MERRYLANDS PUBLIC SCHOOL

FOWLER ROAD MERRYLANDS NSW 2160

Job No. **161277**

STORMWATER SERVICES

- STORMWATER PIPE
- STORMWATER RISING MAIN PIPE
- EXISTING STORMWATER PIPE
- RAINWATER PIPE
- SUB-SOIL DRAINAGE LINE

STORMWATER LEGEND

- PROPOSED SEALED JUNCTION PIT
- PROPOSED GRATED SUFACE INLET PIT. PIT DIMENSIONS ARE GOVERNED BY DEPTH REFER TO DETAIL.
- EXISTING PIT
- PIT TO BE REMOVED
- PROPOSED KERB INLET PIT
- PROPOSED GRATED DRAIN
- PROPOSED RAINWATER TANK
- DOWNPIPE, RISER OR VERTICAL DROP
- RO1 – RAINWATER OUTLET FOR BALCONIES, ROOF, CARPARK ETC
- GS1 – DOWNPIPE WITH RAIN HEAD OVERFLOW
- GS2 – DOWNPIPE WITH SUMP SIDE OVERFLOW
- GS3 – DOWNPIPE WITH SUMP HIGH CAPACITY OVERFLOW
- SWALE DRAIN
- OVERLAND FLOW PATH
- ROOF FALL DIRECTION
- P 35.05 — PROPOSED PAVEMENT SURFACE LEVEL
- GL 35.05 — PROPOSED PIT SURFACE LEVEL
- IL 34.75 — PROPOSED PIT INVERT LEVEL
- FFL 23.56 — PROPOSED FINISHED FLOOR LEVEL
- + 35.11 — EXISTING SURFACE LEVEL
- 36.00 — EXISTING SURVEY CONTOUR
- TREE PROTECTION ZONE (TPZ)

GENERAL PIPEWORK LEGEND

- FLOW DIRECTION
- SERVICE / SIZE — SERVICES TO ABOVE
- SERVICE / SIZE — SERVICES FROM BELOW
- FALL DIRECTION
- STW Ø225 @ 1.0%min — PIPE TYPE, SIZE AND GRADE
- CONNECTION
- CONTINUATION
- END CAP
- ? — KEYNOTE TAG

EXISTING SERVICES

- S — S — EXISTING SEWER LINE
- T — T — EXISTING TELSTRA LINE
- G — G — EXISTING GAS LINE
- E — E — EXISTING ELECTRICITY LINE
- W — W — EXISTING WATER LINE
- O — O — EXISTING OPTUS LINE
- OF — OF — EXISTING OPTIC FIBRE LINE
- C — C — EXISTING COMMUNICATIONS LINE

GENERAL ABREVIATIONS

AB	ABOVE BENCH
AFFL	ABOVE FINISHED FLOOR LEVEL
CIS	CAST IN SLAB
CL	CENTRELINE
CS	CEILING SPACE
Cu	COPPER
DIA	DIAMETER
DP	DOWNPIPE
Ex.	EXISTING
FC	FALSE CEILING
FFL	FINISHED FLOOR LEVEL
GD	GRATED DRAIN
GL	GROUND LEVEL
HBS	PIPES HUNG BELOW SLAB
HL	HIGH LEVEL
IG	IN-GROUND
IL	INVERT LEVEL
LL	LOW LEVEL
O/F	OVERFLOW
PVC	POLYVINYLCHLORIDE
RL	REDUCED LEVEL
RWR	RAINWATER REUSE
SL	SURFACE LEVEL
S/S	STAINLESS STEEL
STW	STORMWATER
UB	UNDER BENCH
uPVC	UNPLASTICISED POLYVINYLCHLORIDE
U/S	UNDER SIDE
VD	VERTICAL DROP

PAVEMENT LEGEND

- EXTENT OF CONCRETE PAVEMENT
- DJ — DOWELLED JOINT
- KJ — KEYED JOINT
- SC — SAW CUT JOINT
- BJ — BUTT JOINT
- 2N12 TRIMMERS x 1200 LONG (TIED UNDER TOP MESH)
- 150 K&G — 150mm HIGH KERB & GUTTER
- 150 KO — 150mm HIGH KERB ONLY
- EXTENT OF BITUMEN PAVEMENT
- PAVEMENT TYPE 1 – CONCRETE
- PAVEMENT TYPE 2 – BITUMEN
- PAVEMENT TYPE 3 – CONCRETE FOOTPATH
- PAVEMENT TYPE 4 – GRAVEL
- PAVEMENT TYPE 5 – PAVERS
- LANDSCAPE PLANTING AREA
- LANDSCAPE TILED AREA
- LANDSCAPE WATER AREA
- FALL — FALL DIRECTION

PROJECT INFORMATION TABLE

THE TABLES BELOW ARE TO BE READ IN CONJUNCTION WITH THE ADJACENT NOTES

GEOTECHNICAL INFORMATION

COMPANY	REPORT No.	DATED
JK GEOTECHNICS	30427 Srpt	30/06/2017

SURVEY INFORMATION

THE SURVEY INFORMATION ON THESE DRAWINGS HAS BEEN PROVIDED BY

COMPANY	DATED
C.M.S Surveyors Pty Ltd	25/01/2017

CIVIL DRAWING LIST

No.	SHEET NAME
C001	NOTES & LEGEND
C050	TYPICAL DETAILS - SHEET 1
C051	TYPICAL DETAILS - SHEET 2
C100	EXTERNAL STORMWATER PLAN

EROSION SEDIMENT CONTROL DRAWING LIST

No.	SHEET NAME
ESM1	EROSION SEDIMENT CONTROL NOTES & LEGEND
ESM2	EROSION SEDIMENT CONTROL PLAN

GENERAL

1. ALL EXISTING LEVELS TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF WORKS
2. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE NOMINATED OR APPLICABLE COUNCIL SPECIFICATION. WHERE A SPECIFICATION HAS NOT BEEN NOMINATED THEN THE CURRENT NSW DEPARTMENT OF HOUSING CONSTRUCTION SPECIFICATION IS TO BE USED. THE NOMINATED SPECIFICATION SHALL TAKE PRECEDENCE TO THESE NOTES.
3. ALL DRAWINGS SHOULD BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS & DRAWINGS FROM OTHER CONSULTANTS.
4. THE CONTRACTOR SHOULD REPORT ANY DISCREPANCIES ON THE DRAWINGS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN.
5. THE CONTRACTOR SHOULD LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION AND PROTECT AND MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE AND/OR ADJUST IF NECESSARY. INFORMATION GIVEN ON THE DRAWINGS IN RESPECT TO SERVICES IS FOR GUIDANCE ONLY AND IS NOT GUARANTEED COMPLETE NOR CORRECT.
6. CONTRACTOR IS NOT TO ENTER UPON NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT THE PERMISSION OF THE OWNER.
7. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED WHERE DIRECTED OR REMOVED FROM SITE.
8. ALL NEW WORKS SHALL MAKE A SMOOTH JUNCTION WITH EXISTING.
9. ALL DRAINAGE LINES THROUGH ADJACENT LOTS SHALL BE CONTAINED WITHIN EASEMENTS CONFORMING TO COUNCIL'S STANDARDS.
10. THE CONTRACTOR SHALL CLEAR THE SITE BY REMOVING ALL RUBBISH, FENCES AND DEBRIS ETC. TO THE EXTENT SPECIFIED.
11. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL PROVIDE A TRAFFIC MANAGEMENT PLAN PREPARED BY AN ACCREDITED PERSON IN ACCORDANCE WITH RMS REQUIREMENTS, FOR ANY WORK ON OR ADJACENT TO PUBLIC ROADS, PLAN TO BE SUBMITTED TO COUNCIL & RMS.

