REQUEST FOR PROPOSAL
LINING THE STORM AND SANITARY SEWERS
FOR THE CITY OF FLINT

PURPOSE:

The City of Flint, Michigan is seeking the services for repair of and future blanket pricing for CIPP (Cured In Place Piping), lining of 8, 10, 12, 16, 20, 24, 36, 42, 48, 54, 60, and 66 inch sewer lines for the City of Flint as may be feasible and economically practical.

BACKGROUND:

The City of Flint has an aging collection system with many of the sewer mains over fifty years old. These older pipes have hairline cracks and other deterioration. The City of Flint has found that relining is the most cost effective and least disruptive option. The City of Flint is therefore seeking a three (3) year pricing proposal to provide on an as needed and an as requested basis various size storm and sanitary sewer pipe rehabilitation services.

PROJECT DESCRIPTION:

The purpose of this project is to provide relining services through the period of 7/1/2017 with the option to renew two additional years through 6/30/2019.

1. DESCRIPTION:

1.1 The work shall consist of furnishing and installing all pipe repair materials and fittings in accordance with manufacturer's requirements for warranty of materials and installation of pipe relining.

2. SCOPE OF SERVICES:

2.1 Services to include installing CIPP Liner to rehabilitate sewer lines. The liner is to be installed under parameters of ASTM F1216 and meet or exceed all standards required by ASTM D790. The following procedures will be used:

- Clean and inspect the main line requested to be relined
- Install and perform a bypass if necessary
- Perform lining procedure
- Cut in all customer house leads
- Perform a final video inspection of the job. The video will be delivered to the City of Flint representative for their records.
- Provide the representative of the City of Flint with a written report outlining the performance of each procedure.

2.01.01 SPECIFICATION FOR CURED-IN-PLACE-PIPE (CIPP)

PART 1 – GENERAL

It is the intent of this section of these Specifications to provide for the reconstruction of pipelines and conduits by the installation of a resin-impregnated flexible tube that is either inverted or pulled into the original pipeline/conduit and expanded to fit tightly against said pipeline by the use of water or air pressure. The resin system shall then be cured by elevating the temperature of the fluid (water/air) used for the inflation to a sufficient enough level for the initiators in the resin to effect a thermosetting reaction.

PART 2 - REFERENCED DOCUMENTS

This Specification references ASTM D5813 (Standard Specification for Cured-in-Place Thermosetting Resin Sewer Pipe) ASTM F1216 (Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube), and ASTM F1743 (Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-In-Place Installation of Cured-In-Place Thermosetting Resin Pipe).

PART 3 - QUALIFICATION REQUIREMENTS

The system proposed (materials, methods, workmanship) must be proven through previous successful installations to an extent and nature satisfactory to the Owner and the Engineer that is commensurate with the size of the project being proposed. Since CIPP is intended to have a 50-year design life, only products deemed to have this performance will be accepted. All products and installers must be pre-approved prior to the formal opening of proposals.

Products and Installers seeking approval must meet *all* of the following criteria to be deemed commercially acceptable:

For a Product to be considered Commercially Proven, a minimum of 250,000 linear feet and/or 1000 line sections must have been successfully installed. The Manufacturer (Licensor) shall have completed sufficient enough testing to document that the materials and the method(s) of installation proposed will produce the desired long-term performance.

For an Installer to be considered Commercially Proven, the Installer must satisfy all insurance, financial, and bonding requirements of the Owner, and must have at least three years active experience in the commercial installation of the product bid. The Installer's key personnel shall have at least 100,000 linear feet and/or 300 line sections of successful experience (included in this experience shall be a sufficient quantity of installations in the sizes proposed for this project). The Installer shall be "ISO" certified or demonstrate that he/she has a similar quality assurance system in place. Documentation for products and installers seeking pre-approved status must be submitted no less than two weeks prior to the proposal due date to allow time for adequate consideration. The Owner will advise of acceptance (or rejection) a minimum of three days prior to the due date. All required submittals must be satisfactory to the Owner.

