



# Bonded Saddle Licence to drill

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# Why 'Bonded Saddle'?

## Meeting the challenge

Up to 15" standard excavations can be utilised.

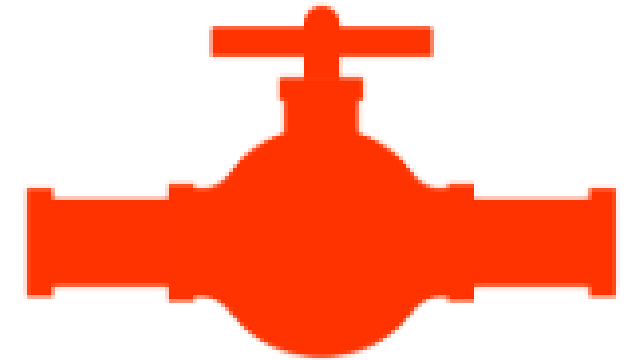
18" and above pose issues.



Service connections, mains access - across the full range of pipe sizes up to 48"



A number of valves discovered to be installed without the PP and Rider Points





# Bond and bolt

## Drawing on an existing technique

Bond and Bolt is tried and tested and in wide use already.

Offers significant savings to use a tried and tested technique:-

- No need for deep ex working
- Reduction in excavation size
- Backfill costs
- No impact on host main support
- Disruption to road users





