

**DRAINAGE INSTALLATION
VERIFICATION REPORT**

for a development at

**ALFRED MORRIS COURT, FELLPARK ROAD,
WYTHENSHAW**

Undertaken on behalf of

THE CASEY GROUP LTD

Report Title:	Drainage Installation Verification Report
Report Reference:	8530/DIVR/02
Client:	The Casey Group Ltd
Issue Date:	May 2022
Drafted By:	Kevin Tyldesley
Authorised By:	Natalie Brock

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1.0 DRAINAGE INSTALLATION VERIFICATION REPORT

- 1.1 WML Consulting have been commissioned by The Casey Group Ltd (TCGL) to provide a response to planning condition 15 of planning consent ref. 123541 / FO / 2019.
- 1.2 The proposed development to which this consent relates is described as the erection of part two, part three, part four storey building to accommodate 23 no. apartments (7 x 1 bed and 16 x 2 bed) and 11. no two storey houses (9 x 3 bed and 2 x 4 bed) after demolition of the former Alfred Morris Court building with associated car parking, cycle storage and landscaping at Alfred Morris Court, Fellpark Road, Manchester, M23 0EX.
- 1.3 Condition 15 of this consent is as below in blue font.

No development hereby permitted shall be occupied until details of the implementation, maintenance and management of the sustainable drainage scheme have been submitted to and approved by the local planning authority. The scheme shall be implemented and thereafter managed and maintained in accordance with the approved details. Those details shall include:

- Verification report providing photographic evidence of construction as per design drawings;
- As built construction drawings if different from design construction drawings;
- Management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.

Reason: To manage flooding and pollution and to ensure that a managing body is in place for the sustainable drainage system and there is funding and maintenance mechanism for the lifetime of the development.

- 1.4 In response to the above WML have produced this document which contains a series of appendices as listed below

- Appendix A – drawings indicating the as installed below ground drainage infrastructure.

Note that TCGL have confirmed that the below ground drainage proposals were installed in line with WML's construction status drawings and calculations.

Note that the maintenance information requested via the third bullet point above is provided on WML drawing 1001 and repeated below:-

Maintenance of the below ground drainage system

The below ground foul and surface water drainage proposals indicated are relatively traditional in nature, and should provide years of relatively low maintenance operation in relation to the anticipated lifespan of the proposed development.

In line with current good practice:-

- **Gullies and linear drainage channels.** These should be inspected and / or cleaned out at 6 monthly intervals or following heavy storms that may wash detritus into them. Any problems highlighted by these inspections will need to be investigated, possibly by CCTV survey, to confirm the nature of the problem and to allow it to be remedied in a timely manner.

- **Inspection chambers, manholes, catchpits, etc.** These should be inspected at 6 monthly intervals or following heavy storms to ensure that the pipework associated with them is running freely. Any problems highlighted by these inspections will need to be investigated, possibly by CCTV survey, to confirm the nature of the problem and to allow it to be remedied in a timely manner.
- **The infiltration trench.** The surface water drainage strategy for the development is based upon the external hardstanding areas of the site being drained via direct infiltration to the ground beneath them. Therefore only the roofed areas of the development are to drain to the infiltration trench. In addition, as is the norm the roofed areas are drained via RWPs with trapped gullies at their base, these gullies will retain any detritus that may be carried down from the roof. Hence there will be minimal opportunity for the infiltration trench to be exposed to the risk of siltation. As mentioned above the inspection chambers immediately upstream of the infiltration trench should be inspected at 6 monthly intervals or following heavy storms to ensure that the pipework associated with them and the infiltration trench are operating freely. Any problems highlighted by these inspections will need to be investigated, possibly by CCTV survey, to confirm the nature of the problem and to allow it to be remedied in a timely manner.
- It is anticipated that the majority of the maintenance of the below ground drainage system will be carried out by the site owners management team / company. Though it may be necessary to involve a specialist drainage maintenance company also as and when needed.

Maintenance of the porous surfacings

The areas of porous surfacing should not be used for the storage of any materials that may clog the pores within the surfacing.

Similarly the use of sand or other non-soluble materials for snow and ice control should be avoided.

The areas of porous surfacing should be regularly swept, vacuumed or blown to remove leaves and other debris that may lead to the pores within the surfacing becoming blocked. It is anticipated that this cleaning will be required twice per year, however the effectiveness of this cleaning frequency will need to be monitored and may need to be increased.

It is anticipated that the external areas of the site will be routinely inspected and maintained by a management team / company.

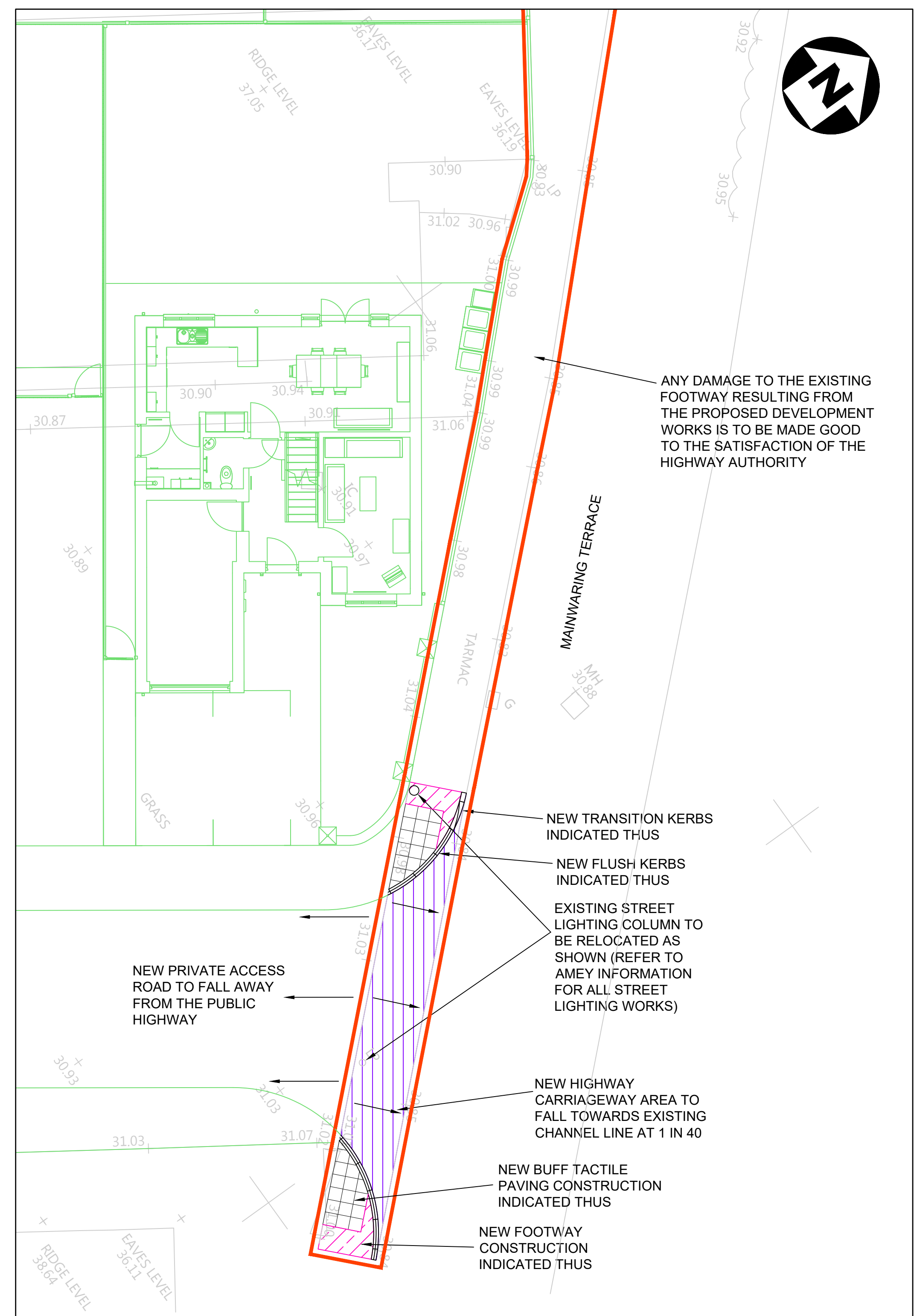
TCGL will be responsible for the maintenance of the below ground drainage systems for twelve months following handover of the development, currently forecast to happen 11th Feb 2022.

Wythenshawe Community Housing Group will be responsible for the maintenance of the below ground drainage systems after 11th Feb 2023.

- Appendix B – Surface water drainage calculations for the systems indicated on drawing 1001.
- Appendix C – Photographs of the installation of the drainage infrastructure.

1.5 It is considered that this document with its various appendices adequately responds to the information requested via planning condition 15, and hence it can be discharged.

