

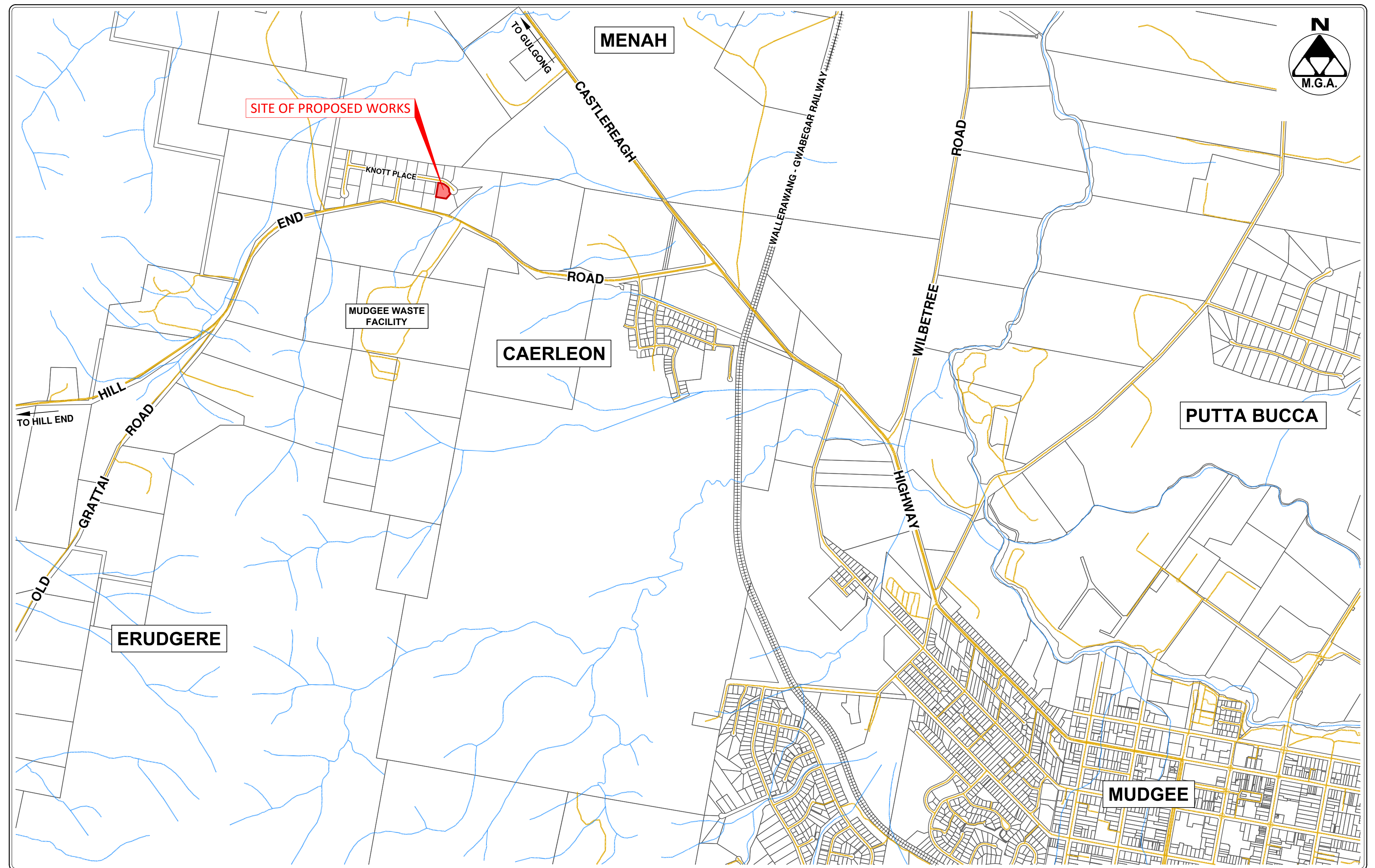
Civil Design Documentation

Proposed Light Industrial Units

Lots 9 in DP 1277513

5 Knott Place, Caerleon NSW 2850

DRAWING SCHEDULE	
DWG NUMBER	DESCRIPTION
39211-C00	COVER SHEET AND DRAWING SCHEDULE
39211-C01	EXISTING SITE PLAN
39211-C02	PROPOSED SITE PLAN
39211-C03	PROPOSED PAVEMENT PLAN
39211-C04	PAVEMENT SPECIFICATIONS
39211-C05	PROPOSED STORMWATER MANAGEMENT PLAN
39211-C06	STORMWATER SPECIFICATIONS
39211-C07	PROPOSED SEWER PLAN
39211-C08	SEWER SPECIFICATIONS
39211-C09	BULK EARTHWORKS PLAN
39211-C08	BULK EARTHWORKS SPECIFICATIONS



LOCALITY PLAN
REDUCTION RATIO 1:12500 @ A1

SUBMISSION FOR DA

BARNSON PTY LTD

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email generalenquiry@barnson.com.au
web barnson.com.au

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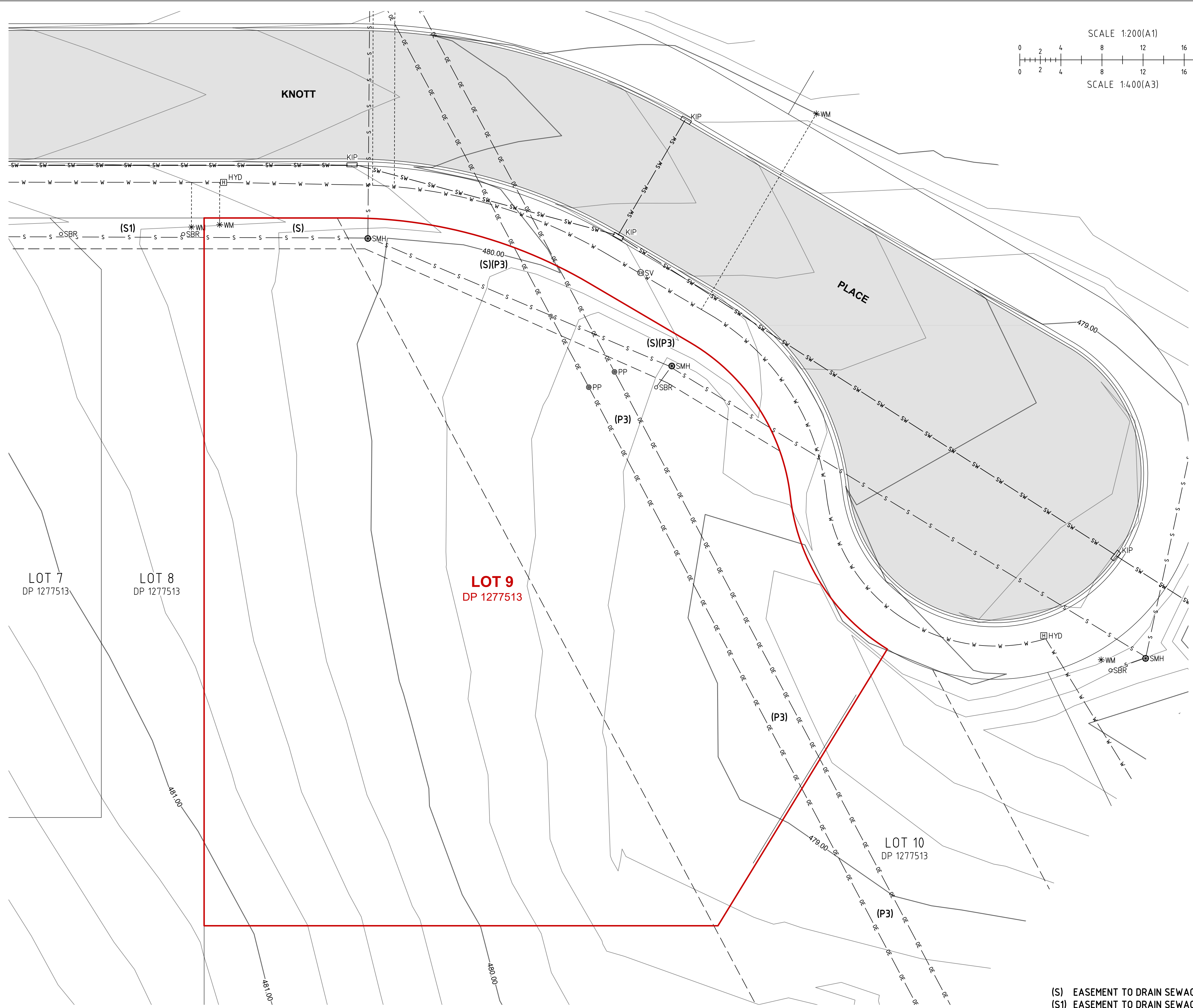
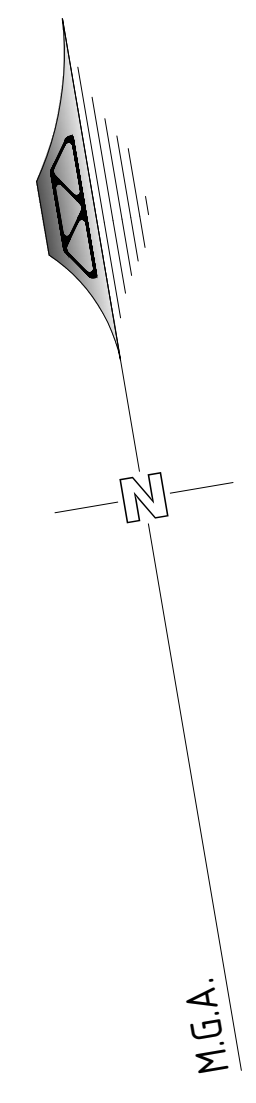
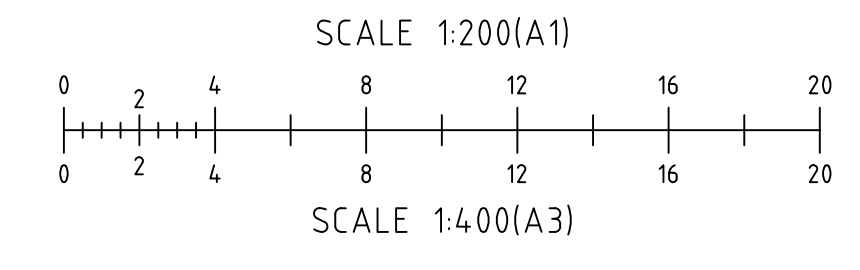
Rev	Date	Description
0	22.02.2023	SUBMISSION FOR D.A.

Project
**CIVIL DESIGN DOCUMENTATION
PROPOSED LIGHT INDUSTRIAL UNITS**
Site Address
LOT 9 IN DP 1277513
5 KNOTT PLACE, CAERLEON NSW 2850
Client
STRUCTOR PROJECTS PTY LTD

Drawing Title		Certification	
COVER SHEET & DRAWING SCHEDULE		Original Sheet Size	A1
Design	LM	Project No	39211
Drawn	JC	Drawing No	C00
Check	LM	Revision	0

