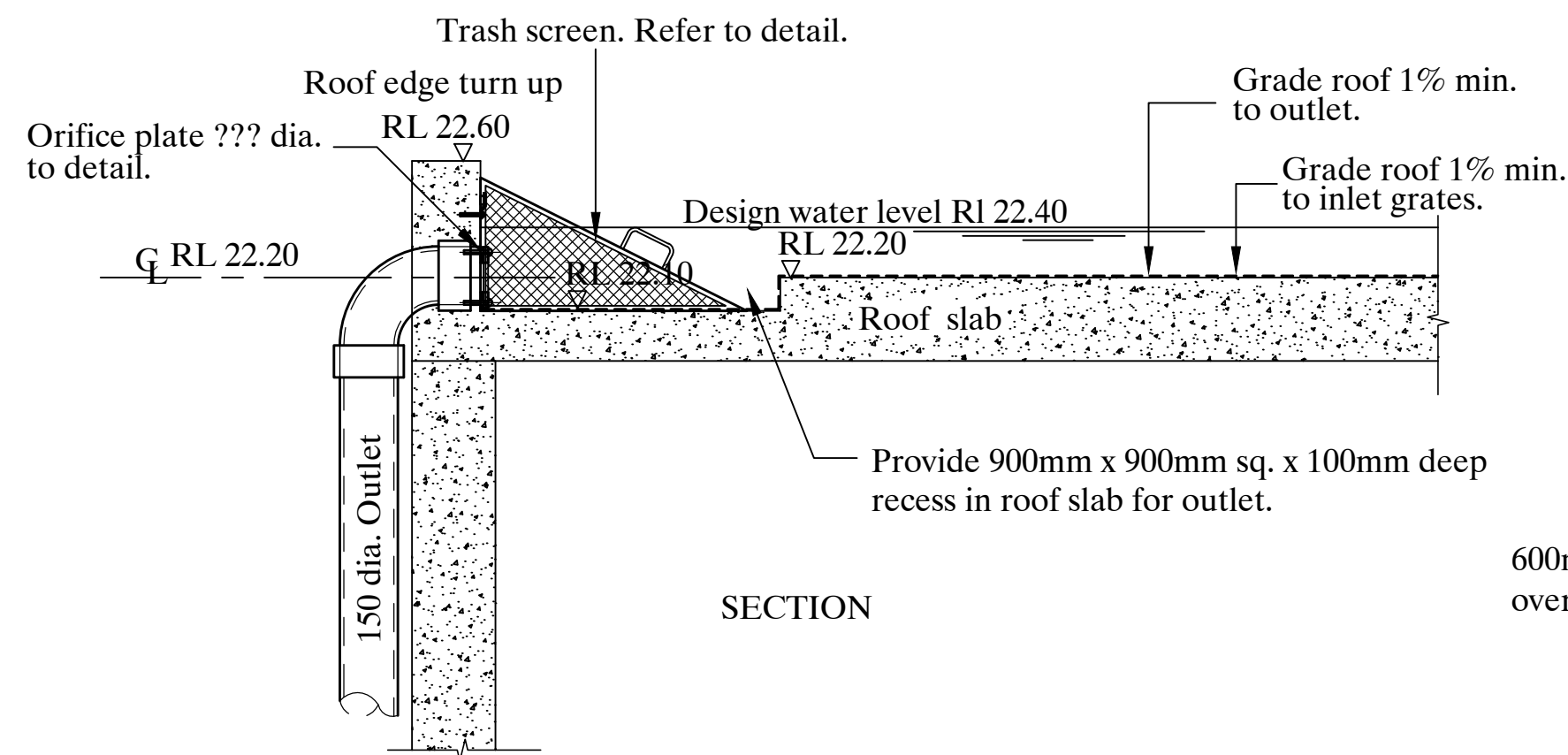