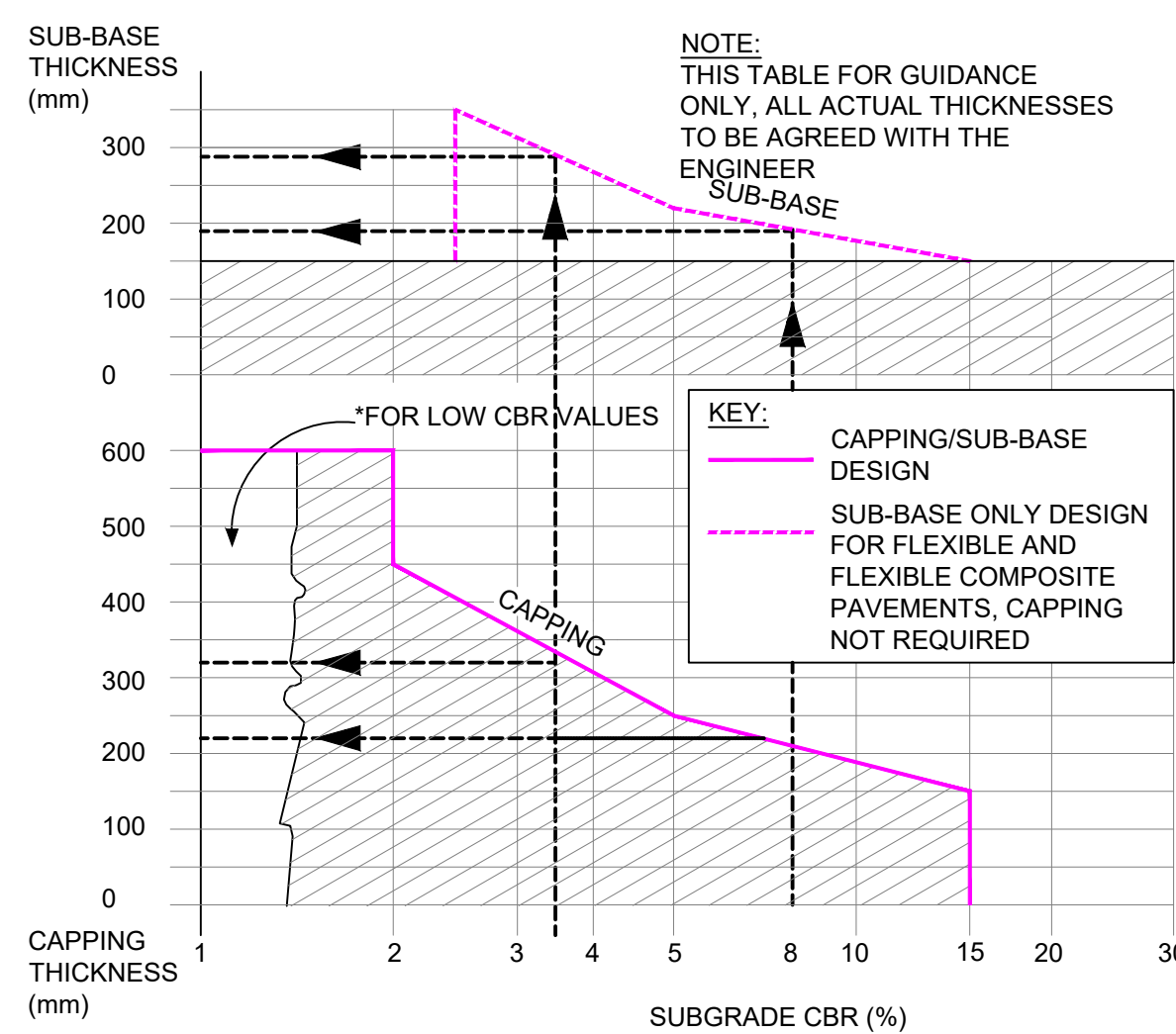
APPENDIX A
Record Drawings



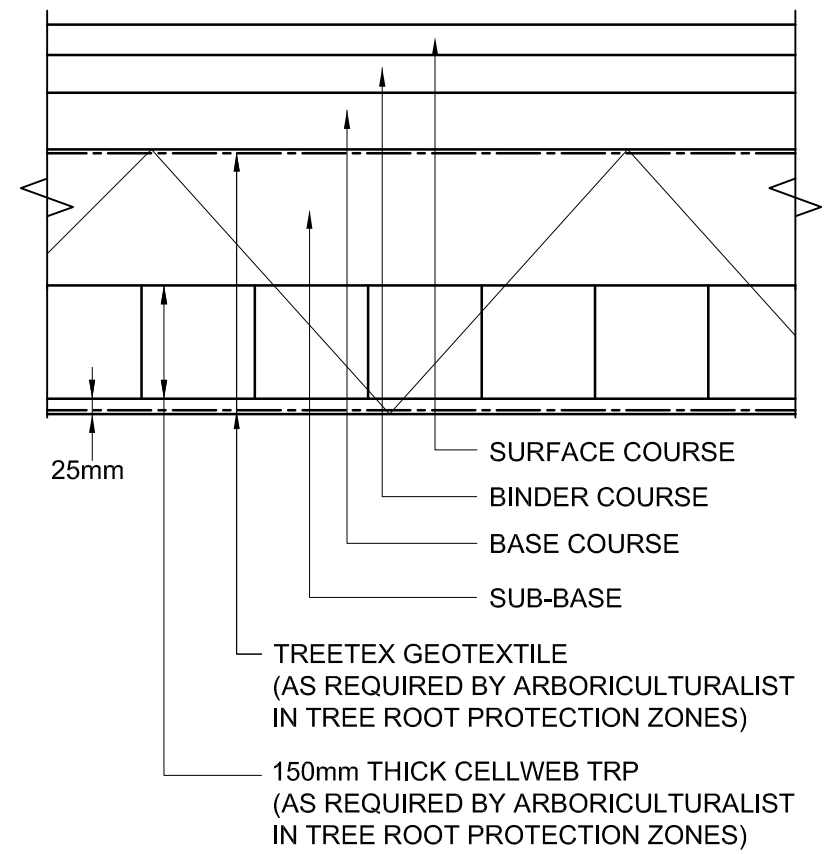
THE CONTRACTOR SHALL INCORPORATE ALL THE REQUIREMENTS OF THE PRE-TENDER STAGE HEALTH AND SAFETY PLAN.

CONSTRUCTION

1. CONCRETE BEDDING AND BACKING SHALL BE TYPE ST4 TO CLAUSE 2602 TABLE 26/1.
2. KERBS SHALL COMPLY WITH BS EN 1340.
3. CEMENT SHALL BE ORDINARY PORTLAND CEMENT TO BS EN 197-1.
4. JOINTS TO KERBS SHALL BE POINTED WITH CLASS (III) MORTAR TO CLAUSE 2404.
5. CUT LENGTHS OF KERBS ARE TO BE CUT USING A DISC CUTTER MIN. LENGTH 450mm.
6. IN THE CASE OF NEW CARRIAGEWAY CONSTRUCTION THE SUB BASE LAYER IS EXTENDING 300mm BEYOND THE BACK OF KERB FOUNDATION THE CONTRACTOR SHALL ALLOW FOR FILLING IN BETWEEN THE ROAD SUB BASE AND THE FOOTWAY FORMATION WITH SUB BASE MATERIAL.
7. KERBS LAID IN EXISTING CARRIAGEWAY FORMATION, TO INCLUDE INFILL OF OVERBREAK IN FOOTWAY WITH CONCRETE OF ST 1 TO CONFORM TO CLAUSE 2404.



SUB-BASE / CAPPING CBR TABLE



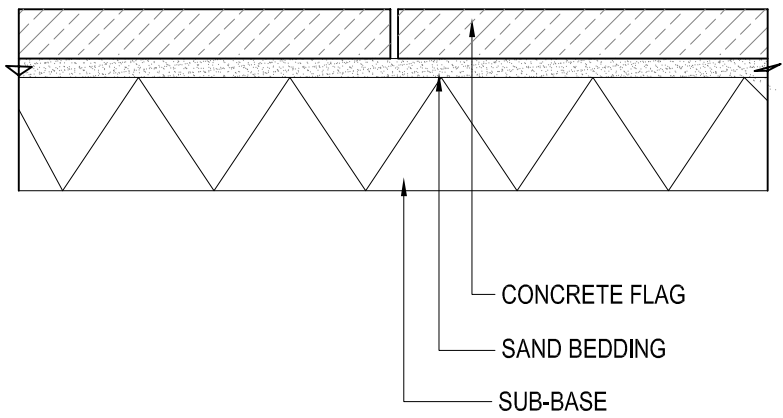
ALL WORKS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF BS594987:2010 GENERALLY.

SURFACE COURSE MATERIAL	40mm AC10 SURF PA
BINDER COURSE MATERIAL	50mm AC20 BIN PA
BASE COURSE MATERIAL	75mm AC32 BAS PA
GRANULAR SUBBASE	MIN 350mm CLEAN ANGULAR STONE TYPE 4/20
ASSUMED CBR	2.5% (SUBJECT TO CONFIRMATION OF CBR TESTS BY SITE INVESTIGATION SPECIALIST)

ADDITIONAL FILLING REQUIRED TO SUIT PROPOSED LEVELS TO USE TYPE 3 SUB-BASE OR CLEAN ANGULAR STONE TYPE 4/20.

NOTE:
ALL MATERIAL WITHIN 450mm OF SURFACE LEVEL TO BE NON-FROST SUSCEPTIBLE.

POROUS ACCESS ROAD CONSTRUCTION

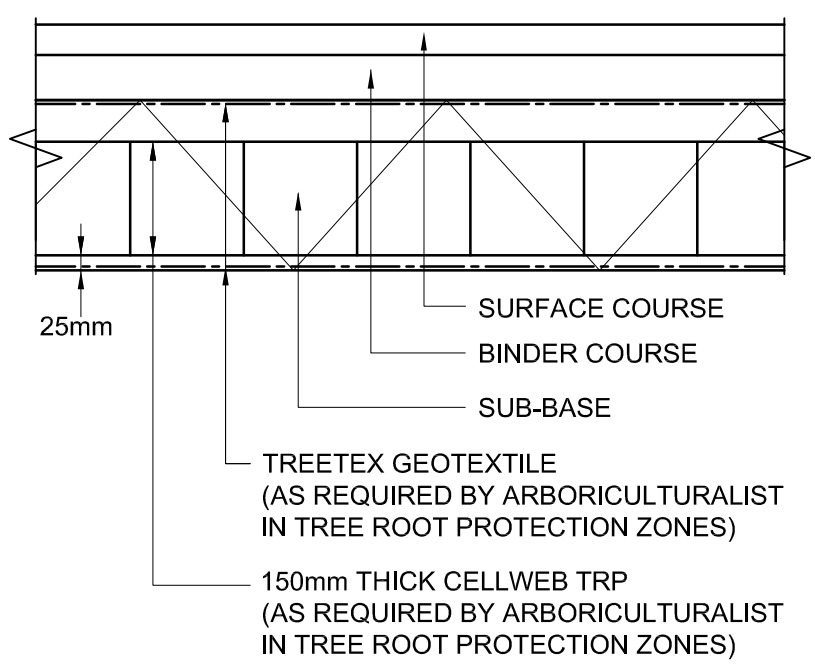


GRANULAR SUB-BASE:	HIGHWAYS AGENCY TYPE 1 GRANULAR MATERIAL AS SECTION Q20
THICKNESS:	150mm
BEDDING:	SAND
NOMINAL THICKNESS:	25mm
FLAGS:	TO BS 7263-1
MANUFACTURER:	TO ARCHITECT'S SPEC
PRODUCT REFERENCE:	TO ARCHITECT'S SPEC
COLOUR / FINISH:	TO ARCHITECT'S SPEC
METHOD OF MANUFACTURE:	TO ARCHITECT'S SPEC
NOMINAL SIZES:	TO ARCHITECT'S SPEC
JOINTING:	WITH SAND
WIDTH:	2 - 5mm
BOND:	TO ARCHITECT'S SPEC
ASSUMED CBR:	2.5% (SUBJECT TO CONFIRMATION OF CBR TESTS BY SITE INVESTIGATION SPECIALISTS AFTER SITE STRIP)

ADDITIONAL FILLING REQUIRED TO RAISE SURFACE LEVEL FOLLOWING SITE STRIP TO BE IN ACCORDANCE WITH P20 (SHW 803 TYPE 1 GSB).

ALL MATERIAL WITHIN 450mm OF SURFACE LEVEL TO BE NON-FROST SUSCEPTIBLE. IF ENCOUNTERED NOTIFY WML REPLACEMENT FILL TO BE GRADE 6F2 OR 6F5 UNLESS AGREED OTHERWISE.

CONCRETE FLAG PAVING TO PEDESTRIAN ONLY AREAS



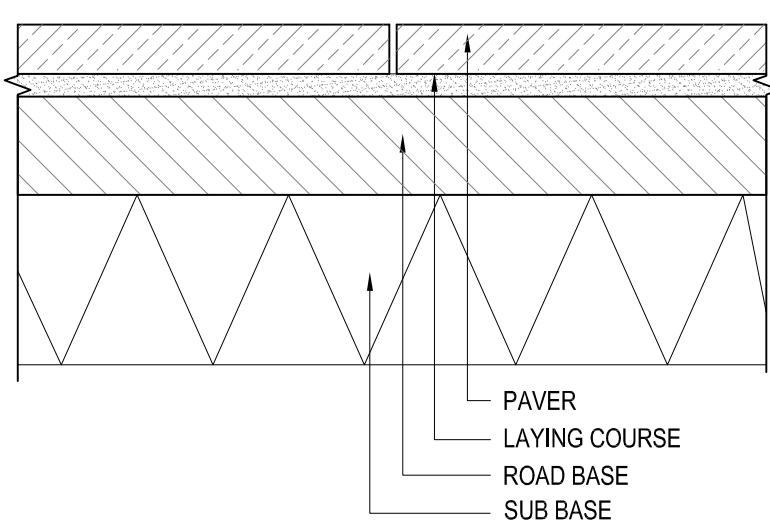
ALL WORKS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF BS594987:2010 GENERALLY.

