

ABBREVIATIONS

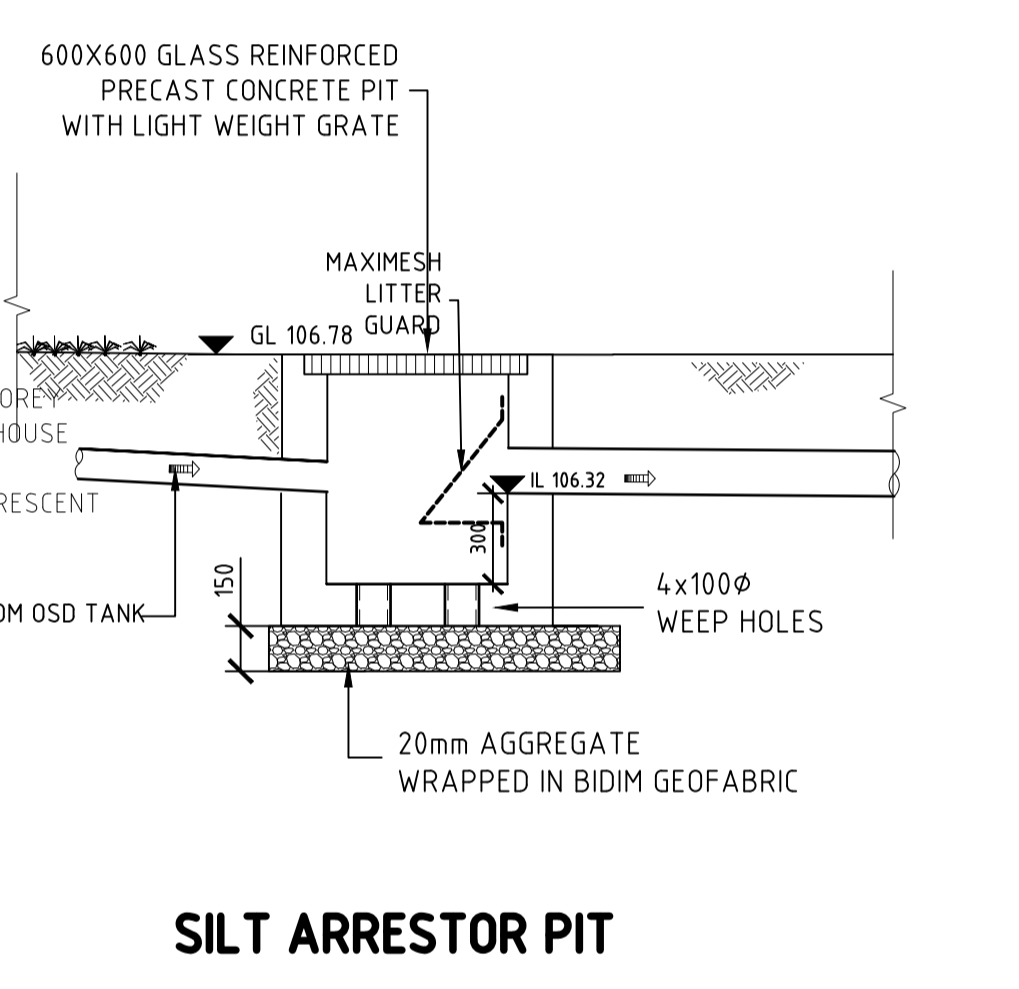
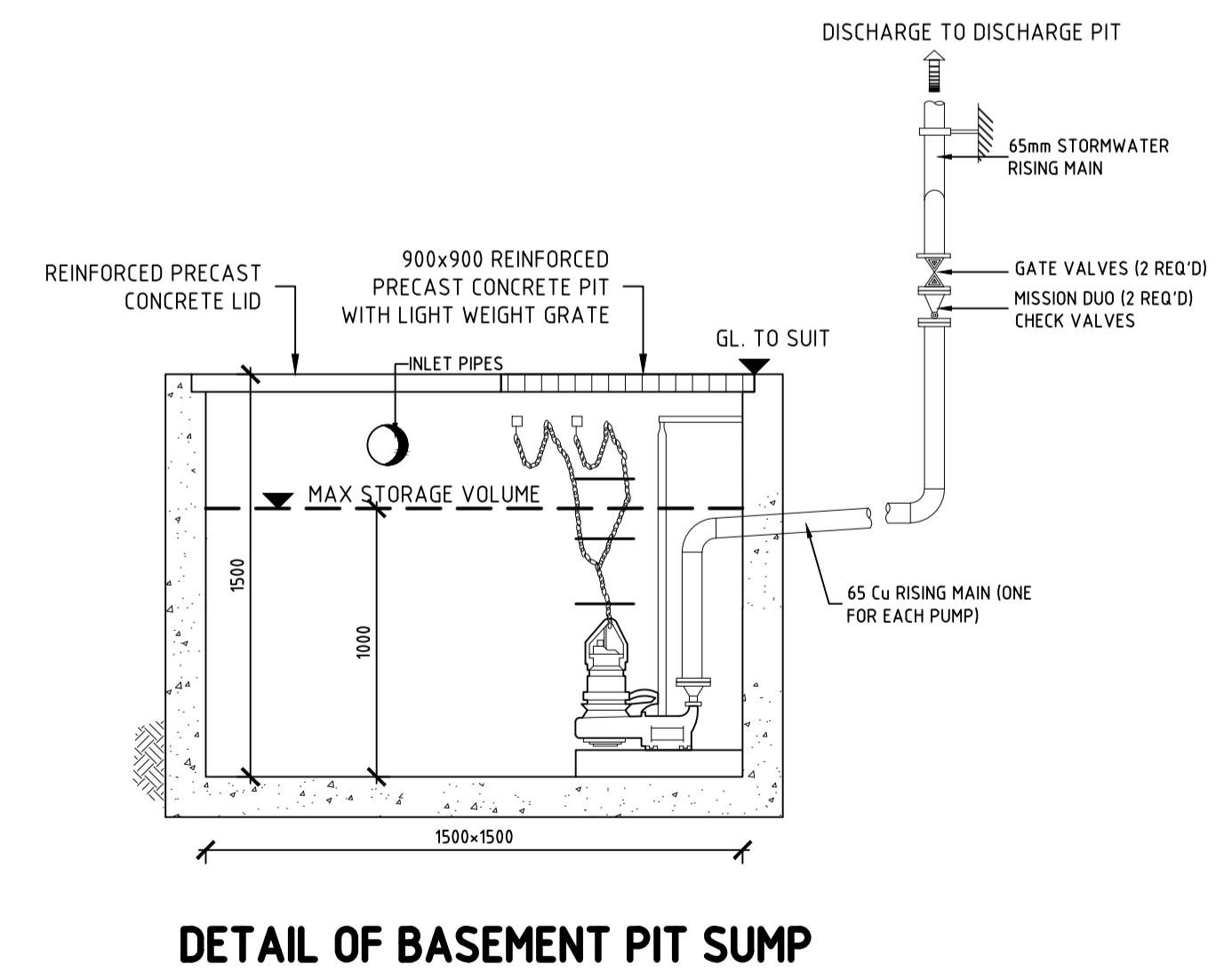
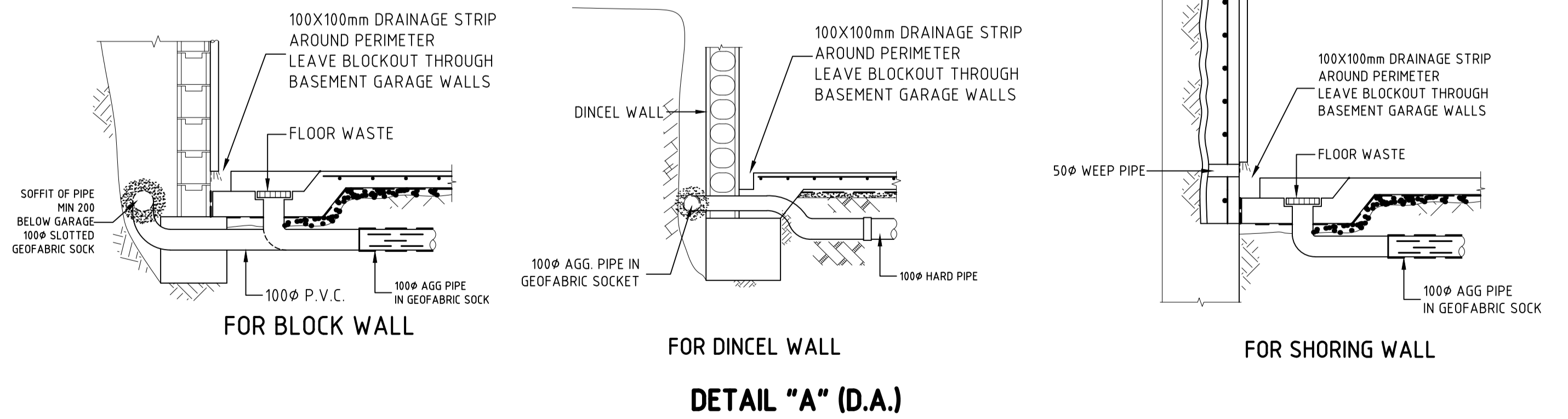
- AH---ACCESS HATCH
- DDO---DISH DRAIN OUTLET
- CO---CLEAR OUT
- DCP---DISCHARGE CONTROL PIT
- DP---DOWNPIPE
- FFL---FINISH FLOOR LEVEL
- FW---FLOOR WASTE
- GL---GROUND FLOOR LEVEL
- IL---INVERT LEVEL
- OSD---ON SITE DETENTION
- PD---PLANTERS DRAIN
- PFO---PLANTER FLOOR OUTLET
- PP---PLANTER PIT
- RH---RAINWATER HEAD
- RP---RELN PIT
- RO---ROOF OUTLET
- SDO---STRIP DRAIN OUTLET
- SIP---SURFACE INLET PIT
- STP---SILT TRAP PIT
- SP---SPREADER
- TD---TUN DISH

