

WSP Group Ltd		Page 4
. . .		Micro Drainage
Date 15/01/2021 10:34	Designed by UKJAG005	
File 70064036_Crown St, Rear...	Checked by	
XP Solutions	Network 2019.1	
Online Controls for Storm		
Hydro-Brake® Optimum Manhole: SW 06, DS/PN: 1.006, Volume (m³): 3.1		
Unit Reference MD-SHE-0175-1720-1750-1720 Design Head (m)1.750 Design Flow (l/s)17.2 Flush-Flo™Calculated ObjectiveMinimise upstream storage ApplicationSurface Sump AvailableYes Diameter (mm)175 Invert Level (m)30.655 Minimum Outlet Pipe Diameter (mm)225 Suggested Manhole Diameter (mm)1500		
Control Points Head (m)Flow (l/s) Design Point (Calculated)1.75017.2 Flush-Flo™0.51117.2 Kick-Flo®1.09313.8 Mean Flow over Head Range-15.0		
The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated		
Depth (m)Flow (l/s) Depth (m)Flow (l/s) Depth (m)Flow (l/s) Depth (m)Flow (l/s) 0.1006.21.20014.43.00022.27.00033.4 0.20014.91.40015.53.50023.97.50034.5 0.30016.41.60016.54.00025.58.00035.6 0.40017.01.80017.44.50027.08.50036.7 0.50017.22.00018.35.00028.49.00037.7 0.60017.12.20019.25.50029.79.50038.7 0.80016.52.40020.06.00031.0 1.00015.12.60020.86.50032.2		
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<u>Storage Structures for Storm</u>		
<u>Filter Drain Manhole: FD 01, DS/PN: 1.000</u>		
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m) 0.150
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m) 0.100
Safety Factor	2.0	Number of Pipes 1
Porosity	0.30	Slope (1:X) 303.0
Invert Level (m)	32.150	Cap Volume Depth (m) 0.000
Trench Width (m)	0.4	Cap Infiltration Depth (m) 0.000
Trench Length (m)	10.0	
<u>Filter Drain Manhole: DUMMY NODE, DS/PN: 1.002</u>		
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m) 0.150
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m) 0.100
Safety Factor	2.0	Number of Pipes 1
Porosity	0.30	Slope (1:X) 306.3
Invert Level (m)	32.110	Cap Volume Depth (m) 0.000
Trench Width (m)	0.4	Cap Infiltration Depth (m) 0.000
Trench Length (m)	49.0	
<u>Filter Drain Manhole: FD 02, DS/PN: 1.003</u>		
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m) 0.150
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m) 0.100
Safety Factor	2.0	Number of Pipes 1
Porosity	0.30	Slope (1:X) 386.7
Invert Level (m)	31.950	Cap Volume Depth (m) 0.000
Trench Width (m)	0.4	Cap Infiltration Depth (m) 0.000
Trench Length (m)	29.0	
<u>Filter Drain Manhole: FD 03, DS/PN: 1.004</u>		
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m) 0.150
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m) 0.100
Safety Factor	2.0	Number of Pipes 1
Porosity	0.30	Slope (1:X) 400.0
Invert Level (m)	31.875	Cap Volume Depth (m) 0.000
Trench Width (m)	0.4	Cap Infiltration Depth (m) 0.000
Trench Length (m)	3.0	
<u>Filter Drain Manhole: FD 04, DS/PN: 2.000</u>		
Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m) 0.150
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m) 0.100
Safety Factor	2.0	Number of Pipes 1
Porosity	0.30	Slope (1:X) 303.3
Invert Level (m)	31.920	Cap Volume Depth (m) 0.000
Trench Width (m)	0.4	Cap Infiltration Depth (m) 0.000
Trench Length (m)	6.3	
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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Number of Input Hydrographs	0	Number of Storage Structures	7
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

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Margin for Flood Risk Warning (mm) 300.0      DVD Status ON
      Analysis Timestep      Fine Inertia Status ON
      DTS Status      ON
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Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.
1.000	FD 01	15 Winter	30	+0%	30/15 Summer			
1.001	DUMMY	NODE 15 Winter	30	+0%	30/15 Summer			
1.002	DUMMY	NODE 15 Winter	30	+0%	30/15 Summer			
1.003	FD 02	15 Winter	30	+0%	30/15 Summer			
1.004	FD 03	15 Winter	30	+0%	30/15 Summer			
2.000	FD 04	15 Winter	30	+0%	30/15 Summer			
2.001	FD 05	15 Winter	30	+0%	30/15 Summer			
1.005	FD 06	15 Winter	30	+0%	30/15 Summer			
3.000	SW 06A	30 Winter	30	+0%	30/15 Summer			
3.001	DUMMY	30 Winter	30	+0%	30/15 Summer			
1.006	SW 06	30 Winter	30	+0%	30/15 Summer			

PN	US/MH Name	Water	Surcharged	Flooded	Pipe		Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)		
1.000	FD 01	32.387	0.087	0.000	0.91		8.2	SURCHARGED
1.001	DUMMY NODE	32.362	0.095	0.000	0.76		8.2	SURCHARGED