SURVEY

1. JONES NICHOLSON IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY 3rd PARTY INFORMATION PROVIDED ON THIS DRAWING.
2. ALL LEVELS ARE TO A.H.D.
3. ALL CHAINAGES AND LEVELS ARE IN METRES, AND DIMENSIONS IN MILLIMETRES.
4. CONTRACTORS SHALL ARRANGE FOR THE WORKS TO BE SET OUT BY A REGISTERED SURVEYOR.

EARTHWORKS

1. PROVIDE PROTECTION BARRIERS TO PROTECTED/SENSITIVE AREAS PRIOR TO ANY BULK EXCAVATION.
2. OVER FULL AREA OF EARTHWORKS, CLEAR VEGETATION, RUBBISH, SLABS ETC. AND STRIP TOP SOIL. AVERAGE 200mm THICK. REMOVE FROM SITE, EXCEPT TOP SOIL FOR RE-USE.
3. CUT AND FILL OVER THE SITE TO LEVELS REQUIRED.
4. PRIOR TO ANY FILLING IN AREAS OF CUT OR IN EXISTING GROUND, PROOF ROLL THE EXPOSED SURFACE. REFER TO PROJECT INFORMATION TABLES FOR MINIMUM ROLLER WEIGHT AND THE MINIMUM NUMBER OF PASSES.
5. EXCAVATE AND REMOVE ANY SOFT SPOTS ENCOUNTERED DURING PROOF ROLLING AND REPLACE WITH APPROVED FILL COMPACTED IN LAYERS. THE WHOLE OF THE EXPOSED SUBGRADE AND FILL SHALL BE COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2%.
6. FOR ON SITE FILLING AREAS, THE CONTRACTOR SHALL TAKE LEVELS OF EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING FILL OPERATIONS.
7. WHERE HARD ROCK IS EXPOSED IN THE EXCAVATED SUB-GRADE, THIS WILL BE INSPECTED AND A DECISION MADE ON THE LEVEL TO WHICH EXCAVATION IS TAKEN.
8. FILL IN 200mm MAXIMUM (LOOSE THICKNESS) LAYERS TO UNDERSIDE OF BASECOURSE USING THE EXCAVATED MATERIAL AND COMPACTED TO 98% STANDARD (AS 1289 5.1.1). MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2% SHOULD THERE BE INSUFFICIENT MATERIAL FROM SITE EXCAVATIONS, IMPORT AS NECESSARY CLEAN GRANULAR FILL TO THE DESIGN ENGINEERS APPROVAL.
9. COMPACTION TESTING TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT INFORMATION TABLE. THE COSTS OF TESTING AND RE-TESTING ARE TO BE ALLOWED FOR BY THE BUILDER.
10. BATTERS TO BE AS SHOWN, OR MAXIMUM 1 VERT : 4 HORIZ. ALL CONDUITS AND MAINS SHALL BE LAID PRIOR TO LAYING FINAL PAVEMENT.
11. ALL BATTERS AND FOOTPATHS ADJACENT TO ROADS SHALL BE TOP SOILED WITH 150mm APPROVED LOAM AND SEEDED UNLESS OTHERWISE SPECIFIED.

SAFETY IN DESIGN

THERE ARE INHERENT RISKS WITH CONSTRUCTING, MAINTAINING, OPERATING, DEMOLISHING, DISMANTLING AND DISPOSING THIS DESIGN THAT ARE TYPICAL OF SIMILAR DESIGNS. AS FAR AS IS REASONABLY PRACTICABLE RISKS HAVE BEEN ELIMINATED OR MINIMISED THROUGH THE DESIGN PROCESS. HAZARD CONTROLS MUST STILL BE IMPLEMENTED BY THE CONTRACTOR, OWNER OR OPERATOR TO ENSURE THE SAFETY OF WORKERS.

- JONES NICHOLSON'S ASSESSMENT DID NOT IDENTIFY ANY UNIQUE RISKS ASSOCIATED WITH THE DESIGN

STORMWATER DRAINAGE

1. STORMWATER DRAINAGE SHALL BE GENERALLY IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS AND COUNCIL'S SPECIFICATION.
2. PIPES OF 225mm DIA. AND UNDER SHALL BE UPVC.
3. PIPES OF 300mm DIA. AND LARGER SHALL BE FRC OR CONCRETE CLASS 2 RUBBER RING JOINTED UNO.
4. ALL FRC OR RCP STORMWATER PIPES WITHIN ROAD RESERVE AREAS TO BE CLASS 3 U.N.O.
5. MINIMUM COVER TO PIPES 300mm DIA. AND OVER GENERALLY SHALL BE 600mm IN CARPARK & ROADWAY AREAS UNO.
6. PIPES SHALL GENERALLY BE LAID AT THE GRADES INDICATED ON THE DRAWINGS.
7. PIPES UP TO 150mm DIA SHALL BE LAID AT 1.0% MIN. GRADE U.N.O.
8. PIPES 225mm DIA AND OVER SHALL BE LAID AT 0.5% MIN. GRADE U.N.O.
9. BACKFILL TRENCHES WITH APPROVED FILL COMPACTED IN 200mm LAYERS TO 98% OF STANDARD DENSITY.
10. ANY PIPES OVER 16% GRADE SHALL HAVE CONCRETE BULKHEADS AT ALL JOINTS.
11. PITS SHALL BE AS DETAILED WITH METAL GRATES AT LEVELS INDICATED. ALL PITS DEEPER THAN 1200mm TO HAVE CLIMB IRONS. ALL GRATED PITS WITHIN PEDESTRIAN AND BUILDING AREAS TO HAVE ANTI-SLIP HEELGUARD GRATES.
12. BUILD INTO UPSTREAM FACE OF ALL PITS A 3.0m SUBSOIL LINE FALLING TO PITS TO MATCH PIT INVERTS.
13. INSTALL TEMPORARY SEDIMENT BARRIERS TO INLET PITS, TO COUNCIL'S STANDARDS UNTIL SURROUNDING AREAS ARE PAVED OR GRASSED.
14. PITS & DOWNPIPE LOCATIONS AND LEVELS MAY BE VARIED TO SUIT SITE CONDITIONS AFTER CONSULTING THE ENGINEER.
15. DOWNPIPES SHOWN ARE INDICATIVE ONLY, ALL ROOF GUTTERING AND DOWNPIPES TO THE CURRENT AUSTRALIAN STANDARDS.
16. ALL PLANTER BOXES AND BALCONIES TO BE CONNECTED TO THE PROPOSED STORMWATER DRAINAGE LINE.
17. HAND-EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS.
18. FOOTPATH CROSSING LEVELS SHOWN ARE TO BE ADJUSTED TO FINAL COUNCIL'S ISSUED LEVELS.
19. GEOTEXTILE FABRIC TO BE PLACED UNDER RIP RAP SCOUR PROTECTION.
20. ALL BASES OF PITS TO BE BENCHED TO HALF PIPE DEPTH AND PROVIDE GALVANISED ANGLE SURROUNDINGS TO GRATE.
21. SUBSOIL LINE PIPES AND FITTINGS SHALL BE PERFORATED PLASTIC TO CURRENT AUSTRALIAN STANDARDS. LAY PIPES ON FLOOR OF TRENCH GRADED AT 1% MIN. AND OVERLAY WITH FILTER MATERIAL EXTENDING TO WITHIN 200mm OF SURFACE. PROVIDE FILTER FABRIC OF PERMEABLE POLYPROPYLENE BETWEEN FILTER MATERIAL AND TOPSOIL