SITE AND GROUND FLOOR STORMWATER DRAINAGE CONCEPT PLAN
SCALE: 1:100

STANDARD PUMP OUT DESIGN NOTES:

THE PUMP OUT SYSTEM SHALL BE DESIGNED TO OPERATE IN THE FOLLOWING MANNER:

- THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATELY SO AS TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATION LOAD AND PUMP LIFE.
- A LOW LEVEL FLOAT SHALL BE PROVIDED TO ENSURE THAT THE MINIMUM REQUIREMENT WATER LEVEL IS MAINTAINED WITHIN THE SUMP AREA OF THE BELOW GROUND TANK. IN THIS REGARD THE FLOAT WILL FUNCTION AS AN OFF SWITCH FOR THE PUMPS.
- A SECTION FLOAT SHALL BE PROVIDED AT A HIGHER LEVEL, APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL, WHEREBY ONE OF THE PUMPS WILL OPERATE AND DRAIN THE TANK TO THE LEVEL OF THE LOW LEVEL FLOAT.
- A THIRD FLOAT SHALL BE PROVIDED AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHOULD START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM.
- AN ALARM SYSTEM SHALL BE PROVIDED WITH A FLASHING STORE LIGHT AND A PUMP FAILURE WARNING SIGN WHICH AREA TO BE LOCATED AT THE DRIVEWAY ENTRANCE TO THE BASEMENT LEVEL. THE ALARM SYSTEM SHALL BE PROVIDED WITH A BATTERY BACK-UP IN CASE OF POWER FAILURE.



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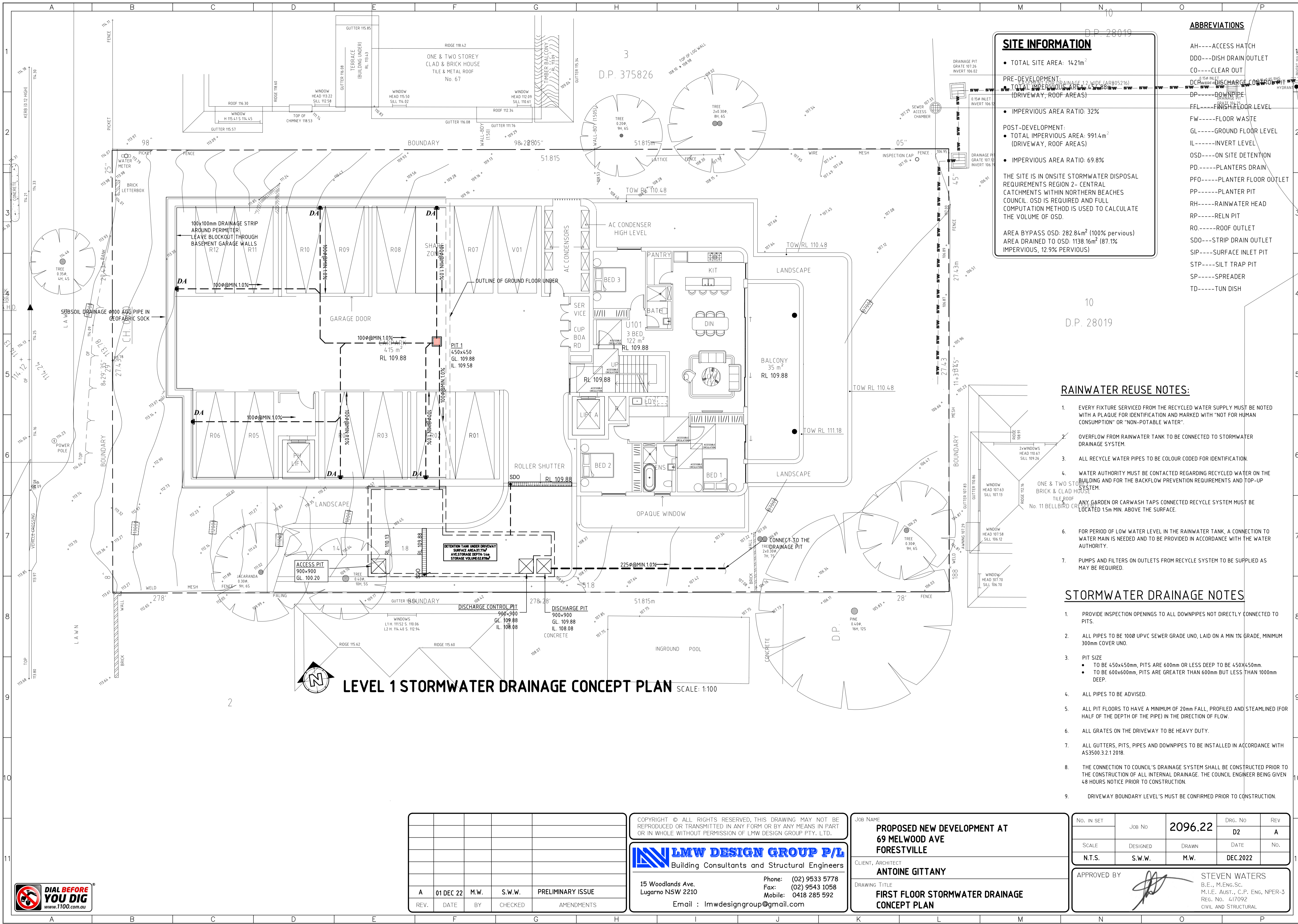
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JOB NAME:
PROPOSED NEW DEVELOPMENT AT 69 MELWOOD AVE FORESTVILLE
 CLIENT, ARCHITECT:
ANTOINE GITTANY
 DRAWING TITLE:
SITE AND GROUND FLOOR STORMWATER DRAINAGE CONCEPT PLAN

