11 September 2020 181478 CAAA

Carmichael Tompkins Property Group
Level 13, 333 George Street
Sydney NSW 2000

Attention: Jessica Zhang

MERIDEN CENTRE FOR MUSIC AND DRAMA

Civil Engineering Statement for the SSDA Modification

Dear Jessica,

Under application number SSD 9692, TTW prepared a civil engineering report, dated 26th of April 2019 addressing the relevant Secretary's Environmental Assessment Requirements (SEARs). The key purpose of the report was to demonstrate that the proposed Centre for Music and Design at Meriden School, Strathfield was able to meet the stormwater management, water quality and sediment control conditions and requirements specified by Strathfield Council.

To summarise the findings our previous report:

- The proposed development involved the demolition of the existing Music building and Staff building to allow for the construction of a new four storey music and drama building and additional landscaping.
- Replacing the existing staff building with landscaping ensured there was no significant increase to the overall impervious surface area of the site compared to the pre-development conditions. It was demonstrated that there was no increase to the permissible site discharge (PSD) and as such on-site detention (OSD) was not required.
- Water quality treatment devices were not required in accordance with Part N of the Strathfield Council DCP (2005)
- A sediment and erosion control plan was prepared to minimise and manage the generation of sediment, dust and runoff during construction works.

As of May 2020 it is proposed to retain the existing staff building and as such the client will be lodging a Section 4.55 application to modify the initial development approval.

The intent of this civil engineering statement is to:

- Determine the required modifications to stormwater management, water quality controls and sediment and erosion controls to suit the revised plan
- Demonstrate that the modifications are in accordance with Strathfield Council's requirements.

Figure 1 - Proposed Development Site Plan, provided by AJ+C Architects

Pre and Post Development Surface Areas

A comparison of the pre and post development surfaces areas shows the modified plan has a significant reduction in pervious landscaped area which will result in a higher site discharge rate if left unrestricted. In order to reduce the flow rate discharging from the proposed development site, an on-site detention tank (OSD) with an outlet control structure will be required in accordance with Section 4.2 of the Strathfield Stormwater Management Code (1994).

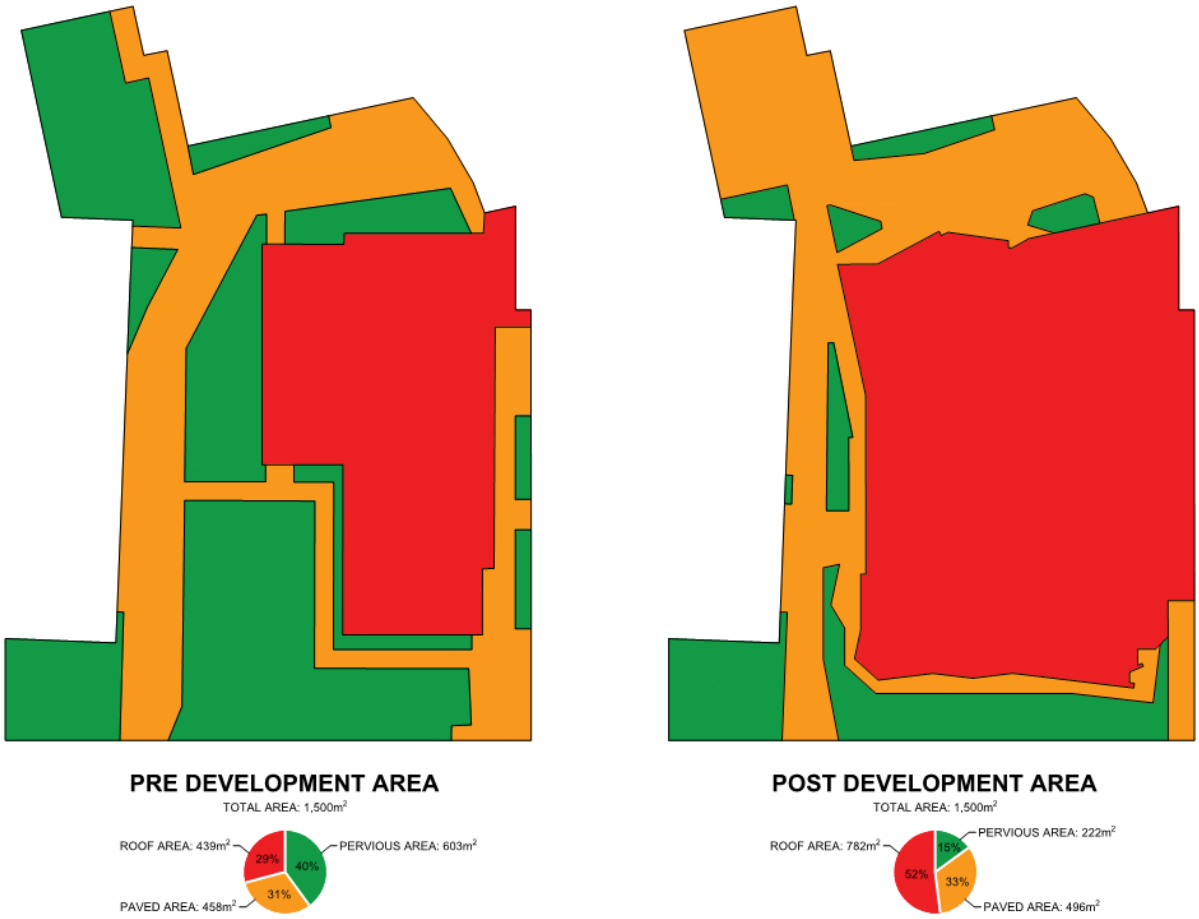


Figure 2 - Comparison of Pre and Post Development surface areas

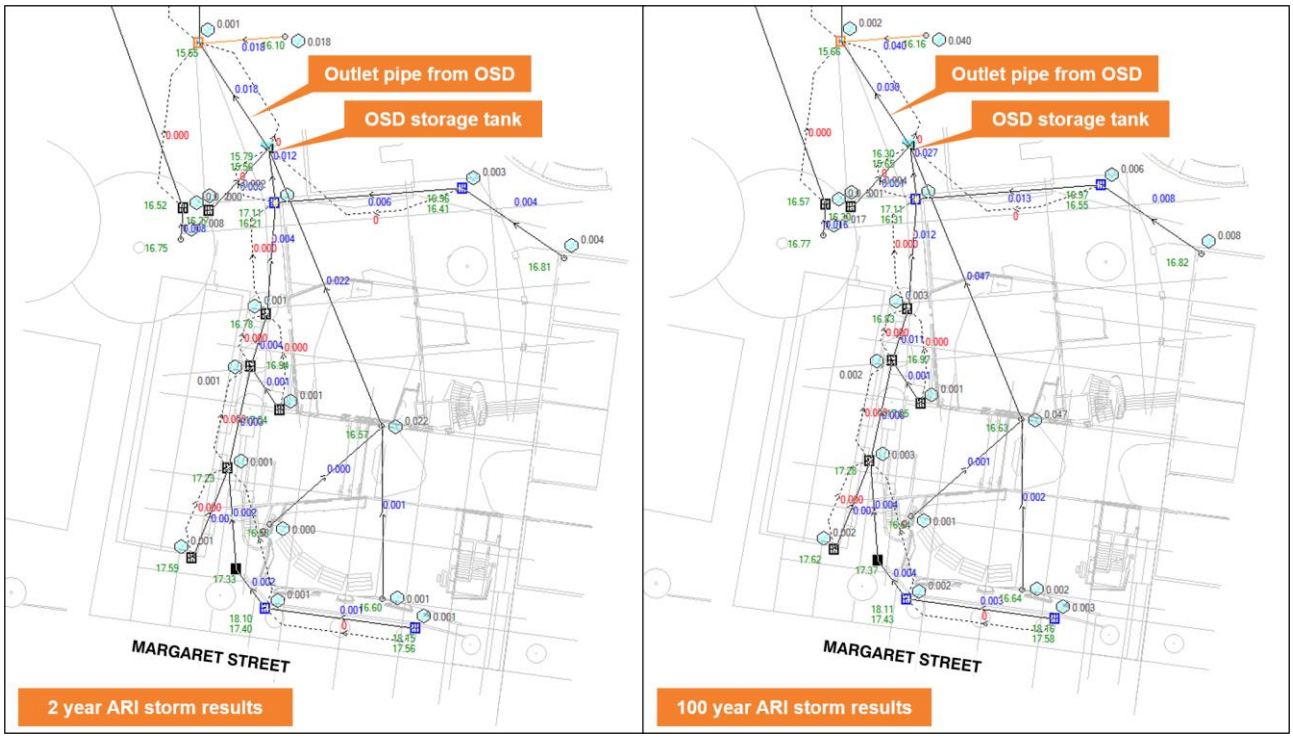
On-site detention requirements

Supplement 2 of the Strathfield Stormwater Code requires all roof and paved surfaces to pass through the OSD system. The OSD and outlet control structure must be designed for the 2, 10 and 100 year Average Rainfall Interval storms. Below is a table of required storage volumes and permissible storage discharge rates based on a site area of 1,500m^2 and the Group 1 requirements in the Strathfield Stormwater Code.

