

Water Main Replacement Project (WMRP), TRINITY PROJECT

The 2013-14 WMRP consists of installing approximately one-half mile of new water main along Trinity Drive (located between Tioga Drive and Klamath Drive) and Trinity Court. These new water mains will replace existing water mains that had major breaks three times in the last six-years. These breaks appear to have been caused in part by local ground movement. To safeguard against similar breaks in the new water mains, staff proposes a pilot project to install KUBOTA Earthquake Resistant Ductile Iron Pipe (ERDIP). This is a new product manufactured in Japan. Staff is not aware of an equivalent product manufactured in the US. Over 33000-miles of this pipes were installed in Japan, and none of them broke during the 2011 Great East Japan (magnitude 9) Earthquake. The Cities of Los Angeles, and Portland, Oregon have already installed this pipe, and the City of San Francisco and Vancouver, as well as EBMUD have plans to install it. The project is currently out to bid, and staff is planning to recommend award of contract at the August 19, 2014 Council meeting.

The Plans and Specifications are designed to give the City flexibility in choosing the pipe materials. The KUBOTA ERDIP is specified as the pipe material for the BASIS OF BID. A process is included for submittal of alternate materials for consideration based upon CRITERIA described in the Specifications. In addition, bid alternates are included to allow for the substitution of standard ductile iron pipe instead of the KUBOTA ERDIP if the cost is prohibitive.

Staff is proposing this as a pilot project in anticipation of the City WATER SYSTEM MASTER PLAN that is scheduled for completion in winter-2015. Our goal is to evaluate use of the ERDIP for back-bone water pipeline infrastructure to provide emergency water supply system reliability.

Please see the following ATTACHMENT A for additional ERDIP information.



ATTACHMENT A
EARTHQUAKE RESISTANT
DUCTILE IRON PIPE (ERDIP)

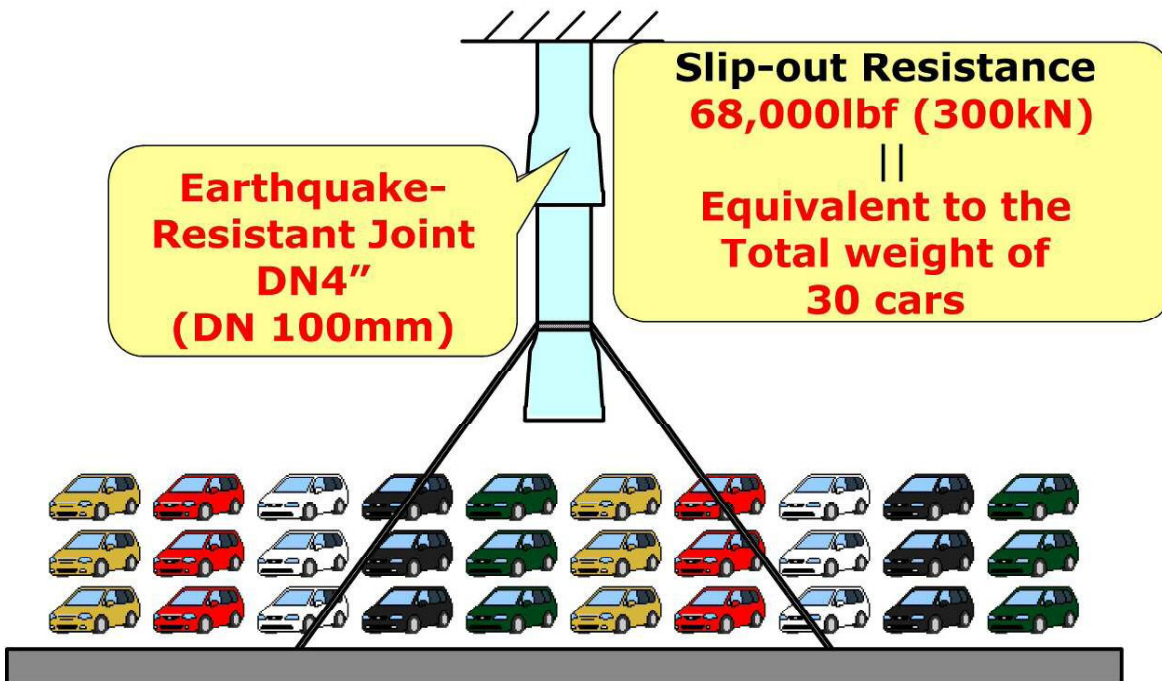
Water mains can fail by pulling apart during earthquake movement.



