THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING 001

MACARTHUR MEDICAL RESEARCH CENTRE

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 SUPERINTENDENT.
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
LTS LOCKLEY	SURVEY	33690 006DT	E	27.04.21
BVN	GENERAL ARRANGEMENT 00	AR-BVN-11B L00-000 04		12.10.21
TURF	LEVELS AND GRADING SITE PLAN			05.10.21

SURVEY AND SERVICES INFORMATION

SURVEY

Origin of levels : SSM186425 RL 93.038
Datum of levels : AHD
Coordinate system : MGA
Survey prepared by : LTS Lockley
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.

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

PIT SCHEDULE

Note: Grate size does not necessarily reflect pit size, refer pit type details, shown on detail sheets – **011**
Final internal pit dimensions are to comply with AS3500

Type	Description	Cover (Clear Opening)	Number
A	Kerb inlet pit 1800 lintel	450 x 900 Class D galvanised mild steel grate hinged to frame	????????
B	Surface inlet pit	600 x 900 Class D galvanised mild steel grate hinged to frame	????????
C	Junction pit	1200 x 900 class D cast iron cover with concrete infill	????????
D		Existing pit to be demolished and removed	????????
E		Existing pit to remain	????????

HOLD

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 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 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.

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.

CONCRETE NOTES

EXPOSURE CLASSIFICATION : External : B2

CONCRETE

Place concrete of the following characteristic compressive strength f'c as defined in AS 1379.

Location	AS 1379 f'c MPa at 28 days	Specified Slump	Nominal Agg. Size
Kerbs	S20	80	20
Retaining wall footing	S40	80	20

1. Use Type 'GP' cement, unless otherwise specified.
2. All concrete shall be subject to project assessment and testing to AS 1379.
3. Consolidate by mechanical vibration. Cure all concrete surfaces as directed in the Specification.
4. For all falls in slab, drip grooves, regiets, chamfers etc. refer to Architects drawings and specifications.
5. Unless shown on the drawings, the location of all construction joints shall be submitted to Engineer for review.
6. No holes or chases shall be made in the slab without the approval of the Engineer.
7. Conduits and pipes are to be fixed to the underside of the top reinforcement layer.
8. Slurry used to lubricate concrete pump lines is not to be used in any structural members.
9. All slabs cast on ground require sand blinding with a Concrete Underlay

FORMWORK

1. The design, certification, construction and performance of the formwork, falsework and backpropping shall be the responsibility of the contractor. Proposed method of installation and removal of formwork is to be submitted to the superintendent for comment prior to work being carried out.

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 = 231 mm/hr
5% AEP = 171 mm/hr
(C) Rainfall losses –
Impervious areas: IL = 1.5 mm , CL = 0 mm/hr
Pervious areas: IL = 45 mm , CL = 2.4 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 Campbelltown Council
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).

BULK EARTHWORKS NOTES

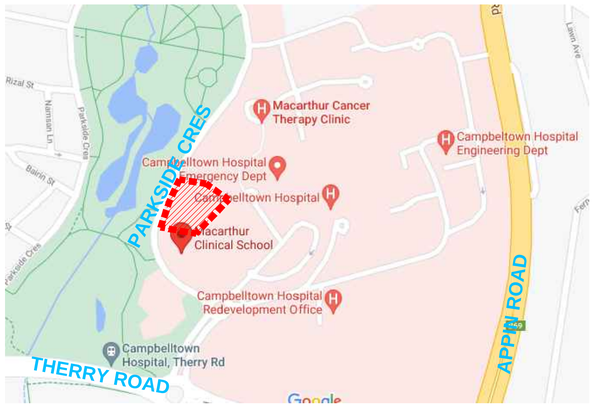
1. All bulk earthworks setout from grid lines U.N.O.
2. Refer plan for batters at slope.
3. Excavated material may be used as structural fill provided,
(i) it complies with the specification requirements for fill material,
(ii) the placement moisture content complies with the Geotechnical Consultants requirements, and allows filling to be placed and proofrolled in accordance with the specification. Where necessary the Contractor must moisture condition the excavated material to meet these requirements.
4. Compact fill areas and subgrade to not less than:

Location	Standard dry density (AS 1289 5.1.1.)	Moisture (OMC)
Under building slabs on ground:	98%	±2%
Under roads and carparks:	98%	±2%
Landscaped areas:	95%	±2%