STORMWATER DRAINAGE INSTALLATION

1. SUPPLY & INSTALLATION OF DRAINAGE WORKS TO BE IN ACCORDANCEWITH THESE DRAWINGS, THE COUNCIL SPECIFICATION AND THE CURRENT APPLICABLE AUSTRALIAN STANDARDS.
2. BEDDING OF THE PIPELINES IS TO BE TYPE 'HS2' IN ACCORDANCE WITH THE STANDARDS AND AS FOLLOWS:
   a. COMPACTED GRANULAR MATERIAL IS TO COMPLY WITH THE FOLLOWING GRADINGS:

SIEVE SIZE (mm)	19	2.36	0.60	0.30	0.15	0.075
% MASS PASSING	100	50-100	20-90	10-60	0-25	0-10

   - AND THE MATERIAL PASSING THE 0.075 SIEVE HAVING LOW PLASTICITY AS DESCRIBED IN APPENDIX D OF AS1726
   b. BEDDING DEPTH UNDER THE PIPE TO BE 100mm.
   c. BEDDING MATERIAL TO BE EXTENDED FROM THE TOP OF THE BEDDING ZONE UP TO 0.3 TIMES PIPE OUTSIDE DIAMETER. THIS REPRESENTS THE 'HAUNCH ZONE.'
   d. THE BEDDING & HAUNCH ZONE MATERIAL IS TO BE COMPACTED TO A MINIMUM RELATIVE COMPACTION OF 98% WITHIN ROAD RESERVES AND TRAFFICABLE AREAS AND 95% ELSEWHERE FOR COHESIVE MATERIAL OR A MINIMUM DENSITY INDEX OF 70% IN ACCORDANCE WITH THE STANDARDS FOR COHESIONLESS MATERIAL.
   e. COMPACTION TESTING SHALL BE CARRIED OUT BY AN APPROVED ORGANISATION WITH A NATA CERTIFIED LABORATORY FOR ALL DRAINAGE LINES LAID WHOLLY OR IN PART UNDER THE KERB & GUTTER OR PAVEMENT.
3. BACKFILL SHALL BE PLACED & COMPACTED IN ACCORDANCE WITH THE SPECIFICATION. A GRANULAR GRAVEL AGGREGATE MATERIAL (<10mm) BACKFILL IS RECOMMENDED FOR THE BEDDING, HAUNCH SUPPORT AND SIDE ZONE DUE TO IT'S SELF COMPACTING ABILITY.
4. A MINIMUM OF 150mm CLEARANCE IS TO BE PROVIDED BETWEEN THE OUTSIDE OF THE PIPE BARREL AND THE TRENCH WALL FOR PIPES < 600 DIA. 200mm CLEARANCE FOR PIPES 600 TO 1200 DIA AND D/6 CLEARANCE FOR PIPES > 1200 DIA.

PAVEMENT - FLEXIBLE

1. THE PAVEMENT DESIGN AS DETAILED ASSUMES A PROPERLY PREPARED UNIFORM AND STABLE SUBGRADE. CONFIRMATION OF DESIGN CBR RATIO IS REQUIRED BY A GEOTECHNICAL ENGINEER PRIOR TO WORKS COMMENCING.
2. ASSUMED DESIGN CBR TO BE CONFIRMED ONSITE DURING CONSTRUCTION PRIOR TO PLACEMENT OF PAVEMENT MATERIALS. THE CONTRACTOR IS TO UNDERTAKE SUFFICIENT CBR TESTING TO CONFIRM THE ASSUMED VALUE. WHERE A LESSER VALUE HAS BEEN DETERMINED, THE SUPERVISING ENGINEER IS TO BE NOTIFIED TO DETERMINE A REVISED PAVEMENT DESIGN.
3. PAVEMENT TO BE CONSTRUCTED AS FOLLOWS:
   SURFACE COURSE – DENSE GRADED ASPHALT
   PRIMERSEAL – EMULSION BASED HOT BITUMEN
   BASE COURSE – DGB 20
   SUB BASE – DGS 40
4. SUBGRADE SHALL BE COMPACTED TO 100% STANDARD MAXIMUM DRY DENSITY RATIO AT OPTIMUM MOISTURE CONTENT ±2% IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS.
5. SUBBASE COURSE SHALL BE COMPACTED TO 95% MODIFIED MAXIMUM DRY DENSITY.
6. BASECOURSE SHALL BE COMPACTED TO 98% MODIFIED MAXIMUM DRY DENSITY.
7. PRIOR TO THE PLACEMENT OF THE PRIMERSEAL AND AFTER THE REQUIRED DENSITY IS ACHIEVED, THE PAVEMENT IS TO BE ALLOWED TO DRY BACK TO APPROXIMATELY 60% TO 70% OPTIMUM MOISTURE CONTENT.
8. ALL SUBGRADES TO BE PROOF ROLLED & APPROVED BY SUPERVISING ENGINEER.
9. COMPACTION TESTS ARE TO BE UNDERTAKEN FOR ALL PAVEMENT LAYERS INCLUDING SUBGRADE AT A RATE TO BE DETERMINED BY THE SUPERVISING ENGINEER & THE RESULTS TO BE SUPPLIED TO THE ENGINEER PRIOR TO PLACEMENT OF THE NEXT PAVEMENT LAYER.