# Bond and bolt

## Ripe for development



# Project scope

## Bolder and better

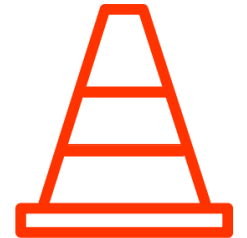
### Timing

- In & out within 24 hours
- Mains prep to drilling in less than 2 hours



### Safety post installation

- Use once, no re-entry
- Untrained operatives



### Existing fittings

- 2" TPTT's
- Donkin 55 TB valve



### Testing requirements

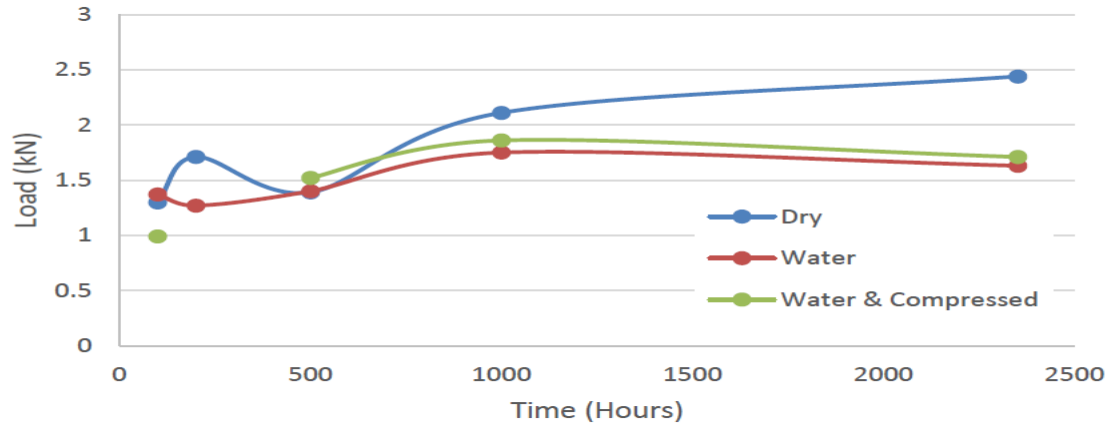
- ROSEN



# Fast tracking... resin development

# Resin development

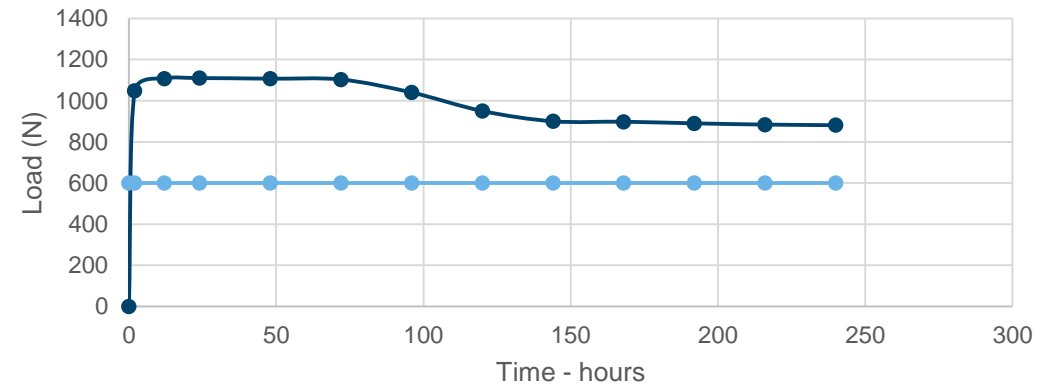
## Faster curing



From  
24 hours cure  
to  
drilling within  
90 minutes



## Bond & Bolt

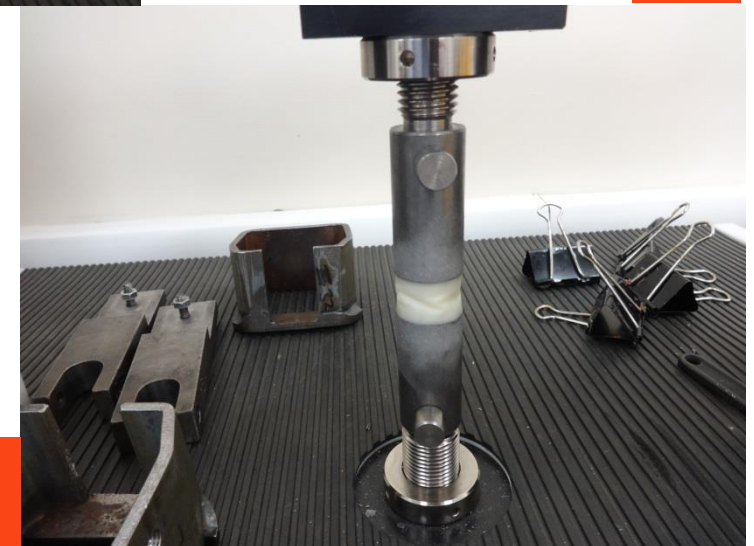
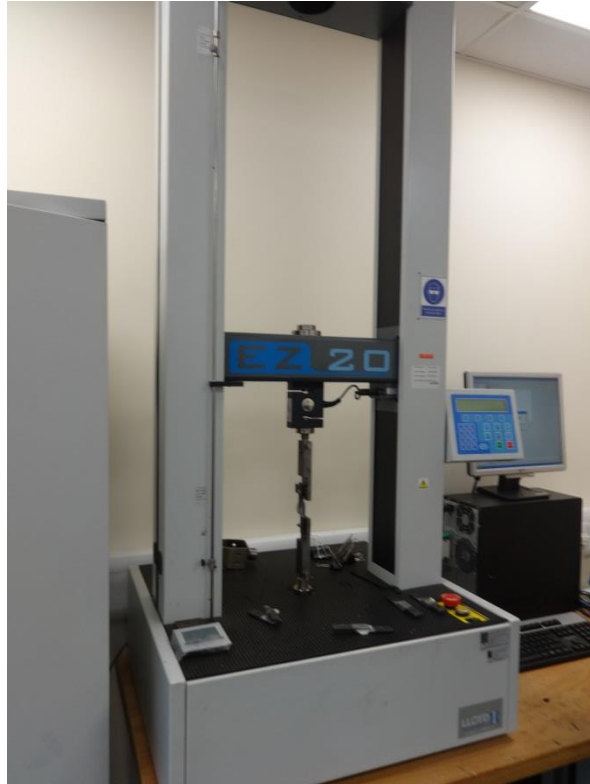