ARI storm	Minimum Storage Volume (m^3)		Permitted Discharge from Storage (L/s)	
	per 1000m^2	Required	per 1000m^2	Required
2	6	9.0	13	19.5
10	9	13.5	17	25.5
100	15	22.5	23	34.5

DRAINS Modelling

Roof and surface run-off have been simulated using DRAINS modelling software. The below figure shows the results for the minor 2 ARI storm and major 100 year ARI storm.



In order to reduce the outlet flow rate from the OSD storage, a steel plate with a 131mm diameter orifice is to be placed over the outlet from the OSD. The below table summarises the results from the DRAINS modelling.

ARI storm	Tailwater Level in Tank (m, AHD)	Storage Volume (m^3)		Discharge from Storage (L/s)	
		Design Peak	Minimum Required	Design Peak	Maximum Permitted
2	15.79	9.0	9.0	18.0	19.5
10	15.97	17.0	13.5	24.0	25.5
100	16.30	30.0	22.5	30.0	34.5

Refer to Appendix A for proposed stormwater management plan and schematic OSD details.

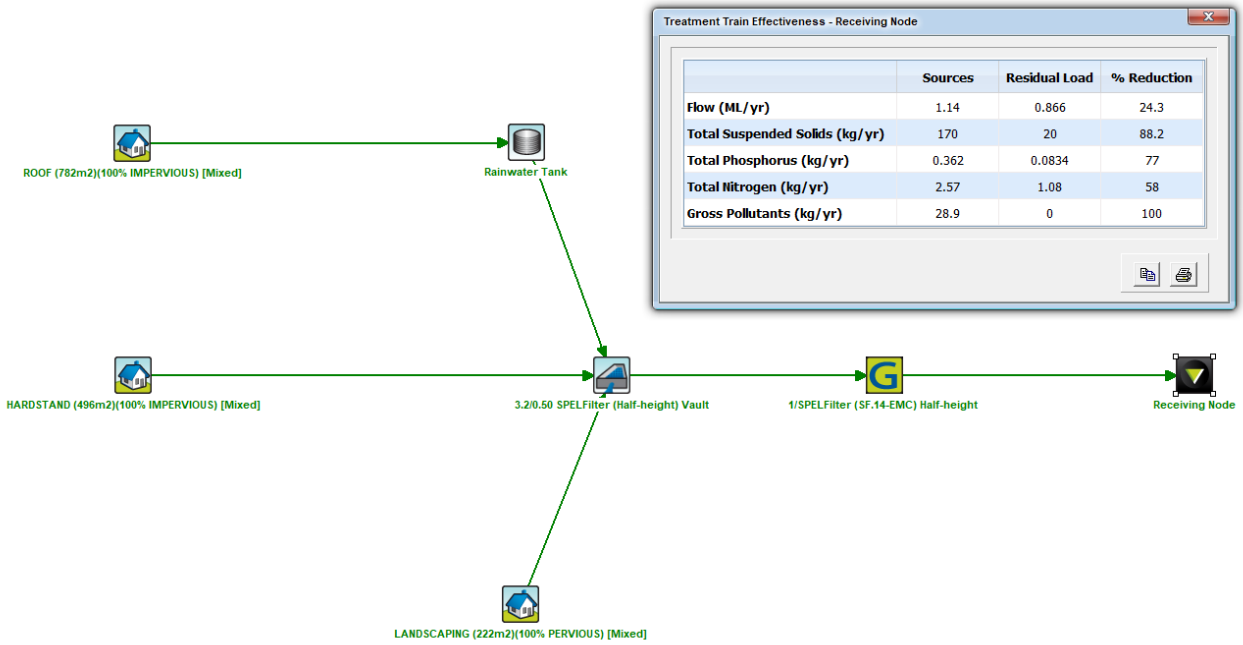
Water quality

Part N of Strathfield Council's Consolidated Development Control Plan 2005 states that water quality is required for "All alterations and additions to existing commercial, retail, mixed use and industrial development with a total site area greater than 2,000m^2, which results in increase in building footprint or gross floor area of greater than 50%. WSUD is to be applied to the whole site". Since the modification to the proposed development is not increasing the site's building footprint by greater than 50%, this development is exempt from having to meet Council's water quality targets.

Despite no council requirement, the School has proposed to implement water quality measures to meet GBCA Green Star building requirements. These proposed measures include stormwater harvesting, re-use for landscape irrigation and to meet Category B pollutant reduction targets. The pollutant reduction targets are shown below:

Pollutant	Reduction Target (% of the typical urban annual load) GBCA - Category B
Total Suspended Solids (TSS)	80%
Total Phosphorus (TP)	60%
Total Nitrogen (TN)	45%
Gross Pollutants	90%
Total Petroleum Hydrocarbons	N/A – No vehicle access
Free Oils	N/A – No vehicle access

A water quality model has been prepared using MUSIC modelling software. To meet the reduction targets it is recommended that a treatment filter such as the SPEL SpelFilter (SF.14-EMC) be installed in the OSD tank. The below image show the results from the MUSIC model.



Water quality results have been summarised in the below table.

Pollutant	Pollutant reduction with recommended water quality devices (%)	Minimum Required
Total Suspended Solids (TSS)	88%	80%
Total Phosphorus (TP)	77%	60%
Total Nitrogen (TN)	58%	45%
Gross Pollutants	100%	90%

Sediment and Erosion Control

The Sediment and Erosion Control Plan has been modified to suit the proposed layout of the development site and extent of works. Refer to the Sediment and Erosion Control Plan in Appendix A.

Conclusion

To summarise the findings of this civil engineering statement, stormwater for the development can be managed in accordance with Council requirements. The proposed development poses no adverse effects to existing Council stormwater management and no adverse flooding impacts to downstream developments. The implementation of water quality devices that meet reduction targets specified by GBCA will reduce the amount of common pollutants entering Council's receiving stormwater system.

Should you require anything further please contact the undersigned.

Yours faithfully,
TAYLOR THOMSON WHITTING (NSW) PTY LTD
in its capacity as trustee for the
TAYLOR THOMSON WHITTING NSW TRUST

DUNCAN MARSHALL
Civil Engineer

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Civil Engieering Drawings

MERIDEN SENIOR SCHOOL, CENTRE FOR MUSIC AND DRAMA

10-12 REDMYRE ROAD, STRATHFIELD

CIVIL WORKS

GENERAL NOTES

1. Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the Engineer .
2. Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
3. Make smooth connection with all existing works.
4. Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
5. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority; the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site.
6. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority is to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable.
7. For all temporary batters refer to geotechnical recommendations.

REFERENCE DRAWINGS

1. These drawings have been based from, and to be read in conjunction with the following Consultants drawings. Any conflict to the drawings must be notified immediately to the Engineer.

Consultant	Dwg Title	Dwg No	Rev	Date
AJ+C (ARCH)	BASEMENT 2 (B2) GA PLAN	A2001	2	27.07.20
	BASEMENT 1 (B1) GA PLAN	A2002	2	27.07.20
	GROUND (G) GA PLAN	A2101	2	27.07.20
LTS LOCKLEY (SURVEY)	PLAN OF DETAIL AND LEVELS	35598DT	1	17.07.20
OCULUS (LANDSCAPE)	CONCEPT DESIGN INDICATIVE GROUND PLAN (CAD)	S18-030	–	29.07.20
DOUGLAS PARTNERS (GEOTECH)	GEOTECHNICAL INVESTIGATION	86568.00	0	16.11.18

SURVEY AND SERVICES INFORMATION

SURVEY

Origin of levels : SSM118117, RL18.652
Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM
Coordinate system : MGA
Survey prepared by : LTS SURVEYORS
Setout Points : CONTACT THE SURVEYOR

Taylor Thomson Whitting does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.

UNDERGROUND SERVICES - WARNING

The locations of underground services shown on Taylor Thomson Whittings drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.

The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.

Taylor Thomson Whitting does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.

The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to; State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way.
Taylor Thomson Whitting plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

SAFETY IN DESIGN

Contractor to refer to Appendix B of the Civil Specification for the Civil Risk and Solutions Register.

EXISTING SERVICES

Contractor to be aware existing services are located within the site. Location of all services to be verified by the Contractor prior to commencing works. Contractor to confirm with relevant authority regarding measures to be taken to ensure services are protected or procedures are in place to demolish and/or relocate.

EXISTING STRUCTURES

Contractor to be aware existing structures may exist within the site. To prevent damage to existing structure(s) and/or personnel, site works to be carried out as far as practicably possible from existing structure(s).