SURFACE COURSE MATERIAL	40mm AC10 SURF PA
BINDER COURSE MATERIAL	60mm AC20 BIN PA
GRANULAR SUBBASE	MIN 225mm CLEAN ANGULAR STONE TYPE 4/20
ASSUMED CBR	2.5% (SUBJECT TO CONFIRMATION OF CBR TESTS BY SITE INVESTIGATION SPECIALIST)

ADDITIONAL FILLING REQUIRED TO SUIT PROPOSED LEVELS TO USE TYPE 3 SUB-BASE OR CLEAN ANGULAR STONE TYPE 4/20.

NOTE:
ALL MATERIAL WITHIN 450mm OF SURFACE LEVEL TO BE NON-FROST SUSCEPTIBLE.

POROUS DRIVEWAY CONSTRUCTION



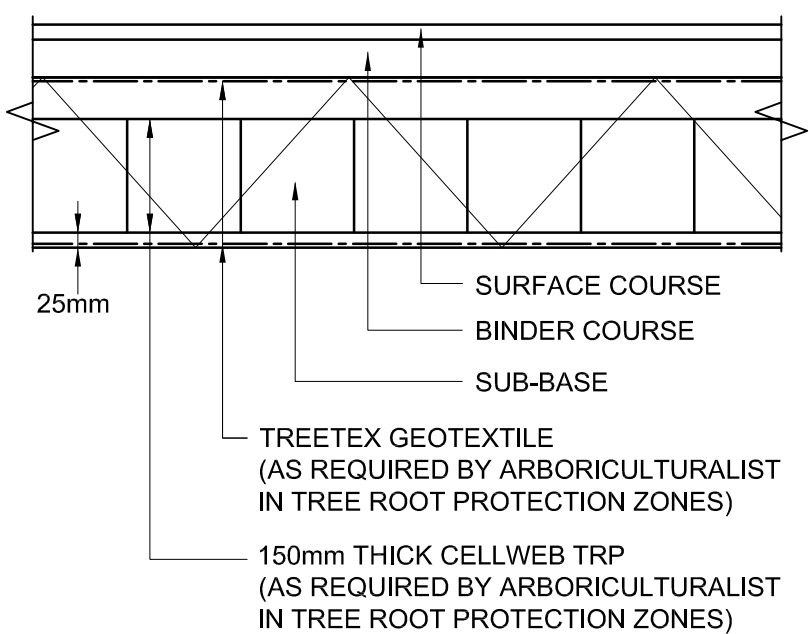
ALL WORKS TO BE IN ACCORDANCE WITH BS7533-3 GENERALLY.

PAVER: MATERIAL:	THICKNESS 65mm AS SPECIFIED BY ARCHITECT
LAYING COURSE: MATERIAL:	THICKNESS 50mm 2mm TO 6.3mm GRADED GRIT TO BS EN 7533-13
ROADBASE: MATERIAL:	THICKNESS 130mm AC20 BAS PA
SUB-BASE:	MIN 350mm THICK CLEAN ANGULAR STONE TYPE 4/20
JOINTING MATERIAL:	1mm TO 4mm CLEAN HARD CRUSHED STONE
LAYING PATTERN:	AS SPECIFIED BY ARCHITECT
ASSUMED CBR:	2.5% (SUBJECT TO CONFIRMATION OF CBR TESTS BY SITE INVESTIGATION SPECIALIST AFTER SITE STRIP)

ADDITIONAL FILLING REQUIRED TO RAISE SURFACE LEVEL FOLLOWING SITE STRIP TO BE IN ACCORDANCE WITH D20, (SH803 TYPE 1 GSB).

ALL MATERIAL WITHIN 450mm OF SURFACE LEVEL TO BE NON-FROST SUSCEPTIBLE. IF ENCOUNTERED NOTIFY WML REPLACEMENT FILL TO BE GRADE 6F2 OR 6F5 UNLESS AGREED OTHERWISE.

PERMEABLE BLOCK PAVING TO ACCESS ROAD



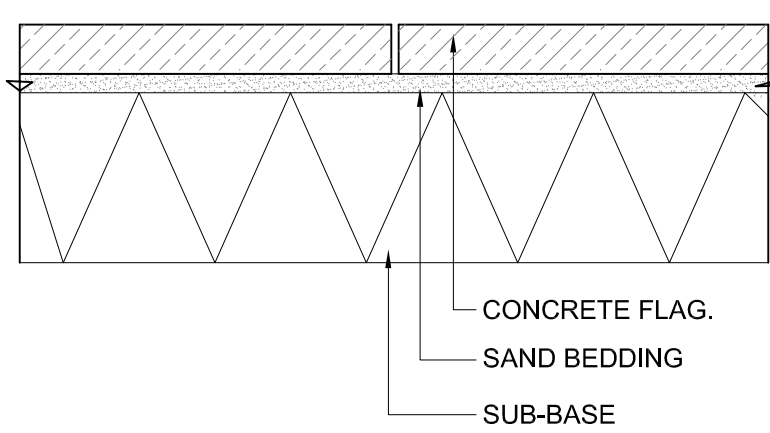
ALL WORKS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF BS594987:2010 GENERALLY.

SURFACE COURSE MATERIAL	20mm AC10 SURF PA
BINDER COURSE MATERIAL	50mm AC20 BIN PA
GRANULAR SUBBASE	MIN 150mm CLEAN ANGULAR STONE TYPE 4/20
ASSUMED CBR	2.5% (SUBJECT TO CONFIRMATION OF CBR TESTS BY SITE INVESTIGATION SPECIALIST)

ADDITIONAL FILLING REQUIRED TO SUIT PROPOSED LEVELS TO USE TYPE 3 SUB-BASE OR CLEAN ANGULAR STONE TYPE 4/20.

NOTE:
ALL MATERIAL WITHIN 450mm OF SURFACE LEVEL TO BE NON-FROST SUSCEPTIBLE.

POROUS FOOTWAY CONSTRUCTION TO PEDESTRIAN ONLY AREAS

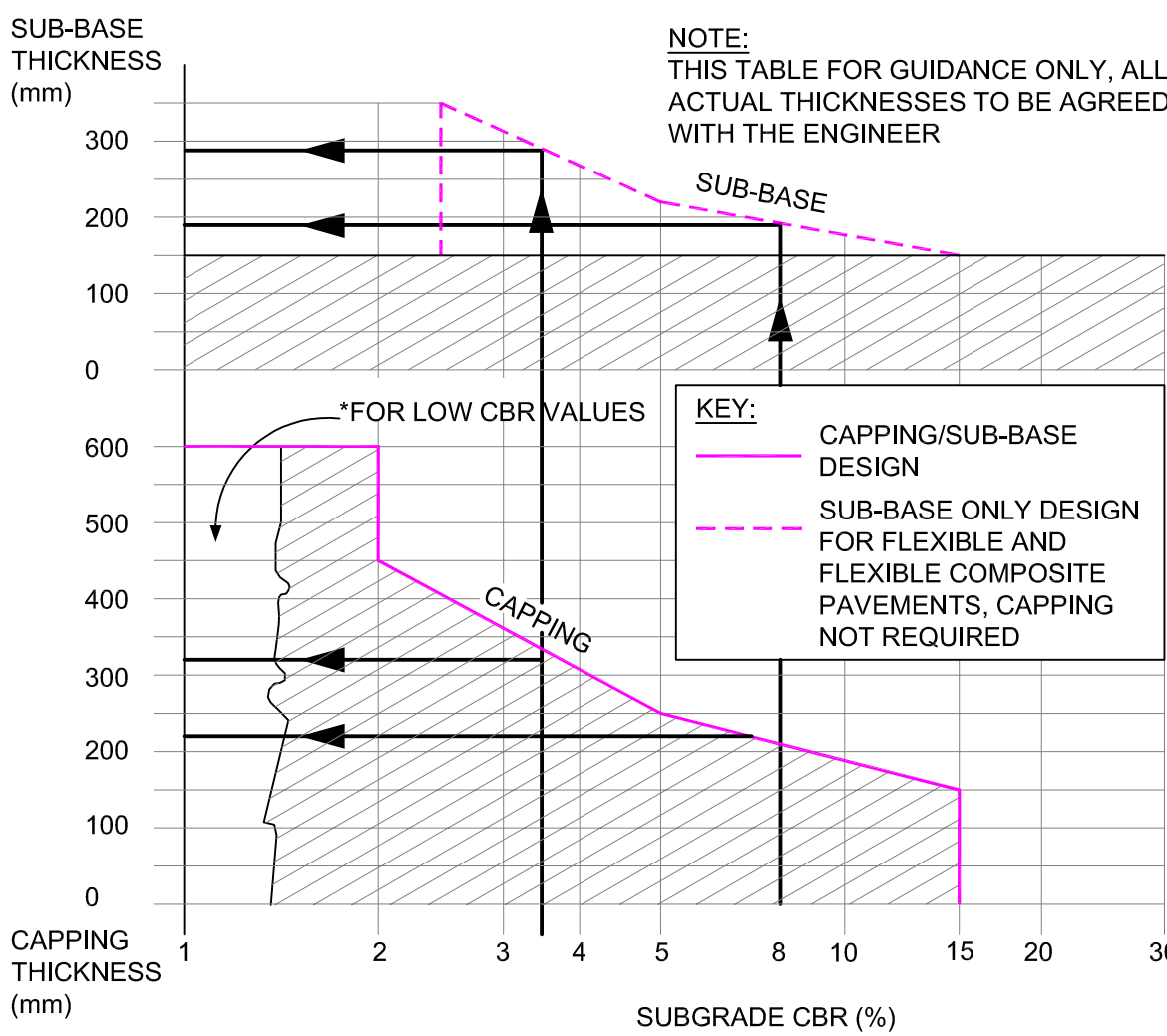


SUB-BASE:	HIGHWAYS AGENCY TYPE 3 GRANULAR MATERIAL OR CLEAN ANGULAR STONE TYPE 4/20
THICKNESS:	150mm
LAYING COURSE:	2mm TO 6.3mm GRADED GRIT TO BS EN 7533-13
THICKNESS:	25mm
FLAGS:	TO BS 7263-1.
MANUFACTURER:	TO ARCHITECT'S SPEC.
PRODUCT REFERENCE:	TO ARCHITECT'S SPEC.
COLOUR / FINISH:	TO ARCHITECT'S SPEC.
METHOD OF MANUFACTURE:	TO ARCHITECT'S SPEC.
NOMINAL SIZES:	TO ARCHITECT'S SPEC.
JOINTING:	2mm TO 6.3mm GRADED GRIT TO BS EN 7533-13
WIDTH:	8mm MIN TO ARCHITECT'S SPEC.
BOND:	TO ARCHITECT'S SPEC.
ASSUMED CBR:	2.5% (SUBJECT TO CONFIRMATION OF CBR TESTS BY SITE INVESTIGATION SPECIALISTS AFTER SITE STRIP)

