

38 BOWER STR., MANLY, STORMWATER ENGINEERING

General Hydraulic

- G1. All work shall be carried out in accordance with relevant authority requirements, Council's regulations, Superintendent's approval, Hydraulic Specification and National Plumbing Codes AS.3500, AS.1221, AS.2441 and AS.2419.1.
- G2. This plan shall be read in conjunction with approved architectural, structural, mechanical and electrical plans and specifications.
- G3. Drains to be supported on or from solid ground. Location and depth/invert level of branch shall be verified on site prior to commencement of work.
- G4. Drains under buildings shall be re-tested where directed by superintendent.
- G5. Inspection openings shall be provided:
-on the property boundary
-on each w.c. or branch
-at a max. of 30m intervals, spread equidistant where possible
-immediately upstream and downstream of all jump-ups
-as required by the authority for inspection and maintenance.
- G6. Existing services have been plotted from supplied data. The Superintendent does not guarantee their accuracy and it is the contractor's responsibility to establish the location of all existing services prior to commencement of any work. Clearances shall be obtained from the relevant authority.
- G7. The contractor shall arrange all survey setouts by a registered surveyor.
- G8. Contractor shall verify all levels and ensure all falls are attainable prior to commencing work.
- G9. All services that cross pavements, footings etc. shall be backfilled with approved granular material to upgrade level and compacted to 100% standard maximum dry density in accordance with AS.1289.E1.1.
- G10. On completion of pipe installation, all disturbed areas must be restored to original condition including kerbs, footpaths, concrete areas, gravel areas, grassed areas and road pavements.
- G11. Trenches through existing road and concrete areas shall be sawcut to full depth of concrete and a minimum of 50mm in bituminous paving. Reinstlate to equivalent of original road and concrete area.
- G12. Where new work abuts existing, the contractor shall ensure that a smooth, even profile, free from abrupt changes, is obtained.
- G13. Care shall be taken when excavating near existing services. No mechanical excavation shall be taken over Telstra or electrical services. Excavate by hand in these areas.
- G14. All pipe penetrations at walls shall be fitted with a puddle flange and made good and watertight.
- G15. All suspended slab pipes shall be supported with adjustable hanging brackets similar to "Abey" in accordance with AS.3500.
- G16. All core hole locations shall be approved by the superintendent prior to commencement of coring.
- G17. Contractor shall allow for all timbering, shoring and shuttering as necessary to construct pipework and include the removal of same upon completion of pipework.
- G18. Provide 80mm compressible material over pipework where clearance to underside of footing is less than 150mm (U.N.O.)
- G19. Contractor shall obtain all authority approvals and pay all fees.
- G20. All uPVC pipe exposed to sunlight shall be DWV.
- G21. Contractor to allow for all associated fees, charges, applications and inspections (Section 50, Hydraulic Design Assessment etc.) for water, sewer and gas services installations required by authorities.

Supplied data

Existing services have been plotted from supplied data. It is the Contractor's responsibility to establish the location of all existing services prior to commencing any work.

Existing services servicing other operational areas must be retained. Contractor to modify/relocate existing services as required. This drawing is to be used as a guide only.

Existing Services and Features

- E1. The contractor shall allow for the capping off, excavation and removal if required, of all existing services in areas affected by works within the contract area and as shown on the drawings, unless directed otherwise by the Superintendent.
- E2. The contractor shall ensure that at all times services to all buildings are not affected by the works and are not disrupted.
- E3. Prior to commencement of any works the contractor shall gain approval of his programme for the relocation/construction of temporary services.
- E4. Existing buildings, external structures and trees shown on these drawings are features existing prior to any demolition works.
- E5. Contractor shall construct temporary services to maintain existing supply to buildings remaining in operation during works to the satisfaction and approval of the superintendent. Once diversion is complete and commissioned the contractor shall remove all such temporary services and make good to the satisfaction of the Superintendent.
- E6. Interruption to supply of existing services shall be done so as not to cause any inconvenience to the principal. Contractor to gain approval of Superintendent for time of interruption.

Demolition

- D1. Unless noted otherwise in these hydraulic drawings, refer to Architect's drawings, existing conditions drawings and demolition drawings for extent of demolition works associated with these works.
- D2. Disconnect and remove existing services to and from existing fixtures and plant areas affected by the proposed works.
- D3. Contractor to undertake independent survey of all areas to determine extent of existing services to be disconnected and removed.
- D4. Existing services required for the operation of other buildings are to be diverted/extended as required.

Water, Gas and Fire services

1. All pipework to be copper type "B" unless noted otherwise. For fire services, material pipe shall be galvanized steel pipe.
2. Piping materials proposed for installation shall be suitable for the soil conditions existing on site. Confirm soil conditions prior to laying metal piping through soils.
3. Where piping is concealed in wall or chased in floor, Kemlag insulation to both hot and cold water pipework shall be provided as a minimum.
4. All metal pipework penetrating fire rated elements shall be sealed to maintain required fire rating

Erosion and Sediment Control

General instructions:

- All references to details, testing and procedures are to be followed as specified in the Department of Housing "Managing Urban Stormwater Soils and Construction" manual (March 2004).
- This plan is to be read in conjunction with the engineering plans and any other plans or written instructions that may be issued and relating to development at the subject site.
- The contractor will ensure that all soil and water management works are located as shown in this specification.
- All contractors shall be aware of their responsibilities in minimising the potential for soil erosion and pollution to downslope lands and waterways.
- These plans represent concepts only, the contractor shall be responsible for the establishment and management of a detailed scheme meeting council's approval.

Construction sequence:

6. The soil erosion potential on this site shall be minimised. Hence initial works shall be undertaken in the following sequence prior to commencing construction:
- install all temporary sediment fences and barrier fences. Where fences are adjacent to each other the sediment fence can be incorporated into the barrier fence.
 - construct temporary stabilised site access.
 - install sediment traps.

7. Undertake site development works so that land disturbance is confined to areas of minimum workable size.

Erosion control:

8. At all times and in particular during windy and dry weather, large, unprotected areas will be kept moist (not wet) by sprinkling with water to keep dust under control.

Sediment control:

9. Any sand used in the concrete curing process (spread over the surface) will be removed as soon as possible and within ten working days from placement.
10. Water will be prevented from entering the permanent drainage system unless it is relatively sediment free i.e. the catchment area has been permanently landscaped/stabilised and/or any likely sediment has been filtered through an approved structure.

11. Temporary soil and water management structures will be removed only after the lands they are protecting are stabilised/rehabilitated.

