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FOR:



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# STORMWATER MANAGEMENT PLAN

## FOR PROPOSED DWELLING

### 30 ROSE STREET, SEFTON, NSW



ISSUED FOR: C.C

|                                                                                                                                                                                                                                         |  |  |  |                                                                                                                                                                 |  |  |  |                                                                                                                                                                               |  |  |  |                                                                                                                                                                                                                             |  |  |  |
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| <b>STORMWATER DRAINAGE GENERAL</b>                                                                                                                                                                                                      |  |  |  | ENGINEER IS TO BE NOTIFIED AT THE EARLIEST POSSIBLE CONVENIENCE                                                                                                 |  |  |  | • PROVIDE CONCRETE BENCHING ACROSS PIT TO SUIT INLET AND OUTLET PIPES AS DETAILED                                                                                             |  |  |  | • RAINWATER TANK TO BE CONNECTED TO ALL TOILETS, LAUNDRY AND AT LEAST ONE (1) OUTDOOR TAP.                                                                                                                                  |  |  |  |
| • THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT AND ENGINEER FOR DECISION BEFORE PROCEEDING WITH THE WORK |  |  |  | • THE CONTRACTOR TO VERIFY THE INVERT LEVELS AT POINT OF CONNECTION TO EXISTING STORMWATER SYSTEM AND REPORT ANY CONFLICT OF LEVELS                             |  |  |  | • DIA 100 SUBSOIL DRAINAGE PIPE 3.0 M LONG WRAPPED IN FABRIC SOCK TO BE PLACED ADJACENT TO INLET PIPES ON BOTH SIDES AND 100 MM MIN. ABOVE PIT FLOOR                          |  |  |  | <b>DESIGN NOTES</b>                                                                                                                                                                                                         |  |  |  |
| • DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THESE DRAWINGS. REFER TO ARCHITECT'S FINAL DRAWINGS.                                                                                                                                      |  |  |  | • ALL BUILDINGS HAVE RAISED SO THERE IS AT LEAST 150 mm STEP UP INTO THE BUILDING TO ALLOW SUFFICIENT FREEBOARD FOR OVERLAND FLOWS IN THE CASE OF PIPE BLOCKAGE |  |  |  | • SUB SOIL DRAINAGE SHALL BE PROVIDED TO ALL RETAINING WALLS AND EMBANKMENTS WITH THE LINES FEEDING INTO THE STORMWATER DRAINAGE SYSTEM, UNO.                                 |  |  |  | • ALL EVE GUTTERS AND DOWNPIPES ARE DESIGNED FOR 10 YEAR ARI STORM EVENT.                                                                                                                                                   |  |  |  |
| • THE BUILDER SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING AND NEW SERVICES, AND SHALL BE RESPONSIBLE FOR DAMAGE TO THE SAME.                                                                                                         |  |  |  | • DOWNPIPES AND PITS LOCATIONS AND LEVELS MAY BE VARIED TO SUIT THE SITE CONDITIONS, AFTER ENGINEERING APPROVAL                                                 |  |  |  | • SELECTED GRANULAR BACKFILL IS TO BE PLACES AGAINST THE FULL HEIGHT OF THE PIT VERTICAL FACES AND FOR A HORIZOONTAL DISTANCE EQUAL TO ONE-THIRD THE HEIGHT OF THE STRUCTURE. |  |  |  | • BOX GUTTER AND RAINWATER HEADS ARE DESIGNED FOR 100 YEAR ARI STORM EVENT                                                                                                                                                  |  |  |  |
| • ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE SSA CODES, AND THE BY-LAWS AND ORDINANCES OF THE COUNCIL EPA AND WORKCOVER AS 3500 PART 2 & 3                                                       |  |  |  | • DOWNPIPES SHOWN ARE INDICATIVE ONLY. ALL ROOF GUTTERING AND DOWNPIPES TO THE CURRENT AUSTRALIAN STANDARDS                                                     |  |  |  | • MORTAT BASES TO BE SHAPED TO GIVE MIN 20 mm FALL ACROSS PITS                                                                                                                |  |  |  | • INTENSITY FREQUENCY DURATION (IFD) DESIGN CHART OBTAINED FROM BUREAU OF METEOROLOGY HAS BEEN USED TO DESIGN ON SITE DETENTION SYSTEM.                                                                                     |  |  |  |
| • PREPARE PROGRESSIVELY AND FURNISH TO THE ENGINEER WORK AS EXECUTED DRAWINGS OF THE SAME SIZE AND QUALITY AS THIS DRAWING BUT ACCORDANCE WITH DA CONDITIONS AND CC REQUIREMENTS.                                                       |  |  |  | • DRAINAGE PIPES TO BE CONCRETE ENCASED WHERE LOCATED UNDER DRIVEWAY OR BUILDING                                                                                |  |  |  | • MORTAR BASES TO BE DISHED TO SUIT ADJOINING PIPE SIZES TO GICE SELF CLEANSING PITS.                                                                                         |  |  |  | • <b>SEDIMENT FENCE</b>                                                                                                                                                                                                     |  |  |  |
| • GIVE SUFFICIENT NOTICE SO THAT INSPECTION MAY BE CARRIED OUT AT THE FOLLOWING STAGES: WORK READY FOR SPECIFIED TESTING, WORK READY TO BE COVERED OR CONCEALED.                                                                        |  |  |  | • ALL PIPES TO BE FULLY HOUSED INTO PIT WALLS AND JOINED / SEAL IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.                                                |  |  |  | • WHERE PIT DEPTH EXCEEDS STANDARD DEPTH, CONCRETE SHALL BE USED AS PIT BASE, AND ALSO TO GAIN REQUIRED INLET/ OUTLET LEVELS.                                                 |  |  |  | • SEDIMENT CONTROL DEVICES ARE TO BE IN PLACE PRIOR TO ANY DEMOLITION OR CONSTRUCTION.                                                                                                                                      |  |  |  |
| • OBTAIN APPROVAL BEFORE INTERRUPTING AN EXISTING SERVICE. KEEP THE NUMBER OF INTERRUPTIONS TO A MINIMUM.                                                                                                                               |  |  |  | • GRADE ALL PAVED AND GRASSED AREAS AWAY FROM THE BUILDING.                                                                                                     |  |  |  | • THE INLET PIPE OBVERT IS TO BE HIGHER THAT THE OUTLET PIPE OBVERT                                                                                                           |  |  |  | • CONSTRUCT A SILT BARRIER FENCE AS SHOWN ON PLAN AND TO DETAILS AS ABOVE.                                                                                                                                                  |  |  |  |
| • LAY PIPES TO THE LEVELS SHOWN ON THE DRAWINGS AND IN ANY CASE NOT LESS THAN THE FOLLOWING:                                                                                                                                            |  |  |  | • TOP OF GRATE TO BE POSITIONED TO CATCH ALL UPSTREAM SURFACE FLOWS AS INDICATED BY PLANS.                                                                      |  |  |  | • ALL SWAYLES SHALL HAVE A TURFED INVERT EXTENDING 0.5 m UP THE SIDE SLOPES                                                                                                   |  |  |  | • SEDIMENT CONTROL DEVICES ARE TO BE MAINTAINED IN GOOD WORKING ORDER UNTIL COMPLETION OF ALL SITE WORKS OR TO THE SATISFACTION OF THE COUNCIL SUPERVISING OFFICER.                                                         |  |  |  |
| DIA. 100 MM @ 1.0%, DIA 150 MM @ 1.0%, DIA 225 MM @ 0.5%, DIA 300 MM @ 0.5%                                                                                                                                                             |  |  |  | • ALL PIPES WITHIN THE PROPERTY TO BE MIN. OF 150 DIA, @ 1% MIN. GRADE, UNO.                                                                                    |  |  |  | • HAND EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS                                                                                                                    |  |  |  | • ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN                                                                                                                                                                  |  |  |  |
| • ENDS OF PIPES AND STUB CONNECTIONS TO BE SEALED WITH AN APPROVED SEALED DISC.                                                                                                                                                         |  |  |  | • ANY PIPES OVER 16% GRADE SHALL HAVE CONCRETE BULHEADS AT ALL JOINTS.                                                                                          |  |  |  | • FOOTHPATH CROSSING LEVELS SHOWN ARE TO BE ADJUSTED TO FINAL COUNCIL'S ISSUED LEVELS                                                                                         |  |  |  | <b>SEDIMENT BARRIER AROUND PIT:</b>                                                                                                                                                                                         |  |  |  |
| • MILD STEEL STAR PICKET 1200 mm LONG WITH 300 mm PAINTED GREEN EXTENDED ABOVE GROUND LEVEL TO BE PLACED AT EACH INTERLOTMENT DRAINAGE CONNECTION POINT.                                                                                |  |  |  | • ALL PITS WITHIN THE PROPERTY AREA TO BE FITTED WITH WELDOK OR APPROVED EQUIVALENT GRATES TO AS3996:                                                           |  |  |  | • ALL FENCES MUST BE RAISED 150 mm FROM THE FINISHED GROUND LEVELS SO THAT OVERLAND FLOWS FROM UPSTREAM PROPERTIES ARE NOT RESTRICTED OR BLOCKED.                             |  |  |  | • FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE.                                                                                                                                                                        |  |  |  |
| • GEOTEXTILE FABRIC TO BE PLACED UNDER RIP RAP SCOUR PROTECTION                                                                                                                                                                         |  |  |  | ○ LIGHT DUTY FOR LANDSCAPE AREAS                                                                                                                                |  |  |  | • THE SYSTEM TO BE INSTALLED WITH THE FOLLOWING CONSIDERATIONS:                                                                                                               |  |  |  | • SUPPORT GEOTEXTILE WITH MESH TIED TO THE POSTS AT 1000 MM CENTERS.                                                                                                                                                        |  |  |  |
| <b>STORMWATER DRAINAGE NOTES:</b>                                                                                                                                                                                                       |  |  |  | ○ HEAVY DUTY WHERE SUBJECTED TO VEHICULAR CROSSING                                                                                                              |  |  |  | • A 'FIRST FLUSH' DIVERSION TO REMOVE ROOF CONTAMINANTS                                                                                                                       |  |  |  | • DONOT COVER INLET WITH GEOTEXTILE                                                                                                                                                                                         |  |  |  |
| • CONTRACTOR IS TO VERIFY THE LEVEL AND LOCATION OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF EXCAVATION.                                                                                                                          |  |  |  | • ANY PIPES BENEATH RELEVANT LOCAL AUTHORITY ROAD TO BE RUBBER RING JOINTED RCP, UNO.                                                                           |  |  |  | • ADEQUATE SCREENING TO PROVIDE MOSQUITO BREEDING AND ENTRY OF ANIMAL OR FLOATING MATTER                                                                                      |  |  |  | <b>STANDARD PIPE TRENCH</b>                                                                                                                                                                                                 |  |  |  |
| • THE CONTRACTOR IS TO VERIFY ANY CONFLICT OF SERVICES IN THE ROAD RESERVE OR SUBJECT PROPERTY AND THE                                                                                                                                  |  |  |  | • ALL PITS IN ROADWAYS ARE TO BE FITTED WITH HEAVY DUTY GRATES WITH LOCKING BOLTS AND CONTINEOUS HINGE                                                          |  |  |  | • TANKS TO BE PLUMBED TO TOP-UP FROM THE POTABLE WATER SUPPLY DURING DRY PERIOD WHEN THE TANK IS 80% EMPTY.                                                                   |  |  |  | • SAND FREE FROM ROCK OR OTHER HARD AND SHARP OBJECTS THAT WOULD RETAINED ON 13.2 SEIVE                                                                                                                                     |  |  |  |
|                                                                                                                                                                                                                                         |  |  |  | • ALL COURTYARD AND LANDSCAPE PITS TO BE 400 SQUARE, UNO                                                                                                        |  |  |  | • NO DIRECT CROSS-CONNECTION WITH THE POTABLE WATER SUPPLY AND AN AIR GAP MAINTAINED ABOVE THE OVERFLOW IN THE TANK.                                                          |  |  |  | • CRISHED ROCK OR GRAVEL OF APPROVED GRADING UP TO MAX SIZE OF 14 mm                                                                                                                                                        |  |  |  |
|                                                                                                                                                                                                                                         |  |  |  | • ALL PLANTER BOXES AND BALCONIES TO BE CONNECTED TO THE PROPOSED STORMWATER DRAINAGE LINE.                                                                     |  |  |  |                                                                                                                                                                               |  |  |  | • THE EXCAVATED MATERIAL MAY BE USED IF IT IS FREE FROM ROCK OR HARD MATTER AND BROKEN UP SO STHAT IT CONTAINS NO SOIL LUMPS HAVING ANY DIMENSION GREATER THAN 75 mm WHICH WOULD PREVENT ADEQUATE COMPACTION OF THE BEDDING |  |  |  |
|                                                                                                                                                                                                                                         |  |  |  | • PROVIDE STEP IRONS TO STORMWATER PITS GREATER THAN 1200 IN DEPTH.                                                                                             |  |  |  |                                                                                                                                                                               |  |  |  | • MATERIAL FOR PIPE SIDE SUPPORT SHOULD BE ADEQUATELY TAMPED IN LAYERS OF NOT MORE THAN 150 mm.                                                                                                                             |  |  |  |
|                                                                                                                                                                                                                                         |  |  |  | • COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS TO BE MIN. 25 MPa                                                                                                 |  |  |  |                                                                                                                                                                               |  |  |  | • PIPE OVERLAY MATERIAL SHOULD BE LEVELLED AND TAMPED IN LAYERS TO A MINIMUM HEIGHT OF 150 mm ABOVE THE CROWN OF THE PIPE                                                                                                   |  |  |  |
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|                                                                                                                                                                                                                                         |  |  |  |                                                                                                                                                                 |  |  |  |                                                                                                                                                                               |  |  |  |                                                                                                                                                                                                                             |  |  |  |
| </                                                                                                                                                                                                                                      |  |  |  |                                                                                                                                                                 |  |  |  |                                                                                                                                                                               |  |  |  |                                                                                                                                                                                                                             |  |  |  |