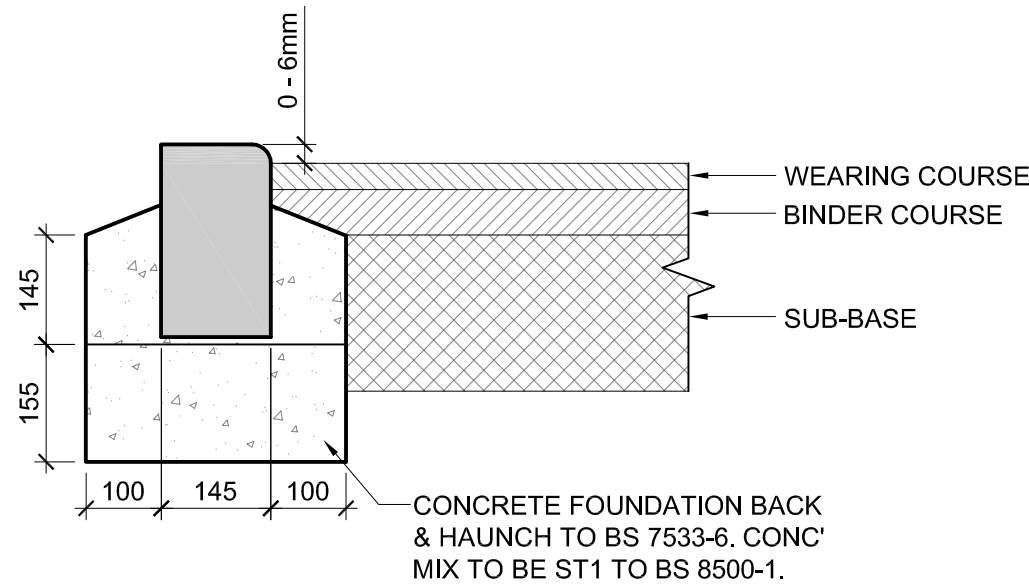
ADDITIONAL FILLING REQUIRED TO RAISE SURFACE LEVEL FOLLOWING SITE STRIP TO BE IN ACCORDANCE WITH P20 (SHW 803 TYPE 1 GSB).

ALL MATERIALS WITHIN 450mm OF SURFACE LEVEL TO BE NON-FROST SUSCEPTIBLE. IF ENCOUNTERED NOTIFY WML REPLACEMENT FILL TO BE GRADE 6F2 OR 6F5 UNLESS AGREED OTHERWISE.

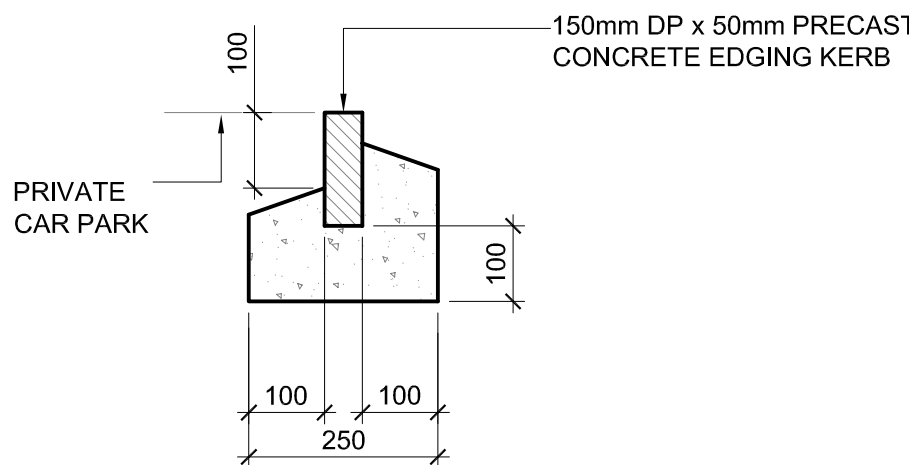
POROUS CONCRETE FLAG PAVING TO PEDESTRIAN ONLY AREAS



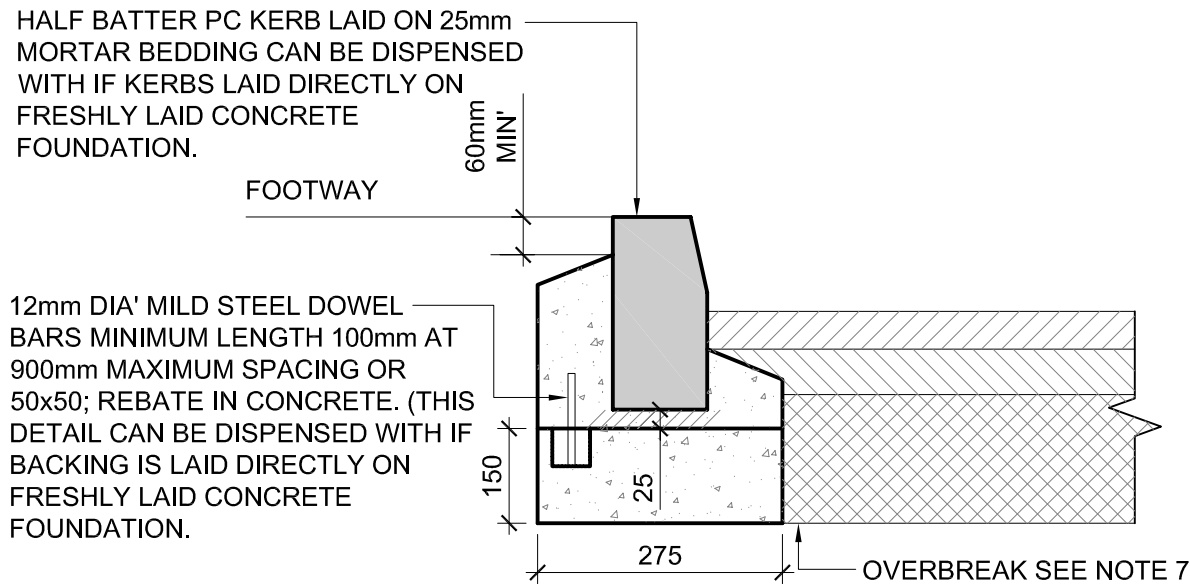
SUB-BASE / CAPPING CBR TABLE



TYPICAL DROP KERB [SCALE 1:10]



TYPICAL EDGING DROP KERB [SCALE 1:10]



TYPICAL KERB DETAIL [SCALE 1:10]

NOTES:

- CONCRETE BEDDING AND BACKING SHALL BE TYPE ST1 TO BS 8500-1.
- KERBS SHALL COMPLY WITH BS EN 1340.
- CEMENT SHALL BE ORDINARY PORTLAND CEMENT TO BS EN 197-1.
- JOINTS TO KERBS SHALL BE POINTED WITH CLASS (iii) MORTAR.
- CUT LENGTHS OF KERBS ARE TO BE CUT USING A DISC CUTTER MIN. LENGTH 450mm.
- IN THE CASE OF NEW CARRIAGEWAY CONSTRUCTION THE SUB BASE LAYER IS EXTENDED 300mm BEYOND THE BACK OF KERB FOUNDATION THE CONTRACTOR SHALL ALLOW FOR FILLING IN BETWEEN THE ROAD SUB BASE AND THE FOOTWAY FORMATION WITH SUB BASE MATERIAL.
- KERBS LAID IN EXISTING CARRIAGEWAY FORMATION-RATE TO INCLUDE INFILL OF OVERBREAK IN FRONT OF KERB WITH CONCRETE TYPE ST.1 TO BINDER COURSE FINISH LEVEL.

GENERAL NOTES

- DO NOT SCALE FROM THIS DRAWING WORK TO FIGURED DIMENSIONS ONLY.
- NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS ALLOWED WITHOUT PRIOR PERMISSION IN WRITING.
- ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS AND THE SPECIFICATION.
- THE CONTRACTOR SHALL INCORPORATE ALL THE REQUIREMENTS OF THE PRE-TENDER STAGE HEALTH & SAFETY PLAN.

RESIDUAL RISK REGISTER -

REFER TO WML CIVIL / STRUCTURAL DESIGN RISK REGISTER IN ADDITION TO THE HAZARDS / RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORKS INDICATED ON THIS DRAWING. NOTE THE FOLLOWING:-

CONSTRUCTION

C01	CONSTRUCTION ISSUE.	08/07/20	KPT	NB
P01	PRELIMINARY ISSUE.	20.03.20	KPT	NB
Rev.	Amendment	Date	By	Chkd

Project
**ALFRED MORRIS COURT
FELLPARK ROAD**

Client
BERNARD TAYLOR PARTNERSHIP

Title
**PROPOSED EXTERNAL WORKS DETAILS
TO NON-HIGHWAY AREAS**

WML Job No. 8340	Drawn KPT	Checked NB	Date MARCH 2020	Scale N.T.S.
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WML CONSULTING
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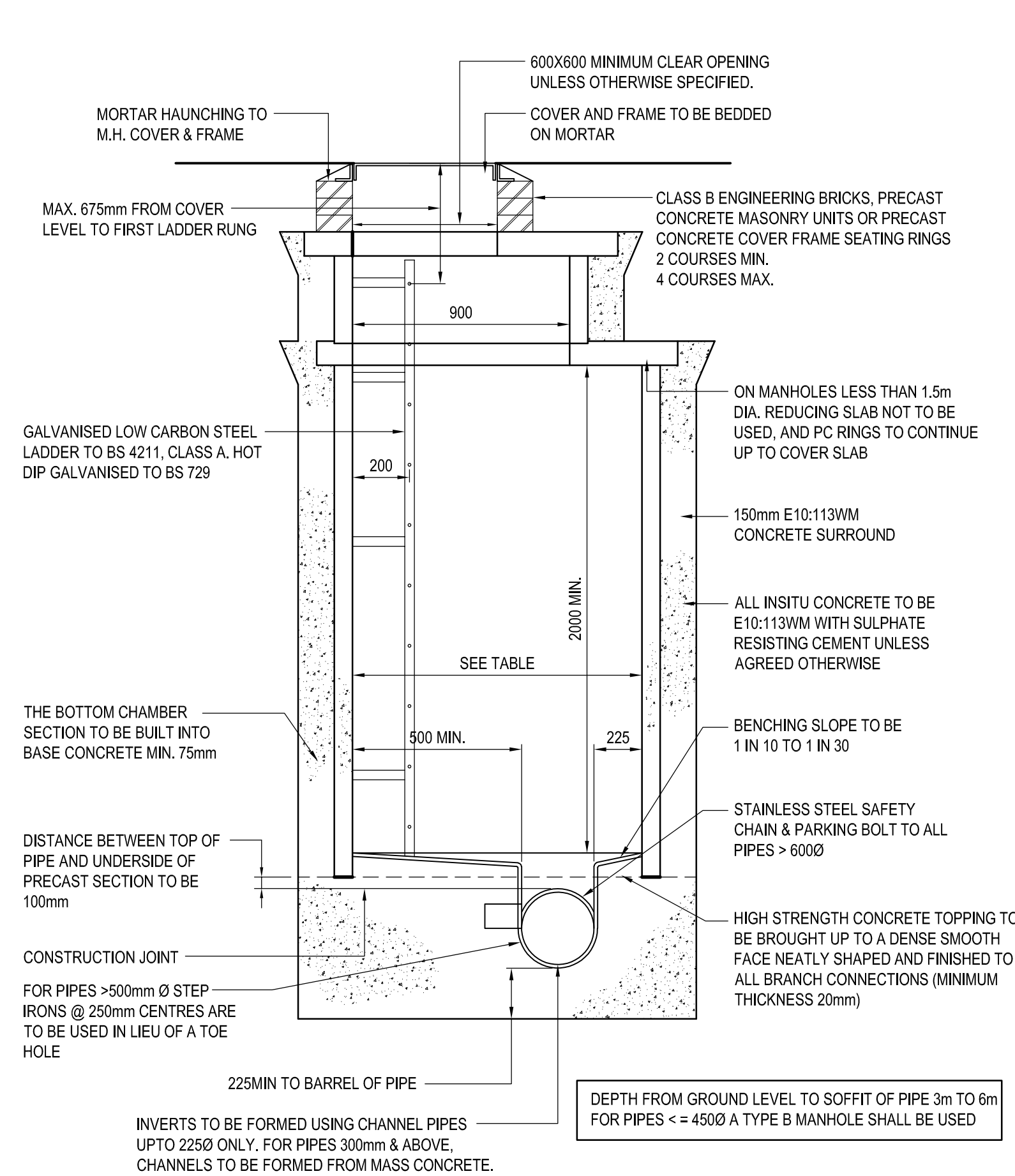
Drawing No.	Project	Originator	Volume	Level	Type	Role	Number	Rev
8340 - WML -	00 -	XX -	DR -	C -	1003	C01		

GENERAL NOTES

1. DO NOT SCALE FROM THIS DRAWING WORK TO FIGURED DIMENSIONS ONLY.
2. NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS ALLOWED WITHOUT PRIOR PERMISSION IN WRITING.
3. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS' ENGINEERS AND SPECIALISTS DRAWINGS AND THE SPECIFICATION.
4. THE CONTRACTOR SHALL INCORPORATE ALL THE REQUIREMENTS OF THE PRE-TENDER STAGE HEALTH & SAFETY PLAN.