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

AMDT	DATE	BY	DESCRIPTION
2	27.07.17	KG	ISSUED FOR DA (REVISED ARCHITECTURAL)
1	14.07.17	KG	ISSUED FOR DA

CIVIL · STRUCTURAL · BUILDING SERVICES

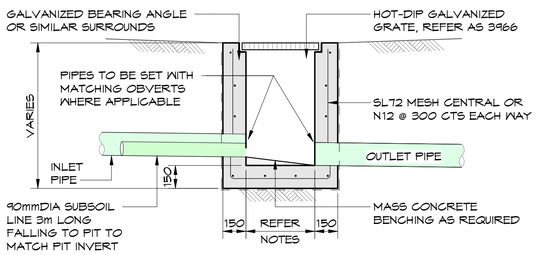
JONES NICHOLSON CONSULTING ENGINEERS
WWW.JONESNICHOLSON.COM.AU ABN: 51 003 316 032

DESIGN : TH
DRAWN : KG
DATE : JULY 17
DRG SIZE : A1
SCALE : As indicated
PROJECT MGR : BJ

CIVIL DESIGN NOTES & LEGEND

MERRYLANDS PUBLIC SCHOOL
FOWLER ROAD MERRYLANDS NSW 2160
JDH ARCHITECTS

161277 C001 2

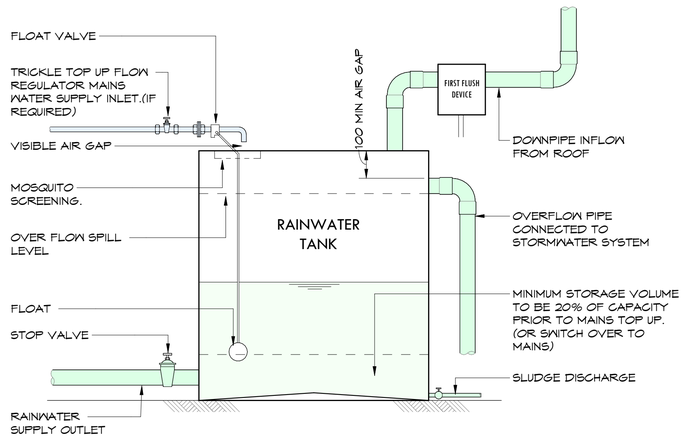


MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS			
DEPTH OF INVERT OF OUTLET		DEPTH OF INVERT OF OUTLET	
		WIDTH	LENGTH
	< 600	450	450
> 600		600	600
> 900		600	900
> 1200		900	900
*STEP IRONS SHALL BE PROVIDED FOR PITS WITH DEPTHS EXCEEDING 1200mm			

NOTES

1. CLIMB IRONS SHALL BE PROVIDED UNDER LID AT 300 CTS TO COUNCIL STANDARDS WHERE PIT DEPTH IS DEEPER THAN 1000.
2. REINFORCEMENT NOTED IS ONLY REQUIRED FOR PITS EXCEEDING 900 DEEP, SUBJECT TO COUNCIL REQUIREMENTS. PITS GREATER THAN 3000 DEEP WILL REQUIRE STRUCTURAL ENGINEERS DESIGN.
3. PROVIDE 90Dia x 3000 LONG SUBSOIL DRAINAGE STUB PIPE SURROUNDED WITH 100mm THICKNESS OF NOMINAL 20mm COARSE FILTER MATERIAL WRAPPED IN GEOTEXTILE FILTER FABRIC. (BIDUM A24 OR APPROVED SIMILAR). TO BE PARALLEL TO UPSTREAM SIDE OF EACH INLET PIPE.
4. ALTERNATIVE PIT CONSTRUCTION MAY BE USED SUBJECT TO THE ENGINEERS APPROVAL.
5. CONCRETE STRENGTH F'c = 32 MPa

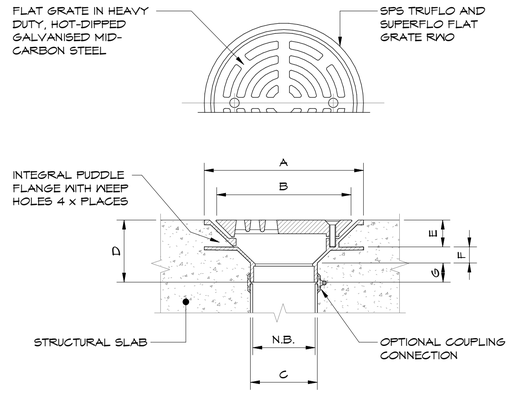
TYPICAL CONCRETE INLET PIT - NATURAL SURFACE



NOTES:

- RAINWATER TANK INSTALLED TO AS/NZS 3500.1 (2003) TO BE PROVIDED FOR TRICKLE TOP-UP OF RAINWATER TANK IF THE STORED WATER BECOMES LESS THAN SET MINIMUM WATER LEVEL. ALTERNATIVELY PROVIDE SWITCH OVER TO MAINS DEVICE WHEN TANK STORAGE REACHES MINIMUM WATER LEVEL. (RAINBANK OR SIMILAR)
- INSTALL FIRST FLUSH DEVICE TO RESTRICT LEAVES, DEBRIS, DUST AND OTHER CONTAMINATING MATERIAL ENTERING THE RAINWATERTANK AND POLLUTING THE WATER.

TYPICAL RAINWATER TANK DETAIL



N.B.	A	B	C	D	E	F	C	FLOW RATE * L/S
100	260	200	110	95	44	26	25	8.2
150	260	200	160	80	48	29	28	10.2
SUPERFLO**	400	290	160	143	66	39	38	17

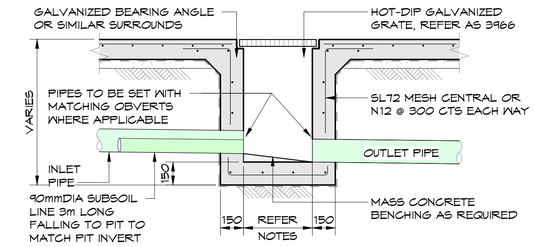
* BASED ON 50mm HEAD OF WATER ABOVE SURFACE LEVEL. FOR FURTHER DATA REFER TO FLOW CHARTS.

** SUPERFLO AVAILABLE IN 150mm OUTLET ONLY.

SPECIFICATION CODE:
- TIA100F (100mm TRUFLO CI BODY, GALVANISED FLAT GRATE).
- TIA150F (150mm TRUFLO CI BODY, GALVANISED FLAT GRATE).
- TIA100/90F2 (150mm SUPERFLO CI BODY, GALVANISED FLAT GRATE).

