



***STRONG-SEAL® COMPOSITE SYSTEM SPECIFICATIONS:  
for REHABILITATION of CONCRETE and MASONRY STRUCTURES  
for MAXIMUM CORROSION PROTECTION***

**INTENT:** This specification covers work, materials and equipment required for rehabilitating and protecting concrete structures by spray application of Strong-Seal® Profile Plus Mix corrosion resistant liner materials to repair voids, eliminate infiltration, and restore structural integrity, the application of Strong-Seal® Epoxy, a monolithic 100% solids epoxy, to provide corrosion protection and the application of Strong-Seal® Sealant, a 100% solids polyurea, to prevent infiltration between the manhole frame and manhole chimney.

## **1.0 GENERAL**

### **1.1 SCOPE OF SPECIFICATIONS:**

This specification shall govern all work, materials, and equipment required to obtain a structural, monolithic liner eliminating infiltration, providing corrosion protection, repair of voids, and to restore the structural integrity of the substrate as a result of a low pressure, low velocity, wet slurry spray application of Strong-Seal® Profile Plus Mix, a calcium aluminate cementitious mixture to the wall and bench surfaces of brick, concrete or other masonry construction materials and protected against corrosion with Strong-Seal® Epoxy, and the manhole frame/chimney interface sealed against infiltration using Strong-Seal® Sealant.

Described are procedures for cleaning, substrate preparation, application and acceptance testing. The applicator, certified and trained by the manufacturer, shall furnish all labor, equipment and materials for applying,

- A. The removal of any loose and unsound substrate
- B. Cleaning of the area to be sprayed
- C. The elimination of active infiltration prior to making the application
- D. The repair and filling of voids.
- E. The repair of the invert and benches.
- F. The spray application of, Strong-Seal® Profile Plus Mix, an acid resistant cementitious material to rebuild the substrate to original dimensions, eliminate infiltration, restore structural integrity and provide the proper surface for application of Strong-Seal® Epoxy.

- G. The spray application of a 100% solids, VOC-free Strong-Seal<sup>®</sup> Epoxy for maximum corrosion protection.
- H. The spray application of a 100% solids, VOC-free Polyurea Strong-Seal<sup>®</sup> Sealant, to prevent infiltration between manhole cover frame and the manhole chimney.

1.2 DESCRIPTION OF THE STRONG-SEAL<sup>®</sup> COMPOSITE SYSTEM:

- 1.2.1 Hand applied materials to stop active leaks, fill voids and repair bench and invert
- 1.2.2 Spray-applied, Strong-Seal<sup>®</sup> Profile Plus Mix cementitious liner material to prevent infiltration, restore structural integrity and provide proper surface for application of Strong-Seal<sup>®</sup> Epoxy
- 1.2.3 Spray-applied 100% solids Strong-Seal<sup>®</sup> Epoxy to protect against corrosion.
- 1.2.4 Spray-applied 100% solids Strong-Seal<sup>®</sup> Sealant to prevent infiltration between the manhole cover frame and the manhole chimney.

1.3 SUBMITTALS:

- 1.3.1 The following items shall be submitted:
  - A. A technical data sheet for each product used, including ASTM test results verifying product meets specifications and verifying product is suitable for its intended use.
  - B. Material Safety Data Sheets (MSDS) for all products used, including materials used for patching, profiling, leak stoppage and corrosion protection.
  - C. Project guidelines and recommendations.
  - D. Qualification of Applicator
    - 1. Manufacturer Certification that personnel have been trained and approved in the handling, mixing and application of the products to be used
    - 2. Certification that the equipment to be used for applying the products has been manufactured or approved by the manufacturer.
  - E. Design details for any additional ancillary systems and equipment to be used on site and surface preparation, application, and testing must be approved by Strong-Seal<sup>®</sup> Systems authorized personnel.

1.4 QUALITY ASSURANCE:

- 1.4.1 Applicator shall initiate and enforce quality control procedures consistent with applicable ASTM and NACE procedures together with the manufacturer's recommendations.
- 1.4.2 The Strong-Seal<sup>®</sup> Profile Plus Mix applicator shall submit test cubes provided by manufacturer to verify performance of profiling liner material per specifications.
- 1.4.3 The Strong-Seal<sup>®</sup> Epoxy applicator shall label two retained plaques with pertinent and unique identification for each project and spray one side for submission of the sample to the owner and one sample to Strong-Seal<sup>®</sup> Systems.