5. Before placing fill, proof roll exposed subgrade with a 10 tonne minimum roller to test subgrade and then remove soft spots (areas with more than 3mm movement under roller). Soft spots to be replaced with **select** fill U.N.O.
6. Contractor shall place safety barriers around excavations in accordance with relevant safety regulations.
7. For interpretation of bulk earthworks foot print line shown on the bulk earthworks drawings refer to the bulk earthworks construction legend.
8. Bulk earthwork drawings are not to be used for detailed excavation.
9. Refer to Geotechnical Report prepared by –
DOUGLAS PARTNERS
34275.31 DATED 07/2021

SITEWORKS LEGEND

F22.20 — Finished surface level
F22.00 — Finished contour
IL10.00 / 600 ø 'Z' / 1.25% / Q=345 l/s / IL9.65 — Stormwater pit, flow direction and line with Invert level upstream, Pipe size and class, Pipe grade, Flow (Litres per second), Invert level downstream
GD — Grated drain
DP — Down pipe
RWall — Retaining wall



SITE LOCALITY PLAN
NOT TO SCALE

CIVIL DRAWING SCHEDULE

Drawing No.	Drawing Title
TTW-CI-01A XXX-001	COVER, NOTES AND LEGEND
TTW-CI-20A NLS-002	EROSION AND SEDIMENT CONTROL PLAN
TTW-CI-20A NLS-005	SITEWORKS AND STORMWATER PLAN
TTW-CI-20A NLS-006	BULK EARTHWORKS PLAN
TTW-CI-20D XXX-007	BULK EARTHWORKS SECTIONS
TTW-CI-20E XXX-010	OSD DETAILS
TTW-CI-20E XXX-011	DETAILS

0 2 4 6 8 10 12 14 16m
1:200 A1 1:400 A3

SSDA

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A1

Rev	Description	Eng	Draft	Date
P2	SSDA ISSUE	AA	WW	14.10.21
P1	SSDA ISSUE	AA	WW	07.10.21

Architect: BVN

TTW Structural Civil Traffic Façade
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project: MACARTHUR MEDICAL RESEARCH CENTRE

Sheet Subject: COVER SHEET, NOTES AND LEGEND

Scale : A1: NTS | Drawn: WW | Authorised: SB

Job No: 201940 | Drawing No: TTW-CI-01A XXX-001 | Revision: P2

Plot File Created: Oct 14, 2021 - 10:27am

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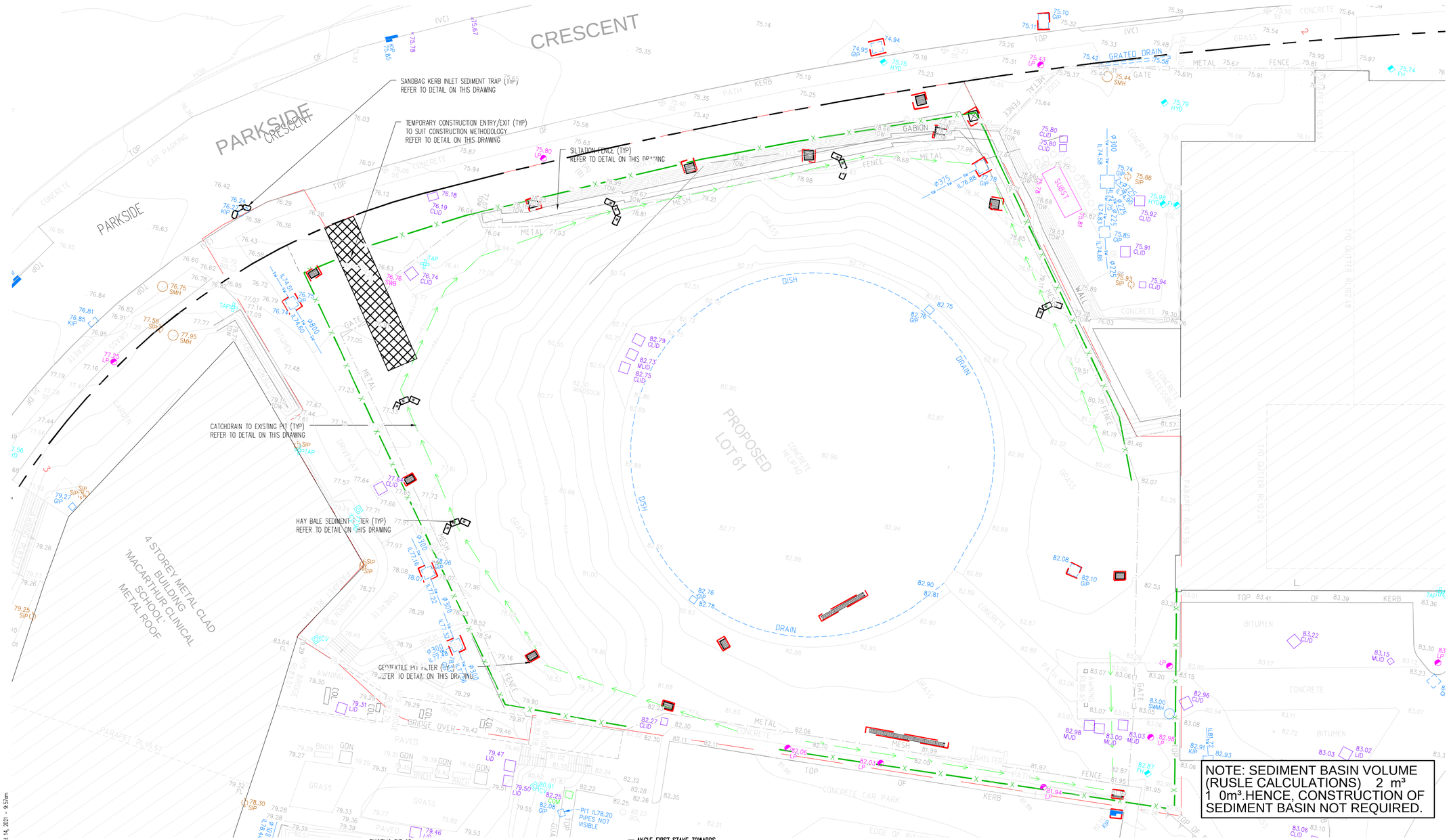

