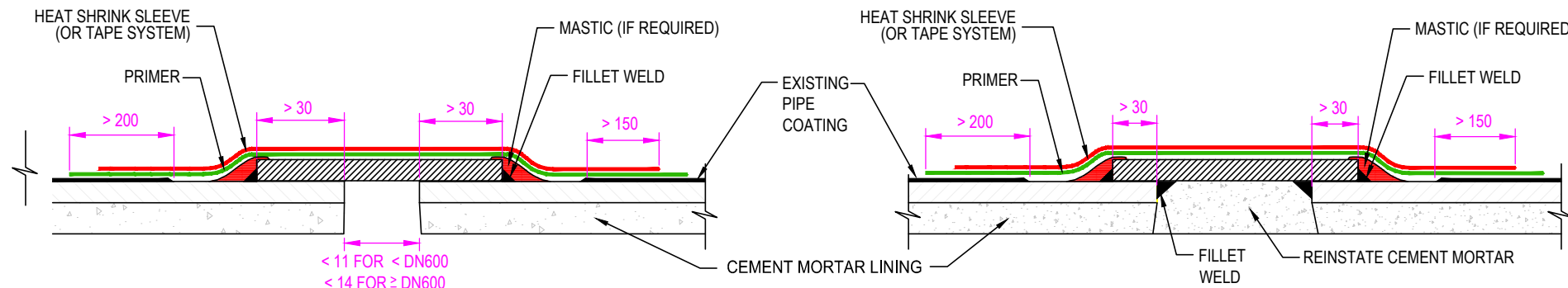


**FIGURE 400-A: SPHERICAL SLIP-IN WELDED JOINT (SSJ)**

SPHERICAL SLIP IN JOINTS ARE THE DEFAULT JOINT FOR MAINS ≤ DN900.

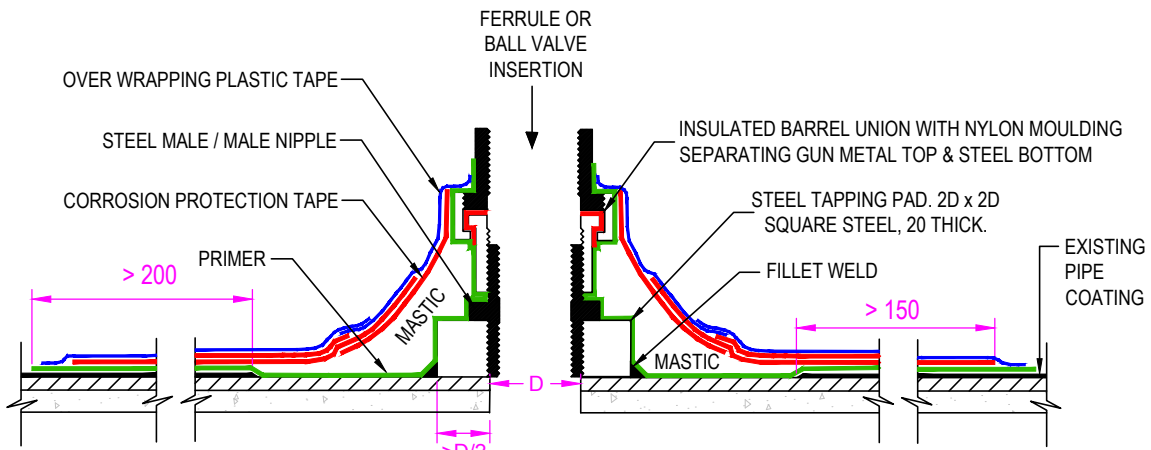
**FIGURE 400-B: BALL AND SOCKET JOINT (B&S)**

BALL AND SOCKET JOINTS ARE THE DEFAULT JOINT FOR MAINS > DN900 AND PROVIDE A GREATER DEGREE OF JOINT FLEXIBILITY AT THESE SIZES.



**FIGURE 400-C: PLAIN END WELDED COLLAR JOINT (WC)**

**FIGURE 400-D: PLAIN ENLD WEDED COLLAR JOINT (WC) FOR MAINS ≥ DN750**



**FIGURE 400-D: STEEL MAIN INSULATED TAPPING ARRANGEMENT**

**NOTES Regarding Insulated Tappings:**

- Tapping of steel mains is generally not acceptable for mains ≥ DN375 and requires water agency approval.
- Steel tapping pad shall be pre tapped and fillet welded onto the pipe around the entire perimeter.
- All exposed steel shall be covered by protective tape to 150mm over native pipe coating as described in drawing MRWA-W-306A.
- Only protective tape and mastic system shall be used (not PE shrink wrap).
- Stretch tape tightly around barrel union, mastic and tapping pad to prevent water / air ingress.
- Tape shall be wound continuously over clean and primed pipe.

