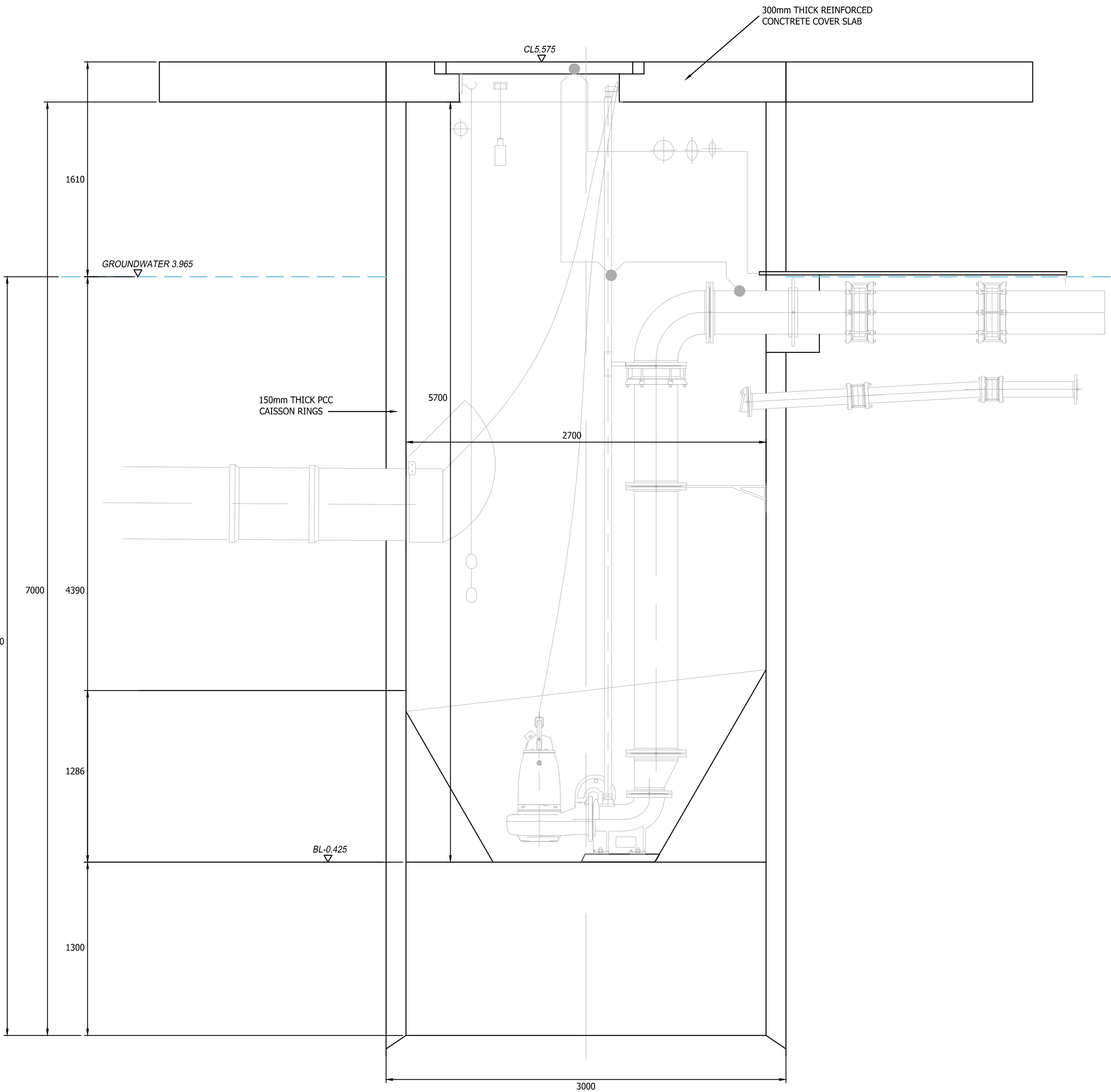




FLOTATION CALCULATIONS

WATER DISPLACED BY CHAMBER:

3.00m O/DIA., VOLUME = $\pi r^2 \times d$
= $\pi \times 1.50^2 \times 5.690$
= 40.22m³

MASS = pw x V = 1000 kg/m³ x 40.22
= 40220.2 kg
x g (9.8 m/s²) = 39415.8 N
= 394.158 kN

FACTOR OF SAFETY = 1.2

i.e 394.158 x 1.2 = **472.99 kN (BUOYANCY FORCE)**

CHAMBER SELF-WEIGHT:

COVER SLAB (volume) = $\pi r^2 \times d$
= $\pi \times 1.50^2 \times 0.3$
= 2.12m³
less cover opening = 2.0 x 1.2 x 0.3
= 0.72m³
= 2.12 - 0.72m³
= 1.40m³

MASS = pw x V = 2500 kg/m³ x 1.40
= 3500 kg
x g (9.8 m/s²) = 34300 N
= **34.30 kN**

RINGS = 7.00m DEEP
RINGS (area) = $\pi r_{(o)}^2 - \pi r_{(i)}^2$
= $(\pi \times 1.50^2) - (\pi \times 1.35^2)$
= 7.068 - 5.725
= 1.342m²

RINGS (volume) = 1.342 x 7.00 = 9.397m³

MASS = 3490 kg/m depth
= 7.00 x 3490 kg
= 24430 kg
x g (9.8 m/s²) = 239414 N
= **239.41 kN**

CONCRETE BENCHING = 1.286m mean DEEP x 1.957m mean ID
BENCHING (volume) = $\pi r^2 \times d$ (max) - $\pi r^2 \times d$ (mean)
= $(\pi \times 1.35^2) - (\pi \times 0.978^2) \times 1.286$
= (5.725 - 3.004) x 1.286m³
= 3.498m³

MASS = 3.498m³ x 2500 kg/m³
= 8745.1 kg
x g (9.8 m/s²) = 85702.7 N
= **85.70 kN**

CONCRETE BASE = 1.300m DEEP
BASE (volume) = $\pi r^2 \times d$
= $(\pi \times 1.35^2) \times 1.300$
= 7.443m³
= 7.443m³ x 2500 kg/m³
= 18608 kg
x g (9.8 m/s²) = 182358.85 N
= **182.35 kN**

i.e. CHAMBER SELF-WEIGHT TOTAL
= 34.30 + 239.41 + 85.70 + 182.35
= **541.76 kN**

541.76 > 472.99 kN ∴ OK (NO FLOTATION)

SW PUMP WET WELL
(as drawn - Willow Pumps)

- Notes**
1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations , record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. Any discrepancies shall be notified to gta prior to works commencing.
 2. Prior to commencement of works the contractor shall provide co-ordinated and dimensioned installation drawings and calculations and allow 10 working days for gta`s checking procedure prior to proceeding with those works or the ordering of materials.
 3. Tender or billing drawings shall not be used for construction or the ordering of materials.
 4. Do not scale, All dimensions and levels to be site confirmed.
 5. This drawing shall be read in conjunction with all relevant architects, consultants drawings and specifications, together with H&S plan requirements
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Status				
INFORMATION				
Client				
Project				
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Title				
FLOTATION CALCULATIONS SW PUMP WET WELL				
Date	JULY 2021	Scale @ A2	1:25	
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