1.5 REFERENCES FOR STRONG-SEAL<sup>®</sup> EPOXY:

ASTM: The Published Standards of the American Society for Testing and Materials, West Conshohocken, PA

NACE: The Published Standards of National Association of Corrosion Engineers (NACE International), Houston, TX

1.6 DELIVERY, STORAGE, AND HANDLING:

- 1.6.1 Materials are to be kept dry, protected from weather and stored under cover protected from the elements.
- 1.6.2 Materials are to be stored between 40° F and 110° F. Do not store near flame, heat, or strong oxidants.
- 1.6.3 All materials are to be handled according to specific material safety data sheets.

1.7 SITE CONDITIONS:

- 1.7.1 Applicator shall conform to all local, state, and federal regulations including those set forth by OSHA, RCRA, and the EPA, and other applicable authorities.
- 1.7.2 Method statements and design procedures are to be approved by owner when confined space entry or flow diversion bypass pumping is necessary in order for applicator to perform the specified work.

## 2.0 MATERIALS

### 2.1 PATCHING MATERIAL (Strong-Seal® QSR):

Strong-Seal® QSR, a quick setting corrosion resistant cementitious material, shall be used as a patching material to fill voids and to repair inverts and is to be mixed and applied prior to spray applying Strong-Seal® Profile Plus Mix liner material according to manufacturer's recommendations and shall have the following minimum requirements:

<b>STRONG-SEAL® QSR</b>		
Compressive Strength	ASTM C109	>1800 psi, 1 hr. >2600 psi, 24 hrs. >3000 psi, 28 days
Bond	ASTM C882	>1600 psi, 28 days
Calcium Aluminate Cement		Sulfate resistant
Applied Density		105 pcf ± 5 lbs.
Shrinkage	ASTM C596	0% at 90% R.H.
Placement Time		5 to 10 minutes
Set Time		15 to 30 minutes

### 2.2 INFILTRATION CONTROL MATERIAL (Strong-Seal® Strong Plug®):

Strong-Plug®, a rapid setting cementitious product specifically formulated for leak control, shall be used to stop minor water infiltration and shall be mixed and applied according to manufacturer's recommendations and shall have the following minimum requirements:

<b>STRONG-SEAL® STRONG-PLUG®</b>		
Compressive Strength	ASTM C109	>1000 psi, 1hr. >2500 psi, 24 hrs.
Sulfate Resistance	ASTM C267	No weight loss after 15 cycles @ 2000 ppm
Freeze/Thaw	ASTM C666 "Method A"	100 cycles
Pull Out Strength	ASTM C234	14,000 lbs.
Set Time		<1.0 minute

2.3 GROUTING MATERIAL:

2.3.1 Strong-Seal® Grout 250, a cementitious grout, shall be used for stopping very active infiltration and filling voids and shall be mixed and applied according to manufacturers' recommendations. The cementitious grout shall be volume stable, and have a minimum 28 day compressive strength of 250 psi.

2.3.2 Strong-Seal® Grout 1000, a cementitious grout, shall be used for the same application as Grout 250, but is designed for special soil conditions, and shall be used per manufacturers' recommendations. The cementitious grout shall be volume stable and have a minimum 28 day compressive strength of 1000 psi.

2.3.3 Chemical grouts may be used for stopping very active infiltration and shall be mixed and applied per manufacturers' recommendation.

2.4 STRONG-SEAL® PROFILE PLUS MIX LINER MATERIAL:

Strong-Seal® Profile Plus Mix material is a calcium aluminate, acid resistant cementitious product to be used for building back deteriorated substrates to original dimensions, restore structural integrity, and provide a uniform surface for applying Strong-Seal® Epoxy and shall have the following minimum requirements:

<b>PROFILE PLUS MIX</b>			
Compressive Strength	ASTM C109	28 days	>9000 psi
Tensile Strength	ASTM C496	28 days	>600 psi
Flexural Strength	ASTM C293	28 days	>900 psi
Shrinkage @90% R.H.	ASTM C596	28 days	0%
Bond	ASTM C882	28 days	>2000 psi
Density, When Applied			134 ± 5lbs/ft3
Freeze/Thaw	ASTM C666	N/A	300 cycles no visible damage

2.5 WATER:

Water used to mix product shall be clean and free from contaminants. Questionable water shall be tested by a laboratory per ASTM C-94 procedure. Potable water need not be tested.