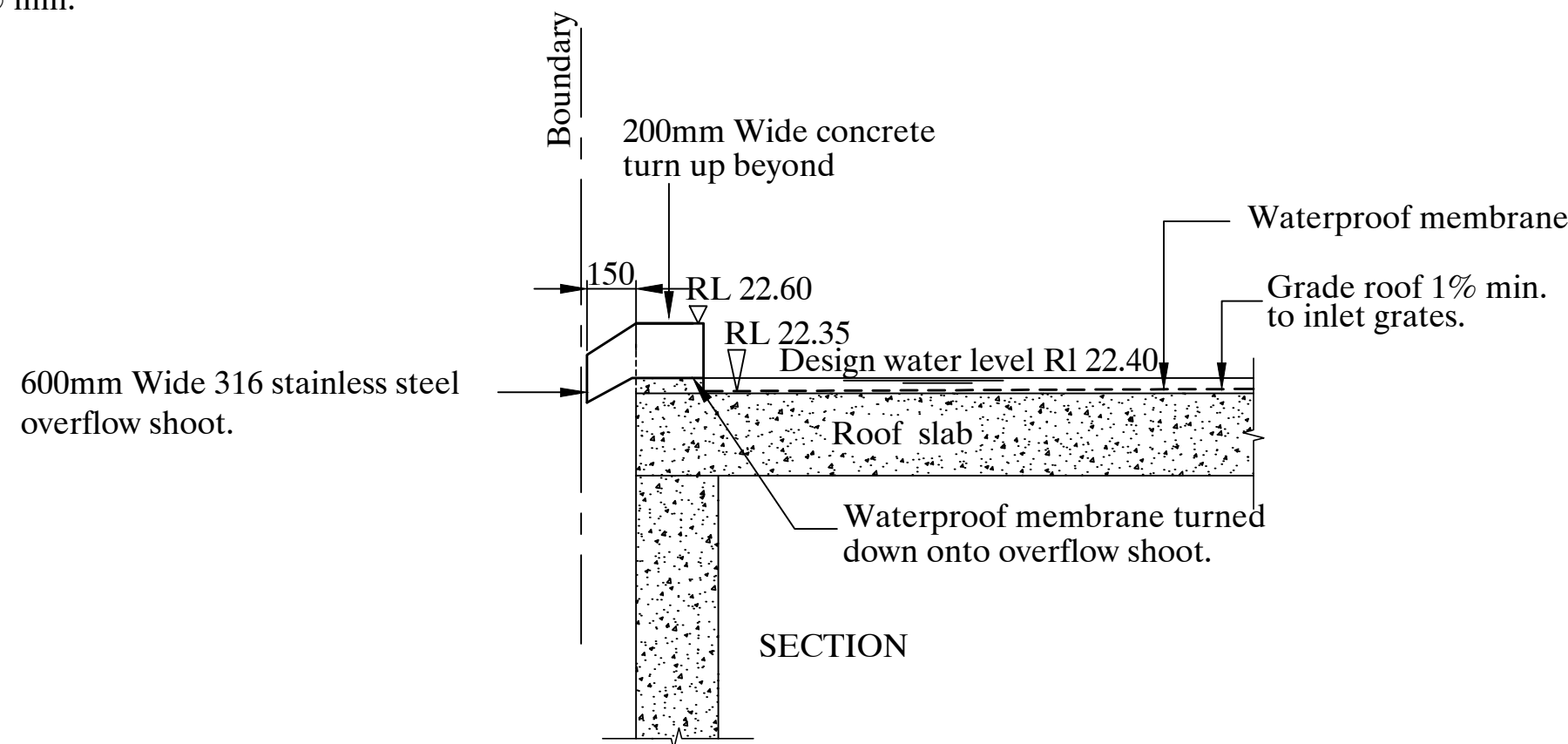