SUGGESTED APPLICATIONS:
- CAR PARK DECKS.
- PLANT ROOMS.
- PEDESTRIAN PRECINCTS.

SPS TRUFLO & SUPERFLO FLAT GRATE (RWO)

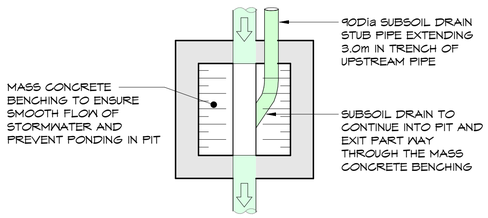


MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS			
DEPTH OF INVERT OF OUTLET		DEPTH OF INVERT OF OUTLET	
		WIDTH	LENGTH
	< 600	450	450
> 600		600	600
> 900		600	900
> 1200		900	900
*STEP IRONS SHALL BE PROVIDED FOR PITS WITH DEPTHS EXCEEDING 1200mm			

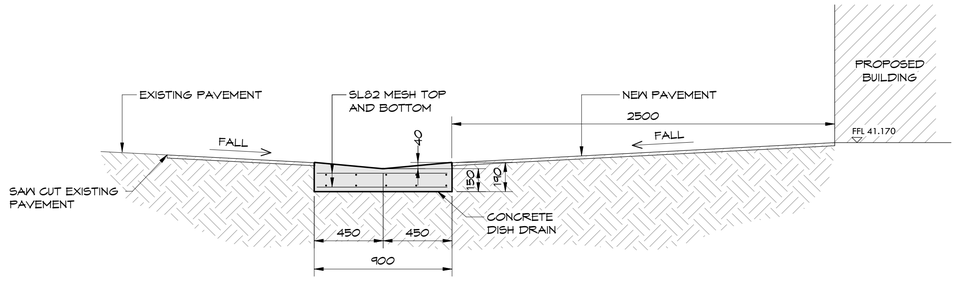
NOTES:

1. CLIMB IRONS SHALL BE PROVIDED UNDER LID AT 300 CTS TO COUNCIL STANDARDS WHERE PIT DEPTH IS DEEPER THAN 1000.
2. REINFORCEMENT NOTED IS ONLY REQUIRED FOR PITS EXCEEDING 900 DEEP, SUBJECT TO COUNCIL REQUIREMENTS. PITS GREATER THAN 3000 DEEP WILL REQUIRE STRUCTURAL ENGINEERS DESIGN.
3. PROVIDE 90Dia x 3000 LONG SUBSOIL DRAINAGE STUB PIPE SURROUNDED WITH 100mm THICKNESS OF NOMINAL 20mm COARSE FILTER MATERIAL WRAPPED IN GEOTEXTILE FILTER FABRIC.
   (BIDUM A24 OR APPROVED SIMILAR). TO BE PARALLEL TO UPSTREAM SIDE OF EACH INLET PIPE.
4. ALTERNATIVE PIT CONSTRUCTION MAY BE USED SUBJECT TO THE ENGINEERS APPROVAL.
5. CONCRETE STRENGTH F'c = 32 MPa

TYPICAL CONCRETE INLET PIT - CONCRETE SURFACE



TYPICAL SUBSOIL PIPE/PIT BENCHING



TYPICAL CONCRETE DISH DRAIN DETAIL

2	27.07.17	KG	ISSUED FOR DA (REVISED ARCHITECTURAL)
1	14.07.17	KG	ISSUED FOR DA
AMDT	DATE	BY	DESCRIPTION

CIVIL · STRUCTURAL · BUILDING SERVICES

ISO 9001 Quality Management · ISO 14001 Environmental Management · AS/NZS 4801 Occupational Health & Safety Management

JONES NICHOLSON CONSULTING ENGINEERS

WWW.JONESNICHOLSON.COM.AU ABN: 51 003 316 032

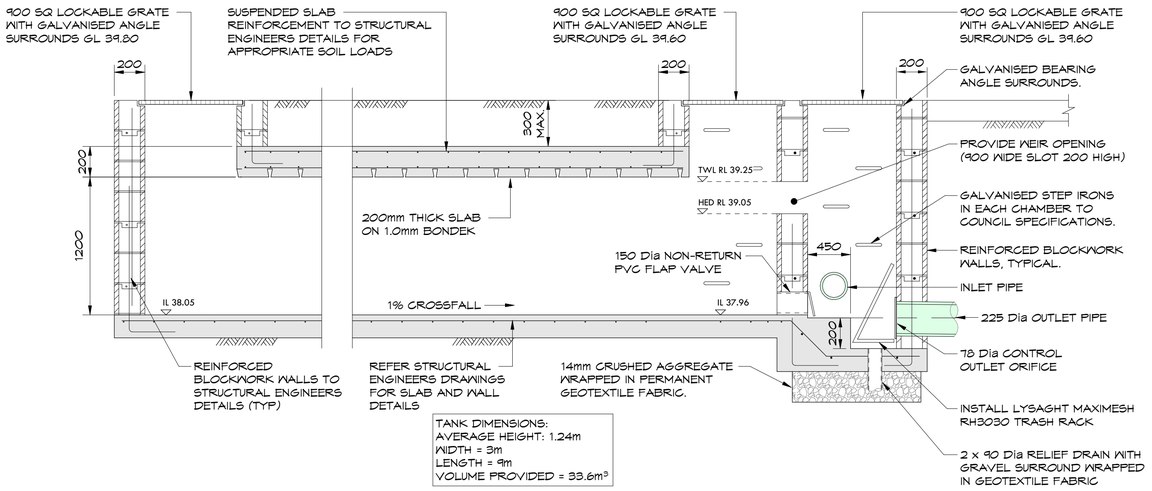
DESIGN : TH
DRAWN : KG
DATE : JULY 17
DRG SIZE : A1
SCALE : As indicated
PROJECT MGR : BJ