Other matters:

12. Acceptable receptors will be constructed for concrete and mortar slurries, paints, acid washings, light-weight waste materials and litter.
13. Any existing trees which form part of the final landscaping plan, will be protected from construction activities by:
- protecting them with barrier fencing or similar materials installed outside the drip line.
 - ensuring that nothing is nailed to them.
 - prohibiting paving, grading, sediment wash or placing of stockpiles within the drip line except under the following conditions:
 - encroachment only occurs on one side and no closer to the trunk than either 1.5m or half the distance between the outer edge of the drip line and the trunk, whichever is the greater.
 - a drainage system that allows air and water to circulate through the root zone (e.g. a gravel bed) is placed under all fill layers of more than 300mm depth.
 - care is taken not to cut roots unnecessarily nor to compact the soil around them.

Site inspection and maintenance:

14. Allow for grass stabilisation of unstable areas, open channels and rock batters as and where directed.
15. Allow for establishment of other erosion protection measures as directed.
16. Receptors for concrete and mortar slurries, paints, acid washings, light-weight waste materials and litter are to be emptied as necessary. Disposal of waste shall be in a manner approved by the site superintendent.
17. Erosion and sediment control measures shall be inspected to ensure that they operate effectively immediately after each storm. Repairs and or maintenance shall be undertaken after each event and as required on a weekly basis.
18. The contractor shall provide all monitoring controls and testing.

Stormwater

SW1. All stormwater lines shall be sewer grade uPVC with solvent weld joints. (U.N.O.)

SW2. Minimum grade to stormwater lines to be 1% (U.N.O.)

SW3. Contractor to supply and install all fittings and specials including various pipe adapters to ensure proper connection between dissimilar pipework.

SW4. All connections to existing drainage pits shall be made in a tradesman-like manner and the internal wall of the pit at the point of entry shall be cement rendered to ensure a smooth finish.

SW5. Where trenches are in rock, the pipe shall be bedded on a minimum 50mm concrete bed (or 75mm thick bed of 12mm blue metal) under the barrel of the pipe. the pipe collar at no point shall bear on the rock. in other than rock, pipes shall be laid on a 75mm thick sand bed. In all cases backfill the trench with sand to 200mm above the pipe. Where the pipe is under pavements, backfill remainder of trench with approved granular material to subgrade level in 150mm layers compacted to 100% standard maximum dry density. A minimum pavement of 125mm thick dg520 base and 25mm thick ac10 wearing course shall be provided.

SW6. Where stormwater lines pass under floor slabs, sewer grade rubber ring joints are to be used.

SW6 All metal downpipes connecting to gutters are to be separated by non-conducting gasket or similar approved device to prevent electro chemical corrosion.

Minimum grades piping materials

N.B. Alternatives to materials listed hereunder will only be considered by written submission to the Engineer.

Stormwater

225(dia.)mm and under -uPVC DWV SH to AS.1415

Downpipes

-all exposed downpipes to be in material as specified by architect
-all concealed downpipes to be uPVC to A.S.3500.2.2 Section 2

Legend

Pipework

—SW— SW — Existing stormwater service
—SW— SW — Proposed stormwater service

Symbols

ExDP 100 Existing riser
Existing service type
Existing size
Existing dropper

DP 100 Riser
Service type
Service size
Dropper

Note reference

— — Pipe Riser
— — Pipe Dropper
— — End Cap
— — Continuation
— — Stop Valve
— — Direction of overland flow
↑↑ SPRD Rainwater spreader

Hose tap

Temporary sediment fence

Sandbag sediment trap

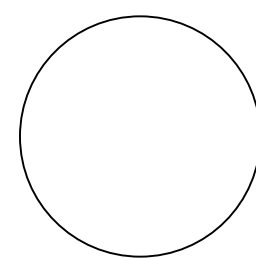
Temporary geotextile filter fabric drop inlet sediment trap

Abbreviations

@ H/L	At High Level
Ø	Diameter
Approx.	Approximately
Cu	Copper
Dia	Diameter
DN	Nominal Size
DP	Downpipe
Drg	Drawing
Ex./Exist.	Existing
F.F.L.	Finished Floor Level
F.G.L.	Finished Ground Level
F.S.L.	Finished Surface Level
G.L.	Ground Level
HL	High Level
I.L.	Invert Level
l/sec.	Litres per Second
m	Metre
mm	Millimetre
N.T.S.	Not to Scale
OF	Overflow
PVC	Poly Vinyl Chloride
RHS	Rectangular hollow section
R.L.	Reduced Level
RRJ	Rubber Ring Jointed
SPRD	Spreader
STW	Stormwater
SWP	Stormwater Pit
TBC	To Be Confirmed
TOK	Top of Kerb
U.N.O.	Unless Noted Otherwise
uPVC	Unplasticised Poly Vinyl Chloride
uv	Ultraviolet

NOT FOR CONSTRUCTION

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Project	ALTERATIONS AND ADDITIONS 38 BOWER STR MANLY
Client	TRACEY & JAMES SMAIL
Architect	A&Co.