NOTE: SEDIMENT BASIN VOLUME (RUSLE CALCULATIONS) 2 m³
1 0m³.HENCE, CONSTRUCTION OF SEDIMENT BASIN NOT REQUIRED.

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 materil 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
- Sandbag sediment trap
- Hay bale barriers
- Catch drain

0 2 4 6 8 10 12 14 16m

1:200 A1 1:400 A3

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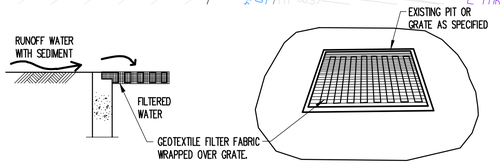
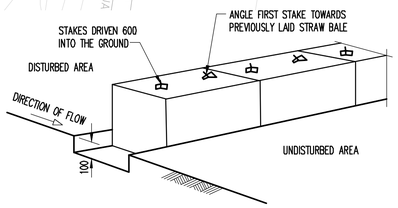
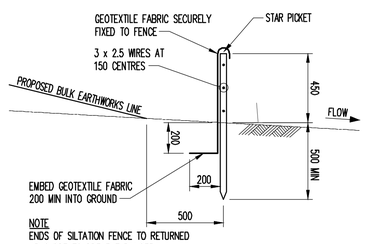


GEOTEXTILE PIT FILTER
NTS

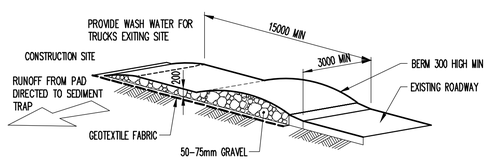


HAY BALE SEDIMENT FILTER
NTS
NOTE: STAKE TO BE EITHER TAR COATED STAR OR 50 x 50 HARDWOOD

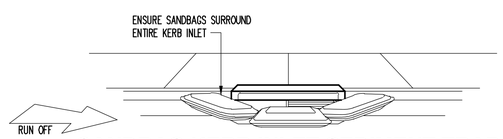


NOTE
ENDS OF SILTATION FENCE TO RETURNED UP SLOPE TO PREVENT RUNOFF

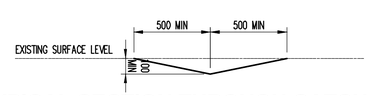
SILTATION FENCE DETAIL
SCALE 1: 20



TEMPORARY CONSTRUCTION EXIT
NTS



SANDBAG KERB INLET SEDIMENT TRAP
NTS



TYPICAL SECTION THROUGH CATCH DRAIN
SCALE 1: 20

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A1

Rev	Description	Eng	Draft	Date
P2	SSDA ISSUE	AA	WW	14.10.21
P1	SSDA ISSUE	AA	WW	07.10.21

Architect: BVN

TTW Structural Civil Traffic Façade
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project: MACARTHUR MEDICAL RESEARCH CENTRE

