

Gordon, Robert

From: Yohanus Bogale <yohanusb@stormwater360.co.nz>
Sent: Monday, 1 August 2022 5:07 pm
To: Gordon, Robert
Cc: Wynand Du Toit; Rozema, Alexander; Kevin Jonathan
Subject: RE: #7131; Waka Kotahi Weigh Station, Bombay
Attachments: SF-V-69-4715-20-Rev0.pdf; ESK-STD-MH-ALL1.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Rob,

Thanks for providing the information.

Based on the catchment area of 7450 m², we calculated 20.69 L/s water quality flow using the Rational Method. Run off coefficient = 1.0 and 10 mm/hr rainfall intensity. We recommend:

Oil water separator: ESK 40 in 1500 MH

Treatment flow rate capacity = 40 L/s

Depth to invert = 875 mm approx.

Oil storage capacity = 900 L

StormFilter = 15 x 69 cm perlite cartridges in a Vault (footprint = 4.95 m x 1.8 m)

Depth to invert = 2m approx.

Driving head = 930 mm

Some considerations:

- Please note, the StormFilter sizing has been done based on an assumption of a low sediment generating catchment area. If higher sediment loadings are expected, we would recommend adding the number of cartridges or using a gross pollutant trap upstream of the StormFilter to prolong the maintenance frequency of the StormFilter device.
- The ESK oil water separator has a built-in shut off valve to prevent spills and storage capacity excess exiting the device. When the valve shuts off, the incoming stormwater runoff will start bypassing before entering the treatment system. For this reason, a regular inspection and maintenance is required.

- Just to confirm, for an offline configuration a splitter manhole will be designed upstream of the ESK and StormFilter, to direct water quality flows to the treatment system and bypassing peak flows. We can discuss the weir level of the diversion/splitter manhole when you have the long sections available.

Please refer to the drawings attached for further information. If you have any questions, please let me know.

Ngā Mihi | Kind Regards,

Yohanus Bogale | **Environmental Product and Design Engineer**

☎ +64 21 229 6783

✉ yohanusb@stormwater360.co.nz



🌱 Please consider the environment before printing this e-mail

Disclaimer: the content of this message and any attachments may be privileged, in confidence, or sensitive. Any unauthorised use is expressly prohibited. If you have received this email in error please notify the sender and dis

From: Gordon, Robert <Robert.Gordon@wsp.com>

Sent: Thursday, 28 July 2022 5:18 pm

To: Yohanus Bogale <yohanusb@stormwater360.co.nz>

Cc: Wynand Du Toit <wynand@stormwater360.co.nz>; Rozema, Alexander <Alexander.Rozema@wsp.com>

Subject: RE: #7131; Waka Kotahi Weigh Station, Bombay

Hi Yohanus

Thanks for getting back to me.

The facility will be a truck weigh station. It will be a low-speed environment but will generate the usual traffic contaminants, predominantly from diesel-powered trucks for the foreseeable future. There will be some drips of oil and other engine fluids and a chance every now and then of a spill. Again, it's a low speed environment, so we're not catering for a tanker overturning, but there will be a risk of low volume spills of whatever trucks are carting, we're assuming of up to 100 litres.

See notes in red, below.

Thanks again

Regards
Rob



Robert Gordon
Principal Engineer - Water

T: +64 9 353 7370
M: +64 27 491 7942
Robert.Gordon@wsp.com

wsp.com/nz

From: Yohanus Bogale <yohanusb@stormwater360.co.nz>
Sent: Thursday, 28 July 2022 12:14 pm
To: Gordon, Robert <Robert.Gordon@wsp.com>
Cc: Wynand Du Toit <wynand@stormwater360.co.nz>; Rozema, Alexander <Alexander.Rozema@wsp.com>
Subject: #7131; Waka Kotahi Weigh Station, Bombay

Hi Rob,

Apologies for the delayed response, I have been a bit busy with training and site visits.

Regarding the upstream diversion manhole, that's correct it's best if the oil water separator is configured offline too.

I just have a couple of questions that will assist us with some design considerations we need to make:

- Do you have information on the nature of contaminants on this site and the expected levels? **See above**
- What materials are being offloaded on site? is this area going to be covered? **Only the inspection shed and the Control Building will be covered.**
- The inspection bays aren't covered, will there be any maintenance work being carried out here? **No maintenance will be carried out on vehicles here. The inspection shed interior floor will be hosed down, but we will be designing a reservoir to collect the hose-down water.**

I should be able to forward you recommendations by tomorrow. Thanks

Ngā Mihi | Kind Regards,

Yohanus Bogale | **Environmental Product and Design Engineer**

+64 21 229 6783

yohanusb@stormwater360.co.nz



 Please consider the environment before printing this e-mail

Disclaimer: the content of this message and any attachments may be privileged, in confidence, or sensitive. Any unauthorised use is expressly prohibited. If you have received this email in error please notify the sender and dis

From: Gordon, Robert <Robert.Gordon@wsp.com>

Sent: Monday, 25 July 2022 2:39 pm

To: Yohanus Bogale <yohanusb@stormwater360.co.nz>

Cc: Wynand Du Toit <wynand@stormwater360.co.nz>; Rozema, Alexander <Alexander.Rozema@wsp.com>

Subject: RE: WAKAKOTAHI WEIGH STATION, BOMBAY

Hi Yohanus

Actually, I just thought, it may be necessary to have a splitter MH upstream since 10-year runoff may flush trapped oily water through the separator to the StormFilter. Let me know what you think.

Thanks again

Rob

From: Gordon, Robert

Sent: Monday, 25 July 2022 2:33 pm

To: Yohanus Bogale <yohanusb@stormwater360.co.nz>

Cc: Wynand Du Toit <wynand@stormwater360.co.nz>; Rozema, Alexander <Alexander.Rozema@wsp.com>

Subject: WAKAKOTAHI WEIGH STATION, BOMBAY

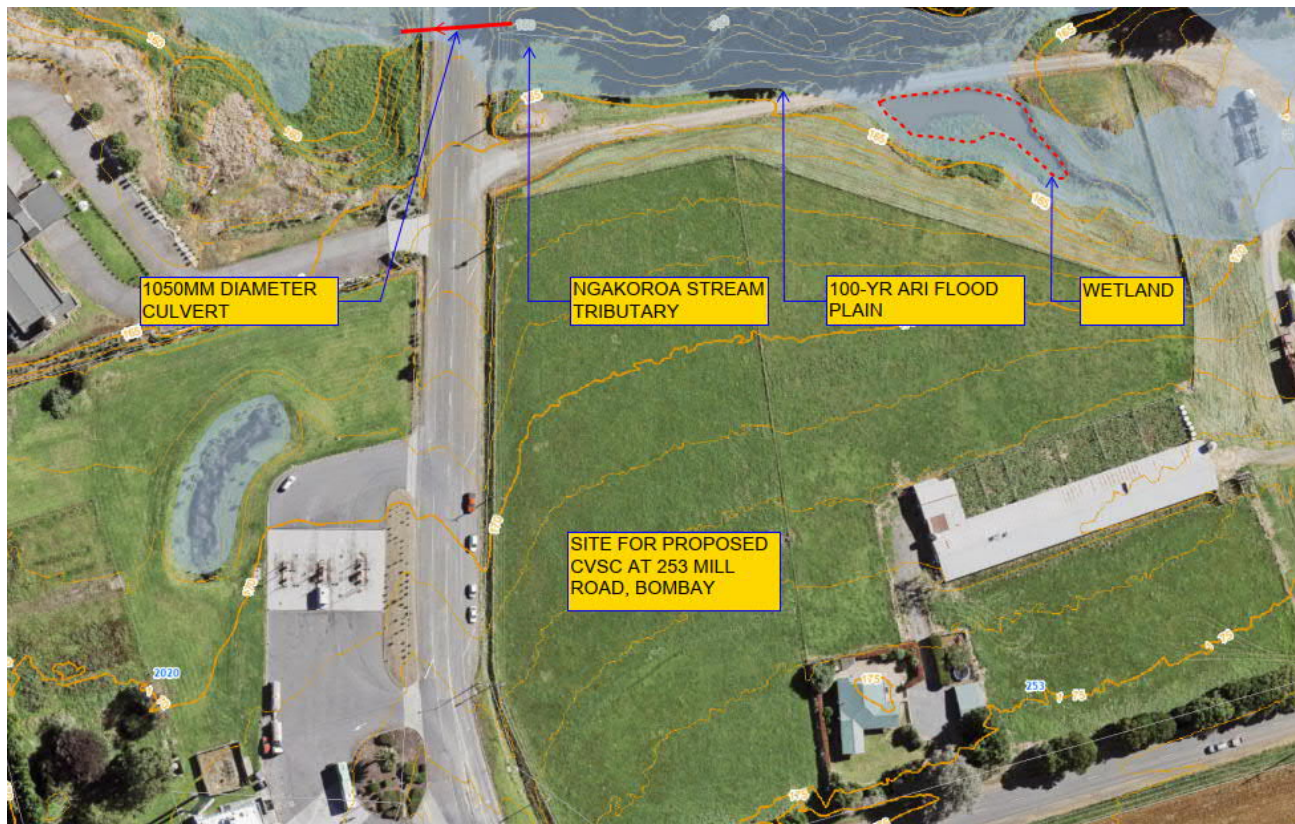
Importance: High

Hi Yohanus

This is a new job (as far as my approaches to SW360 go), and I'd like to ask you for some preliminary information for our Concept Design and Resource Consent application.