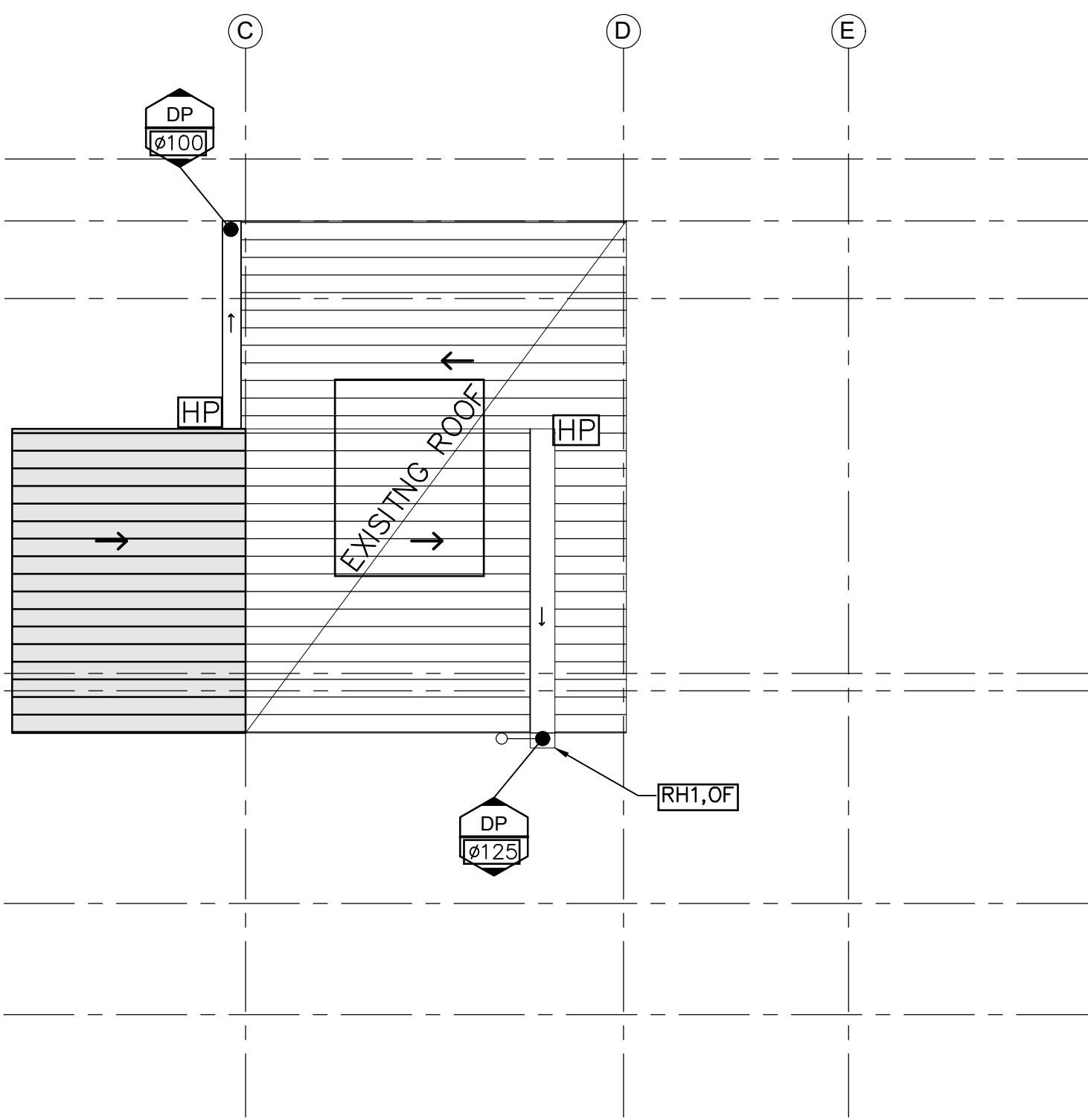
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Scales	INTS
Drawing No.	23S255 -H01
Client Project No.	
Sheet	1 of 5
Revision	2