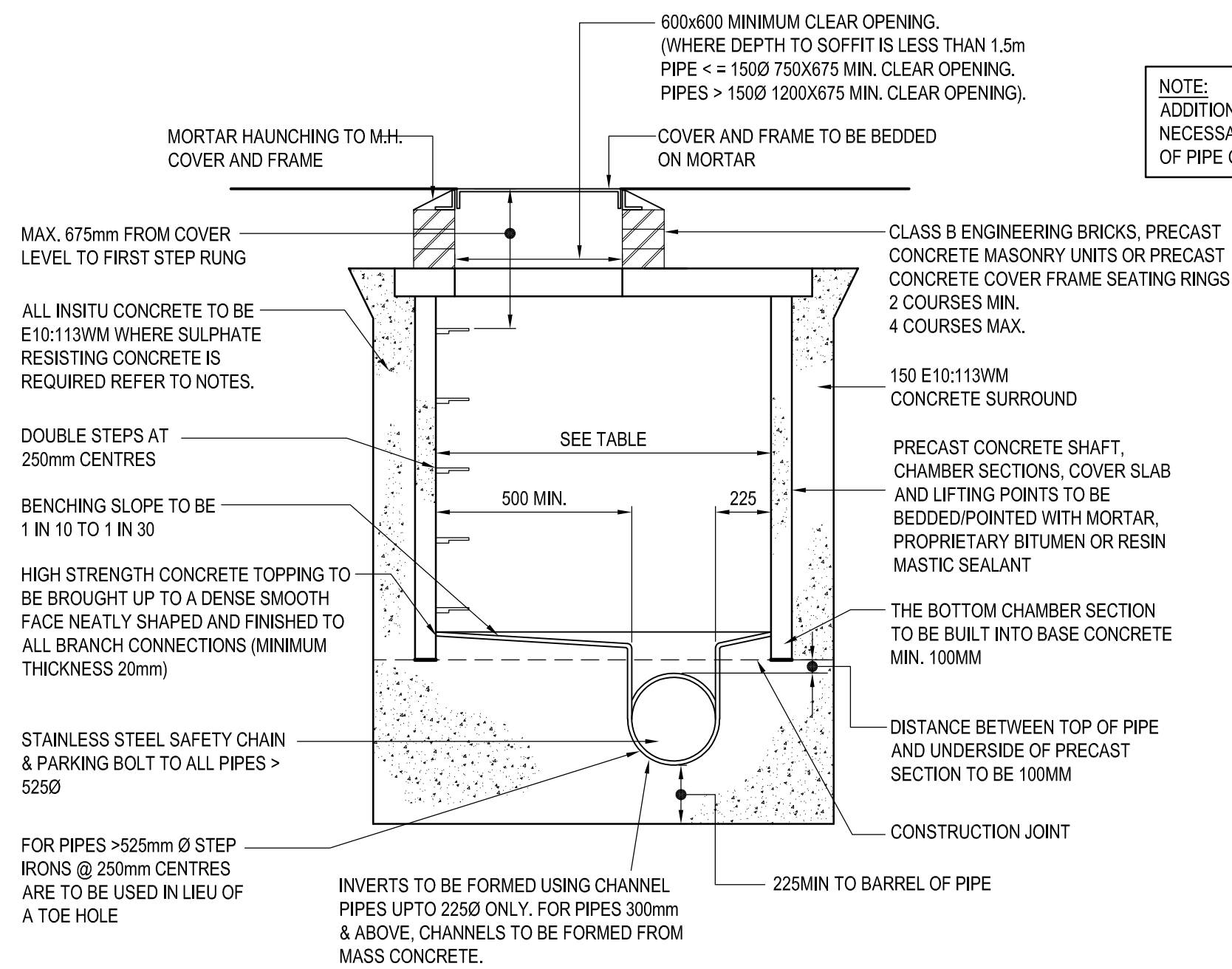
RESIDUAL RISK REGISTER

REFER TO WML CIVIL / STRUCTURAL DESIGN RISK REGISTER IN ADDITION TO THE HAZARDS / RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORKS INDICATED ON THIS DRAWING. NOTE THE FOLLOWING:-



TYPICAL MANHOLE DETAIL TYPE A (SECTION

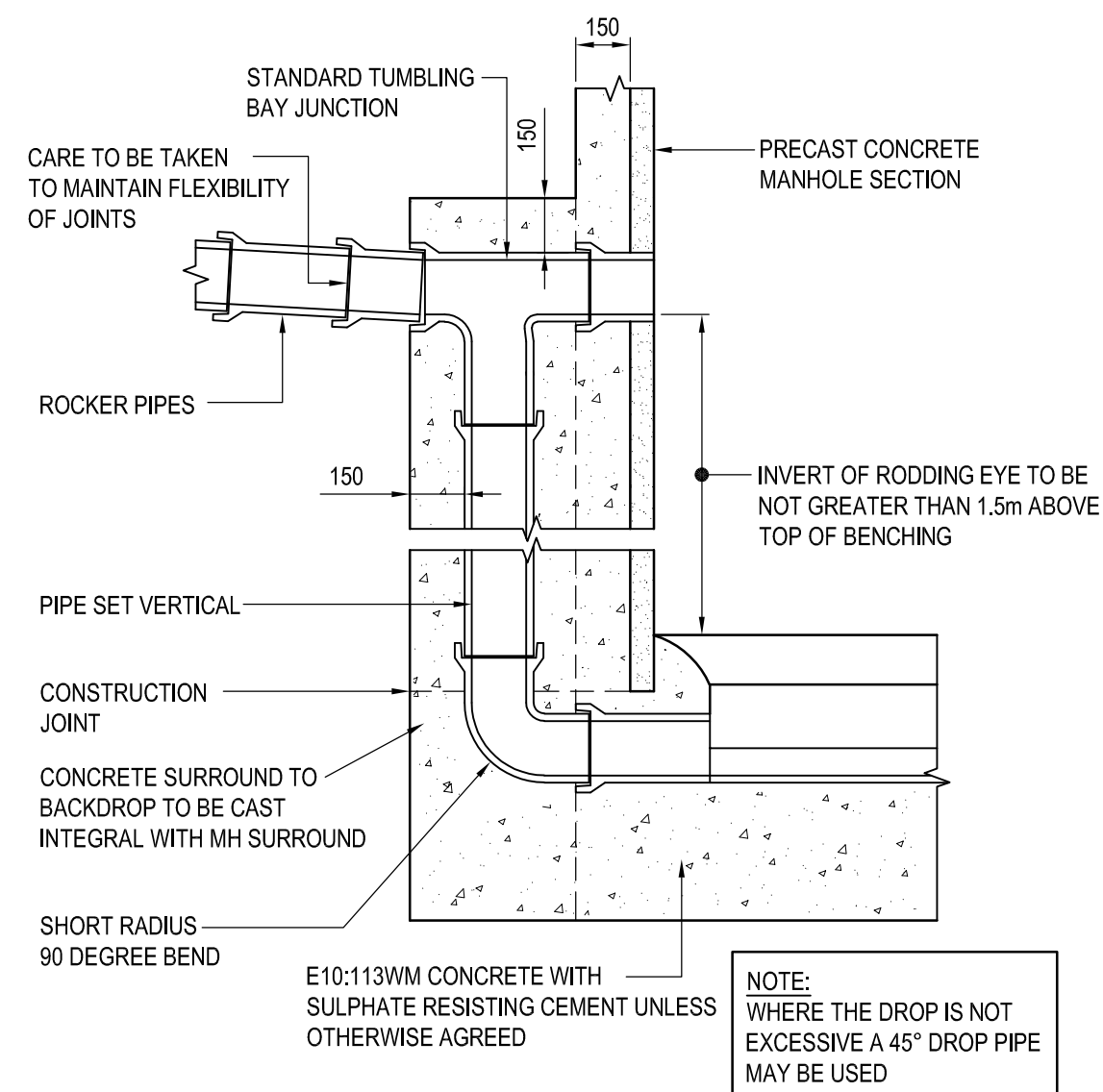
[SCALE 1:20 @ A]



DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	MIN. MANHOLE INTERNAL DIAMETER (mm)
< = 300mm (< 1.5M DEEP TO SOFFIT)	1200
> 300mm (< 1.5M DEEP TO SOFFIT)	THE LARGER OF 1800 OR (DN + 775)
< = 450mm	1200
> 450mm	THE LARGER OF 1800 OR (DN + 775)

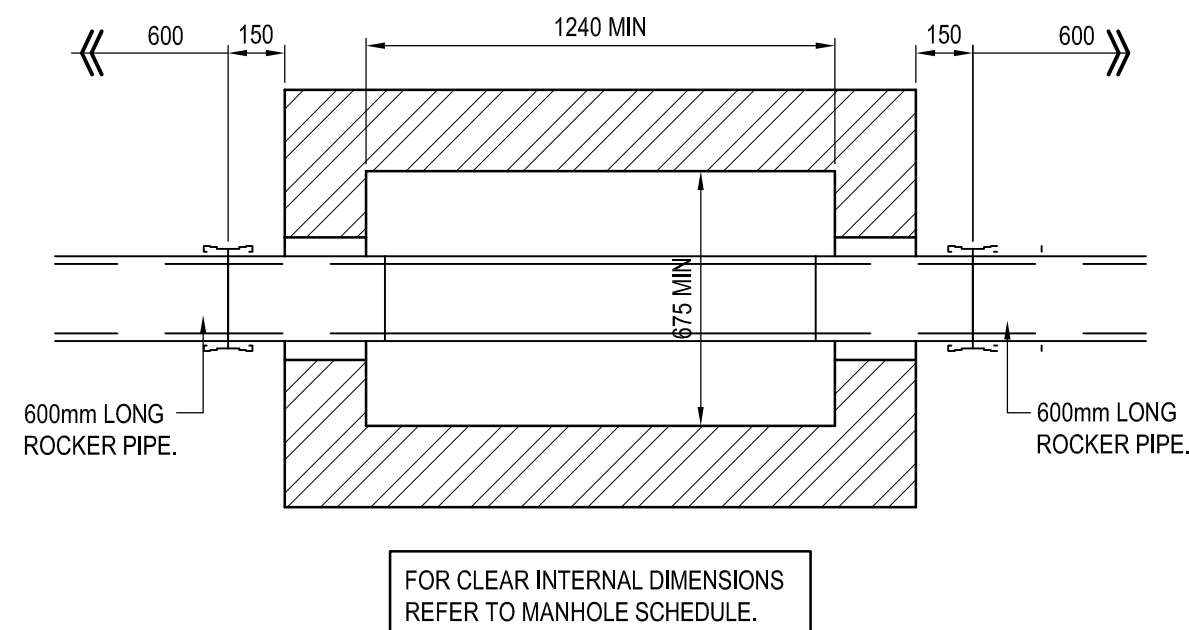
TYPICAL MANHOLE DETAIL TYPE B (SECTION

[SCALE 1:20 @ A']