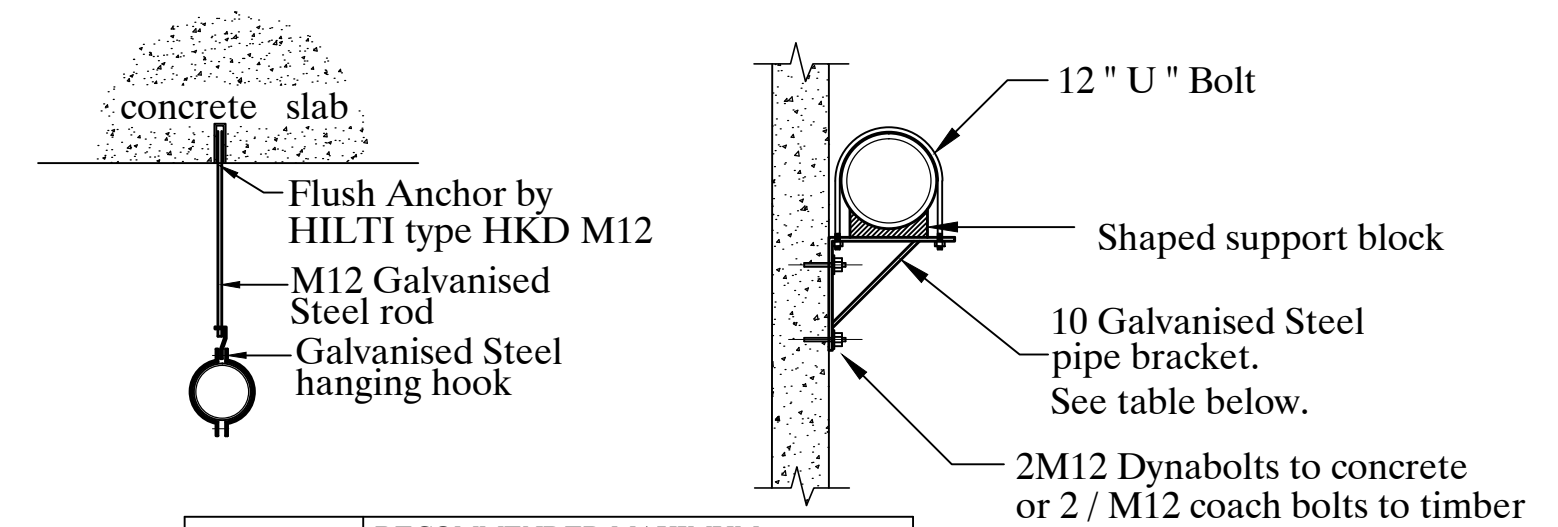
21. Tanks may be in-situ or precast. Note that falls, sumps and the position and depth to office plates or discharge control pipe is critical: both for hydraulic and health reasons. Overflow and access grates also provide light and ventilation requirements of various Authorities. Provide step iron on all tanks over 1200 mm.
22. Tank risers should be in-situ concrete. Risers shall have the same clear internal size as the tank access opening. Provide step iron to risers as specified.
23. Individual-rung step iron to tank, tank risers and deep pits shall be an approved type of step iron. Rungs shall be spaced at 250mm vertically. Rungs permanently and securely by drilling and epoxy grouting. Provide the specified number of step-irons, equally spaced vertically between 250mm and 350mm, with alternate rungs offset 200mm.
24. Grates shall be used to access the hinged and childproof, using either a spring loaded bolt or a bolt and lock locking system (padlocks are not permitted). The frames shall be securely attached to the tank or riser, or built into an in-situ slab.
25. Grates shall be class A (light duty) in paths and lawns; class B (medium duty) in residential vehicular areas; and class C (heavy duty) in public roads.