EXISTING TREES

Contractor to be aware existing trees exist within the site which need to be protected. To prevent damage to trees and/or personnel, site works to be carried out as far as practicably possible from existing trees. Advice needs to be sought from Arborist and/or Landscape Architect on measures required to protect trees.

GROUNDWATER

Contractor to be aware ground water levels are close to existing surface level. Temporary de-watering may be required during construction works.

EXCAVATIONS

Deep excavations due to stormwater drainage works is required. Contractor to ensure safe working procedures are in place for works. All excavations to be fenced off and batters adequately supported to approval of Geotechnical Engineer.

GROUND CONDITIONS

Contractor to be aware of the site geotechnical conditions. Refer to geotechnical report by Douglas Partners for details.

HAZARDOUS MATERIALS

Existing asbestos products & contaminated material may be present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practices as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Refer to geotechnical/environmental report by Douglas Partners for details.

CONFINED SPACES

Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods and use appropriate PPE when entering confined spaces.

MANUAL HANDLING

Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works.

WATER POLLUTION

Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment.

SITE ACCESS/EGRESS

Contractor to be aware site works occur in close proximity to footpaths and roadways. Contractor to erect appropriate barriers and signage to protect site personnel and public.

VEHICLE MOVEMENT

Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshall to supervise vehicle movements where necessary.

BOUNDARY AND EASEMENT NOTE

The property boundary and easement locations shown on Taylor Thomson Whitting drawing's have been based from information received from : **No boundary information received. Refer architect for boundary information and locations**

Taylor Thomson Whitting makes no guarantees that the boundary or easement information shown is correct.
Taylor Thomson Whitting will accept no liabilities for boundary inaccuracies. The contractor/builder is advised to check/confirm all boundaries in relation to all proposed work prior to the commencement of construction. Boundary inaccuracies found are to be reported to the superintendent prior to construction starting.

STORMWATER DRAINAGE NOTES

1 Stormwater Design Criteria :
(A) Average exceedance probability –
1% AEP for roof drainage to first external pit
5% AEP for paved and landscaped areas
(B) Rainfall intensities –
Time of concentration: 5 minutes
1% AEP = 18.0 mm
5% AEP = 11.9 mm
(C) Rainfall losses –
Impervious areas: IL = 1.5 mm , CL = 0 mm/hr
Pervious areas: IL =23.1 mm , CL = 1.6 mm/hr

2. Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints U.N.O.
3. Pipes up to 300 dia may be sewer grade uPVC with solvent welded joints, subject to approval by the engineer
4. Equivalent strength VCP or FRP pipes may be used subject to approval.
5. Precast pits may be used external to the building subject to approval by Engineer
6. Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia.
7. Where subsoil drains pass under floor slabs and vehicular pavements, unslotted uPVC sewer grade pipe is to be used.
8. Grates and covers shall conform with AS 3996-2006, and AS 1428.1 for access requirements.
9. Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.
10. Care is to be taken with invert levels of stormwater lines. Grades shown are not to be reduced without approval.
11. All stormwater pipes to be 150 dia at 1.0% min fall U.N.O.
12. Subsoil drains to be slotted flexible uPVC U.N.O.
13. Adopt invert levels for pipe installation (grades shown are only nominal).

RETAINING WALLS

1. Drainage shall be provided as shown on the drainage drawings.
2. Backfilling shall be carried out after grout or concrete has reached a minimum strength of 0.85 f'c. Backfilling shall be approved granular material compacted in layers not exceeding 200mm to 95% Standard compaction unless noted otherwise.
3. Provide waterproofing to back of walls as specified or noted.
4. Where retaining walls rely on connecting structural elements for stability, do not backfill against the wall unless it is adequately propped or the elements have been constructed and have sufficient strength to withstand the loads.
5. For all temporary batters obtain geotechnical engineers recommendations.

SITEWORKS NOTES

1. All basecourse material to comply with RMS specification No 3051 and compacted to minimum 98% modified standard dry density in accordance with AS 1289 5.2.1.
2. All trench backfill material shall be compacted to the same density as the adjacent material.
3. All service trenches under vehicular pavements shall be backfilled with an approved select material and compacted to a minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1

DBYD SERVICES NOTE

"Public Service Utility information shown on plan has been complied from information received from Dial Before You Dig inquiry, reference Number 14788291, which was obtained on 21/08/2018. Unless specifically shown otherwise, this location and depth of services shown on this plan have not been verified.

The location of services shown on this drawing have been plotted as accurately as possible from diagrams provided by service authorities and should be confirmed by site inspection."

CONCRETE FINISHING NOTES

1. All exposed concrete pavements are to be broomed finished.
2. All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool.
3. Concrete pavements with grades greater than 10 % shall be heavily broomed finished.
4. Carborundum to be added to all stair treads and ramped crossings U.N.O.

SURVEY LEGEND

Surface level
Contour
Kerb line
Batter
Retaining wall
Stormwater drainage line
Telecommunications line
Gas line
Water main
Sewer line
Electrical line
Easement
Fence
Tree to be removed/be retained
Boundary
Sign
Hydrant
Manhole
Gas
Stop Valve
Water
Telecomunications
Trap
Gully
Grate
Sewer Manhole
Electricity
Electric Light Pole
Traffic Light
Traffic Light Lid
Traffic Light Box
Telephone Box
Parking Meter
Permanent Mark
Bench Mark
Borehole
Test Pit

EXISTING SERVICES LEGEND

Existing sewer
Existing water
Existing underground electrical
Existing aerial electrical
Existing communications
Existing gas
Existing stormwater

MASONRY NOTES

1. Temporary bracing shall be provided by the contractor to keep the masonry stable at all times.
2. Masonry to be in accordance with AS 3700
3. Masonry units shall comply with AS/NZS 4455 and as follows:

Type of masonry unit	Characteristic unconfined compressive strength (fuc)	Characteristic lateral modulus of rupture (fut)
Clay & Calcium silicate	15 MPa	0.8 MPa
Concrete (used in non-loadbearing internal walls)	4.5 MPa (hollow units) 3.0 MPa (solid or cored units)	0.8 MPa
Concrete (used in unreinforced loadbearing walls, reinforced masonry and non-loadbearing external walls)	15 MPa (hollow units) 10 MPa (solid or cored units)	0.8 MPa

4. Mortar shall consist of the following:
M3 for general applications
1 part Type GP cement: 5 parts sand plus water thickener
M4 for elements in interior environments subject to saline wetting and drying; below a damp-proof course or in contact with ground in aggressive soils; in severe marine environments; in saline or contaminated water including tidal splash zones; and within 1km of an industry producing chemical pollutants.
1 part Type GP cement: 4 parts sand plus water thickener
5. Provide vertical control joints in masonry over permanent floor joints and as per the architectural drawings.
6. Masonry walls shown on the structural plans are load-bearing UNO. Non-loadbearing walls shall be separated from the concrete structure above with 20mm compressible filler. Masonry walls supporting slabs shall have a layer of mortar troweled smooth on top. Provide M.E.T. slipjoint to separate floor slabs and masonry. Provide Hercules HERCUSLIP COMPOSITE to separate roof slabs and masonry.
7. Other than what is allowed in the specification no chasing or rebates may be made in masonry walls without written approval.
8. The contractor shall provide records that demonstrate all masonry bed joint reinforcement, masonry ties and masonry wall stiffeners have been installed in accordance with the drawings and specification.
9. All load bearing concrete masonry walls shall have all cores filled with grout UNO. Core filling grout shall be thoroughly compacted. Grout to be in accordance with AS3700 and as follows:

Location	f'cg MPa	Specified Slump	Maximum Agg. Size
Grout	20	230	10

10. All core filled blockwalls shall be constructed with "Double U" blocks
11. In core filled blockwalls cleanout openings shall be provided at the bottom of each core and shall be cleaned of mortar protrusions before grouting.
12. All core filled block walls shall have all cores filled with grout UNO. Core filling grout to be in accordance with note 9.
13. Cover to reinforcement to be 50mm to face of block UNO.
14. Provide bed joint reinforcement as follows
M.E.T. galvanized masonry reo where M3 mortar is used (supplied by DUNSTONE MAZE in NSW)
Ancon CCL stainless steel where M4 mortar is used and locate as follows
– in 2 bed joints below and above head and sill flashings to openings
– in 2 bed joints below and above openings
– in third bed joint above bottom of wall
– in second bed joint below top of wall

REINFORCEMENT NOTES

1. Fix reinforcement as shown on drawings. The type and grade is indicated by a symbol as shown below. On the drawings this is followed by a numeral which indicates the size in millimetres of the reinforcement.

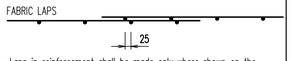
N. Hot rolled ribbed bar grade D500N
R. Plain round bar grade R250N
SL. Square mesh grade 500L
RL. Rectangular mesh grade 500L

2. Provide bar supports or spacers to give the following concrete cover to all reinforcement unless otherwise noted on drawings.