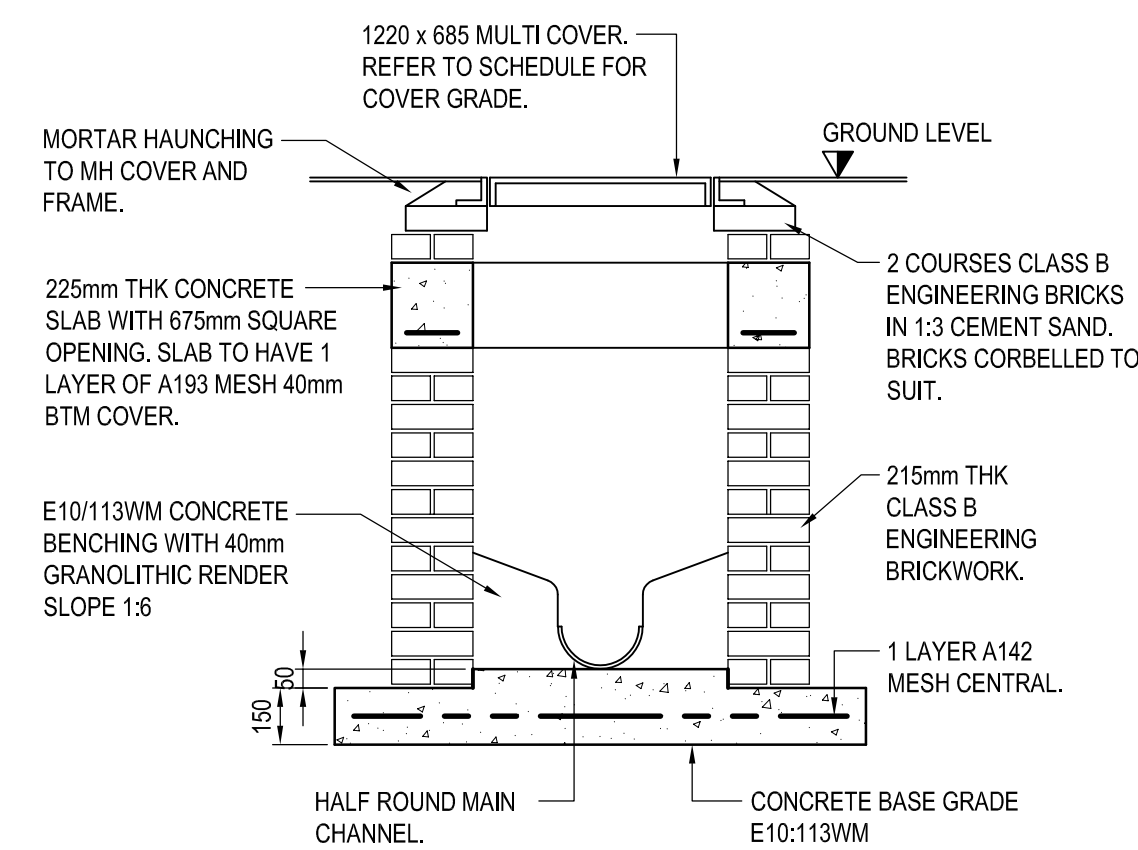


TYPICAL VERTICAL BACKDROP DETAIL

[SCALE 1:20 @ A1]



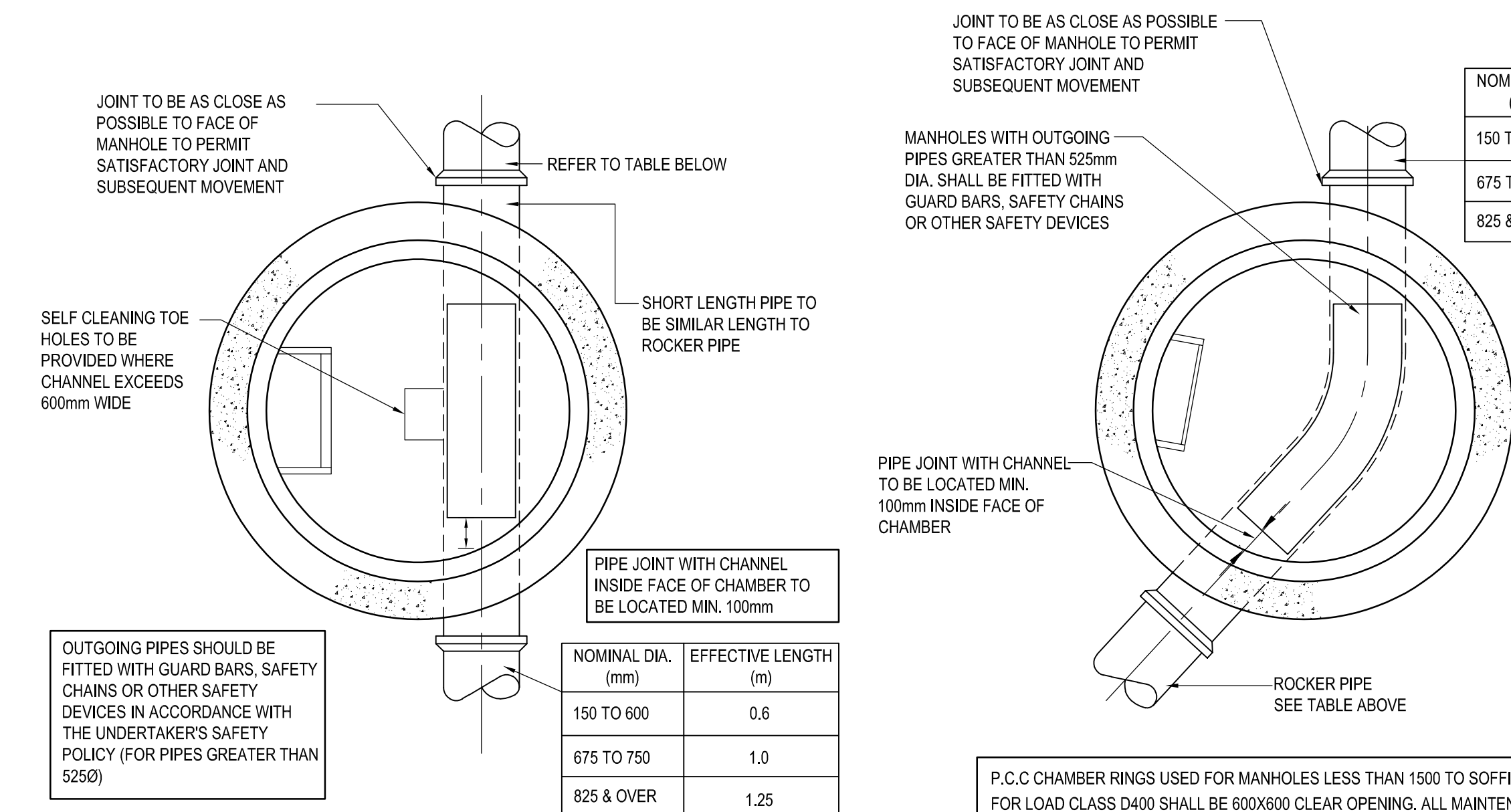
PLAN SECTION



BRICKWORK MANHOLE TYPE C DETAIL

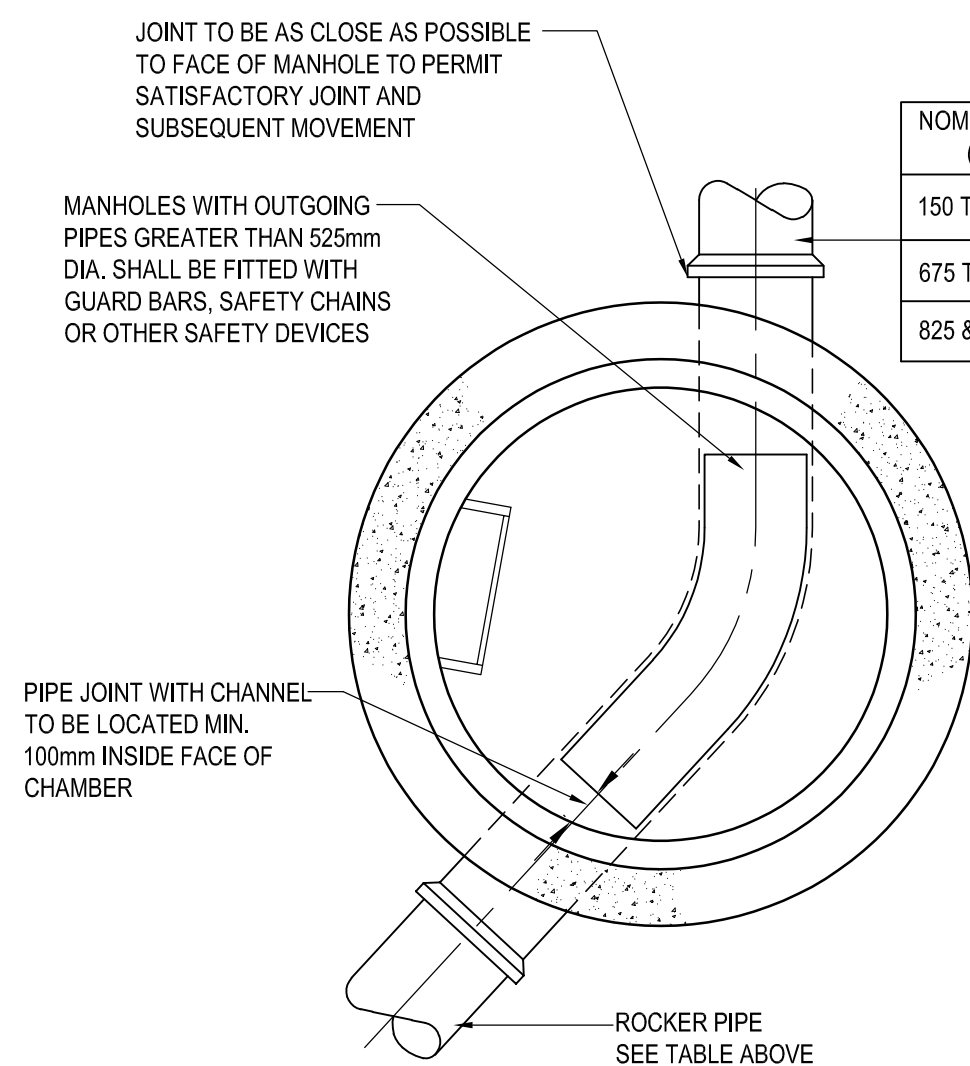
(DEPTH TO SOFFIT UP TO 1.5m)