The site at 253 Mill Road, Bombay lies adjacent to a stream which is part of the Ngakoroa Stream catchment:





Waka Kotahi want to construct a truck weigh station which will involve building a 7,840m² platform, 7,450m² of which will be a paved area requiring SW treatment. I envisage draining the trafficable area to an oil and water separator and then to a StormFilter, before discharging treated runoff to an adjacent induced wetland:

What I'd like to ask you for are recommendations for a separator unit and a StormFilter for the 7,450m² platform. I'd like to provide 100 litres of spill storage as well and I'm wondering if we can do this with the oil/water separator, such that it accommodates a certain volume of oily water plus the 100 litre spill volume.

For the StormFilter I'd prefer it to have an internal bypass sufficient for the 10-year runoff, rather than having a splitter manhole and diversion pipe upstream of the StormFilter. I've estimated that the WQ runoff peak will be 21 l/s and the 10-year peak will be 288 l/s (see below).

Project Name		WAKA KOTAHI WEIGH STATION, BOMBAY															
CATCHMENT RUNOFF CALCULATIONS																	
Constants																	
	C																
Roof	1.00																
Seal	1.00																
Grass	0.40																
1) CALCULATE RUNOFF COEFFICIENT												2) RUNOFF CALCUALTION					
A (m ²)	A (Ha)	Roof %	Seal %	Grass %	Roof Area (Ha)	Seal Area (Ha)	Grass Area (Ha)	Roof cA	Seal cA	Grass cA	Total CA	Overall C	T	K	C	i	
7450	0.745	0%	100%	0%	0.000	0.745	0.000	0	0.745	0	0.745	1.00	WQ	0.00278	1.00	10	0.
7450	0.745	0%	100%	0%	0.000	0.745	0.000	0	0.745	0	0.745	1.00	10-yr	0.00278	1.00	139	0.

HIRDS V4 Intensity-Duration-Frequency Results

Sitename: Waka Kotahi Weigh Station - Bombay

Rainfall intensities (mm/hr) :: RCP6.0 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	83.9	55.8	43.7	28.4	18.1	8.45	5.09	3.03	1.77	1.28	1.01	0.841
2	0.5	91.8	61.1	47.8	31.2	19.9	9.3	5.62	3.33	1.95	1.41	1.11	0.928
5	0.2	119	79.1	62.1	40.6	25.9	12.2	7.39	4.39	2.57	1.87	1.48	1.23
10	0.1	139	92.7	72.8	47.6	30.5	14.4	8.74	5.2	3.05	2.22	1.76	1.46
20	0.05	159	107	83.9	55	35.3	16.7	10.2	6.05	3.56	2.58	2.05	1.71
30	0.033	172	115	90.7	59.5	38.2	18.1	11	6.57	3.87	2.81	2.23	1.86
40	0.025	181	121	95.5	62.7	40.3	19.2	11.7	6.96	4.09	2.98	2.36	1.97
50	0.02	188	126	99.4	65.3	42	20	12.2	7.26	4.28	3.11	2.47	2.06
60	0.017	194	130	103	67.4	43.4	20.7	12.6	7.52	4.43	3.22	2.56	2.13
80	0.013	204	137	108	70.9	45.7	21.7	13.2	7.92	4.67	3.4	2.7	2.25
100	0.01	211	142	112	73.6	47.4	22.6	13.8	8.24	4.86	3.54	2.81	2.35
250	0.004	242	163	129	84.8	54.7	26.2	16	9.59	5.67	4.13	3.29	2.74



Could I possibly get recommendations and broad specs for the Stormfilter and oil/water separator this week? Further details could wait another week.

Thanks Yohanus. Please email me back if anything's unclear.