| No. in SET | JOB No | 2096.22 | DRG. No | REV |
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LEVEL 1 STORMWATER DRAINAGE CONCEPT PLAN SCALE: 1:100

SITE INFORMATION

• TOTAL SITE AREA: 1421m²

PRE-DEVELOPMENT:
 • TOTAL IMPERVIOUS AREA: 438.8m²
 (DRIVEWAY, ROOF AREAS)

• IMPERVIOUS AREA RATIO: 32%

POST-DEVELOPMENT:
 • TOTAL IMPERVIOUS AREA: 991.4m²
 (DRIVEWAY, ROOF AREAS)

• IMPERVIOUS AREA RATIO: 69.8%

THE SITE IS IN ONSITE STORMWATER DISPOSAL REQUIREMENTS REGION 2- CENTRAL CATCHMENTS WITHIN NORTHERN BEACHES COUNCIL. OSD IS REQUIRED AND FULL COMPUTATION METHOD IS USED TO CALCULATE THE VOLUME OF OSD.

AREA BYPASS OSD: 282.84m² (100% pervious)
 AREA DRAINED TO OSD: 1138.16m² (87.1% IMPERVIOUS, 12.9% PERVIOUS)

- ABBREVIATIONS**
- AH----ACCESS HATCH
 - DDO---DISH DRAIN OUTLET
 - CO---CLEAR OUT
 - DCP---DISCHARGE CONTROL PIT
 - DP---DOWNPIPE
 - FEL---FINISH FLOOR LEVEL
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RAINWATER REUSE NOTES:

1. EVERY FIXTURE SERVICED FROM THE RECYCLED WATER SUPPLY MUST BE NOTED WITH A PLAQUE FOR IDENTIFICATION AND MARKED WITH "NOT FOR HUMAN CONSUMPTION" OR "NON-POTABLE WATER".
2. OVERFLOW FROM RAINWATER TANK TO BE CONNECTED TO STORMWATER DRAINAGE SYSTEM.
3. ALL RECYCLE WATER PIPES TO BE COLOUR CODED FOR IDENTIFICATION.
4. WATER AUTHORITY MUST BE CONTACTED REGARDING RECYCLED WATER ON THE BUILDING AND FOR THE BACKFLOW PREVENTION REQUIREMENTS AND TOP-UP SYSTEM.
5. ANY GARDEN OR CARWASH TAPS CONNECTED RECYCLE SYSTEM MUST BE LOCATED 1.5m MIN. ABOVE THE SURFACE.
6. FOR PERIOD OF LOW WATER LEVEL IN THE RAINWATER TANK, A CONNECTION TO WATER MAIN IS NEEDED AND TO BE PROVIDED IN ACCORDANCE WITH THE WATER AUTHORITY.
7. PUMPS AND FILTERS ON OUTLETS FROM RECYCLE SYSTEM TO BE SUPPLIED AS MAY BE REQUIRED.

STORMWATER DRAINAGE NOTES

1. PROVIDE INSPECTION OPENINGS TO ALL DOWNPIPES NOT DIRECTLY CONNECTED TO PITS.
2. ALL PIPES TO BE 100Ø UPVC SEWER GRADE UNO, LAID ON A MIN 1% GRADE, MINIMUM 300mm COVER UNO.
3. PIT SIZE
 - TO BE 450x450mm, PITS ARE 600mm OR LESS DEEP TO BE 450x450mm.
 - TO BE 600x600mm, PITS ARE GREATER THAN 600mm BUT LESS THAN 1000mm DEEP.
4. ALL PIPES TO BE ADVISED.
5. ALL PIT FLOORS TO HAVE A MINIMUM OF 20mm FALL, PROFILED AND STEAMLINED (FOR HALF OF THE DEPTH OF THE PIPE) IN THE DIRECTION OF FLOW.
6. ALL GRATES ON THE DRIVEWAY TO BE HEAVY DUTY.
7. ALL GUTTERS, PITS, PIPES AND DOWNPIPES TO BE INSTALLED IN ACCORDANCE WITH AS3500.3.2.1 2018.
8. THE CONNECTION TO COUNCIL'S DRAINAGE SYSTEM SHALL BE CONSTRUCTED PRIOR TO THE CONSTRUCTION OF ALL INTERNAL DRAINAGE. THE COUNCIL ENGINEER BEING GIVEN 48 HOURS NOTICE PRIOR TO CONSTRUCTION.
9. DRIVEWAY BOUNDARY LEVEL'S MUST BE CONFIRMED PRIOR TO CONSTRUCTION.

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CLIENT, ARCHITECT
ANTOINE GITTANY

DRAWING TITLE
FIRST FLOOR STORMWATER DRAINAGE CONCEPT PLAN

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ON-SITE DETENTION CALCULATION:

1. COUNCIL REQUIREMENT FOR PSD:

DESIGN ARI: 5 YRS, 20 YRS, 100 YRS
 PERMISSIBLE SITE DISCHARGE: THE PEAK 5-YEAR ARI STORM EVENT FOR THE PRE-DEVELOPMENT BASED ON 0%PRE-DEVELOPMENT SITE IMPERVIOUS AREA

2. TRIANGULAR HYDROGRAPH METHOD (USING DRAINS):

PRE-DEVELOPMENT

| STORM | PEAK FLOW (m ³ /s) |
|---|-------------------------------|
| AR&R 5yrs, 5min STORM, AVE. 161mm/h, ZONE 1 | 0.014 |
| AR&R 5yrs, 10min STORM, AVE. 125mm/h, ZONE 1 | 0.026 |
| AR&R 5yrs, 20min STORM, AVE. 92.9mm/h, ZONE 1 | 0.039 |
| AR&R 5yrs, 30min STORM, AVE. 76.4mm/h, ZONE 1 | 0.039 |
| AR&R 5yrs, 60min STORM, AVE. 52.7mm/h, ZONE 1 | 0.036 |

| STORM | PEAK FLOW (m ³ /s) |
|---|-------------------------------|
| AR&R 100yrs, 5min STORM, AVE. 268mm/h, ZONE 1 | 0.035 |
| AR&R 100yrs, 10min STORM, AVE. 211mm/h, ZONE 1 | 0.060 |
| AR&R 100yrs, 20min STORM, AVE. 161mm/h, ZONE 1 | 0.079 |
| AR&R 100yrs, 30min STORM, AVE. 135mm/h, ZONE 1 | 0.076 |
| AR&R 100yrs, 60min STORM, AVE. 94.2mm/h, ZONE 1 | 0.066 |