Footings – 50 top, 50 bottom, 50 sides.
Walls – 30 generally.
– 30 when cast in forms but later exposed to weather or ground.
– .. when cast directly in contact with ground.

3. Cover to reinforcement ends to be 50 mm u.n.o.
4. Provide N12–450 support bars to top reinforcement as required, Lap 500 U.N.O.
5. Maintain cover to all pipes, conduits, reglets, drip grooves etc
6. All cogs to be standard cogs unless noted otherwise.
7. Fabric end and side laps are to be placed strictly in accordance with the manufacturers requirements to achieve a full tensile lap. Fabric shall be laid so that there is a maximum of 3 layers at any location.

FABRIC LAPS

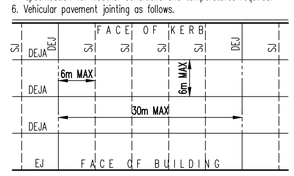


8. Laps in reinforcement shall be made only where shown on the drawings unless otherwise approved. Lap lengths as per table below.

JOINTING NOTES

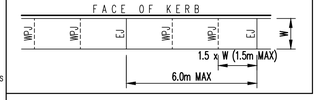
Vehicular Pavement Jointing

1. All vehicular pavements to be jointed as shown on drawings.
2. Keyed construction joints should generally be located at a maximum of 6m centres.
3. Sawn joints should generally be located at a maximum of 6m centres or 1.5 x the spacing of keyed joints, where key joint spacing is less than 4m, with dowelled expansion joints at maximum of 30m centres.
4. Provide 10mm wide full depth expansion joints between buildings and all concrete or unit pavers.
5. The timing of the saw cut is to be confirmed by the contractor on site. Site conditions will determine how many hours after the concrete pour before the saw cuts are commenced. Refer to the specification for weather conditions and temperatures required.
6. Vehicular pavement jointing as follows.



Pedestrian Footpath Jointing

1. Expansion joints are to be located where possible at tangent points of curves and elsewhere at max 6.0m centres.
2. Weakened plane joints are to be located at a max 1.5 x width of the pavement.
3. Where possible joints should be located to match kerbing and / or adjacent pavement joints.
4. All pedestrian footpath jointings as follows (uno).



PIT SCHEDULE

Note: Grate size does not necessarily reflect pit size, refer pit type details, shown on detail sheets – C061
Final internal pit dimensions are to comply with AS3500

Type	Description	Cover (Clear Opening)	Number
A	Surface inlet pit	600 x 600 Class B galvanised mild steel, heel–safe grate hinged to frame	8,9,11
		900 x 900 Class B galvanised mild steel, heel–safe grate hinged to frame	2,3
B	Junction pit	600 x 600 Class B cast iron cover with paver infill	4,10
		900 x 900 Class B cast iron cover with paver infill	6,7
C	Access covers	900 x 900 Class B galvanised mild steel, heel–safe grate hinged to frame	A1
		900 x 900 Class B cast iron cover with synthetic turf infill	A2,A3,A4, A6,A7
		900 x 900 Class B cast iron cover with paver infill	A5
D		Existing pit to be demolished and removed	X1,X2,X3, X4,X5
E		Existing pit to remain	1,5,12,13

DRAWING SCHEDULE

DWG No	Drawing Title
C000	NOTES AND LEGENDS SHEET
C010	SEDIMENT & EROSION CONTROL PLAN
C030	SITEWORKS PLAN
C050	PAVEMENT AND JOINTING PLAN
C060	DETAILS SHEET 1
C061	DETAILS SHEET 2
C062	DETAILS SHEET 3

FOR APPROVAL

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Rev	Description	Eng	Draft	Date
P2	FOR APPROVAL	DM	SH	04.09.20
P1	PRELIMINARY	DM	SH	07.08.20

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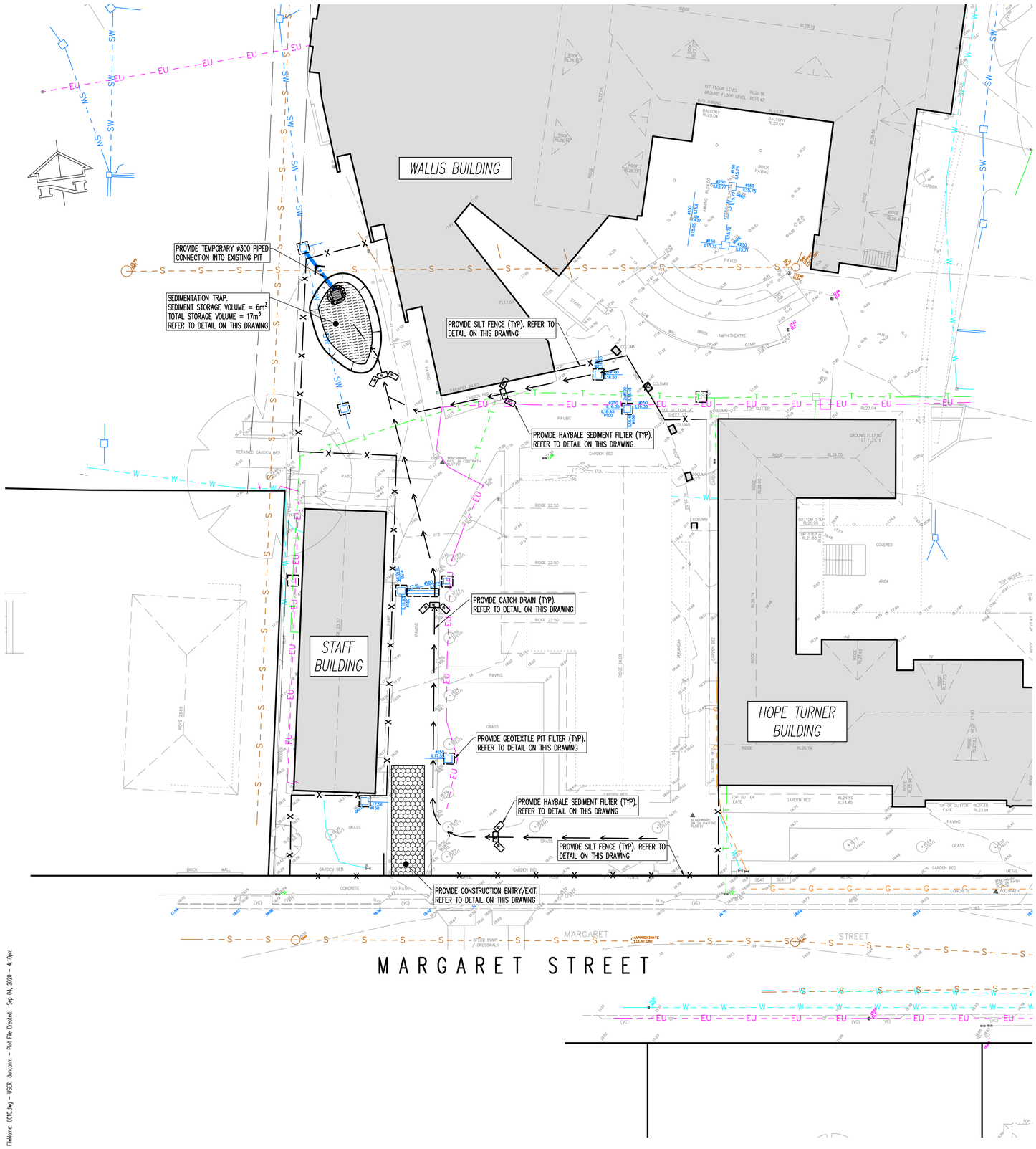
ABN 53 003 782 250

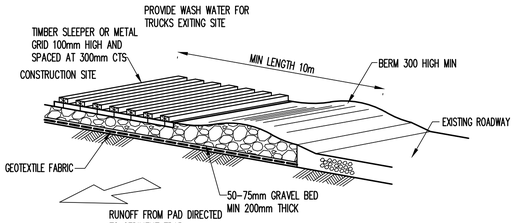
Structural Engineer
Taylor Thomson Whitting
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project
MERIDEN SENIOR SCHOOL
CENTRE FOR MUSIC AND DRAMA
10-12 REDMYRE ROAD
STRATHFIELD NSW 2135

Sheet Subject
NOTES AND LEGENDS SHEET

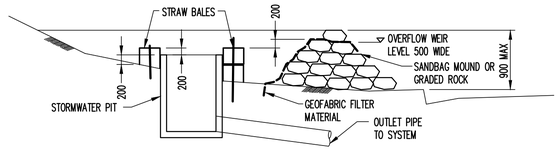
Scale : A1 NOT TO SCALE
Drawn DM
Authorised
Job No 181478
Drawing No C000
Revision P2
Plot File Created: Sep 04, 2020 - 4:10pm