PART 4 – SUBMITTALS

The Contractor shall submit the following information:
1. Manufacturer's certification that the materials to be used meet the referenced standards and these specifications.
2. License or certificate verifying Manufacturer' s/Licensor' s approval of the installer.
3. Proposed equipment and procedures for accomplishing the work.
4. Lining Manufacturer's product data and instructions for resin and catalyst system.
5. Design Calculations for wall thickness designs. To be completed by an engineer proficient in the design of pipeline systems.

PART 5 - MATERIALS

5.1 The Tube. The tube shall consist of one or more layers of a flexible needled felt or an equivalent nonwoven or woven material, or a combination of nonwoven and woven materials, capable of carrying resin and withstanding the installation pressures and curing temperatures. The tube should be compatible with the resin system to be used on this project. The material should be able to stretch to fit irregular pipe sections and negotiate bends.

5.1.1. The tube should be fabricated to a size that, when installed, will tightly fit the internal circumference and the length of the original conduit. Allowances should be made for the longitudinal and circumferential stretching that occurs during placement of the tube.

5.1.2. The tube shall be uniform in thickness and when subjected to the installation pressures will meet or exceed the designed finish wall thickness.

5.1.3. Any plastic film applied to the tube on what will become the interior wall of the finished CIPP shall be compatible with the resin system used, translucent enough that the resin is clearly visible, and shall be firmly bonded to the felt material.

5.1.4 The tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 feet. Such markings shall also include the lining manufacturer's name or identifying symbol.5.2. The Resin System. The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that when properly cured meets the minimum requirements given herein or those that are to be utilized in the design of the CIPP for this project.

PART 6 - STRUCTURAL REQUIREMENTS

The design thickness of the liner shall be arrived at using standard engineering methodology. ASTM F1216, Appendix X1, has such an acceptable methodology that may be used where applicable. The long-term flexural modulus to be used in the design shall be verified through testing. The long-term modulus shall not exceed 50% of the short-term value for the resin system unless the tube contains reinforcements. In the event that a reinforced tube is utilized, the long-term flexural modulus shall be the percentage of the short-term modulus as determined by the above referenced testing.

The layers of the finished CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or such that the knife blade moves freely between the layers. If separation of the layers occurs during testing of the field samples, new samples will be cut from the work. Any reoccurrence may be cause for rejection of the work.

The finished CIPP shall fit tightly to the host pipeline at all observable points and shall meet or exceed the minimum thickness established by the design process. The materials properties of the finished CIPP shall meet or exceed the following structural standards:

	MINIMUM PHYSICAL		PROPERTIES	
Property	ASTM Test Method	Polyester System	Filled Polyester System	Vinyl Ester System
Flexural Strength	D790 (Initial)	4,500psi	4,500psi 400,000psi	5,000psi
	D790 (50 Yr)	250,000psi	200,000psi 3,000psi	300,000psi
Flexural Modulus	D790 D638	125,000psi		200,000psi
		3,000psi		4,000psi
Flexural Modulus				
Tensile Strength				

PART 7 – INSTALLATION

The CIPP shall be installed in accordance with the practices given in ASTM F1216 (for direct inversion installations) or ASTM F1743 (for pulled-in-place installations). The quantity of resin used for the tube's impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances being made for polymerization shrinkage and the anticipated loss of any resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used in conjunction with a roller system to achieve a uniform distribution of the resin throughout the tube.

Temperature gauges shall be placed at the upstream and downstream ends of the reach being lined to monitor the pressurized fluid's (air or water) temperature. In addition to monitoring the temperature inside the tube, temperature gauges shall be placed between the host pipe and the liner at as many points as is practical to record the heating that takes place on the outside of the liner.

Curing of the resin system shall be as per the Manufacturer (Licensor) of the CIPP product. The temperatures achieved and the duration of holding the pressurized fluid at those temperatures shall be per the Manufacturer's (Licensor's) established procedures.