Regards
Rob



Robert Gordon
Principal Engineer - Water

T: +64 9 353 7370
M: +64 27 491 7942

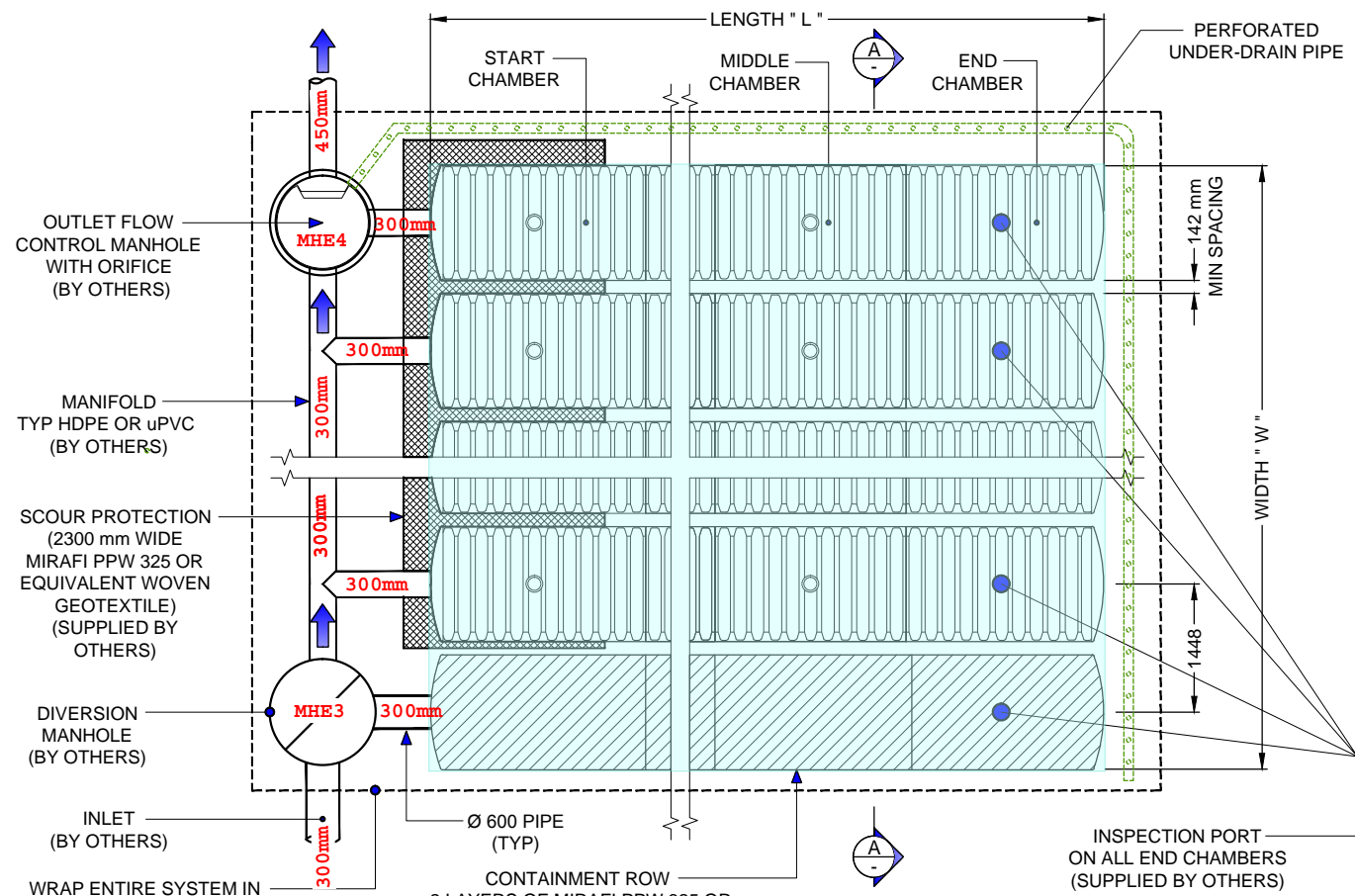
Robert.Gordon@wsp.com

WSP
Lvl 3, The Westhaven
100 Beaumont St
Auckland, 1010
New Zealand

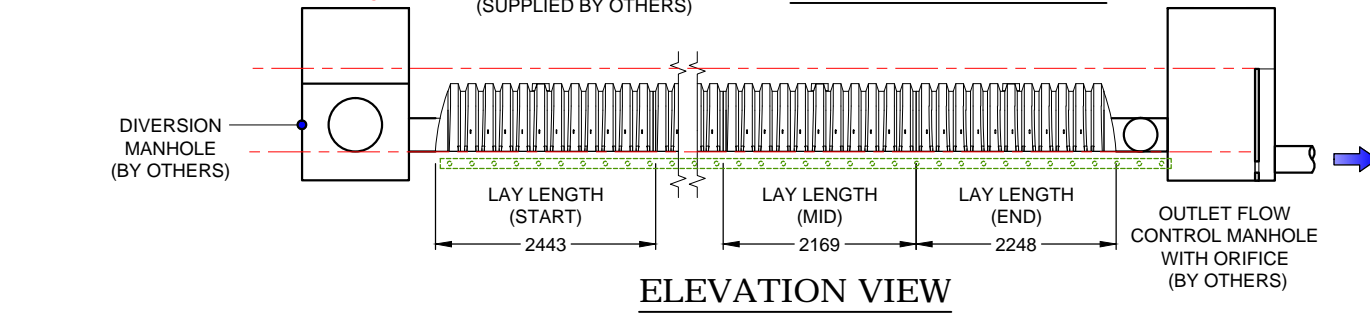
wsp.com/nz

NOTICE: This communication and any attachments ("this message") may contain information which is privileged, confidential, proprietary or otherwise subject to restricted disclosure under applicable law. This message is for the sole use of the intended recipient(s). Any unauthorized use, disclosure, viewing, copying, alteration, dissemination or distribution of, or reliance on, this message is strictly prohibited. If you have received this message in error, or you are not an authorized or intended recipient, please notify the sender immediately by replying to this message, delete this message and all copies from your e-mail system and destroy any printed copies.

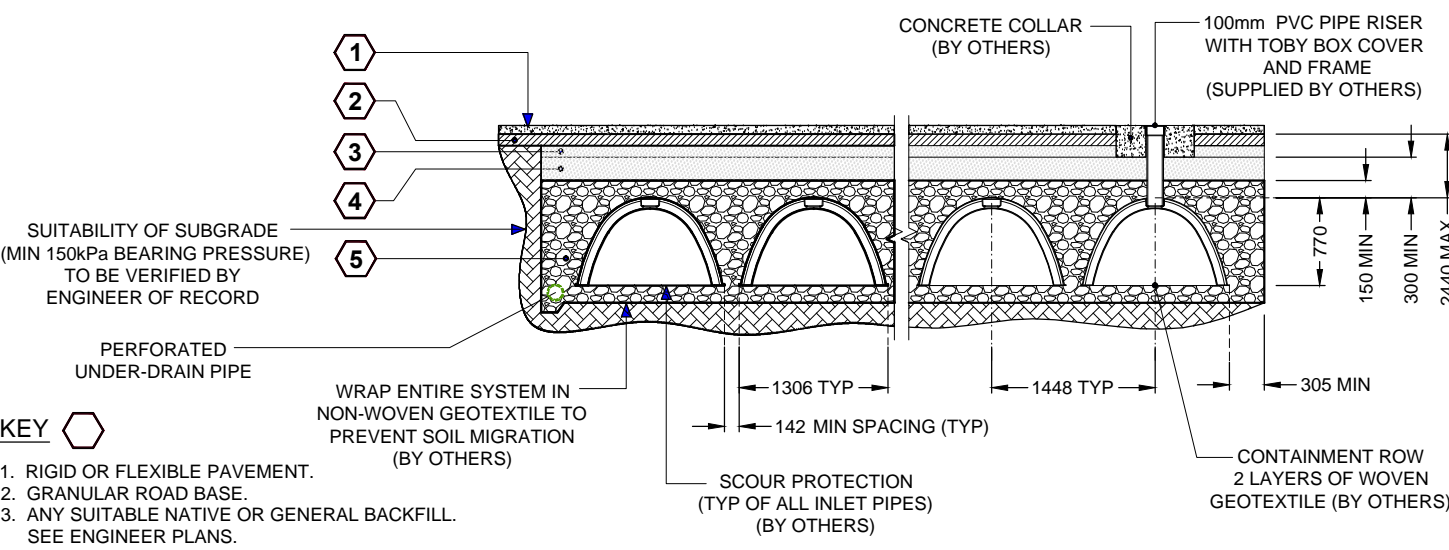
-LAEmHhHzdJzBITWfa4Hgs7pbKI



**PLAN VIEW
TYPICAL LAYOUT**



ELEVATION VIEW

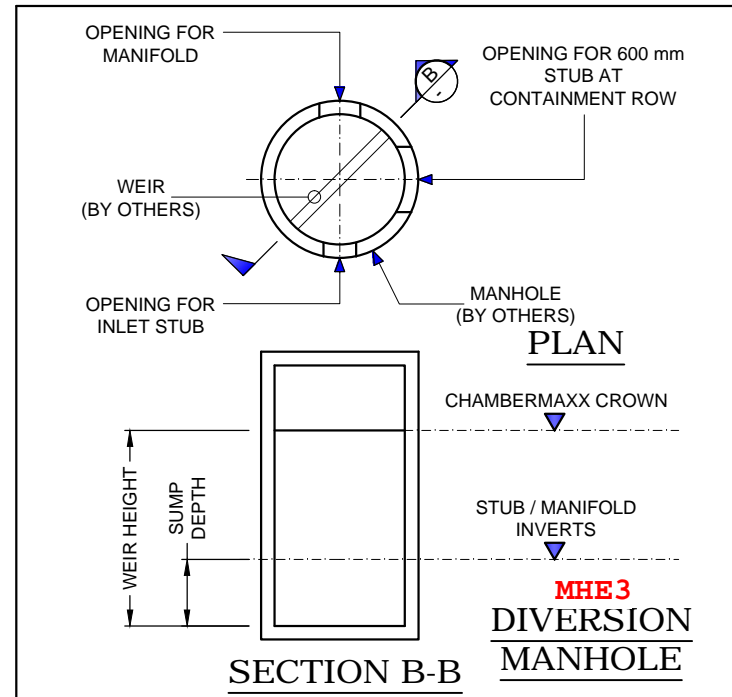


SECTION A-A

- KEY**
- RIGID OR FLEXIBLE PAVEMENT.
 - GRANULAR ROAD BASE.
 - ANY SUITABLE NATIVE OR GENERAL BACKFILL. SEE ENGINEER PLANS.
 - WELL GRADED GRANULAR FILL WITH <35% FINES COMPACTED TO MIN 95% STANDARD DENSITY.
 - FREE DRAINING ANGULAR WASHED STONE 20-50 mm PARTICLE SIZE POSITIVELY COMPACTED TO ORIENT STONE FACETS.

CHAMBERMAXX DESIGN DETAILS				
FEATURE	START CHAMBER	MIDDLE CHAMBER	END CHAMBER	
OVERALL CHAMBER HEIGHT (mm)	770	770	770	
OVERALL CHAMBER WIDTH (mm)	1306	1306	1306	
ACTUAL LENGTH (mm)	2500	2311	2337	
INSTALLED LAY LENGTHS (mm)	2443	2169	2248	
CHAMBER STORAGE VOLUME (m3)	1.421	1.336	1.307	
CHAMBER STORAGE PER LINEAR METRE (m3/Lm)	0.582	0.616	0.582	
*MIN. INSTALLED CHAMBER VOLUME (m3)	2.211	2.127	2.098	
*MIN. INSTALLED CHAMBER VOLUME PER LINEAR METRE (m3/LMm)	0.905	0.981	0.934	
CHAMBER WEIGHT (Kg)	37.65	33.11	34.47	
*150mm OF STONE ABOVE AND BELOW CHAMBER, 142mm CHAMBER SPACING AND 40% POROSITY				

* SITE SPECIFIC DATA REQUIREMENTS	
FOR DETAILED DESIGN ASSISTANCE REFERENCE CHAMBERMAXX DYODS (DESIGN YOUR OWN DETENTION SYSTEM) SOFTWARE AND CHAMBERMAXX STAGE STORAGE CALCULATOR @ WWW.STORMWATER360.CO.NZ	
TOTAL REQUIRED STORAGE VOLUME (m3)	
DEPTH TO INVERT BELOW ASPHALT (m)	
LIMITING WIDTH (m)	
LIMITING LENGTH (m)	
POROUS STONE ABOVE CHAMBER (mm)	
POROUS STONE BELOW CHAMBER (mm)	
STONE POROSITY (0 TO 40%)	
MANIFOLD SYSTEM DIAMETER (mm)	
* PER ENGINEER OF RECORD	