FROM THE TABLES ABOVE, THE PERMISSIBLE SITE DISCHARGE: 39 L/S (0% PRE-DEVELOPMENT SITE IMPERVIOUS AREA DURING AR&R 5 YEAR, 30 MINUTES AVERAGE 76.4 mm/h, ZONE 1) (USING DRAINS)

3. DESIGNED ARI FOR OSD: 100YRS POST-DEVELOPMENT

| STORM | PEAK FLOW (m ³ /s) |
|---|-------------------------------|
| AR&R 100yrs, 5min STORM, AVE. 268mm/h, ZONE 1 | 0.013 |
| AR&R 100yrs, 10min STORM, AVE. 211mm/h, ZONE 1 | 0.017 |
| AR&R 100yrs, 20min STORM, AVE. 161mm/h, ZONE 1 | 0.020 |
| AR&R 100yrs, 30min STORM, AVE. 135mm/h, ZONE 1 | 0.021 |
| AR&R 100yrs, 60min STORM, AVE. 94.2mm/h, ZONE 1 | 0.023 |

BYPASS

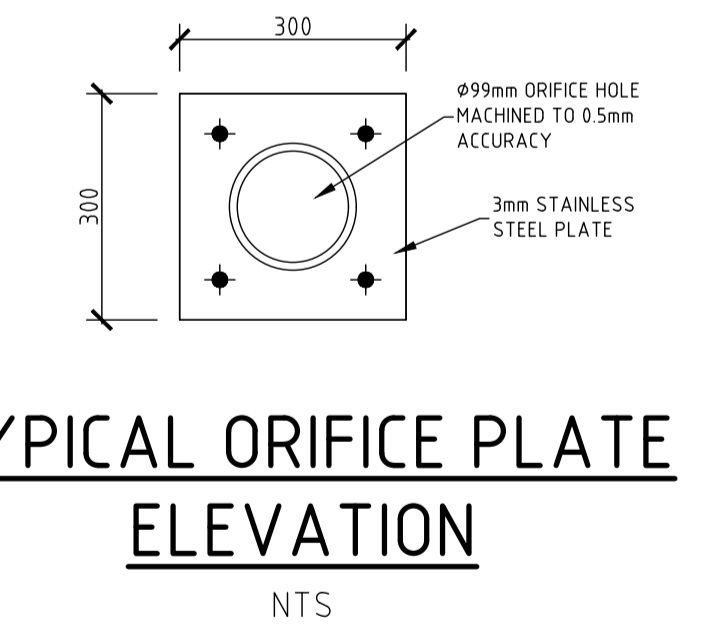
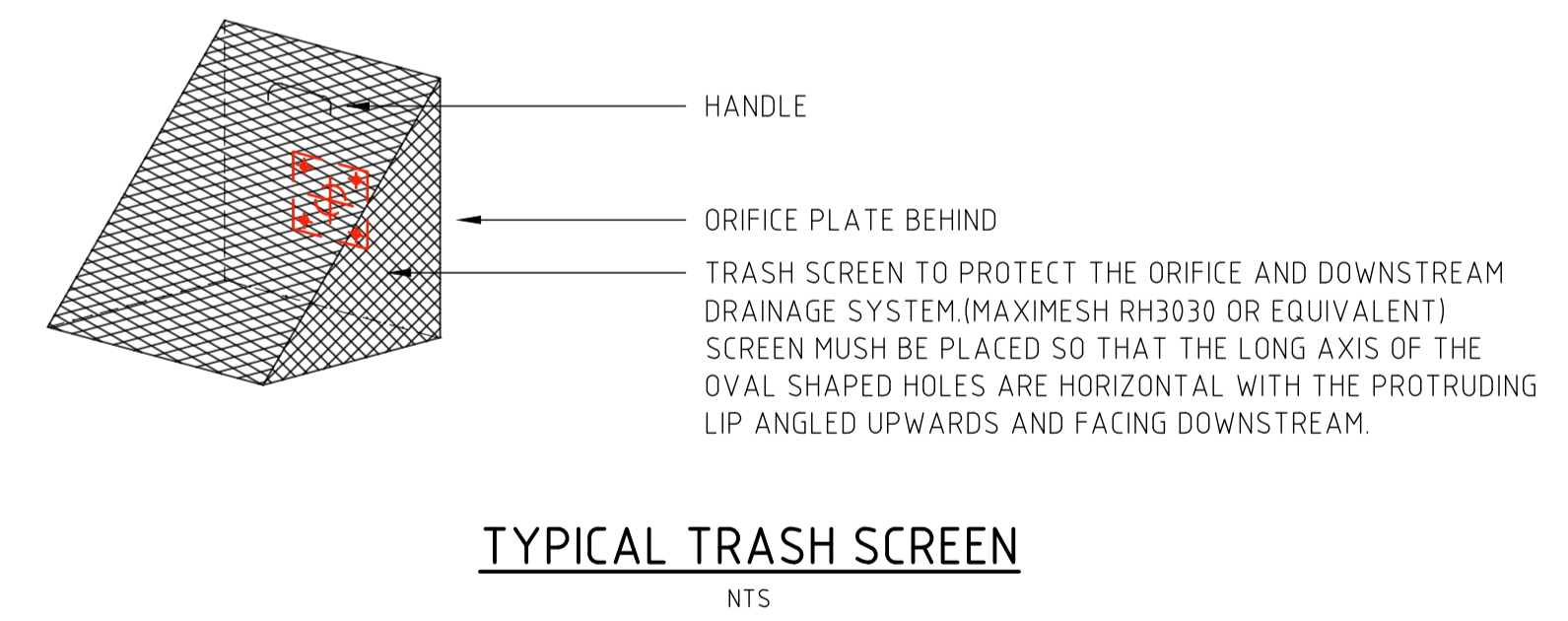
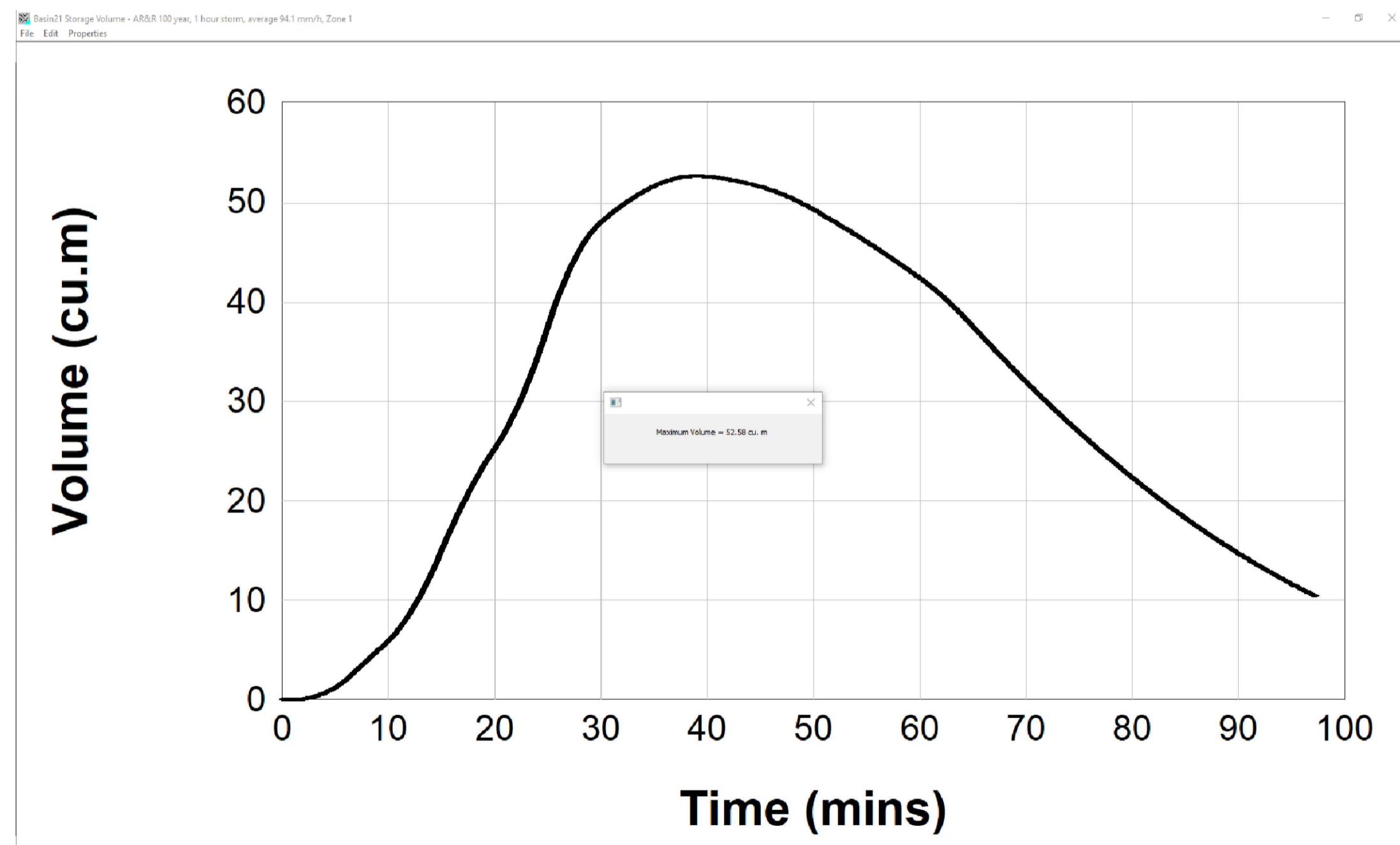
| STORM | PEAK FLOW (m ³ /s) |
|---|-------------------------------|
| AR&R 100yrs, 5min STORM, AVE. 248mm/h, ZONE 1 | 0.007 |
| AR&R 100yrs, 10min STORM, AVE. 193mm/h, ZONE 1 | 0.012 |
| AR&R 100yrs, 20min STORM, AVE. 145mm/h, ZONE 1 | 0.016 |
| AR&R 100yrs, 30min STORM, AVE. 119mm/h, ZONE 1 | 0.015 |
| AR&R 100yrs, 60min STORM, AVE. 82.6mm/h, ZONE 1 | 0.013 |