PART 8 - INSTALLATION RESPONSIBILITIES FOR INCIDENTAL ITEMS

It shall be the responsibility of the Contractor to locate and designate all manhole access points open and accessible for the work, and the Owner to provide rights of access to these points. If a street must be closed to traffic because of the orientation of the pipeline, the Contractor shall institute the actions necessary to do this for the mutually agreed time period and provide traffic control. The Owner shall also provide access to water hydrants for cleaning, installation of the tube, and other work items requiring water.

The Contractor, when required, shall remove all internal debris out of the pipeline that will interfere with the installation of the CIPP. The Owner shall provide a dumpsite for all debris removed during the cleaning operations. Unless stated otherwise, it is assumed that this site will be at or near the sewage treatment facility to which the debris would have arrived in absence of the cleaning operation. Any hazardous waste encountered during this project will be considered as a changed condition.

The Contractor, when required, shall provide for the flow of sewage around the section, or sections, of pipe designated for rehabilitation. The bypass shall be made by plugging the line at the existing upstream manhole and pumping the flow into a downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the anticipated flow. The Owner may require a detail of the bypass plan to be submitted.

Experienced personnel trained in locating breaks, obstacles, and service connections by close circuit television shall perform inspection of the pipelines NASSCO certified. The interior of the pipeline shall be carefully inspected to determine the location of any conditions that may prevent proper installation of the CIPP into the pipelines, and it shall be noted so that these conditions may be corrected. A videotape and suitable log shall be kept for later reference by the Owner.

It shall be the responsibility of the Contractor to clear the line of obstructions such as solids and roots that will prevent the insertion of CIPP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the installation process, and it cannot be removed by conventional sewer cleaning equipment, then the Contractor shall notify and report to the OWNER any obstructions that might prevent insertion of CIPP. The Contractor shall make every effort to maintain service usage throughout the duration of the project. In the event that a service will be temporarily out of service, the maximum amount of time of no service shall be 16 hours for any property served by the sewer. The Contractor shall be required to notify the City and all affected properties whose service laterals will be out of commission and to advise against water usage until the sewer main is back in service. Such notification shall be provided to the Utility Department at least one week prior to service disconnecting.

A public notification program shall be implemented, and shall as a minimum, require the Contractor to be responsible for contacting each home or business connected to the sanitary sewer and informing them of

the work to be conducted, and when the sewer will be off-line. The Contractor shall also provide the following:

A. Written notice to be delivered to each home or business describing the work, schedule, how it affects them, and a local telephone number of the Contractor they can call to discuss the project or any problems that could arise.

B. Personal contact and attempted written notice the day prior to the beginning of work being conducted on the section relative to the residents affected.

C. Personal contact with any home or business that cannot be reconnected within the time stated in the written notice

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PART 9 - QUALITY ASSURANCE PROCEDURES

The Contractor shall prepare a sample for each installation of CIPP. The samples shall be restrained samples for diameters of CIPP less than 18"; and flat plate samples for diameters of CIPP 18" and larger. The flat plate samples shall be taken directly from the wet out tube, clamped between flat plates, and cured in the downtube. The restrained samples shall be tested for thickness and initial physical properties; flat plate samples shall be tested for initial physical properties only.

In addition to physically sampling the finished CIPP, the Contractor shall post-TV the completed work. The television inspection should be used to confirm tightness of the fit of the CIPP to the host pipe and to identify any imperfections. The finished liner shall be continuous over its entire length and be free from visual defects such as foreign inclusions, dry spots, pinholes, and delamination.

PART 10 - PAYMENT

Payment for the work included in this section will be in accordance with the unit prices set forth in the proposal for the quantity of work performed.

2.02 Spot Re-Lining services to include installing CIPP Liner to rehabilitate sewer lines of various diameters. The liner is to be installed under parameters of ASTM F1216 and meet or exceed all standards required by ASTM D790.

2.02.01 Installation Specifications for Cured in-Place Lateral Lining

1. INTENT

It is the intent of this specification to provide materials and a standard practice for installing a cured-in-place pipe to renew a sewer service lateral that enters a collector pipe through means of minimal or no excavation.