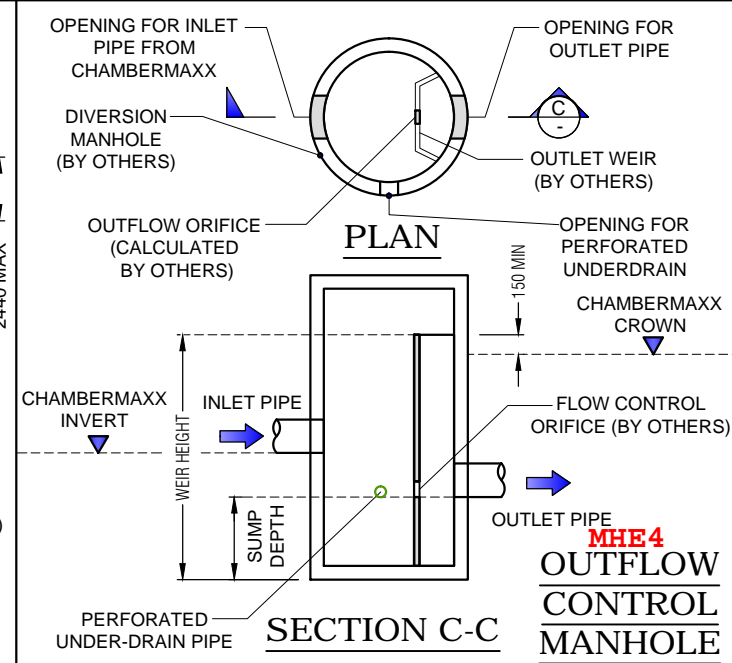
**SECTION B-B
MHE3 DIVERSION MANHOLE**

GENERAL NOTES

- STORMWATER360 TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- ALL ELEVATIONS, DIMENSIONS AND LOCATIONS OF RISERS AND INLETS SHALL BE VERIFIED BY THE ENGINEER OF RECORD.
- PRIOR TO INSTALLATION OF THE CHAMBERMAXX SYSTEM A PRE-CONSTRUCTION MEETING SHALL BE CONDUCTED. THOSE REQUIRED TO ATTEND ARE THE SUPPLIER OF THE SYSTEM, THE GENERAL CONTRACTOR, SUB-CONTRACTORS AND THE ENGINEER.
- CHAMBERMAXX CHAMBERS ARE MANUFACTURED FROM POLYPROPYLENE PLASTIC.
- CHAMBERMAXX SHALL MEET NZTA'S HN-HO-72 OR PER APPROVING JURISDICTION TRAFFICKED LOAD REQUIREMENTS. FOR LOWER LOADING LESS COVER IS REQUIRED.
- ACCESS COVER AND FRAME ARE TO BE RATED TO EITHER CLASS B (FOR PEDESTRIAN AREAS) OR CLASS D (TRAFFICKED ROADS) IN ACCORDANCE WITH AS 3996 : 2006.
- FOR HN-HO-72 LOADING MINIMUM COVER IS 550 mm TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. FOR COVER HEIGHTS GREATER THAN 2440 mm CONTACT YOUR STORMWATER CONSULTANT VIA 0800 STORMWATER or sales@stormwater360.co.nz FOR MORE INFORMATION.
- FOR INFORMATION ON PRE-TREATMENT DEVICES CONTACT YOUR STORMWATER CONSULTANT VIA 0800 STORMWATER or sales@stormwater360.co.nz
- CHAMBERMAXX BY STORMWATER360 NEW ZEALAND

INSTALLATION NOTES

- CHAMBERMAXX INSTALLATION GUIDE TO BE REVIEWED BY CONTRACTOR PRIOR TO INSTALLATION.
- PRIOR TO PLACING BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, A TENSAR BX GEOGRID SHALL BE UTILIZED OR UNSUITABLE MATERIAL SHALL BE REMOVED AND BROUGHT BACK TO GRADE WITH FILL MATERIAL AS APPROVED BY THE ENGINEER OF RECORD. ONCE THE FOUNDATION PREPARATION IS COMPLETE, THE BEDDING MATERIAL CAN BE PLACED.
- THE SCOUR PROTECTION AND CONTAINMENT ROW UNDERLAY ARE TO BE MIRAFI PPW 325 OR EQUIVALENT STRENGTH CLASS C WOVEN GEOTEXTILE (AS PER NZTA'S F/7 SPECIFICATION). THE SCOUR PROTECTION LAYER IS TO EXTEND 300 mm BEYOND OUTSIDE EDGE OF INLET CHAMBERS.
- COVER ANY OPEN VOID SPACES GREATER THAN 20mm ON CHAMBERS WITH A29 BIDIM OR EQUIVALENT STRENGTH CLASS C + FILTRATION CLASS 3 NON-WOVEN GEOTEXTILE (AS PER NZTA'S F/7 SPECIFICATION) TO PREVENT INFILTRATION OF BACKFILL MATERIAL.
- STONE EMBEDMENT MATERIAL IS TO BE FREE DRAINING ANGULAR WASHED STONE 20-50 mm PARTICLE SIZE, AND PLACED IN 150 mm TO 200 mm LOOSE LIFTS AND POSITIVELY COMPACTED TO ORIENT STONE FACETS. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT DIFFERENTIAL BETWEEN ANY OF THE CHAMBERS AT ANY TIME DURING THE BACKFILLING PROCESS.
- GRANULAR BACKFILL MATERIAL SHALL BE WELL GRADED SOIL/AGGREGATE WITH <35% FINES AND PLACED IN 150MM LIFTS AND BE COMPACTED TO A MINIMUM 95% STANDARD DENSITY OR AS OTHERWISE INSTRUCTED BY ENGINEER OF RECORD. THE BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE CHAMBER SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON THE CHAMBERS.
- REFER TO CHAMBERMAXX INSTALLATION GUIDE FOR TEMPORARY CONSTRUCTION LOADING GUIDELINES.
- IT IS ALWAYS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW H&S GUIDELINES FOR SAFE PRACTICES.



**SECTION C-C
MHE4 OUTFLOW CONTROL MANHOLE**

CHAMBERMaxx
PATENT PENDING



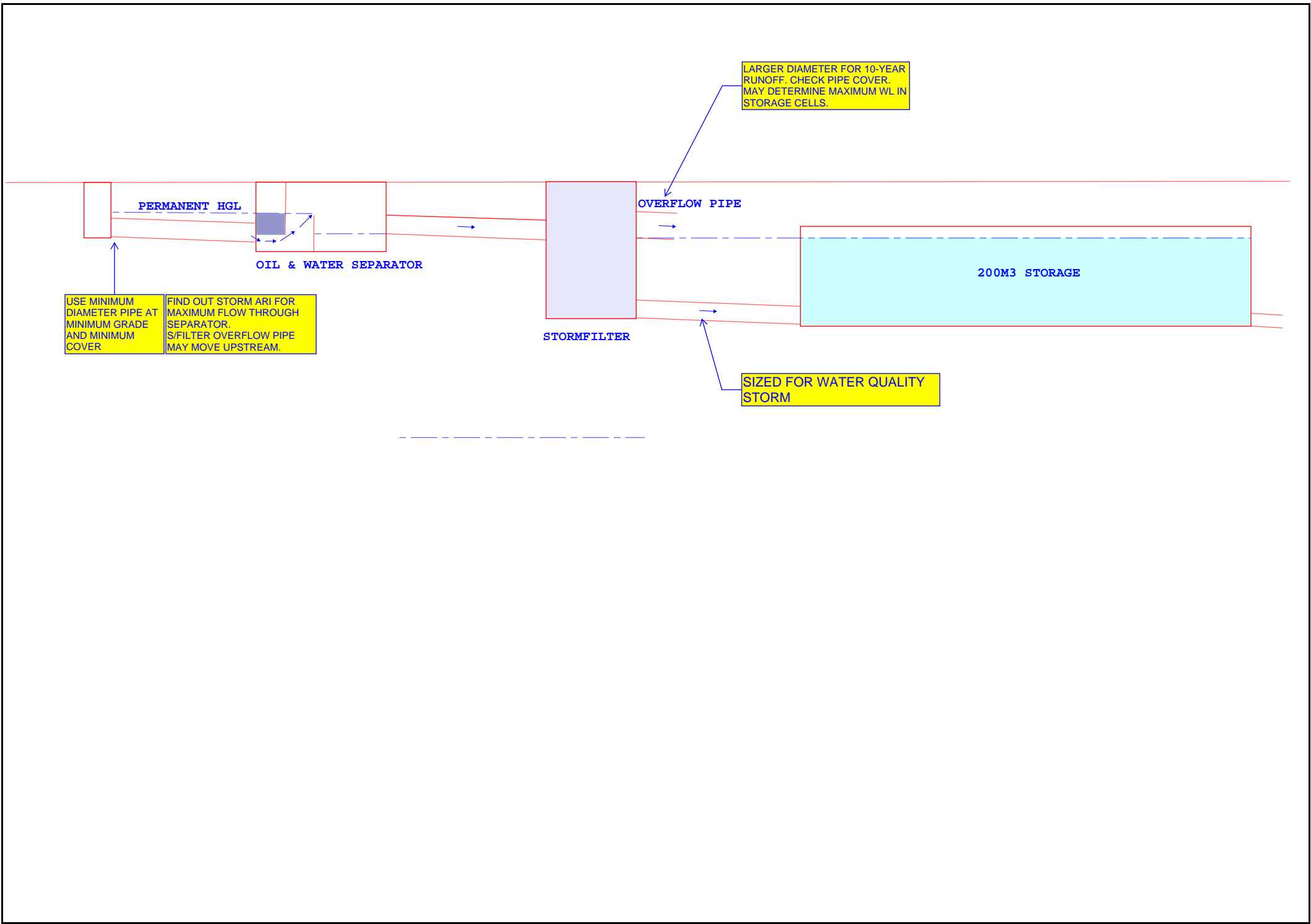
0800 STORMWATER
sales@stormwater360.co.nz
www.stormwater360.co.nz

