Case Study:
ADS N-12 HDPE Pipe

CUBICM3
SUSTAINABLE ENGINEERING SOLUTIONS

BRIDGE REPLACEMENT: YORK-MERREDIN ROAD – MAIN ROADS WA

CLIENT: MAIN ROADS WESTERN AUSTRALIA

INSTALLATION DATE: JUNE 2016

GENERAL PROJECT INFORMATION

- Timber and concrete bridges and culverts are failing in the wheatbelt areas due to highly aggressive soil and water flows.
- Designs for replacement culverts were originally created using reinforced concrete pipe in spite of the fact that "concrete cancer" was a common cause of failure.
- A poor understanding of the more rigorous design process applied to flexible pipe than with RCP and experience with other flexible pipes that did not follow the design standard had created a misperception that plastic pipe could not handle the loads required.
- Education on the benefits of well designed flexible pipe and the external quality controls applied to ADS N-12 necessary to achieve AASHTO M294 compliance gave Main Roads WA the confidence to take advantage of the strength, resilience and installation of ADS N-12.

DESIGN CONSIDERATIONS

- All pipe designs require AS 5100.2 – 2004 live loads as inputs.
- ADS HDPE N12 pipe exceeded these requirements at low cover for a design life in excess of 100 years.
- As with all stormwater applications abrasion from sediment was a major factor, unlike concrete or corrugated metal pipe which can erode to expose structural elements to the environment ADS N-12 pipe is a homogenous material with an abrasion resistance higher than these other materials.

DESIGN STANDARDS

- Materials had to comply with the relevant Australian design standards and codes AS 2566.1 with the higher AS 5100.2 live loads and construction loads. Data used for design needed to be independently verifiable.

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