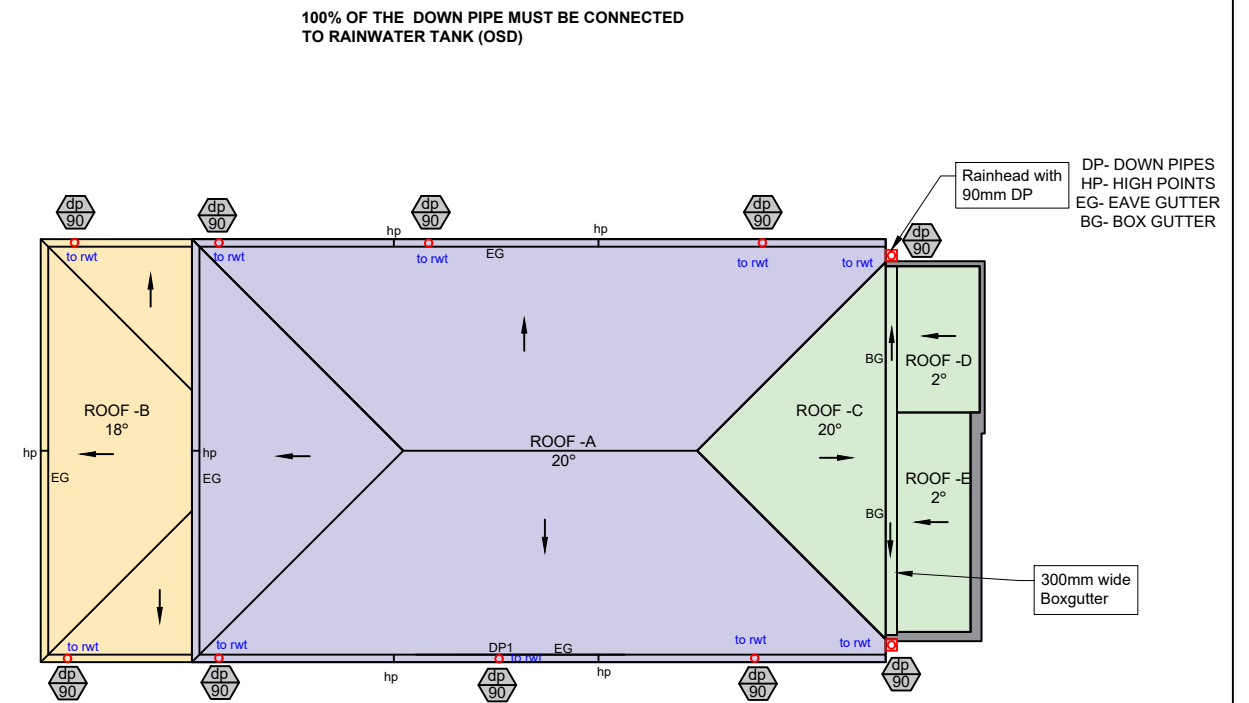
#### Alternative water

The applicant must install a rainwater tank of at least 2000 litres.  
The rainwater tank to collect rain runoff from at least 50 m2 of the roof  
The applicant must connect the rainwater tank to:  
• all toilets in the development  
• the cold water tap that supplies each clothes washer  
• at least one outdoor tap in the development