Certification
Project No
Drawing No

39211
C00

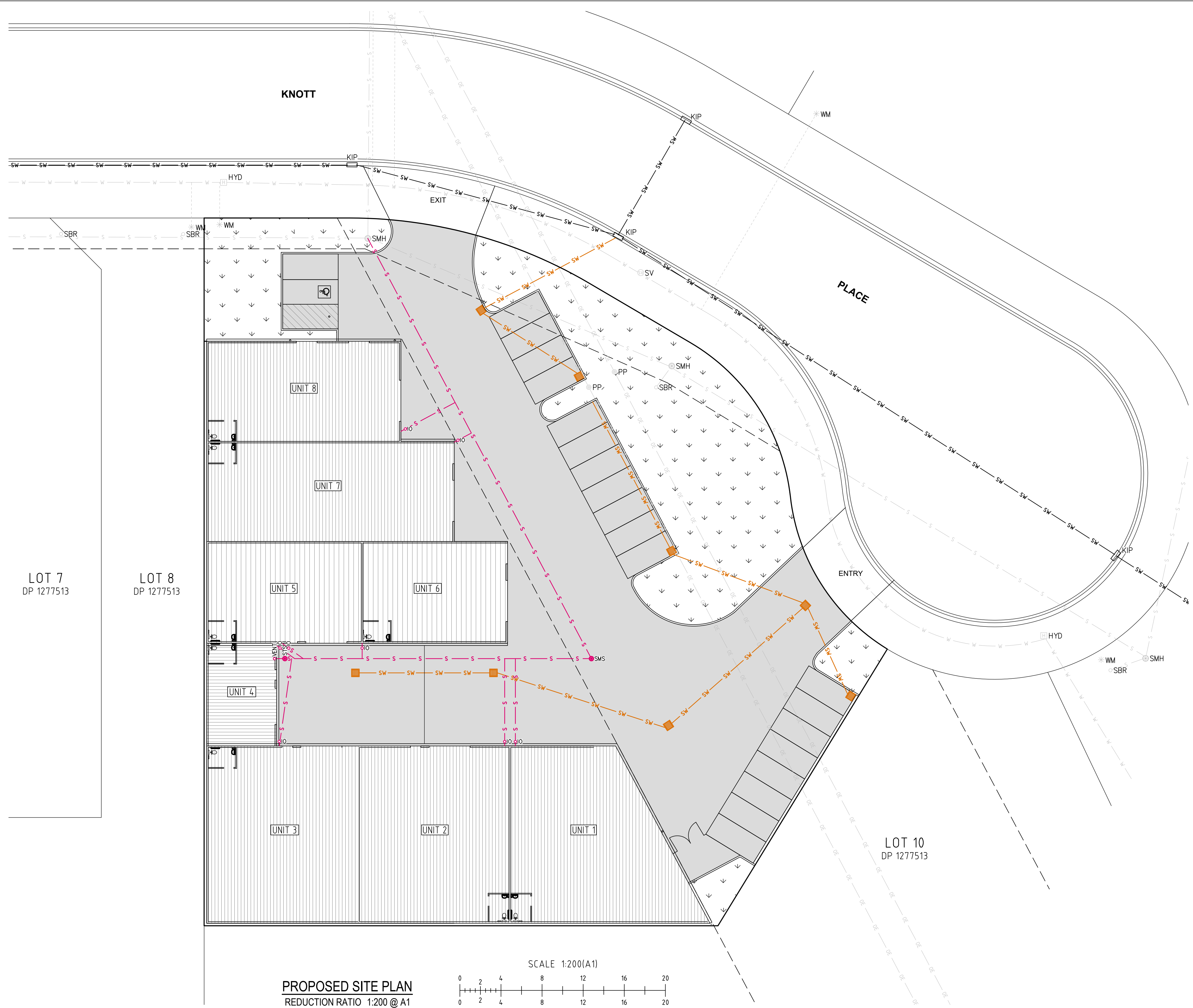
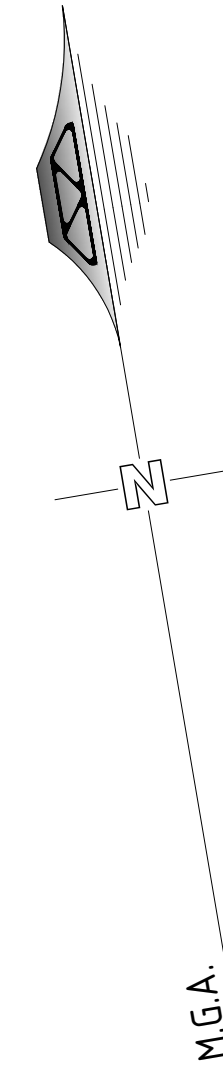


KEY	
	EXISTING SUBJECT CADASTRAL BOUNDARIES
	EXISTING UNDERGROUND WATER MAIN - APPROX.
	EXISTING UNDERGROUND SEWER PIPE
	EXISTING UNDERGROUND STORMWATER PIPE
	EXISTING OVERHEAD ELECTRICITY CABLES
	EXISTING WATER METER
	EXISTING SEWER BOUNDARY RISER / JUNCTION
	EXISTING SEWER MANHOLE
	EXISTING HYDRANT
	EXISTING STOP VALVE
	EXISTING KERB INLET PIT
	EXISTING POWER POLE

EXISTING SITE PLAN
REDUCTION RATIO 1:200 @ A1
1:400 @ A3

(S) EASEMENT TO DRAIN SEWAGE 3 WIDE (VIDE DP 1277513)
(S1) EASEMENT TO DRAIN SEWAGE VARIABLE WIDTH (VIDE DP 1277513)
(P3) EASEMENT FOR TRANSMISSION LINE & COVENANT (VIDE BK 2922 No. 648)

SUBMISSION FOR DA



KEY (existing)

	EXISTING SUBJECT CADASTRAL BOUNDARIES
	EXISTING UNDERGROUND WATER MAIN - APPROX.
	EXISTING UNDERGROUND SEWER PIPE
	EXISTING UNDERGROUND STORMWATER PIPE
	EXISTING OVERHEAD ELECTRICITY CABLES
	EXISTING WATER METER
	EXISTING SEWER BOUNDARY RISER / JUNCTION
	EXISTING SEWER MANHOLE
	EXISTING HYDRANT
	EXISTING STOP VALVE
	EXISTING KERB INLET PIT
	EXISTING POWER POLE

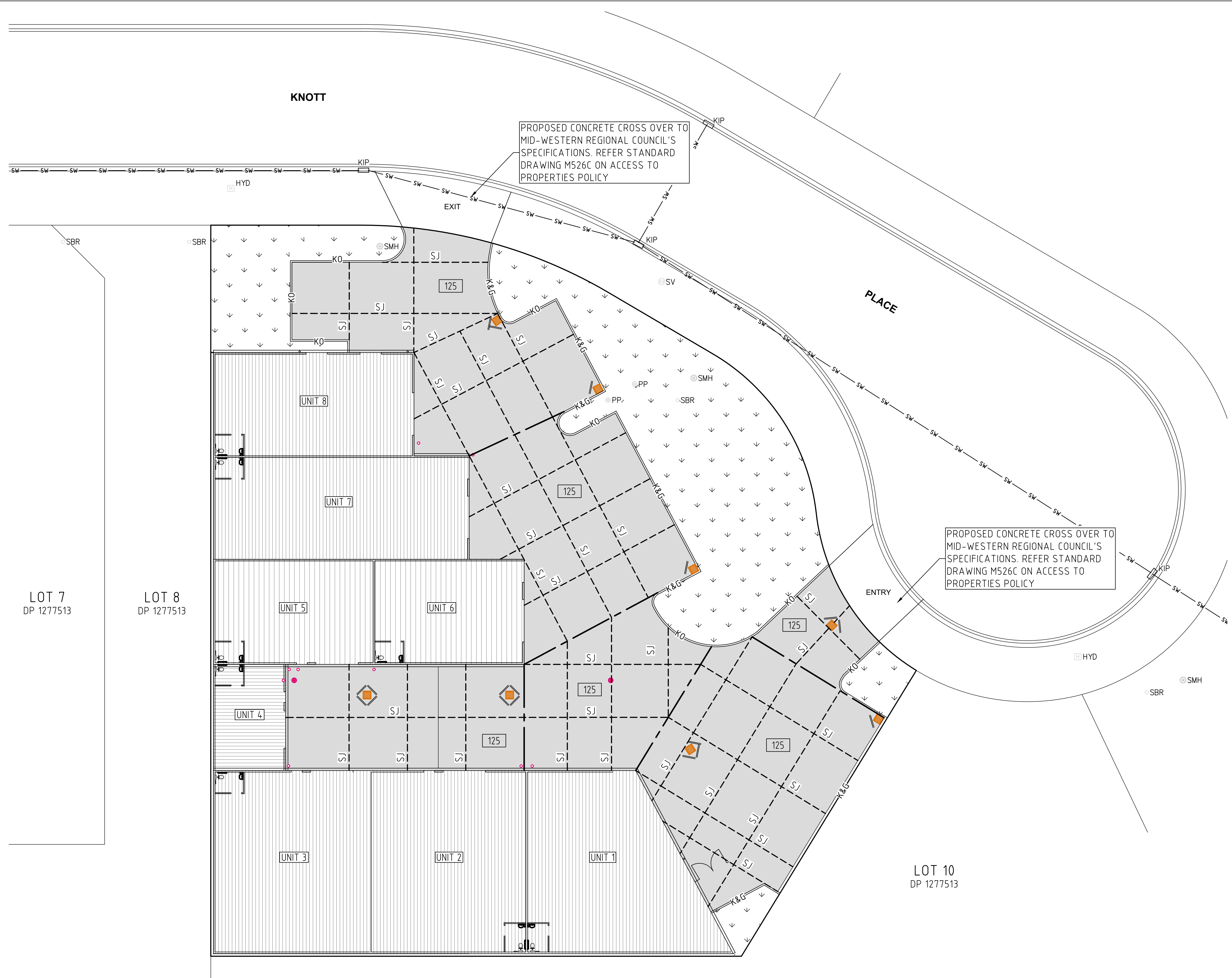
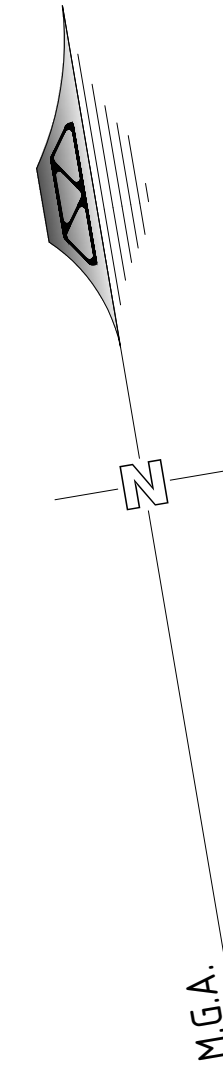
KEY (proposed)

	EXTENT OF NEW CONCRETE CAR PARK.
	PROPOSED ROOF AREA
	PROPOSED LANDSCAPED AREA
	PROPOSED SEWER PIPE (Ø AS SHOWN)
	PROPOSED SEWER MAINTENANCE SHAFT
	PROPOSED STORMWATER PIPE (Ø AS SHOWN)
	PROPOSED SW PIT

PROPOSED SITE PLAN
REDUCTION RATIO 1:200 @ A1
1:400 @ A3

SCALE 1:200(A1)
SCALE 1:400(A3)

SUBMISSION FOR DA



LEGEND (proposed)

	EXTENT OF PROPOSED CONCRETE PAVEMENT, REFER TO 39211-C04 FOR DETAIL
	PROPOSED BARRIER KERB AND GUTTER
	PROPOSED KERB ONLY
	DENOTES SAW CUT REFER TO 39211-C04 FOR DETAIL MAX SPACING = 6m
	DENOTES CONSTRUCTION JOINT REFER TO 39211-C04 FOR DETAIL MAX SPACING = 24m
	SLAB THICKNESS REINFORCED WITH SL82 MESH, 50 TOP COVER
	2xN12 TRIMMER BARS, 1m LONG TO SW PITS
	2xN12 BARS, 1.5m LONG TO RE-ENTRANT CORNERS
	PROPOSED SEWER MAINTENANCE/TERMINAL SHAFT
	PROPOSED SEWER VENT / INSPECTION OPENING
	PROPOSED SEWER OVERFLOW RELIEF GULLY

LEGEND (existing)

	EXISTING SUBJECT CADASTRAL BOUNDARIES
	EXISTING UNDERGROUND WATER MAIN - APPROX.
	EXISTING UNDERGROUND SEWER PIPE - APPROX
	EXISTING UNDERGROUND STORMWATER PIPE
	EXISTING WATER METER
	EXISTING SEWER BOUNDARY RISER
	EXISTING SEWER MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING GRATED INLET PIT

PROPOSED PAVEMENT PLAN
REDUCTION RATIO 1:200 @ A1
1:400 @ A3

SCALE 1:200(A1)
0 2 4 8 12 16 20

SCALE 1:400(A3)
0 2 4 8 12 16 20

SUBMISSION FOR DA

SITWORKS NOTES

- ORIGIN OF LEVELS -- AHD
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK.
- ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS, THE SPECIFICATIONS AND THE DIRECTIONS OF THE SUPERINTENDENT.
- EXISTING SERVICES HAVE BEEN OBTAINED FROM SURFACE INSPECTION ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- WHERE NEW WORKS ABOUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
- THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A QUALIFIED SURVEYOR.
- CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOM OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
- ON COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS.
- MAKE SMOOTH TRANSITION TO EXISTING AREAS.
- THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY DIVERSION DRAINS AND MOUNDS TO ENSURE THAT AT ALL TIMES EXPOSED SURFACES ARE FREE DRAINING AND WHERE NECESSARY EXCAVATE SUMPS AND PROVIDE PUMPING EQUIPMENT TO DRAIN EXPOSED AREAS. ALL WORK TO BE UNDERTAKEN WITH ADHERENCE TO THE REQUIREMENTS OF THE SOIL AND WATER MANAGEMENT PLAN.
- THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL, STRUCTURAL, HYDRAULIC AND MECHANICAL DRAWINGS AND SPECIFICATIONS.

BASECOURSE DESIGN NOTES

A) ALL BASE COURSE AND SUB-BASECOURSE MATERIALS SHALL CONFORM WITH AUSPEC SPECIFICATION FOR THE CONSTRUCTION OF NATURAL GRAVEL OR CRUSHED ROCK ROAD PAVEMENT AND AUSPEC SPECIFICATION FOR THE SUPPLY AND DELIVERY OF BASE AND SUB-BASE MATERIALS FOR SURFACED ROAD PAVEMENTS.

B) ALL BASECOURSE AND SUB-BASE MATERIALS SHALL BE COMPACTED TO ACHIEVE A MINIMUM OF 100% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OF +0R- 2% IN ACCORDANCE WITH AS1289 E1.1

CONCRETE NOTES

1. CONCRETE FOR KERBS, DRIVEWAYS, RAMPS AND FOOTPATH SHALL HAVE A CONCRETE STRENGTH OF 25MPa AT 28 DAYS, MINIMUM SLUMP OF 60mm AND MAXIMUM AGGREGATE SIZE OF 20mm.