## Project Bond

● load (N) ● baseline



# Resin development Working with Rosen



# Fast tracking... the saddle

# The saddle

## New saddle design with no bolts

**Drilling up  
to 2 1/2"**



**Remains  
in place  
once  
completed**



# Fast tracking... prepping the main



# Prepping the main

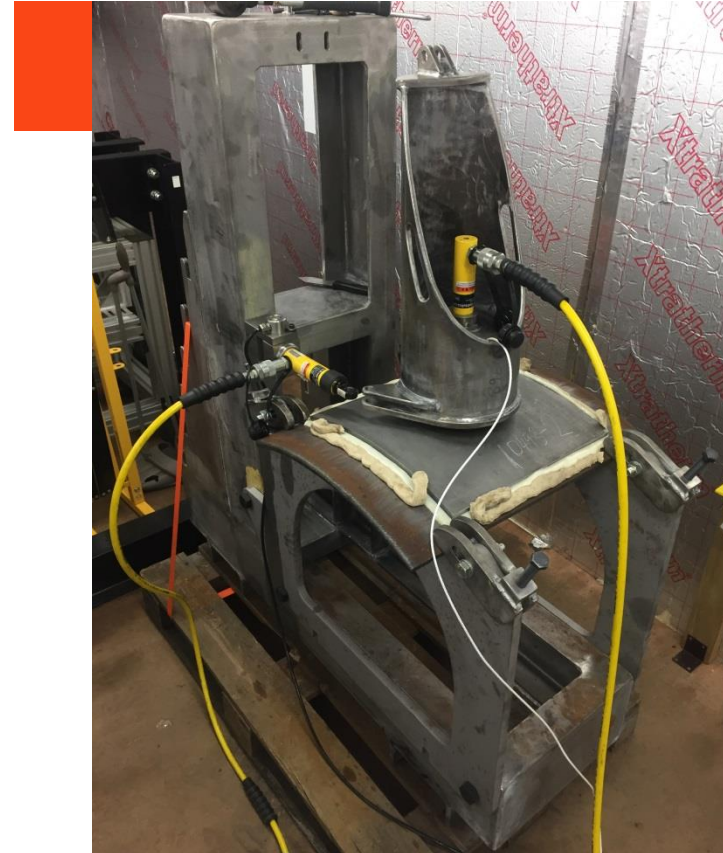
## Straightforward method



# Fast tracking... testing testing

# Lab testing

## Working with Rosen



# Fast tracking... to the field



# Field trials

## Cast iron, spun iron, steel – low and medium pressure



# Field trials

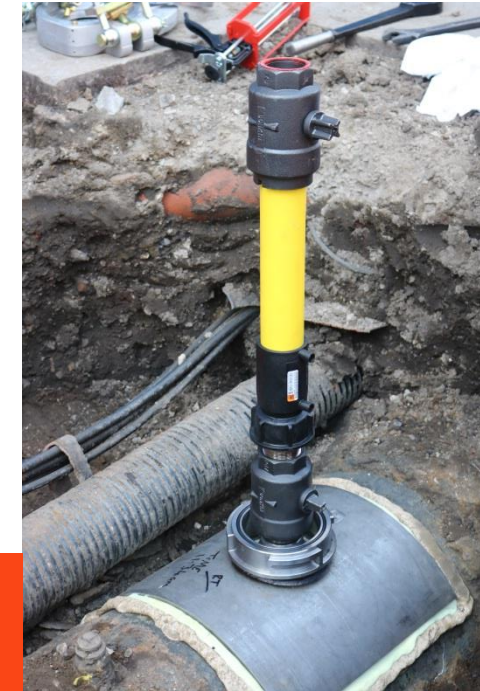
## Lessons learned



**Refined the tooling  
and end to end  
process**



**Proved the benefits**



**Focused outcomes  
and open  
communications**



# The benefits

## Multiple savings

### Quick access

- Install to drill **90 minutes**
- Faster resin cure
- In & out within 24 hours



### No specialist fittings

- Lowers costs
- No additional approvals



### Flexible for use across other processes



### Off the shelf tooling

- ALH S1 drill already approved, resin dispensing



### Reduce excavation size

- Expose only crown of main



### Overall cost savings and customer benefits



# Fast tracking... what next



# What next?

## Business as usual



**Final contracts**



**Engineering bulletin**



**Explore potential for further development**



**Sharing with other GDNs**



**Implementation into business as usual**



**International interest and other utilities**



Thank you

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