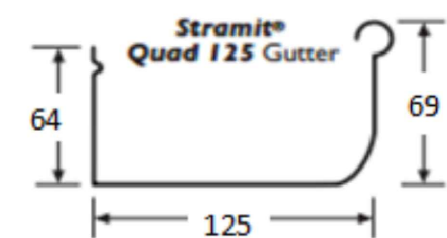
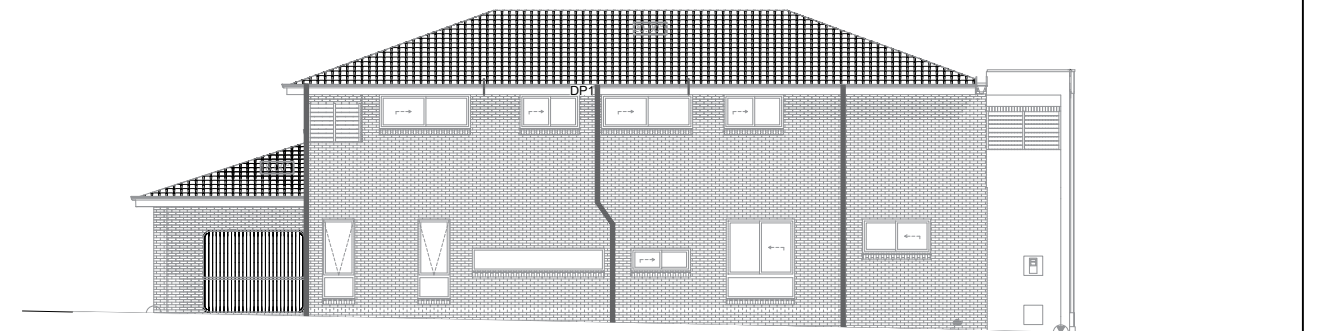
#### EAVES GUTTER AND DOWN PIPE DESIGN TO AS/NZS 3500.3: 2021

| DESCRIPTION                                       |      |            | UNIT       | ROOF     |      |       |
|---------------------------------------------------|------|------------|------------|----------|------|-------|
|                                                   |      |            |            | A        | B    | C,D,E |
| Horizontal catchment area                         | Ah   | sq.m       | 180.5      | 51.5     |      |       |
| Roof Average slope                                | S    | degrees    | 20         | 18       |      |       |
| Intensity                                         | I    | mm/hr      | 160        | 160      |      |       |
| Is Gutter slope steeper than 1:500 ?              |      |            | Yes        | Yes      |      |       |
| Down pipe size selected                           | dia  | mm         | 90         | 90       |      |       |
| Cross referencing From Table 3.5.2 and Fig 3.5.2  | Tnum |            | 5.2        | 1.46     |      |       |
| Theoretical number of DPs required                |      |            |            |          |      |       |
| Selected Number of Down pipes                     | n    |            | 6          | 2        |      |       |
| from AS3500 Table 3.4.5.2, C'ment Area Multiplier | f    |            | 1.18       | 1.16     |      |       |
| Roof Area allowing for slope                      | Ac   | sq.m       | Ah*f       | Ah*f     |      |       |
|                                                   |      |            | 213        | 59.7     |      |       |
| Catchment Area per DP                             | A    | sq.m       | Ac/n       | Ac/n     |      |       |
|                                                   |      |            | 35.5       | 29.9     |      |       |
| Flow/DP                                           | q    | litres/sec | I*A/3600   | I*A/3600 |      |       |
|                                                   |      |            | litres/sec | 1.58     | 1.33 |       |
| from AS/NZS 3500 fig 3.5.2(C), Gutter Area        |      | sq.mm      | 5891       | 5159     |      |       |
| Gutter Area rounded to nearest 100sq.mm           |      | sq.mm      | 5900       | 5200     |      |       |
| From AS/NZS 3500 Table 3.5.2,, Down Pipe size     |      | mm         | 85         | 80       |      |       |
| Down Pipe size selected                           |      | mm         | 90         | 90       |      |       |
| Summary                                           |      |            |            |          |      |       |
| This catchment requires :- number of DPs          |      |            | 6          | 2        |      |       |
| Downpipe size                                     |      | mm         | 90         | 90       |      |       |
| minimum eaves gutter cross sectional Area         |      | sq.mm      | 5891       | 5159     |      |       |

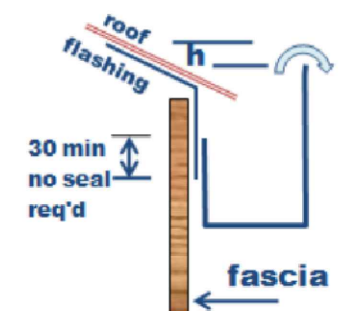
RECOMMENDED GUTTER = Stramit Quad 125 Unslotted NSW; Area = 6200 mm<sup>2</sup>  
(Note: assuming the catchment area of each DP is roughly similar.Length of any gutter draining to a downpipe to be not longer than 12m.(NCC vol2)



**STORMWATER MANAGEMENT PLAN (ROOF)**  
scale 1:200



RECOMMENDED GUTTER = Stramit Quad 125 Unslotted NSW; Area = 6200 mm<sup>2</sup>  
OR  
EQUIVALENT SHOULD BE USED



**Overflow over the front with flashing**

REQUIRED SETDOWN (h) FOR 1% AEP GUTTER OVERFLOW = 25 mm

|     |                                   |    |            |
|-----|-----------------------------------|----|------------|
| C   | ISSUED FOR C.C (INCLUSION OF OSD) | CS | 28/07/2023 |
| B   | ISSUED FOR C.C                    | CS | 19/06/2023 |
| A   | ISSUED FOR D.A                    | CS | 01/08/2022 |
| Rev | Description                       | By | Date       |

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Client:



Project:

Proposed Development at  
30 ROSE STREET , SEFTON , NSW

Title:

3 EAVE GUTTER CALC

Designed By:

Chij Shrestha  
MIEAust, CPEng, NER

Reviewed By:

C.L.A

Scale:

as shown (A3)

Date: 28/07/2023

Issue: C

Job No: SW166\_2208 C

Sheet No: 3 OF 9

## Roof C+D

## BOX GUTTER AND RAIN WATER HEAD DESIGN TO AS/NZS 3500.3:2021

Diagramatic shape of Given Data (Not to scale)



Design Storm Intensity (ARI 100)

Catchment Areas as shown in the diagram.

Calculate roof rise areas.

Roof Slope LHS = 20 deg Therefore

Roof Slope RHS = 2 deg Therefore

Calculate catchment area for each wind direction

Ac = Ah + 1/2(Av facing wind - Av causing rain shadow)

wind from LHS

wind from RHS

Worst wind direction is from the right

Design Flow

|     |   |             |       |
|-----|---|-------------|-------|
| Ah  | = | Area Horiz  | sq.m. |
| Av  | = | Area Vert'l | sq.m. |
| Ac  | = | Area Cment  | sq.m. |
| LHS | = | Left hand   | side  |
| RHS | = | Right hand  | side  |

I = 202 mm/hr

|     |   |                    |
|-----|---|--------------------|
| Av1 | = | Ah1*tan(Slope) sqm |
| Av1 | = | 12.5*tan(20)       |
|     | = | 4.5 sqm            |
| Av3 | = | Ah2*tan(Slope) sqm |
| Av3 | = | 10*tan(2)          |
|     | = | 0.3 sqm            |

|           |                            |
|-----------|----------------------------|
| Ac(LHS) = | 12.5+10+0.5*(0.3+1-4.5-1)  |
| =         | 20.4 sqm                   |
| Ac(RHS) = | 12.5+10+0.5*(4.5+1-0.3-1)  |
| =         | 24.6 sqm                   |
| Ac        | = 24.6 sqm.                |
| Q         | = 1*Ac/3600 Litres/sec     |
|           | = 202*24.6/3600 Litres/sec |
|           | = 1.4 Litres/sec           |

## Roof C+D

## Box Gutter Depth

From AS/NZS 3500.3 Fig I1 (Interpolating where necessary)

|                                                |   |    |        |
|------------------------------------------------|---|----|--------|
| Using :- Gutter Slope                          | 1 | in | 200    |
| and Gutter Width                               | W | =  | 300 mm |
| from AS/NZS 3500.3 fig I1 Minimum Gutter Depth | d | =  | 81 mm  |

