1.0 SCOPE

This Technical Specification shall apply to operations required for wrapping of joints and damaged Sintakote piping.

The wrapping systems described in this specification pertain to:-

System A: Application of PVC backed Bitumen tape (Densopol 80®).
System B: Application of the Petrolatum 4 step system.
System C: Application of Canusa® Heat Shrink patches to repair tears and damage to the Sintakote coating.
System D: Application of Bitumen tape to repair tears and damage to the Sintakote coating.

The Corporation has approved the use of Denso® products for tape wrapping and Canusa® for Heat Shrink products.

Other equivalent products may be used subject to evaluation and appraisal by the Corporation.

2.0 PURPOSE

The purpose of this Technical Specification is to protect pipeline, valves and pumps against corrosion deterioration.

3.0 DEFINITIONS

| Bitumen Primer: Bitumen based primer for use with all bitumen tapes; |
| Bitumen Mastic Strip: 3mm permanently plastic (non hardening) mastic, mouldable by hand, based on Bitumen/Rubber; |
| PVC Backed Bitumen tape: Dual reinforcing system, comprising 1.5mm of reinforced self-adhesive polymer bitumen mastic layer and 0.5mm of high impact PVC backing; |
| Contractor: The service provider or its subcontractor who will undertake the works; |
| Corporation: The Water Corporation and the Principal for the purpose of externally contracted asset delivery; |
| ITP: The detailed inspection and test plan(s) for the Works; |
Petrolatum Primer: Petrolatum tape primer

Petrolatum Profiling Mastic: Petrolatum mastic with polymer beads used for profiling irregular shapes;

Petrolatum tape: Synthetic fabric based tape impregnated and coated with petrolatum based compounds;

PVC over-wrap tape: 0.2 mm plasticized PVC incorporating natural and synthetic rubber adhesive and fungal inhibitor;

Technical Specification: This technical specification;

Works: For the purpose of this Technical Specification means the wrapping of joints or repair work to be undertaken by the Contractor to which this Technical Specification applies.

4.0 STANDARDS/CODES

4.1 All tape wrapping shall comply with the Australian Standard(s) or Code(s) of practice (including amendments) specified in the Contract Specification or stated on the Contract Drawings.

4.2 The applicable edition(s) of standards / codes are those current two weeks prior to tender close date.

4.3 The relevant standard / code is deemed the minimum standard applicable unless otherwise stated in the specification.

5.0 GENERAL

5.1 The Contractor shall supply all necessary plant, equipment, materials and labour, prepare the surface and apply and maintain the protective coating system to steel and/or cast iron surfaces in accordance with this Specification.

5.2 Work shall only be carried out by companies with experience on projects of a similar nature.

5.3 Personnel engaged in tape wrapping application shall have a minimum of 3 months experience on the application of the relevant product where personnel do not meet this criterion they should be supervised by a competent person at all times.

5.4 Personnel engaged in tape wrapping shall be trained and certified by the tape wrapping supplier as competent applicators.
5.5 Only wrapping systems detailed within this specification shall be used to wrap joints, bends, bands, flanges and damaged Sintakote. Alternate methods shall be subject to approval by the Superintendent.

6.0 WRAPPING PROCEDURES

6.1 All weld spatter, slag and sharp edges on the external welded joints shall be removed prior to the tape wrapping.

6.2 All burrs/stubs from the Sintakote coating shall be removed. The edges of the Sintakote shall be bevelled so that there shall be a tapered transition of a minimum of 10 mm between the full coating and the exposed steel.

6.3 100 mm from the edge of the remaining Sintakote® coating shall be roughened using 120 grit emery.

6.4 Inspect for dis-bonding of the Sintakote® pipe coating, cut-out Sintakote coating that has disbonded due to the welding/cutting operations.

6.5 The acceptable surface condition prior to priming/tape wrapping shall be in accordance with Table 1. Appendix – A provides further guidance on surface preparation.

Table 1 - Surface Preparation in accordance with ISO 8501/AS/NZS 1627.9

<table>
<thead>
<tr>
<th>Surface Condition Untreated</th>
<th>Acceptable Surface Condition Post Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Accept (No treatment required)</td>
</tr>
<tr>
<td>B</td>
<td>B St 2</td>
</tr>
<tr>
<td>C</td>
<td>C St 2</td>
</tr>
<tr>
<td>D</td>
<td>D St 2</td>
</tr>
</tbody>
</table>

6.6 System A – PVC Backed Bitumen Tape

Short Straight Sections, Joints, Bends and Bands shall be wrapped using **System A – PVC Backed Bitumen Tape**.

Step 1 - Bitumen primer
Step 2 - Bitumen Mastic strip where required to profile voids.
Step 3 - PVC backed Bitumen tape

The primer shall be applied approximately ten (10) minutes prior to wrapping. The primer shall be tacky prior to tape wrapping. No wrapping shall be allowed once the primer has dried.
Repriming of the dried primer shall be carried out and the primer shall be tacky prior to tape wrapping.

Contour any edges or irregularity’s using the Bitumen Mastic strip (if required). The PVC backed bitumen tape shall extend a minimum of 100mm over the Sintakote and shall be overlapped a minimum of 55% on itself [Refer: Figure 1].
TAPE WRAPPING REQUIREMENTS

SPECIFICATION: L1

ISSUE: 4

DATE: AUGUST 2019

Figure 1 - PVC Backed Bitumen Tape.
6.7 **System B – Petrolatum 4 Step System**

Flange to Flange, Flange to Valve connections, Control Valve gearboxes and irregular shapes shall be wrapped using **System B - Petrolatum 4 Step System**.