PHOTO #1

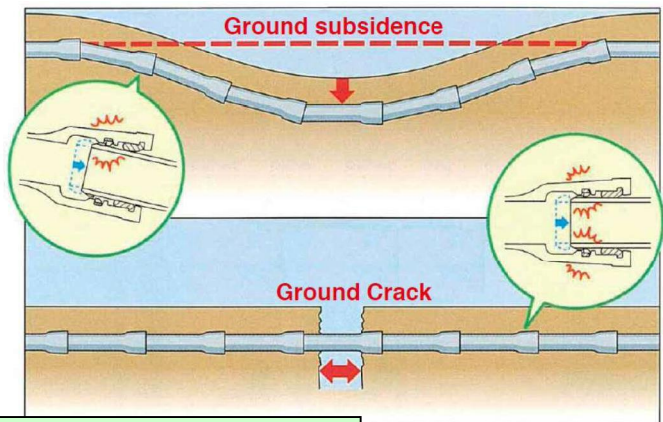
ATTACHMENT A
EARTHQUAKE RESISTANT
DUCTILE IRON PIPE (ERDIP)

ERDIP is designed to resist failure from pulling apart.



ATTACHMENT A
EARTHQUAKE RESISTANT
DUCTILE IRON PIPE (ERDIP)

ERDIP is designed to expand, contract, and bend without breaking or leaking.

