

Hydro Stormwater Grate and Frame

Technical Guide D16.5

Hydro Stormwater Grate and Frame offers a quality product that is visually appealing, high performance, complies with recognised Standards, and has a superior flow capture capability.



04.23 | DRAINAGE | D16.5 HYDRO STORMWATER GRATE AND FRAME

Applications

Stormwater applications, where higher performance is critical

Product Attributes

Ductile Iron casting sustains high impact loads

Large open area gives an increased hydraulic capture

A visually appealing grate that is cycle friendly

Grate is hinged and bolted down – no more stolen grates

Lightweight and flat level design replaces the heavy concave conventional grate and frame

Approvals/Standards

Manufactured and tested to AS3996:2019 Class D240 kN

HN-HO-72 Transit Loading 250 kN

Quality

ISO 9001:2008 Quality Management Standard

We are the supply partner of choice for New Zealand's civil construction industry, specialising in water and infrastructure based solutions.

HYNDS
PIPE SYSTEMS

Hydro Stormwater Grate and Frame offers a quality product that is visually appealing, high performance, complies with recognised Standards, and has a superior flow capture capability.

Design Specifications

- Fits the corresponding standard concrete sumps
- Frame incorporates side locking for better anchoring in surrounding concrete apron.
- With its unique wavy pattern, the Hydrograte disrupts and captures water flow far more efficiently than a conventional slotted grate.
- Manufactured with Ductile Iron – up to 35% lighter than a conventional Cast Iron grate and frame.
- To enable identification, all castings are marked with product weight, manufacturer, Standard and class rating, in accordance with Standard AS3996:2019.

Testing

- Tested in accordance with required Standards by third party accredited laboratory of Opus International Consultants Ltd.

Durability

- Ductile Iron material provides excellent corrosion resistant properties and sustains high impact loads

Availability

- Hydro Grate available in the following sizes



FIG. 1 HYDRO 675x450 on std concrete sump, displaying increased capture capability

TABLE 1 Product Range

Code	Description
DIHSTGFD	Hydro DI Stormwater Grate 675 x 450mm Class D
DIHSTGFDVG	Hydro DI Stormwater Grate 675 x 450mm Class D with Vertical Grill
DIHSTGFD450450	Hydro DI Stormwater Grate 450 x 450mm Class D
DIHSTGF535340WC	Hydro DI Stormwater Grate 535 x 450mm Class D (WCC)
DIHSTGFD580350W	Hydro DI Stormwater Grate 580 x 350mm Class D Wide Frame
DIHSTGFD580350C	Hydro DI Stormwater Grate 580 x 350mm Class D Concave
DIHSTGFD800450	Hydro DI Stormwater Grate 800 x 450mm Class D

Note: This product range is progressively being replaced by the Slam Lock version.

Volumetric Flow Calculation Comparison for Standard 675 x 450 mm concrete grate and Hydro D.I. grate

TABLE 2 Product Dimensions and Characteristics

Parameter	Hydro 675 x 450 Grate	675 x 450 Cesspit Cover
Slot Length	60 mm	39 mm
No. of longitudinal slots	10	10
Slot width	45 mm	338 mm
No. of traverse slots	7	1
Area of single slot gap	2700 mm ²	13182 mm ²
Total No. of grate slots	70	10
Net clear opening area	189000 mm ²	131820 mm ²

TABLE 3 Hydro D.I. Grate Flow Capacity

Depth of Water (mm)	Flow Capacity (no blockage) (L/s)	Flow Capacity (80% blockage factor) (L/s)
10	3.0	0.6
20	8.6	1.7
50	34	6.8
100	96	19.2
150	176	35
200	225	45

TABLE 4 Std. C.I. 675 x 450 Cesspit Grate Flow Capacity

Depth of Water (mm)	Flow Capacity (no blockage) (L/s)	Flow Capacity (80% blockage factor) (L/s)
10	2.4	0.5
20	6.8	1.4
50	27	5.4
100	76	15.3
150	136	27
200	157	31

