

PIPELINE

Delivering the Latest News in Pipe Manufacturing in New Zealand

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Humes new sealed manhole system

Humes has spent the last two years researching manhole solutions around the world. From what we have identified there is a significant opportunity to improve the current system used in New Zealand with corresponding benefits from a more flexible offer with greater structural performance, no water infiltration, better manhole benching and water conductivity, easier to use components and improved on site health and safety. Humes new DN1050 sealed modular manhole system for sewer and stormwater applications, made using the new VT production process (similar to the new pipe manufacturing process) delivers on all these attributes.

Comprising of octagonal bases, circular water tight rubber ring jointed risers, conical lids and adjustment rings with cast in streetware options for more effective road alignments will provide asset owners, developers and contactors with the improved solutions they have been seeking for some time.

The new rubber seal removes the need for longer manhole risers, with the 300, 600, 900 and 1200mm risers provide a flexible combination of riser length options, which can be reused or reconfigured once installed. Additionally the new 600mm high conical lid means there is a need for fewer riser lengths.

The base and conical lid provides a minimum manhole height for sewer applications of 1400mm and 1700mm for stormwater. These heights will accommodate a large proportion of manhole applications. Longer lengths can be easily accommodated with the new range of riser lengths while smaller heights can be accommodated with a flat lid option.

Humes manhole system is quick to install, safer and has fixed weight combinations to deliver a better, more cost effective installed solution. While there are no specific standards for manholes in New Zealand the new system will meet the AS 4198:1994 standard and all local council requirements.



The Victoria Park Tunnel Project

Victoria Park Tunnel (VPT) calls for the removal of the current viaduct structure and replacement with a traffic tunnel. Doing this requires a complicated work flow and the repositioning of many services and stormwater culverts. Deadlines were very tight so it was critical for the contractors to get the required pipe sizes at the right time.

Recognising the production efficiencies and thus the quick delivery times that can be achieved through Humes VT process, the Victoria Park Tunnel Alliance partners made the choice to use Humes pipe for this project.

There are four large diameter pipe sizes required for this job, and Humes have been able to commit to substantial pipe volumes with very short lead times. The pipe used for the VPT has been supplied with the new Lamell sealed lubricated rings. Feedback from the contractors on the job has been excellent with comments about the speed of delivery and the ease of pipe jointing with the new Lamell ring.

The new manhole base options

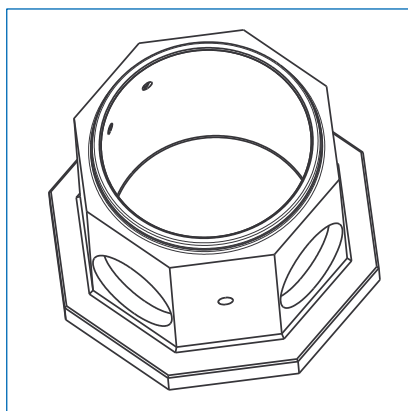
Humes new DN1050 manhole range has octagonal unreinforced bases with 110mm thick walls, which provide flat vertical faces for coring or establishing pipe entry points. The unreinforced bases make it easier to core or break open for pipe entry points. The new bases provide solutions for sewer and stormwater and have respective heights of 800mm and 1100mm. The additional weight of the bases with flanged profile provides better resistance to floatation.

The current practice of benching manholes in situ has many issues such as being time consuming, messy and creating dangers of confined spaces. The new pre-benched sewer option provides solid concrete channels using 50MPa concrete mix manufactured under controlled conditions. This provides consistent high quality concrete benching and negates the need to have earthenware channels or other corrosion resistant finishes, which is the current practice in most other countries. However for aggressive sewers, Humes can provide a factory applied epoxy coating or have the bases made out of Duracem.

Humes will provide three base options:

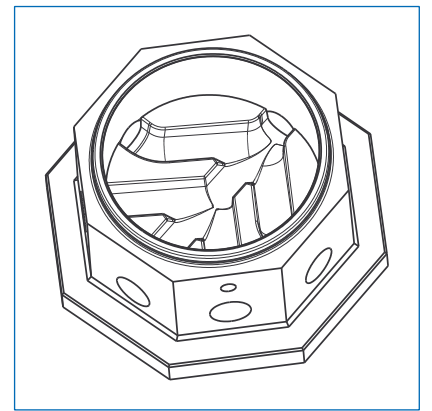
STORMWATER BASE

The new 1100mm high stormwater base has soft spots which will accommodate pipes with nominal internal diameter up to DN375mm. This base requires benching to suit the specific pipe configuration.