TRAFFIC CONTROL NOTES:

- ADEQUATE SIGNPOSTING AND PROTECTION IS TO BE GIVEN TO THE MOTORING PUBLIC AND WORKERS ENGAGED ON SITE. ATTENTION IS DRAWN TO THE FOLLOWING SPECIFICATIONS AND GUIDELINES:
 - AUSTRALIAN STANDARD AS1742.2-2009 TRAFFIC CONTROL DEVICES FOR GENERAL USE;
 - AUSTRALIAN STANDARD AS1742.3-2009 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES;
 - RTA GUIDELINES "TRAFFIC CONTROL AT WORK SITES"; AND
 - WORKCOVER AUTHORITY CODE OF PRACTICE "WORKING NEAR MOBILE PLANT FOR TRAFFIC".
- APPROPRIATE TRAFFIC CONTROL BASED UPON A LOWER SPEED ENVIRONMENT WHILE WORKS ARE IN PROGRESS SHOULD BE THE BASIS FOR ANY PROTECTION WORKS.

CROSS-OVER NOTES

- CONSTRUCTION OF DRIVEWAY SLABS IS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH MID-WESTERN REGIONAL COUNCIL'S ROAD STANDARD DRAWINGS, RELEVANT AUS-SPEC DOCUMENTATION. THESE DOCUMENTS ARE AVAILABLE FROM COUNCIL'S CUSTOMERS SERVICE AREA.
- CONTRACTORS/ OWNERS/DEVELOPERS ARE RESPONSIBLE FOR THE LOCATING OF ALL UNDERGROUND SERVICES AND THE ARRANGING AND COMPLETION OF REPAIRS WITH THE APPROPRIATE AUTHORITY SHOULD THEY BE BROKEN OR DAMAGED DURING CONSTRUCTION.
- THE DRIVEWAY SLAB IS TO BE CONSTRUCTED TO THE DIMENSIONS AND SPECIFICATIONS SHOWN ON THIS PLAN. THE THICKNESS SHALL BE AS FOLLOWS:
 - FOR A COMMERCIAL SITUATION, THE CONCRETE SHALL BE 150mm THICK WITH TWO LAYERS OF SL82 MESH WITH 40mm TOP AND BOTTOM COVER AND A BROOM FINISH.

THE COMPRESSIVE STRENGTH OF THE CONCRETE IS TO BE 25MPa AT 28 DAYS. ALL EXPOSED EDGES ARE TO 10MM RADIUS. ADDITIONALLY ALL POOR SUBGRADE MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE FILL MATERIAL. ALL SUBGRADES ARE TO BE WELL COMPACTED BEFORE THE PLACEMENT OF THE BASE MATERIAL. FORMWORK MUST EXTEND FROM FINISHED CONCRETE HEIGHT TO THE BASE MATERIAL FOR THE TOTAL AREA OF THE DRIVEWAY SLAB.

- THE FOLLOWING INSPECTIONS ARE TO BE CARRIED OUT PRIOR TO AND DURING CONSTRUCTION. IN THIS REGARD, 24 HOURS NOTICE IS TO BE GIVEN BY PHONING 6801 400. THE INSPECTION REQUIRED ARE AS FOLLOWS:
 - SITE INSPECTION PRIOR TO THE COMMENCEMENT OF WORK.
 - WHEN THE FORMWORK AND COMPACTED BASE ARE IN PLACE AND PRIOR TO THE MESH BEING PLACED.
 - WHEN THE MESH HAS BEEN PLACED.
 - PRIOR TO THE BITUMEN SEALING OR ASPHALT WORKS.
 - AT THE COMPLETION OF ALL THE WORKS INCLUDING RESTORATION OF THE SITE.

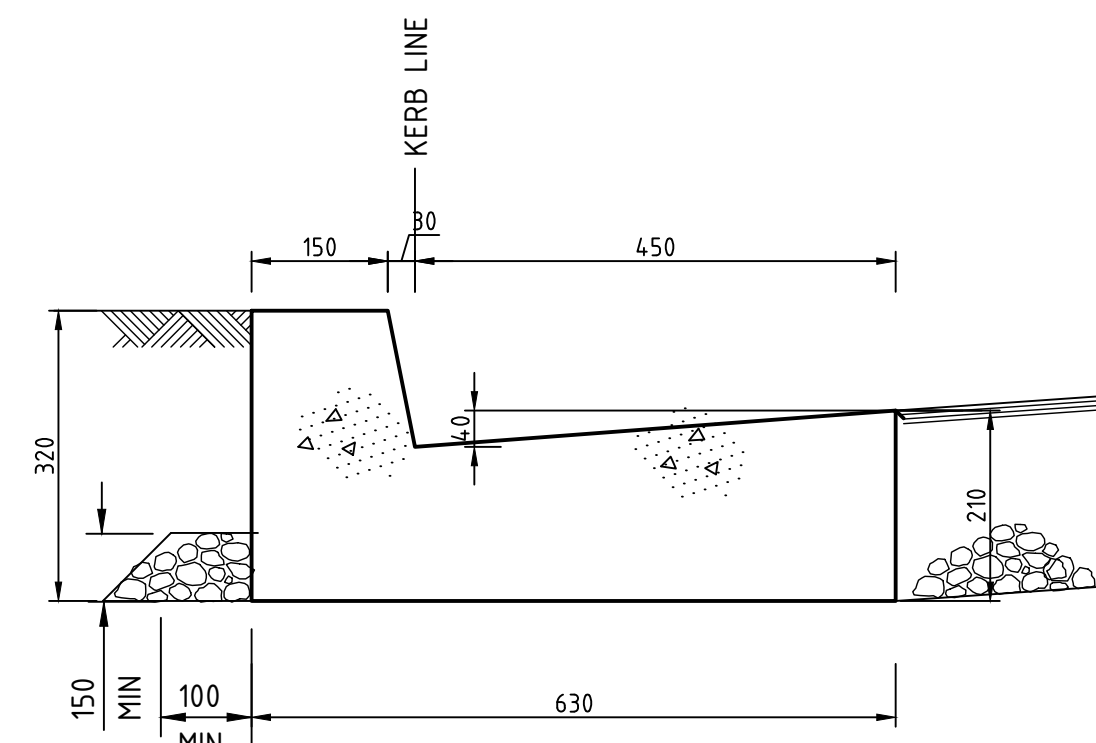
FAILURE TO HAVE THE ABOVE INSPECTION CARRIED OUT MAY RESULT IN THE REJECTION OF THE CROSSING.

- THE FINISHED SURFACE IS TO BE KEPT FROM DRYING OUT TOO RAPIDLY BY COVERING WITH SAND OR PLASTIC SHEETING.
- AN APPROVED TRAFFIC AND PEDESTRIAN CONTROL PLAN COMPLETED BY AN APPROPRIATELY QUALIFIED PERSON IN ACCORDANCE WITH AS 1742.3-2009 IS TO BE IN PLACE PRIOR TO ANY CONSTRUCTION WORKS COMMENCING AND DURING ANY CONSTRUCTION WORKS.
- PRIOR TO CONSTRUCTION OF DRIVEWAY SLAB, SECTION 138 ROAD ACT - APPROVAL FOR WORKS IN THE PUBLIC ROAD TO BE LODGED AND APPROVED BY COUNCIL.
- THE POTENTIAL FOR EROSION AND THE TRANSPORTATION OF SEDIMENT IS TO BE ADDRESSED. APPROPRIATE MEASURES ARE TO BE IN PLACE TO PREVENT THIS FROM HAPPENING.
- THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL FORMWORK AND RUBBISH ASSOCIATED WITH THE CONSTRUCTION FROM THE SITE AND THE REINSTATEMENT OF THE SURFACE ADJACENT TO THE WORKS UPON COMPLETION.
- IF THE LENGTH OR WIDTH OF DRIVEWAY SLAB EXCEEDS 6M AN EXPANSION JOINT IS TO BE PROVIDED AT THE MID-POINT (SEE EXPANSION JOINT DETAIL).

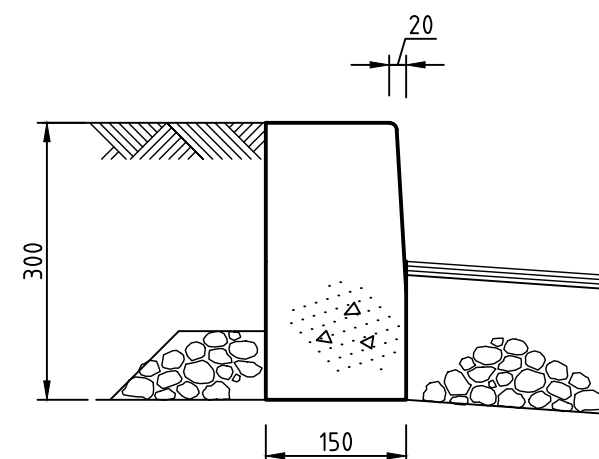
SUBGRADE COMPACTION NOTES

- STRIP TOPSOIL TO EXPOSE NATURALLY OCCURRING MATERIAL.
- WHERE FILLING IS REQUIRED TO ACTIVATE DESIGN SUBGRADE PROOF ROLL EXPOSED NATURAL SURFACE WITH A MINIMUM OF 10 PASSES OF A VIBRATING ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) IN THE PRESENCE OF THE SUPERINTENDENT.
- ALL SOFT, WET OR UNSUITABLE MATERIAL TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LISTED BELOW.
- ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING:
 - FREE FROM ORGANIC AND PERISHABLE MATTER
 - MAXIMUM PARTICLE SIZE 75mm
 - PLASTICITY INDEX BETWEEN 2% AND 15%.
- ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200mm THICK LAYERS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289 E3.1 OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITIES IN ACCORDANCE WITH AS1289 E1.1:

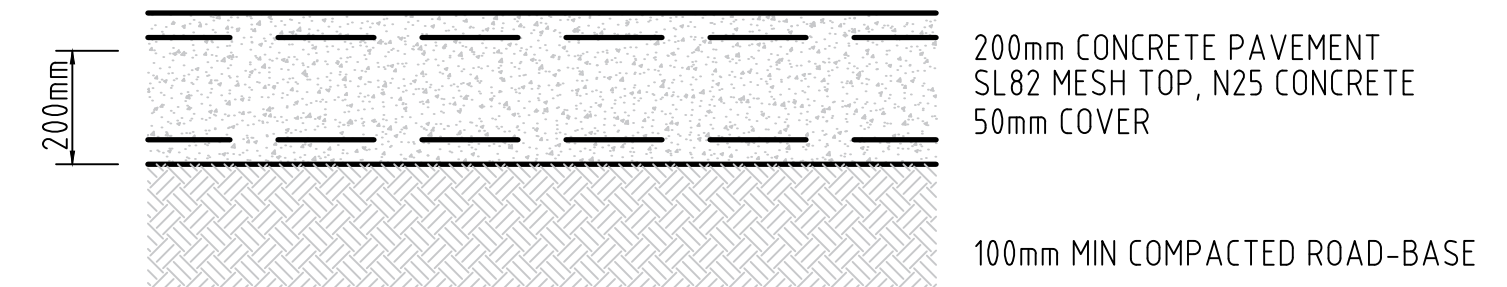
LOCATION	STANDARD DRY DENSITY
ALL EXTERNAL PAVE AREAS	98%
LANDSCAPED AREAS	90%
- THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT THEIR COST.
- TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE.