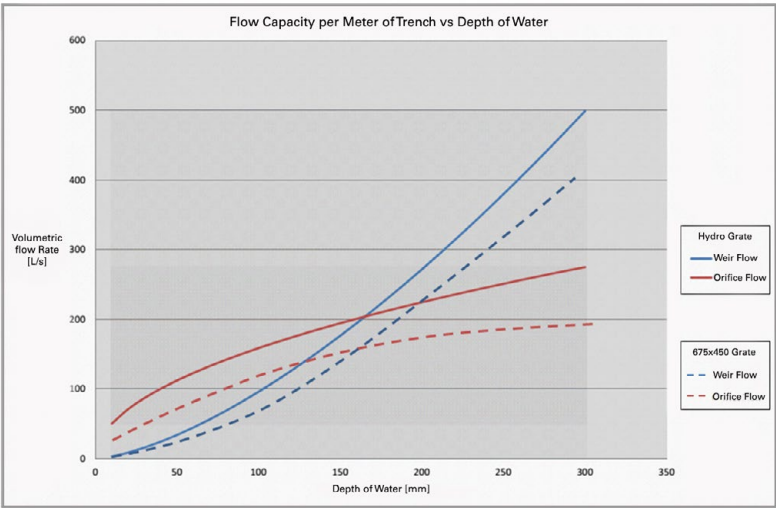
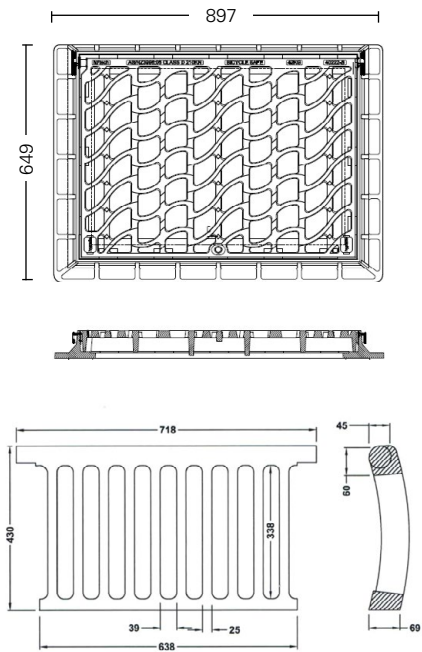


FIG. 2 Flow Capacity per Meter of Trench Vs. Depth of Water. Hydro and Standard Grate Comparison

Volumetric Flow Calculation Comparison for 800 x 500 mm grates and Hydro DI Grate

TABLE 5 Product Dimensions and Characteristics

Parameter	Class DHydro Grate	Tasman Grate	Manning Grate
Slot Length	65 mm	150 mm	390 mm
No. of longitudinal slots	10	5	2
Slot width	50 mm	20 mm	15 mm
No. of traverse slots	7	8	12
Area of single slot gap	3250 mm ²	3000 mm ²	5850 mm ²
Total No. of grate slots	70	40	24
Net clear opening area	227500 mm ²	120000 mm ²	140400 mm ²

TABLE 6 Class D Hydro Grate Flow Capacity

Depth of Water (mm)	Flow Capacity (no blockage) (L/s)	Flow Capacity (80% blockage factor) (L/s)
10	3.3	0.7
20	9.4	1.9
50	37	7.4
100	105	21.0
150	193	39
200	270	54

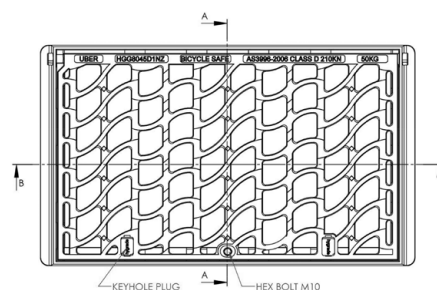


TABLE 7 Tasman Grate Flow Capacity

Depth of Water (mm)	Flow Capacity (no blockage) (L/s)	Flow Capacity (80% blockage factor) (L/s)
10	3.0	0.6
20	8.5	1.7
50	34	6.8
100	96	19.1
150	123	25
200	143	29

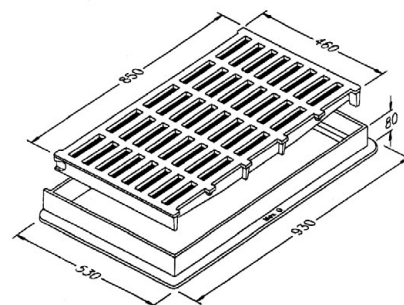
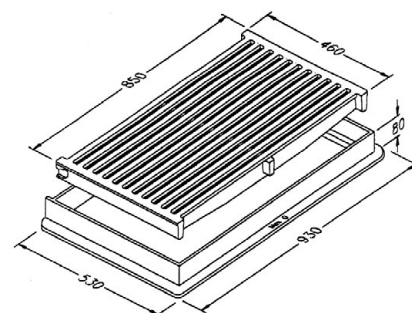


TABLE 8 Manning Grate Flow Capacity

Depth of Water (mm)	Flow Capacity (no blockage) (L/s)	Flow Capacity (80% blockage factor) (L/s)
10	3.2	0.6
20	9.0	1.8
50	36	7.1
100	101	20.2
150	144	29
200	167	33



Note: Flow report available on request

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