CONDITION OF USE
© STORMWATER360 2018
Any unauthorised reproduction of this drawing in part or in full is prohibited

**CHAMBERMAXX
COMBINED STORMWATER DETENTION & RETENTION
STANDARD DETAIL
CONTAINMENT ROW OPTION**

SCALE : NTS DRG No : CM-SDR-STD-CRO

DRAWING	JOB NO :	
1	PROJECT :	
A	DEVICE # :	
	DRN :	R.P. 05.02.18
	CKD :	T.B. 05.02.18



LARGER DIAMETER FOR 10-YEAR RUNOFF. CHECK PIPE COVER. MAY DETERMINE MAXIMUM WL IN STORAGE CELLS.

PERMANENT HGL

OIL & WATER SEPARATOR

OVERFLOW PIPE

200M3 STORAGE

STORMFILTER

USE MINIMUM DIAMETER PIPE AT MINIMUM GRADE AND MINIMUM COVER

FIND OUT STORM ARI FOR MAXIMUM FLOW THROUGH SEPARATOR. S/FILTER OVERFLOW PIPE MAY MOVE UPSTREAM.

SIZED FOR WATER QUALITY STORM

ESK DESIGN NOTES

THE ESK™ IS A PASSIVE HIGH EFFICIENCY COALESCING SEPARATOR THAT REMOVES FREE OIL FROM CONTAMINATED STORMWATER RUNOFF AND HAS A BUILT-IN SHUTOFF VALVE TO PREVENT SPILLS AND STORAGE CAPACITY EXCESS EXITING THE DEVICE. THE DEVICE IS IDEALLY SUITED FOR SITES WHERE SPECIFIC EFFLUENT TARGETS ARE SPECIFIED, OR FOR SITES WHERE REMOVAL OF OIL AND GREASE IS THE GREATEST CONCERN E.G. FUEL STATIONS, FUEL DISTRIBUTION STATIONS, CAR SERVICING WORKSHOPS, ETC. IT IS TYPICALLY SIZED TO REMOVE OIL DROPLETS AS SMALL AS 10 MICRONS AND ACHIEVE AN EFFLUENT CONCENTRATION OF 5 MG/L OR LESS.

(A)	ESK MODEL	ESK10	ESK20	ESK40	ESK100
	TREATMENT FLOW RATE (L/s)	10 L/s	20 L/s	40 L/s	100 L/s
(Voil)	MINIMUM OIL STORAGE (L)	175	400	900	1900
(B)	CHAMBER DIAMETER (mm)	Ø 1050	Ø 1200	Ø 1500	Ø 1800
(C)	INTERNAL HEIGHT (mm)	≈ 1100	≈ 1400	≈ 1700	≈ 2300
(D)	TYPICAL DEPTH TO INVERT INLET/OUTLET	875	875	875	900
	RECOMMENDED INLET/OUTLET PIPE SIZE (mm)	Ø 150	Ø200	Ø 300	Ø 300

SITE SPECIFIC DATA REQUIREMENTS

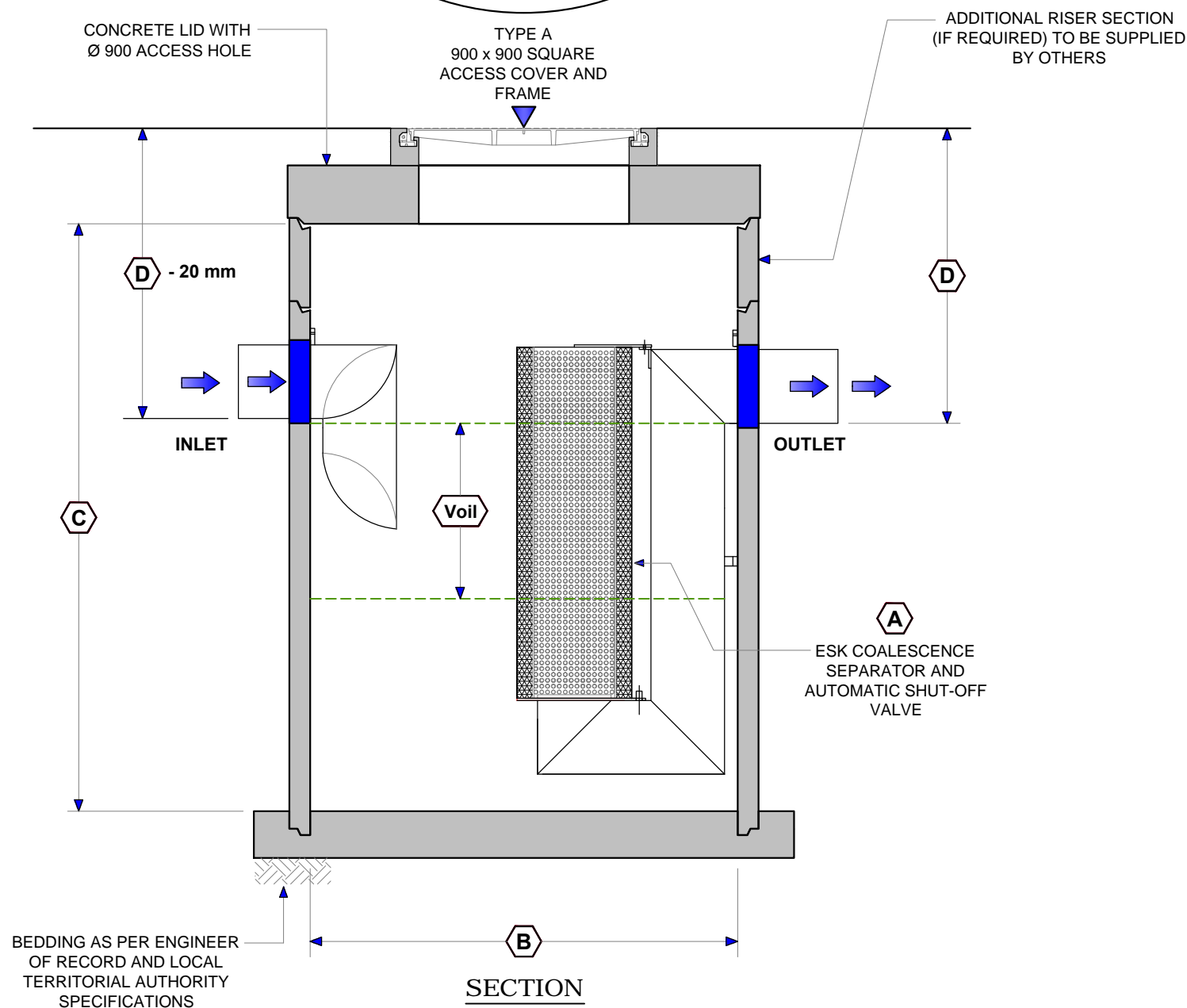
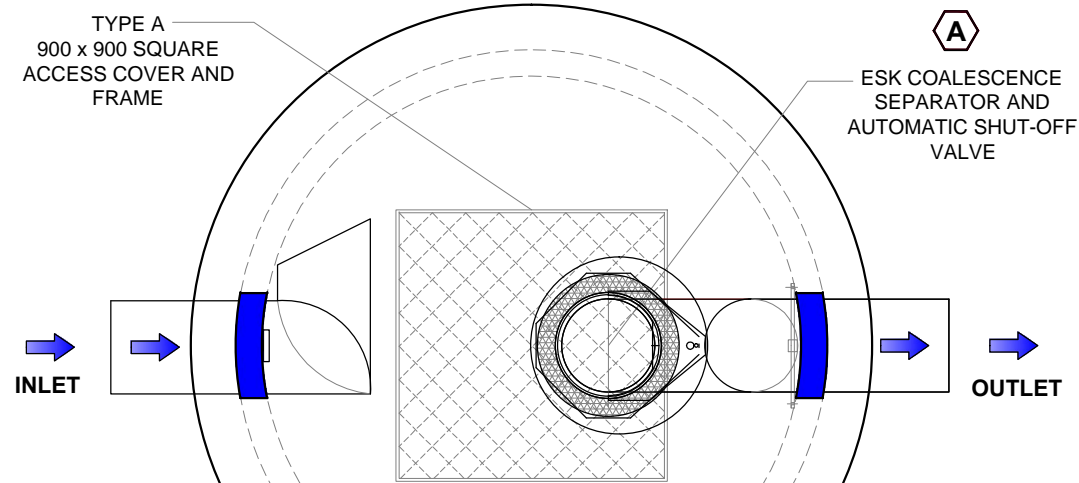
STRUCTURE ID			
ESK MODEL			
CATCHMENT AREA			
HYDROCARBON SPECIFIC GRAVITY (SG)			
WATER QUALITY FLOW RATE (L/s)			
PEAK FLOW RATE (L/s)			
RETURN PERIOD OF PEAK FLOW (yrs)			
PIPE DATA:	R.L.	MATERIAL	DIAMETER
INLET PIPE #1			
INLET PIPE #2			
OUTLET PIPE			
LID LEVEL		N/A	N/A
AS PER ENGINEER OF RECORD			

