

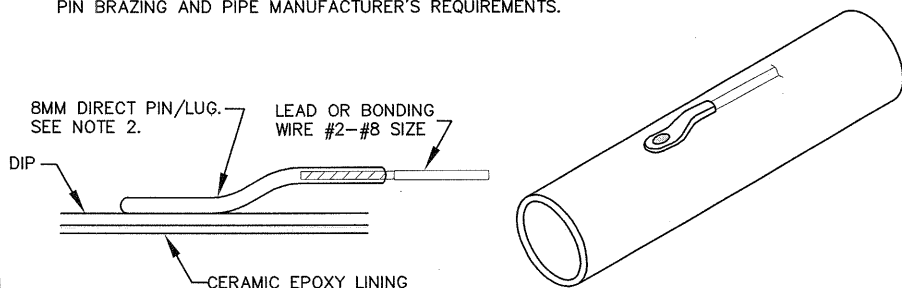
**CAD WELD NOTES:**

1. ALL WIRE WELDS SHALL BE MINIMUM 6 INCHES APART.
2. CAD-WELD MOLD SHOWN IS FOR HORIZONTAL SURFACES. FOR VERTICAL SURFACES SIDE WELD MOLD IS REQUIRED.
3. BASED ON THE TYPE OF PIPE (STEEL, DUCTILE IRON, OR CAST IRON) TO WHICH THE WIRE IS TO BE WELDED, THE CARTRIDGE TYPE, SIZE AND WEIGHT SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

TABLE A		
PIPE MATERIAL	WIRE SIZE	USE/LOCATION
STEEL CML&C	#8 AWG STRANDED	PIPE LEAD
STEEL CYLINDER PIPE	#8 AWG STRANDED	PIPE LEAD
DUCTILE IRON PIPE	#8 AWG STRANDED	PIPE LEAD
STEEL CML&C	#4 AWG STRANDED	JOINT BONDING
STEEL CYLINDER PIPE	#4 AWG STRANDED	JOINT BONDING
DUCTILE IRON PIPE	#4 AWG STRANDED	JOINT BONDING

**PIN BRAZING NOTES:**


1. ALL PIN BRAZING SHALL BE MINIMUM 6 INCHES APART.
2. USE OF DIRECT STANDARD 8MM PIN BRAZING REQUIRES MINIMUM 0.20 INCH PIPE WALL THICKNESS. USE OF 8MM EXTRA-FLUX PIN BRAZING REQUIRES MINIMUM 0.25 INCH PIPE WALL THICKNESS. STYLE, TYPE, MATERIALS AND PIPE WALL THICKNESS SHALL BE IN ACCORDANCE WITH PIN BRAZING AND PIPE MANUFACTURER'S REQUIREMENTS.



**ALUMINO-THERMIC (CAD) WELDING**

- STEP 1:** REMOVE COATING OR ENCASEMENT FROM PIPE.
- STEP 2:** FILE OR GRIND PIPE SURFACE TO BARE SHINY METAL (EQUIVALENT TO SSPC-10 "NEAR WHITE METAL") TO A MINIMUM SIZE OF AN AREA OF 3-INCH X 3-INCH.
- STEP 3:** PREHEAT THE AREA TO BE CAD-WELDED WITH A PROPANE TORCH TO REMOVE ANY SURFACE MOISTURE. DO NOT OVER HEAT).
- STEP 4:** STRIP 1 INCH OF INSULATION FROM END OF CP TEST WIRE.
- STEP 5:** WRAP TEST LEAD WIRE ONCE AROUND OUTSIDE CIRCUMFERENCE OF PIPE THEN TIE WIRE INTO A "HALF HITCH" KNOT APPROXIMATELY 12 INCHES AWAY FROM CAD-WELD AREA. LEAVE 12 INCHES OR MORE OF WIRE (SLACK) BETWEEN KNOT AND CAD-WELD, (THIS WILL HELP PREVENT FUTURE DAMAGE TO CAD-WELD.)
- STEP 6:** INSTALL APPROPRIATE CAD-WELD PROTECTIVE SLEEVE ONTO SPECIFIC AWG WIRE SIZE. (REFER TO TABLE A.)
- STEP 7:** SELECT CORRECT CAD-WELD GRAPHITE MOLD AND APPROPRIATE WELDING POWDER FOR THE SIZE AND TYPE OF WIRE AND METALLIC PIPE THAT IS TO BE WELDED. (REFER TO TABLE A.)
- STEP 8:** INSPECT AND CLEAN THE GRAPHITE MOLD.
- STEP 9:** INSERT CAD - WELD DISC IN BOTTOM OF GRAPHITE MOLD, POUR ENTIRE CONTENTS OF SHOT (ALUMINO-THERMIC WELD POWDER AND STARTER) INTO GRAPHITE MOLD.
- STEP 10:** PLACE WIRE IN THE CENTER OF THE CLEANED AREA SO THAT ALL OF THE STRIPPED WIRE IS IN CONTACT WITH THE PIPE SURFACE.
- STEP 11:** PLACE LOADED GRAPHITE MOLD OVER WIRE AND HOLD FIRMLY IN PLACE.
- STEP 12:** POSITION YOURSELF (AND ANY OTHER PERSONNEL) AT LEAST 90-DEGREES AWAY FROM IGNITION PORT OPENING.
- STEP 13:** HOLD FLINT GUN AT IGNITION PORT AND IGNITE STARTING POWDER.
- STEP 14:** REMOVE GRAPHITE MOLD FROM PIPE AFTER CAD-WELD COMBUSTION HAS STOPPED.
- STEP 15:** REMOVE SLAG FROM WELD AREA USING A WELDING PEEN HAMMER.
- STEP 16:** GRASP WIRE AND APPLY TENSION TO WIRE WHILE STRIKING WELD WITH A 2-POUND HAMMER TO CHECK SOUNDNESS OF WELD. (BE CAUTIOUS OF DAMAGE TO INTERIOR OF PIPE LINING.)
- STEP 17:** COAT WIRE, CAD-WELD AND EXPOSED PIPE SURFACE WITH APPROVED "ELASTOMERIC COMPOUND" OR "MASTIC FILLED DOME". BE SURE TO USE MANUFACTURER'S SPECIFIED PRIMER MATERIAL.
- STEP 18:** REPLACE PIPE COATING AND PLASTIC WRAP OR TAPE IF REQUIRED.

**ALUMINO-THERMIC (CAD) WELDING AND PIN BRAZING**

REVISION			APPROVED		CITY OF CORONA
NO.	APPROVED	DATE		DATE	
			<i>Nelson D. Nelson</i>	11-26-12	 STD 456
			<i>Tom Koper</i>	11-20-12	
			NELSON D. NELSON, PE, CITY ENGINEER		SHEET 1 OF 1
			TOM KOPER, PE, DISTRICT ENGINEER, DEPARTMENT OF WATER AND POWER		