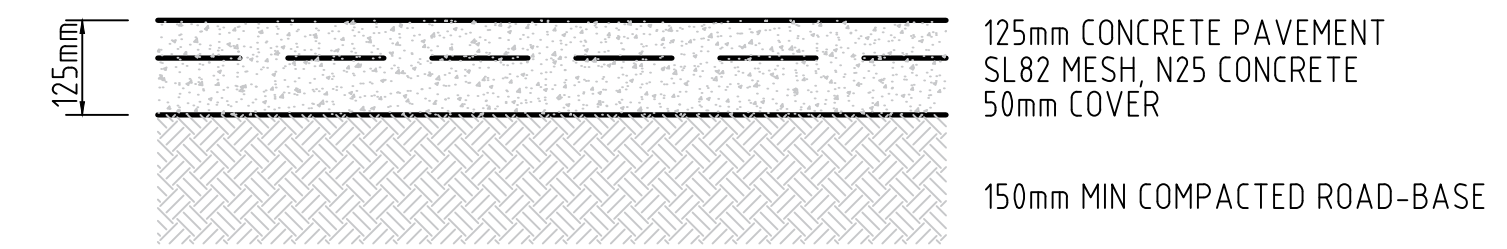
K&G KERB & GUTTER
SCALE 1:10 (A1), 1:20 (A3)



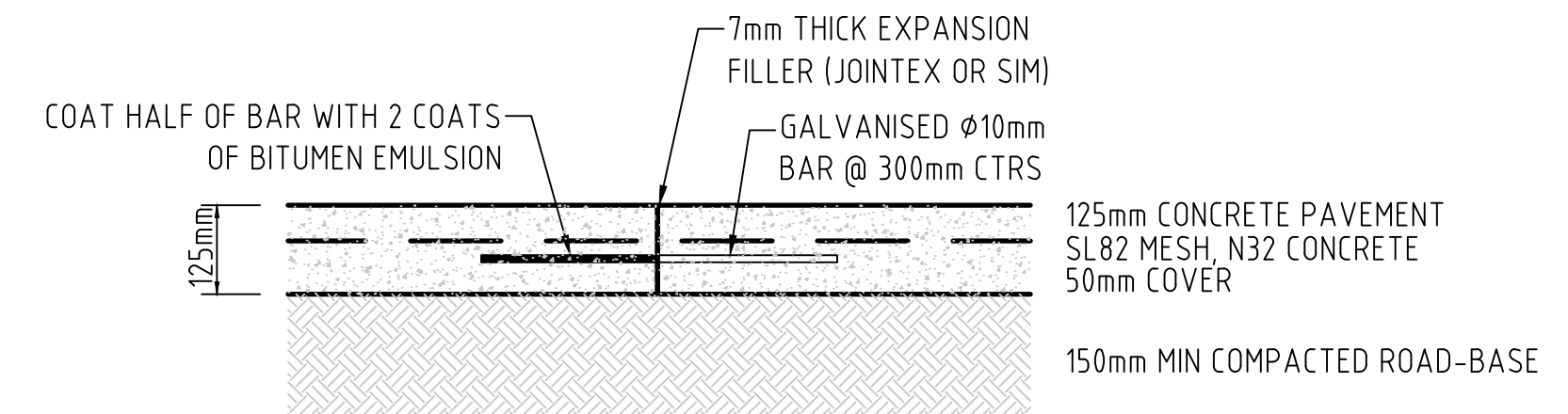
KO KERB ONLY
SCALE 1:10 (A1), 1:20 (A3)



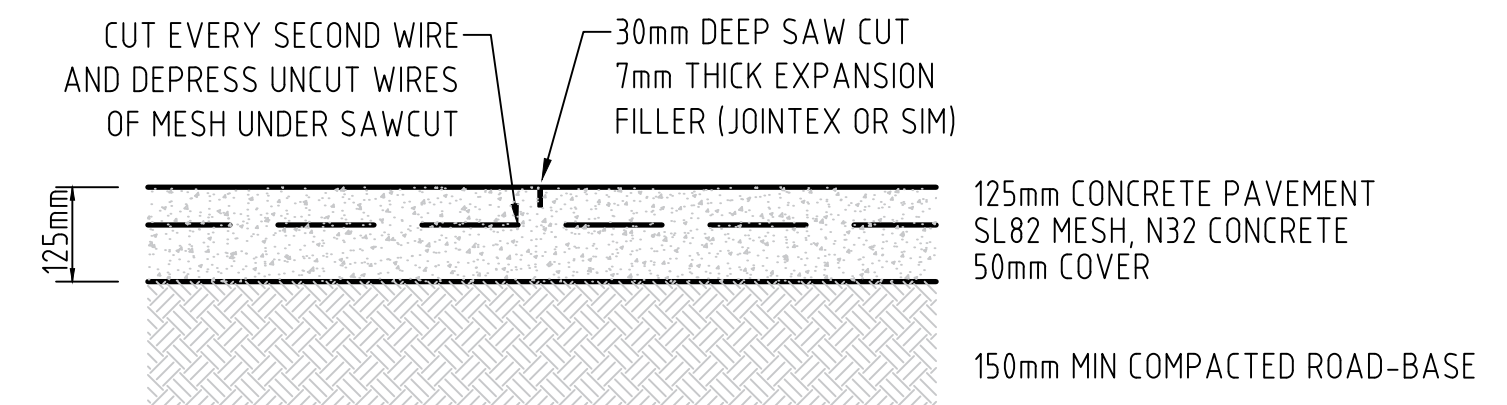
PAVEMENT SECTION - CROSSOVER
SCALE 1:10 (A1), 1:20 (A3)



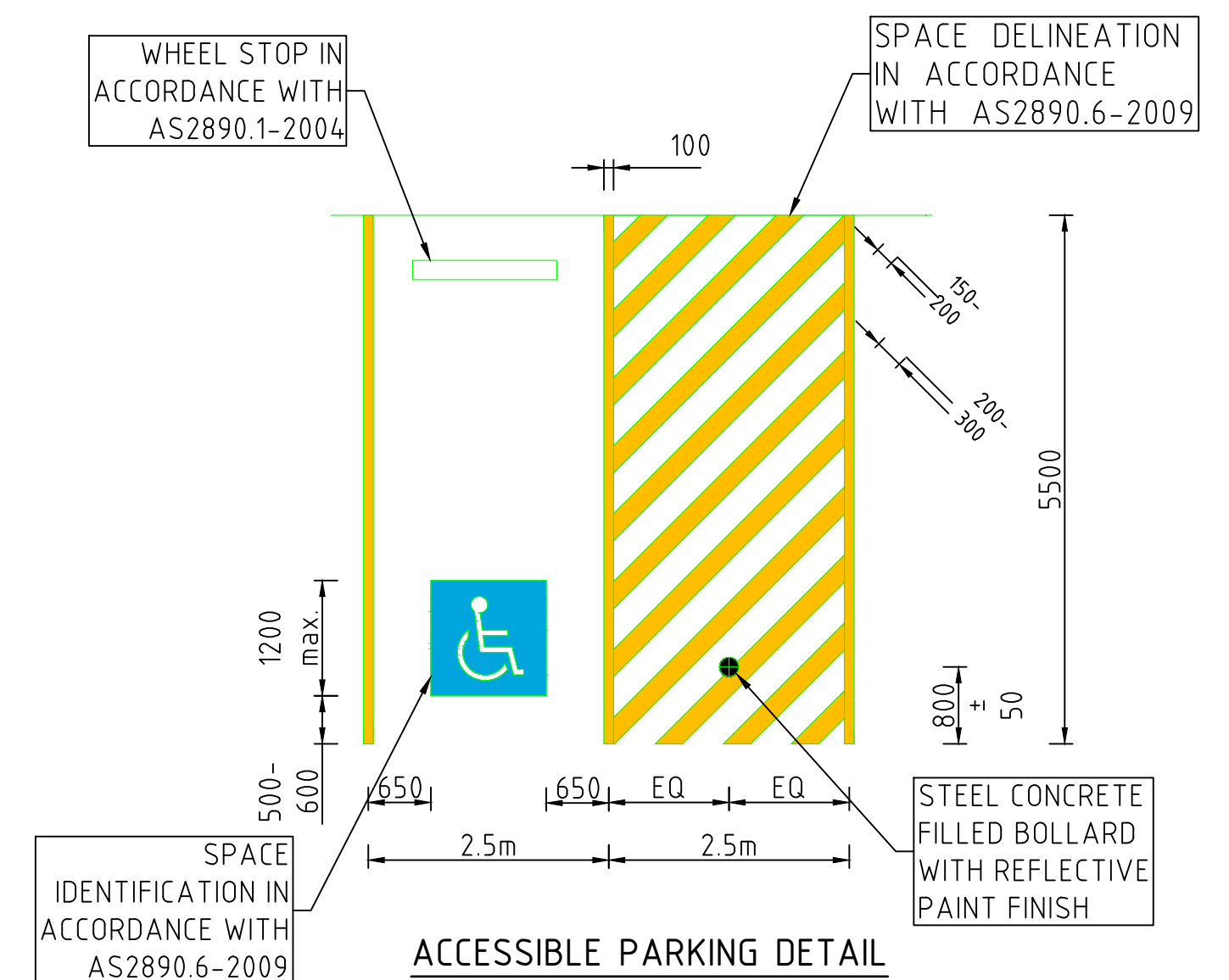
PAVEMENT SECTION - CARPARK
SCALE 1:10 (A1), 1:20 (A3)



PAVEMENT SECTION - CONSTRUCTION JOINT CJ (CARPARK)
SCALE 1:10 (A1), 1:20 (A3)



PAVEMENT SECTION - SAWN JOINT SJ (CARPARK)
SCALE 1:10 (A1), 1:20 (A3)



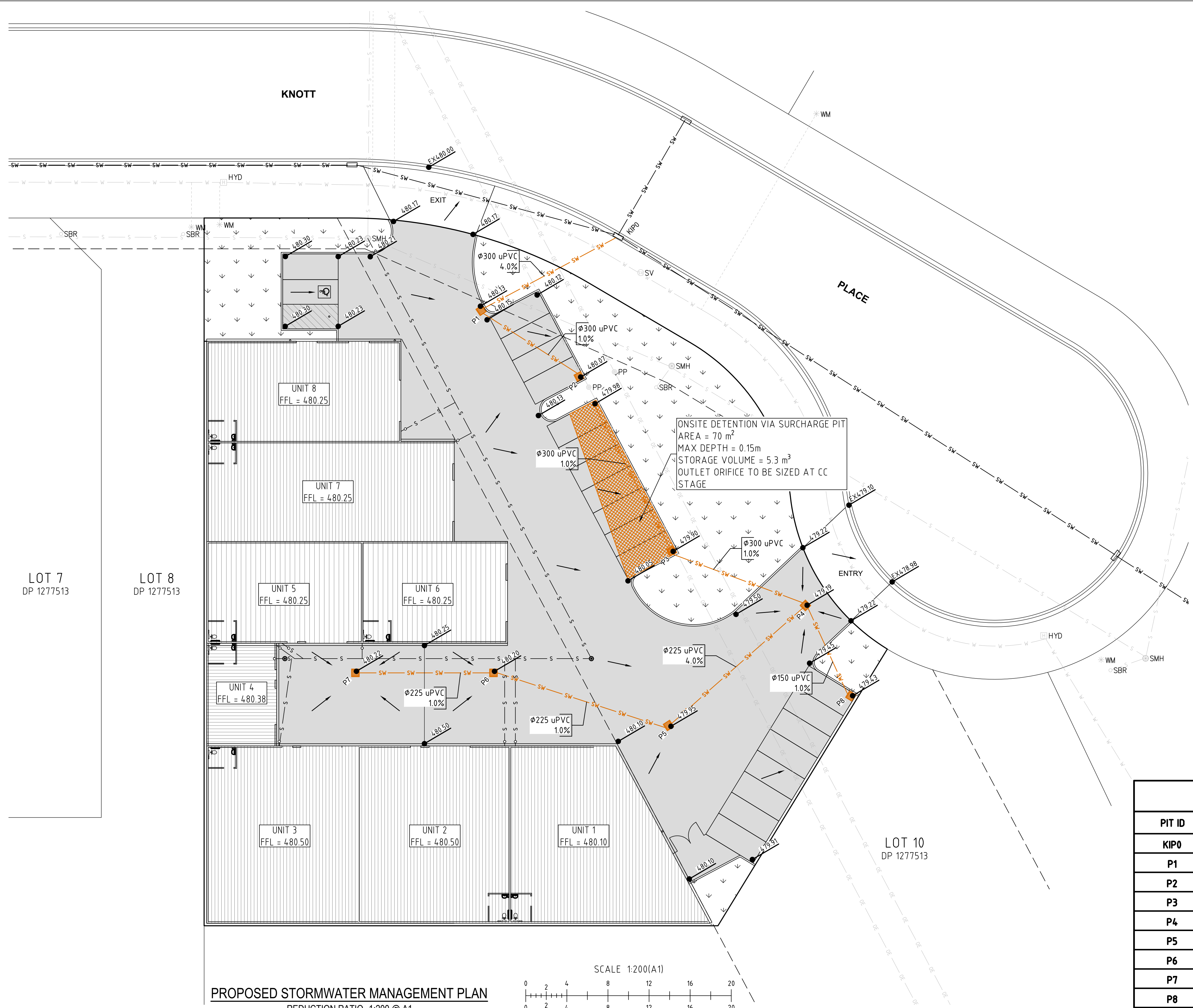
ACCESSIBLE PARKING DETAIL

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PRE-DEVELOPMENT AREAS
TOTAL = 3,700 m²
IMPERVIOUS = 0 m² = 0%
PERVIOUS = 3,700 m² = 100%

POST-DEVELOPMENT AREAS
TOTAL = 3,700 m²
IMPERVIOUS = 1,540 m² + 1,471 m² = 3,011 m² = 81%
PERVIOUS = 690 m² = 19%

STORMWATER MANAGEMENT STRATEGY
AN ON-SITE DETENTION (OSD) BASIN HAS BEEN PROVIDED TO THE SUBDIVISION WITH A PROVISION FOR 75% IMPERVIOUS AREA. THE PROPOSED DEVELOPMENT HAS 81% IMPERVIOUS AREA, WHICH EXCEEDS THE OSD PROVISION BY 6%. THEREFORE ADDITIONAL OSD IS REQUIRED AS FOLLOWS:
EXCESS AREA = 6% x 3,700 = 222 m²
1/2,5min = 193 mm/h
0.1%,5min = 222 m² x 193 mm/h / 3600 = 11.9 L/s
REQUIRED OSD VOLUME = 11.9 L/s x 60 s x 5 min = 3570 L = 3.57 m³
OSD VOLUME PROVIDED = 5.3 m³



LEGEND (proposed)

