

# HYDROFRAME

## *Modular Bracketing System*



Available in  
100mm or 80mm

## About the product

- **Versatile support system**
- **Heavy duty**
- **Easy to use componentry**
- **Significant time and labour savings**
- **Optimum corrosion resistance in indoor/outdoor applications**
- **Pipes can be mounted at any point along slotted square**
- **Project specific design and engineering available**

### In accordance with the following standards

NZS 4219:2009 Seismic Performance of Engineering Systems in Buildings

NZS 4541:2020 New Zealand Fire Standard

AS/NZ 4600:2018 Cold-formed Steel Structures

AS/NZ 1170:2002 Structural Design Actions – General Principles

### Notes

- Peer reviewed by an independent engineering design firm
- Convenient site modifications if required
- Wide range of compatible supporting products
- Systems available in 80mm and 100mm
- All components Hot Dipped Galvanized
- Site specific design and engineering available through our partners with PS1/PS4 on completion



**Re-Generate**  
Energy And Water Solutions

*Chris Hayes*

Chris Hayes

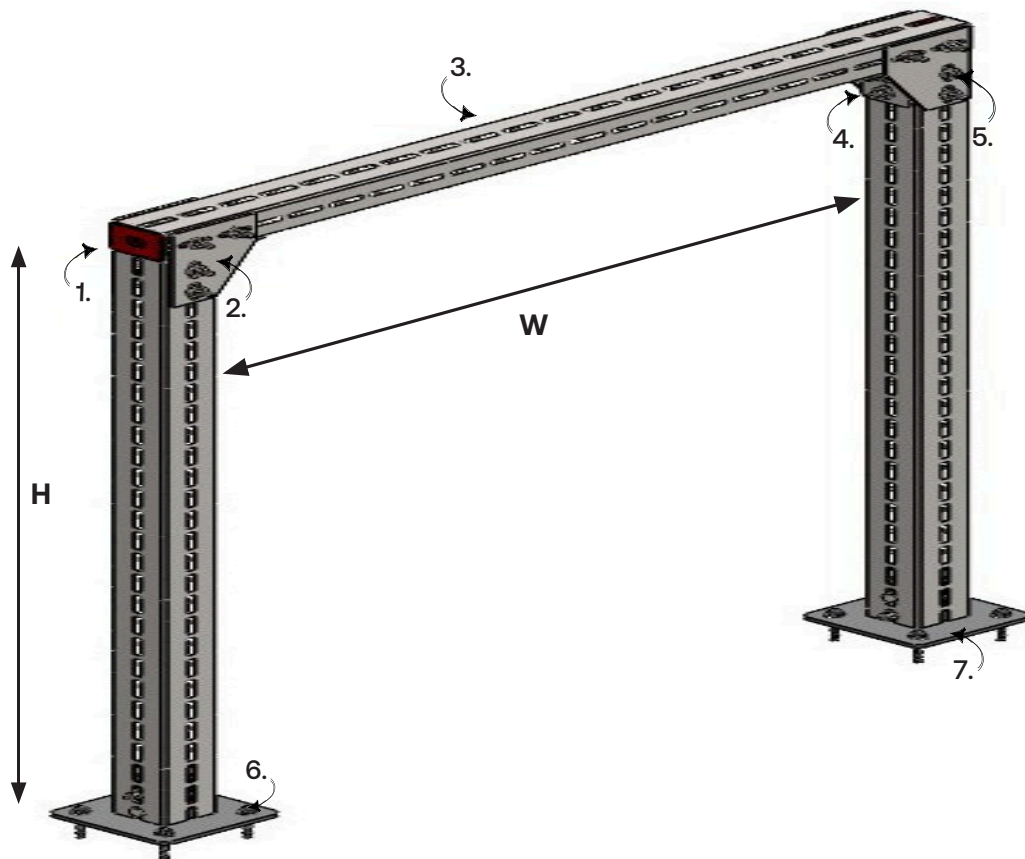
CPEng, CMEngNZ, IntPE(NZ) / APEC Engineer 1020055

Re-Generate NZ Project: P813 & P931

Date: 2024-07-25 / Expiry: 2029-07-25

I believe on reasonable grounds that the 80 & 100x3 loadings shown on this page (74NZL001) result in a design compliant with NZS 3404 Parts 1 and 2:1997 and NZS 4541:2020. Refer also to P813-PS2-001 r2 and P931-PS2-001 r1.