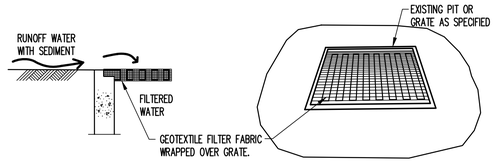
TEMPORARY CONSTRUCTION VEHICLE EXIT

NTS



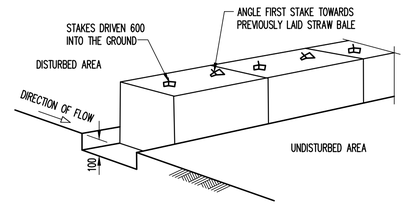
SEDIMENTATION TRAP

NTS



GEOTEXTILE PIT FILTER

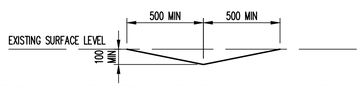
NTS



HAY BALE SEDIMENT FILTER

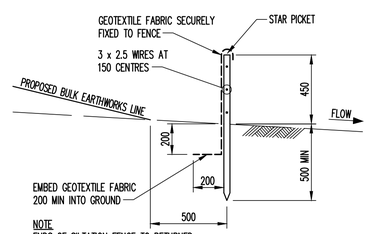
NTS

NOTE: STAKE TO BE EITHER TAR COATED STAR OR 50 x 50 HARDWOOD



TYPICAL SECTION THROUGH CATCH DRAIN

SCALE 1: 20



SILTATION FENCE DETAIL

SCALE 1: 20

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C000

EROSION AND SEDIMENT CONTROL NOTES

1. All work shall be generally carried out in accordance with
   (A) Local authority requirements,
   (B) EPA – Pollution control manual for urban stormwater,
   (C) LANDCOM NSW – Managing Urban Stormwater: Soils and Construction ("Blue Book").
2. Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities.
   The erosion and sediment control plan shall be implemented and adapted to meet the varying situations as work on site progresses.
3. Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
4. When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
5. Minimise the area of site being disturbed at any one time.
6. Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
7. All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
8. Control water from upstream of the site such that it does not enter the disturbed site.
9. All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
10. All vehicles leaving the site shall be cleaned and inspected before leaving.
11. Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
12. Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

1. Prior to commencement of excavation the following soil management devices must be installed.
1.1. Construct silt fences below the site and across all potential runoff sites.
1.2. Construct temporary construction entry/exit and divert runoff to suitable control systems.
1.3. Construct measures to divert upstream flows into existing stormwater system.
1.4. Construct sedimentation traps/basin including outlet control and overflow.
1.5. Construct turf lined swales.
1.6. Provide sandbag sediment traps upstream of existing pits.
2. Construct geotextile filter pit surround around all proposed pits as they are constructed.
3. On completion of pavement provide sand bag kerb inlet sediment traps around pits.
4. Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

WATER QUALITY TESTING REQUIREMENTS

Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environment consultant outlining the following:

- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
- If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system.This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.

EROSION AND SEDIMENT CONTROL LEGEND

- Batter
- Siltation fence
- Stormwater pit with Geotextile filter surround
- Hay bale barriers
- Sandbag sediment trap
- Catch drain
- Overland flow path

0 2 4 6 8 10 12 14 16m

1:200 A1 1:400 A3

FOR APPROVAL

FileName: C010.dwg – USER: dcroom – Plot File Created: Sep 04, 2020 – 4:10pm

A1 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date
P2	FOR APPROVAL	DM	SH	04.09.20
P1	PRELIMINARY	DM	SH	07.08.20

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Sheet Subject
EROSION AND SEDIMENT CONTROL PLAN AND DETAILS

Scale : A1 1:200 | Drawn DM | Authorised

Job No 181478 | Drawing No C010 | Revision P2

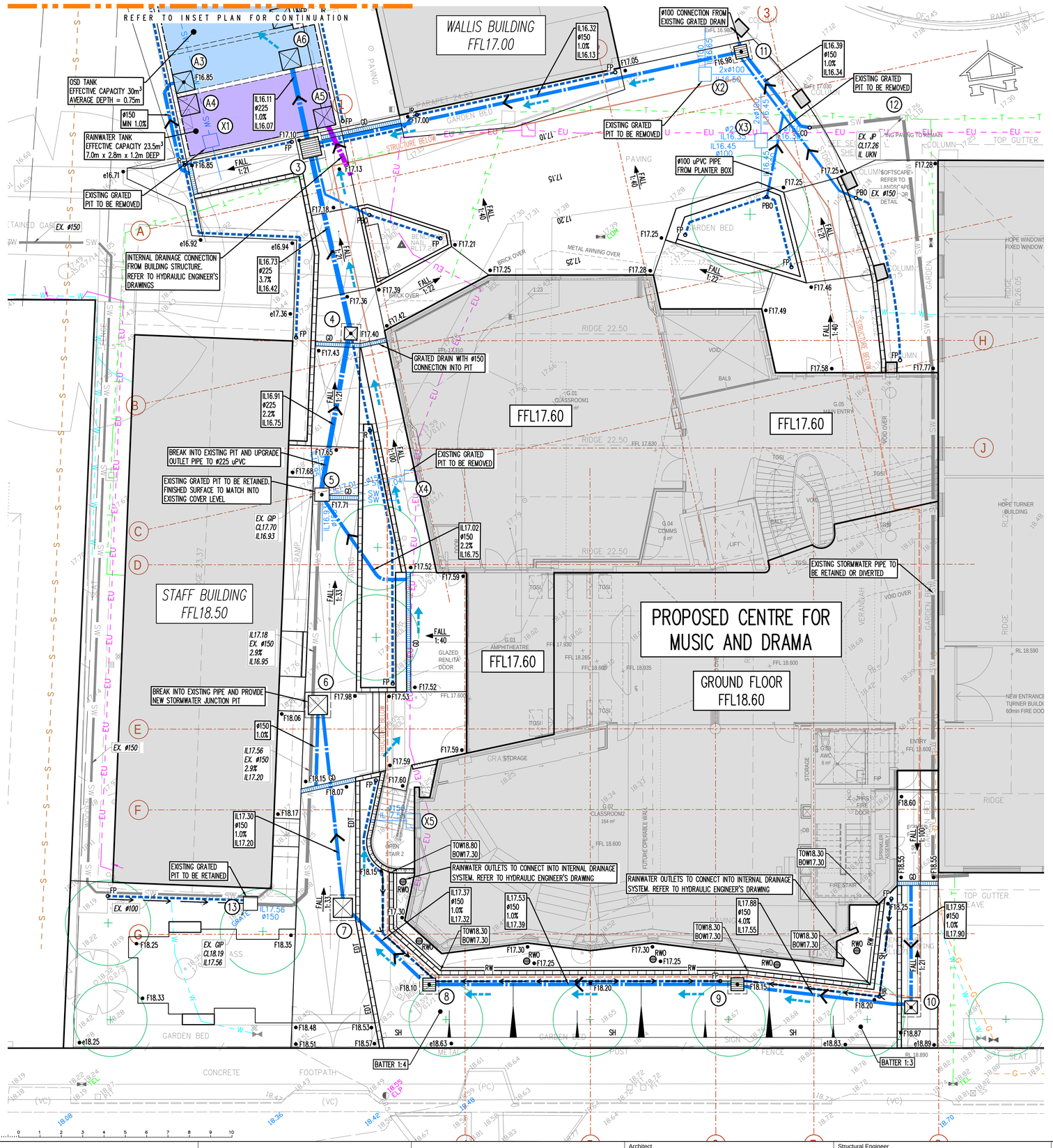
Plot File Created: Sep 04, 2020 - 4:10pm

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C000

SITEWORKS LEGEND

- F22.20 — Finished surface level
- 22.20 — Finished surface major contour 0.2m interval
- 21.95 — Finished surface minor contour 0.05m interval
- IK — Integral kerb
- FK — Flush kerb
- EDT — Concrete edge downturn
- SH — Compacted support shoulder
- Surface catch drain
- Taper kerb to zero height
- Stormwater pit, flow direction and line
  - IL6.04
  - ø375 'Z'
  - 0.5%
  - IL5.84
  - Invert level upstream
  - Pipe size and class
  - Pipe grade
  - Invert level downstream
- IR — Intermediate riser with subsoil drainage line (100 dia)
- FP — Flushing point with subsoil drainage line (100 dia)
- DP — Downpipe
- PBO — Planter box outlet
- CO — Clear out riser
- RWO — Rainwater outlet
- Indicative internal drainage Refer hydraulic engineering drawings
- Overland flow path
- GD — Grated drain
- RW — Retaining wall
- STRUCTURE BELOW — Extent of structure below

REFER TO COVER SHEET C000 FOR STORMWATER PIT SCHEDULE



0 1 2 3 4 5 6 7 8m

1:100 A1 1:200 A3

FOR APPROVAL

FileName: C030.dwg - USER: duncanm - Plot File Created: Sep 04, 2020 - 4:10pm

A1 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date
P4	FOR APPROVAL	DM	SH	04.09.20
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P2	PRELIMINARY	DM	SH	03.08.20
P1	PRELIMINARY	DM	SH	30.07.20