## Rain Water Head Calculations

|                                                                                  |   |    |    |
|----------------------------------------------------------------------------------|---|----|----|
| Selected down pipe size                                                          | = | 90 | mm |
| From AS/NZS 3500.3 fig I3, Rain water head Depth (Interpolating where necessary) | = | 11 | mm |

Rain water Head Depth increased to comply with Note 1 Fig I2 (RWH depth to be &gt;= 1.25\*DP dia.)

|                                                                  |   |         |    |
|------------------------------------------------------------------|---|---------|----|
| From AS/NZS 3500.3 fig I3, Rain water head Length at slope 1:200 | = | 1.25*90 | mm |
|                                                                  | = | 113     | mm |
| From AS/NZS 3500.3 fig I3, Rain water head Length at slope 1:200 | = | 51      | mm |

|                                                       |   |     |    |
|-------------------------------------------------------|---|-----|----|
| Rain water Head Length increased to fit the DP 90 +20 | = | 110 | mm |
| Rain water Head Width                                 | = | 300 | mm |

## Summary

|                          |   |     |    |
|--------------------------|---|-----|----|
| Down Pipe Size           | = | 90  | mm |
| Box Gutter Width         | = | 300 | mm |
| Box gutter minimum Depth | = | 81  | mm |
| Rain Water Head Depth    | = | 113 | mm |
| Rain Water Head Length   | = | 110 | mm |
| Rain Water Head Width    | = | 300 | mm |

## Roof C+E

## BOX GUTTER AND RAIN WATER HEAD DESIGN TO AS/NZS 3500.3:2021

Diagramatic shape of Given Data (Not to scale)



Design Storm Intensity (ARI 100)

Catchment Areas as shown in the diagram.

Calculate roof rise areas.

Roof Slope LHS = 20 deg Therefore

Roof Slope RHS = 2 deg Therefore

Calculate catchment area for each wind direction

Ac = Ah + 1/2(Av facing wind - Av causing rain shadow)

wind from LHS

wind from RHS

Worst wind direction is from the right

Design Flow

|     |   |             |       |
|-----|---|-------------|-------|
| Ah  | = | Area Horiz  | sq.m. |
| Av  | = | Area Vert'l | sq.m. |
| Ac  | = | Area Cment  | sq.m. |
| LHS | = | Left hand   | side  |
| RHS | = | Right hand  | side  |

I = 202 mm/hr

|     |   |                    |
|-----|---|--------------------|
| Av1 | = | Ah1*tan(Slope) sqm |
| Av1 | = | 12.5*tan(20)       |
|     | = | 4.5 sqm            |
| Av3 | = | Ah2*tan(Slope) sqm |
| Av3 | = | 15.5*tan(2)        |
|     | = | 0.5 sqm            |

|           |                             |
|-----------|-----------------------------|
| Ac(LHS) = | 12.5+15.5+0.5*(0.5+1-4.5-1) |
| =         | 26 sqm                      |
| Ac(RHS) = | 12.5+15.5+0.5*(4.5+1-0.5-1) |
| =         | 30 sqm                      |
| Ac        | = 30 sqm.                   |
| Q         | = 1*Ac/3600 Litres/sec      |
|           | = 202*30/3600 Litres/sec    |
|           | = 1.7 Litres/sec            |

## Roof C+E

## Box Gutter Depth

From AS/NZS 3500.3 Fig I1 (Interpolating where necessary)

|                                                |   |    |        |
|------------------------------------------------|---|----|--------|
| Using :- Gutter Slope                          | 1 | in | 200    |
| and Gutter Width                               | W | =  | 300 mm |
| from AS/NZS 3500.3 fig I1 Minimum Gutter Depth | d | =  | 84 mm  |

## Rain Water Head Calculations

|                                                                                  |   |    |    |
|----------------------------------------------------------------------------------|---|----|----|
| Selected down pipe size                                                          | = | 90 | mm |
| From AS/NZS 3500.3 fig I3, Rain water head Depth (Interpolating where necessary) | = | 17 | mm |

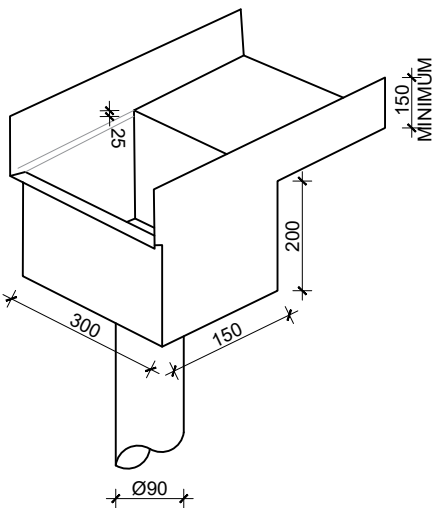
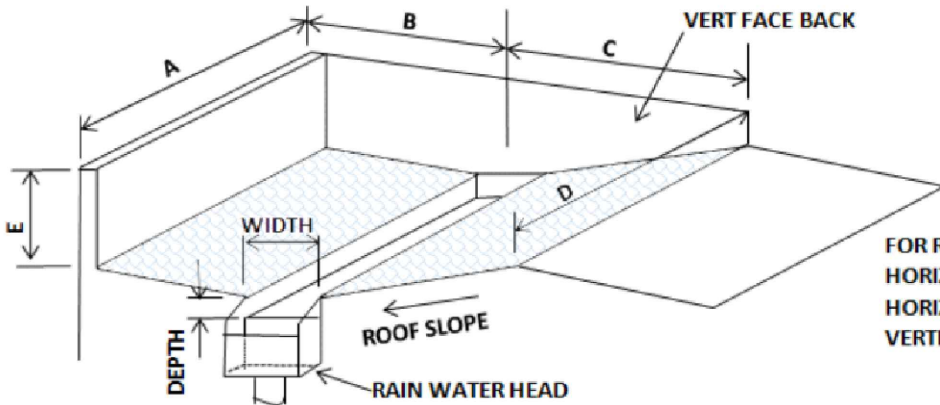
Rain water Head Depth increased to comply with Note 1 Fig I2 (RWH depth to be &gt;= 1.25\*DP dia.)

|                                                                  |   |         |    |
|------------------------------------------------------------------|---|---------|----|
| From AS/NZS 3500.3 fig I3, Rain water head Length at slope 1:200 | = | 1.25*90 | mm |
|                                                                  | = | 113     | mm |
| From AS/NZS 3500.3 fig I3, Rain water head Length at slope 1:200 | = | 55      | mm |

|                                                       |   |     |    |
|-------------------------------------------------------|---|-----|----|
| Rain water Head Length increased to fit the DP 90 +20 | = | 110 | mm |
| Rain water Head Width                                 | = | 300 | mm |

## Summary

|                          |   |     |    |
|--------------------------|---|-----|----|
| Down Pipe Size           | = | 90  | mm |
| Box Gutter Width         | = | 300 | mm |
| Box gutter minimum Depth | = | 84  | mm |
| Rain Water Head Depth    | = | 113 | mm |
| Rain Water Head Length   | = | 110 | mm |
| Rain Water Head Width    | = | 300 | mm |

RECOMMENDED RAINWATER HEAD DETAIL  
not to scaleFOR RECTANGULAR AREAS:-  
HORIZONTAL AREA LHS = A x B  
HORIZONTAL AREA RHS = C x D  
VERTICAL FACE LHS = A x E

|     |                                   |    |            |
|-----|-----------------------------------|----|------------|
| C   | ISSUED FOR C.C (INCLUSION OF OSD) | CS | 28/07/2023 |
| B   | ISSUED FOR C.C                    | CS | 19/06/2023 |
| A   | ISSUED FOR D.A                    | CS | 01/08/2022 |
| Rev | Description                       | By | Date       |

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Client:



Project:

Proposed Development at  
30 ROSE STREET , SEFTON , NSW

Title:

4 BOX GUTTER CALC

Designed By:

Chij Shrestha  
MIEAust, CPEng, NER

Date: 28/07/2023

Issue: C

Reviewed By:

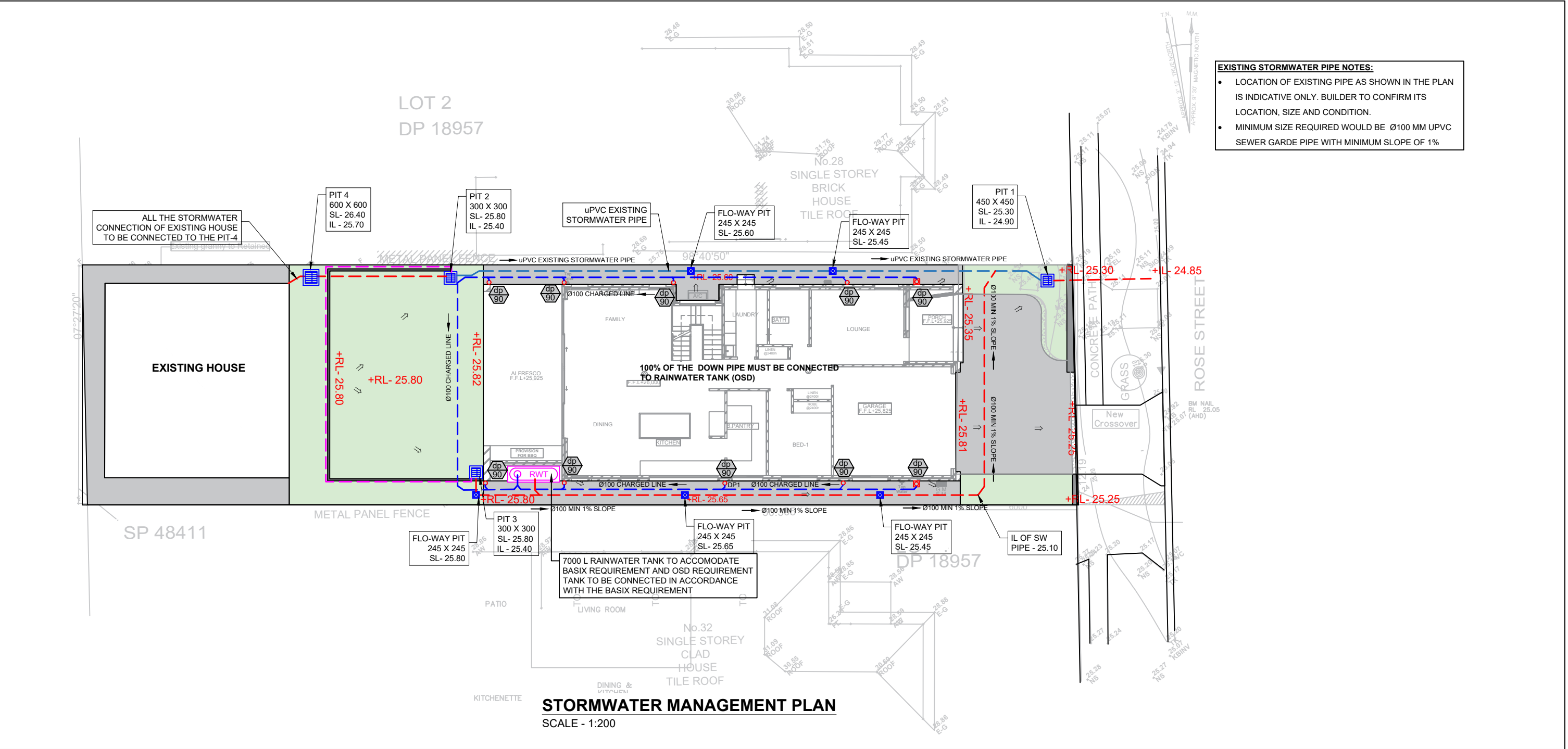
C.L.A

Scale:

as shown (A3)

Job No: SW166\_2208 C

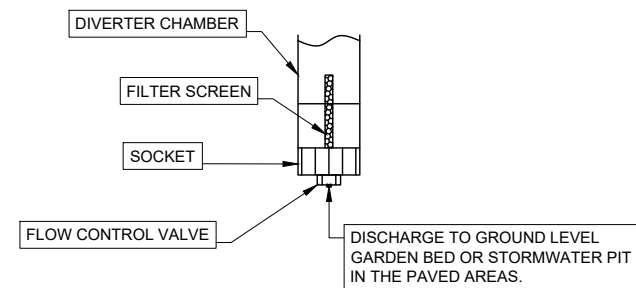
Sheet No: 4 OF 9



- EXISTING STORMWATER PIPE NOTES:**
- LOCATION OF EXISTING PIPE AS SHOWN IN THE PLAN IS INDICATIVE ONLY. BUILDER TO CONFIRM ITS LOCATION, SIZE AND CONDITION.
  - MINIMUM SIZE REQUIRED WOULD BE Ø100 MM UPVC SEWER GARDE PIPE WITH MINIMUM SLOPE OF 1%

|                                                                                     |                               |                                                                                     |                           |                                                                                       |                                                  |                                                                                       |                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | DOWN PIPE<br>DIA OF DOWN PIPE |  | 245 X 245 FLOW-WAY PIT    |  | uPVC STORM WATER PIPE -100mm                     |  | CONCRETE AREA                                                                                                                                                                                                                                                                                      |
| SL                                                                                  | SURFACE LEVEL                 |  | 450 X 450 STORM WATER PIT |  | uPVC STORM WATER PIPE -150mm                     |  | STORMWATER DRAINAGE EASEMENT                                                                                                                                                                                                                                                                       |
| IL                                                                                  | INVERT LEVEL                  |  | 600 X 600 STORM WATER PIT |  | uPVC STORM WATER - 225mm                         |  | RAINWATER TANKS AS PER BASIX REQUIREMENTS. FURST FLUSH DEVICE MUST BE INSTALLED BEFORE THE INLET POINT. RAINWATER TANK TO BE CONNECTED TO AT LEAST ONE TOILET AND EXTERNAL TAPS. OVERFLOW FROM RAINWATER TANK TO BE CONNECTED TO STORMWATER PIPE DISCHARGING TO PIT-1 AT THE FRONT OF THE PROPERTY |
| dp                                                                                  | DOWNPipes                     |  | 900 X 900 STORM WATER PIT |  | uPVC STORM WATER PIPES - 375mm                   |  | Ø100 mm uPVC SEWER GRADE STORMWATER PIPES MINIMUM 1% SLOPE. ARROW REPRESENTS DIRECTION OF FLOW IN PIPE STORMWATER PIPE                                                                                                                                                                             |
|  | BOXGUTTER WITH RAINWATER HEAD |  | RETAINING WALL            |  | AG PIPES                                         |  | Ø100 mm uPVC SEWER GRADE STORMWATER PIPES CHARGED TO RAIN WATER TANK. ARROW REPRESENTS DIRECTION OF FLOW IN PIPE STORMWATER PIPE                                                                                                                                                                   |
| +RL- 22.52                                                                          | FINISH GROUND LEVEL           |  | GRATED DRAIN 150mm        |  | uPVC STORM WATER PIPES TO RAIN WATER TANK -100mm |                                                                                       |                                                                                                                                                                                                                                                                                                    |
|  | SURFACE FLOW DIRECTION        |  | GRASS AREA                |  | uPVC EXISTING STORM WATER PIPE                   |                                                                                       |                                                                                                                                                                                                                                                                                                    |

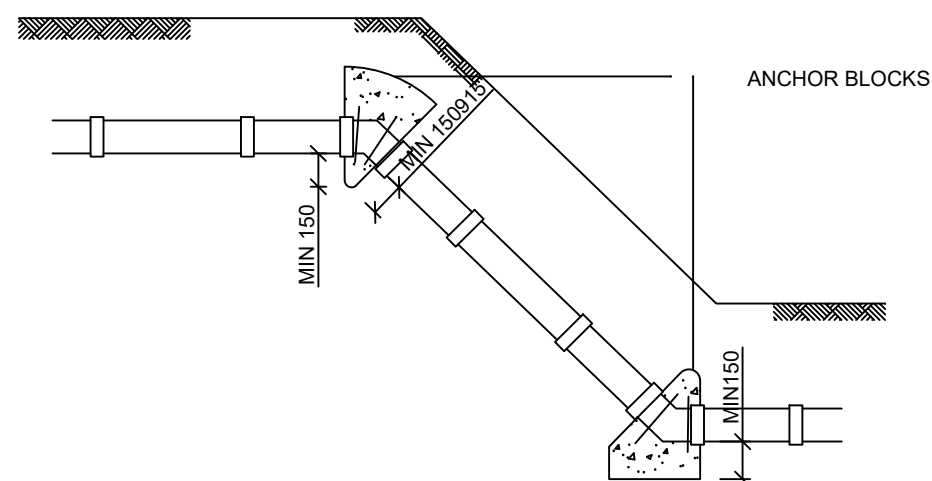
|     |             |                                                             |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |                                                                                                                                                                                     |                                                                                                  |                                    |  |                                |
|-----|-------------|-------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------|--|--------------------------------|
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|     |             | Designed By:<br><b>Chij Shrestha</b><br>MIEAust, CPEng, NER | Date:<br><b>28/07/2023</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |                                                                                                                                                                                     |                                                                                                  |                                    |  |                                |
|     |             | Reviewed By:<br><b>C.L.A</b>                                | Issue:<br><b>C</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |                                                                                                                                                                                     |                                                                                                  |                                    |  |                                |
|     |             | Job No:<br><b>SW166_2208 C</b>                              |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |                                                                                                                                                                                     |                                                                                                  |                                    |  |                                |
| Rev | Description | By                                                          | Date                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |                                                                                                                                                                                     |                                                                                                  |                                    |  | Scale:<br><b>as shown (A3)</b> |