2. GENERAL

The reconstruction will be accomplished using a non-woven fabric tube of particular length and a thermo-set resin with physical and chemical properties appropriate for the application. The tube is vacuum-impregnated with the resin within a translucent bladder and then inserted a mobile launching device. The mobile launching device shall rotate on its axis from the 6 O'clock to the 12 O'clock position and shall include a camera port for viewing the liner during inversion and visually verifying the liner has been fully deployed and open ended. Access to an upstream end of the service lateral is achieved by use of an existing clean out or by a small excavation.

The mobile launching device is aligned with the access point of the service lateral pipe (manhole, excavated pit, inside clean out or outside clean out). When the mobile launching device is properly positioned, the resin-saturated tube and inflation bladder are inverted as an assembly with air pressure accomplishing a one-step inversion. The inversion is complete when the liner/bladder assembly is fully extended within the lateral pipe. A camera port shall be used to insert a lateral camera during inversion allowing visual verification that the end of the lining tube is fully deployed, open ended and that the liner has not extended into the municipal main pipe. Once the tube/resin composite is cured, the inflation bladder and the mobile launching device are removed.

The composite of the materials above will, upon installation inside the host pipe, exceed the minimum test standards specified by the ASTM F1216-07.

3. MATERIAL

The fabric tube will consist of one or more layers of flexible needled felt, knitted tube or an equivalent non-woven material. The tube is constructed by longitudinal stitching and thermal tape seal bonding. The tube will be capable of conforming to bends, offset joints, bells, and disfigured pipe sections. A hydrophilic O-ring shall be positioned at the lower end of the tube providing a compression gasket seal.

The thermo-set resins will be polyester, vinyl ester, silicate or epoxy with proper catalysts as designed for the specific application.

The translucent bladder and the liner within enable visual inspection of resin impregnation. This allows for a one-step controlled inversion while keeping the liner inflated and pressurized against the host pipe until final cure.

The composite of the materials above, will upon installation inside the host Pipe, exceed the minimum test standards specified in ASTM F1216-07.

Test Standards for CIPP

FLEXURAL STRENGTH (ASTM D-790).....4,500PSI

FLEXURAL MODULUS (ASTM D-790).....250,000 PSI

4. INSTALLATION PROCEDURE (ASTM F1216-07) Standard practice for the Installation of Cured In-Place Pipe by Inversion Lining.

4.1 If a cleanout does not exist, the Installer will excavate an access pit or install an outside clean out at the appropriate location to gain access to the lateral pipe.

4.2 Installer shall clean and inspect, by means of CCTV, the lateral line immediately prior to rehabilitation and determine the overall structural condition of the pipeline. All roots, debris, and protruding service connections should be removed prior to inserting the liner.

4.3 The tube is inspected for torn or frayed sections. The tube in good condition will then be vacuum impregnated with a thermo-set resin.
All resin will be contained within a translucent bladder during vacuum impregnation and insertion. Installer shall ensure that no public property is exposed to contamination by liquid resin compounds or components.
4.4 The resin impregnated tube within the inflation bladder will be inserted into the mobile launching device. The mobile launching device is positioned at the clean out or pipe opening.
The resin and tube are completely protected during the placement. The resin shall not be contaminated or diluted by exposure to dirt, debris, or water during the placement.
4.5 The liner/bladder assembly shall be inverted out of the mobile launching device by controlled air pressure. The inversion shall be complete when the tube is fully deployed and terminates short of the municipal main pipe. The tube is held tightly in place against the wall of the host pipe until the cure is complete in accordance with ASTM F1216-07 Section 7.4.2 *Using Air Pressure*—The inversion air pressure should be adjusted to be of sufficient pressure to cause the impregnated tube to invert from point of inversion to point of termination and hold the tube tight to the pipe wall, producing dimples at side connections. Care should be taken during the inversion so as not to overstress the woven and nonwoven materials. Section 7.4.3 *Required Pressures—Before* the inversion begins, the tube manufacturer shall provide the minimum pressure required to hold the tube tight against the existing conduit, and the maximum allowable pressure so as not to damage the tube. Once the inversion has started, the pressure shall be maintained between the minimum and maximum pressures until the inversion has been completed. Should the pressure deviate from within the range of the minimum and maximum pressures, the installed tube shall be removed from the existing conduit.
4.6 When the curing process is complete, the pressure is released and the inversion bladder is reverted back into the mobile launching device. The mobile launching device is then removed from the clean out or the excavation pit.
No barriers, coatings, or any material other than the cured tube/resin composite, specifically designed for desirable physical and chemical resistance properties, is to be left in the host pipe. Any materials used in the installation other than the cured tube/resin composite are to be removed from the pipe by the installer.
4.7 Any cured liner that protrudes into the municipal main pipe will be robotically trimmed flush.
4.8 A second CCTV inspection is performed to verify the proper cure of the material, the proper trim of service connection, and the integrity of the seamless pipe. Owner will receive a video recording of the inspections and a written report documenting the project.
4.9 Any necessary excavations are restored and the lateral pipe returned to normal service.