## Single Goal Post



1. **100mm Plastic Cover Cap**  
Product code: HF100PC



2. **100mm Corner Connection Plate**  
Product code: HF100CP



3. **100mm x 100mm x 3mm Slotted Square 6m Length**  
Product code: HF100X3



4. **100mm x 100mm 3 Slot Horizontal Angle**  
Product code: HF100AB3



5. **M12 x 40 Tee Head Bolt**  
Product code: HFTBOLT



6. **M16 x 145 Through Bolt Anchor**  
Product code: HFM16145



7. **100mm 3 Sided Base Plate**  
Product code: HF100BP3

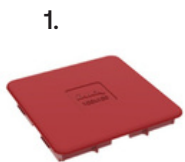
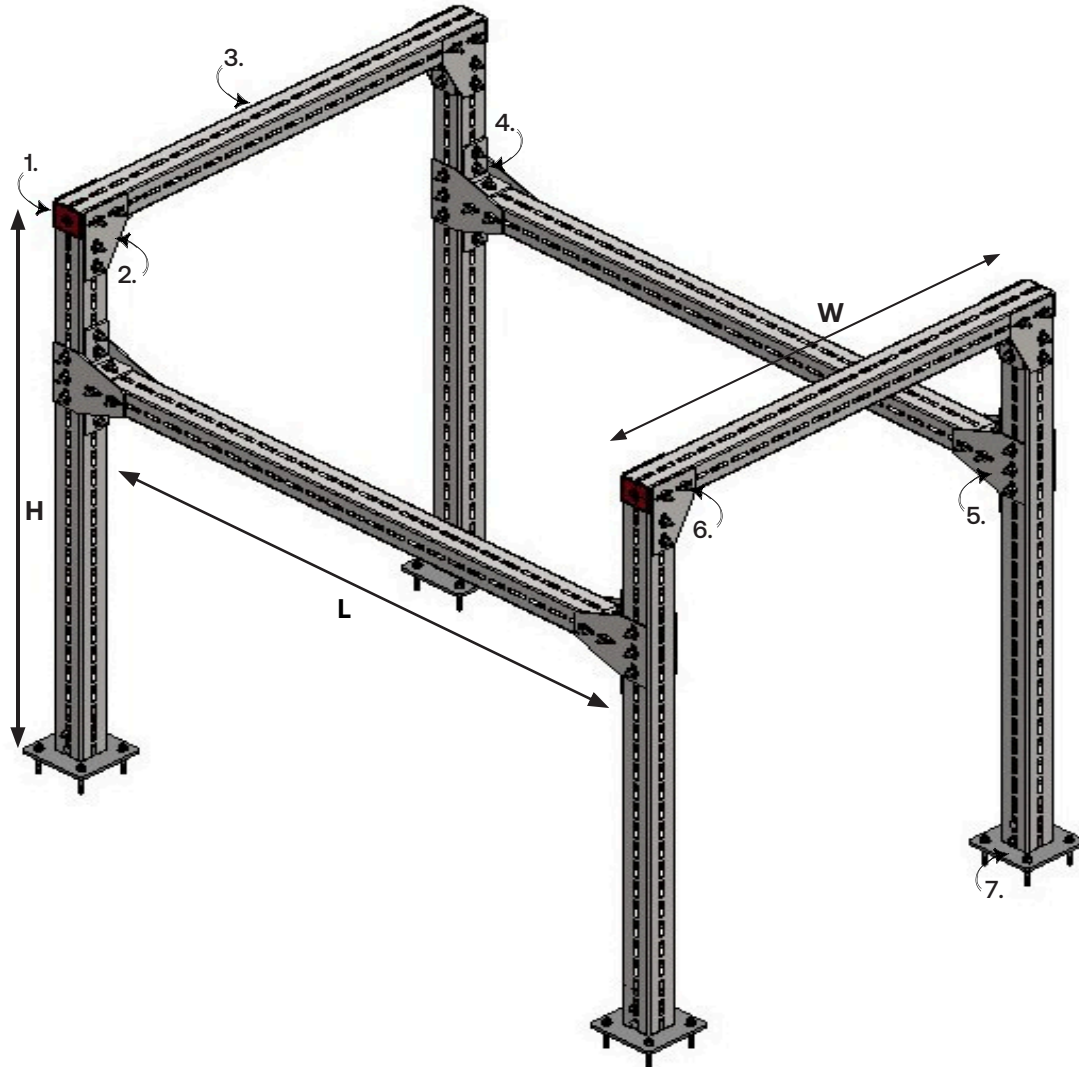
## Fire Water Systems - Allowable Load (Pipe + Water) (kg) 100x100x3 Single Goal Post – 3 Side Base Plate