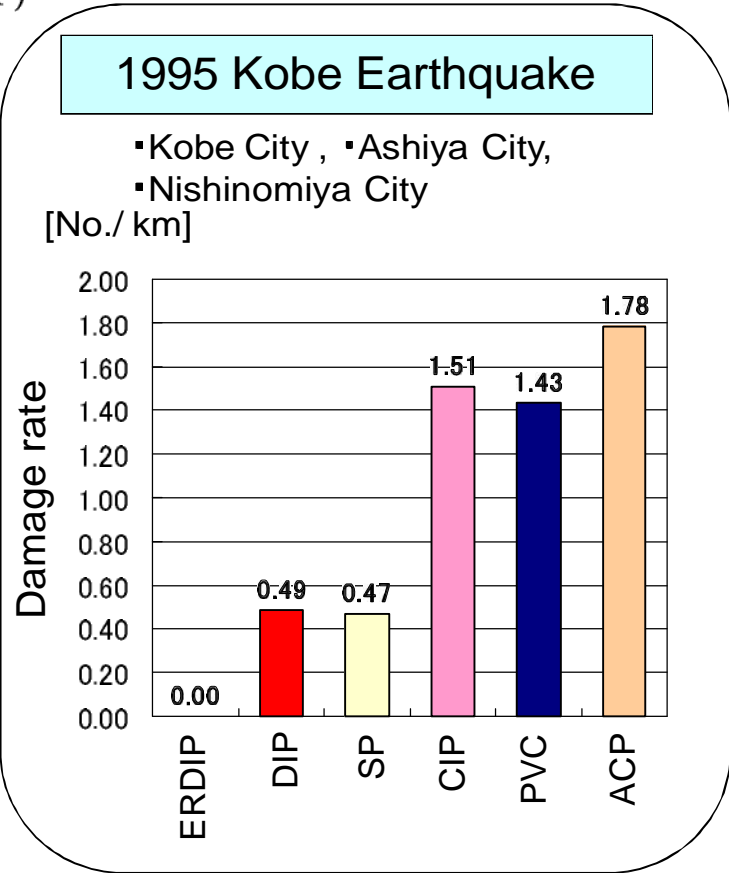
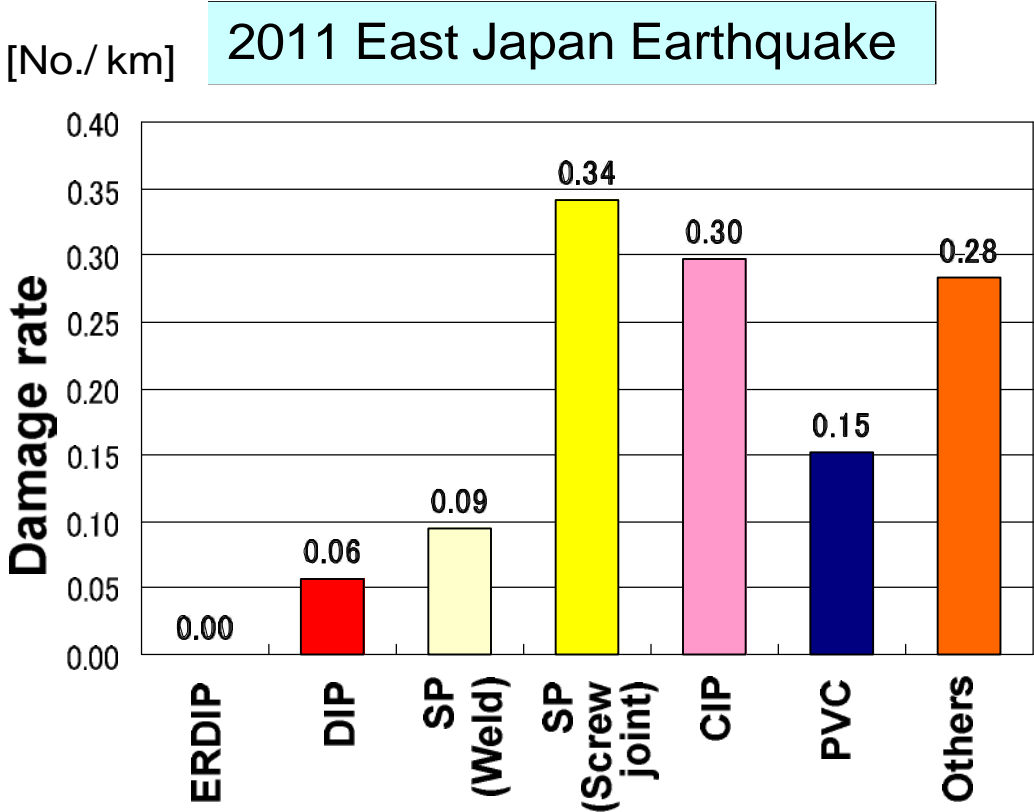


Chain (Flexible & Lock) structure joint

Item	Performance amount	6 (150mm)
Amount of expansion / contraction %	1% of nominal pipe length	$\pm 50\text{mm}$ (=2")
Slip out resistance force	3D kN (D: Dia in mm) 17,000 D lbf (D: Dia in inch)	450 kN 102,000 lbf
Joint deflection angle	6° - 8° (depend on diameter)	8°

PHOTO #3

ATTACHMENT A
EARTHQUAKE RESISTANT
DUCTILE IRON PIPE (ERDIP)



Japan had 33,000-miles of ERDIP during its 2011 magnitude 9 earthquake, and none of it failed.

ATTACHMENT A EARTHQUAKE RESISTANT DUCTILE IRON PIPE (ERDIP)

We don't want to stand in line for water after an earthquake.
Japan successfully provided emergency water supply to their customers during the 2011 earthquake.

Emergency Water Supply



California agencies with ERDIP currently installed:

1. City and County of Los Angeles

Other California agencies with ERDIP projects in design or construction

1. City and County of San Francisco
2. East Bay Municipal Utilities District (EBMUD)

PHOTO #5