DESIGNED OUTFLOW FROM THE SITE: 36L/s
 REQUIRED OSD VOLUME: 52.58m³

| MAINTENANCE ACTION | FREQUENCY | RESPONSIBILITY | PROCEDURE |
|--|-------------|------------------------|--|
| Outlets | | | |
| Inspect & remove any blockage of orifices | Six monthly | Owner | Remove grate & screen to inspect orifice. See plan for location of outlets |
| Check attachment of orifice plates to wall of chamber and/or pit (gaps less than 5 mm) | Annually | Maintenance Contractor | Remove grate and screen. Ensure plates are mounted securely, tighten fixings if required. Seal gaps as required. |
| Check orifice diameters are correct and retain sharp edges | Five yearly | Maintenance Contractor | Compare diameter to design (see Work-as-Executed) and ensure edge is not pitted or damaged. |
| Inspect screens and clean | Six monthly | Owner | Remove grate(s) and screens if required to clean them. |
| Check attachment of screens to wall of chamber or pit | Annually | Maintenance Contractor | Remove grate(s) and screen(s). Ensure screen fixings are secure. Repair as required. |
| Check screen(s) for corrosion | Annually | Maintenance Contractor | Remove grate(s) and examine screen(s) for rust or corrosion, especially all corners or welds. |
| Inspect walls (internal and external, if appropriate) for cracks or spalling | Annually | Maintenance Contractor | Remove grate(s) to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required. |
| Inspect outlet sumps & remove any sediment/sludge | Six monthly | Owner | Remove grate(s) and screen(s). Remove sediment/sludge build-up and check orifices are clear. |
| Inspect grate(s) for damage or blockage | Six monthly | Owner | Check both sides of a grate for corrosion, (especially corners and welds) damage or blockage. |
| Inspect outlet pipe & remove any blockage | Six monthly | Maintenance Contractor | Remove grate(s) and screen(s). Ventilate underground storage if present. Check orifices and remove any blockages in outlet pipe. Flush outlet pipe to confirm it drains freely. Check for sludge/debris on upstream side of return line. |
| Check step irons for corrosion | Annually | Maintenance Contractor | Remove grate. Examine step irons and repair any corrosion or damage. |
| Check fixing of step irons is secure | Six monthly | Maintenance Contractor | Remove grate(s) and ensure fixings are secure prior to placing weight on step iron. |

| MAINTENANCE ACTION | FREQUENCY | RESPONSIBILITY | PROCEDURE |
|--|-------------|------------------------|---|
| Storage | | | |
| Inspect storage & remove any sediment/sludge in pit | Six monthly | Owner | Remove grate(s) and screen(s). Remove sediment/sludge build-up. |
| Inspect internal walls of storage (and external, if appropriate) for cracks or spalling | Annually | Maintenance Contractor | Remove grate(s) to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required. |
| Inspect & remove any debris/litter/mulch etc blocking grates | Six monthly | Owner | Remove blockages from grate(s) and check if storage is blocked. |
| Inspect areas draining to the storage(s) & remove debris/mulch/litter etc likely to block screens/grates | Six monthly | Owner | Remove debris and floatable material likely to be carried to grates. |
| Compare storage volume to volume approved. (Rectify if loss > 5%) | Annually | Maintenance Contractor | Compare actual storage available with Work-as Executed plans. If volume loss is greater than 5%, arrange for reconstruction to replace the volume lost. Council to be notified of the proposal. |
| Inspect storages for subsidence near pits | Annually | Maintenance Contractor | Check along drainage lines and at pits for subsidence likely to indicate leakages. |

| Frequency | Staff Needed | Time | Task |
|------------------------|--------------|---------------|---|
| DAILY | 1 | 10-15 minutes | <ul style="list-style-type: none"> Check for overheating Check for cavitation & bearing noise Check for motor current & voltage |
| WEEKLY | 1 | 20-30 minutes | <ul style="list-style-type: none"> Check for suction & discharge pressures Check for vibration & noise Visual check for sealing and pipework leakage Check for signs of corrosion or discolouration |
| MONTHLY | 1 | 20-30 minutes | <ul style="list-style-type: none"> Remove safety guards & check for shaft & auxiliary devices Check for coupling alignment Fill lubrication oil (if necessary) |
| ANNUALLY | 2 | 2-3 hours | <ul style="list-style-type: none"> If you have a back up pump, run the pump & check for maintainability Check for axial movement of motor shaft Remove & clean all auxiliary devices (valves, manometers, piping's, sight glasses, etc) Remove coupling halves & check for wear at rubber part (renew if necessary) |
| 2 YEARS OR 10000 HOURS | 2 | 6-8 hours | <ul style="list-style-type: none"> Dismantle the pump from the piping & disassemble Make inspection on parts, replace if necessary: <ul style="list-style-type: none"> - Impellers - Wear Rings/Wear Plates - O-rings - Shaft Apply coating on un-machined surfaces |