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Sheet Subject
SITEWORKS PLAN

Scale : A1	Drawn	Authorised
1:100	DM	

Job No	Drawing No	Revision
181478	C030	P4

Plot File Created: Sep 04, 2020 - 4:10pm

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C800

PAVEMENT LEGEND

NOTES

1. Asphaltic concrete shall conform to AS2150 and the specification
2. Pavement based on geotechnical report by Douglas Partners Report No. 86568.00

P1 — **Concrete Pavement on grade**
120mm thickness concrete (f'c = 25MPa)
concrete finish to landscape architect's drawings
with SL72 fabric (40 cover) on
100mm compacted thickness fine crushed rock (DGB20) on
Compacted subgrade to min 3% CBR

P2 — **Pavers on Concrete Pavement**
40mm thickness paver to landscape architect's specification on
25mm thickness mortar bedding on
120mm thickness concrete (f'c = 25MPa)
with SL72 fabric (40 cover) on
100mm compacted thickness fine crushed rock (DGB20) on
Compacted subgrade to min 3% CBR

P3 — **Pavers on Suspended Structure**
40mm thickness paver to landscape architect's specification on
30mm thickness mortar bedding on
Max 100mm thickness screed layer to achieve finished levels on
Suspended structure to structural engineer's drawings

S1 — **Suspended Structure**
To structural engineer's drawings
Finishes to landscape architect's drawings

Seating
To landscape architect's detail

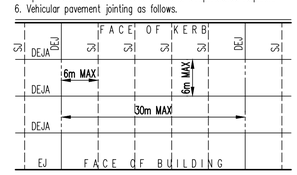
L1 — **Landscaping**
To landscape architect's detail

L2 — **Synthetic Turf**
Synthetic turf to landscape architect's specification

JOINTING NOTES

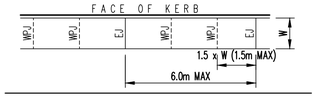
Vehicular Pavement Jointing

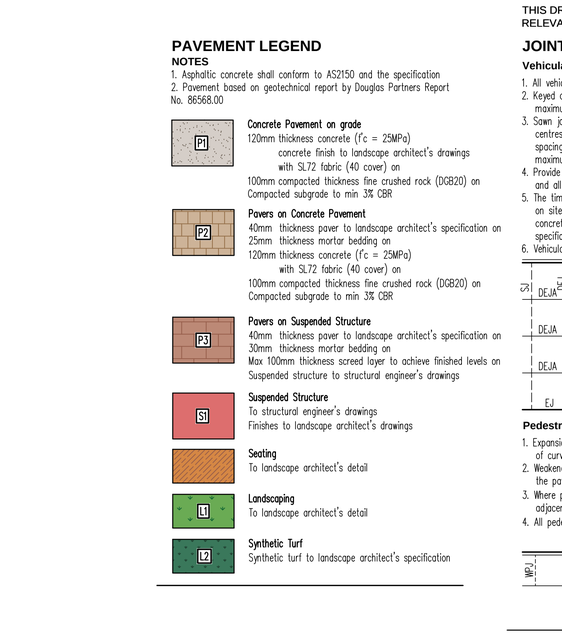
1. All vehicular pavements to be jointed as shown on drawings.
2. Keyed construction joints should generally be located at a maximum of 6m centres.
3. Sawn joints should generally be located at a maximum of 6m centres or 1.5 x the spacing of keyed joints, where key joint spacing is less than 4m, with dowelled expansion joints at maximum of 30m centres.
4. Provide 10mm wide full depth expansion joints between buildings and all concrete or unit pavers.
5. The timing of the saw cut is to be confirmed by the contractor on site. Site conditions will determine how many hours after the concrete pour before the saw cuts are commenced. Refer to the specification for weather conditions and temperatures required.
6. Vehicular pavement jointing as follows.



Pedestrian Footpath Jointing

1. Expansion joints are to be located where possible at tangent points of curves and elsewhere at max 6.0m centres.
2. Weakened plane joints are to be located at a max 1.5 x width of the pavement.
3. Where possible joints should be located to match kerbing and / or adjacent pavement joints.
4. All pedestrian footpath jointings as follows (uno).





INSET PLAN
SCALE 1: 100

0 1 2 3 4 5 6 7 8m
1:100 A1 1:200 A3

FOR APPROVAL

Rev	Description	Eng	Draft	Date
P3	FOR APPROVAL	DM	SH	04.09.20
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Sheet Subject
PAVEMENT & JOINTING PLAN

Scale : A1 1:100 | Drawn DM | Authorised
Job No 181478 | Drawing No C050 | Revision P3
Plot File Created: Sep 04, 2020 - 4:10pm

FileName: C050.dwg - USER: duncanm - Plot File Created: Sep 04, 2020 - 4:10pm

A1 0 1 2 3 4 5 6 7 8 9 10

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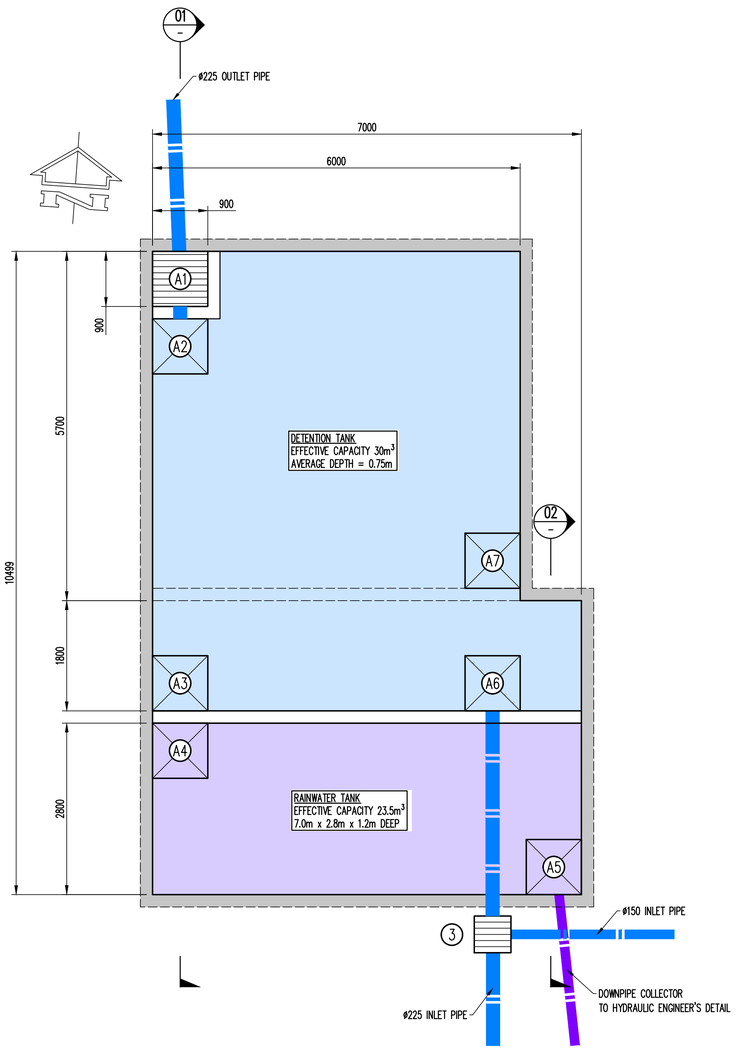
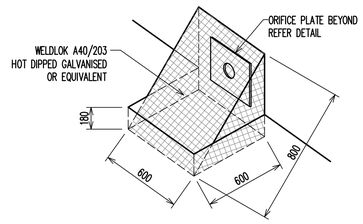
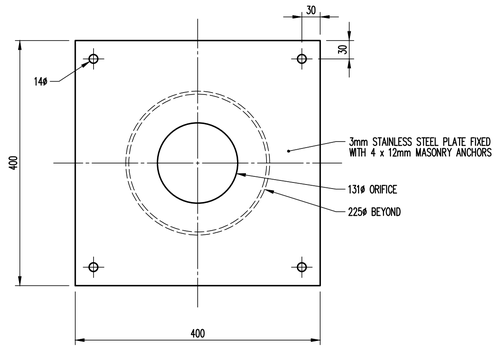
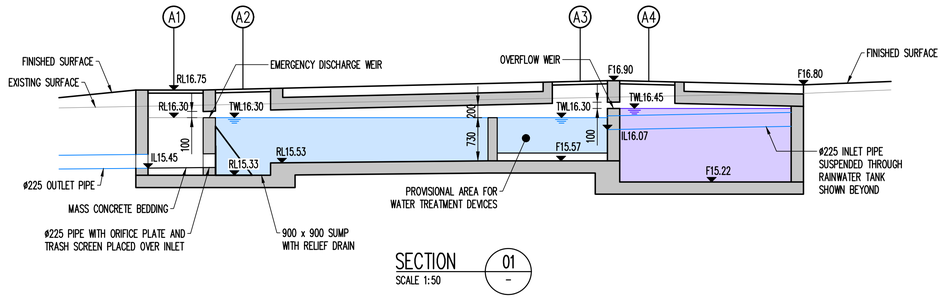