CIVIL DESIGN
TYPICAL DETAILS - SHEET 1

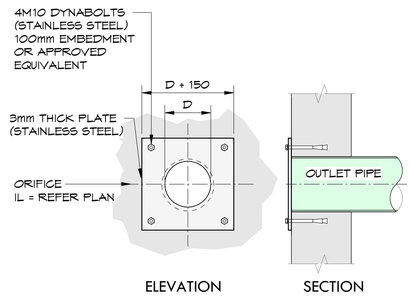
MERRYLANDS PUBLIC SCHOOL
FOWLER ROAD MERRYLANDS NSW 2160
JDH ARCHITECTS

161277
C050 2

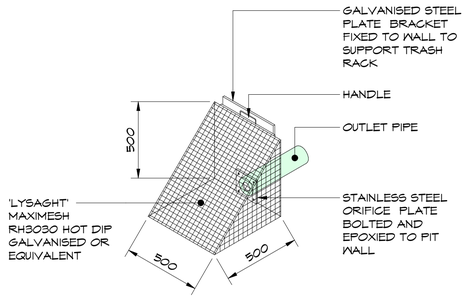
PRELIMINARY NOT TO BE USED FOR CONSTRUCTION



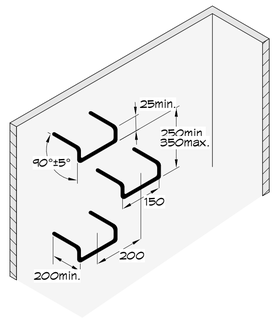
ON SITE DETENTION TANK DETAIL



TYPICAL ORIFICE PLATE DETAIL



TYPICAL TRASH RACK SCREEN DETAIL



STEP IRON DETAIL

AMDT	DATE	BY	DESCRIPTION
1	27.07.17	KG	ISSUED FOR DA (REVISED ARCHITECTURAL)

ISO 9001 Quality Management · ISO 14001 Environmental Management · AS/NZS 4801 Occupational Health & Safety Management

CIVIL · STRUCTURAL · BUILDING SERVICES

JONES NICHOLSON CONSULTING ENGINEERS
WWW.JONESNICHOLSON.COM.AU ABN: 51 003 316 032

DESIGN : TH
DRAWN : KG
DATE : JULY 17
DRG SIZE : A1
SCALE : As indicated
PROJECT MGR : BJ

CIVIL DESIGN
TYPICAL DETAILS - SHEET 2

MERRYLANDS PUBLIC SCHOOL
FOWLER ROAD MERRYLANDS NSW 2160
JDH ARCHITECTS

161277
C051 1

MORRIS STREET

FOWLER ROAD

HOLDWORTH STREET

CONNECT TO EXISTING KERB INLET PIT

600 SQ GRATED INLET PIT

Ø300 @ 1.0% MIN. >

600 SQ GRATED INLET PIT

Ø300 @ 1.0% MIN. >

EXISTING STORMWATER NETWORK DOES NOT HAVE THE ADDITIONAL CAPACITY REQUIRED TO CATER FOR THE PROPOSED DEVELOPMENTS RUNOFF AND SHALL REMAIN SEPARATE TO THE PROPOSED STORMWATER NETWORK.

PROPOSED OSD TANK. REFER TO SIZING CALCULATIONS BELOW AND DETAILS DRAWING C050. OSD TANK VOLUME = 34.6m³ (AVERAGE HEIGHT = 1.24m WIDTH = 3m, LENGTH = 9m)

600 SQ SEALED JUNCTION PIT

450 SQ GRATED INLET PIT

Ø225 @ 1.0% MIN. >

Ø150 @ 1.0% MIN. >

5000L SLIMLINE RAINWATER TANK

RAINWATER TANK OVERFLOW TO OSD SYSTEM

600 SQ GRATED INLET PIT

Ø225 @ 1.0% MIN. >

34.7m² (3.0%) ROOF AREA BYPASSING OSD (REMAINDER OF BUILDING FOOTPRINT DRAINS TO OSD)

600 SQ GRATED INLET PIT

EXTERNAL EXPOSED PAVEMENT TO FALL AT MINIMUM 1.0%

900 WIDE CONCRETE DISH DRAIN

600 SQ GRATED INLET PIT

EXTENT OF NEW PAVEMENT

REPROFILE BITUMEN TO ENSURE FALL FROM BUILDING TO PROPOSED DISH DRAIN

OSD SUMMARY

OSD Catchment:	A'Becketts Creek
New site footprint:	0.107 Ha
S.S.R:	300 cu.m/Ha
P.S.D:	140 L/s/Ha
Percentage to storage:	97%
Vol/PSD Adjustment:	141.75
P.S.D for site:	**14.73 L/s**
Max Head to orifice centre:	1.29m
Calculated orifice dia:	**0.078m**
Max discharge:	14.73 L/s
Head for H.E.D:	1.09m
H.E.D:	13.54 L/s (92%)
Mean Discharge:	14.14 L/s
Average Discharge/Ha:	136.02 L/s/Ha
Final Site Storage Ratio:	321 cu.m/Ha
Site Storage Volume:	**33.36 cu.m**
Volume Provided:	**33.60 cu.m**

0 4 8 12 16 20m
4 3 2 1
SCALE 1:200

PRELIMINARY NOT TO BE USED FOR CONSTRUCTION

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1	14.07.17	KG	ISSUED FOR DA

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CIVIL • STRUCTURAL • BUILDING SERVICES

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DESIGN :	TH
DRAWN :	KG
DATE :	JUL 2017
DRG SIZE :	A1
SCALE :	1:200
PROJECT MGR :	BJ

CIVIL DESIGN EXTERNAL STORMWATER PLAN

MERRYLANDS PUBLIC SCHOOL
FOWLER ROAD
MERRYLANDS, NSW 2160
JDH ARCHITECTS

161277
C100 3

MERRYLANDS PUBLIC SCHOOL

FOWLER ROAD MERRYLANDS NSW 2160

Job. No 161277

EROSION SEDIMENT CONTROL LEGEND

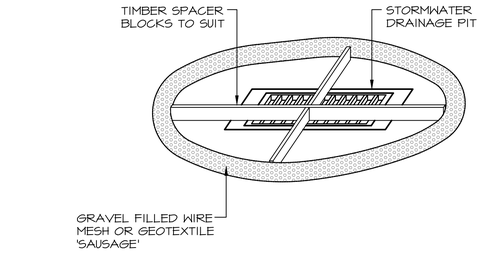
- PROPOSED BUILDING LINE
- PROPOSED BUILDING ROOF OUTLINE
- PROPRIETARY SILT FENCE
- PROVIDE TEMPORARY CHAIN WIRE FENCING (HOARDING) ALONG THE SITE BOUNDARY.
- TEMPORARY STABALISED CONSTRUCTION ENTRY/EXIT. (SHAKER PAD)
- TEMPORARY FILTER TUBE WITH SAFETY BARRICADE TO KERB INLET PITS.
- TEMPORARY MASS CONCRETE FOOTPATH CROSSING.
- DIRECTION OF FLOW
- DIVERSION BANK
- SURFACE INLET DRAINAGE PIT WITH SURROUNDING FILTER FABRIC INLET SEDIMENT TRAP OR FILTER TUBES (SANDBAGS)
- TEMPORARY GEOTEXTILE WRAPPED HAY BALES/SAND BAGS
- SANDBAG SEDIMENT INLET TRAP
- SANDBAG KERB SEDIMENT TRAP