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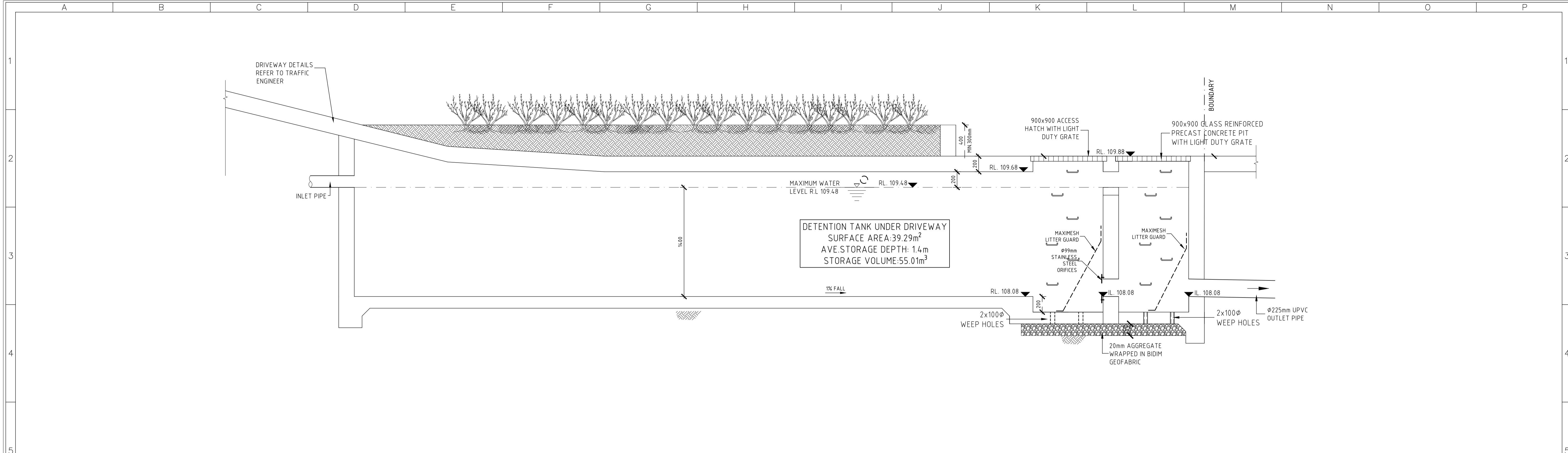
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DETAILS OF ON-SITE DETENTION TANK

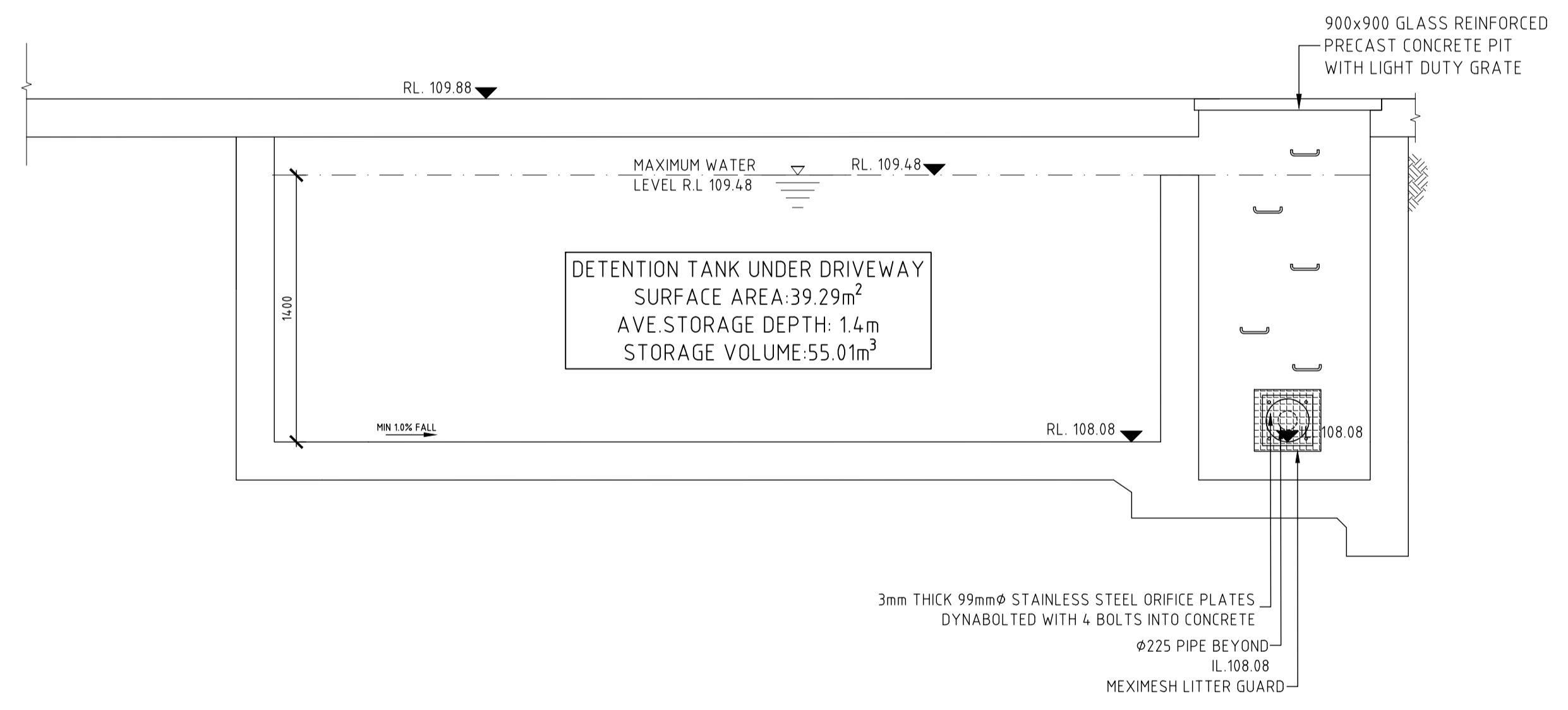
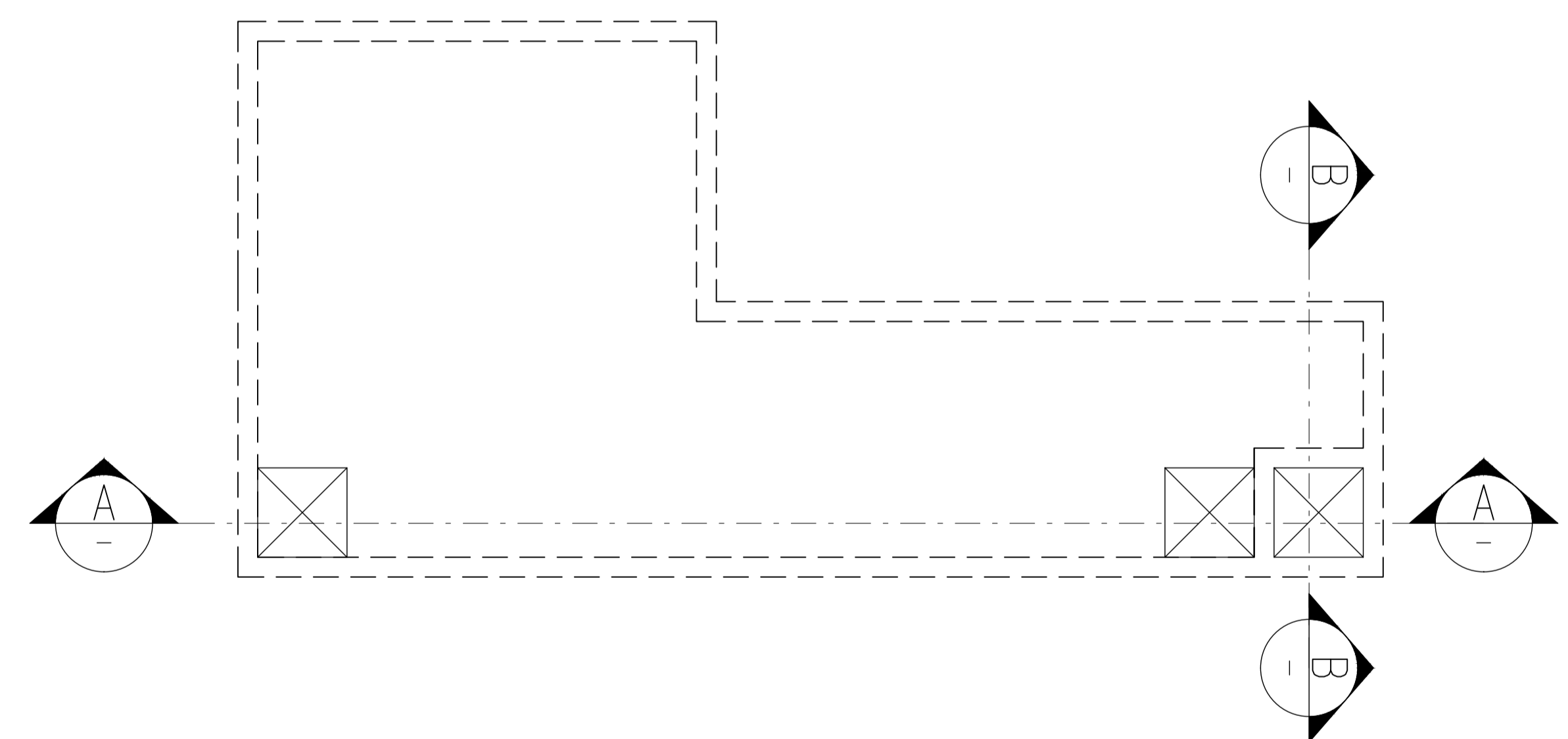
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SECTION A OSD TANK DETAILS
SCALE: 1:25