**NOTES on Corrosion Protection:**

- Corrosion protection described here is required for all steel surfaces which do not have a high integrity coating consisting of one of the following:
  - Heat applied MDPE coating to AS4321.
  - Fusion bonded epoxy coating to AS/NZS 4158.
- Bare, bitumen coated or painted surfaces are not acceptable coatings. These surfaces will be referred to as uncoated.
- All corrosion protection products shall be as per the water agency product catalogue. The manufacturers instructions must be available for reference on site.
- Products from a single manufacturer shall be used to ensure compatibility of products. All products shall be applied as per the manufacturers instructions.
- Step 1: Surface Preparation- All surfaces to be primed shall be prepared to a finish of class SA2.5 according to AS1627.2. Power wire brush remove all scale, loose rust and old flanking coating. Chisel off all weld splutter and slag.
- Step 2: Primer- Shall be applied by brush or spray to all uncoated surfaces to a distance of 200mm over the pipe native coating. The entire area to be wrapped shall be primed, including all flanges and bolts.
- Step 3: Mastic- Mastic is only required where projections greater than 3mm occur (therefor fillet welds will only need to be mastic contoured when the plate thickness is > 3mm thicker than the fillet weld). Mastic will be required around all tappings. Apply mastic to create a gradual and smooth transition from the pipe to the outer surface. Apply mastic by hand, ensuring no significant voids are present.
- Step 4- Option A: MDPE shrink wrap- MDPE shrink wrap shall be undertaken in accordance with clause "reinstatement using heat shrinkable wrapping system" clause in Part 2 of WSA03, MRWA edition. Only suitable for flat surfaces (ie: SSJ, B&S or WC joints).
- Step 6: DCVG Holiday Testing- Where requested or specified by the water agency, DCVG holiday detection testing shall be undertaken to confirm the integrity of the pipeline coating system in accordance with AS4827.1- coating defect surveys for buried pipelines- direct current voltage gradient (DCVG).

**GENERAL NOTES:**

- For steel pipelines, only SSJ, B&S, WC and flanged joints are acceptable. RRJ mains require water agency approval.
- Pipes to be joined in accordance with manufacturers handling and installation manual.
- Gaps in the internal cement mortar lining shall be reinstated and internal seams welded for all mains ≥ DN750.
- Welding and the non destructively testing of welds shall be undertaken in accordance with clause "welding of steel pipelines" clause in Part 2 of WSA03, MRWA edition.
- Fitting shall be fabricated in accordance with clause "fabrication of steel fittings" clause in Part 2 of WSA03, MRWA edition.
- For steel flange arrangements, refer to MRWA-W-306A & 306B.
- For Cathodic Protection requirements of steel mains, refer to the Water Agency's Cathodic Protection Standards (CORR specifications).
- Ensure test points are installed on cathodic protected mains as per the Cathodic Protection design and that mains on both sides of valves are protected (via bonding across a valve, separate anodes or separate ICCP units etc).

DESIGNED	R. JAGGER	DATE:	20/01/2011
DRAWN:	R. JAGGER	DATE:	20/01/2011
CHECKED:	NAME	DATE	APPROVED: NAME
<input checked="" type="checkbox"/>	C.WW	C. RIVETTE	04/04/12
<input checked="" type="checkbox"/>	SEWL	C.PAXMAN	04/04/12
<input checked="" type="checkbox"/>	YVW	K.DAWSON	04/04/12
<input checked="" type="checkbox"/>	C.WW	G.CARRUTHERS	04/04/12
<input checked="" type="checkbox"/>	SEWL	G.REYNOLDS	04/04/12
<input checked="" type="checkbox"/>	YVW	A.COSHAM	04/04/12

MELBOURNE RETAIL WATER AGENCIES

MRWA WATER SUPPLY STANDARDS

NOT TO SCALE

STEEL PIPELINE JOINTING

MRWA-W-400

ISSUED 2012 REVISION NO. 3

REV	DESCRIPTION	DATE	APPROVED
3	REFORMATTING & REF CP DRAWINGS	1/06/16	RJ / CP / JT
2	PUBLISHED FIRST ISSUE	04/04/12	R. JAGGER
1	PRE PUBLISHED DRAFT FOR COMMENT	12/07/11	R. JAGGER