EROSION SEDIMENT CONTROL

1. EROSION & SEDIMENT CONTROLS TO BE INSTALLED IN ACCORDANCE WITH COUNCIL'S SPECIFICATION & THE NSW DEPARTMENT OF HOUSING "BLUE BOOK" - SOILS AND CONSTRUCTION - MANAGING URBAN STORMWATER, 2004. REFER TO THE BLUE BOOK FOR STANDARD DRAWINGS "SD"
2. SEDIMENT & EROSION CONTROLS MUST BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS OR DEMOLITION ACTIVITY. THE LOCATION OF SUCH DEVICES IS INDICATIVE ONLY AND FINAL POSITION SHOULD BE DETERMINED ON SITE.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MEASURES ARE TAKEN DURING THE COURSE OF CONSTRUCTION TO PREVENT SEDIMENT EROSION AND POLLUTION OF THE DOWNSTREAM SYSTEM. SUPERVISING ENGINEER SHOULD BE CONTACTED IF IN DOUBT. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED AFTER EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO A NOMINATED SOIL STOCKPILE SITE.
4. RETAIN ALL EXISTING GRASS COVER WHEREVER POSSIBLE. TOPSOIL FROM ALL AREAS THAT WILL BE DISTURBED TO BE STRIPPED AND STOCKPILED AT THE NOMINATED SITE. A SEDIMENT FENCE TO BE PLACED DOWNHILL OF STOCKPILE.
5. AREAS OF SITE REGRADING ARE TO BE COMPLETED PROGRESSIVELY DURING THE WORKS AND STABILISED AS EARLY AS POSSIBLE. THE SUPERVISING ENGINEER MAY DIRECT THE CONTRACTOR TO HAVE AREAS OF DISTURBANCE COMPLETED AND STABILISED DURING THE COURSE OF THE WORKS.
6. ALL DISTURBED AREAS ARE TO BE SEEDED & FERTILISED WITHIN 14 DAYS OF EXPOSURE.
7. ALL EXISTING TREES TO BE RETAINED UNLESS SHOWN OTHERWISE ON APPROVED DRAWINGS. TREES RETAINED ARE TO BE PROTECTED WITH A HIGH VISIBILITY FENCE, PLUS FLAGGING TO INDIVIDUAL TREES AS NECESSARY.
8. INSTALL TEMPORARY SEDIMENT BARRIERS TO ALL INLET PITS LIKELY TO COLLECT SILT LADEN WATER, UNTIL SURROUNDING AREAS ARE PAVED OR REGRASSED. GRAVEL OR GEOTEXTILE INLET FILTERS TO SD6-11 & SD6-12.
9. ALL SILT FENCES & BARRIERS ARE TO BE MAINTAINED IN GOOD ORDER & REGULARLY DESILTED DURING THE CONSTRUCTION PERIOD. SILT FENCES TO SD6-8 OR SD6-9.
10. STOCKPILES OF LOOSE MATERIALS SUCH AS SAND, SOIL, GRAVEL MUST BE COVERED WITH GEOTEXTILE SILT FENCE MATERIAL. PLASTIC SHEETING OR MEMBRANE MUST NOT BE USED. SAFETY BARRICADING SHOULD BE USED TO ISOLATE STOCKPILES OF SOLID MATERIALS SUCH AS STEEL REINFORCING, FORMWORK AND SCAFFOLDING.
11. WASTE MATERIALS ARE TO BE STOCKPILED OR LOADED INTO SKIP-BINS LOCATED ON SITE AS SHOWN ON PLAN.
12. NO MORE THAN 150m OF TRENCHING TO BE OPEN AT ANY ONE TIME. IMMEDIATELY AFTER TRENCH BACKFILLING, PROVIDE SANDBAGS OR SAUSAGE FILTERS ACROSS EACH TRENCH AT MAXIMUM 20m SPACINGS. FILTERS TO REMAIN IN PLACE UNTIL REVEGETATION HAS OCCURRED.
13. ALL VEHICLES LEAVING THE SITE MUST PASS OVER THE STABILISED SITE ACCESS BALLAST AREA (SIMILAR TO SD6-14) TO SHAKE OFF SITE CLAY AND SOIL. IF NECESSARY WHEELS AND AXLES ARE TO BE HOSED DOWN. BALLAST IS TO BE MAINTAINED & REPLACED AS NECESSARY DURING THE CONSTRUCTION PERIOD.
14. THE HEAD CONTRACTOR IS TO INFORM ALL SITE STAFF AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.
15. ANY SEDIMENT DEPOSITED ON THE PUBLIC WAY, INCLUDING FOOTPATH RESERVE AND ROAD SURFACE, IS TO BE REMOVED IMMEDIATELY.
16. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS WITHIN THE FOOTPATH AREA TO PROVIDE SAFE ACCESS FOR PEDESTRIANS.
17. CONCRETE PUMPS AND CRANES ARE TO OPERATE FROM WITHIN THE BALLAST ENTRY DRIVEWAY AREA AND ARE NOT TO OPERATE FROM THE PUBLIC ROADWAY UNLESS SPECIFIC COUNCIL PERMISSION IS OBTAINED.
18. DELIVERY VEHICLES MUST NOT STAND WITHIN THE PUBLIC ROADWAY FOR MORE THAN 20 MINUTES AT A TIME.
19. TRUCKS REMOVING EXCAVATED / DEMOLISHED MATERIAL SHOULD TRAVEL ON STABILISED CONSTRUCTION PATHS. MATERIAL TO BE TAKEN TO THE TRUCK TO REDUCE TRUCK MOVEMENT ON SITE. TRUCKS TO BE LIMITED TO SINGLE UNIT HEAVY RIGID VEHICLES. (NO SEMITRAILERS)
20. ANY EXCAVATION WORK ADJACENT TO ADJOINING PROPERTIES OR THE PUBLIC ROADWAY IS NOT TO BE COMMENCED UNTIL THE STRUCTURAL ENGINEER IS CONSULTED AND SPECIFIC INSTRUCTIONS RECEIVED FROM THE ENGINEER.
21. TOILET FACILITIES MUST BE EITHER A FLUSHING TYPE OR APPROVED PORTABLE CHEMICAL CLOSET. CHEMICAL CLOSETS ARE TO BE MAINTAINED & SERVICED ON A REGULAR BASIS SO THAT OFFENSIVE ODOUR IS NOT EMITTED.
22. DURING TRENCH EXCAVATION ALL SPOIL SHALL BE MOUNDED ON THE UPHILL SIDE OF TRENCHES AND PLACEMENT IS TO COMPLY WITH THE SUPERINTENDENTS REQUIREMENT.
23. DIVERSION BANKS SHOULD BE CONSTRUCTED BY MOUNDING STRIPPED TOPSOIL (MIN HEIGHT 600mm) WHERE DIRECTED. MATERIAL TO BE RESPREAD ON FOOTWAYS AFTER FINAL TRIMMING.
24. UNDISTURBED BUFFER ZONE AREAS ARE CLOSED TO ALL TRAFFIC MOVEMENTS UNLESS OTHERWISE NOTED BY THE SUPERINTENDENT AND ACCESS TO THE SEWER OR C.D.L. TRENCHING WILL BE AS SHOWN, OR HEAVY PENALTIES MAY BE IMPOSED.
25. TRAFFIC MANAGEMENT MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH 'R.T.A. TRAFFIC CONTROL AT WORK SITES - CURRENT EDITION' AND AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.'
26. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.'

