

# **114 Fabricated Mechanical Joint Repair Sleeves**

# 114 Fabricated Mechanical Joint Repair Sleeves For familiar cast iron and ductile iron problems.



JCM 114 Bell Repair Sleeve Bell – Spigot Connection JCM 114 Bell Repair Sleeve Flanged Pipe Connection JCM 114 Repair Sleeve Repair Straight Run of Pipe Boston, Massachusetts Leaking 60" Cast Iron Bell-Spigot Joint One of two major transmission mains serving suburban areas.



Boston, Massachusetts Leaking 60" Cast Iron Bell-Spigot Joint Mechanical Bell Join Leak Clamp installed in early 1970's extended service life for 30+ years. Fitting failure required repair.



# **MWRA contacts JCM with information**

- Cast iron pipeline: 63.63 O.D.
- Cast bell joint: 78.00 O.D.
- Bell length w/clamp: 28" long
- Working pressure: 150 PSI



SHOWN ABOVE: EXISTING DIMENSIONS OF LEAKING BELL JOINT. MAIN CANNOT BE ISOLATED THEREFORE MWRA NEEDS AN ENCAPSULATING COUPLING TO ENVELOPE AROUND THE EXISTING BELL AND BELL JOINT CLAMP BOTH SIDES OF ENCAPSULATION FITTING TO GO FROM 63.63 O.D. ON EXISTING PIPE TO 78" I.D. IN THE MIDDLE FOR A MINIMUM OF 28" LENGTH TO CLEAR THE EXISTING BELL JOINT CLAMP NOTE ALSO THAT ENCAPSULATION FITTING TO HAVE BLEED-OFF PLUG OR CORPORATION FOR EASE OF INSTALLATION JCM responds to the inquiry with the JCM 114 Mechanical Joint Bell Repair Sleeve. This drawing submitted to the MWRA for consideration.



Fitting is designed to encapsulate the bell/spigot joint and the bell joint leak clamp.

MWRA approved the submittal and placed order with JCM Industries on Tuesday, April 26. Several aspects concerning old, large diameter pipe were covered including: out of round condition, irregular pipe surface and extreme capabilities of the fabricated fitting. Special instructions for emergency status fabrication and shipment were included. JCM Industries order the special materials for fabricating a 60" fitting – body material, flanges, mechanical joint push rings, side lug bar material, etc. Materials were received and production on the fitting began on Thursday, April 28<sup>th</sup>.





After fabrication and coating, the fitting is delivered to assembly for gasket installation, hardware and assembly for shipment.



Fitting weight Approx. 6,500 lbs.

Fitting shipped on Friday, April 29th



Summary Custom 114 - 60" Bell Repair Sleeve: Information approved/Fitting ordered April 26th Fabrication begins April 28<sup>th</sup> Finished Fitting shipped April 29<sup>th</sup> Completion of job May 5<sup>th</sup>





Pearl Harbor, Hawaii

Problem: Ship docking in Pearl Harbor dropped anchor onto 24" cast iron pipe damaging the pipe wall.

Solution: Fabricate mechanical joint repair sleeve to encompass whole length of pipe.



Pearl Harbor, Hawaii

Fitting installed on test fixture to ensure the integrity of the welds and construction.





# Pearl Harbor, Hawaii

Fitting coated and prepared for shipment



PROBLEM: Underwater 30" Cast Iron Pipe about 100 years old. Galveston Island water supply from City of Houston. Numerous leaks and breaks, old valves and growing demands put enormous stress on the older line. *Note the temporary JCM Universal Clamp Couplings.* 



#### **SOLUTION: 114 MJ Bell Repair Sleeve**

JCM submitted a custom fabricated 114 MJ Repair Sleeve to isolate the entire section of pipeline and permanently seal the damaged areas. JCM fabricators laying out the 16' long fitting.





At completion of fabrication. Note the interior of the sleeve and the broad flange faces on the ends. This 114 was sized to accommodate the two Bells (O.D. of 38-1/2"). The 114 was provided with a epoxy coating and stainless steel hardware to protect the carbon steel from corrosive saltwater environment.





On the job site in Galveston, Texas. Installation crews used barges and large cranes to transport the fittings and drop them underwater for diver installation. (Installation project was delayed for two days waiting for Willie Nelson Concert on Galveston Island.)









SCALE: 3/8 \* = 1'-0\* 2" BALL DAMAGED BELL (32 1/2 " O.D.) 48" STEEL SLEEVE 30" CAST IRON PUSHER PLATE, TYP WATER MAIN PTP FIG. 190 CLAMP (2 EA. PILE TYP) 3" WELD, BOTH SIDES, TYP SAND/CEMENT BAGS, TYP 6" DIA. PILE (TYP BOTH SIDES) 34709F06.DGN FINAL SLEEVE CONFIGURATION

After – green outline represents fabricated fitting. Encompasses two joints and full length of pipe.

## UC Davis excavation site for repair of 30" Ductile MJ x MJ Adapter. Installation of JCM 114 Bell Repair Sleeve.





Leaking 30" DI MJ x MJ Fitting

### JCM 114 Installed over Ductile MJ x MJ Adapter



For Comparison, note the identical MJ x MJ Adapter just above the already installed JCM 114 Repair Sleeve