**SECTION THROUGH DETENTION POND AND OUTLET**  
N.T.S.

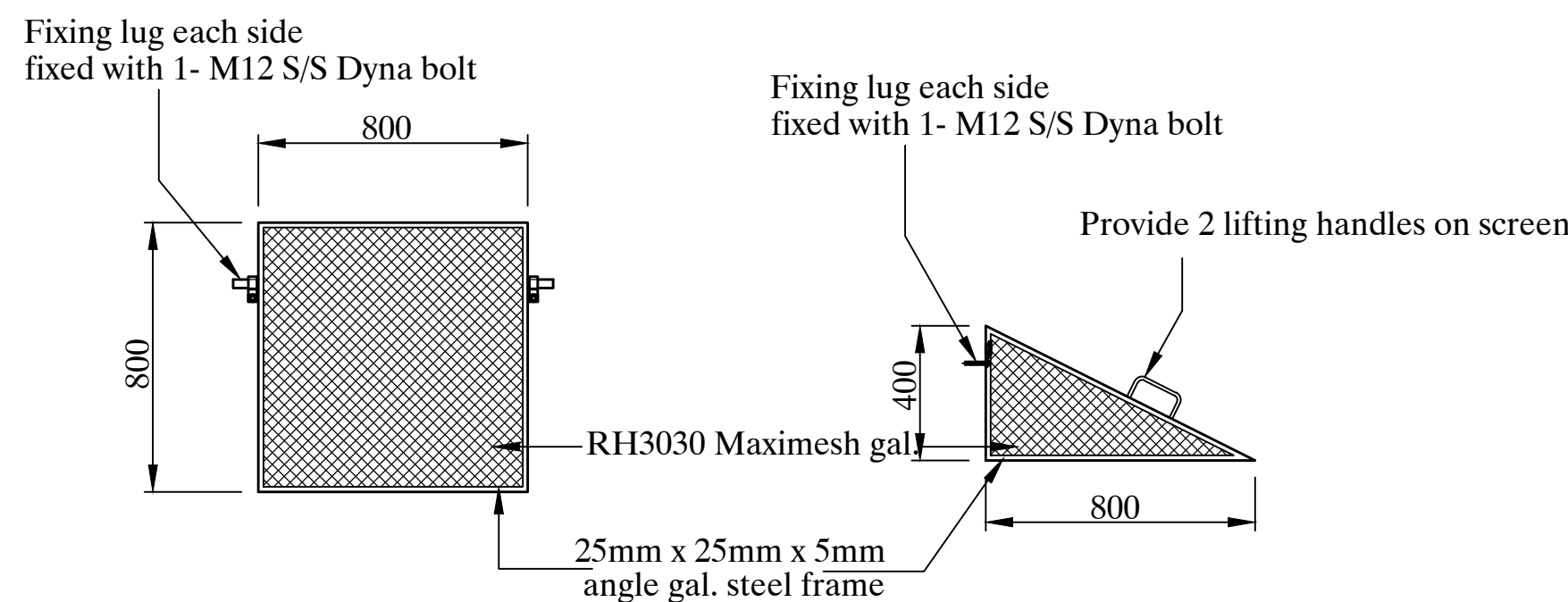


**CONCRETE ROOF DETENTION POND OVERFLOW DETAIL**  
N.T.S.

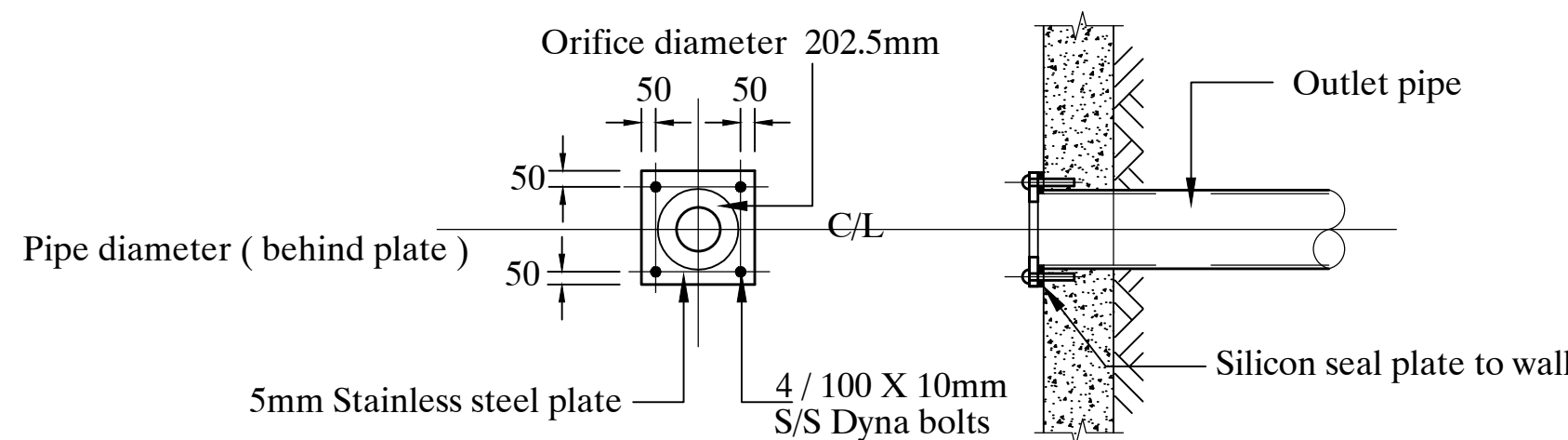


**TYPICAL SECTION OF SUSPENDED STORMWATER DRAINAGE**  
N.T.S.