## 2.6 OTHER MATERIALS:

No other material shall be used with the mix described in Parts 2.1, 2.2, 2.3, and 2.4 without prior approval or recommendation from Strong-Seal® Systems authorized personnel.

## 3.0 EQUIPMENT FOR STRONG-SEAL® PROFILE PLUS MIX

- 3.1 Applicator must use approved equipment designed and manufactured by the material supplier specifically for the application of cementitious liners in sanitary systems.
- 3.2 Specially designed machines consisting of a progressive cavity pump and an air system for low velocity spray application of product, shall be used for applying Strong-Seal® Systems cementitious products. Equipment is complete with water storage and metering system. Spray Mate® models 35C and 35D and MiniMate II are approved machines for applying Strong-Seal® Systems products. Other models may be approved after review by Strong-Seal® Systems authorized personnel.

## 4.0 APPLICATION OF STRONG-SEAL® PROFILE PLUS MIX

### 4.1 PREPARATION:

- 4.1.1 Place covers over invert to prevent extraneous material from entering the sewer lines before cleaning.
- 4.1.2 All foreign material shall be removed from the manhole wall and bench using a high-pressure water spray (minimum 3000 psi). If grease, chemicals, previous coatings or other surface contaminants are present, the surface shall be cleaned with steam, chemical cleaning compounds or surface abrading as necessary to provide a clean substrate (contact material manufacturer for recommendations). Loose and protruding brick, mortar, and concrete shall be removed using a mason's hammer and chisel and/or scraper. Fill any large voids with quick setting patching mix Strong-Seal® QSR (2.1).
- 4.1.3 Active leaks shall be stopped using quick setting, specially formulated mixes, such as Strong-Plug® (2.2) according to manufacturer's recommendations. Some leaks may require weep holes to localize the infiltration during the application. After application the weep holes shall be plugged with the quick setting material Strong-Seal® Strong Plug® (2.2) prior to final coat. When severe infiltration exists, drilling may be required in order to pressure grout using a cementitious grout, such as Strong-Seal®

Grout 250 and Strong-Seal® Grout 1000, or chemical grouts (2.3). Manufacturer's recommendations shall be followed when pressure grouting is required.

#### 4.2 INVERT REPAIR:

- 4.2.1 After all preparations have been completed, remove all loose material and wash wall again.
- 4.2.2 Any bench, invert, or service line repairs shall be made at this time using the quick setting patching mix, Strong-Seal® QSR (2.1) and shall be used per manufacturer's recommendations.
- 4.2.3 Invert repair shall be performed on all inverts with visible damage or where infiltration is present or when vacuum testing is specified. After blocking flow through the manhole and thoroughly cleaning invert, the quick setting patch material, Strong-Seal® QSR (2.1) shall be applied to the invert in an expeditious manner. The material shall be troweled uniformly onto the damaged invert at a minimum thickness of 1/2 inch at the invert extending out onto the bench of the manhole sufficiently to tie into the structural monolithic liner to be spray applied. The finished invert surfaces shall be smooth and free of ridges.

#### 4.3 MIXING:

- 4.3.1 For each bag of product, use the amount of water required per manufacturer's recommendations following mixing procedures noted on product bag and using the approved equipment for mixing and application (3.0).
- 4.3.2 Strong-Seal® Profile Plus Mix material shall be applied at a minimum thickness of 1/2 inch.
- 4.3.3 Prepared mix shall be discharged into a hopper and another batch prepared to occur in such a manner as to allow spraying continuously without interruption until each application is complete.

#### 4.4 SPRAYING:

- 4.4.1 The surface shall be clean and free of all foreign material and shall be damp without noticeable free water droplets or running water, but totally saturated just prior to the application of material. Materials shall be applied up to one (1) inch thick in one pass from the bottom of the frame; however, minimum total thickness shall

not be less than 1/2 inch. The surface is then troweled to a relatively smooth finish being careful not to over trowel.