- EXTENT OF PROPOSED CONCRETE CARPARK
- EXTENT OF PROPOSED ROOF
- PROPOSED STORMWATER DRAINAGE PIPE
- PROPOSED DISH DRAIN
- PROPOSED STORMWATER PIT
- PROPOSED KERB INLET PIT
- PROPOSED SURFACE FALL DIRECTION
- EXISTING/PROPOSED SURFACE LEVEL
- PROPOSED SEWER PIPE
- PROPOSED SEWER MAINTENANCE/TERMINAL SHAFT
- PROPOSED SEWER VENT / INSPECTION OPENING
- PROPOSED SEWER OVERFLOW RELIEF GULLY

LEGEND (existing)

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- EXISTING UNDERGROUND WATER MAIN - APPROX.
- EXISTING UNDERGROUND SEWER PIPE - APPROX.
- EXISTING UNDERGROUND STORMWATER PIPE
- EXISTING WATER METER
- EXISTING SEWER BOUNDARY RISER
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING GRATED INLET PIT

STORMWATER PIT SCHEDULE

PIT ID	TOP RL (m)	INLET RL (m)	OUTLET RL (m)	DEPTH (m)	LID TYPE
KIP0	479.77	477.99	EX 477.27 COS	2.5	HD GRATED
P1	480.13	478.16	478.14	1.9	HD GRATED
P2	480.07	478.29	478.27	1.8	HD GRATED
P3	479.90	478.49	478.47	1.5	HD GRATED
P4	479.19	478.64	478.62	0.6	HD GRATED
P5	479.95	479.35	479.33	0.7	HD GRATED
P6	480.20	479.54	479.52	0.7	HD GRATED
P7	480.22	-	479.67	0.6	HD GRATED
P8	479.43	-	478.88	0.6	HD GRATED

PROPOSED STORMWATER MANAGEMENT PLAN
REDUCTION RATIO 1:200 @ A1
1:400 @ A3
SCALE 1:200(A1)
SCALE 1:400(A3)

SUBMISSION FOR DA

SITWORKS NOTES

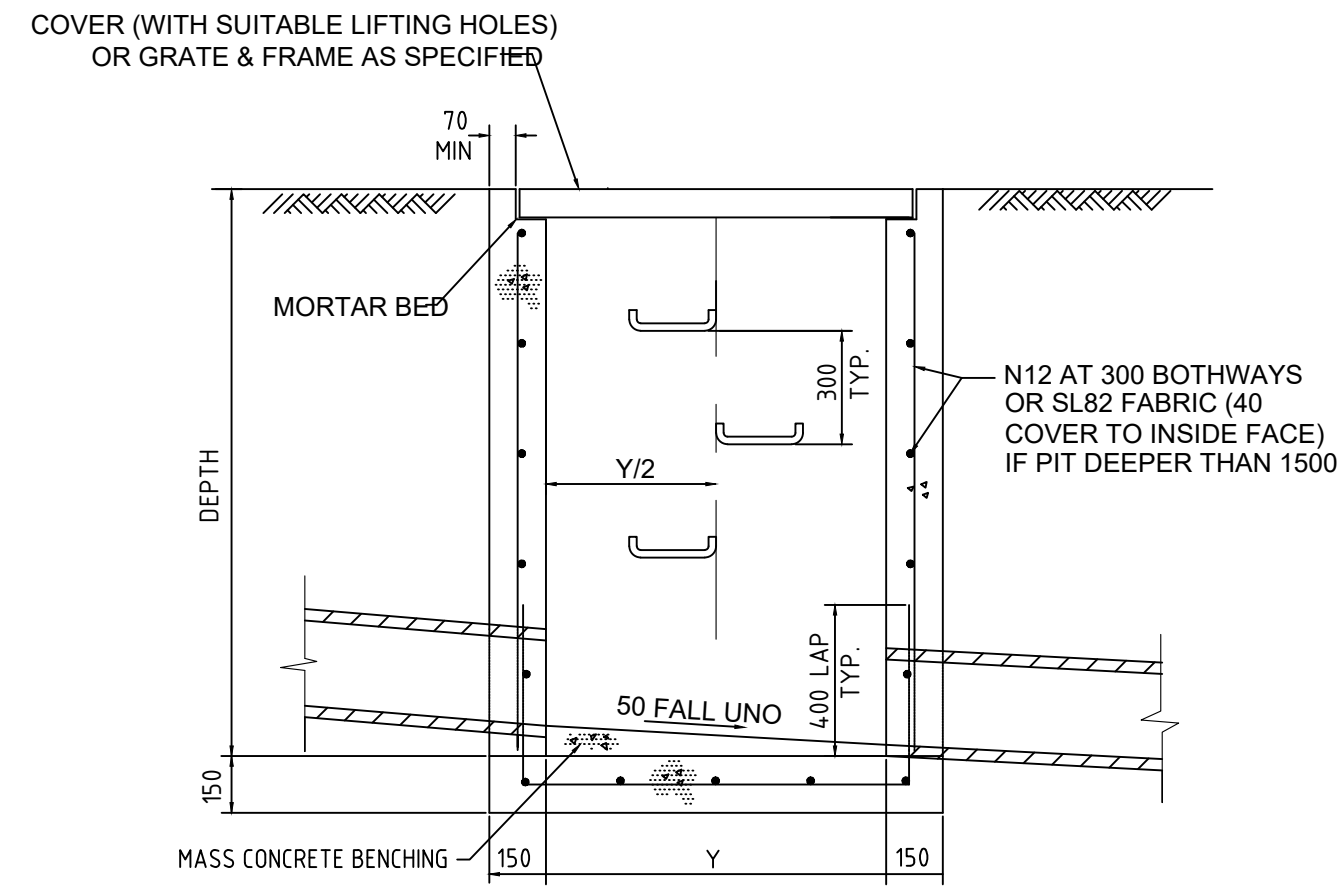
- ORIGIN OF LEVELS :- AHD
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK.
- ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS, THE SPECIFICATIONS AND THE DIRECTIONS OF THE SUPERINTENDENT.
- EXISTING SERVICES HAVE BEEN OBTAINED FROM SURFACE INSPECTION ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- WHERE NEW WORKS ABOUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
- THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A QUALIFIED SURVEYOR.
- CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOM OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
- ON COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS.
- MAKE SMOOTH TRANSITION TO EXISTING AREAS.
- THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY DIVERSION DRAINS AND MOUNDS TO ENSURE THAT AT ALL TIMES EXPOSED SURFACES ARE FREE DRAINING AND WHERE NECESSARY EXCAVATE SUMPS AND PROVIDE PUMPING EQUIPMENT TO DRAIN EXPOSED AREAS. ALL WORK TO BE UNDERTAKEN WITH ADHERENCE TO THE REQUIREMENTS OF THE SOIL AND WATER MANAGEMENT PLAN.
- THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL, STRUCTURAL, HYDRAULIC AND MECHANICAL DRAWINGS AND SPECIFICATIONS.

STORMWATER NOTES

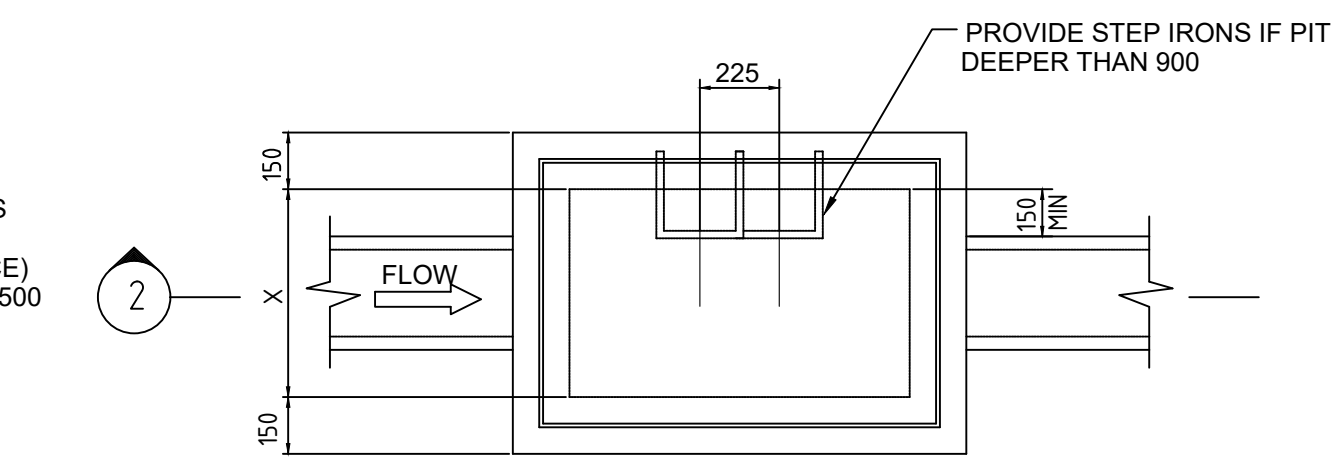
- ALL DOWNPIPE LINES SHALL BE SEWER GRADE uPVC WITH SOLVENT WELD JOINTS (U.N.O)
- EQUIVALENT STRENGTH VCP OR FCP PIPES MAY BE USED.
- MINIMUM GRADE TO STORMWATER LINES TO BE 0.5% MINIMUM (U.N.O)
- CONTRACTORS TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
- ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
- APPROVED PRECAST PITS MAY BE USED.
- WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50mm CONCRETE BED (75mm THICK BED OF 12mm BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR THE ROCK. IN OTHER THAN ROCK, PIPES SHALL BE LAID ON A 75mm THICK SAND BED. IN ALL CASES, BACKFILL THE TRENCH WITH THE SAND TO 200mm ABOVE THE PIPE .WHERE THE PIPE IS UNDER PAVEMENTS, BACKFILL REMAINDER OF TRENCH WITH SAND OR APPROVED GRANULAR BACKFILL COMPACTED IN 150mm LAYERS TO 98% MAX. DRY DENSITY.
- WHERE STORMWATER LINES PASS UNDER FLOOR SLABS, SEWER GRADE RUBBER RING JOINTS ARE TO BE USED.
- ALL PIPES IN THE ROADWAY AND FOOTPATH AREAS, WHERE THE DEPTH OF PIPE IS LESS THAN 500mm FROM THE FINISHED SURFACE LEVEL ARE TO BE CONCRETE ENCASED.

PIPE TRENCH - FILL NOTES:

- BEDDING SAND**
BEDDING SAND SHALL BE GRANULAR MATERIAL HAVING A LOW PERMEABILITY AND HIGH STABILITY WHEN SATURATED, CONFORMING TO THE GRADING LIMITS FOR BEDDING SAND AS INDICATED IN THE CONTRACT DOCUMENTS. BEDDING SAND SHALL BE COMPACTED TO A DENSITY INDEX OF 95% AS DETERMINED IN ACCORDANCE WITH AS1289.
- APPROVED IMPORTED GRANULAR FILL**
ONLY IMPORTED GRANULAR FILL MATERIAL APPROVED BY THE SUPERINTENDENT SHALL BE USED. THIS FILL MATERIAL SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 300mm THICK TO A DRY DENSITY OF 100% OF THE STANDARD MAXIMUM DRY DENSITY OF THE MATERIAL AND WITH A MOISTURE CONTENT NO MORE THAN 1% ABOVE OPTIMUM MOISTURE CONTENT AS DETERMINED IN ACCORDANCE WITH AS1289.
- ORDINARY EXCAVATED FILL MATERIAL**
ORDINARY EXCAVATED FILL MATERIAL IS EXCAVATED TRENCH MATERIAL THAT IS FREE OF VEGETABLE MATTER, HUMUS, LARGE CLAY LUMPS AND ROCK BOULDERS. THIS FILL MATERIAL SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 300mm THICK, TO A DENSITY OF 95% OF THE STANDARD MAXIMUM DRY DENSITY OF THE MATERIAL WITH A MOISTURE CONTENT OF NOT MORE THAN 1% ABOVE THE OPTIMUM MOISTURE CONTENT AS DETERMINED IN ACCORDANCE WITH AS1289.