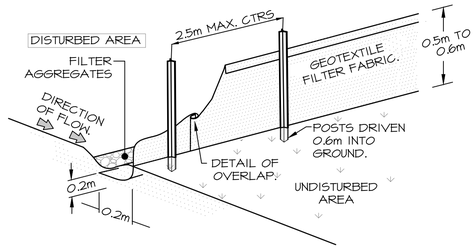
SAFETY IN DESIGN

1. THERE ARE INHERENT RISKS WITH CONSTRUCTING, MAINTAINING, OPERATING, DEMOLISHING, DISMANTLING AND DISPOSING THIS DESIGN THAT ARE TYPICAL OF SIMILAR DESIGNS. AS FAR AS IS REASONABLY PRACTICABLE RISKS HAVE BEEN ELIMINATED OR MINIMISED THROUGH THE DESIGN PROCESS. HAZARD CONTROLS MUST STILL BE IMPLEMENTED BY THE CONTRACTOR, OWNER OR OPERATOR TO ENSURE THE SAFETY OF WORKERS.
2. JONES NICHOLSON'S ASSESSMENT DID NOT IDENTIFY ANY UNIQUE RISKS ASSOCIATED WITH THE DESIGN.



SAUSAGE BARRIER

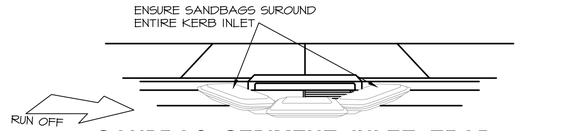
1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH ON THE INLET PIT.
2. FILL THE SLEEVE WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. MAINTAIN A CLEAR DISTANCE AWAY FROM THE PIT WITH SPACER BLOCKS.



NOTE: DRAINAGE AREA 0.6HA. MAX.
SLOPE GRADIENT 1:2 MAX. SLOPE LENGTH 60M MAX.

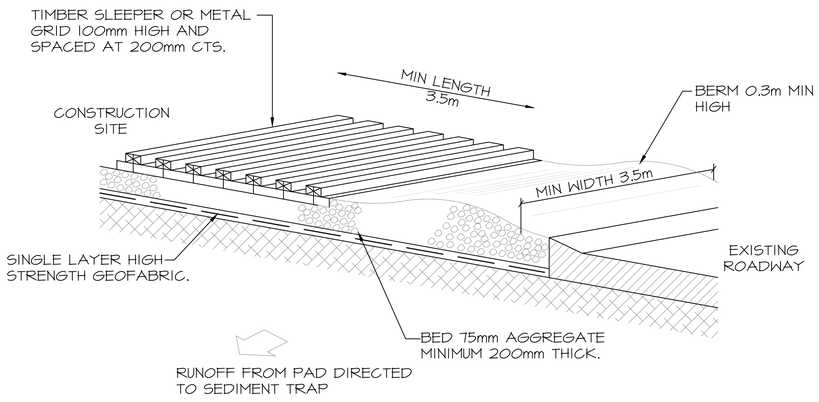
SEDIMENT FENCE

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5m LONG STAR PICKETS IN GROUND 3m APART.
3. DIG A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT WITH A 150mm OVERLAP.



SANDBAG SEDIMENT INLET TRAP

1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT.
2. FILL THE SLEEVE WITH 25mm TO 50MM GRAVEL.
3. FORM AN ELIPTICAL CROSS SECTION ABOUT 150mm HIGH X 400mm WIDE.
4. PLACE THE FILTER AT THE OPNEING OF THE KERB INLET LEAVING A 100MM GAP AT THE TOP TO ACT AS AN EMERGENCY SPILL WAY.
5. MAINTAIN A CLEAR DISTANCE AWAY FROM THE PIT WITH SPACER BLOCKS.
6. FORM A SEAL WITH THE KERBING AND PREVENT SEDIMENT BYPASSING THE FILTER.
7. FIT TO ALL KERB INLETS AS SHOWN.



TEMPORARY CONSTRUCTION EXIT

STOCKPILES

1. LOCATE STOCKPILE AT LEAST 5m FROM VEGETATION, CONCENTRATED WATER FLOWS, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS A LOW FLAT ELONGATED MOUND.
3. WHERE THERE IS A SUFFICIENT AREA TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT. (TO ALLOW AIR VENTILATION FOR FUTURE REUSE)
4. REHABILITATE IN ACCORDANCE WITH THE SWMP/ESCP.
5. CONSTRUCT EARTH BANK ON THE UPSLOPE SIDE TO DIVERT RUN OFF AROUND THE STOCKPILE AND A SEDIMENT FENCE 1m TO 2m DOWNSLOPE OF STOCKPILE.

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CIVIL DESIGN
EROSION SEDIMENT CONTROL NOTES & LEGEND

MERRYLANDS PUBLIC SCHOOL
FOWLER ROAD
MERRYLANDS, NSW 2160
JDH ARCHITECTS

161277
ESM12

MORRIS STREET

FOWLER ROAD

HOLDWORTH STREET

PROVIDE SANDBAG SEDIMENT TRAPS

EXISTING SURFACE INLET DRAINAGE PITS WITH SURROUNDING FILTER FABRIC INLET SEDIMENT TRAP OR FILTER TUBES (SANDBAGS)

PROVIDE STOCKPILE. LOCATION TO BE CONFIRMED BY SUPERINTENDENT.

SITE SHED AND AMENITIES. LOCATION TO BE CONFIRMED BY SUPERINTENDENT.

PROVIDE TEMPORARY STABALISED CONSTRUCTION ENTRY/EXIT. (SHAKER PAD)

SURFACE INLET DRAINAGE PIT WITH SURROUNDING FILTER FABRIC INLET SEDIMENT TRAP OR FILTER TUBES (SANDBAGS)

PROVIDE SILT FENCE

PROVIDE TEMPORARY CHAIN WIRE FENCING (HOARDING) ALONG THE SITE BOUNDARY.

PROVIDE SANDBAGS ALONG SOUTHERN EDGE OF FENCE

PRELIMINARY NOT TO BE USED FOR CONSTRUCTION

SCALE 1:200

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CIVIL DESIGN EROSION SEDIMENT CONTROL PLAN

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ESM23