[SCALE 1:2]



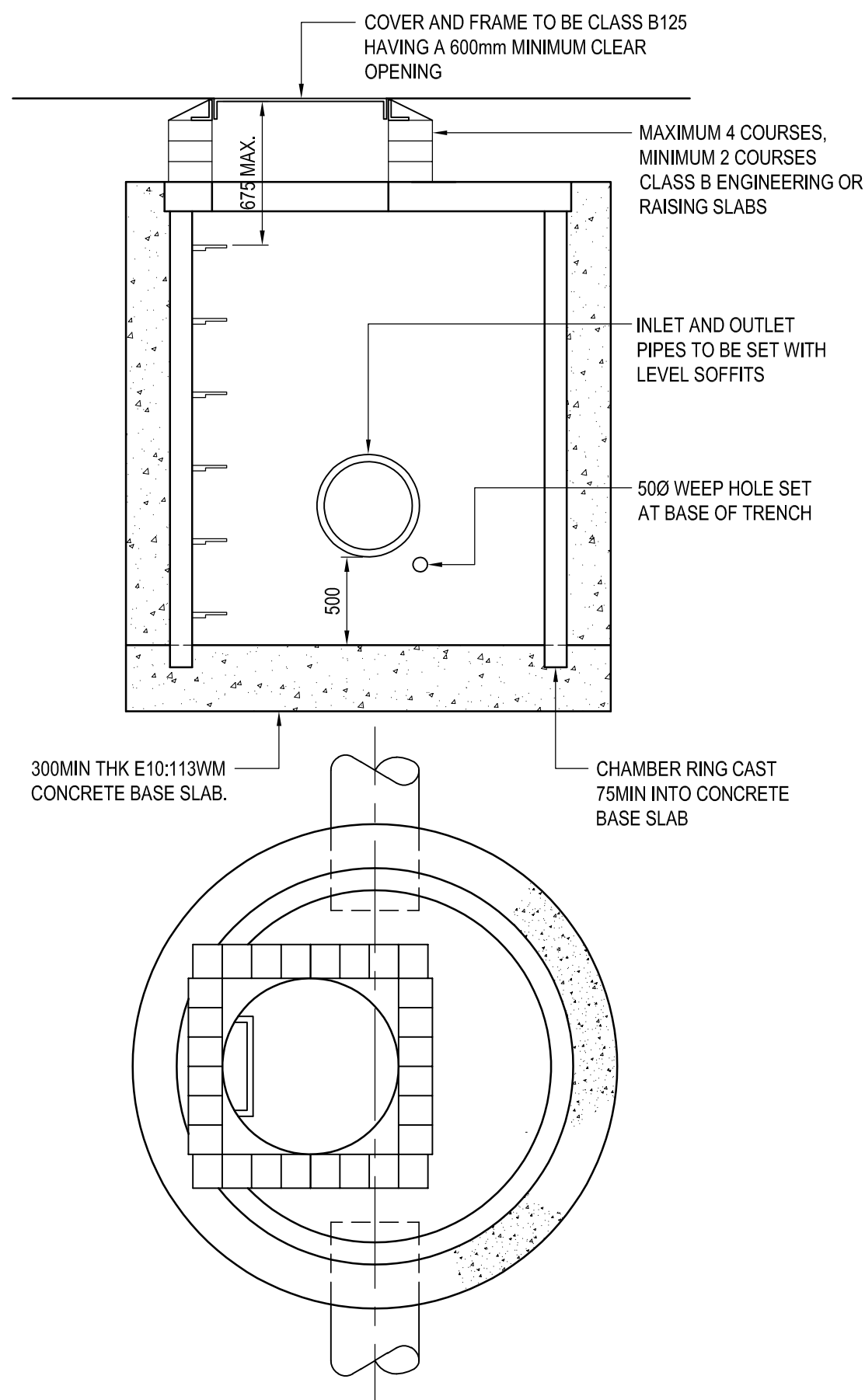
TYPICAL MANHOLE DETAIL TYPE A (PLAN

[SCALE 1:20 @ A]



TYPICAL MANHOLE DETAIL TYPE B (E/F)
DEPTH TO SOFFIT OF PIPE 1.5m* TO 3.0m

[SCALE 1:20 @ A]



TYPICAL CATCHPIT MANHOLE PLAN & SECTION

(CHAMBER CONSTRUCTION AS FOR PCC MANHOLES)

[SCALE 1:20 @ A1]

CONSTRUCTION

C01	CONSTRUCTION ISSUE.	08/07/20	KPT	N
P01	PRELIMINARY ISSUE.	08/04/20	KPT	N
Rev.	Amendment	Date	By	Cl

Proje

ALFRED MORRIS COURT
FELLPARK ROAD

Client:

BERNARD TAYLOR PARTNERSHI

Title

TYPICAL DRAINAGE DETAILS
SHEET 1 OF 3

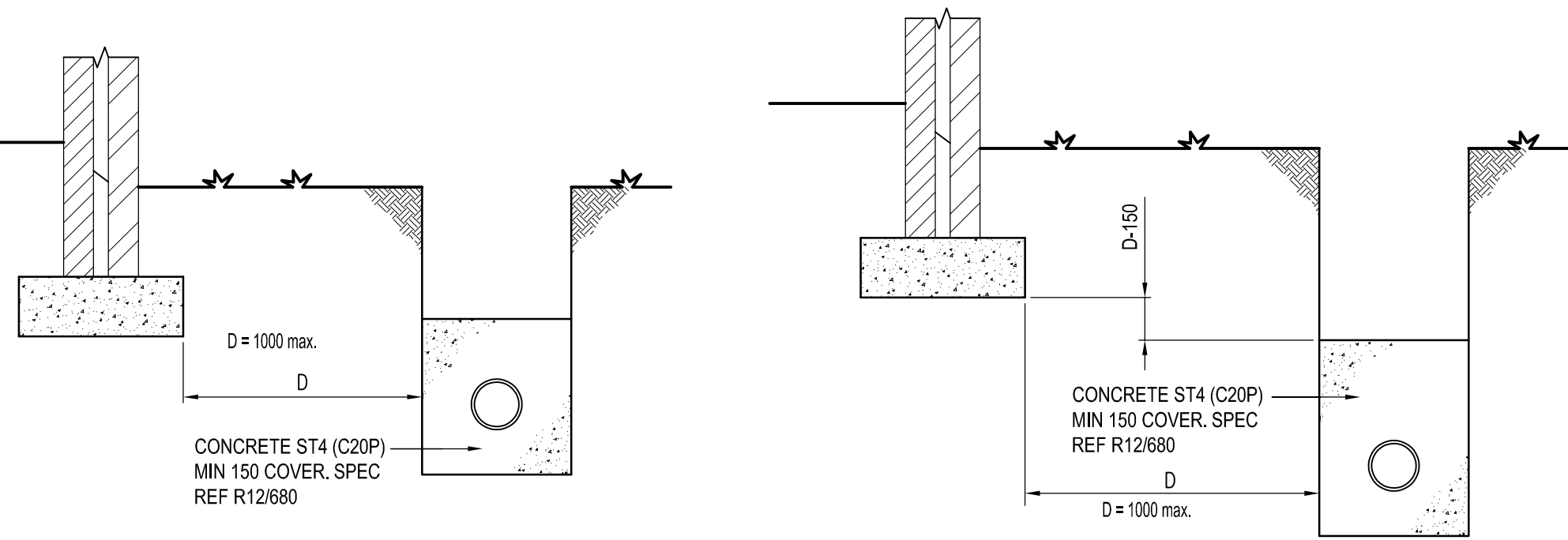
WML Job No. 8340	Drawn KPT	Checked NB	Date APRIL 2020	Scale N.T.S.
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WML CONSULTING
Civil, Structural & Geotechnical Engineers

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www.wmlconsulting.com

Drawing No.

Project	Originator	Volume	Level	Type	Role	Number	Rev
8340	- WML	- 00	- XX	- DR	- C	- 1004	C0

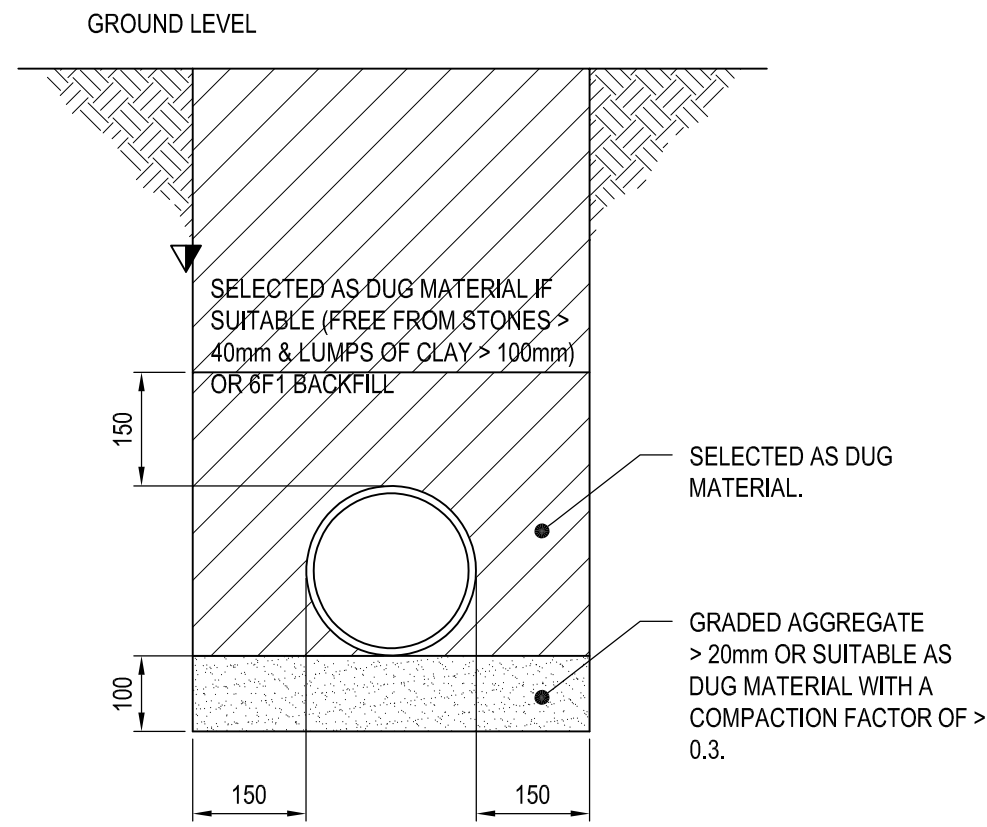


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WHERE BOTTOM OF TRENCH IS LOWER THAN A CRITICAL LEVEL USE CONCRETE SURROUND. TOP OF CONCRETE TO BE AS DEFINED BELOW.