5. CLEAN-UP

The site will always be left clean and the property returned to original condition.

6. PAYMENT

Payment for the work will be in accordance with the prices as set forth in the proposal for the scope of work performed.

2.03.01 Installation Specifications Vacuum Inserted Sewer Clean-Out

1. INTENT

It is the intent of this specification to provide a cost effective installation of a sewer lateral clean out without conventional excavation.

2. GENERAL

This process consists of locating a sewer lateral pipe by the most effective means available to the installer. The most common method utilized and associated with this process consists of inserting a video camera with an internal sonde into the lateral service line from the mainline pipe. Locating the lateral pipe is accomplished using a locating receiver. The located lateral pipe shall be marked by driving a steel pin in the soil when possible, and marking the surface with marking paint and a marking flag. Next, a borehole approximately twenty-inches (20") in diameter is created by vacuum excavation. A saddle is affixed to one end of a PVC riser pipe utilizing a solvent weld. A mastic adhesive/sealant is applied to the underside of the saddle. The pipe and saddle are inserted down into the hole with the saddle end first, to snap fit onto the exterior of the lateral pipe. The saddle is pressed down onto the lateral pipe whereby the saddle expands under the downward force until the bottom-most portion of the saddle has surrounded more than fifty percent (50%) of the pipe diameter. Once the saddle has surrounded more than half of the pipe and passes the spring line of the pipe, the saddle retracts thus pulling downward until the saddle has snapped as it encompasses a majority of the pipe. Next, the annular space between the borehole and the riser pipe is filled with sand or pea-gravel to within six-inches (6") of the surface grade and an approved cleanout cap is installed. A hydrostatic water test is performed and the crown of the lateral pipe is cut open. The surface is then restored to its original condition.

3. MATERIAL

The material shall be a one-piece, molded PVC saddle and shall be compatible with the riser pipe. Solvent welding the riser pipe into the saddle boss. The saddle shall conform to the lateral pipe by a snap fit where the lateral pipe is either four (4") or six (6") in diameter. The riser pipe shall be SDR 35 or SDR 26 PVC. The resin will be a one-part marine grade adhesive/sealant designed for the specific designed for the application of a saddle adhered to the lateral pipe by a chemical bond.

4. INSTALLATION PROCEDURE

4.1 In grass areas, the sod shall be neatly cut and removed. In pavement areas, the pavement shall be straight-line marked, cut and removed.

4.2 The vacuum excavated borehole shall be approximately twenty-inches (20") in diameter and all spoils shall be deposited in a vacuum truck.

4.3 A riser pipe of an appropriate length is solvent welded to the saddle.

4.4 The adhesive/sealant shall be applied to the underside of the saddle at no less than a W thick layer.

4.5 The saddle and riser pipe shall be carefully inserted into the bore hole, setting the saddle onto the pipe, applying a downward force causing the saddle to expand and snap onto the lateral pipe.

