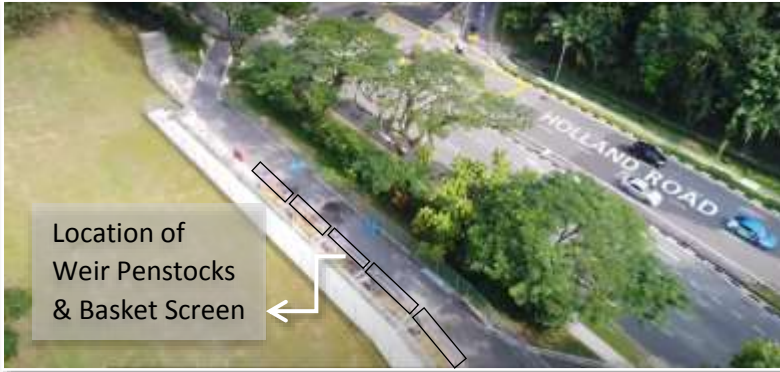


## WEIR PENSTOCK AND BASKET SCREEN AT STAMFORD DETENTION TANK (SDT), SINGAPORE



### Location:

Stamford Detention Tank (SDT) is located near the Holland road, Singapore. The Stamford Detention Tank (SDT) sits beneath the coach park of the Tyersall Learning Forest, and the National Orchid Nursery, at the Singapore Botanic Garden.

### Purpose of Stamford Detention Tank (SDT) :

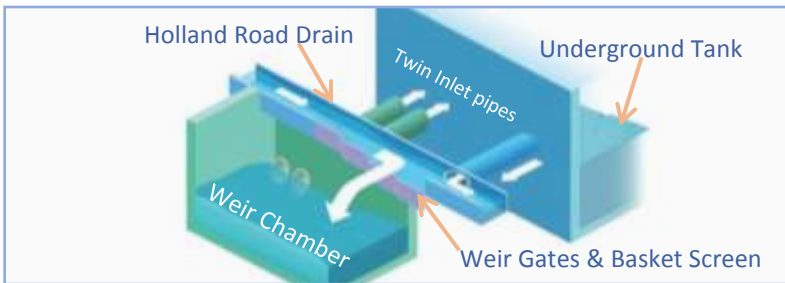
Singapore has experienced frequent flooding due to intense rainfall in recent times. These trends are expected to continue with the change of climate. In order to cope with more intense storm and reduce flood risks, Singapore National Water Agency PUB continuously upgrade Singapore's drainage infrastructure & system. The Stamford Diversion Canal (SDC) and Stamford Detention Tank (SDT) are drainage projects that were designed to improve stormwater system within the Stamford catchment area. The Stamford Diversion Canal (SDC) and Stamford Detention Tank (SDT) aim to ensure that, should the same intensity of rain as that in June 2010, June 2011 and December 2011 fall over the Stamford Catchment area again, Orchard Road will not flood.

Project Details	
<b>Project</b>	Stamford Detention Tank & Ancillary Facilities
<b>Owner</b>	PUB, Singapore
<b>Engineering Contractor</b>	UES Holding Pvt Ltd, Singapore
<b>Consultant</b>	CPG Consultant Pvt Ltd. Singapore

Overflow Weir Penstock & Basket Screen Details	
<b>Weir Penstock size</b>	5350 x 1900 mm (width x Height) – 6 nos.
<b>Basket Screen size</b>	5400 mm wide opening
<b>Sluice gate size</b>	3000 x 2500 mm – 02 nos.
<b>Manufacturer</b>	Jash engineering Ltd. India
<b>Operation</b>	Electrically actuated
<b>MOC</b>	Stainless Steel ASTM A240 Type 316L

### Environmental and Sustainable Design Considerations:

The SDT is designed to temporarily store stormwater from the drains in Holland Road, during a heavy downpour. The excess stormwater will flow from the drains into a weir chamber where a pair of inlet pipes will then channel the water into the SDT, by gravity. Excess stormwater will then temporarily hold in the detention tank. After the rain subsides, and water levels in the Holland Road drains fall, the water stored in SDT will be pumped back into these drains which lead to the Stamford Detention Canal (SDC). SDC will divert excess rainwater from Holland Road, Napier Road and Grange Road - which are in the upstream section of Stamford Catchment - into the nearby Singapore River, which then merges with the Marina Reservoir further on.



## Role of Jash Overflow Weir Penstocks and Basket Screen at Stamford Detention Tank Site:

During heavy rain Jash weir penstock allows excess stormwater to flow from the drains into a weir chamber where a pair of inlet pipes will then channel the water into the SDT by gravity. The basket screen adjacent to weir penstock collects floating waste coming with flood.

The SDT can hold up to 38,000 m<sup>3</sup> of stormwater (equivalent to the quantity of water in 15 Olympic-sized swimming pools) which can be emptied in four hours, to prepare the tank for the next heavy downpour.



Gate & Basket screen during movement testing at Jash Plant.



Gates during installation at site.



Gates & Basket Screen in operation at site.



## Engineering Specialty of the Jash Overflow Weir Penstocks & Basket Screen:

As per the PUB specification requirement, these penstocks should be designed such that flow of water should not be obstructed by any part of gate. To meet this requirement Jash has innovatively designed these penstocks such that the tandem operating shafts are coming outside the opening area of the gate.

The electric hoisting unit of weir penstocks and basket screens are specially design to operate at a height of 2 m from the ground level. This enables the walk way near the installation location safe, trouble free & give enough room for a human to walk under the shaft.

The fabrication of equipment was done very precisely & accurately in order to maintain the required gap of 10 mm between outer edge of gate stiffeners & basket screen cage.

In order to achieve longer sealing life, Jash has offered these weir penstocks & sluice gates with HARSA™ rigid sealing system on sides and top. This unique integral seal / seat system is certified for 25,000 cycle operation in abrasive condition and reduces the possibility of future seal change. This sealing system offers longevity and necessitates precision in installation to achieve specified leakage criteria.

These weir penstocks are also equipped with GRIT-DEFLECT™ arrangement provided at the bottom to prevent embedment of grit in bottom sealing area and thereby avoid scouring of slide face.

These Weir Penstocks & Basket screens were installed in 2016.

For more details about Stamford Detention Tank & Stamford Canal, please follow the link given hereunder:

<https://www.youtube.com/watch?v=uAUeZvKemWA> (GOV, SG), <https://www.youtube.com/watch?v=nzLDU5AjbYU> (PUB, SG)

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