Step 1 - Petrolatum primer  
Step 2 - Petrolatum Profiling Mastic  
Step 3 - Petrolatum tape  
Step 4 - PVC over-wrap tape

Note: The paint coated section between the flanges of valves does not require wrapping. Wrapping is required for the bolted connection flange only.

(a) The primer shall be applied prior to wrapping.

(b) The Profiling mastic shall be applied to contour all irregular shapes.

(c) The Petrolatum tape shall extend a minimum of 50mm over the Sintakote and shall be overlapped a minimum of 55% on itself.

(d) The PVC over-wrap shall extend a minimum of 50mm outside the petrolatum tape and shall be overlapped a minimum of 55% on itself [Refer: Figure 2].
PVC Tape to extend minimum 50 mm over Petrolatum Tape

Petrolatum Tape to extend minimum 50 mm over Sintakote®

55% Overlap for PVC Tape

55% Overlap for Petrolatum Tape

Bolted Flange

50 mm minimum Petrolatum

Profiling Mastic

Uncoated/Bare Steel

Uncoated/Bare Steel

Sintakote®

Sintakote®

Legends:
- Primer
- Profiling Mastic
- Petrolatum Tape
- PVC Tape

Figure 2 - Petrolatum 4 Step System
6.8 **System C - Canusa® Heat Shrink Repair Patches**

Patch repairs to damaged Sintakote coating shall be carried out using Canusa® heat shrink repair patches.

Patch repairs using Bitumen tape is only permissible following approval of the Superintendant.

For this application refer to the Corporation’s specification L2.

6.9 **System D - Patch Repair Bitumen Tape**

(a) Where it is not possible to circumferentially wrap the pipe, using PVC backed Bitumen tape a patch repair shall be permitted. As a minimum, the patch shall consist of bitumen primer, bitumen mastic strip and PVC backed bitumen tape.

(b) The primer shall be applied approximately ten (10) minutes prior to wrapping, depending on the ambient conditions. The primer shall be tacky prior to tape wrapping. No wrapping shall be allowed once the primer has dried.

(c) The mastic strip repair patch shall extend a minimum of 150 mm beyond the edge of the defect over the Sintakote®.

(d) The PVC backed bitumen tape repair shall extend a minimum of 100 mm beyond the edge of the bitumen mastic strip over the Sintakote.

(e) Care shall be taken to ensure that the patch repair is not damaged or removed during backfilling and compaction.

7.0 **INSPECTION & TESTING**

7.1 The Contractor shall inspect the completed wrapping to confirm that it is adequately bonded to the pipe and that there are no visible voids. Systems that are not adequately bonded to the pipe shall be removed and re-applied.

7.2 There shall be no holes, punctures, gaps or any other defects that may impair the performance of the tape system. All such defects shall be repaired in accordance with the manufacturers recommended practice.

7.3 The finished tape wrapping shall be holiday tested in accordance with AS 3894.1. The minimum voltage setting for the high voltage spark testing for System A, C and D shall be 12,000 volts. The minimum voltage for the high voltage spark testing for System B shall be 5000 volts.

7.4 Plant, equipment, materials and methods used shall be subject to inspection acceptance by the Superintendent.
8.0 PROCESSES & CONSUMABLES

8.1 All materials used in the tape wrapping process shall comply with the relevant standards/codes.

8.2 All materials used in the tape wrapping process shall be supplied by:

8.2.1 The manufacturer of the subject materials who has in place a Quality Management System certified by an accredited third party to AS/NZS ISO 9001 or an equivalent system certified by an accredited third party and approved by the Corporation; (or)

8.2.2 A distributor, who has in place a Quality Management System certified by an accredited third party to AS/NZS ISO 9001 or an equivalent system certified by an accredited third party and approved by the Corporation; or is a distributor who is supplying the goods from a manufacturer who has in place a Quality Management System which is certified in accordance with paragraph 8.2.1.

9.0 CONTRACTOR’S RESPONSIBILITY

9.1 The Contractor shall supply all necessary plant, equipment, materials and labour, prepare the surface and apply and maintain the protective coating in accordance with this specification.

9.2 The preceding inspection clauses shall not relieve the Contractor of their responsibility to supply materials and perform work in accordance with the requirements of any overriding contract documentation.
**APPENDIX A - EXAMPLES OF ACCEPTABLE / UNACCEPTABLE SURFACE RUST**

<table>
<thead>
<tr>
<th>Mill Scale</th>
<th>Light rust – Surface previously grit blasted</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Image" /> Blasted Surface - Acceptable</td>
<td><img src="image2" alt="Image" /> Dry Rag Clean to remove surface oxide.</td>
</tr>
<tr>
<td>Mechanical Cleaning require to remove loose mill scale</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Light rust – Surface previously grit blasted</th>
<th>Long Period of exposure, unprotected environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="Image" /> Clean with dry rag to remove surface oxide.</td>
<td><img src="image4" alt="Image" /> Mechanical Cleaning required to remove rust.</td>
</tr>
<tr>
<td>Light rust – Surface previously grit blasted</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Loose Mill Scale</th>
<th>Tight, Well bonded Mill Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image5" alt="Image" /> Mechanical Cleaning required to remove loose mill scale</td>
<td><img src="image6" alt="Image" /> Well bonded Mill Scale – No treatment required.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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