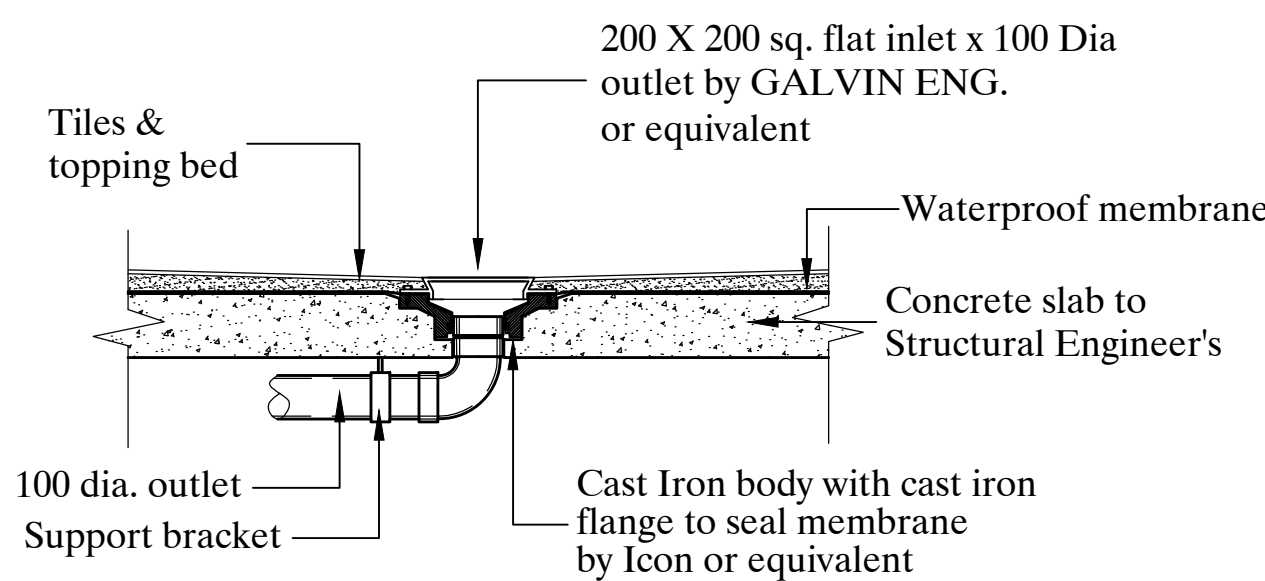
NOMINAL SIZE OF PIPE	RECOMMENDED MAXIMUM SPACING OF SUPPORTS in M	
	HORIZONTAL OR GRADED PIPES	VERTICAL PIPES
80	1.35	2.70
100	1.50	3.00
125	1.70	3.00
150	2.00	3.00
225	2.00	3.00