4.4.2 A coarse brush finish shall be applied to the trowel finished surface. Manufacturer’s recommendations shall be followed whenever more than 24 hours have elapsed between applications.

4.5 BENCH APPLICATION:

4.5.1 The wooden covers shall be removed at this time and the bench sprayed with materials mixed per specifications as per Part 4.3.3 and spray applied in such a manner that a gradual slope is produced from the walls to the invert with the thickness at the invert to be no less than 1/2 inch using Strong-Seal® Profile Plus Mix. The wall/bench intersection shall be rounded to a uniform radius the full circumference of the intersection.

**5.0 CURING OF STRONG-SEAL® PROFILE PLUS MIX**

5.1 Caution will be taken to minimize exposure of applied product to quick surface drying and air movement. If time between applications of additional coats is to be longer than 15 minutes, place cover over manhole. At no time should the finished product be exposed to sunlight or air movement for longer than 15 minutes before covering or closing access. In extremely hot and arid conditions, manhole shall be shaded while reconstruction is in progress. In environments where humidity level is below 70%, it shall be necessary to keep finished product damp for the first 72 hours.

5.1.1 If the manhole is to be put back into service before the Strong-Seal® Epoxy is applied, the final Strong-Seal® Profile Plus Mix material application shall have a minimum cure time of four hours.

<b>HOLD TIMES BEFORE RELEASING FLOW</b>	
Storm Run-off & Surcharge	4 hrs.
Force Main Impact	8 hrs.

<b>HOLD TIMES BEFORE ALLOWING TRAFFIC</b>	
After final application of the Strong-Seal® liner product, street traffic shall be held	12 hrs.



<b>HOLD TIMES BEFORE APPLYING STRONG-SEAL® EPOXY</b>	
Application of Strong-Seal® Epoxy	48 hrs.

## 6.0 WEATHER

- 6.1 No application shall be made if ambient temperature is below 40° Fahrenheit. No application shall be made to frozen surfaces or if freezing is expected to occur within the substrate within 24 hours after application.
- 6.2 Precautions shall be taken to keep the mix temperatures at time of application below 90° Fahrenheit. Water temperature shall not exceed 80° Fahrenheit. Chill with ice if necessary.

## 7.0 PRODUCT TESTING

Four 2-inch cubes shall be cast each day or from every pallet of Strong-Seal® Profile Plus Mix material used, and shall be properly packaged, labeled and following manufacturing's instructions and returned to manufacturer for testing in accordance with the owners' or manufacturer's directions for compression strength per ASTM C109 procedure.

## 8.0 FINAL ACCEPTANCE TESTING

- 8.1 At the direction of the owner or his assignee, the reconstructed structure shall be tested as follows:
- 8.1.1 Visually verify the absence of leaks.

## 9.0 APPLICATION OF STRONG-SEAL® EPOXY

### 9.1 STRONG-SEAL® EPOXY PHYSICAL PROPERTIES:

<b>STRONG-SEAL® EPOXY</b>		
Compressive Strength	ASTM D695	>8,800 psi
Tensile Strength	ASTM D638	>7,700 psi
Flexural Strength	ASTM D790	>12,400 psi
Pull off Strength	ASTM D4541	>350 psi
VOC	ASTM D2584	0%
Durometer Hardness Type D	ASTM D2240	Shore D-70
Moisture Absorption	ASTM C413	<0.03%

## 9.2 SURFACE PREPARATION:

- 9.2.1 Applicator shall inspect the Strong-Seal<sup>®</sup> Profile Plus Mix surface specified to receive the 100% solids epoxy protective lining prior to application. Applicator shall notify owner of any noticeable disparity in the surfaces, which may interfere with the proper application of Strong-Seal<sup>®</sup> Epoxy.
- 9.2.2 Place cover over bench, invert and plug pipe openings to prevent extraneous material from entering the sanitary sewer system.

## 9.3 APPROVED EQUIPMENT:

- 9.3.1 The Model 185 Xtreme plural component machine and Model HSS spray cartridge gun are both approved application equipment. All equipment must be a 2:1 ratio. Equipment other than the preceding must be approved by Strong-Seal<sup>®</sup> Systems personnel.
- 9.3.2 Applications must comply with all safety requirements and applicator must wear approved safety equipment as recommended by NIOSH for confined space entry.

