installation in the same day, eliminating lead time for ordering materials. Our crews routinely complete three to seven installations per day/per crew. The liner will cure under ambient temperature and pressure in one to two hours.

To date, Granite Inliner teams have completed over 33,000 manhole renewals.
**Cementitious Applications**
Granite Inliner project teams apply cementitious coatings as specified by our customers, based upon acute conditions of concrete deterioration, usually in the range of .5” to 2”. Cementitious coatings are a good option for structure renewal projects where bypass pumping or flow control is limited.

**Cementitious Installation and Timing**
Cementitious coatings apply well on damp surfaces and in the presence of moisture in the atmosphere. They typically require minimal surface preparation beyond high pressure and/or detergent cleaning.

These high-strength formulations allow a monolithic .5” to 3” one-pass spray application that restores structural integrity to deteriorating manholes and provides a permanent seal against corrosion, infiltration and exfiltration.

Cementitious coatings are spray-applied, pumped and troweled, or spin-cast. As with other renewal methods, cementitious coating types are dependent upon the degree of damage and deterioration, structure dimensions, system requirements, and location.

**Epoxies by Raven Lining Systems**
Granite Inliner also provides epoxy-based solutions by Raven Lining Systems. Raven’s epoxy products offer great advantages in adhesion, chemical resistance and structural renewal strength.

**Epoxy Installation and Timing**
Prior to applying the epoxy product, the Granite Inliner team performs a visual assessment of the manhole structure, then cleans the surface using water blasting. Cracks and damaged areas are patched, and if the damage is severe, a cementitious underlay is applied. The Raven epoxy is applied with a hand-spray gun with a technique called cross-hatching, or “boxing,” to ensure even coverage and thickness. Final thickness can range from 80-125 ml or more per application.

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**Benefits for Our Customers**
Over the past 30 years, our project teams have delighted customers in improving the life of existing pipelines and structures. Using best-in-class installation techniques, such as CIPMH applications, Granite Inliner teams have renewed the structural and hydraulic characteristics of aged, deteriorated structures, while simultaneously reducing project costs and public inconvenience.

Cementitious applications are equally cost-effective approaches to structure renewal with long-lasting results. Depending upon customer requirements and preferences, multiple product options are readily available. A major benefit for customers is that conditional requirements can be achieved by specifying mixture additives to address structural and chemical concerns.
Applications
Our geopolymer lining is a trenchless rehabilitation method applied by using monolithic mineral polymer with ceramic properties to repair existing pipelines. These applications will adhere to any structure surface, and unlike traditional cement-based mortars, they are also capable of bonding and building to great thicknesses.

Installation and Timing
Using a spin caster or low-pressure hand-sprayer, our crews apply a consistent and evenly coated layer of geopolymer material from the top to bottom of the structure. Following the coating, crews use trowels to smooth out the finish. Once applied to the damaged or deteriorated surface, the geopolymer material quickly forms into a crystalline structure for higher resistance to acids, lower porosity and greater surface durability.

Granite Inliner site crews can complete preparation and installation in the same day, eliminating lead time for ordering materials. Typically, the application of the geopolymer coatings require one pass, in the range of thickness of .5” to 1.5”, with a maximum thickness of approximately 3”. The quick cure rate shortens bypass time and allows flows to be re-established much quicker than Portland cement-based mortars.

On horizontal geopolymer applications with water diversion requirements, our project teams install bypass systems. Dependent on size and other project dynamics, Granite Inliner may opt to assign the bypass setup scope to a strategic partner, allowing for total focus for our crews on physical installation activities.
In 2018 Granite Inliner completed the largest geopolymer installation of over 5 million lbs. of GeoKrete.

Benefits for Our Customers

Our customers gain a wide range of benefits to their systems and structures through our geopolymer applications. In addition to improving the lifespan and the renewal of existing pipelines and structures, geopolymer, made up of over 50 percent recycled materials, is a sustainable material with a low carbon footprint.
Applications
In addition to our flagship Inliner® CIPP product for gravity wastewater applications, Granite Inliner also offers potable water main and sanitary pressure pipe rehabilitation solutions through RS Technik AG.

RS Technik AG provides RS CityLiner® for our pressure pipe installations and RS BlueLine® for our waterline installations. Resin for both applications are applied using RS MobiPreg® mobile saturation technology. Installation for both RS BlueLine and RS CityLiner are both compliant with ASTM F1216 and F2994.

Installation and Timing
Similar to CIPP applications for storm and sanitary sewers, our teams wetout RS Technik resin-saturated liners in controlled wetout facilities or over-the-hole for immediate vertical insertion, dependent upon site conditions. Liner curing is completed using water or steam based upon project specifications and customer requirements.

Additionally, Granite Inliner has the capability to cure Inliner STX® for this application using the UV-cured method.