300mmA1 SHEET

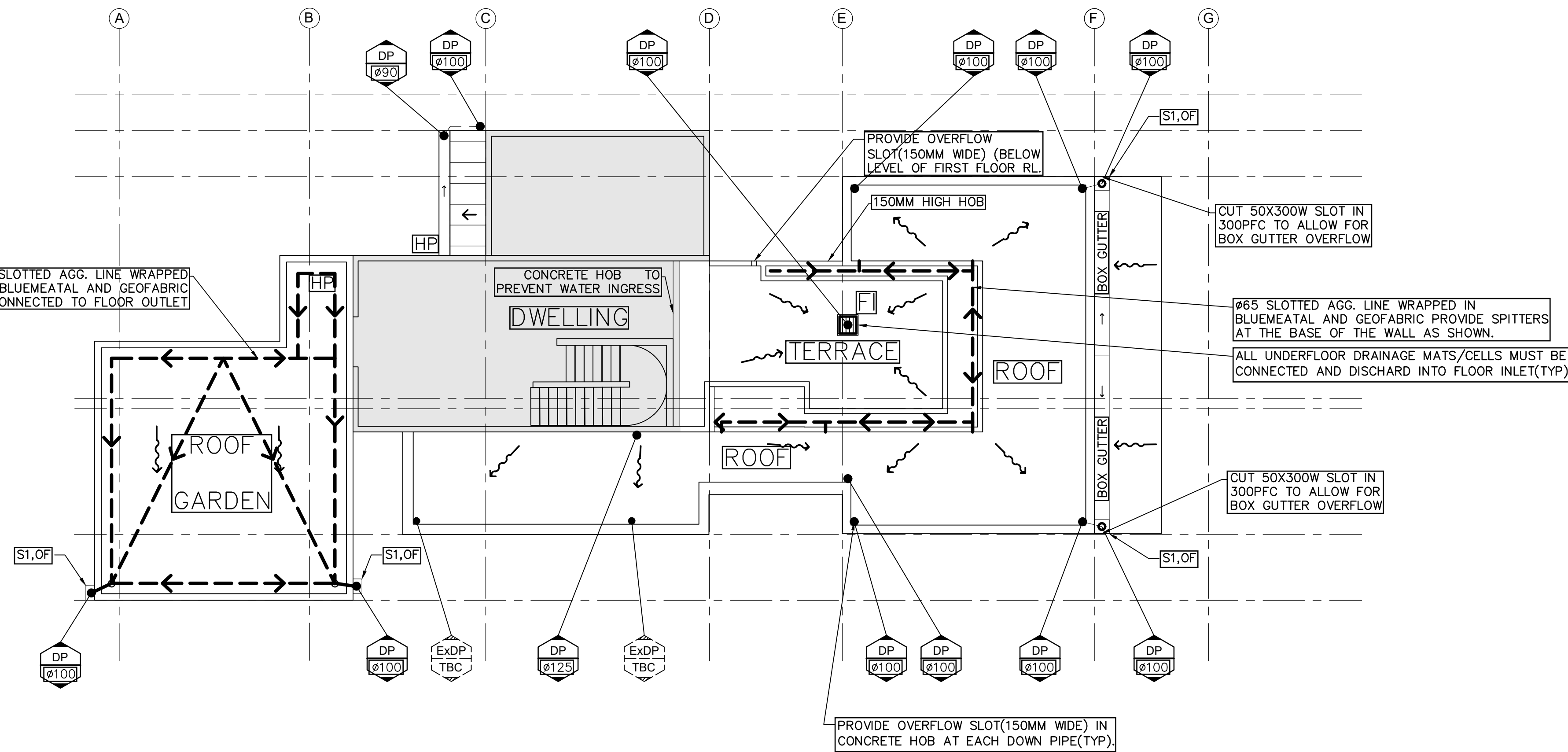
200mm

100mm

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UPPER ROOF PLAN
1:100



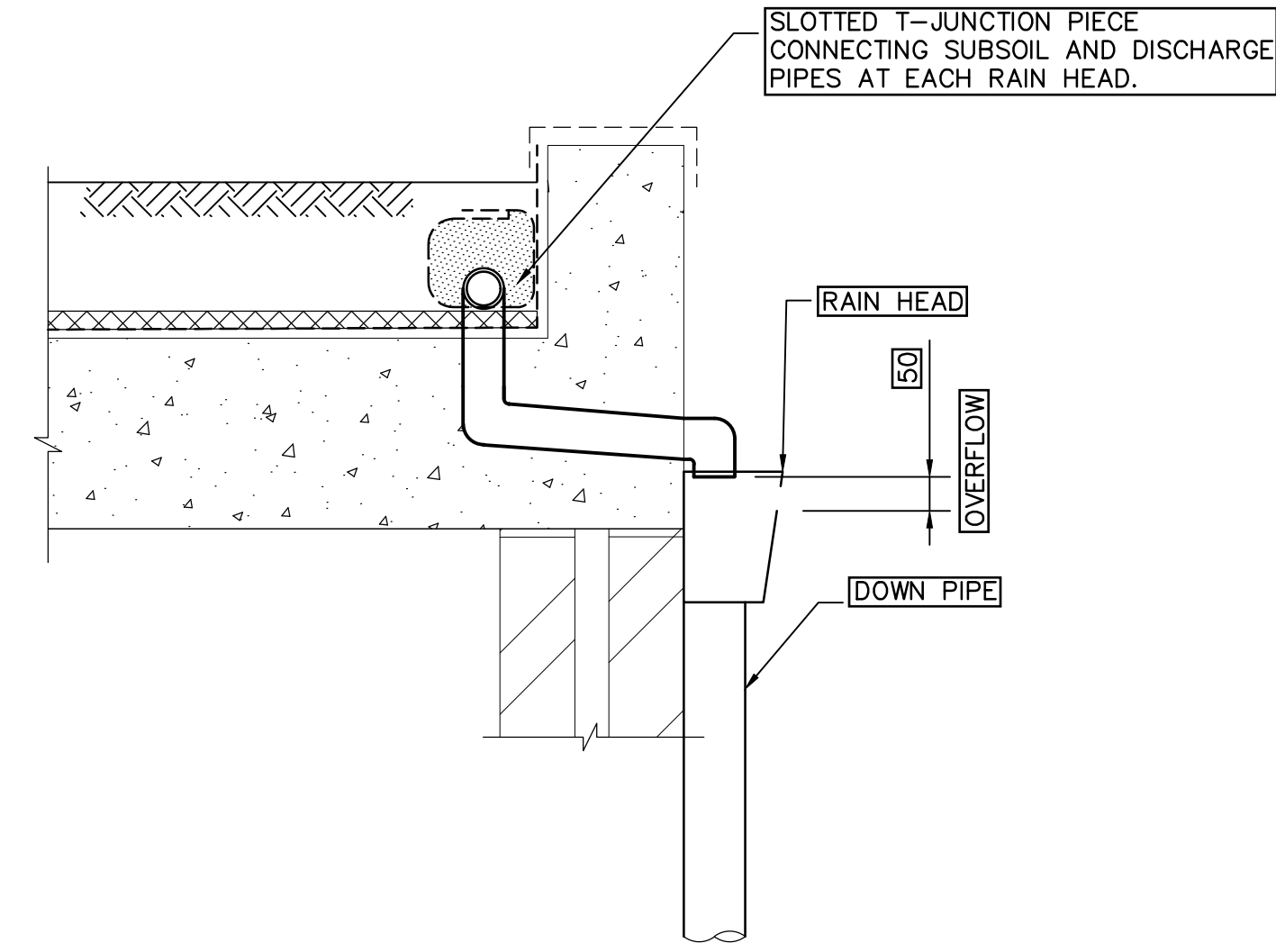
FIRST FLOOR/LOWER ROOF PLAN
1:100

- LEGEND**
- SURFACE RUN OFF
 - GUTTER/DRAINAGE HIGH POINT
 - DOWN PIPE
 - RAIN HEAD(200X300X110D(MIN.))+OVER FLOW
 - SPREADER
 - INLET/INSPECTION PIT
 - FLOOR INLET
 - NEW PROPOSED PIPE(TBC ON SITE)
-