**DETAIL AT A**  
not to scale

| Rainfall events | Pre Development flow | Post Development Flow |              |             |                                | OSD Volume |
|-----------------|----------------------|-----------------------|--------------|-------------|--------------------------------|------------|
|                 |                      | Without OSD           | With OSD     |             |                                |            |
|                 |                      |                       | Orifice flow | Bypass Flow | Total Flow<br>Post Development |            |
| % AEP           | L/s                  | L/s                   | L/s          | L/s         | L/s                            | m³         |
| 50% AEP         | 11                   | 12                    | 3            | 6           | 9                              | 1.85       |
| 20% AEP         | 16                   | 17                    | 4            | 9           | 13                             | 2.3        |
| 10% AEP         | 20                   | 21                    | 4            | 11          | 16                             | 2.73       |
| 5% AEP          | 24                   | 25                    | 5            | 13          | 18                             | 3.2        |
| 2% AEP          | 28                   | 28                    | 5            | 15          | 20                             | 3.75       |
| 1% AEP          | 30                   | 31                    | 5            | 16          | 21                             | 4.22       |

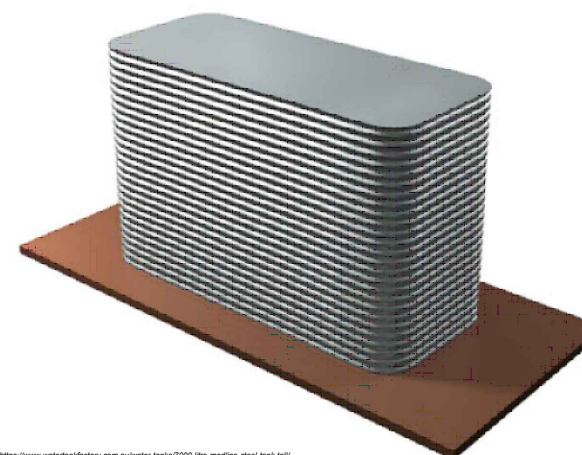
## SUMMARY OF DRAINS MODELLING RESULT



**TYPICAL ANCHOR BLOCK DETAIL FOR SLOPE  
GREATER THAN 1:5**  
not to scale

**NOTE:** WHERE THE GRADIENT OF A SITE OF STORMWATER DRAIN EXCEEDS 1:5, ANCHOR BLOCKS SHALL BE INSTALLED:

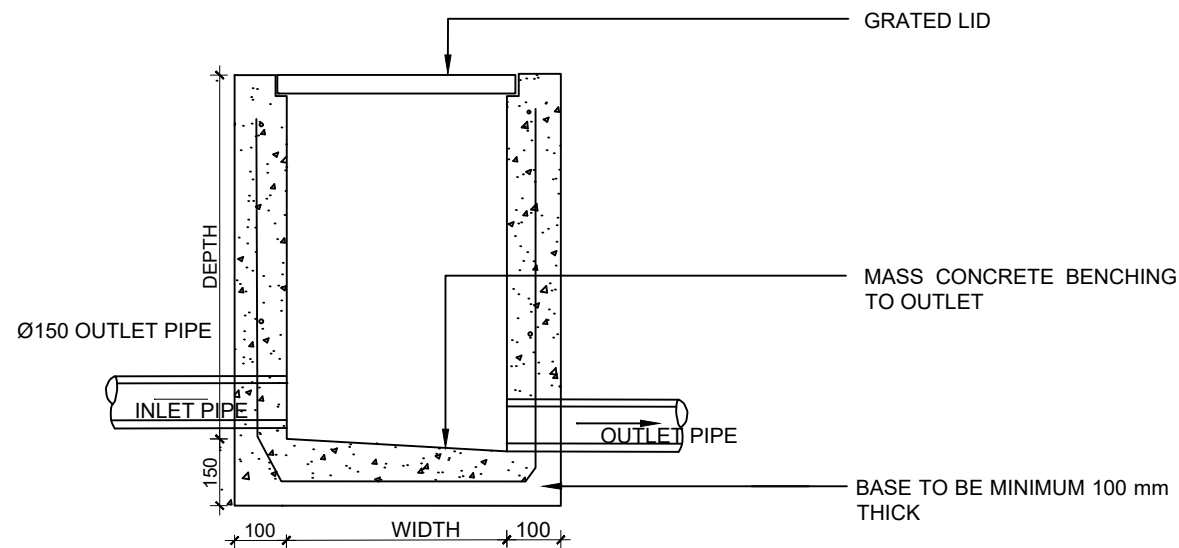
- AT THE BEND OR JUNCTION AT THE TOP AND BOTTOM OF THE STORMWATER DRAIN
- AT INTERVAL NOT EXCEEDING 3.0 m
- THICKNESS OF ANCHOR BLOCKS SHOULD NOT BE LESS THAN 150 mm
- TWO STEEL REINFORCEMENT BAR BARS NOT LESS THAN 10 mm DIA BENT TO A RADIUS ABOUT 200 mm SHALL BE PROVIDED TO ANCHOT BLOCKS
- ANCHOR BLOCKS SHOULD NOT COVER ANY FLEXIBLE JOINTS



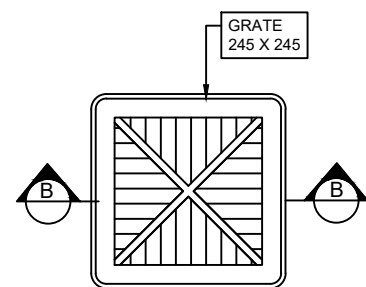
(Nominal Dimensions: 1150mm Width x 3200mm Length x 2020mm Height)

**SPECIFICATION OF RAINWATER TANK USED IN THIS DESIGN**  
(equivalent size can be used after approval from the design engineer)

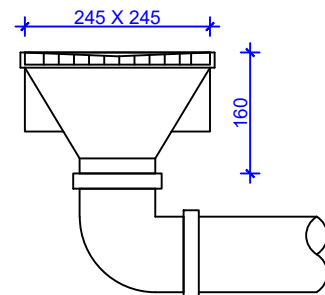
[illegible]



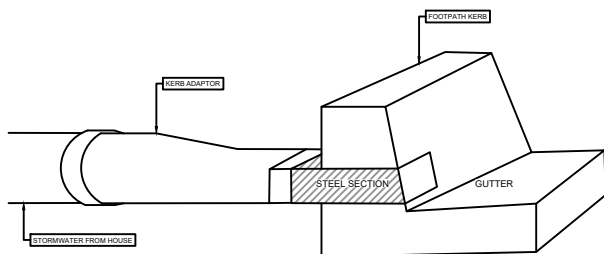
**TYPICAL PIT DETAIL**  
not to scale



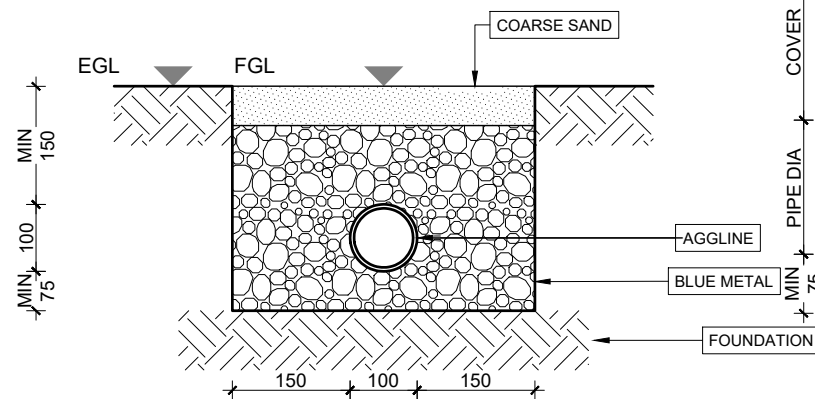
**TYPICAL DEEP FLO-WAY (DFW) PIT PLAN**  
not to scale