Benefits for Our Customers
Trenchless water main rehabilitation provides a sustainable alternative for municipalities as opposed to open trench replacement. Our CIPP technology has been implemented at a considerably lower economic and social cost.
Applications
Granite Inliner teams self-perform or opt to engage one of our strategic partners for both pre- and post-CCTV inspections and cleaning. All inspections and assessments are performed in accordance with NASSCO standards by NASSCO PACP-certified operators. All cleaning is completed in compliance with local and federal environmental standards and in accordance with NASSCO Specification Guidelines for Sewer Pipe Cleaning.

Process
Using color CCTV video imaging, our teams record the internal conditions of the pipe sections and laterals. Upon completion of piping/culvert runs, the videos are submitted in MPEG file format or equivalent formats as requested by the customer and are saved on external hard drives. Each sewer piping run, manhole-to-manhole (including laterals), are labeled and have a specific MPEG file that complies with all customer specifications.

In reviewing the videos, our teams verify the condition of the sewers and will direct CIPP work, considering the level of deterioration and any required point repairs. A post-installation CCTV video is provided to our customers in accordance with the specifications.

The degree of cleaning will vary based upon conditions reviewed in the pre-cleaning video as well as the physical inspection and assessment as conducted by our NASSCO Pipeline Assessment Certification Program (PACP)-certified representative. Cleaning will be sequenced within the project schedule.

Granite Inliner will remove all debris from the sewer mainlines, laterals and culverts, including any debris that may have been washed up into any service connections, drop connections or the bench wall of the manholes. Our teams follow the requirements for NASSCO Standards for Light and Heavy Cleaning as appropriate.

Benefits for Our Customers
The quality and accuracy of our inspections and assessments, CCTV, and cleaning services enable our customers to make informed decisions based upon actual pipe conditions. Working closely with our customers, we provide optimum solutions based on the pipe conditions, age, and level of deterioration.
Liner Products is a Granite-owned liner manufacturing operation that provides reliable and high-performance CIPP products to installers throughout the U.S. These products include tubes for inversion and pull-in-place methods for mainline CIPP, calibration hoses, lateral liners, and pre-liners where required.

Our meticulous standards and ISO 9001 certification assures installers and owners alike, that they will receive a final product that consistently performs beyond expectations. Liner Products can manufacture liners in diameters of 3” to 120” and can produce them in varying thickness levels based upon design conditions.

Rigorous specifications established in-house and throughout our supply chain ensure quality for all components that go into our material (including raw felt and a variety of tube coatings). Working closely with other industry professionals, Liner Products can provide solutions for the most difficult installations along with more traditional projects. Tubes can be heat-bonded or steam-stitched, fiber-reinforced or straight polyester and even transition from one diameter to another in the same run.

This vertical integration and quality assurance within our CIPP offerings allows us to work closely with our customers to ensure consistent products and exceptional service while meeting recognized industry standards including ASTM D5813, ASTM F1216, and ASTM F1743.
Granite Inliner is proud to be a member of the Granite family, and equally honored to share in Granite’s rich legacy of more than 100 years of exceptional service to multiple market sectors throughout North America. In 2018, Granite was named among the World’s Most Ethical Companies by Ethisphere for the 9th straight year.

Pledge to our Customers:
Commitment.
Our commitment to renewing water and sewer infrastructure nationwide and beyond is the core of our Mission Statement.

Granite Inliner as a trusted and high-performing organization is committed to renewing water and sewer infrastructure for both public and private customers. Using the safest and most cost-effective methods, we will provide solutions, expert leadership, and highly experienced teams prepared with the latest technologies and equipment in the industry.

More for our Customers:
Comprehensive Services.
The formation of Granite Inliner has created the development of one of the most extensive service portfolios in the industry. As a result, our customers have more renewal options to select from in aligning their needs with the best-suited technology application.

Responsibility to our Customers:
Single Source Accountability.
The desire to provide full process control on projects for our customers led to the vertical alignment of our products and services. Controlling the production and inventory of liners and directing the deployment of project crews to customer sites has enabled Granite Inliner to balance production, immediately address emergency needs, and prevent project schedule slips. As one of the few manufacturer-installers in the industry, Granite Inliner delivers single source accountability to all customers at all times.

Quality for our Customers:
Performance and Results.
Granite Inliner staff and crews work in an environment where consistent performance and excellence in quality is expected. In addition to an ongoing Continuous Improvement Program, our staff maintains numerous industry qualifications, including NASSCO certifications. Our liner manufacturing facility is ISO 9001:2015 certified.

Alignment with our Customers:
One Team - One Goal Approach.
The key to aligning our expertise with customer needs is to adopt the goals of our customers from Day 1. Our approach to executing projects is characterized by a high degree of communication and information-sharing with our customers, safe and non-intrusive job sites, and courtesy and respect for the public in the areas of our work.