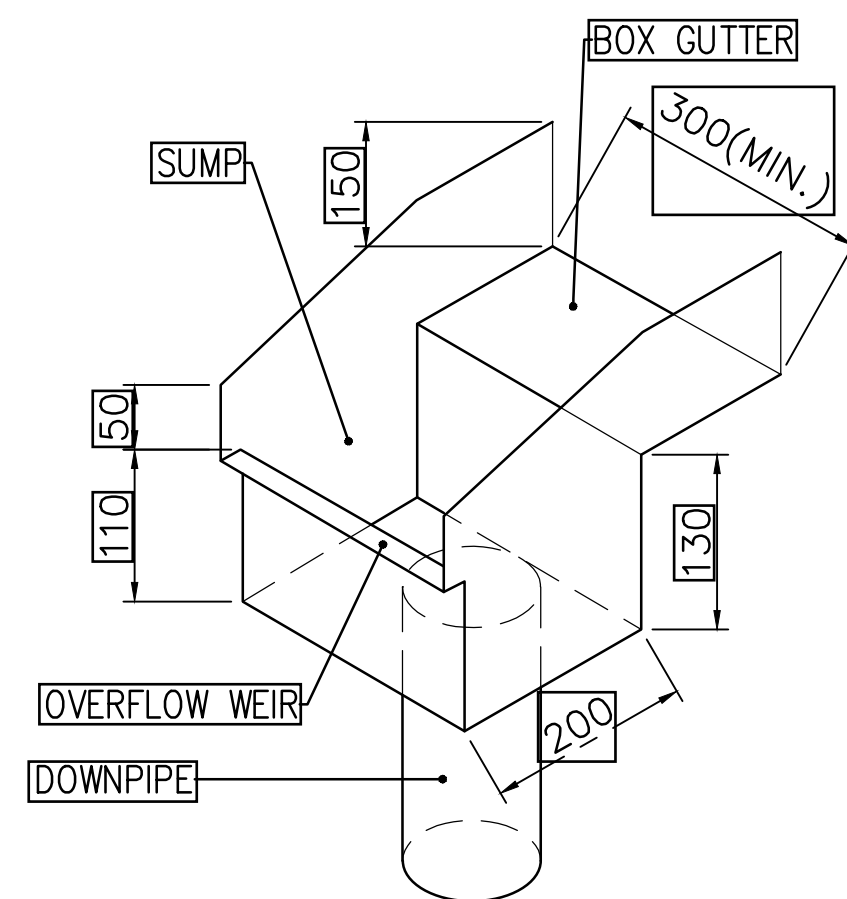
NOTE: ROOF OVERFLOW LOCATIONS TO BE CONFIRMED ON SITE DURING CONSTRUCTION

LEAF GUARDS
TO BE INSTALED TO ALL GUTTERS

EXISTING STORMWATER PIPES AND LOCATION SHOWN ON THESE DRAWINGS ARE ASSUMPTION ONLY AND SUBJECT TO FINAL CONFIRMATION DURING DEMOLITION/OPENING UP WORKS. ADDITIONAL STORMWATER PIPES MIGHT BE REQUIRED, SUBJECT TO LOCAL SITE CONSTRAINTS. QUALIFIED PLUMBER TO LOCATE, INSPECT AND UPGRADE OR REPLACE ALL USED EXISTING STORMWATER PIPES/PITS AS REQUIRED.(ALL WORKS TO COMPLY WITH AS3500.3 AND COUNCIL'S SPECIFICATIONS, FINAL LAYOUT TO BE CONFIRMED BY ENGINEER PRIOR TO CONSTRUCTION.



TYPICAL SUMP(S1) AND GARAGE ROOF FLOOR INLET
NTS



TYPICAL SUMP(S1) AND BOX GUTTER
NTS

TYPICAL BOX GUTTERS SPECIFICATION

THE MINIMUM WIDTH OF BOX GUTTERS USED FOR COMMERCIAL CONSTRUCTION IS 300 MM. BOX GUTTERS 200 MM WIDE MAY BE USED FOR DOMESTIC CONSTRUCTION, BUT THEY ARE MORE PRONE TO BLOCKAGES AND SHOULD BE SUBJECT TO FREQUENT INSPECTIONS AND MAINTENANCE. ADDITIONAL HEIGHT IS RECOMMENDED WHERE POSSIBLE.

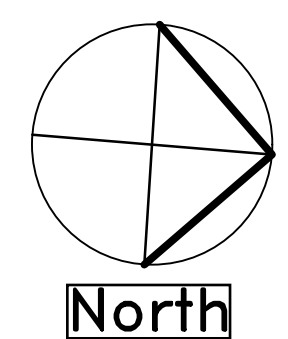
BOX GUTTERS SHALL:

- (I) BE STRAIGHT (WITHOUT CHANGE IN DIRECTION);
- (II) IN A CROSS-SECTION HAVE A HORIZONTAL CONSTANT WIDTH BASE (SOLE) WITH VERTICAL SIDES;
- (III) HAVE A CONSTANT LONGITUDINAL SLOPE BETWEEN 1:200 AND 1:40;
- (IV) DISCHARGE AT THE DOWNSTREAM END WITHOUT CHANGE OF DIRECTION (I.E., NOT TO THE SIDE); AND
- (V) BE SEALED TO THE RAINHEADS AND SUMPS.

3.7.6 DOWNPIPES
DOWNPIPES SHALL BE FITTED VERTICALLY TO THE BASE OF A RAINHEAD OR SUMP

NOT FOR CONSTRUCTION

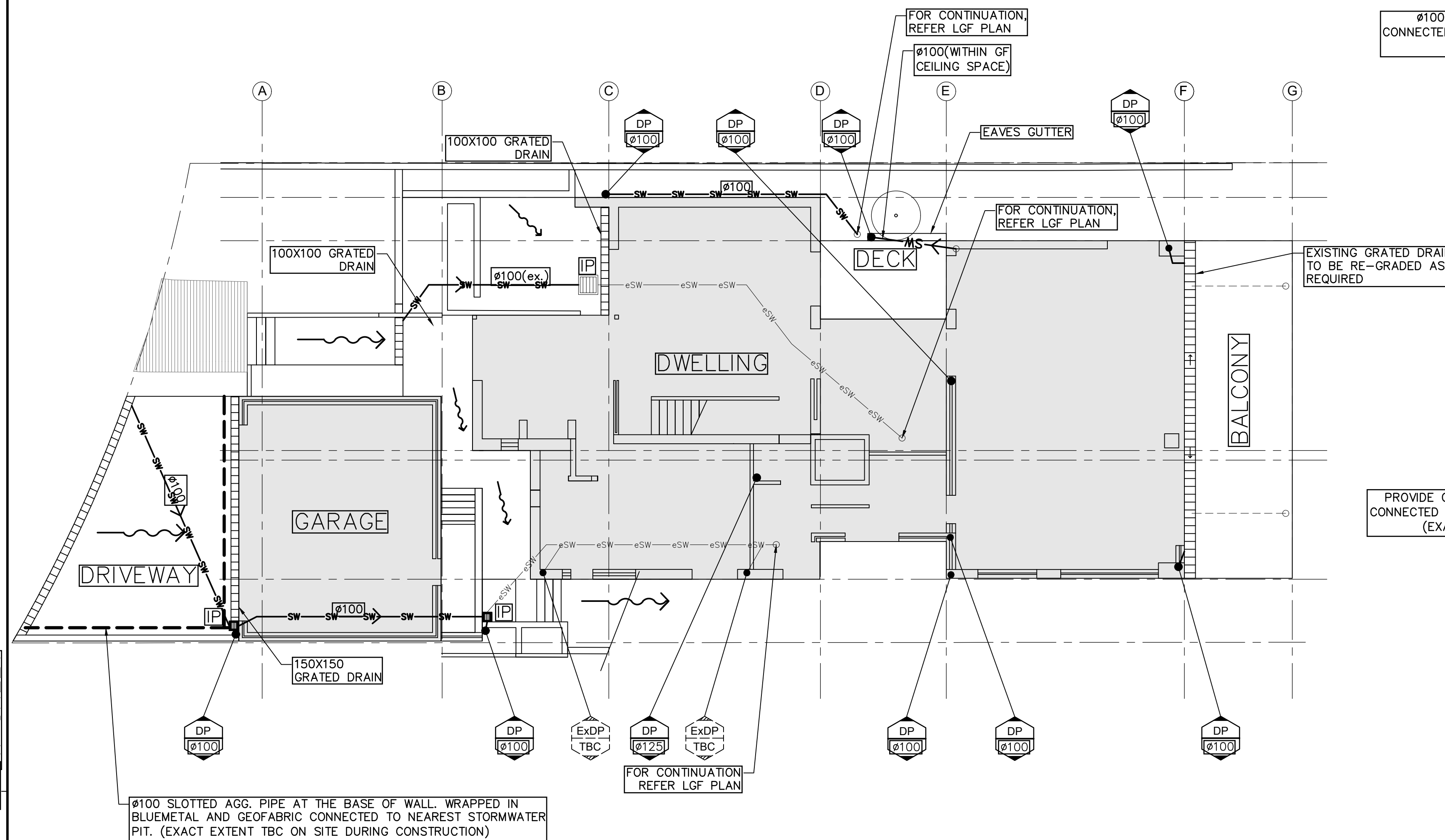
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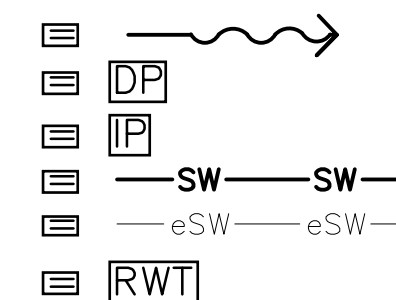
Drawing Title	STORMWATER PLANS AND DETAILS.
Scales	1:100
Drawing No.	23S255-H02
Client Project No.	
Sheet	2 of 5
Revision	2