## 9.4 APPLICATION OF STRONG-SEAL<sup>®</sup> EPOXY:

- 9.4.1 Application procedures shall conform to the recommendations of Strong-Seal<sup>®</sup> Systems specified in the MSDS Epoxy Part A and Part B for material handling, safety, and environmental controls and Specification for Composite System section 9.3.2 for mixing and spray equipment.
- 9.4.2 The spray equipment shall be specially designed to accurately ratio and apply the Strong-Seal<sup>®</sup> Epoxy lining materials and shall be regularly maintained and in proper working order, and must be approved by Strong-Seal<sup>®</sup> Systems authorized personnel.
- 9.4.3 Specified surfaces shall be coated by spray application of Strong-Seal<sup>®</sup> Epoxy as further described herein. The minimum dry film thickness shall be 60 mils.
- 9.4.4 After the application of Strong-Seal<sup>®</sup> Epoxy is applied, if specified, a broadcasting of sand (i.e. oven dried 20 to 30 gradation) may be applied to the bench area while the Strong-Seal<sup>®</sup> Epoxy is tacky to provide a non-slip surface.
- 9.4.5 With flow blocked and invert cleared of all debris, Strong-Seal<sup>®</sup> Epoxy may be applied to invert at same time as applied to bench.

## 10.0 APPLICATION OF STRONG-SEAL® SEALANT

### 10.1 STRONG-SEAL® SEALANT PHYSICAL PROPERTIES:

<b>STRONG-SEAL® SEALANT</b>		
Abrasion Resistance	ASTM D4060	1000 Cycles H-18 Wheel 190 mg/loss
Adhesion	ASTM D4541	>350 PSI
Durometer hardness	ASTM D2240	Shore A-85
Tear Strength	ASTM D975	150 psi
Tensile Elongation	ASTM D412	580 %
Tensile Strength	ASTM D412	>1330 psi
<b>STRONG-SEAL® SEALANT</b>		
Water Absorption	ASTM D570	<0.0%
Temp. Service Range		-40°F to 230°F
Freeze/Thaw	ASTM C666	100 cycles no visible damage

### 10.2 MATERIALS:

#### 10.2.1 PATCHING MATERIAL (Strong-Seal® QSR Reference 2.1):

Strong-Seal® QSR, a quick setting corrosion resistant cementitious material, shall be used as a patching material to fill any cracks wider than 1/8”.

#### 10.2.2 INFILTRATION CONTROL MATERIAL (Strong-Seal® Strong Plug® Reference 2.2):

Strong Plug®, a rapid setting cementitious product specifically formulated for leak control, shall be used to stop minor water infiltration.

### 10.3 SURFACE PREPARATION:

#### 10.3.1 NEW STRUCTURES:

10.3.1.1 Standard Portland cement or new concrete (not quick set high strength cement) must be well cured prior to the application of the Strong-Seal® Sealant protective coating. Generally, 28 days is adequate cure time for standard Portland cement. If earlier application is desired, compressive or tensile strength of the concrete

can be tested to determine if acceptable cure has occurred. Note: Bond strength of the coating to the concrete surface is generally limited to the tensile strength of the concrete itself. Engineer may require Elcometer pull tests to determine suitability of concrete for coatings.

10.3.1.2 Contact Strong-Seal® Systems if the structure contains a quick setting high strength concrete with latex or curing compound additives.

10.3.1.3 Contact Strong-Seal® Systems if the structure contains an existing coating.

### 10.3.2 CHIMNEY PREPARATION:

10.3.2.1 Applicator shall inspect all surfaces specified to receive the Strong-Seal® Sealant protective lining prior to application. Applicator shall notify owner of any noticeable disparity in the surfaces, which may interfere with the proper application of the Strong-Seal® Sealant.

10.3.2.2 Precautions should be taken to prevent extraneous material from entering the sanitary sewer system.

10.3.2.3 Remove all form release agents, curing compounds, salts, efflorescence, laitance, and other foreign matter by sandblasting, shot blasting, mechanical scarification, (such as grinding) or suitable chemical means.