Sheet Subject: EROSION AND SEDIMENT CONTROL PLAN

Scale : A1 1:200 | Drawn LW | Authorised SB

Job No 201940 | Drawing No TTW-CI-20A NLS-002 | Revision P2

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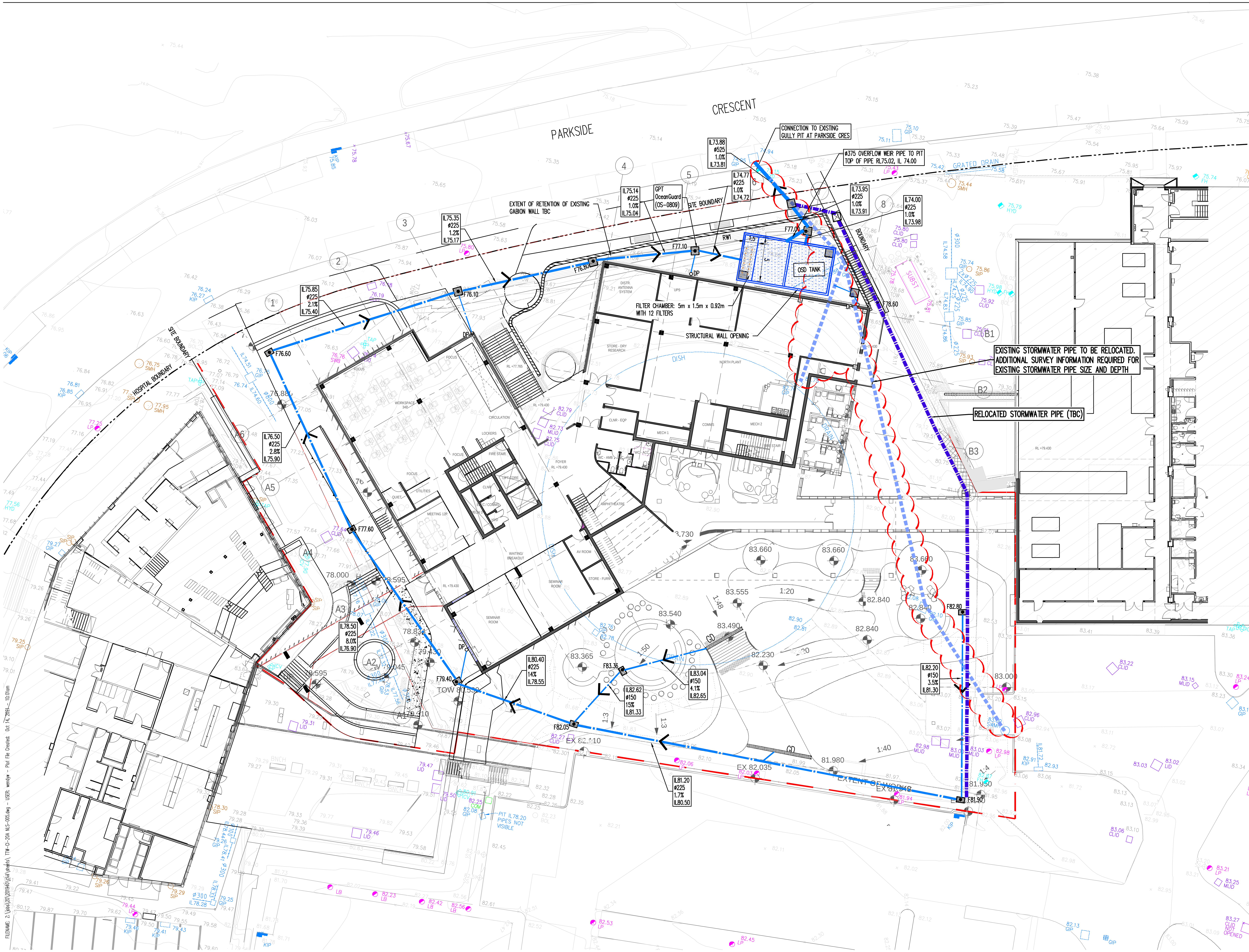

SITEWORKS LEGEND

Symbol	Description
Pit / pipe with flow arrows	Stormwater pit, flow direction and line with
IL10.00 / 600 ø 'Z' / 1.25% / Q=345 L/s / IL9.65	Invert level upstream; Pipe size and class; Pipe grade; Flow (Litres per second); Invert level downstream
red dashed line	Site boundary
black dashed line	Hospital boundary
GD	Grated drain
RWI	Retaining wall

0 2 4 6 8 10 12 14 16m

1:200 A1 1:400 A3

SSDA

A1

Rev	Description	Eng	Draft	Date
P2	SSDA ISSUE	AA	WW	14.10.21
P1	SSDA ISSUE	AA	WW	07.10.21

Architect: BVN

TTW Structural Civil Traffic Façade

612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project: MACARTHUR MEDICAL RESEARCH CENTRE