**GROUND FLOOR SLAB PLAN**
1 : 100

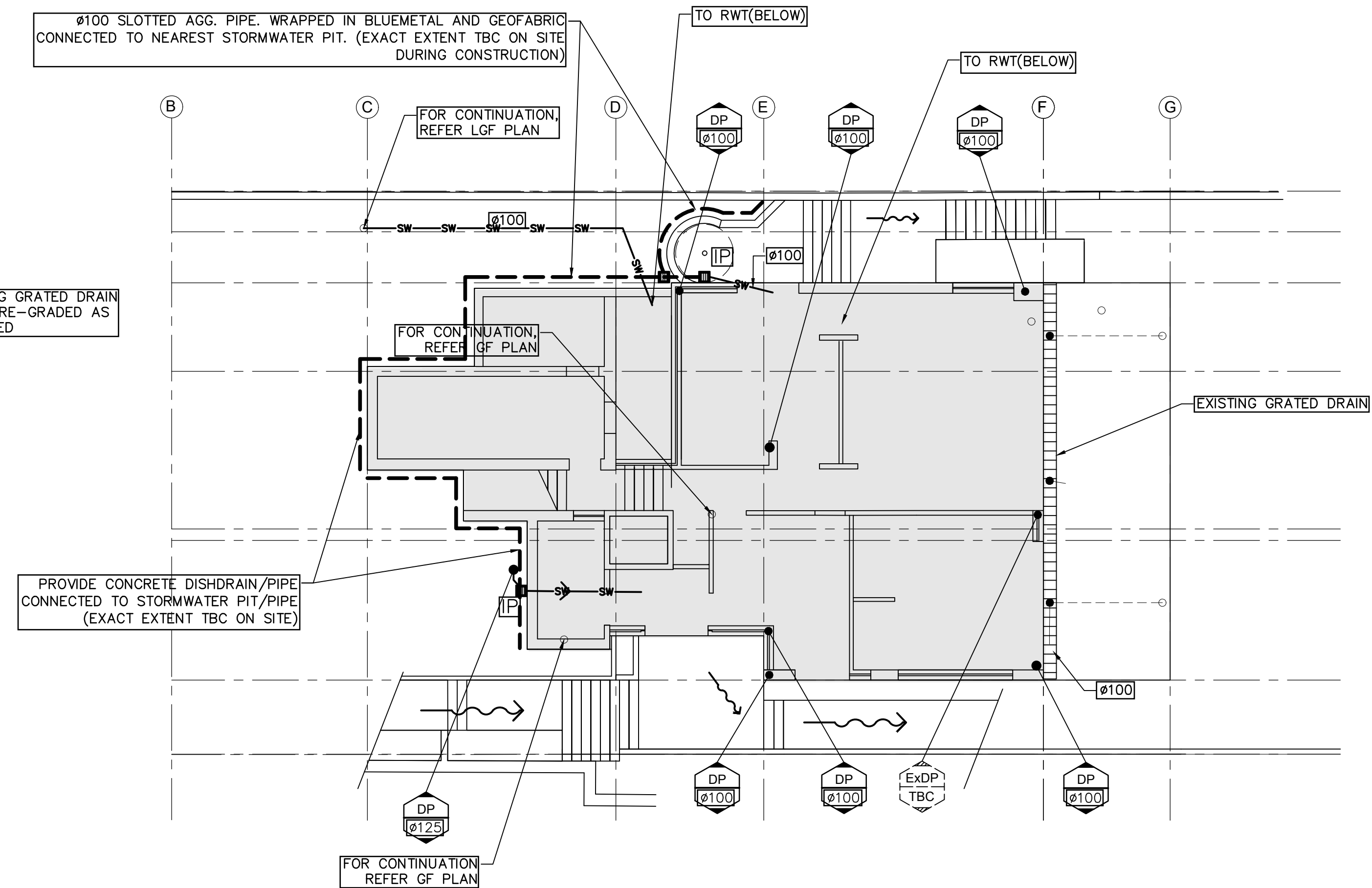
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LEGEND

SURFACE RUN OFF
DOWN PIPE
NEW INLET/INSPECTION PIT
NEW PROPOSED PIPE(TBC ON SITE)
EXISTING PIPE(TBC ON SITE)
RAIN WATER TANK



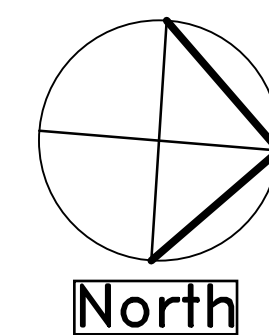
LEAF GUARDS
TO BE INSTALED TO ALL GUTTERS

**LOWER GROUND FLOOR SLAB PLAN**
1 : 100

* - TO ARCH. DETAIL
NOTE: FINAL STORMWATER PIPES LAYOUT TO BE CONFIRMED BY ENGINEER AFTER DEMOLITION WORKS.