10.3.2.4 Active leaks shall be stopped using quick setting, specially formulated mixes, such as Strong-Plug® (2.2) according to manufacturer's recommendations.

10.3.2.5 Openings or gaps larger than 1/8 inch shall be patched using a quick set cement, such as Strong-Seal® QSR (2.1) according to manufacturer's recommendations.

10.3.2.6 Test structural liner surfaces prior to application of Strong-Seal®, rinse thoroughly. Allow to dry thoroughly prior to coating.

10.3.2.7 Surface must be clean, dry, sound and offer sufficient profile (3 mils) to achieve optimum adhesion.

### 10.3.3 MANHOLE FRAME PREPARATION:

10.3.3.1 Place cover over invert or plug all pipe openings to prevent extraneous material from entering the sanitary sewer system.

10.3.3.2 Remove all oil and grease from surface by shot blasting, grinding or suitable chemical means.

10.3.3.3 Surface must be clean, dry sound and near-white metal prior to applying Strong-Seal<sup>®</sup> Sealant.

#### 10.3.4 BRICK CONSTRUCTED MANHOLES:

10.3.4.1 Follow procedures set forth in 10.3.2 and 10.3.3.

10.3.4.2 Using a quick-set cement such as Strong-Seal<sup>®</sup> QSR (2.1), profile the brick chimney a minimum of 8 inches below the manhole frame, built out to near flush with frame to provide a relatively smooth surface.

10.3.4.3 The manhole frame shall be blasted, using waterblasting, sandblasting, or mechanical scarification to a near-white finish.

#### 10.3.5 REHABILITATED MANHOLES:

10.3.5.1 Follow procedures set forth in 10.3.2 and 10.3.3.

#### 10.4 APPLICATION:

10.4.1 Once the Strong-Seal<sup>®</sup> Epoxy has set hard to the touch the manhole frame and chimney area of the manhole shall be sealed using Strong-Seal<sup>®</sup> Sealant.

10.4.2 Application procedures shall conform to the recommendations of Strong-Seal<sup>®</sup> Systems including material handling, mixing, safety, spray equipment and environmental controls during application.

10.4.3 Installer shall inspect all surfaces specified to receive the Strong-Seal<sup>®</sup> Sealant prior to application. Applicator shall notify owner of any noticeable disparity in the surfaces, which may interfere with the proper application of Strong-Seal<sup>®</sup> Sealant.

10.4.4 Using the specified plural-component air-powered application gun, apply the Strong-Seal<sup>®</sup> Sealant 2 inches up onto the interior of the frame to 4 inches below the top of the chimney onto the interior of the manhole chimney.

10.4.5 The final thickness shall be a minimum of 125 mils. One dual-cartridge kit will cover 4.1 sq. ft. at 125 mils thick.

## **11.0 LIMITED WARRANTY**

**If the Strong-Seal® Composite System is applied per Strong-Seal® Composite System specifications, installed by Strong-Seal® Systems certified applicators using Strong-Seal® Systems approved equipment and if Strong-Seal® products are used, The Strong Company, Inc. shall offer a 5 year limited warranty with the following limitations:**

**The Strong Company, Inc. warrants that this product was produced in conformity with its standard specification or formulations within recognized tolerances, free of adulteration or contamination, and that the product will perform in accordance with representations in Strong-Seal® Composite Systems literature and Technical Data Sheets when properly applied in strict conformance with the printed instructions on container or bag and as described in technical data instructions and when applied to a properly prepared surface.**

### **DISCLAIMER**

**THE SOLE REMEDY OF THE PURCHASER SHALL BE REPLACEMENT OF THE PRODUCT OR REFUND OF THE PURCHASE PRICE OF THE PRODUCT IF ANY DEFECT IN MATERIAL OR VARIANCE IN THE PRODUCT BEYOND RECOGNIZED TOLERANCES IN THE SPECIFICATIONS IS FOUND TO EXIST.**

**NO OTHER REMEDY INCLUDING, BUT NOT LIMITED TO, INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR LOST PROFITS, LOST SALES, INJURY TO PERSON OR PROPERTY, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS SHALL BE AVAILABLE TO THE PURCHASER.**

**THE WARRANTY DESCRIBED IN THE ABOVE PARAGRAPHS SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.**

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