Sheet Subject: SITEWORKS STORMWATER PLAN

Scale : A1 1:200 | Drawn WW | Authorised SB

Job No 201940 | Drawing No TTW-CI-20A NLS-005 | Revision P2

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Cut/Fill Summary

2d Area	Cut	Fill	Net
3896.82sq.m	5431Cu. M.	618 Cu. M.	4813 Cu. M.<Cut>

Cut and Fill Depth Table

Number	Minimum Elevation	Maximum Elevation	Color
1	-8.000	-7.000	
2	-7.000	-6.000	
3	-6.000	-5.000	
4	-5.000	-4.000	
5	-4.000	-3.000	
6	-3.000	-2.000	
7	-2.000	-1.000	
8	-1.000	0.000	
9	0.000	1.000	
10	1.000	2.000	
11	2.000	3.000	
12	3.000	4.000	
13	4.000	5.000	

BULK EARTHWORKS LEGEND

BE22.00	Bulk earthworks contour level
BE 22.00	Bulk earthworks platform level

NOTE:

1. Refer architectural and structural drawing for detail excavation for pad footings.
2. Depth of lift should be confirmed with supplier.
3. Bulk quantities represent difference between existing ground levels and bulk earthworks levels. No adjustment factors have been included.
4. Bulk earthworks does not included detailed excavation for lift pits, footings, services, etc.
5. Set down for landscape area assumed to be 200mm.

0 2 4 6 8 10 12 14 16m

1:200 A1 1:400 A3

SSDA

A1

Rev	Description	Eng	Draft	Date
P2	SSDA ISSUE	AA	WW	14.10.21
P1	SSDA ISSUE	AA	WW	07.10.21

Architect: BVN

TTW Structural Civil Traffic Façade

612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project: MACARTHUR MEDICAL RESEARCH CENTRE

Sheet Subject: BULK EARTHWORKS PLAN

Scale : A1 1:200 | Drawn WW | Authorised

Job No 201940 | Drawing No TTW-CI-20A NLS-006 | Revision P2

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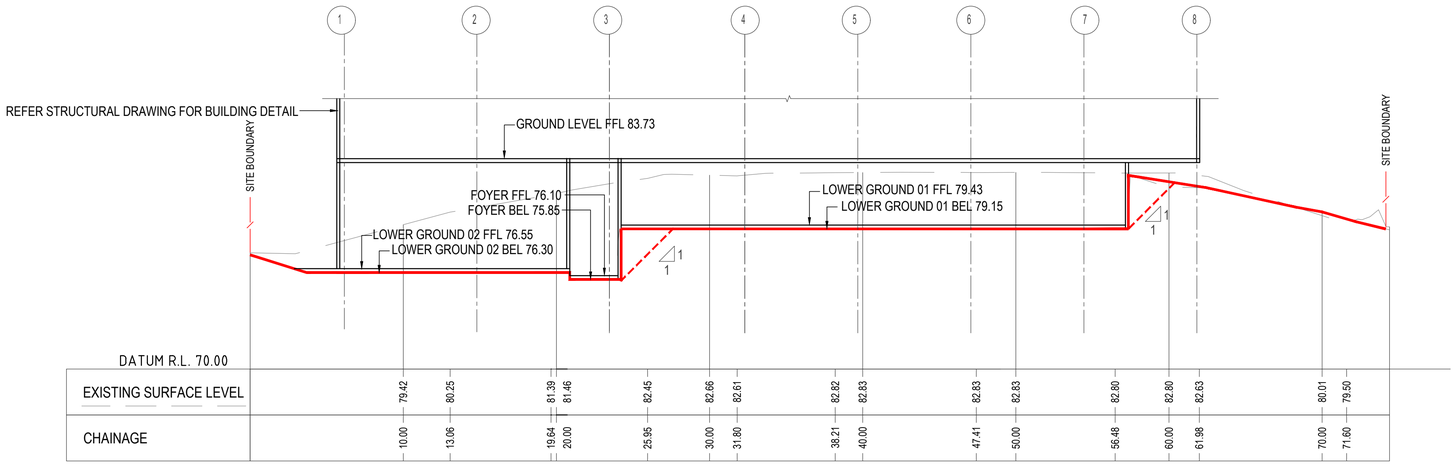
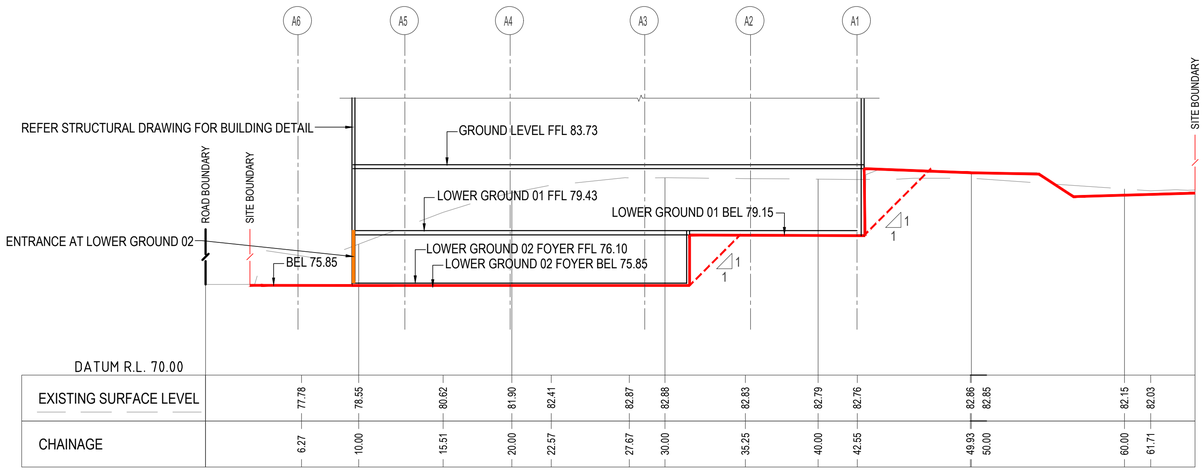