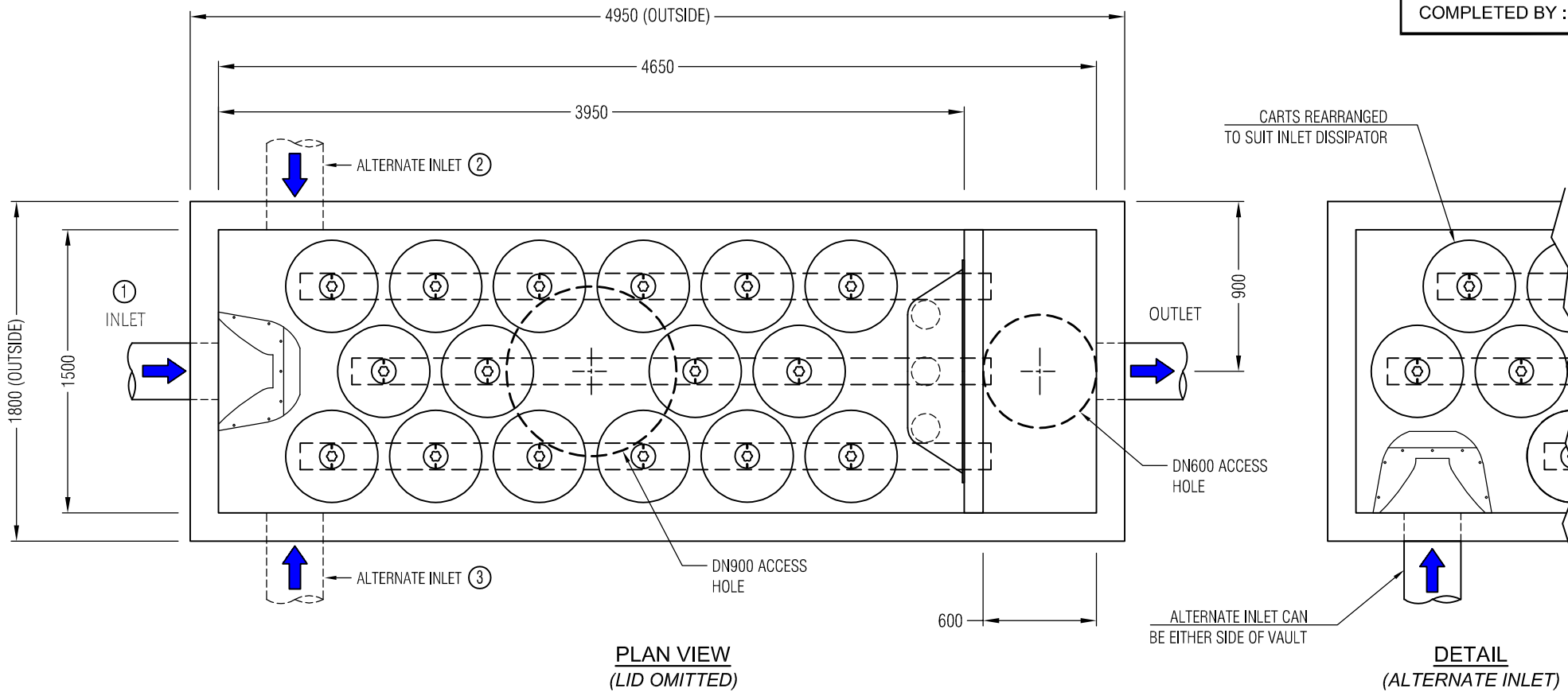
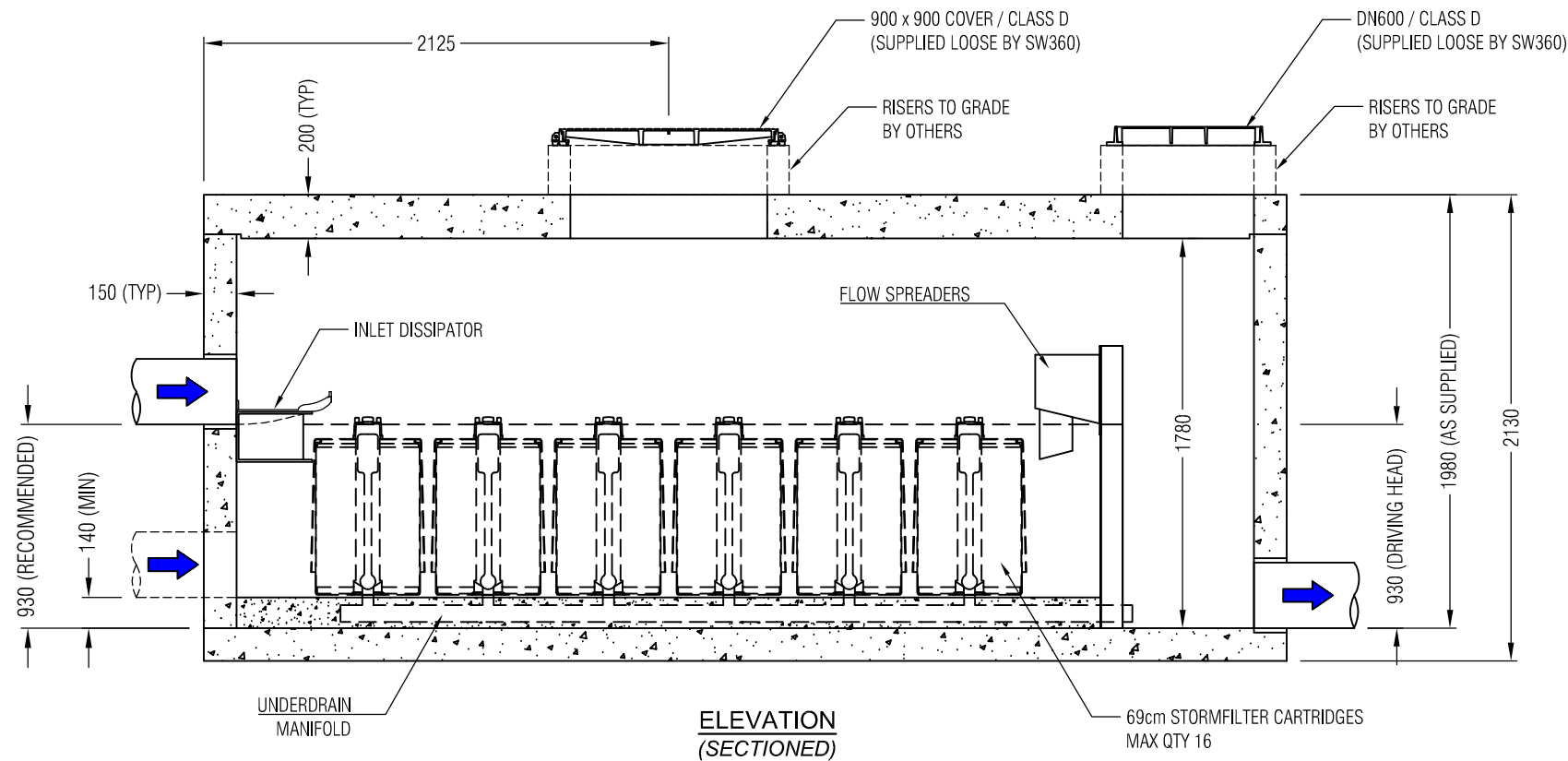
GENERAL NOTES :