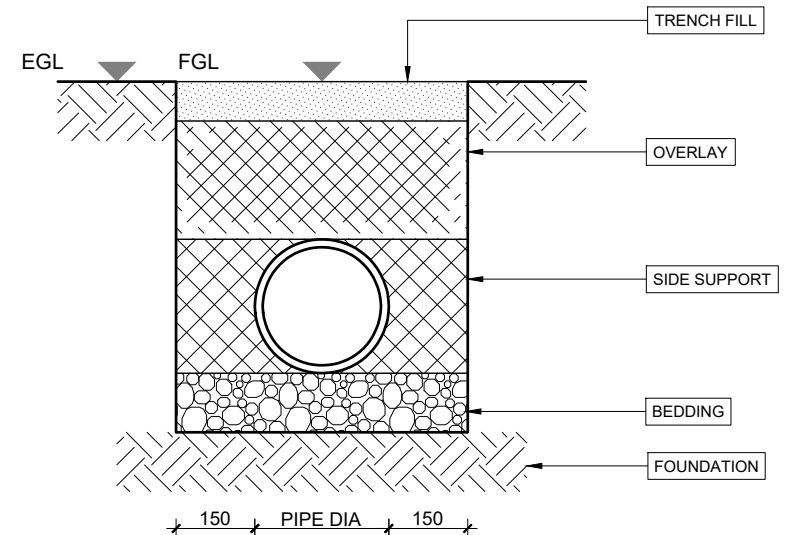
**TYPICAL DEEP FLO-WAY (DFW) PIT SECTION (B-B)**  
not to scale



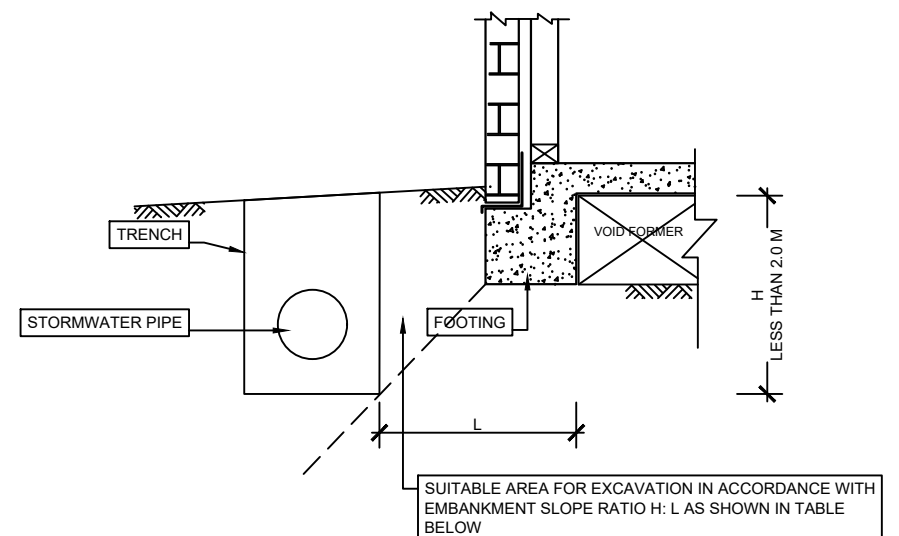
**STREET KERB CONFIGURATION DETAIL (IF REQD)**  
not to scale



**AGGLINE TRENCH DETAIL**  
scale 1:10

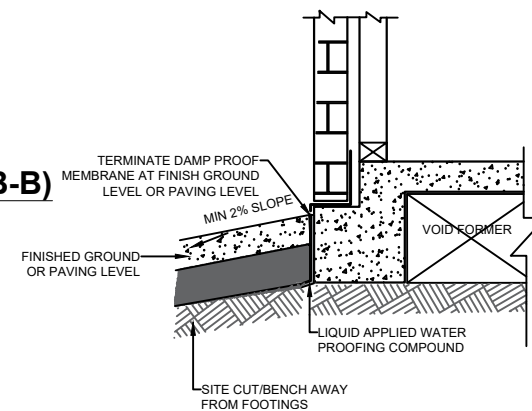


**STANDARD PIPE TRENCH DETAIL**  
scale 1:10



| UN-RETAINED EMBANKMENT SLOPE RATIOS                     |                                                                                                     |                                                                                            |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Soil class<br>(see Part 3.2.4 for material description) | Site cut (excavation)<br>(maximum embankment slope ratio, angle of site cut H:L <sup>Note 1</sup> ) | Compacted fill<br>(maximum embankment slope ratio, angle of batter H:L <sup>Note 1</sup> ) |
| Stable rock (Class A)                                   | 8:1                                                                                                 | 2:3                                                                                        |
| Sand (Class A)                                          | 1:2                                                                                                 | 1:2                                                                                        |
| Firm clay (Class M-E)                                   | 1:1                                                                                                 | 1:2                                                                                        |
| Soft clay (Class M-E)                                   | 2:3                                                                                                 | Not suitable                                                                               |

**EXCAVATION FOR DRAINS  
ADJACENT TO FOOTINGS**  
NOT TO SCALE



**TYPICAL DETAIL OF FINISHED GROUND  
AROUND THE BUILDING FOOTPRINT**  
NOT TO SCALE

| Rev | Description                       | By | Date       |
|-----|-----------------------------------|----|------------|
| C   | ISSUED FOR C.C (INCLUSION OF OSD) | CS | 28/07/2023 |
| B   | ISSUED FOR C.C                    | CS | 19/06/2023 |
| A   | ISSUED FOR D.A                    | CS | 01/08/2022 |

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Project:

Proposed Development at  
30 ROSE STREET, SEFTON, NSW

Title:

7 PIT AND KERB CONNECTION DETAIL

Designed By:

Chij Shrestha  
MIEAust, CPEng, NER

Date: 28/07/2023

Issue: C

Reviewed By:

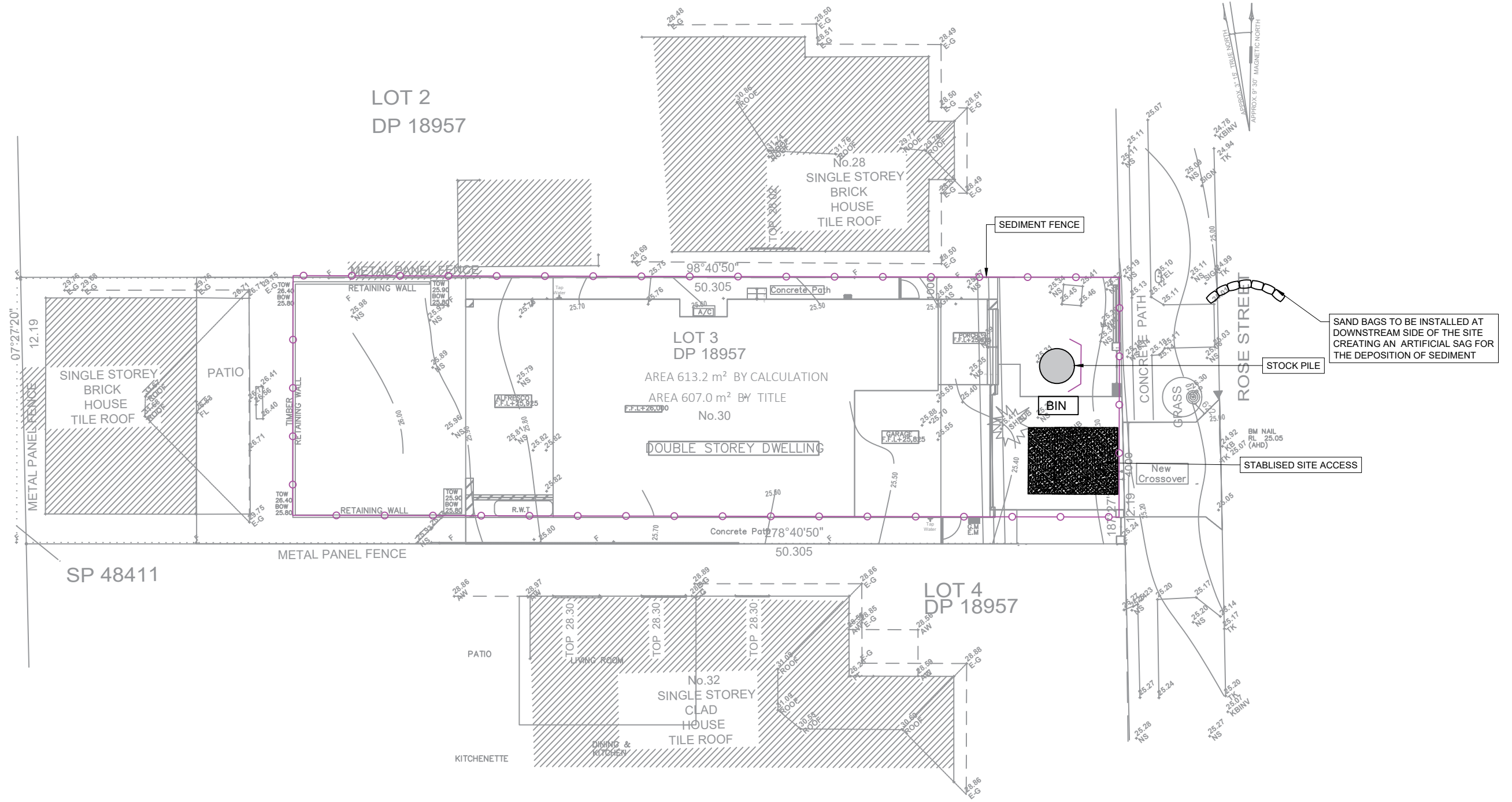
C.L.A

Job No: SW166\_2208 C

Scale:

as shown (A3)