SEWER MANHOLE BASE

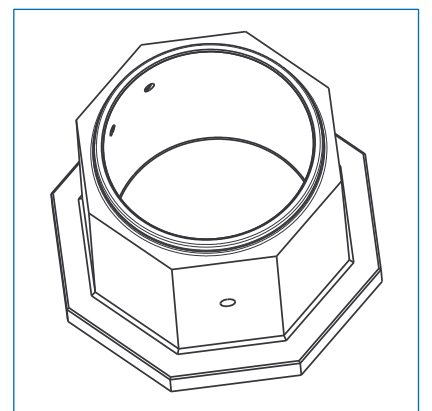
The 800mm high sewer manhole bases will be pre-benched with soft spots to accommodate pipes with nominal internal diameters up to 150mm. With formed straight through, 45° and 90° channels, there is no need for messy and time consuming onsite benching practices. This will provide a further cost saving in materials and time. However for very aggressive sewer situations, channels can be epoxy coated to provide further protection.



The superfluous benched channels are simply filled in using a special coloured high strength wet concrete mix that will be available from Humes, designed specifically for this purpose, providing easy recognition of the finished quality of the benched manhole.

GENERIC MANHOLE BASE

The octagonal shape of this 1100mm high base provides eight directional faces to position pipe entry for up to DN375. It is also easy to use several faces and achieve entry for pipes up to DN600. This option can be used for either sewer or stormwater with benching undertaken in situ.



Manhole riser sections



The new range with 300, 600, 900 and 1200 high rubber ring jointed riser sections remove the need for large, heavy full length risers currently used for deep manholes. The risers will be common to both sewer and stormwater systems.

The self lubricated rubber seals allow for easy jointing, a water tight seal provides the flexibility to increase or decrease manhole heights as construction is undertaken. With the maximum riser length of 1200mm and weight of 1193kg the need to handle heavier riser lengths is removed.

An additional feature of the new riser system is the no slip high grip

manhole step. The manhole risers have a cast in manhole insert and steps are push fitted into inserts as required or a ladder can be placed in position instead. If no steps are required then there is no need to plug the step holes as inserts are cast into the wall and do not penetrate through outside wall of the riser.

High grip manhole steps

Humes has chosen Caswick high grip manholes steps. The new steps have an increased width from 225 to 300mm and are made to European Standard EN13101. The steps are made from structural carbon steel and covered with HDPE. There is also a stainless steel encapsulated HDPE option for aggressive sewer environments, which are lime green in colour for easy identification.

Steps are push fitted into cast in inserts and are rated to a pull out test of 5.0KN as per EN13101 and Standard TypeD Class I (as demonstrated in the photo opposite). If steps are not used, there is no need to plug or mortar the open holes as with the current manhole system meaning that once manholes are installed in the ground the excavations surrounding them can be immediately infilled.

The manhole steps also comply with EN ISO 9002:1994 and are manufactured to BS 1247:Part2, WIS 4-33-01 and carry the coveted kitemark.





Conical lids

The new conical lids replace existing flat lid options. The 670mm high cones can provide a complete manhole option when combined with a base. The entry point aligns with the wall of the manhole to make entry directly down the step face of the risers. The cone shape means there is more fill above the manhole, thus resisting floatation and increases the depth of compaction around the manhole opening.

The conical profile reduces from 1050 to a 610mm opening. Streetware can be directly fitted to the conical riser or if required adjustment rings are available.

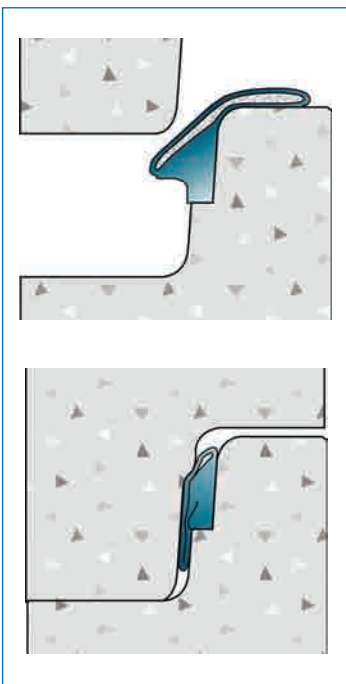
The new cones have been designed to deliver a Class D load rating of 210KN and will meet all trafficable and non trafficable requirements.

Adjustment rings will be available to accommodate a 530 opening as well.

Manhole rubber seals

Humes has chosen a rubber seal specifically designed by Forsheda, a leading concrete pipe ring manufacturer, for manholes. The pre-lubricated rubber ring provides for easy jointing (and disassembly) and a water tight rubber seal for manhole bases, risers and cones. This means that changes can be made to manhole heights during and after construction.