1. STORMWATER360 TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR SW360 STORMWATER CONSULTANT VIA www.stormwater360.co.nz, OR 0800 STORMWATER, OR sales@stormwater360.co.nz.
3. T.W.L. = TREATMENT WATER LEVEL
4. STRUCTURE SHALL MEET NZTA'S HN-HO-72 OR PER APPROVING JURISDICTION TRAFFICKED LOAD REQUIREMENTS, WHICHEVER IS MORE STRINGENT. COVER AND FRAME ARE TO BE RATED TO EITHER CLASS B (FOR PEDESTRIAN AREAS) OR CLASS D (TRAFFICKED ROADS) IN ACCORDANCE WITH AS 3996 : 2006.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO NZS 3109 : 1997, NZS 3114 : 1987 AND AS/NZS 4058 : 2007.
6. DEVICE IS TO CONTAIN A COALESCENCE SEPARATION COLUMN TOGETHER WITH AUTOMATIC OUTFLOW CLOSURE VALVE THAT ACTIVATES WHEN THE LIMIT OF OIL STORED IN THE SEPARATOR IS REACHED.
7. LIGHT LIQUID SEPARATION IN ACCORDANCE WITH EUROPEAN & BRITISH EN858 STANDARD.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES :

- A. SIZE AND CLASS OF PIPE OR SQUARE KNOCKOUT SIZE TO BE SPECIFIED ON DRAWING BY CLIENT / CONTRACTOR.
- B. ADDITIONAL RISERS TO BE FORMED ON SITE BY CONTRACTOR (IF REQUIRED).
- C. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- D. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED).
- E. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- F. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPES.
- G. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT DEVICE FROM CONSTRUCTION-RELATED EROSION RUNOFF.





TO BE COMPLETED BY CUSTOMER / CONTRACTOR			
COMPANY :		P.O. NUMBER :	
SITE ADDRESS :			
SITE CONTACT & PHONE :			
PREFERRED DELIVERY DATE (TBC SW360) :			
STORMFILTER REFERENCE (IF APPLICABLE) :			
INLET PIPE Ø :	PIPE MATERIAL :	CORE DRILL Ø :	INLET (IL) :
OUTLET PIPE Ø :	PIPE MATERIAL :	CORE DRILL Ø :	OUTLET (IL) :
INLET ORIENTATION :	1 2 3	LID LEVEL (RL) :	DTI :
COMPLETED BY :		SIGNED :	DATE :

TO BE COMPLETED BY SW360			
SW360 PRODUCT CODE :			
MEDIA TYPE (CIRCLE ONE) :	PERLITE	ZPG	OTHER :
CARTRIDGE QTY (STATE) :			PRE-INSTALLATION (Y/N) :
SP FLOW RATE (CIRCLE ONE) :	FULL (Ø 27.6 ID) BLACK/MUSTARD	3 QTR (Ø 24.0 ID) WHITE/OPAL	HALF (Ø 19.7 ID) GREEN
ACCESS COVERS (CIRCLE ONE) :	AS DRAWN - YES or NO		OTHER :
COMPLETED BY :	SIGNED :	DATE :	

APPROX WEIGHTS
VAULT WEIGHT: 14800 Kg (EMPTY)
VAULT WEIGHT: 15600 Kg (WITH 16 X ZPG CARTS FITTED)
LID WEIGHT: 4300 Kg

- | NOTES |
|--|
| 1. SW360 TO CONFIRM WEIGHTS AND LIFTING DETAILS PRIOR TO DELIVERY. |
| 2. UNIT SUPPLIED WITH INLET & OUTLET HOLES PRE-CORED. |
| 3. INLET AND OUTLET PIPES BY OTHERS. |
| 4. SEALING / GROUTING OF CONCRETE LID AND PIPES BY CONTRACTOR, ENSURING LOCAL CODES AND REGULATIONS ARE COMPLIED WITH. |
| 5. ANY RISERS REQUIRED TO INCREASE THE DEPTH TO INVERT (DTI) FROM THAT AS DRAWN TO BE SUPPLIED BY THE CONTRACTOR. CONTACT 0800STORMWATER FOR DETAILS. |
| 6. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION RELATED EROSION RUNOFF. |
| 7. BACKFILL, BEDDING AND BUOYANCY DESIGN BY ENGINEER OF RECORD |
| 8. QTY OF CARTRIDGES BY ENGINEER OF RECORD. |
| 9. CONCRETE VAULT AND LID DESIGNED AND MANUFACTURED TO HN-HO-72 |
| 10. DESIGN CHECK REQUIRED WHEN COVER ABOVE LID EXCEEDS 1.0M. |
| 11. OTHER CONFIGURATIONS ARE POSSIBLE. FOR REQUIREMENTS OUTSIDE OF DRAWING SPECIFICATIONS PLEASE CONTACT 0800STORMWATER . |



0800 STORMWATER
 sales@stormwater360.co.nz
 www.stormwater360.co.nz

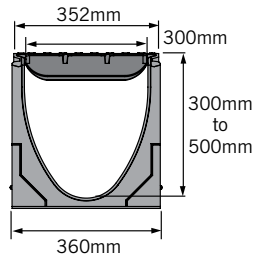
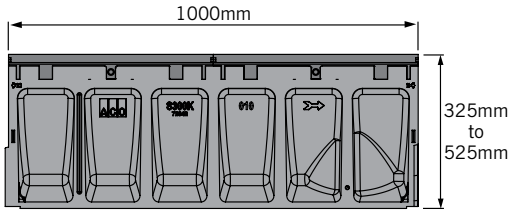
CONDITION OF USE
 © STORMWATER360 2020
 Any unauthorised reproduction of this drawing in part or in full is prohibited

STORMFILTER®
 CARTRIDGE FILTRATION SYSTEM
 16 x 69cm CARTRIDGE VAULT
 GENERAL ARRANGEMENT
 SCALE : N.T.S. DRG No : SF-V-69-4715-20

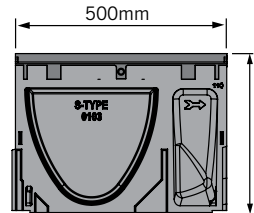
JOB NO :	REV	REVISION DETAIL	DATE
PROJECT :	0	APPROVED	24/09/20
DRN : G.S.			19/03/20
CKD : K.J.			08/08/20



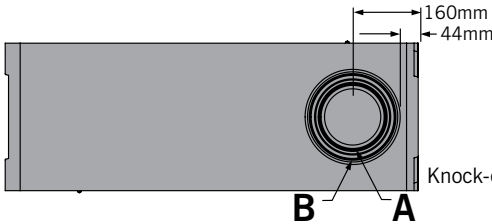
One metre channel



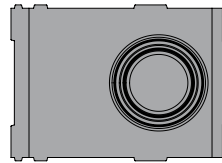
Half metre channel



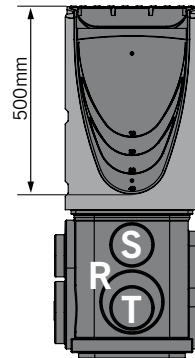
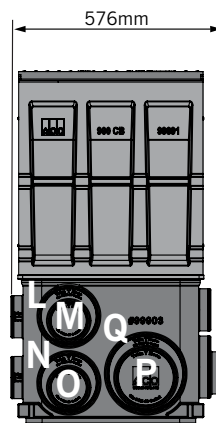
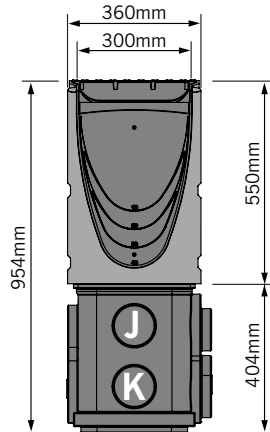
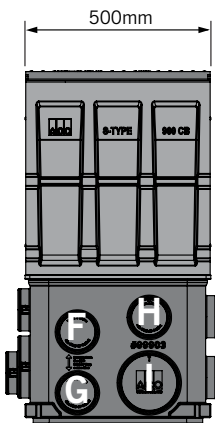
375mm SK3-0103
425mm SK3-0203
475mm SK3-0303
525mm SK3-0403