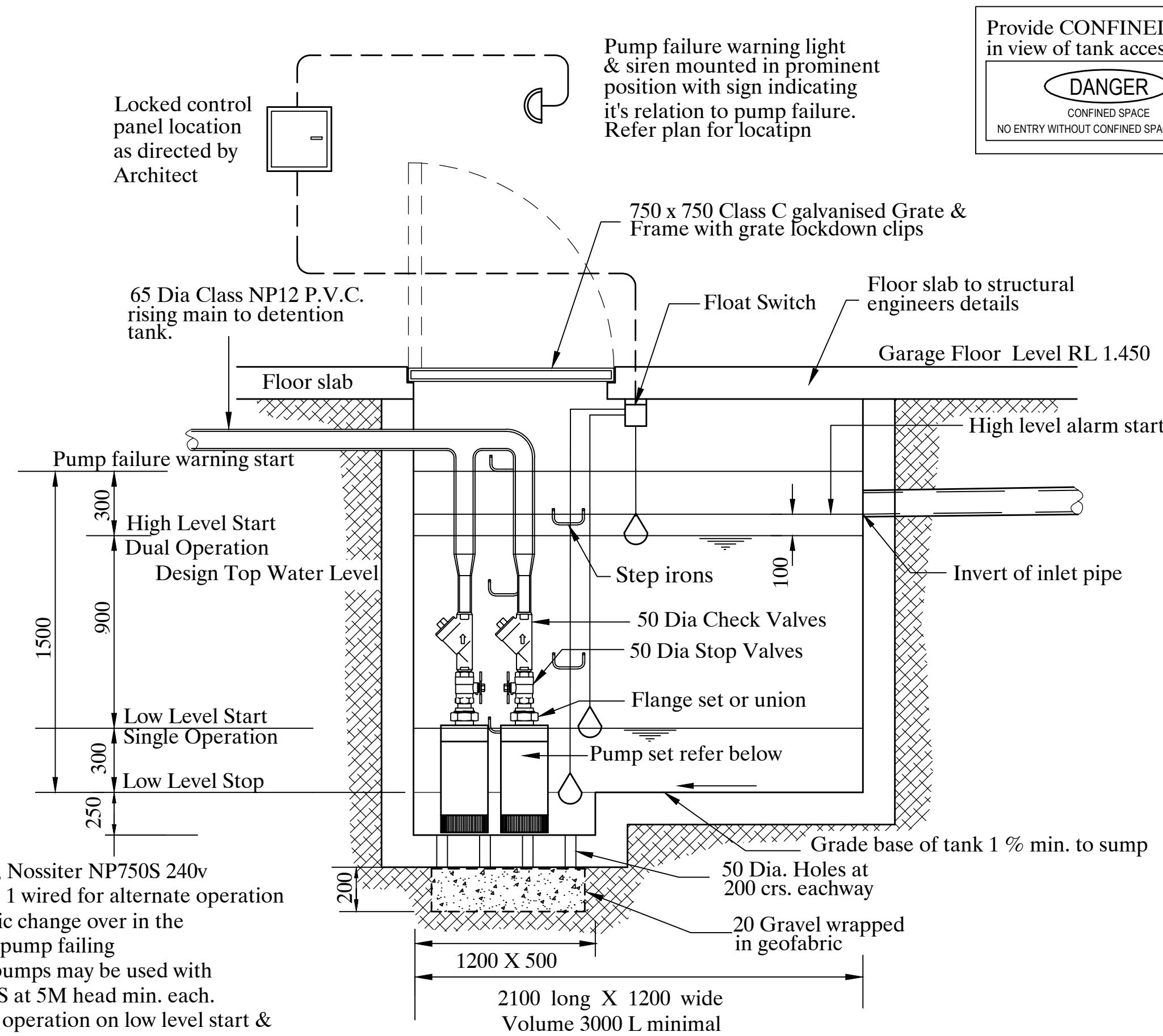
**TRASH SCREEN DETAIL**  
N.T.S.