NOT FOR CONSTRUCTION

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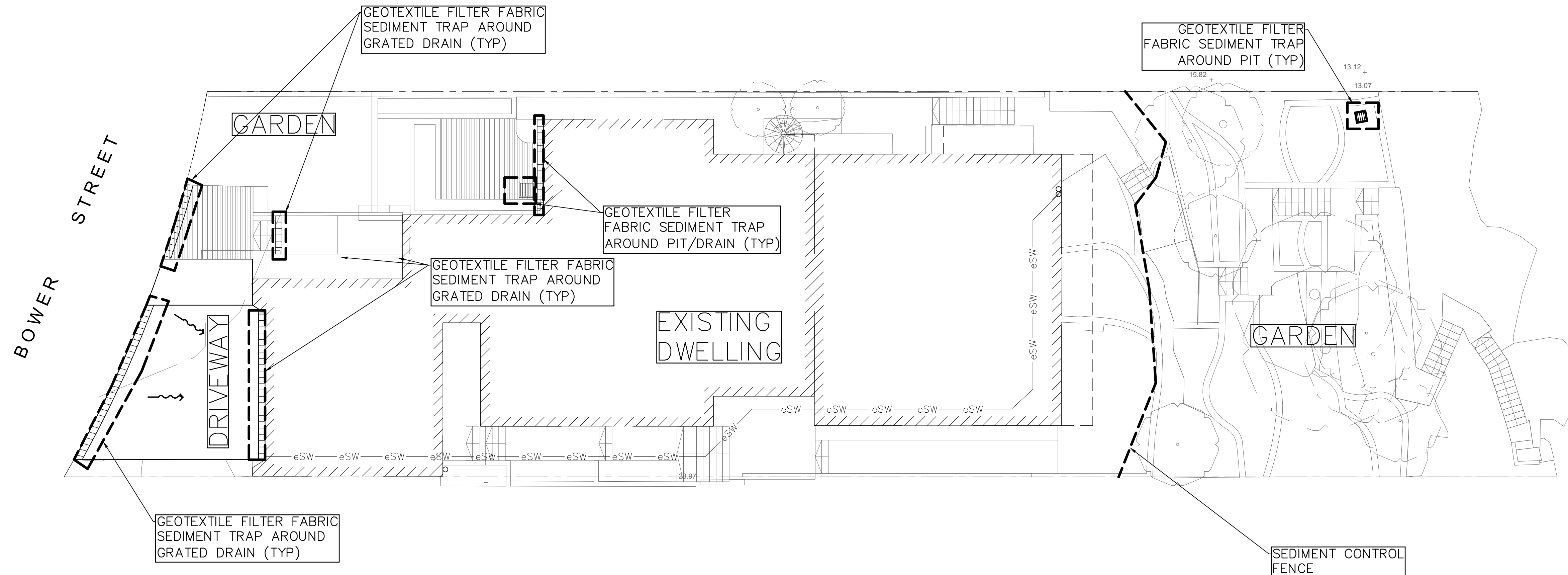


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Project	ALTERATIONS AND ADDITIONS 38 BOWER STR MANLY	Drawing Title	STORMWATER PLANS AND DETAILS.
Client	TRACEY & JAMES SMAL	Scales	1:100
Architect	A&Co.	Drawing No.	23S255-H03
Client Project No.		Sheet	3 of 5
Revision		Revision	2

BASEMENT/SITE PLAN.
1 : 100

SITE DISCHARGE CONTROL PIT(DSP)



SEDIMENT CONTROL PLAN

1:100

DRAINAGE AREA 0.4ha MAX. SLOPE GRADIENT 1:2 MAX.
SLOPE LENGTH 40m MAX.

ANGLE FIRST STAKE TOWARDS
PREVIOUSLY LAID STRAW BALE.

STAKES DRIVEN 0.6m
INTO GROUND

DISTURBED AREA

UNDISTURBED AREA

100 DEEP

STRAW BALE SEDIMENT FILTER

GEOTEXTILE
FILTER FABRIC

3 m max

WIRE AND STEEL MESH
OR SIMILAR

Disturbed area

Direction of
flow

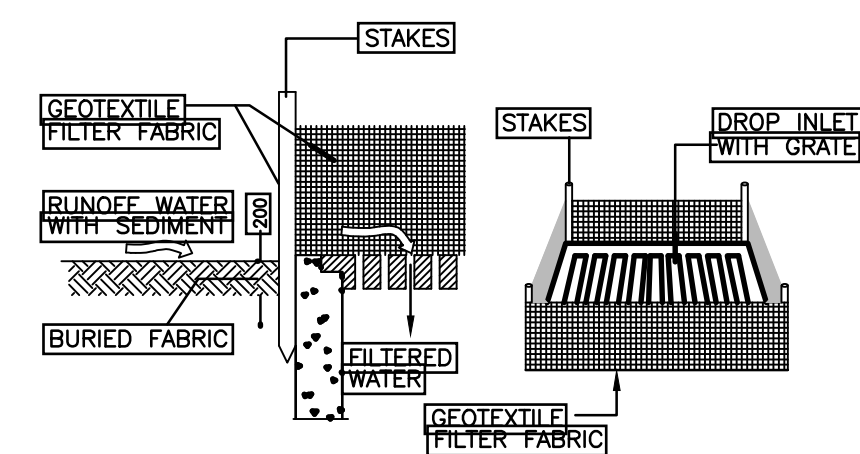
POSTS DRIVEN
0.6m INTO
GROUND

Undisturbed area

SEDIMENT CONTROL FENCE

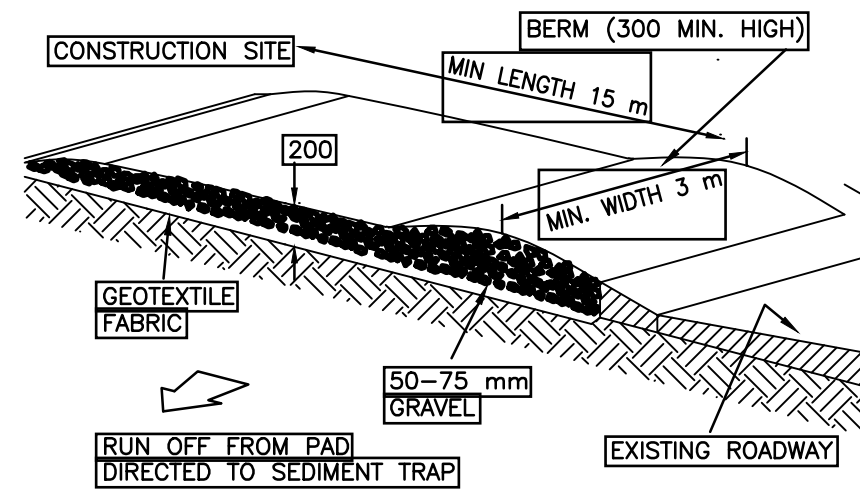
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GEOTEXTILE FILTER FABRIC
DROP INLET SEDIMENT TRAP