LONGITUDINAL SECTION 1

SECTION 1
SCALE 1:200 006



LONGITUDINAL SECTION 2

SECTION 2
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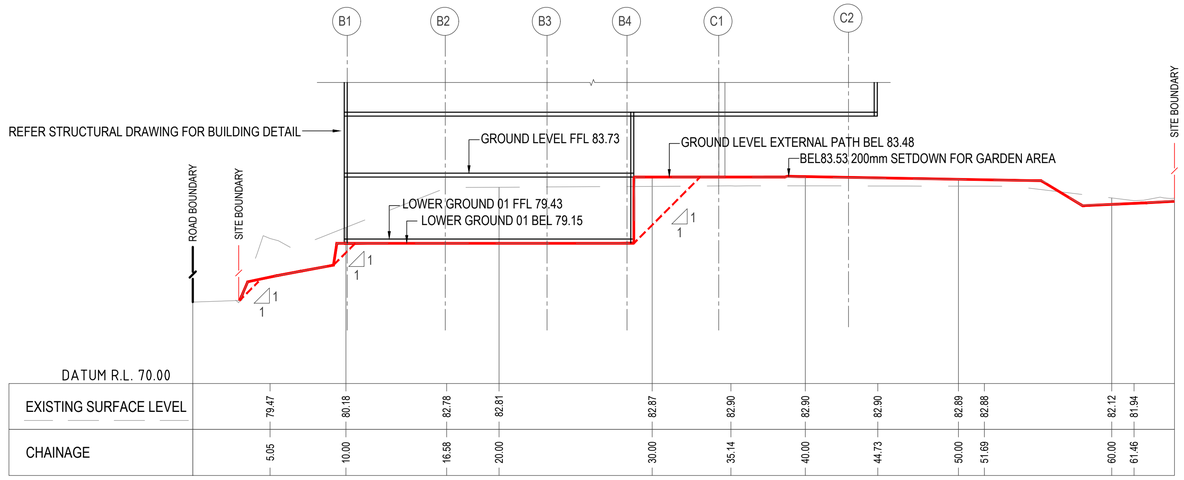

LONGITUDINAL SECTION 3

SECTION 3
SCALE 1:200 006

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A1

Rev	Description	Eng	Draft	Date
P1	SSDA ISSUE	AA	WW	14.10.21
P1	SSDA ISSUE	AA	WW	07.10.21

Architect: BVN

TTW Structural Civil Traffic Façade
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project: MACARTHUR MEDICAL RESEARCH CENTRE