W (mm)		500	1000	1500	2000	2500	3000
H (mm)	Seismic Acceleration (g)						
500	1	662	443	316	244	163	107
	1.5	484	443	316	244	163	107
	2	361	361	316	39	163	107
750	1	453	443	316	244	163	107
	1.5	300	300	300	224	163	107
	2	224	224	224	244	163	107
1000	1	361	361	316	244	163	107
	1.5	239	239	239	239	163	107
	2	178	178	178	178	163	107
1250	1	275	275	275	244	163	107
	1.5	183	183	183	183	163	107
	2	137	137	137	137	137	107
1500	1	239	239	239	239	163	107
	1.5	158	158	158	158	158	107
	2	117	117	117	117	117	107
1750	1	193	193	193	193	163	107
	1.5	132	132	132	132	132	107
	2	96	96	96	96	96	96
2000	1	173	173	173	173	163	107
	1.5	117	117	117	117	117	107
	2	86	86	86	86	86	86
2250	1	152	152	152	152	152	107
	1.5	101	101	101	101	101	107
	2	76	76	316	76	76	76
2500	1	142	142	142	142	142	107
	1.5	91	91	101	91	91	91
	2	71	71	71	71	71	71
2750	1	127	127	127	127	127	107
	1.5	81	81	81	81	81	81
	2	61	61	61	61	61	61
3000	1	112	112	112	112	112	107
	1.5	71	71	71	71	71	71
	2	50	50	50	50	50	50

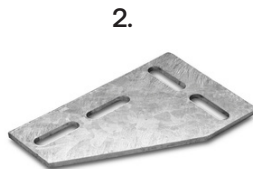
### Assumptions

1. The design is compliant with NZS3404
2. Load combinations considering load cases such as dead load and horizontal seismic load in either X and Y are taken from NZS3404
3. Steel Grade: S235JR
4. Load can be considered from a single pipe or multiple pipes
5. Anchor bolts: HFM16145
6. For frame size configurations that are not available in the table (for example: H of 600mm), the load capacity can be interpolated
7. The shown load capacities are decided based on structural analysis where the applied loads were factored by 5+100 kg as per NZS4541. The system designer must not factorize the (Fire pipe + Water) weight, the calculated load must be compared to the load capacities of this table directly without extra factors.