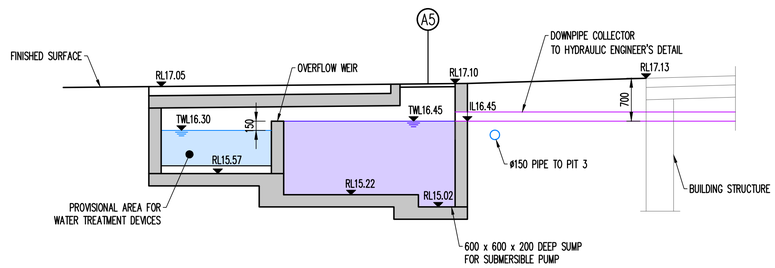
TRASH SCREEN DETAIL
NTS



ORIFICE PLATE DETAIL
SCALE 1: 5



SECTION 01
SCALE 1:50



SECTION 02
SCALE 1:50

DETENTION TANK DESIGN VALUES				
ARI	TAILWATER LEVEL IN TANK (m, AHD)	PEAK STORAGE VOLUME (m^3)	PEAK STORAGE DISCHARGE RATE (L/s)	MAX ALLOWABLE PSD (L/s)
2	15.79	9	18	19.5
10	15.97	13.5	24	25.5
100	16.30	22.5	30	34.5

0 0.5 1 1.5 2 2.5 3 3.5 4m

1:50 A1 1:100 A3

FOR APPROVAL

FileName: C060.dwg – USER: duncanm – Plot File Created: Sep 04, 2020 – 4:10pm

A1 0 1 2 3 4 5 6 7 8 9 10

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Sheet Subject
DETAILS SHEET 1

Scale : A1 AS SHOWN | Drawn DM | Authorised

Job No 181478 | Drawing No C060 | Revision P3

Plot File Created: Sep 04, 2020 - 4:10pm

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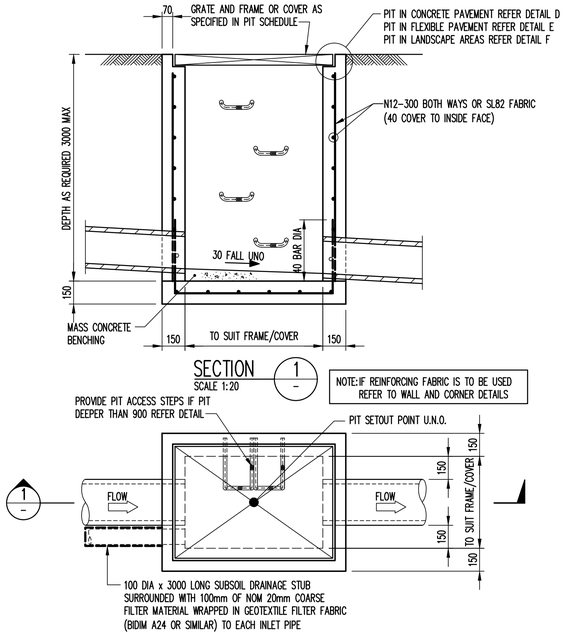
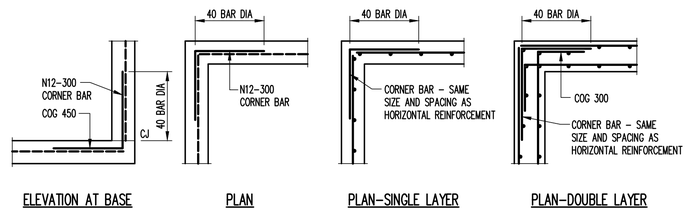
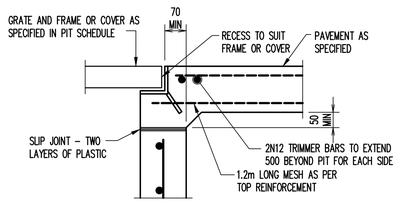


PIT TYPE A & B



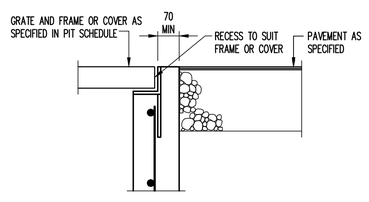
PIT CORNER DETAILS

SCALE 1: 20



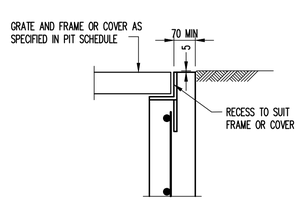
DETAIL D

SCALE 1: 10



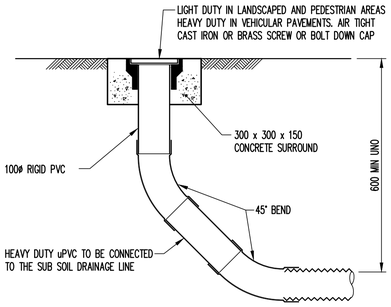
DETAIL E

SCALE 1: 10



DETAIL F

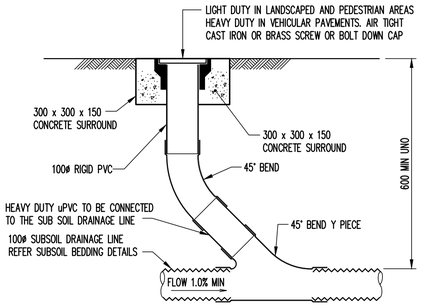
SCALE 1: 10



FLUSHING POINT (FP)

SCALE 1: 10

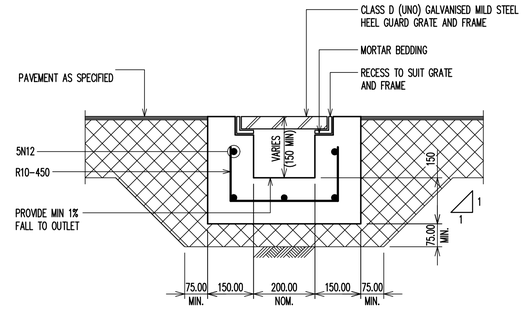
NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED



INTERMEDIATE RISER (IR)

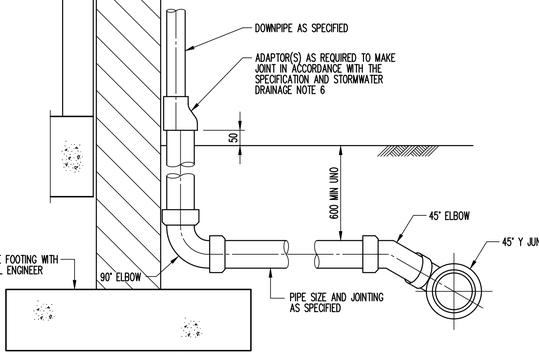
SCALE 1: 10

NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED



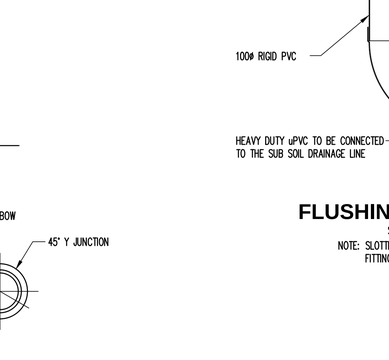
GRATED DRAIN TYPE A (GDA)