Sheet Subject: BULK EARTHWORKS SECTIONS

Scale : A1 1:200 | Drawn WW | Authorised

Job No 201940 | Drawing No TTW-CI-20D XXX-007 | Revision P2

Plot File Created: Oct 13, 2021 - 6:08pm

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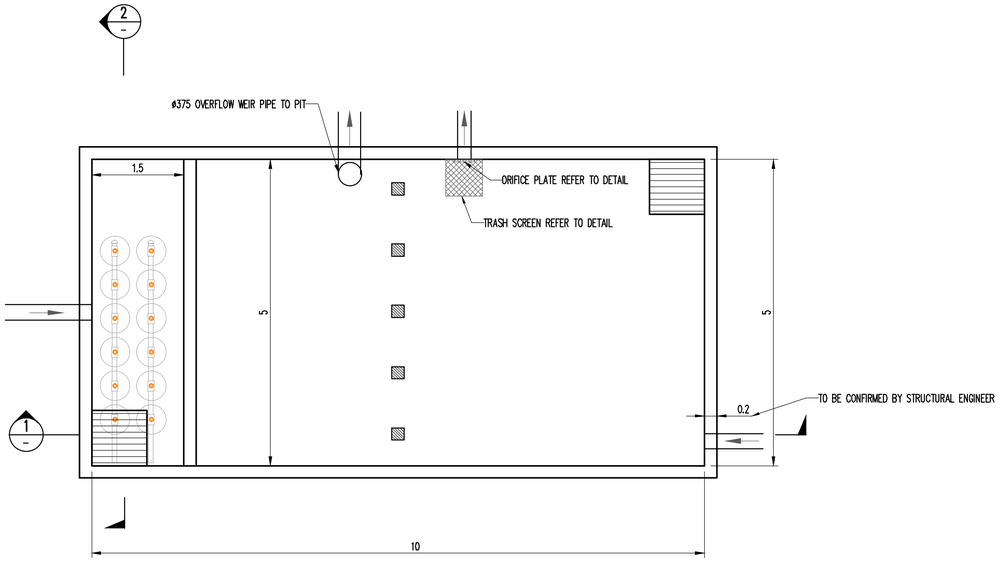
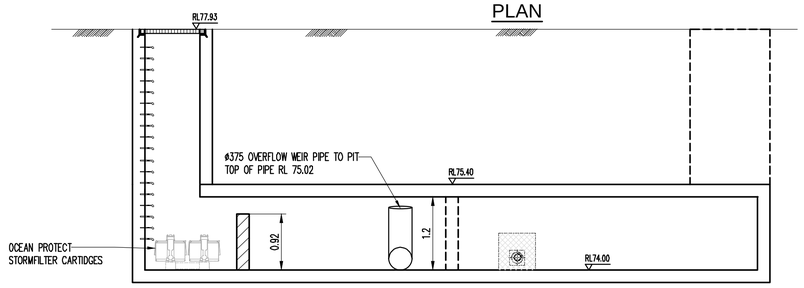
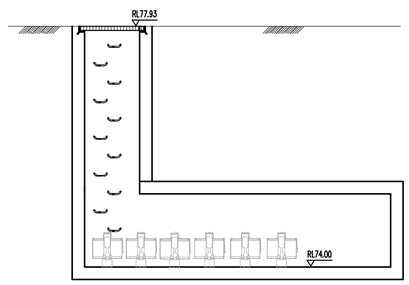


PLAN



SECTION 1



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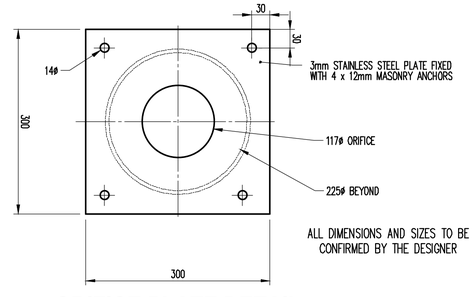
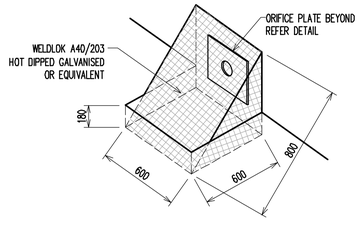


ORIFICE PLATE DETAIL



TRASH SCREEN DETAIL

NTS

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SSDA

A1

Rev	Description	Eng	Draft	Date
P1	SSDA ISSUE	AA	WW	07.10.21

Architect: BVN

TTW Structural Civil Traffic Façade
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project: MACARTHUR MEDICAL RESEARCH CENTRE

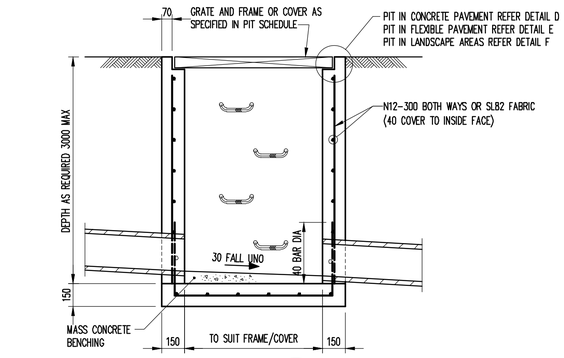
Sheet Subject: OSD DETAILS

Scale : A1 1:50 | Drawn LW | Authorised

Job No 201940 | Drawing No TTW-CI-20E XXX-010 | Revision P1

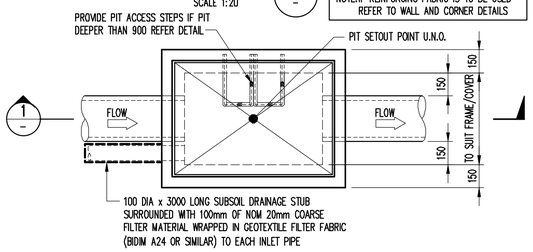
Plot File Created: Oct 08, 2021 - 10:39am