## Double Goal Post



1. **100mm Plastic Cover Cap**  
Product code: HF100PC



2. **100mm Corner Connection Plate**  
Product code: HF100CP



3. **100mm x 100mm x 3mm Slotted Square 6m Length**  
Product code: HF100X3



4. **100mm x 100mm 3 Slot Horizontal Angle**  
Product code: HF100AB3



5. **100mm Tee Attachment Plate**  
Product code: HF100TP



6. **M12 x 40 Tee Head Bolt**  
Product code: HFTBOLT



7. **100mm x 100mm 4 Sided Base Plate**  
Product code: HF100BP4

## Fire Water Systems - Allowable Load (Pipe + Water) (Kg) 100x100x3 Double Goal Post – 4 Side Base Plate

W (mm)		750	1500	2250	3000	750	1500	2250	3000	750	1500	2250	3000
H (mm)	Seismic Acceleration (g)	L : 500 mm				L : 1500 mm				L : 3000 mm			
500	1	1462	713	428	229	1465	713	428	229	1462	713	428	229
	1.5	1427	713	407	229	1427	713	407	229	1427	713	407	229
	2	1274	698	407	229	1274	698	407	229	1274	698	407	229
1000	1	1462	713	428	229	1462	713	428	229	1462	713	428	229
	1.5	1284	662	407	229	1284	662	407	229	1284	662	407	229
	2	866	688	382	229	866	688	382	229	866	688	382	229
1500	1	897	713	428	229	897	713	428	229	897	713	428	229
	1.5	591	591	407	229	591	591	407	229	591	591	407	229
	2	448	382	356	229	448	382	356	229	448	382	356	229
2000	1	509	509	428	229	509	509	428	229	509	509	428	229
	1.5	336	336	336	229	336	336	336	229	336	336	336	229
	2	254	254	254	229	254	254	254	229	254	254	254	229
2500	1	321	321	321	229	321	321	321	229	321	321	321	229
	1.5	214	214	214	214	214	214	214	214	214	214	214	214
	2	163	147	147	147	163	147	147	147	163	147	147	147
3000	1	214	214	214	214	214	214	214	214	214	214	214	214
	1.5	142	142	142	142	142	142	142	142	142	142	142	142
	2	112	112	112	112	112	112	112	112	112	112	112	112

## Assumptions

1. The axial bracing level is at 2/3 of H
2. The design is compliant with NZS3404
3. Load combinations considering load cases such as dead load and horizontal seismic load in either X and Y are taken from NZS3404
4. Steel Grade: S235JR
5. Load can be considered from a single pipe or multiple pipes
6. Anchor bolts: HFM16145
7. For frame size configurations that are not available in the table (for example: H of 600mm), the load capacity can be interpolated
8. The shown load capacities are decided based on structural analysis where the applied loads were factored by 5+100 kg as per NZS4541. The system designer must not factorize the (Fire pipe + Water) weight, the calculated load must be compared to the load capacities of this table directly without extra factors.

## Load Capacity Guidelines

### Step 1

- Calculate the seismic coefficient based on the project site and round it up to 1, 1.5 or 2
- Refer to NZS4541:2020 Section 4.3.12.2

**NZS 4541:2020**

**4.3.12.2**

All pipework shall be designed to resist repeated forces due to seismic acceleration acting horizontally on the mass of the pipework in any direction in addition to the gravity force and vertical forces induced through braces installed out of the horizontal plane.

The seismic acceleration expressed by the lateral force coefficient  $C$  shall be determined by:

$$C = 2.7C_H Z C_p R_c \text{ but not greater than } 3.6$$

Where:

- $C_H = 3.0$  for components above ground or 1.0 at or below ground floor level.
- $Z$  = zone factor (shall be determined from Table 4.8 or interpolated from Figure 4.1(a) or (b)).
- $C_p$  = performance factor = 0.85
- $R_c$  = component risk factor is determined from Table 4.9.

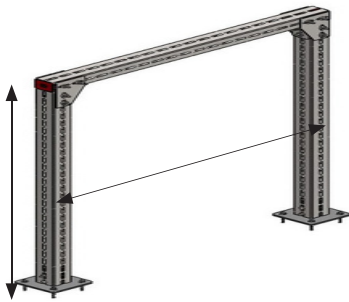
**NOTE –**

(1) The equation for  $C$  is derived from NZS 4219.

(2)  $Z$  factors have been adopted from NZS 1170.5.

### Step 2

- Determine the height and width of your frame and select the corresponding capacity
- Example:**  
Required width: 1500 mm, height: 3000 mm  
>>Frame capacity: 305 kg



H (mm)	Seismic Acceleration (g)	Capacity (kg)	
		500	1000
500	1	662	443
	1.5	484	443
	2	361	361
750	1	453	443
	1.5	300	300
	2	224	224
1000	1	361	361
	1.5	239	239
	2	178	178
1250	1	275	275
	1.5	183	183
	2	137	137
1500	1	239	239
	1.5	158	158
	2	117	117

### Step 3

- Determine the number and sizes of pipes placed above the frame
- Calculate the total load of all pipes in kg/m. Refer to AON TN20-48 Table for guidance.
- Estimate the span between frames by dividing the frame capacity (kg) estimated in 'Step 2' by the total load (kg/m)