SECTION 2

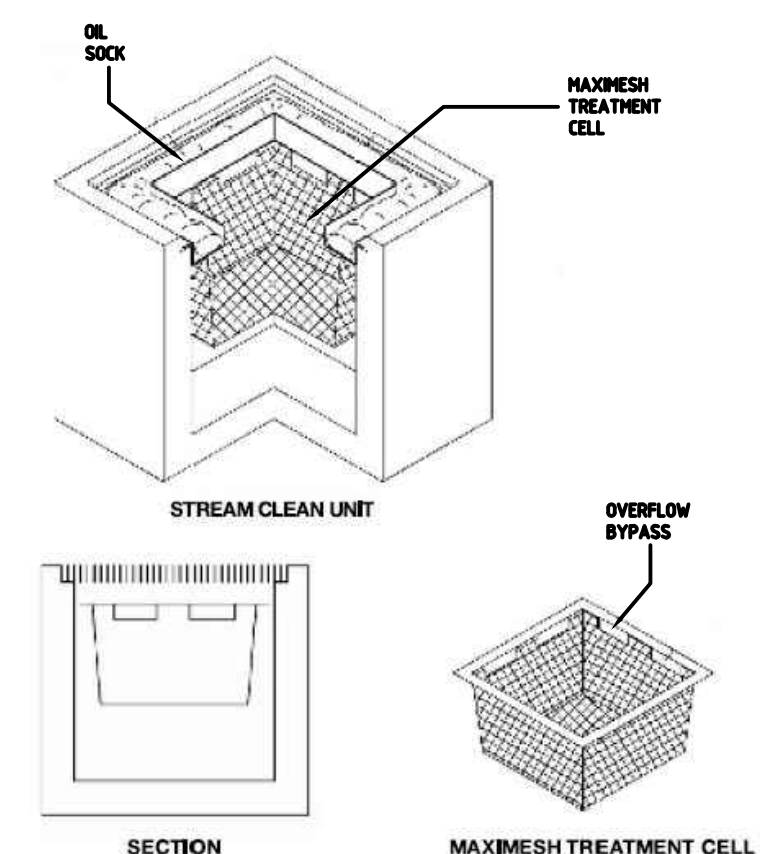


PLAN

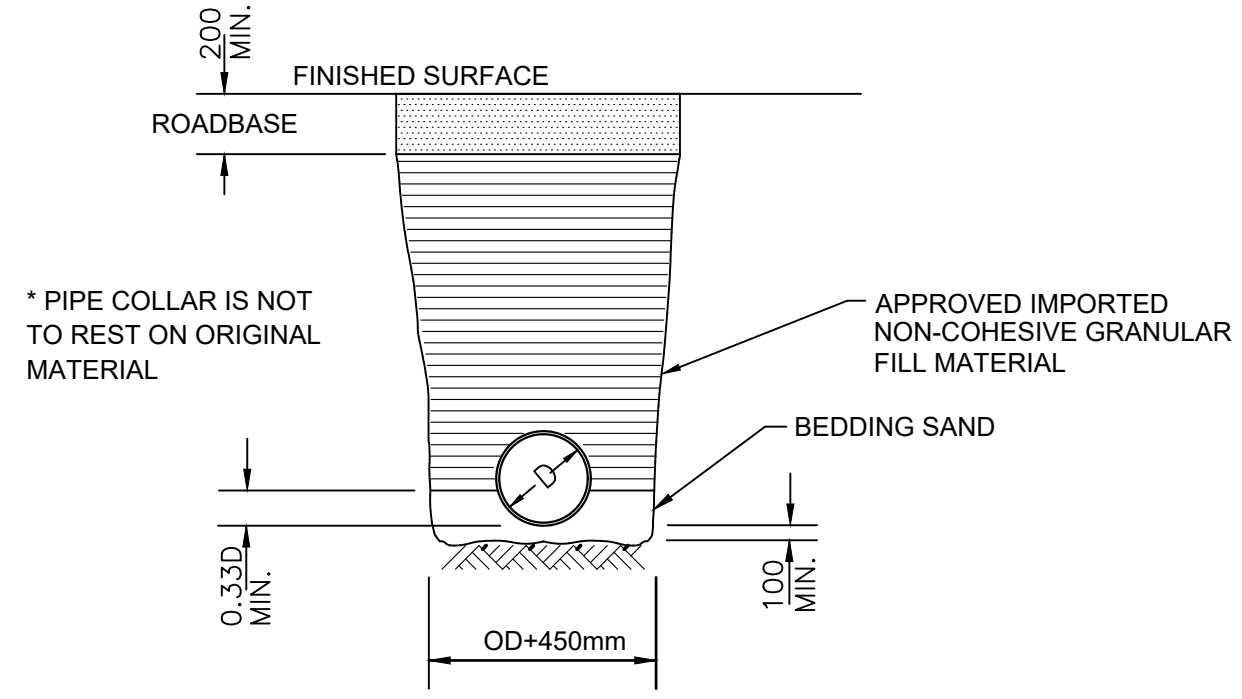
GRATED INLET PIT
N.T.S.

PIT DIMENSIONS		
DEPTH	X	Y
D<600	450	450
D<1000	600	600
D<1500	600	900
1500<D<2400	900	900
D>2400	750	1200

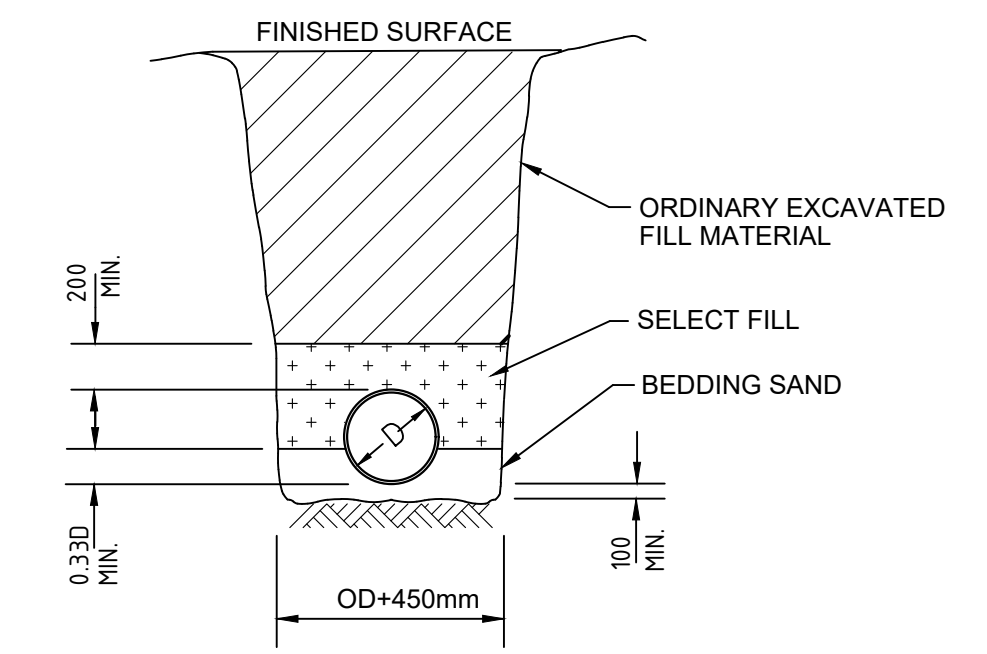
STREAM CLEAN POLLUTION CONTROL PIT



Order Code	Description	Mass kg
StreamG	600 x 600 x 650 Stream Clean pit including Maximesh treatment cell and oil filtration sock	570
SCB66	Stream Clean basket	15
Filtration Sock	Oil filtration sock	3

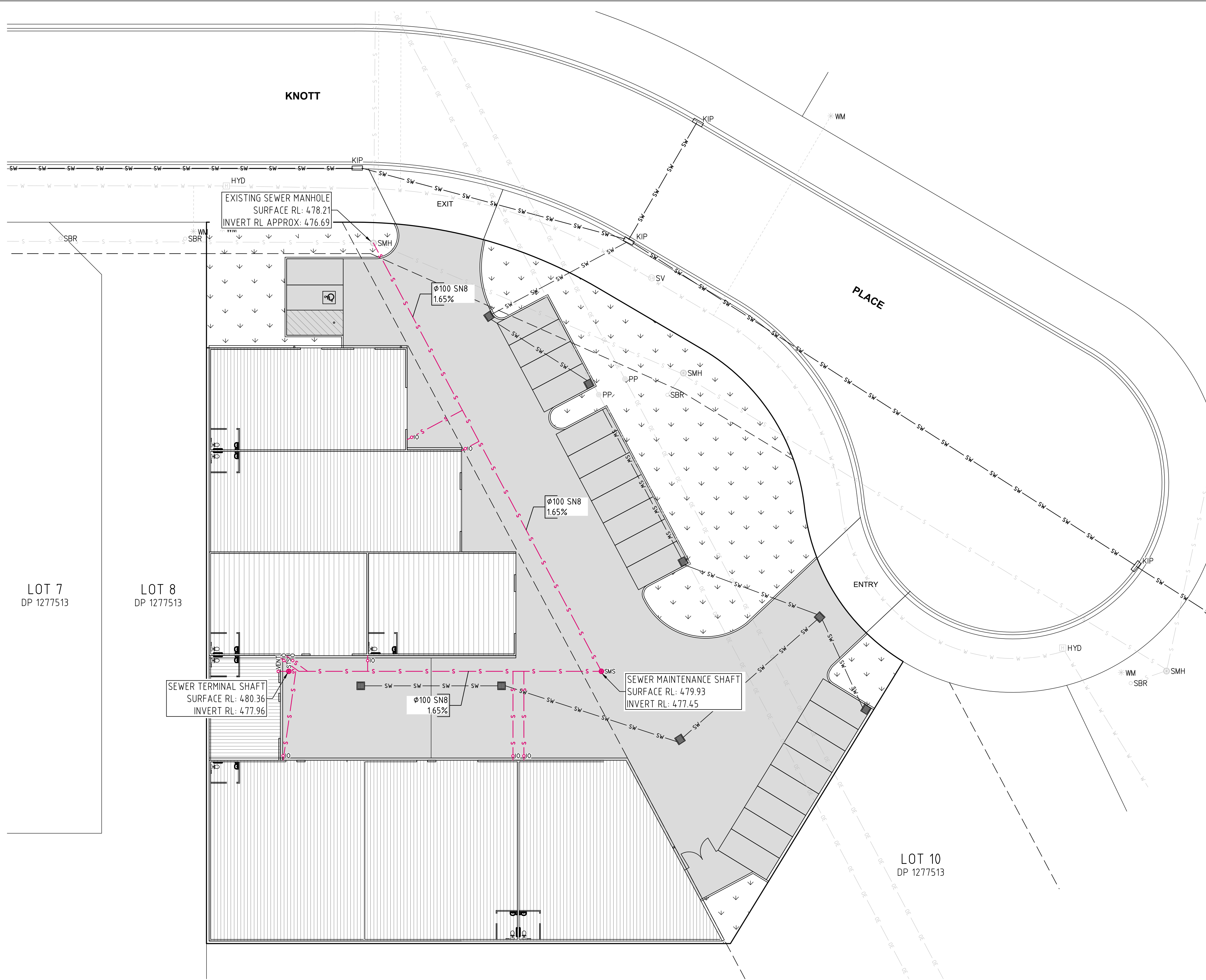
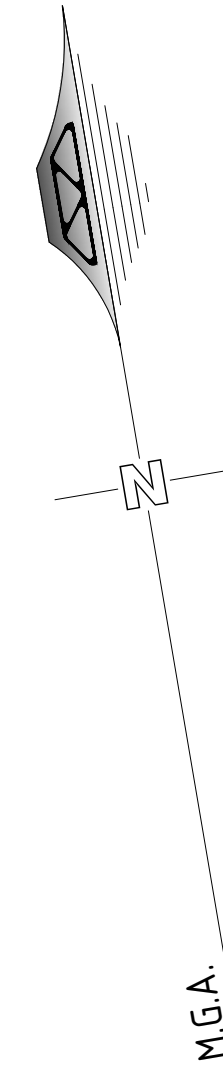


TYPICAL SECTION - TRENCH IN ROADWAY
N.T.S.



TYPICAL SECTION - EARTH FOUNDATION TRENCH
N.T.S.

SUBMISSION FOR DA



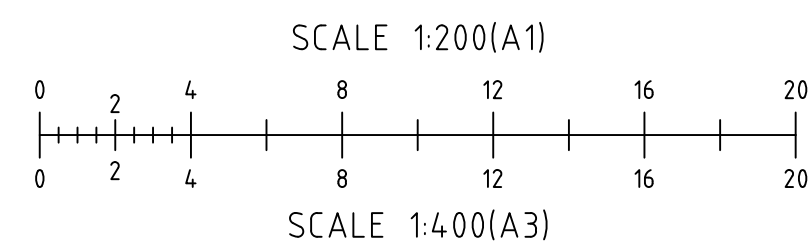
LEGEND (proposed)

	EXTENT OF PROPOSED CONCRETE CARPARK
	EXTENT OF PROPOSED ROOF
	PROPOSED STORMWATER DRAINAGE PIPE
	PROPOSED DISH DRAIN
	PROPOSED STORMWATER PIT
	PROPOSED KERB INLET PIT
	PROPOSED SEWER PIPE
	PROPOSED SEWER MAINTENANCE SHAFT
	PROPOSED SEWER TERMINAL SHAFT
	PROPOSED SEWER VENT
	PROPOSED SEWER INSPECTION OPENING
	PROPOSED SEWER OVERFLOW RELIEF GULLY

LEGEND (existing)

	EXISTING SUBJECT CADASTRAL BOUNDARIES
	EXISTING UNDERGROUND WATER MAIN - APPROX.
	EXISTING UNDERGROUND SEWER PIPE - APPROX.
	EXISTING UNDERGROUND STORMWATER PIPE
	EXISTING WATER METER
	EXISTING SEWER BOUNDARY RISER
	EXISTING SEWER MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING GRATED INLET PIT

