FRP DUCTING

Maskell have 30 years experience in the design and manufacture of fibreglass ducting systems and associated equipment. Recent significant projects include the following. Supply of all GRP ducting for the previous two upgrades of the Mangere WWTP odour control system was completed by Maskell. Ducting in the range DN300 - DN2500 was supplied for the sedimentation tanks, biofilters, fixed growth reactors and screening buildings.

In 1998, Maskell supplied GRP ducting for the recently commissioned Moa Point WWTP in Wellington, designed and built by Anglian Water International. Ducting for foul air systems in the range DN300 – DN1800 was supplied.

From 2001 to 2003 Maskell supplied buried process air pipework for the Project Manukau consortium, Manukau Wastewater Services, who have the Mangere WWTP upgrade project. Ductwork and piping for the $360M project, in the DN450 – DN1500 range, was installed for process air piping. Further supporting information regarding Maskell capability and projects is available upon request.

Advantages of GRP Duct

Fibreglass duct offers several advantages over traditional materials including:

Benefits

- Installation of lightweight duct in 10-20m lengths offers lower handling and carnage costs.
- Smooth internal surface and reduced long term fouling offers lower pumping costs and higher long term flow rates (reduce duct diameters). We suggest review of the blower requirements for smooth bore duct with reduced lifetime fouling.
- Reduced whole of life cost on the duct due to savings in maintenance and pumping costs.
- Use of butt-strap site joints means no leaks and a 100% leak test of the duct system is practical. However client may request flexible couplings which are also offered, as necessary
- Proven longevity of fibreglass duct including use for acids, alkalis and waste streams.
- Installation with sand or aggregate bedding to suit locally available material.

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Design Specification

Fibreglass (GRP) ductwork is to be designed to Australian Standard AS2634, with duct and fittings specified as follows:

Ductwork

Ducts are to be of filament wound or laminated CSM construction to meet design requirements.

Nominal Diameter		Weight kg/m	Maximum Hanger Spacing
200		5	3500
250		6	3500
300		7	4500
350		8	4500
400		10	4500
450		12	4500
500		13	4500
600		19	4500
750		23	4500
800		26	4500
900		29	4500
1050		40	5000
1200		45	6000
1350		56	6000
1500		60	6000
1800		90	6000
2000		100	6000
2500		140	6000

Bends

- Swept bends of bend radius 1.5xD with laminate construction
- Mitre joints – used where acceptable to client with mitres providing lower cost option for all bend joints.

Reducers

- If required – standard length of L=2.5x(D2-D1)
- Laminate construction to be equal to that of larger diameter

Resin Systems

- Duct is to be manufactured from a resin system suitable for continuous service to design temperature and chemical environment.

Internal/External Finish

Internal – Molded internal surface finish for maximum chemical resistance
→ Suitable for above ground service in open environment on site

External – Finished with a gelcoat for longevity

Installation

Recommended Testing	30k Pa Leak Test
Proposed Duct Testing Procedure	Site Test – System pressure test by client Factory – Inspection / In-house QA
Burring Ducting	See Maskell Engineers for specifications.

Dampers and Fittings

Fibreglass flanges are to be provided for attachment of dampers, testing and measuring equipment. Standard duct flanges are available. Note that fibreglass flanges are of the full face type for use with full face gaskets.

Joint Types

- **Butt and Strap Joint** – A fibreglass bandage centred over the joint effectively bonds the two ducts together as one.
- **Mechanical Couplings** – In steel or stainless steel are available which allow bolting of the coupling in place.
- **Flexible Couplings** – Used to isolate vibration from fans and rotating equipment from the duct system.

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Ducting

Proven Performance of GRP Duct

Fibreglass duct and pipe systems have been in use in buried service globally for over 40 years for storage and transport of potable water, wastewater and process gas streams.

Case histories and details of fibreglass duct applications around the world are available upon request however we anticipate you will be familiar with the widespread use of GRP in countries including New Zealand, Australia, Europe and The United States.

Quality Assurance

- The Maskell production facility has been accredited to ISO9001 and a similar level of quality assurance would be provided for this project.
- A summary of the Maskell quality assurance system is available upon request which details the QA procedures and principles used in the manufacture of GRP duct and chemical plant equipment.

Applicable Standards

The codes to be used for design and manufacture of the duct include:

- Australian Standard AS2634: 1983: Chemical Plant Equipment Made From Glass-Fibre Reinforced Plastics (GRP) Based on Thermosetting Resins

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