



SUBMITTAL DOCUMENT

INSIGNIA™ HYDROPHILIC CONNECTION HAT

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SUBMITTAL DOCUMENT FOR
INSIGNIA™ HYDROPHILIC CONNECTION HAT

Item 1

Manufacturer Company Name: LMK Enterprises, Inc.

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Product Submittal: This submittal is for the Insignia™ Hydrophilic Connection Hat process specifically designed to seal and provide a structural, verifiable non-leaking connection between lateral and mainline pipe.

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Insignia™ by LMK® are hydrophilic sealing gaskets used to seal terminating ends of liners and lateral to main connections

LMK Enterprises, Inc. is the owner of Trademarks: Insignia™ and LMK®. LMK Enterprises, Inc. is owned and operated by President Larry W. Kiest, Jr.

Larry Kiest, Jr. CEO/President

Inventor of more than 60 issued patents teaching methods and apparatuses for the Rehabilitation of Underground Pipes, Conduits and Structures. Mr. Kiest is a Licensed Plumber in the State of Illinois, Advisory Board Member of Trenchless Technology Center Louisiana Tech University, Member of ASCE/ PINS Lateral Committee, Board Member of NASSCO, Chairman of NASSCO Lateral Committee, Active Board Member NASSCO 2008-2010, Member of NASTT, Member of AWWA Standards Committee, Member of WEF, Member of MSTT, Active Board Member MSTT 2008-2010, Member of ASTM, and Chairman of Task Committee F17, subcommittee 17.67 standard practice for rehabilitation of a sewer service lateral using a one piece main and lateral cured-in-place liner installed by means of air inversion. Mr. Kiest has conducted business in the field of Trenchless Pipe Renewal Systems since 1985.

LMK's Management Team

Vice President:	Rick Gage
General Manager:	Bruce Kamin
Sales Manager:	Jeff Tinlin
R&D Director:	Jason Mathey
In-house Engineer:	Sahar Hasan
Marketing Manager:	Kristina Kiest
Orders Manager:	Kara Kamin
Shipping Manager:	Tommy Stringham
Assistant to President:	Amber Sibley
Technical Trainer:	Kyle Mucci
Mfg. Manager:	Sharon Biagoni
Accounting:	Lori Lohnes
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References:

1. Jim Shelton PE, Malcolm Pirnie Engineering, Wilmington, Delaware
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4.1 Description

The Insignia™ Hydrophilic Connection Hat is used to create a compression seal between the liner and the main pipe at the main to lateral connection. The Insignia™ hat is hydrophilic which causes it to absorb water and swells to 3 to 5 times its original size creating a watertight connection. The main to lateral connection shall be hereby referred to as a “main/lateral assembly”.

4.2 Technique

The Insignia™ Connection Hat is a seamlessly molded seal consisting of neoprene rubber which gives the Insignia™ Hat its properties of durability and chemical inertness. The Insignia™ Hat is installed with a connection liner such as the T-Liner®. Once the T-Liner® has been positioned on the launcher, the Insignia™ Hat is positioned on the liner and secured with the help of bungee cords on to the liner. The liner is inverted into the lateral pipe thus positioning the Insignia™ Hat at the mainline/lateral connection.

4.3 Intended Use

It is believed that CIPP Liners provide a water tight connection. The truth is that CIPP resins shrink upon curing which causes an annular space between the liner and the host pipe. Also, the mainline/lateral connection is known to be the source of maximum infiltration into the collection system. The Insignia™ Connection Hat product provides a uniform seal and consistent wall thickness around the connection after installation of a connection liner.

4.4 Existing Sewer (Main and Lateral)

The system is compatible with all types of pipes; V.C.P., concrete, cast iron, P.V.C and existing main pipes that have been renewed by a CIPP process.

4.5 Diameter Ranges

Laterals: 4 – 18 inch diameters.

4.6 Properties

Characteristic	Unit	Value	Test Method
Shore A Hardness	point	50 +/- 5	ASTMD2240
Tensile Strength	psi	177	ASTMD412
Elongation at Break	%	523	ASTMD412
Specific Gravity		1.2	ASTMD297
Swell Capacity in Water Contact	%	200	GRCS

4.7 Effects on Homeowners

Homeowners and building occupants at a minimum will receive a door knob notice bulletin 48 hours prior to the scheduled work and personal contact is attempted to be made the day of the scheduled work. The notice bulletin summarizes the scope of work, tentative time of service disruption and home/building owner cooperation for non-use of water/sewer for a 2-hour period or less. A brief explanation of “dry fixture traps” is also included.

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- 5.1 Sewer Preparation** The main and the laterals are cleaned utilizing high-pressure water and mechanical cleaning tools. Pressures may range from 2,000 to 4,000 PSI removing all roots, debris and obstructions. Cleaning of the lateral is performed robotically from the main pipe. Any protruding service connections will be removed prior to liner insertion. The current condition of the pipe will be compared to the original designed condition to verify that design parameters have not changed. Normal mainline flows are plugged or by-passed during the process, depending on flow.
- 5.2 Mainline Service** Typical time for plugging the mainline is one-hour (1) or less.
- 5.3 Specific Requirements** Accesses to the upstream and downstream manholes are mandatory.
- 5.4 Cleanout System** This process does not require a clean-out to be accessible.
- 5.5 Installation Crew & Equipment** A typical crew consists of (3 to 4) technicians. A mobile wet out unit is required for onsite vacuum impregnated of the liner. Traffic disruption is minimal. The installation process is typically quick, efficient and non-disruptive when compared to open cut replacement methods.
- 5.6 Handling Sewer Access** Certified and Licensed Technicians remotely carry out the installation. Internal pipe cleaning, inspection and insertion of the lining are typically performed without the need for confined space entry. Entry into a manhole may be required in order to insert a sewer plugs or to assist insertion of equipment in small diameter manholes or where drop inlets exist. If confined entry is required, Federal, State and Local Laws apply.
- 5.7 Document Final Video and Testing Procedures** A final video inspection is performed from the main if the termination point of the liner can be seen with zoom cameras.
- 5.8 Design Life** 50 - 100 Year Service Life based physical properties, chemical resistance and extrapolations. upon

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Advanced Materials:

- Insignia Hydrophilic Hat (Gasket Sealing Technology)

Respectfully Submitted By:

Larry Kiest, Jr.

Larry Kiest, Jr., President/CEO, LMK Enterprises, Inc.