SECTION B OSD TANK DETAILS
SCALE: 1:25

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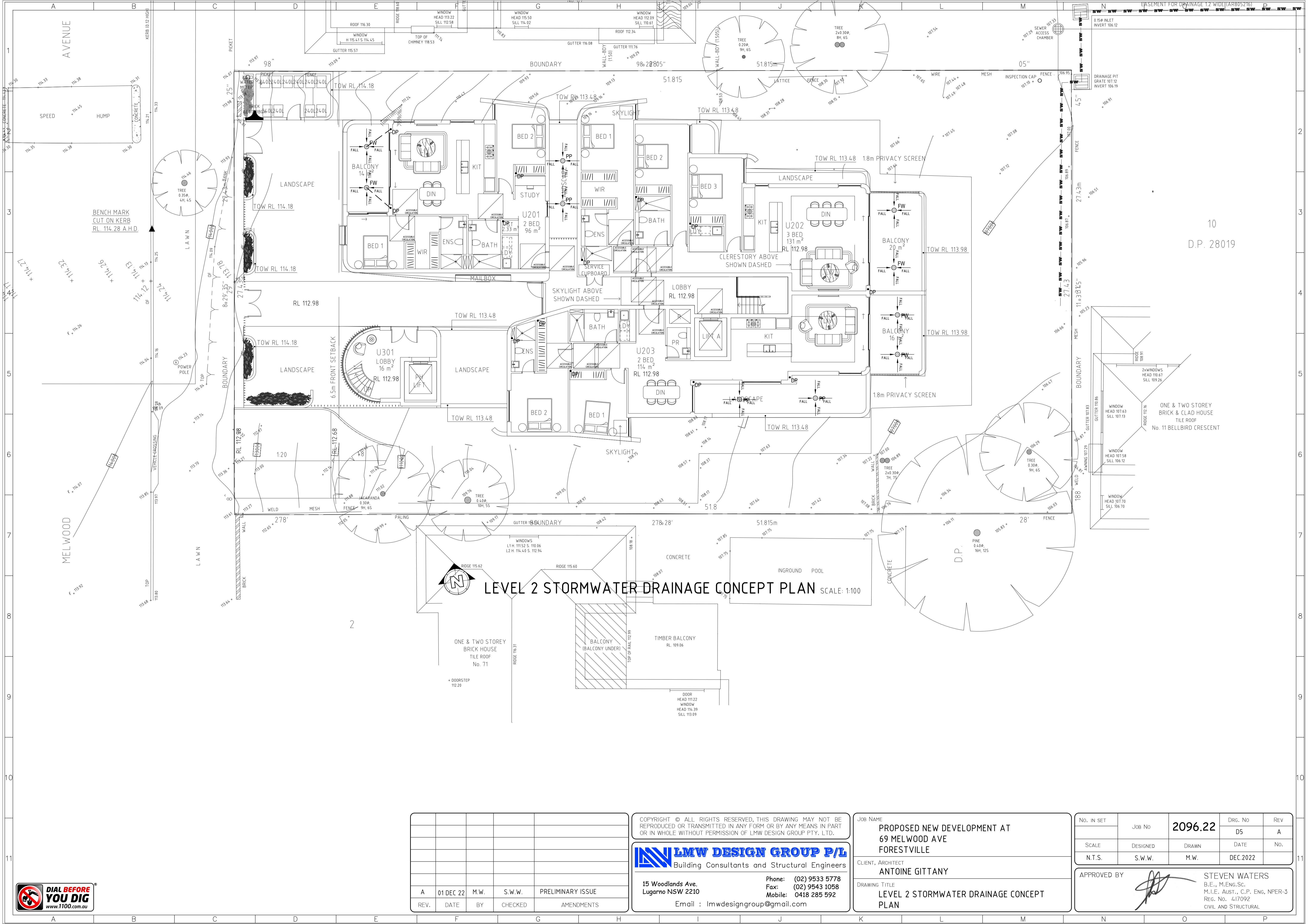
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OSD SECTION DETAILS