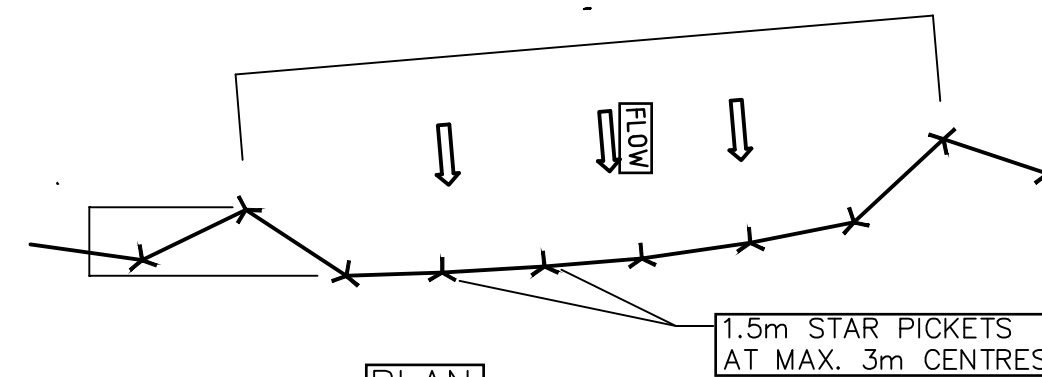
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TEMPORARY CONSTRUCTION EXIT

SCALE: NTS

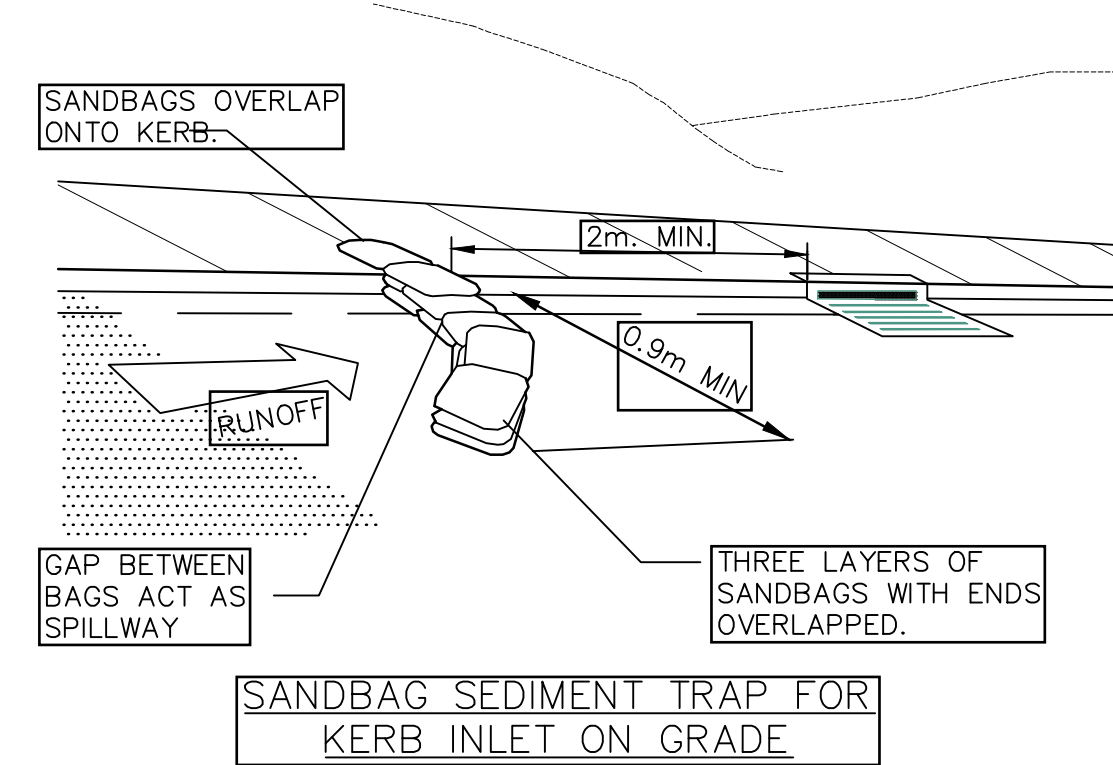
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PLAN
SEDIMENT CONTROL FENCE

CONSTRUCTION NOTES -

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND, 3 METRES APART.
3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC.
5. SELF SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH 150mm OVERLAP.
7. EXACT EXTENT OF SEDIMENT FENCE IS TO BE CONFIRMED DURING CONSTRUCTION WORKS.



SANDBAG SEDIMENT TRAP FOR
KERB INLET ON GRADE

SOIL CONSERVATION NOTES

A. PRIOR TO ANY CLEARING OR EXCAVATION AT THE PROJECT SITE, A TEMPORARY SEDIMENT TRAP ARRANGEMENT SHALL BE MADE TO ENSURE THE CAPTURE OF ANY WATER BORNE MATERIAL GENERATED FROM THE SITE.

(PROVIDE SEDIMENT FENCE AS SHOWN ON PLAN.)

CONSTRUCT STEEL SHAKER GRID SIMILAR TO CATTLE FROM STEEL BEDDED ON 50 - 75mm GRAVEL AND AND GEOTEXTILE ACROSS MAIN ACCESS TO SITE AND MAINTAIN UNTIL ALL SURFACES HAVE BEEN REVEGETATED AND PAVED.

B. DURING CONSTRUCTION

1) SILTATION PROTECTION DESCRIBED ABOVE SHALL BE MAINTAINED DURING THE COURSE OF CONSTRUCTION.

2) NEWLY CONSTRUCTED PITS SHALL BE PROTECTED FROM ANY SEDIMENT ENTRY.

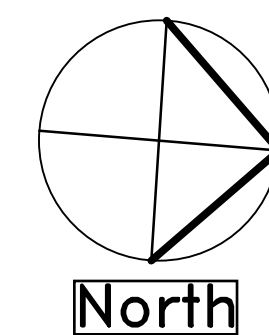
3) ONCE IN PLACE, NO SILTATION PROTECTION SHALL BE REMOVED WITHOUT COUNCIL APPROVAL.

4) AFTER EACH STORM, ALL SEDIMENT TRAPS SHALL BE CLEANED AND REPLACED (IF REQUIRED) TO COUNCIL'S SATISFACTION.

5) OTHER METHODS OF SEDIMENT CONTROL AS MAY BE REQ'D BY THE COUNCIL SHALL BE COMPLIED WITH.

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Drawing Title	EROSION AND SEDIMENT CONTROL PLAN AND DETAILS.
Scales	1:100
Drawing No.	23S255-H05
Client Project No.	
Sheet	5 of 5
Revision	2