PROPOSED SEWER PLAN
REDUCTION RATIO 1:200 @ A1
1:400 @ A3



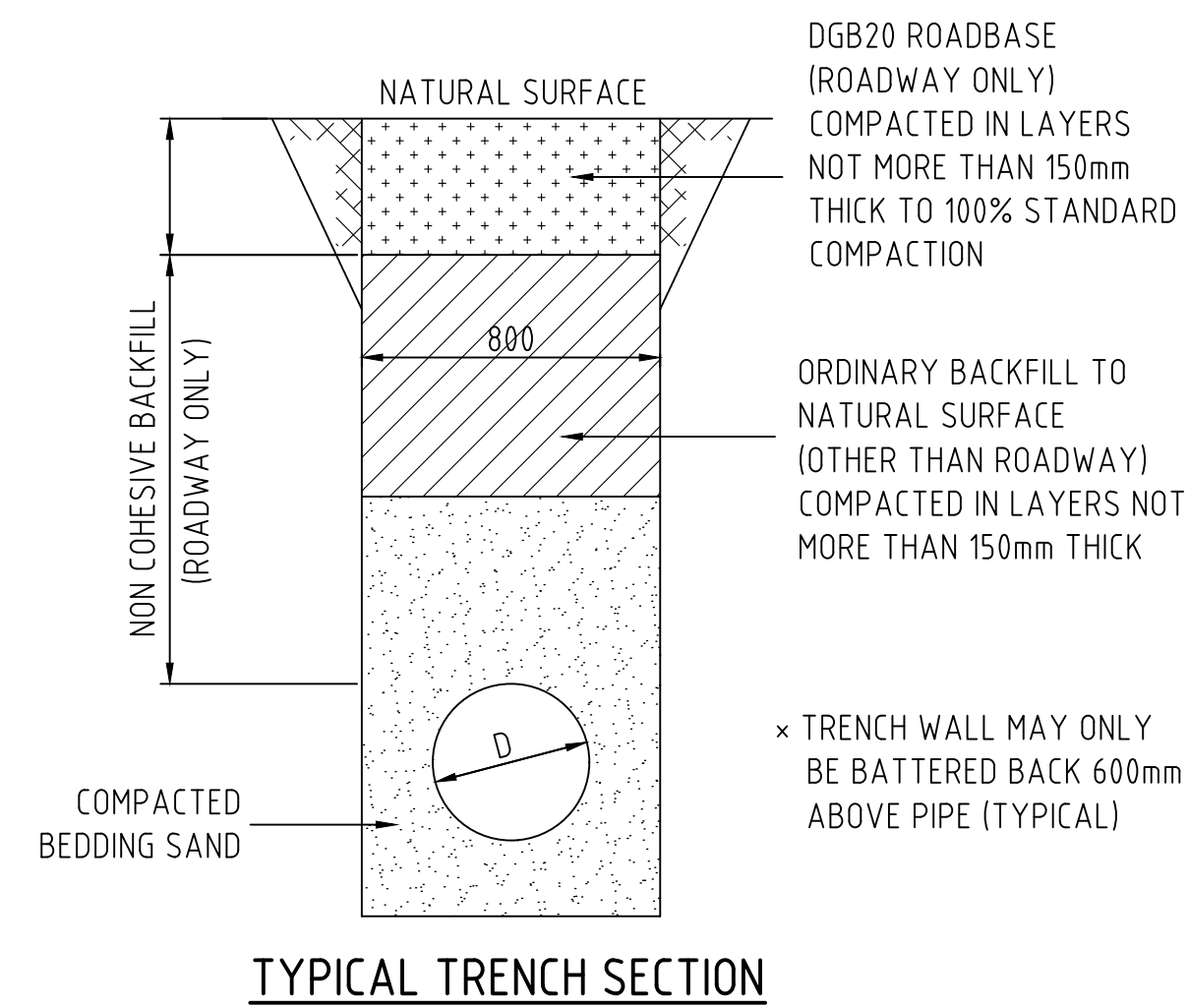
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SEWER MAIN NOTES

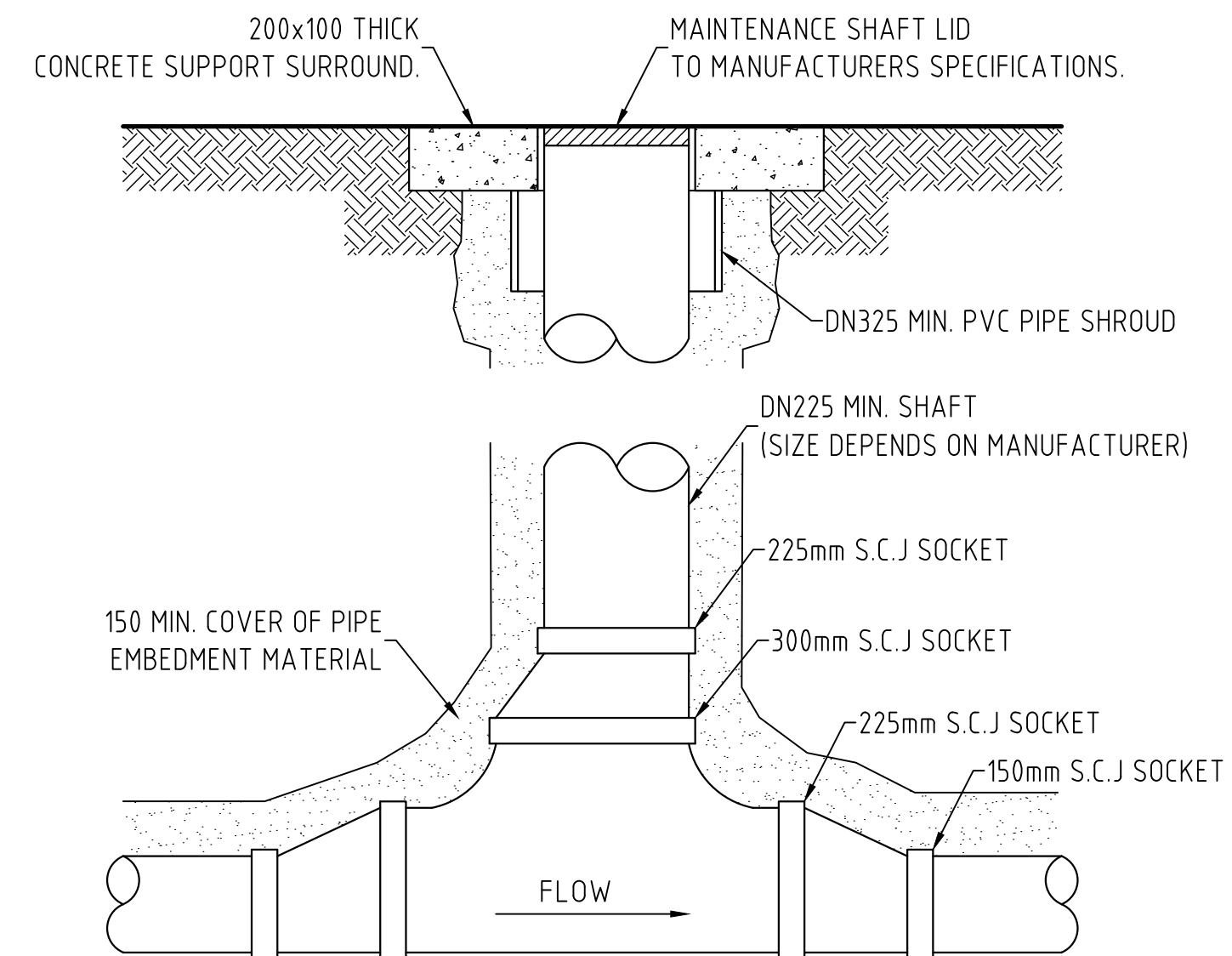
1. ALL SEWER MAINS SHALL BE CLASS SN8 RRJ UPVC PIPE U.N.0 (3m MAX LENGTH). ALL GRAVITY LINES TO USE SEWER GRADE FITTINGS WHERE REQUIRED.
2. CONSTRUCTION OF SEWER MAINS AND MANHOLES SHALL BE CARRIED OUT IN ACCORDANCE WITH THE WSA SEWERAGE CODE, WSA-02, 2002.
3. ANY OTHER SERVICES INCLUDING TELSTRA, GAS, POWER, WATER AND STORMWATER MUST BE LOCATED BEFORE WORK COMMENCES.
4. MANHOLES SHALL BE PRECAST CONCRETE FROM A SUPPLIER APPROVED BY COUNCIL AND HAVE STEP IRONS AT 300mm SPACING, AND A MINIMUM INTERNAL DIAMETER OF 1020mm.
5. 150mm ϕ BOUNDARY RISERS SHALL BE PROVIDED TO EACH LOT TO THE REQUIREMENTS OF THE MANAGER, HEALTH AND BUILDING.
6. RISERS AND SIDELINES TO BE CONSTRUCTED TO WSA-02 2002.
7. FLOW LINE CHANNELS AND INTERSECTIONS SHALL BE CONSTRUCTED THROUGH MANHOLES AS PER WSA-02 2002.
8. ALL SEWER MAINS TO BE PRESSURE TESTED AS PER WSA-02 2002 AND THE REQUIREMENTS OF COUNCIL.

SEWER BEDDING NOTES

1. THE MINIMUM DEPTH TO TOP OF PIPE SHALL BE 600mm, EXCEPT UNDER ROAD PAVEMENT WHERE MINIMUM COVER TO TOP OF PIPE SHALL BE 800mm MINIMUM UNLESS SHOWN OTHERWISE. PIPES WITH LESS COVER THAN THESE LIMITS TO BE CONCRETE ENCASED, AND DICL UNDER ROADS.
2. GRADES OF GRAVITY MAINS NOT TO BE FLATTER THAN 1 IN 200 (0.5%) FOR 150mm DIAMETER PIPES AS PER DESIGN, UNLESS APPROVED BY COUNCIL.
3. MANHOLES SHALL BE PLACED AT EACH CHANGE IN DIRECTION OR GRADE OF THE PIPE LINE AT INTERVALS ALONG THE LINE NOT EXCEEDING 80m.



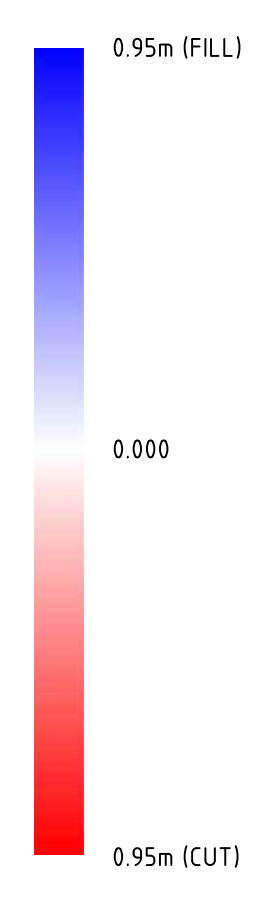
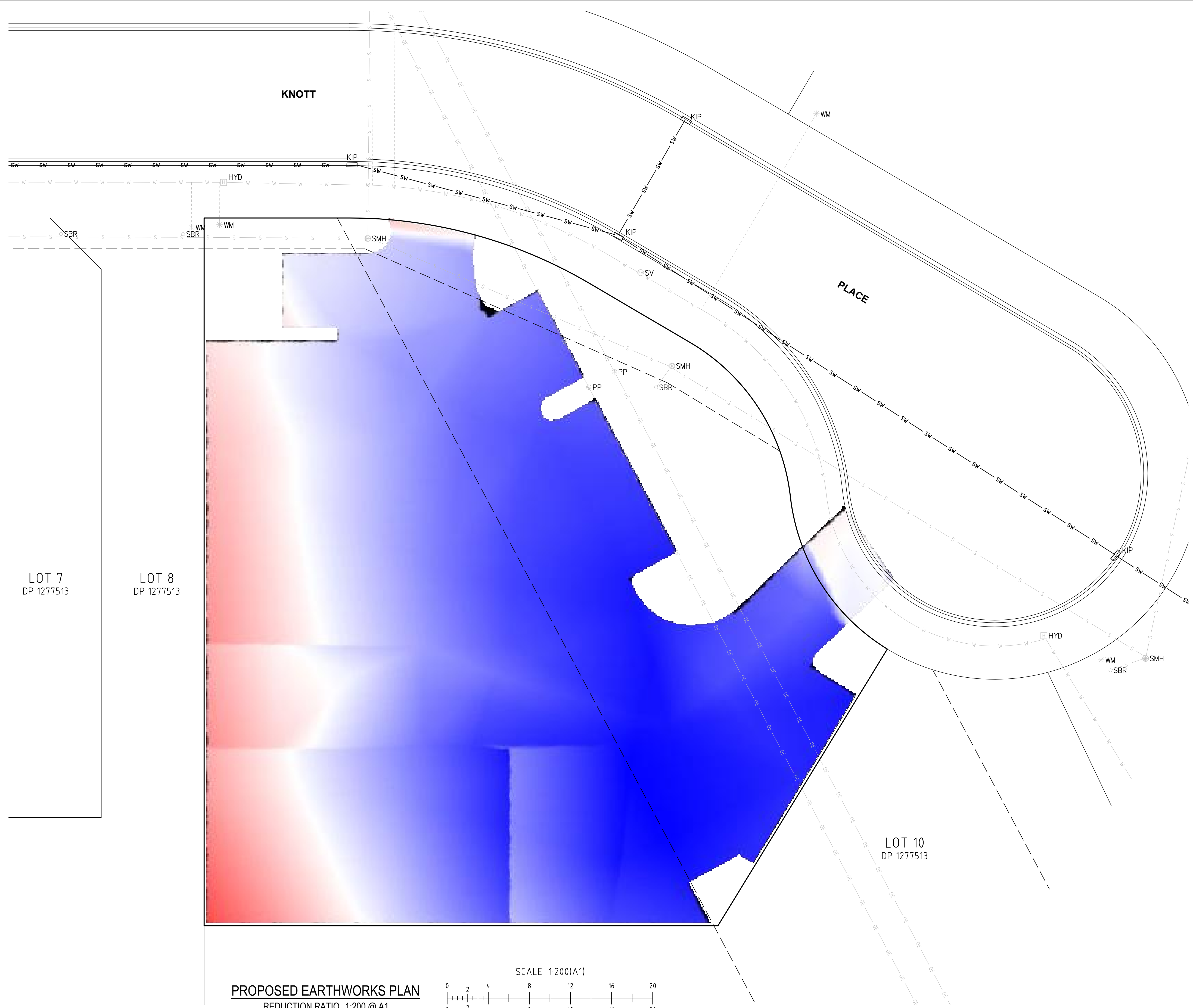
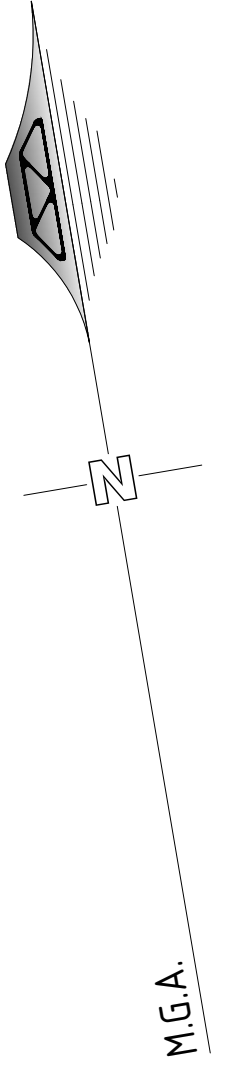
x INSTALLATION OF UPVC PIPES SHALL TO CONFORM TO AS2032-1977 "INSTALLATION OF UPVC PIPE SYSTEMS", AS2566-1998 "BURIED FLEXIBLE PIPELINES", WSA-02 2002 AND MANUFACTURERS INSTRUCTIONS.