Sheet No: 7 OF 9



**EROSION AND SEDIMENT CONTROL PLAN**  
scale 1:200

|     |                                   |    |            |
|-----|-----------------------------------|----|------------|
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Project:

Proposed Development at  
30 ROSE STREET, SEFTON, NSW

Title:

8 EROSION & SEDIMENT CONTROL PLAN

Designed By:

Chij Shrestha  
MIEAust, CPEng, NER

Reviewed By:

C.L.A

Scale:

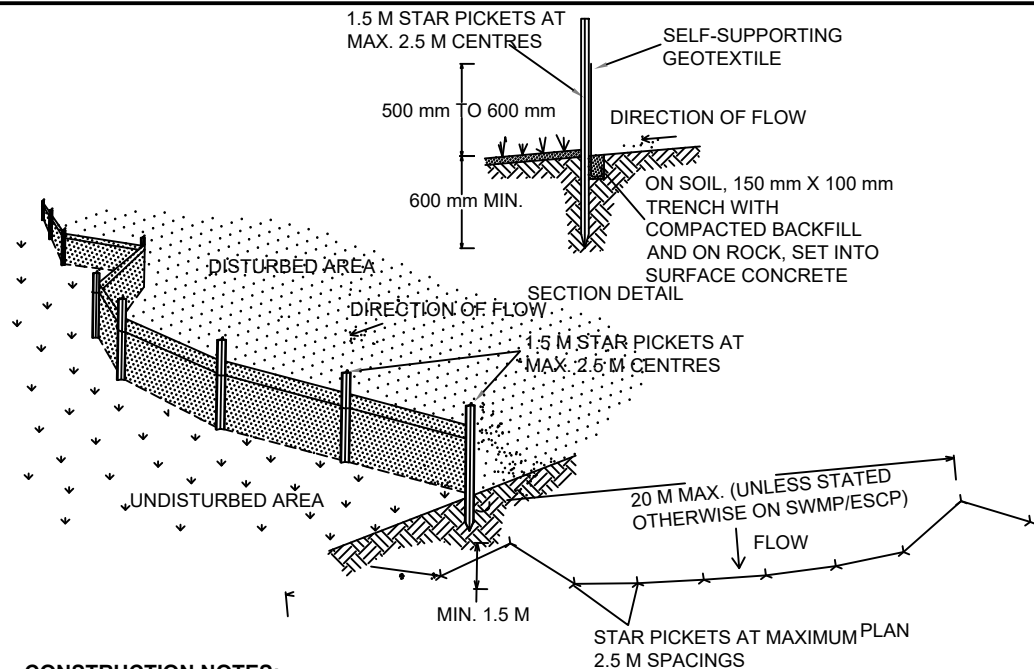
as shown (A3)

Date: 28/07/2023

Issue: C

Job No: SW166\_2208 C

Sheet No: 8 OF 9

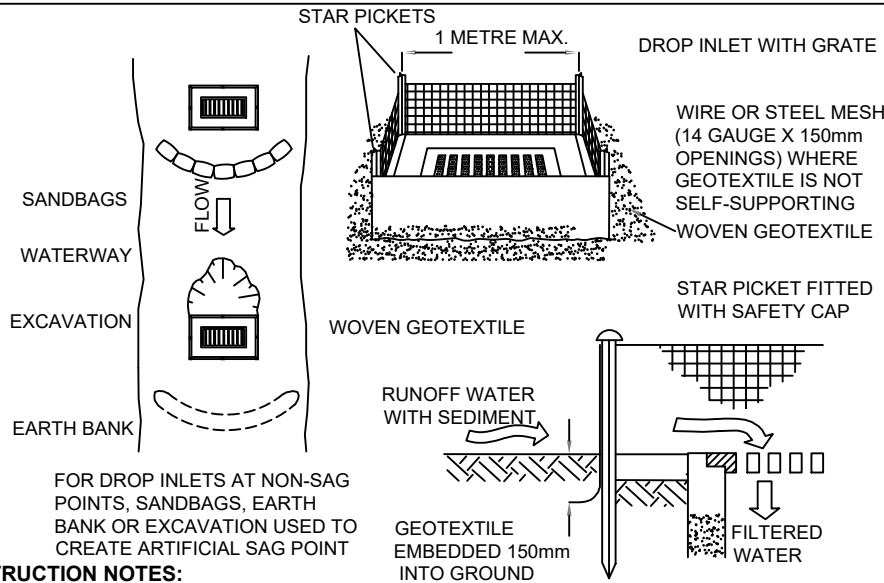


#### CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORMEVENT USUALLY THE 10 YEAR EVENT.
2. CUT A 150 MM DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS
4. FIX SELF SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY
5. JOIN SECTIONS OF FABRIC AT THE SUPPORT POST WITH A 150 MM OVERLAP
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

### SEDIMENT FENCE

SD 6-8

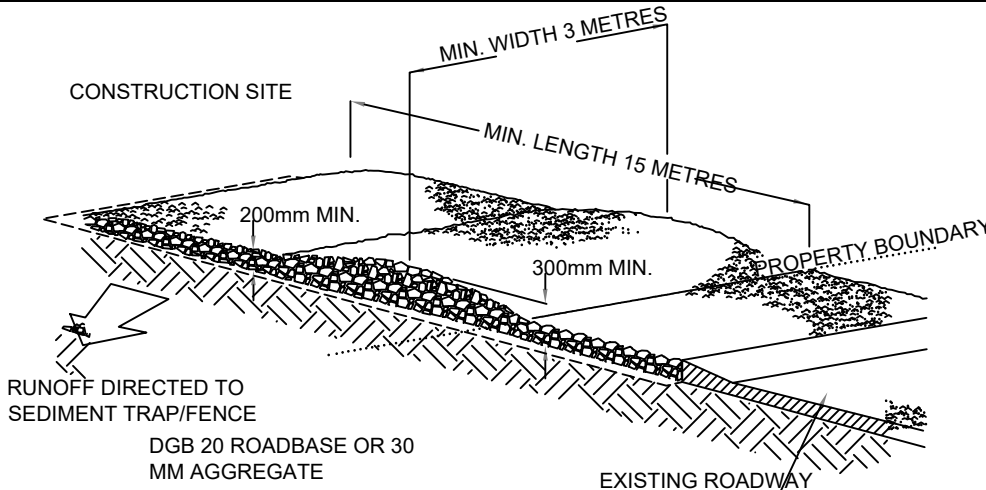


#### CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES
2. FOLLOW THE INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METER CENTRES
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATER TO BYPASS IT.

### GEOTEXTILE INLET FILTER

SD 6-12



GEOTEXTILE FABRIC DESIGNED TO PREVENT INTERMIXING OF SUBGRADE AND BASE MATERIALS AND TO MAINTAIN GOOD PROPERTIES OF THE SUB-BASE LAYERS. GEOFABRIC MAY BE A WOVEN OR NEEDLE-PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4-90) OF 2500 N

#### CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE
2. COVER THE AREA WITH NEEDLE PUNCHED GEOTEXTILE
3. CONSTRUCT A 200 MM THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30 MM AGGREGATE
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE

### STABILISED SITE ACCESS

SD 6-14

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9 EROSION & SEDIMENT CONTROL DETAIL

Designed By:

Chij Shrestha  
MIEAust, CPEng, NER

Reviewed By:

C.L.A

Scale:

as shown (A3)

Date:

28/07/2023

Issue:

C

Job No:

SW166\_2208 C

Sheet No:

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