**ORIFICE PLATE DETAIL**  
1 : 20

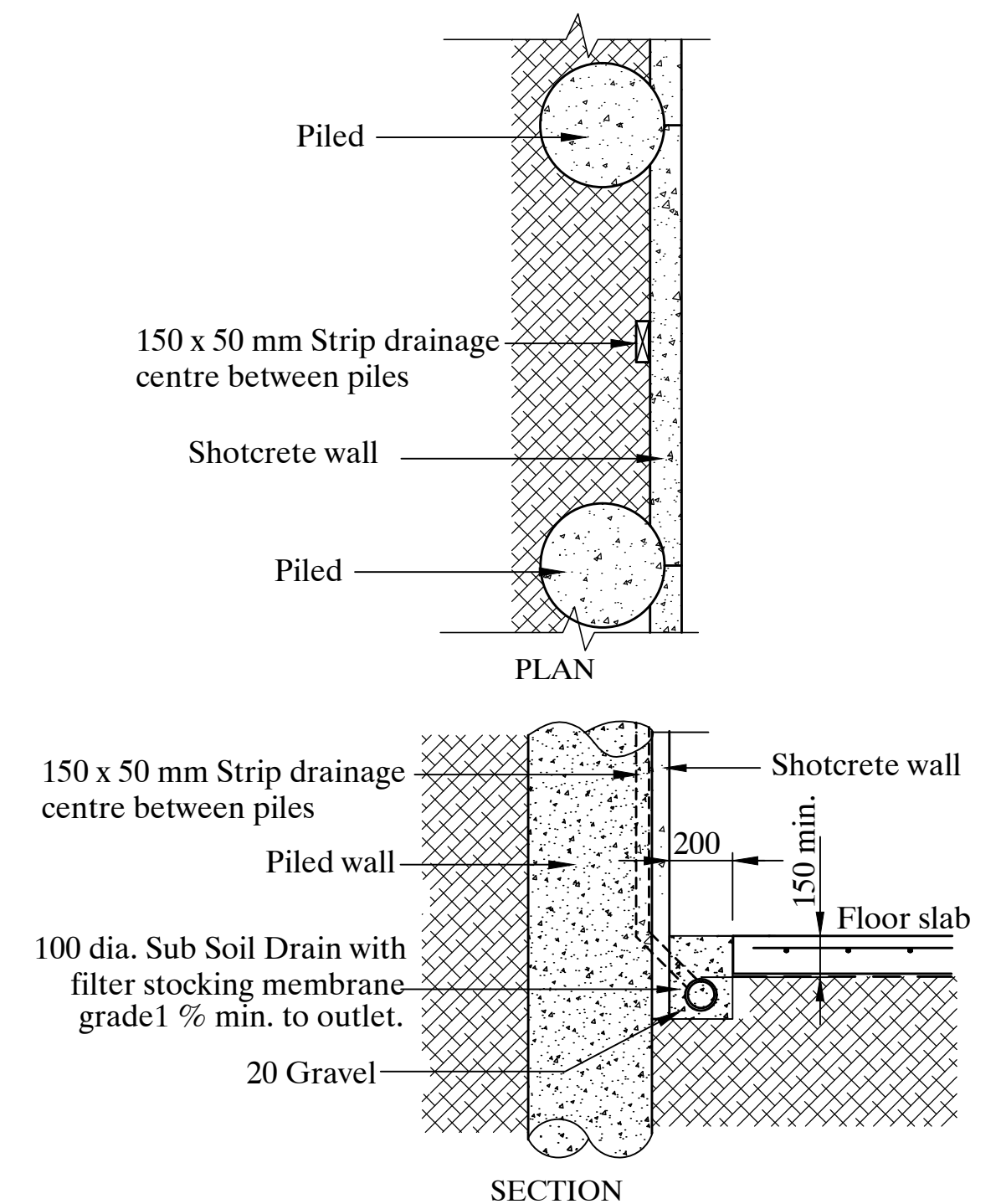


**TYPICAL INLET GRATE TYPE TG-A**  
N.T.S.  
Shown on plan

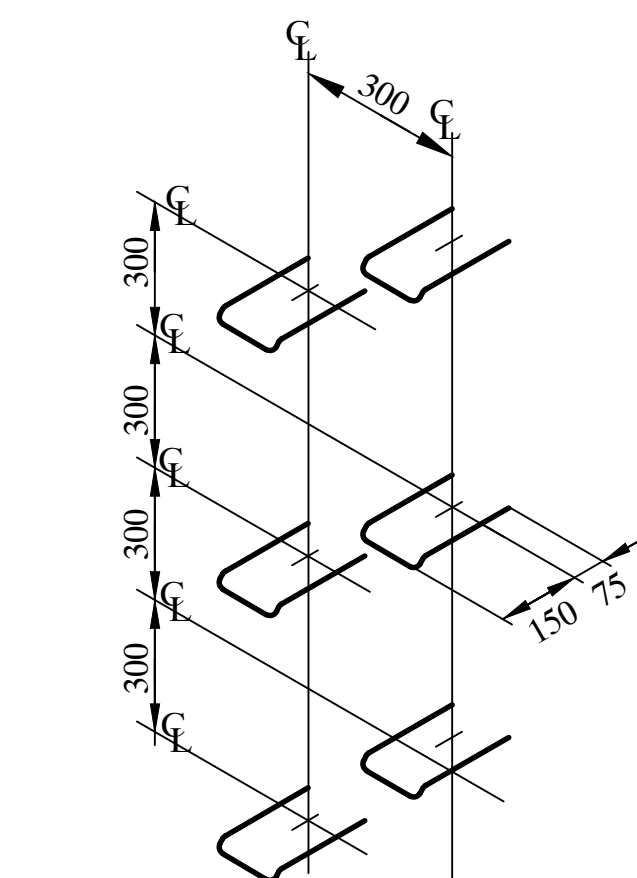


**NOTE : On roof or surface run off water is not to be directed to the pump well**

**PUMP WELL DETAIL**  
N.T.S.



**TYPICAL SECTION SUB-SOIL DRAIN AND DRAIN INSIDE PILED WALL**  
N.T.S.



Step Iron - 24 dia. preformed bar, position insitu or approved equivalent

**STEP IRON DETAIL**

Step irons to be fitted to all pits with a depth greater than 1200 deep and water tanks deeper than 1200

A	Floor plan Altered. Drainage altered to suit	10-10-2018
Revision	Details	Date
Project		
<b>RESIDENTIAL DEVELOPMENT</b>		
21 WHISTLER ST MANLY		
<b>BURGESS, ARNOTT &amp; GRAVA PTY. LTD.</b>		
<b>CONSULTING STRUCTURAL, CIVIL &amp; HYDRAULIC ENGINEERS</b>		
61A THE CENTRE FORESTVILLE P.O. BOX 69 FORESTVILLE 2087		
Ph. 9451 4411 Fax. 9975 2274		
email rob@gravaconsulting.com.au		
Title		
<b>STORMWATER DRAINAGE CONCEPT DETAILS</b>		
Checked	Scale	Date
R. Grava	As shown	Sep.2018
Approved by	Drawing 3 in set of 3	
Chartered Engineer	Drawing size A1	