Nominal bore (mm)	Maximum spacing (m)	Weight per meter (kg/m)	100 kg	Total Mass (kg)
20	2.4	1.95	100	123
25	3.7	3.05	100	156
32	3.7	4.19	100	178
40	4.6	5.03	100	216
50	4.6	7.37	100	270
65	4.6	10.3	100	337
80	4.6	13.7	100	415
100	4.6	21.1	100	585
150	4.6	38.8	100	992
200	4.6	62.6	100	1540

**Example:**  
DN200 + 1xDN100 >> Total Load = 62.6 + 21.1 = 83.7 kg/m

Maximum span = 305 / 83.7 = 3.6 m

**NOTE:** If the calculated span > maximum spacing of TN20-48 & NZS4541:2020 Table 4.7, the span should be capped as per the maximum span value in the table.

## System Componentry



### 100mm Base Plate - 3 sided

- Base connection plate is a 3 sided profile holder allowing robust connection of square profile to floor, wall or ceiling
- 12mm Base plate x 6mm profile
- Compatible with T Bolts and anchors
- Hot Dipped Galvanized

Product code:  
HF100BP3



### 100mm Base Plate - 4 sided

- Base connection plate is a 4 sided profile holder allowing robust connection of square profile to floor, wall or ceiling
- Higher allowable loads than 3 sided
- 12mm plate x 6mm profile
- Compatible with Square Neck Bolt
- Hot Dipped Galvanized

Product code:  
HF100BP4



### 100mm Corner Connection Plate

- Heavy duty connection plates to ensure stability of square profile for pipe support systems
- 6mm Thick
- Hot Dipped Galvanized

Product code:  
HF100CP



### 100mm x 100mm x 3mm Slotted Square 6m Length

- Slotted square profile allows endless connections in various directions
- 3mm x 6M long
- Hot Dipped Galvanized

Product code:  
HF100X3



### 100mm Plastic Cover Cap

- Durable Notched insert to retain in square profile
- Easy to insert and remove if required

Product code:  
HF100PC



### 100mm x 100mm 3 Slot Horizontal Angle

- Heavy Duty square bracket to provide additional support on square profile connections
- 10mm Thick
- Hot Dipped Galvanized

Product code:  
HF100AB3



### 100mm Tee Attachment Plate

- Heavy Duty attachment plates for use on Tee connections to square profile for pipe support systems
- 6mm Thick
- Hot Dipped Galvanized

Product code:  
HF100TP



### M12 x 40 Tee Head Bolt

- Easy fastening of support systems
- Indicator mark on shaft
- Reusable
- Geomet Coating

Product code:  
HFTBOLT



### U Bolt Bracket

- For use with U Bolts when attaching pipe to slotted square
- Two brackets required for anything over 100mm OD
- Hot Dipped Galvanized

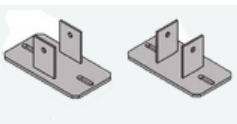
Product code:  
HF100UBB



### M16 x 145 Through Bolt Anchor

- Through bolt anchor for heavy loads in cracked and uncracked concrete
- Atlantis C3-L coating
- C1 & C2 Seismic rating

Product code:  
HFM16145



### Horizontal & Vertical Hinge

- Base plate for 45 degree connections
- Hot Dipped Galvanized

Product code:  
HF100VH / HF100HH



### Square Neck Bolt - M12 x 120

- To suit 4 sided base connection plate
- Carbon Steel with Geometric Coating
- To suit 4 sided base plates for higher allowable loads

Product code:  
HFBPM12120



### Rod Connection Bracket

- For use on slotted square to attach pipe
- M12 rod connection
- Hot Dipped Galvanized

Product code:  
HF100RCB

Componentry Hot Dipped Galvanized (HDG) acc. to  
ASTM A153/153M | ASTM A123/123M | EN ISO 1461/EN ISO 10684



# HYDROFLOW

PARTNERED WITH

**INKA**<sup>®</sup>  
FIXING SYSTEMS

**SEISiT**

## Penrose Warehouse and Fabrication Facility

40 Rockridge Avenue

Auckland

09 448 5844

## Auckland Head Office

221 Bush Road

Albany

09 415 6151

## Wellington

108 Nelson Street

Petone

04 280 2511

## Christchurch

58 Hammersmith Drive

Wigram Park

03 341 1048