The seal is designed as a sliding seal with a pre-lubricated sliding mantle. During installation, the thin sliding mantle slides over the body of the seal. This design permits installation with very low force, as there is no friction between rubber and concrete. The special design of the joint and seal make the system easy to centre during jointing. Forsheda rings meet SS-EN ISO 9001:2000 and bear the British Standard "Kitemark" CE-marking



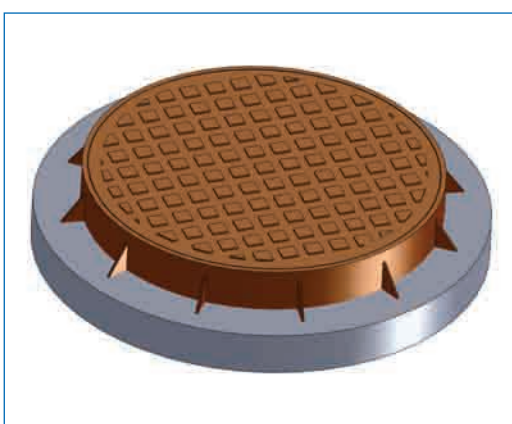
Sewer manhole adaptors

Humes will be providing a standard range of earthenware manhole connectors sized to fit into the preformed openings for the benched manholes. The earthenware connectors can be securely mortared into the openings using Hume bond. The connectors come with standard internal diameters of 100 and 160mm connections. Other options can be custom made by Humes to suit specific needs for larger diameter requirements.

Humes manhole adaptors are manufactured from Naylor earthenware pipe and couplings, which are made to EN295 standard. Sleeve couplings used in the Humes manhole adaptors are manufactured in high impact polypropylene with elastomeric seals providing watertight, flexible mechanical joint assemblies, which allow for any ground movements.



Streetware solutions



The standard manhole opening will be 610mm with options for 530mm openings. The streetware offer includes all current streetware options with an added offer of a cast in streetware solution which reduces the need for the onsite mortaring of streetware. This option provides a strong foundation around the streetware to support the bitumen layer.

Adjustment rings

Humes will provide a standard range of adjustment rings with 610mm opening for use between the cone and streetware for the fine adjustment of manhole heights for road and surface alignment. These will be in 50mm, 75mm, 100mm, 150mm, 200mm and 300mm thicknesses. The 300mm option is designed to be cut on site to whatever length is required to provide an exact height adjustment. Larger adjustments can be made by reconfiguring the interchangeable manhole risers. The same range will also be available for 530mm openings

Marsden Bay Ruakaka



When Humes organised the VT road show to show case pipes and manholes manufactured using the vibration technology, Greg Blomfield Terminal Facilities Manager of Northland Port Corporation in Whangarei, was invited to participate in the branch launch of the VT pipes. Greg was very impressed with the new technology Humes had brought to the market and in particular the added wall thickness and cover to steel.

13 months later when the Northland Port Corporation was undertaking an industrial subdivision, with a stormwater line connecting to an original pipeline that would be subject to high traffic and heavy vehicle loads. Greg reverted to Humes to assist with the pipe design that was easily accommodated with the VT technology. The North Port Project also encompassed large areas of running sands and the new Lamell sealed lubricated rings reduced the jointing time and allow for the pipes to be laid more quickly.

The project required 230 metres of 1350 pipe plus added network drainage, once this was supplied, Humes moved the focus to supporting Hanson Drainage to successfully complete the project.



VT pipe feedback

Feedback from our customers tells us that VT pipe is hitting the mark. Contractors that use the product once continue to use it on other projects because they know they can get in full on time delivery of pipe guaranteed plus the pipes have consistent and low tolerance variances from the mechanical manufacturing process. The other key factor in usability is the ease of jointing using the new Lamell lubricated rubber rings.

Asset owners are starting to compare the features of VT pipe and considering the durability, wall thickness, better sealing properties from the improved rubber seal option and consistent manufacturing process.

VT Manhole Features and Benefits

Install and back fill immediately
Pre benched sewer options
Cost effective and time saving
Improved wider step with stainless steel options
Integrated step insert
Additional lining options available for aggressive sewer applications
Easy pre-lubricated water tight rubber seal
Safer access due to straight back taper
Able to reconfigure and add risers during and after construction
Stormwater soft spot option up to DN325
All purpose generic option for up to DN600
Standard 610mm opening when cast in Streetware with 530 options

VT Pipe Features and Benefits

Uses low water cement at approx 0.34 – 0.38
No slumping due to dry cast process
Homogeneous compaction and consistent material distribution
High strength concrete ensures high compressive strength
Ability to produce large number of pipes per day
Automated and mechanical production process with low tolerance
Ability to install robust PE liners
Pre-lubricated sliding seal rings
Standard pipe length of 2.5m with an option for 3m lengths
2.5 to 3.0m standard or lined cast in band jacking pipes
Process driven heavier wall and increased cover to steel
Fully tested and compliant to AS/NZS 4058:2007 Standard

Lined pipe options

A key feature of Humes VT pipes is the ability to provide a robust integrated PE liner. Since the launch of Humes VT pipes there has been significant interest from councils, specifiers and contractors in this capability and we are currently completing the designs and supply agreements for a number of sewer projects around the country. Humes contribution to these projects includes pipe design, liner specification, and advice around liner jointing. With this new capability and the provision of a quality solution, Humes can assist in providing concrete pipes that meet the performance and durability expected by asset owners. Talk to your Humes representative now if you would like any information or advice on PE lined concrete pipe options.

For more information on VT Pipe Technology email info@humes.co.nz