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING 001



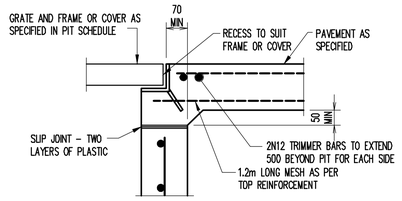
SECTION 1
SCALE 1:20

NOTE:IF REINFORCING FABRIC IS TO BE USED REFER TO WALL AND CORNER DETAILS

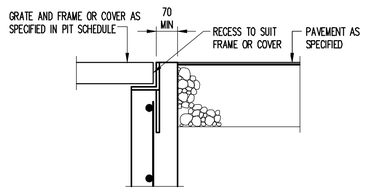


PLAN
SCALE 1: 20

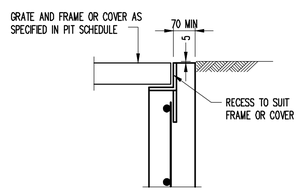
PIT TYPE XX



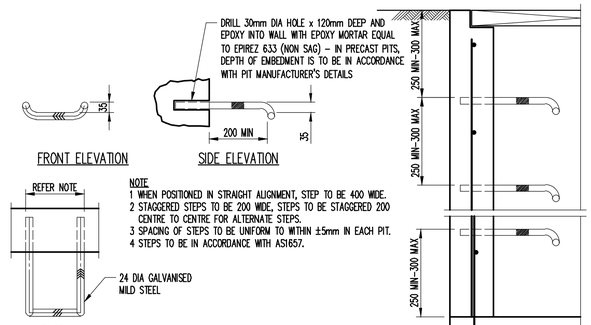
DETAIL D
SCALE 1: 10



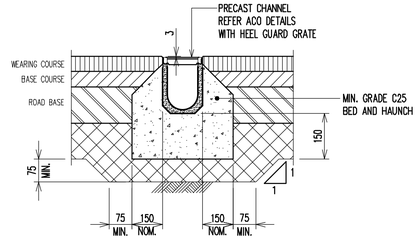
DETAIL E
SCALE 1: 10



DETAIL F
SCALE 1: 10

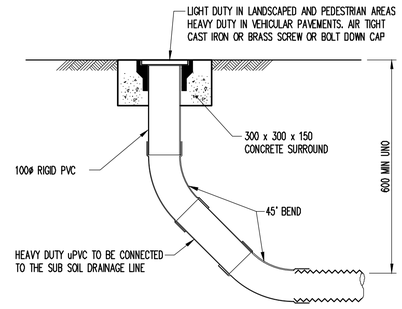


PIT ACCESS STEP DETAIL
SCALE 1: 10

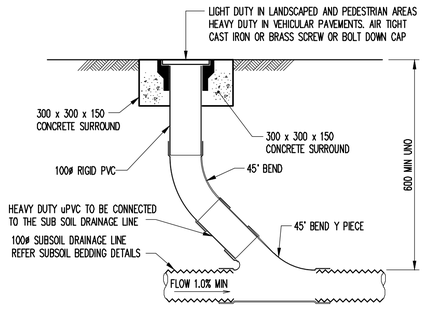


NOTE:
1. THE CHANNEL MUST NOT BE TRAFFICKED UNTIL WEARING COURSE IS LAID

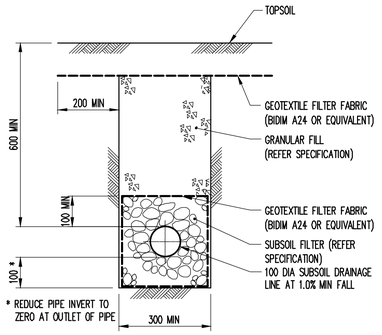
GRATED DRAIN (GD)
SCALE 1:10



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



SUBSOIL IN LANDSCAPED AREAS
SCALE 1: 10

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A1

SSDA

Rev	Description	Eng	Draft	Date
P1	SSDA ISSUE	AA	WW	07.10.21

Architect: BVN

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Plot File Created: Oct 07, 2021 - 2:40pm