Knock-outs included on every 5th channel



SK3-903 In-line pit



Total capacity = 120 litres

Outlet flow rates

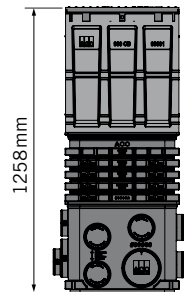
Outlet	Product	Outlet size	Invert Depth (mm)	L/s
A	Bottom outlet - SK3-00	150mm round	300	27.9
A	Bottom outlet - SK3-040	150mm round	500	36.0
B	Bottom outlet - SK3-00	200mm round	300	49.5
B	Bottom outlet - SK3-040	200mm round	500	64.0
C	End outlet - SK3-00	150mm round	300	19.7
C	End outlet - SK3-040	150mm round	500	30.1
D	End outlet - SK3-010	200mm round	350	35.0
D	End outlet - SK3-040	200mm round	500	49.5
E	End outlet - SK3-020	250mm round	400	54.7
E	End outlet - SK3-040	250mm round	500	70.7
F	SK3-903	100mm round	757	18.3
G	SK3-903	100mm round	922	20.5
H	SK3-903	100mm round	717	17.8
I	SK3-903	150mm round	922	44.7
J	SK3-903	100mm round	721	17.8
K	SK3-903	100mm round	886	20.0
L	SK3-903	150mm round	740	39.1
M	SK3-903	100mm round	726	17.9
N	SK3-903	150mm round	922	44.7
O	SK3-903	100mm round	907	20.3
P	SK3-903	150mm round	907	44.3
Q	SK3-903	200mm round	922	76.8
R	SK3-903	150mm round	883	43.6
S	SK3-903	100mm round	702	17.5
T	SK3-903	100mm round	873	19.9

Note: These are the pipe flow rates at the specified outlet, NOT channel flow rates. In-line pit flow rates are without rubbish basket - using rubbish basket reduces flow.

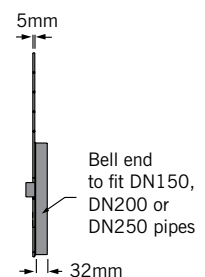
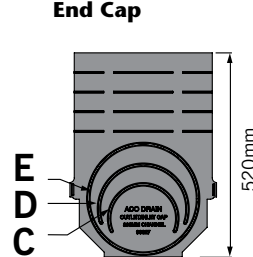
SK3-903 In-line pit with riser

Notes:

- Riser can be cut down in 25mm increments.
- Maximum capacity including riser 160 litres.
- Add 300mm to all heights if using riser.
- Outlet flow rates will be higher due to increased depth. Contact ACO Sales Office for more details.



End Cap



Bell end to fit DN150, DN200 or DN250 pipes

ACO Specification Information





Description	Part No.	Invert ² (mm)	Weight (kg)
SK3-00 Neutral channel - (1m)¹	69041	300	59.1
SK3-1 Sloped channel - (1m)	69001	305	59.1
SK3-2 Sloped channel - (1m)	69002	310	59.6
SK3-3 Sloped channel - (1m)	69003	315	60.2
SK3-4 Sloped channel - (1m)	69004	320	60.7
SK3-5 Sloped channel - (1m) ¹	69005	325	61.3
SK3-6 Sloped channel - (1m)	69006	330	61.9
SK3-7 Sloped channel - (1m)	69007	335	62.4
SK3-8 Sloped channel - (1m)	69008	340	63.0
SK3-9 Sloped channel - (1m)	69009	345	63.5
SK3-10 Sloped channel - (1m) ¹	69010	350	64.1
SK3-010 Neutral channel - (1m)¹	69042	350	64.1
SK3-0103 Neutral channel - (0.5m)¹	69045	350	35.3
SK3-11 Sloped channel - (1m)	69011	355	64.6
SK3-12 Sloped channel - (1m)	69012	360	65.2
SK3-13 Sloped channel - (1m)	69013	365	65.8
SK3-14 Sloped channel - (1m)	69014	370	66.3
SK3-15 Sloped channel - (1m) ¹	69015	375	66.9
SK3-16 Sloped channel - (1m)	69016	380	67.4
SK3-17 Sloped channel - (1m)	69017	385	68.0
SK3-18 Sloped channel - (1m)	69018	390	68.5
SK3-19 Sloped channel - (1m)	69019	395	69.1
SK3-20 Sloped channel - (1m) ¹	69020	400	69.7
SK3-020 Neutral channel - (1m)¹	69044	400	69.7
SK3-0203 Neutral channel - (0.5m)¹	69047	400	38.5
SK3-21 Sloped channel - (1m)	69021	405	70.2
SK3-22 Sloped channel - (1m)	69022	410	70.8
SK3-23 Sloped channel - (1m)	69023	415	71.4
SK3-24 Sloped channel - (1m)	69024	420	71.9
SK3-25 Sloped channel - (1m) ¹	69025	425	72.4
SK3-26 Sloped channel - (1m)	69026	430	73.0
SK3-27 Sloped channel - (1m)	69027	435	73.6

Description	Part No.	Invert ² (mm)	Weight (kg)
SK3-28 Sloped channel - (1m)	69028	440	74.1
SK3-29 Sloped channel - (1m)	69029	445	74.7
SK3-30 Sloped channel - (1m) ¹	69030	450	75.3
SK3-030 Neutral channel - (1m)¹	69046	450	75.3
SK3-0303 Neutral channel - (0.5m)¹	69049	450	41.8
SK3-31 Sloped channel - (1m)	69031	455	75.8
SK3-32 Sloped channel - (1m)	69032	460	76.4
SK3-33 Sloped channel - (1m)	69033	465	76.9
SK3-34 Sloped channel - (1m)	69034	470	77.5
SK3-35 Sloped channel - (1m) ¹	69035	475	78.1
SK3-36 Sloped channel - (1m)	69036	480	78.6
SK3-37 Sloped channel - (1m)	69037	485	79.2
SK3-38 Sloped channel - (1m)	69038	490	79.7
SK3-39 Sloped channel - (1m)	69039	495	80.3
SK3-40 Sloped channel - (1m) ¹	69040	500	80.8
SK3-040 Neutral channel - (1m)¹	69048	500	80.8
SK3-0403 Neutral channel - (0.5m)¹	69050	500	45.5
SK3-903 In-line pit (0.5m) ³	142549	954 ⁴	39.9
Type 900 In-line plastic rubbish basket	98653	-	1.6
Optional plastic riser	141729	300	4.5
Plastic rubbish basket - long	98665	-	1.8
Universal end cap	96827	520 ⁴	1.1
Installation device	97479	-	2.2
Grate removal tool	01318	-	0.1
PowerLok safety clip	10443	-	-

Notes:

1. This channel offers bottom knockout feature; 150mm and 200mm round.
2. Inverts shown are male end, for female invert depths – subtract 5mm from male invert (except neutral channels where it will be the same as the male invert). To calculate overall channel depth, add 25mm to invert depth.
3. In-line pit assembly (polymer concrete top with ductile iron edge rail and plastic base).
4. Overall depth of in-line pit and end cap.

Specifications

The surface drainage system shall be ACO's PowerDrain S300K polymer concrete V-profile channel system with ductile iron edge rails as manufactured by ACO.

Channels

S300K channel shall be 300mm nominal internal width with an overall width of 360mm. Channel invert shall have a V-profile to allow efficient drainage and channel walls shall have deep pockets and vertical ribs for mechanical keying. S300K sloped channels shall have a built-in slope of 0.5%. All channels shall be interlocking with a male/female joint and have provisions for the installation device.

Grates

Insert specification for the selected grate. Refer to the relevant ACO Specification Information sheet, at: <http://www.acodrain.com.au/resources>

Installation

The complete drainage system shall be by ACO and to be installed for its intended purpose. Any deviation or partial use of the specified system and/or improper installation will void all warranties provided by ACO.

Materials

S300K channel shall be manufactured from polyester resin polymer concrete with integrally cast-in ductile iron edge rails with anti-shunt lugs.

Properties of polymer concrete will be as follows with supporting documentation:

Compressive Strength:	98 MPa
Flexural Strength:	26 MPa
Tensile Strength:	14 MPa
Water Absorption:	0.07%
Frost Proof:	YES
Coefficient of Expansion and Contraction:	2.02x10 ⁻⁵ /°C
Water Vapour Transmission:	0.0364g/m ²
Non Flammable:	YES
Roughness (Mannings):	n=0.011
Resistant to Weathering:	YES
Dilute Acid and Alkali Resistant:	YES
SF Sealant Groove:	YES

**ACO Polycrete Pty Ltd
Australia**

Ph: 1300 765 226
www.acodrain.com.au
sales@acoaus.com.au

**ACO Limited
New Zealand**

Ph: 0800 448 080
www.acodrain.co.nz
sales@aconz.co.nz

