

INTERNAL FRAME SEAL

PART 1 GENERAL

1.01 WORK REQUIRED

A frame seal, as shown on the attached drawings, with extensions where needed to cover the entire chimney area, shall be installed on all sanitary manholes in accordance with the manufacturer's instructions.

1.02 SUBMITTALS

The contractor shall make submittals of the manufacturer's literature, shop drawings, installation instructions, and other items in accordance with the provisions of the Standard Specifications.

PART 2 PRODUCTS

2.01 FRAME SEAL

Frame seals shall consist of a flexible internal rubber sleeve, interlocking extensions, and stainless steel expansion bands as manufactured by NPC, Inc. or a pre-approved equal conforming to the following requirements.

The seal shall remain flexible throughout a 25-year design life, allowing repeated vertical movement of the frame of not less than 2 inches and repeated horizontal movement of the frame of not less than ½ inch. The sleeve portion of the seal shall have multiple expansion ribs and a minimum unexpanded vertical height of 8 ½ inches or 10 ½ inches. The sleeve and extension shall have a minimum thickness of 3/16 inches and shall be made from a high quality rubber compound conforming to the applicable requirements of ASTM C-923, with a minimum 1500 psi tensile strength, a maximum 18% compression set, and a hardness (durometer) of 48 ± 5 . The expansion bands shall be fabricated from 16 gauge stainless steel conforming to ASTM A-167, Type 304 or Type 316, with no welded attachments, and shall have a minimum adjustment range of 2 diameter inches.

PART 3 MEASUREMENT AND PAYMENT

3.01 FRAME SEAL AND EXTENSIONS

All costs for furnishing and installing the seal and where necessary, an extension or extensions, shall be included in the unit bid price for sanitary manholes.

FlexRib Internal Chimney Seal

Material Properties

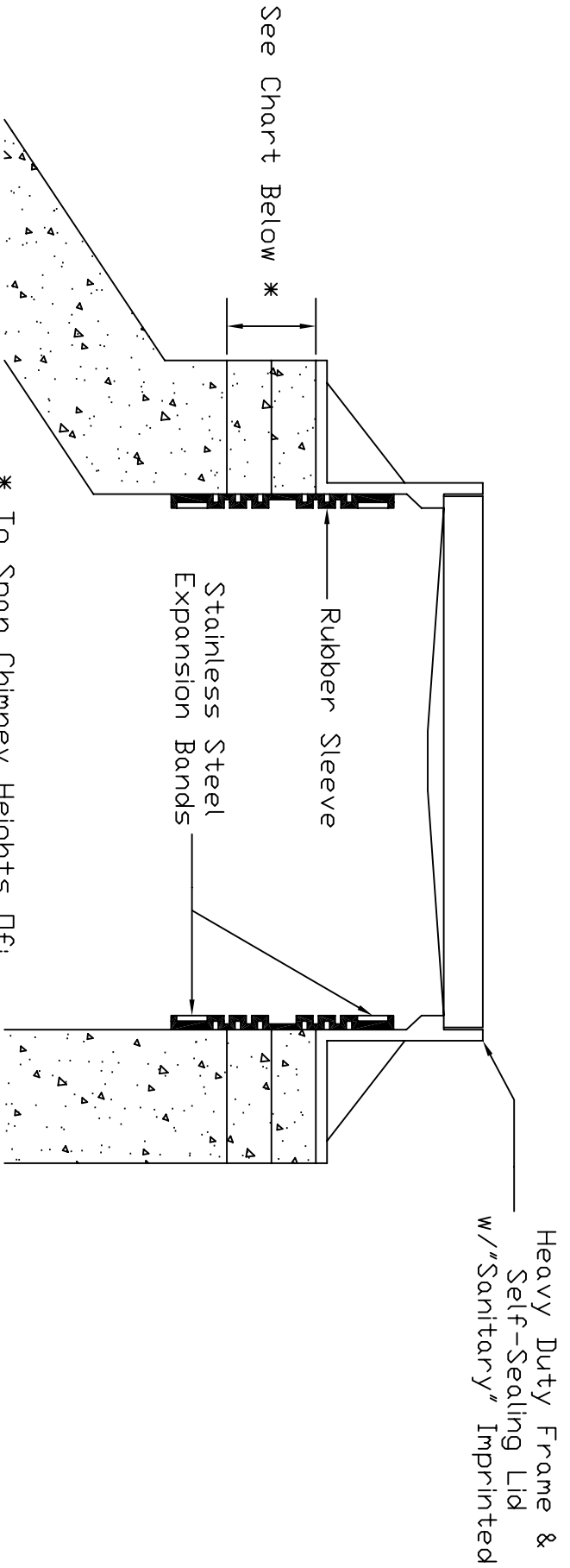
EPDM RUBBER SLEEVE

Physical Property	ASTM Specification	Test Requirement	Typical Properties
Chemical Resistance 1 N Sulfuric Acid 1 N Hydrochloric Acid	D543, at 22°C for 48 hours	No Weight Loss No Weight Loss	No Weight Loss No Weight Loss
Tensile Strength	D412	1200 psi	1580 psi
Elongation at Break	N/A	350% minimum	500%
Hardness	D2240 (shore A durometer)	± 5% from specified hardness	48 ± 5
Accelerated Aging	D573 70°C for 7 days	Maximum Decrease 15% tensile 20% elongation	10.1% tensile decrease 14% elongation decrease
Water Absorption	D471, in distilled water at 70°C for 48 hours	10% weight increase maximum	0.8% weight increase
Ozone Resistance	D1149	Rating 0	Rating 0
Low Temp. Brittle Point	D746	No Fracture at -40°C	No Fracture at -40°C
Tear Resistance	D624, method B	200 lbf/in.	Greater than 210 lbf/in.

INTERNAL EXPANSION BANDS

The Internal Expansion Bands are manufactured from either 304 or 316 series non-magnetic stainless steel conforming to ASTM A167.

Physical Property	Type 304 Stainless Steel	Type 316 Stainless Steel
Tensile Strength (min.)	75,000 psi	75,000 psi
Yield Strength	30,000 psi	25,000 psi
Elongation in 2 inches (min.)	40%	40%



* To Span Chimney Heights Of:
 0" to 5" - 8½" Sleeve
 3" to 7" - 10½" Sleeve
 Over 7" to 12½" - 8½" Sleeve
 w/Extension
 Over 12½" to 14½" - 10½" Sleeve
 w/Extension

NOTES:

Internal Chimney Seals Shall Be Installed On All Sanitary Manholes.

Internal Chimney Seals Shall Be The "FlexRib" As Manufactured By NPC, Inc. Or Pre-Approved Equal.

DATE	REVISIONS	
11/20/03	Original	Internal Manhole Chimney Seal Marathon Materials, Inc.