TYPICAL MAINTENANCE SHAFT FOR SEWER LINES SHOWING Ø150 PIPE

SCALE = NTS
NOTE: PIPE COLLAR IS NOT TO REST ON ORIGINAL MATERIAL

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PROPOSED EARTHWORKS PLAN
REDUCTION RATIO 1:200 @ A1
1:400 @ A3

SCALE 1:200(A1)
0 2 4 8 12 16 20

SCALE 1:400(A3)
0 2 4 8 12 16 20

SUBMISSION FOR DA

Rev	Date	Description
0	22.02.2023	SUBMISSION FOR D.A.

BULK EARTHWORKS APPROVALS

1. APPROVAL IS REQUIRED BY ALL RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS ON SITE.

2. THE BULK EARTHWORKS PLANS AND ALL SUPPORTING INFORMATION INCLUDING ALL EROSION AND SEDIMENT CONTROL PLANS SHALL REMAIN ON SITE AT ALL TIMES.

EXISTING SERVICES

1. EXACT LOCATION OF ALL SERVICES SHALL BE LOCATED PRIOR TO THE COMMENCEMENT OF WORK. IT IS THE BUILDERS RESPONSIBILITY TO CONFIRM THE DEPTH AND LOCATION OF SERVICES AND BARNSON PTY LTD ACCEPTS NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE SERVICES SHOWN.

ADJOINING PROPERTY

1. IT IS THE SUB-CONTRACTOR'S RESPONSIBILITY TO ENSURE THE EFFECTS OF THE EARTHWORKS DO NOT HAVE AN IMPACT TO THE NEIGHBOURING PROPERTIES. SHOULD AN ISSUE ARISE ON SITE, THE SUB-CONTRACTOR SHALL INFORM THE SUPERINTENDENT IMMEDIATELY.

2. THE SUB-CONTRACTOR IS TO RECEIVE WRITTEN PERMISSION PRIOR TO ENTERING OR COMMENCING WORK OUTSIDE THE DEVELOPMENT SITE AND SHALL RECEIVE PERMISSION FROM EASEMENT HOLDERS AND LOCAL AUTHORITY PRIOR TO WORK COMMENCING.

EARTHWORKS SEQUENCE

1. INSTALL ALL VEGETATION PROTECTION, EROSION AND SEDIMENT CONTROL, AND SITE-SPECIFIC MEASURES PRIOR TO THE COMMENCEMENT OF ANY WORK.

2. STRIP ALL TOPSOIL/ORGANIC MATERIAL FROM CONSTRUCTION AREA AND REMOVE FROM SITE OR STOCKPILE AS DIRECTED BY THE SUPERINTENDENT.

3. EXCAVATE MATERIAL AS INDICATED ON THE BULK EARTHWORKS PLAN.

4. PRIOR TO PLACING FILL, PROOF ROLL EXPOSED SUB-GRADE WITH AN 8 TONNE (MINIMUM) ROLLER OR WATER TRUCK TO DETECT THEN REMOVE SOFT SPOTS, REPLACE UNSUITABLE MATERIAL WITH SUITABLE GRANULAR MATERIAL AND COMPACT TO THE MINIMUM COMPACTION REQUIREMENTS LISTED. (TO BE UNDERTAKEN IN THE PRESENCE OF A CIVIL/GEOTECHNICAL ENGINEER

5. GEOTECHNICAL ENGINEER TO UNDERTAKE SUB-GRADE COMPACTION TESTING TO LEVEL 1, AS PER AS 3798 (2007) AND PROVIDE CBR VALUES FOR ADJUSTMENT TO PAVEMENT DESIGN.

6. FILLING IS TO BE PLACED AND COMPACTED IN MAXIMUM 150MM LAYERS AND TO THE MINIMUM COMPACTION REQUIREMENTS LISTED.

7. AFTER ALL BULK EARTHWORKS HAVE OCCURRED, PROOF ROLL THE FINISHED PAD LEVEL WITH AN 8 TONNE (MINIMUM) ROLLER OR WATER TRUCK TO DETECT, THEN REMOVE SOFT SPOTS, REPLACE UNSUITABLE MATERIAL WITH SUITABLE GRANULAR MATERIAL AND COMPACT TO THE MINIMUM COMPACTION REQUIREMENTS LISTED.

TYPICAL EARTHWORKS EMBANKMENT NOTES

1. IT IS THE BUILDER'S RESPONSIBILITY TO ENSURE THAT THE SITE WORKS DO NOT COMPROMISE/UNDERMINE OR PLACE ADDITIONAL SURCHARGE ON ANY EXISTING STRUCTURES.

2. BATTER ANGLES MUST COMPLY WITH LOCAL AUTHORITY REQUIREMENTS AND ARE TO CONFORM TO THE ABOVE DIAGRAM.

3. ALL BATTERS SHALL BE PROTECTED FROM EROSION, AND ADEQUATE EROSION AND SEDIMENT CONTROL MEASURES IN PLACE PRIOR TO THE COMMENCEMENT OF WORK.

4. SHOULD THE ABOVE CONDITIONS NOT BE ACHIEVED, BARNSON MUST BE CONTACTED PRIOR TO ANY SITE WORKS BEING UNDERTAKEN.

PAD AND FINISHED LEVEL NOTES

1. ACTUAL FINISHED LEVELS SHOWN ON THIS PLAN ARE FOR THE SUB-CONTRACTOR'S GUIDANCE ONLY. ACTUAL FINISHED LEVELS SHALL BE SET-OUT IN ACCORDANCE WITH ARCHITECTURAL PLANS (REPORT ANY DISCREPANCIES TO BARNSON IMMEDIATELY).

AUTHORITY REGULATIONS

1. HAUL ROUTES FROM SITE IS TO BE AS FOLLOWS: SITE > TO BE CONFIRMED, STAY ON MAIN ROADS.

2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO WORK COMMENCING AS REQUIRED BY THE COUNCIL APPROVED SEDIMENT & EROSION CONTROL PLAN.

3. ALL VEGETATION PROTECTION AND PRESERVATION MEASURES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF WORK.

SOIL CONTAMINATION

1. ANY SUSPECTED GROUND OR GROUND WATER CONTAMINATION SHALL BE INVESTIGATED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER.

CONSTRUCTION RECORDS

1 ADEQUATE RECORDS SHALL BE KEPT THROUGHOUT CONSTRUCTION INCLUDING, BUT NOT LIMITED TO:

- LOCATION AND QUANTITY OF EXCESS CUT (DUMP SITE);
- THE AREAS ON SITE OF ALL FILL;
- LEVELS OF STRIPPED SURFACE;
- LOCATION OF ANY VEGETATION REMOVED;
- LOCATION OF SITE CONTAMINATION/UNSUITABLE MATERIAL;
- LEVELS AT COMPLETION OF BULK EARTHWORKS WORK;
- DETAILS OF SUB-GRADE TEST ROLLING (PROOF ROLLING);
- TYPES/SOURCE OF FILL MATERIAL;
- LOCATION LEVEL AND RESULT OF EACH COMPACTION TEST;
- RECORD OF ALL ACTIONS TAKEN ON SITE.

UNSUITABLE MATERIALS

1. REFER TO GEOTECHNICAL ENGINEER, AS REQUIRED, FOR DETERMINATION OF SUITABILITY OF MATERIAL WON ON SITE, OR BORROW PIT TO BE USED AS FILL MATERIAL.

2. ALL UNSUITABLE FILL SHALL BE EITHER REMOVED OR USED ORGANIC MATTER FROM BUILDING AND PAVEMENT AREAS TO AN 3. PRIOR TO ANY EARTHWORKS STRIP TOPSOIL, CONTAINING AS PER THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT. APPROXIMATE DEPTH OF 0.10M, SPOIL MATERIAL AS DIRECTED BY THE MANAGER. REMOVE RUBBLE, OVER SATURATED MATERIALS AND ALL ORGANIC MATTER.

TESTING/INSPECTIONS

1. ALL TESTING OF EARTHWORKS SHALL BE DONE AT THE SUB-CONTRACTOR'S EXPENSE, UNLESS NOTED OTHERWISE. SHALL A SUB-GRADE OR PROOF ROLL INSPECTION FAIL, OR 2. ADDITIONAL INSPECTIONS BE REQUIRED FOR ANY REASON OUTSIDE, THE SUB-CONTRACTOR WILL WEAR THE COSTS OF ANY SUBSEQUENT RE-INSPECTIONS UNLESS NOTED OTHERWISE.

SCOUR PROTECTION NOTES

- SCOUR PROTECTION IS TO BE PROVIDED AS A 3000mm WIDE DISTRIBUTION x 300mm DEEP D₅₀100mm RIP RAP PLACED ON A SINGLE LAYER OF GEOTEXTILE (BIDIM A34 OR EQUIVALENT)
- GRADING TO BE AS PER TABLE BELOW

EQUIVALENT SPHERICAL DIAMETER ##	PERCENT (BY WEIGHT) OF RIP RAP OF SMALLER SIZE
1.5 - 2.0 TIMES D ₅₀ ++	100%
D ₅₀	50%
0.3 D ₅₀	10 - 20%

THE DIAMETER OF A SPHERE WITH AN EQUIVALENT VOLUME TO THE INDIVIDUAL ROCK.

++ D₅₀ IS THE MEDIAN RIP RAP DIAMETER OF THE ROCK MIX. (i.e. 50% (BY WEIGHT) IS SMALLER AND 50% (BY WEIGHT) IS LARGER).

BATTER ANGLES - SHORT TERM

SLOPE = H/L H=2m	MATERIAL TYPE (REFER GEOTECHNICAL REPORT)					
	STABLE ROCK	SAND	SILT	FIRM CLAY	SOFT CLAY	SOFT SOILS
COMPACTED FILL	1:1	1:3	1:4	1:2	N/A	N/A
CUTTING	N/A	1:3	1:4	1:2	1:3	N/A

N/A = REFER TO GEOTECHNICAL REPORT FOR TREATMENT OF UNSUITABLE MATERIAL

ALL BATTER ANGLES ARE APPROXIMATE ONLY AND SHOULD BE CONFIRMED BY A GEOTECHNICAL ENGINEER.

SUBMISSION FOR DA

BARNSON PTY LTD

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Rev	Date	Description
0	22.02.2023	SUBMISSION FOR D.A.

Project
**CIVIL DESIGN DOCUMENTATION
PROPOSED LIGHT INDUSTRIAL UNITS**
Site Address
LOT 9 IN DP 1277513
5 KNOTT PLACE, CAERLEON NSW 2850
Client
STRUCTOR PROJECTS PTY LTD

Drawing Title		Certification	
BULK EARTHWORKS SPECIFICATIONS			
Design	LM	Original Sheet Size	A1
Drawn	JC		
Check	LM	Revision	0

Project No
Drawing No

39211
C10