SCALE 1:10



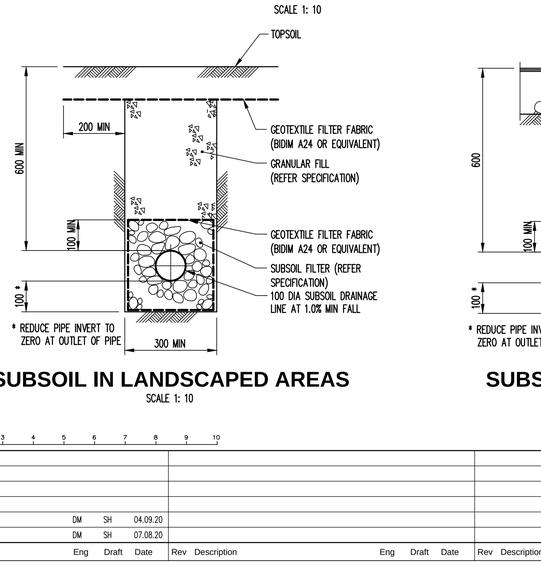
SUBSOIL IN LANDSCAPED AREAS

SCALE 1: 10



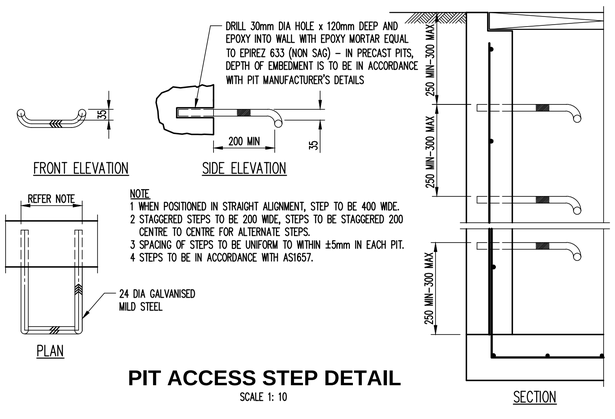
SUBSOIL IN PAVED AREAS

SCALE 1: 10



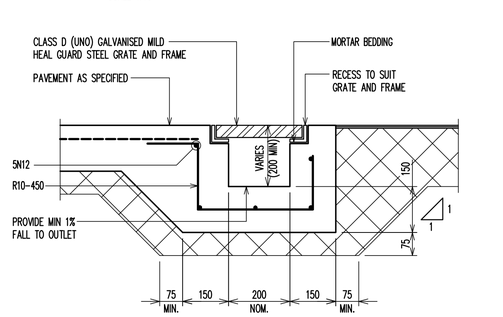
DOWNPIPE CONNECTION TO uPVC STORMWATER

SCALE 1: 10



PIT ACCESS STEP DETAIL

SCALE 1: 10



GRATED DRAIN TYPE C (GDC)

SCALE 1:10

FOR APPROVAL

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Sheet Subject
DETAILS SHEET 2

Scale : A1 AS SHOWN | Drawn DM | Authorised
Job No 181478 | Drawing No C061 | Revision P2
Plot File Created: Sep 04, 2020 - 4:10pm

FileName: C061.dwg - USER: duncanm - Plot File Created: Sep 04, 2020 - 4:10pm

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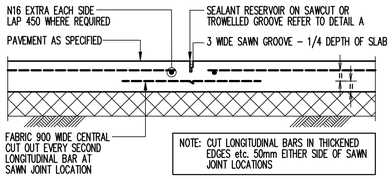
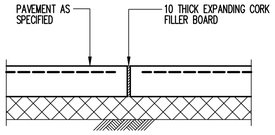


SAWN CONTROL JOINT (SJ)

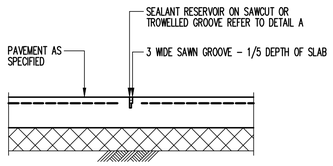
SCALE 1: 20

NOTE:REFER TO JOINTING NOTES, POINT 5 FOR TIMING OF SAW CUTS.



EXPANSION JOINT (EJ)

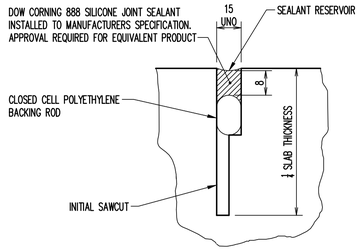
SCALE 1: 20



WEAKENED PLANE JOINT (WPJ)

SCALE 1: 20

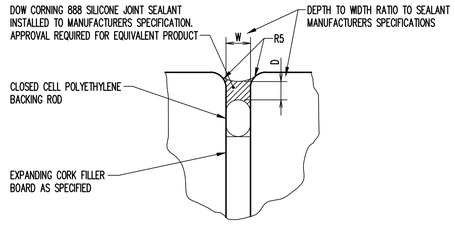
NOTE:REFER TO JOINTING NOTES, POINT 5 FOR TIMING OF SAW CUTS.



DETAIL A

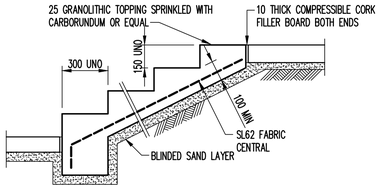
NTS

NOTE:REFER TO JOINTING NOTES, POINT 5 FOR TIMING OF SAW CUTS.



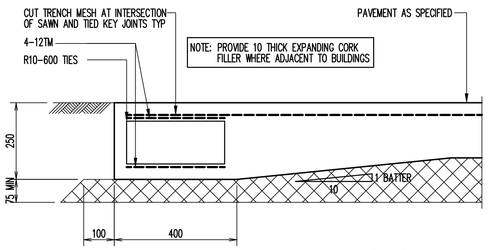
DETAIL C

NTS



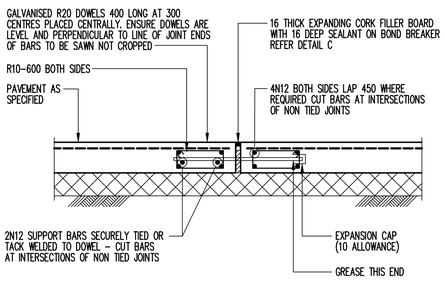
CONCRETE STAIRS

SCALE 1: 20



THICKENED EDGE (TE)

SCALE 1: 20



DOWELLED EXPANSION JOINT (DEJ)

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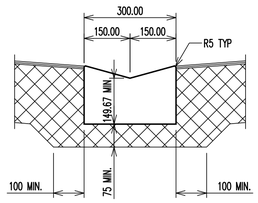
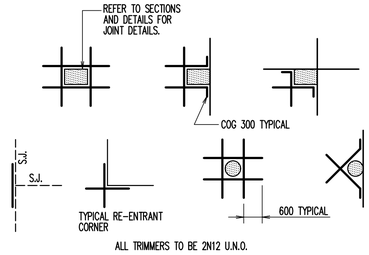


300 WIDE DISH DRAIN (300DD)

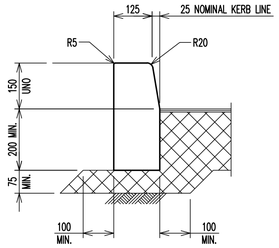
SCALE 1:10



ALL TRIMMERS TO BE 2N12 U.N.O.

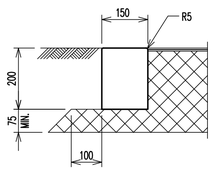
TYPICAL SLAB ON GROUND TRIMMER DETAILS

AT ALL COLUMNS, WALLS, PITS, FLOOR WASTES, ETC THAT CAUSE A PENETRATION THROUGH THE SLAB.



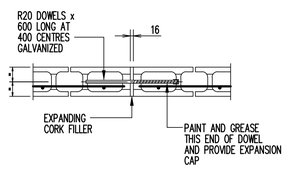
KERB ONLY (KO)

SCALE 1:10



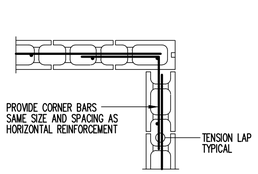
FLUSH KERB (FK)

SCALE 1:10

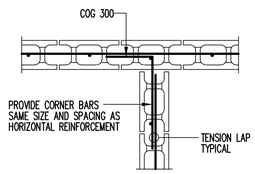


TYPICAL CONTROL JOINT DETAIL

(8000 MAX. CTS U.N.O.)

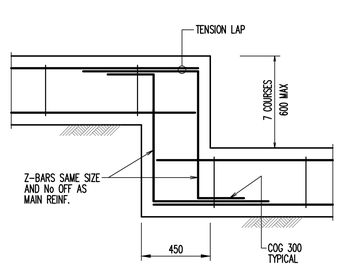


CORNER

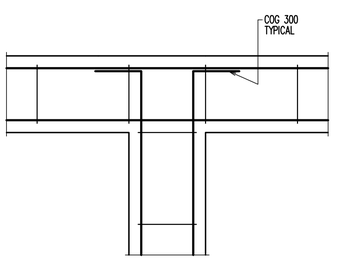


INTERSECTION

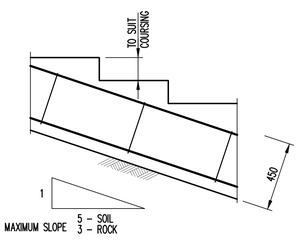
JUNCTION DETAILS



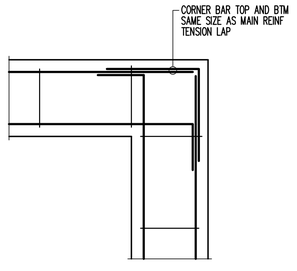
STEP



JUNCTION



STEP - GENTLE SLOPES



CORNER

STRIP FOOTING DETAILS

0 0.5 1 1.5 2 2.5 3 3.5 4m

1:50 A1 1:100 A3

FOR APPROVAL

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A1 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date
P2	FOR APPROVAL	DM	SH	04.09.20
P1	PRELIMINARY	DM	SH	07.08.20

Rev Description Eng Draft Date

Rev Description Eng Draft Date

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Sheet Subject
DETAILS SHEET 2

Scale : A1	Drawn	Authorised
AS SHOWN	DM	

Job No	Drawing No	Revision
181478	C062	P2

Plot File Created: Sep 04, 2020 - 4:10pm