4.6 Immediately after the saddle has been affixed to the lateral pipe, the riser pipe should be secured by backfilling the bore hole with sand or pea-gravel to within 6-inches of the original grade.

5. TESTING and CUTTING

5.1 An exfiltration test shall be performed by filling the riser pipe with a 6-foot column of water. The test shall be performed no less than 2-hours from the time of affixing the saddle to the pipe. The column of water shall be held for five minutes. The water level shall be measured from the top of the riser pipe. Zero leakage is allowed.

5.2 I diamond core saw shall be introduced into the riser pipe, the crown of the pipe is cut and the coupon is removed.

5.3 An approved cap or cover is installed at ground level or below ground level.

6. DEVIATIONS

Should soil conditions reveal running sand or similar conditions that would prohibit the installation, the installation shall be terminated and the borehole filled with flowable grout. The surface area shall be restored to its original condition.

7. CLEAN-UP

The site will always be left clean and the property restored to conditions equal to site conditions prior to installation.

8. FINAL ACCEPTANCE

Upon completion, the installer will deliver a videotape of the completed work to the owner. The owners will review the documentation and the site to determine that the scope of work is complete and the work is satisfactory.

2.03 Lateral Lining Questions

1. Please explain your processes and installation procedures

2. What length of opening can your liner cover?

3. Explain your preparation process

4. What would your typical crew consist of?

5. How does your liner end?

6. What is the guarantee against the liner separating?

7. How is your resin applied?

8. In what size laterals will your liner work in?

9. How many liners or how many feet can your crews do per 8-hr day

10. What is the normal cure time?

11. Can the cure time be accelerated?

12. Are your liners chemical resistant?

13. Are there any chemicals that we may encounter that we may need to be aware of

14. What type of pipes will your liner adhere to?

15. What is the thickness of your liner?

16. Does your liner meet all of the ASTM Standards that we requested?

17. Please provide at least 5 references contact information

18. What would be the maximum time a resident would be out of service

19. What is the product design life (you must provide a copy in writing)

20. Is your company ISO certified?

21. What is your response time after being notified?

22. Do you provide emergency services, please explain?

23. How would you handle protruding taps?

24. Is there an additional charge for removing taps?

25. Would there be any other charges not identified?

26. Will your liner stop all infiltration?

27. Will your liner stop all root intrusion?

28. Whose responsibility is it to remove equipment, tools etc. from liner?

29. A copy of your Licenses and any permits required before starting any work is required

PROPOSAL RESPONSE SHEET/TABULATION

THE CITY OF FLINT IS REQUESTING COSTS PER LINEAL FOOT (INCLUSIVE) FOR RELINING OF VARIOUS SIZE SEWER LINES AND LATERAL LINES PER THE ENCLOSED SPECIFICATIONS.

FURNISH AS REQUESTED FOR THE PERIOD 7/1/23 THROUGH 6/30/24.

APPROXIMATE QUANTITIES, NOT GUARANTEED.

CIPP Liner to rehabilitate Sewer Lines (price per linear foot)													
			8" MAIN	10"	12"	16"	20"	24"	36"	42"	48"	54"	60"	66"
Year 1			/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.
Year 2			/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.
Year 3			/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.
CIPP Lateral Line and Spot Re-Lining to rehabilitate Sewer Lines (price per linear foot)													
	4"	6"	8"	10"	12"	16"	20"	24"	36"	42"	48"	54"	60"	66"
Yr. 1	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.
Yr. 2	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.
Yr. 3	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.	/ft.
Vacuum Inserted Sewer Clean Out (price per ea.)														
	4" LATERAL	6" LATERAL												
Yr. 1	/ea..	/ea..												
Yr. 2	/ea..	/ea..												
Yr. 3	/ea..	/ea..												

Only the specifier has the responsibility and judgment for determining whether a proposed substitution is an "or equal or exceeding" specification. Mfg., model #, and supporting documentation of specifications for alternates must be provided.

All considered proposals must indicate warranty of materials and workmanship