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LEVEL 2 STORMWATER DRAINAGE CONCEPT PLAN SCALE: 1:100

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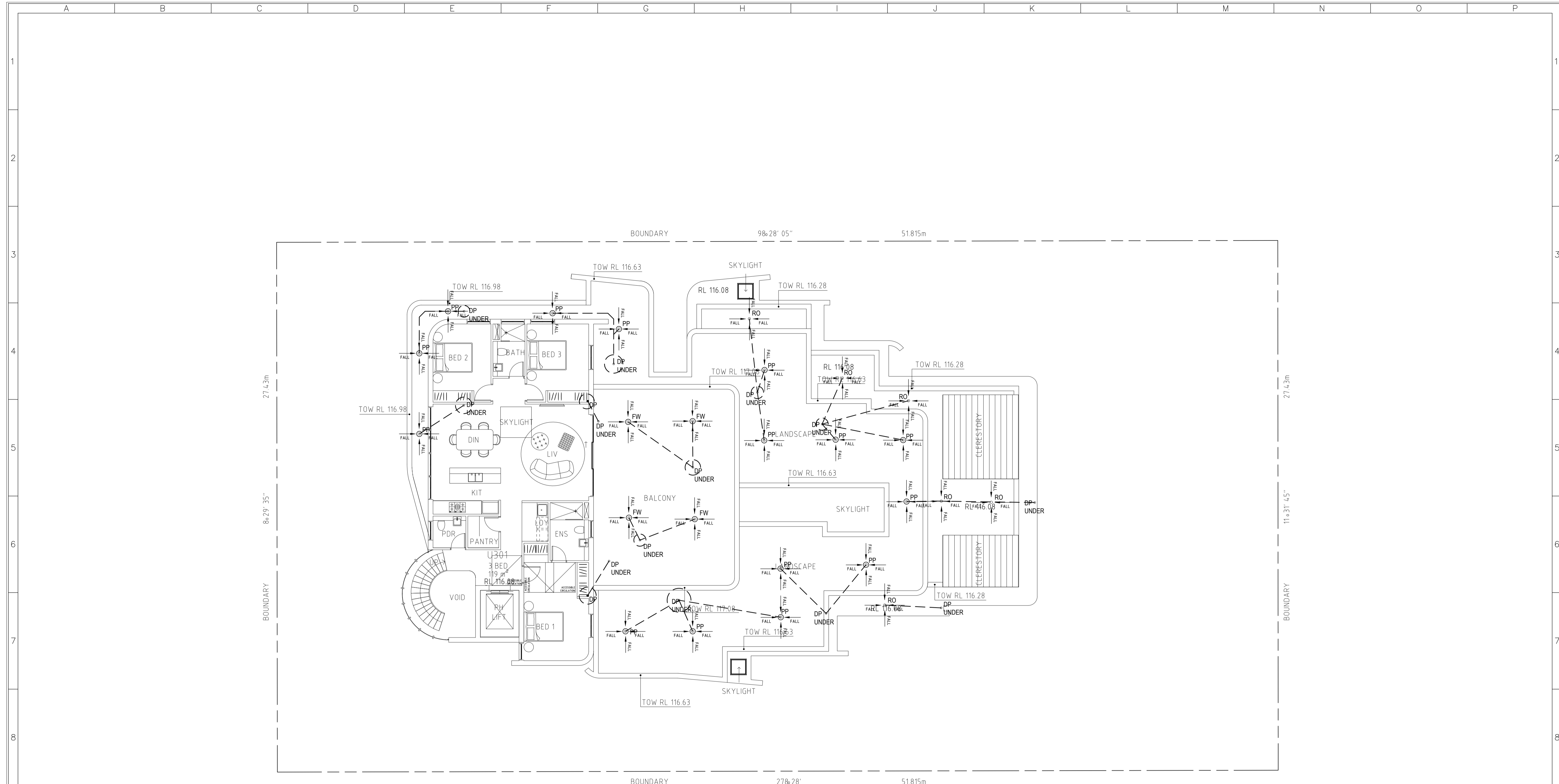
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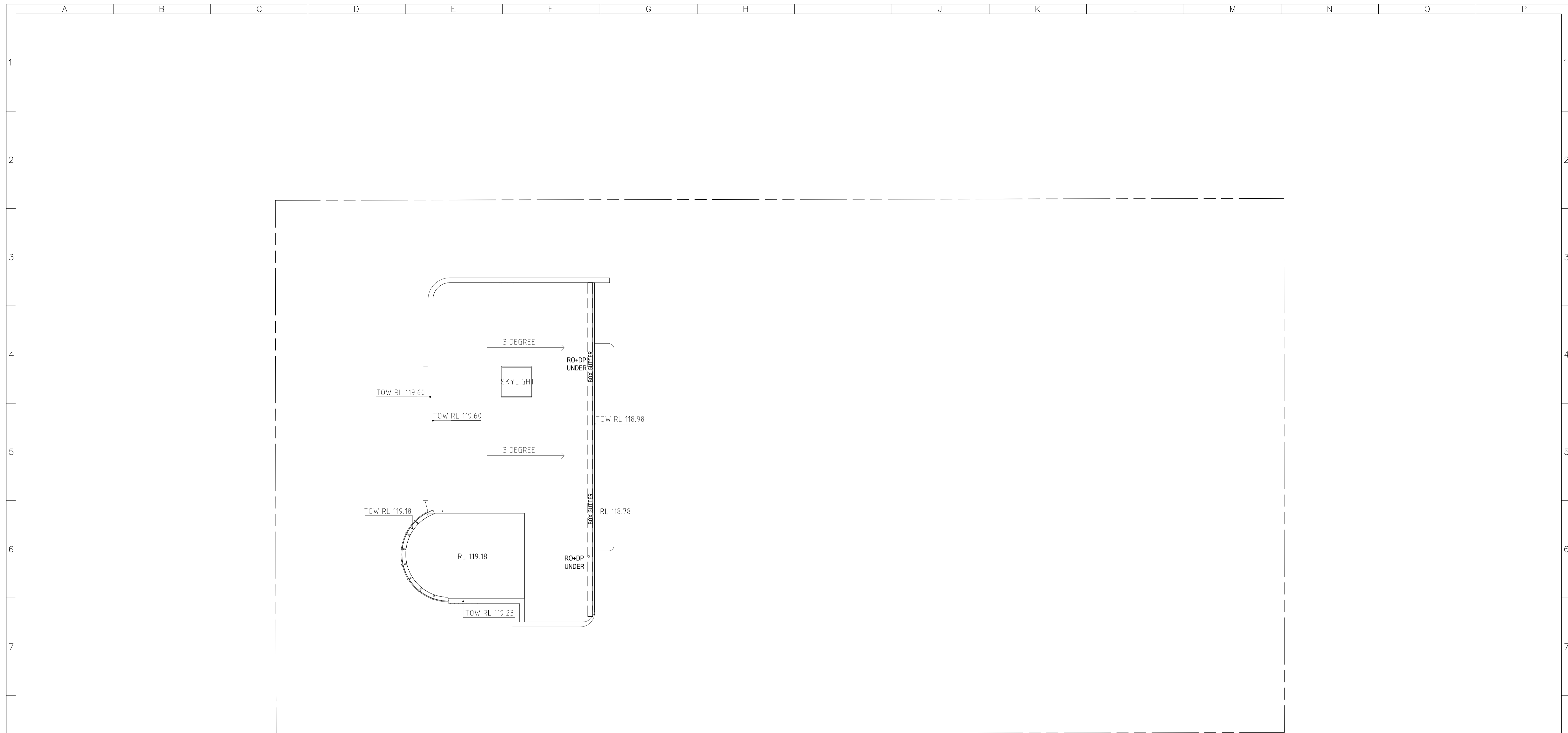
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ROOF STORMWATER DRAINAGE CONCEPT PLAN SCALE: 1:100



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