PIPES NEAR FOUNDATIONS

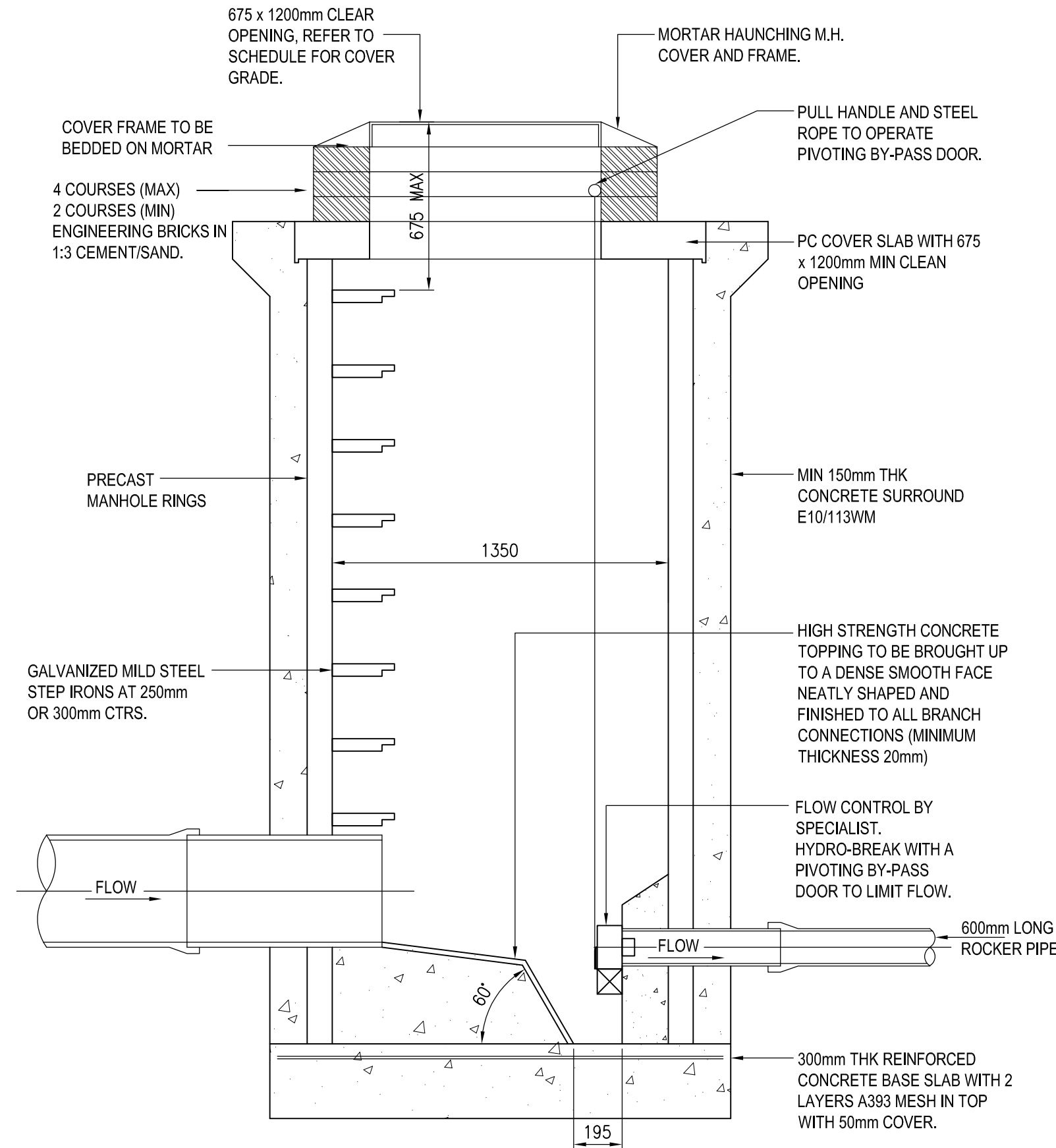
[SCALE 1:20]



DRAIN TRENCH NOT SUBJECTED TO TRAFFIC

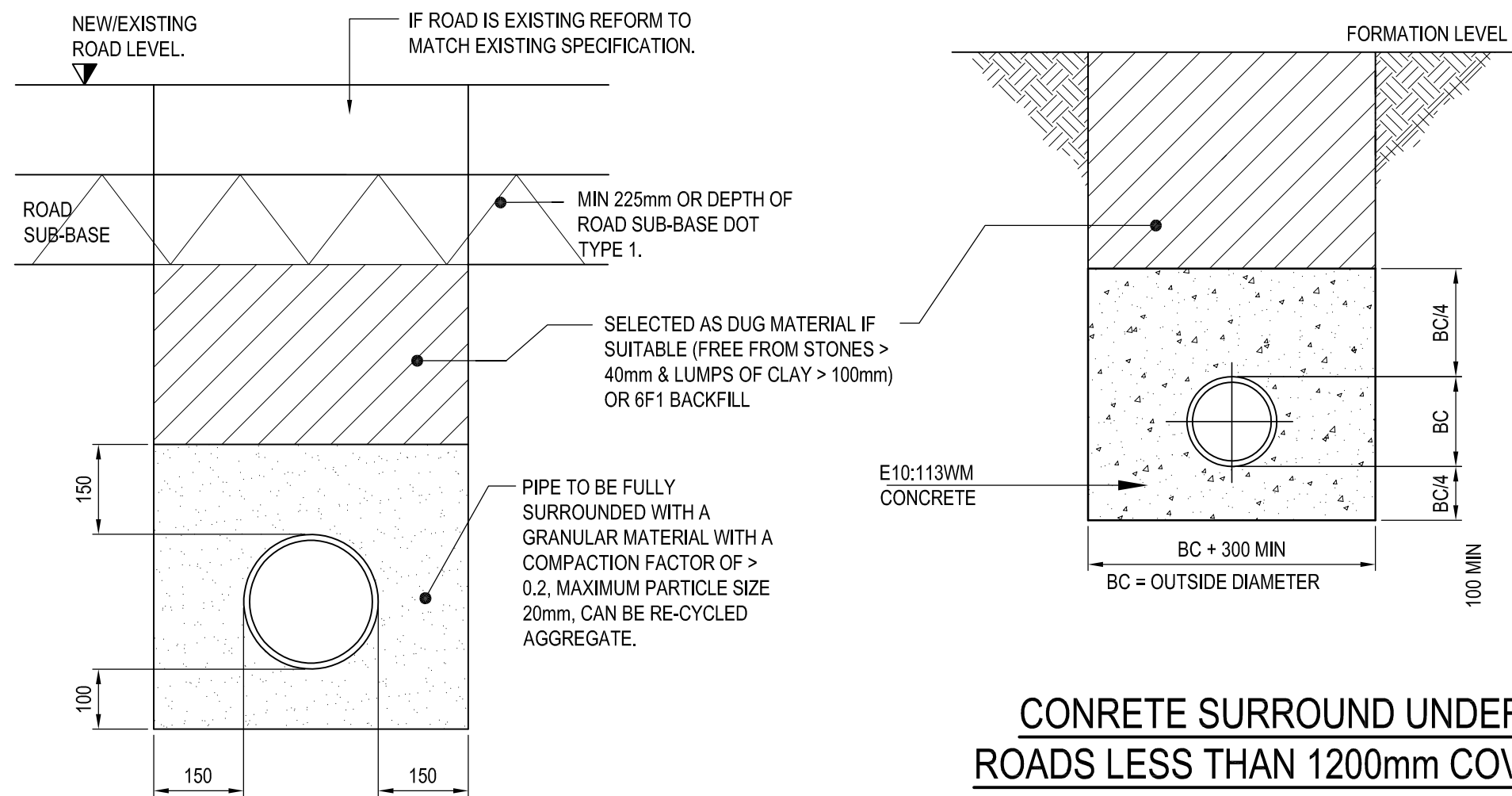
(BEDDING CLASS N)

[SCALE 1:10]



NEW HYDRO-BRAKE CHAMBER.

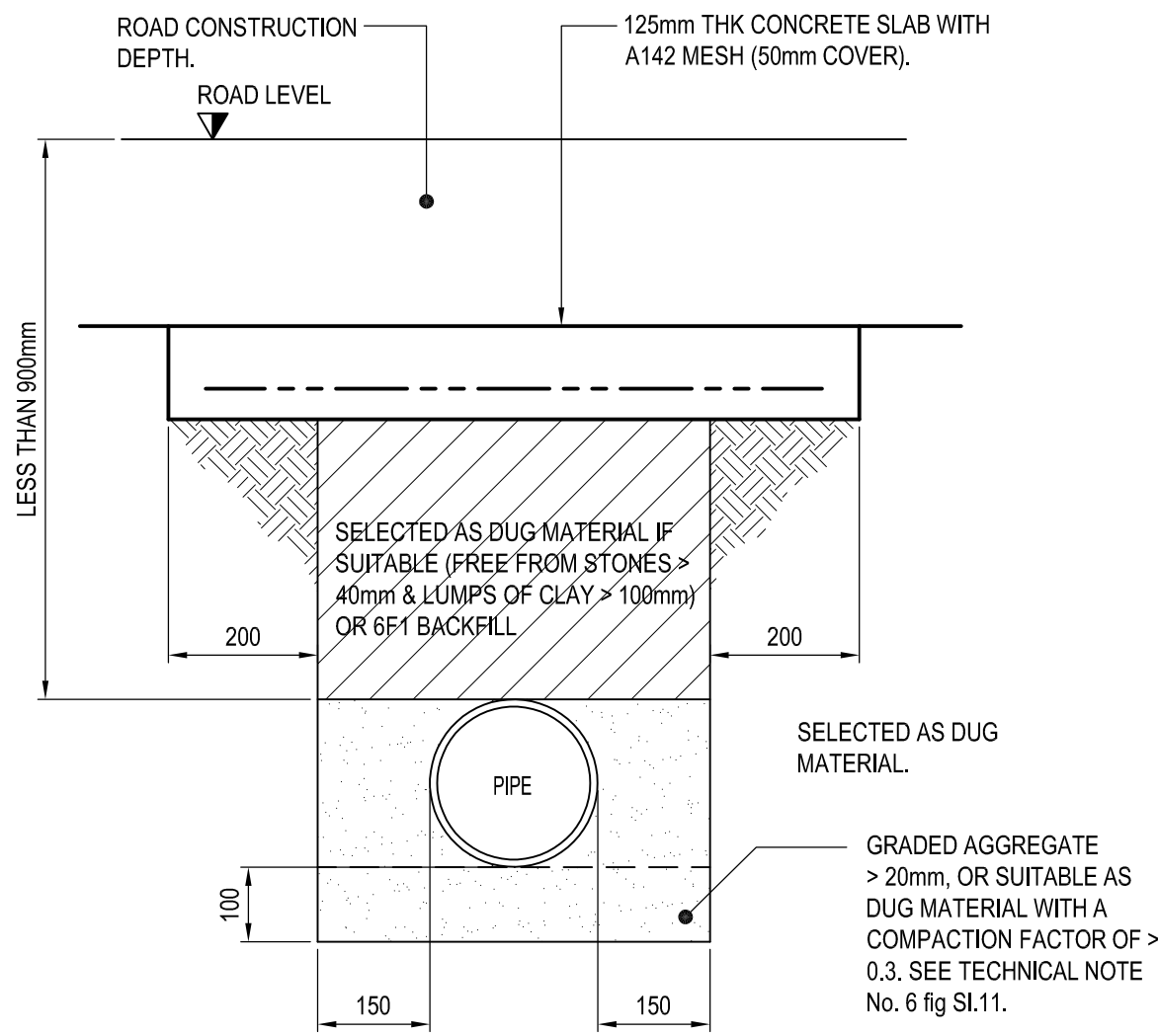
(SCALE 1:20)



DRAIN TRENCH SUBJECTED TO TRAFFIC

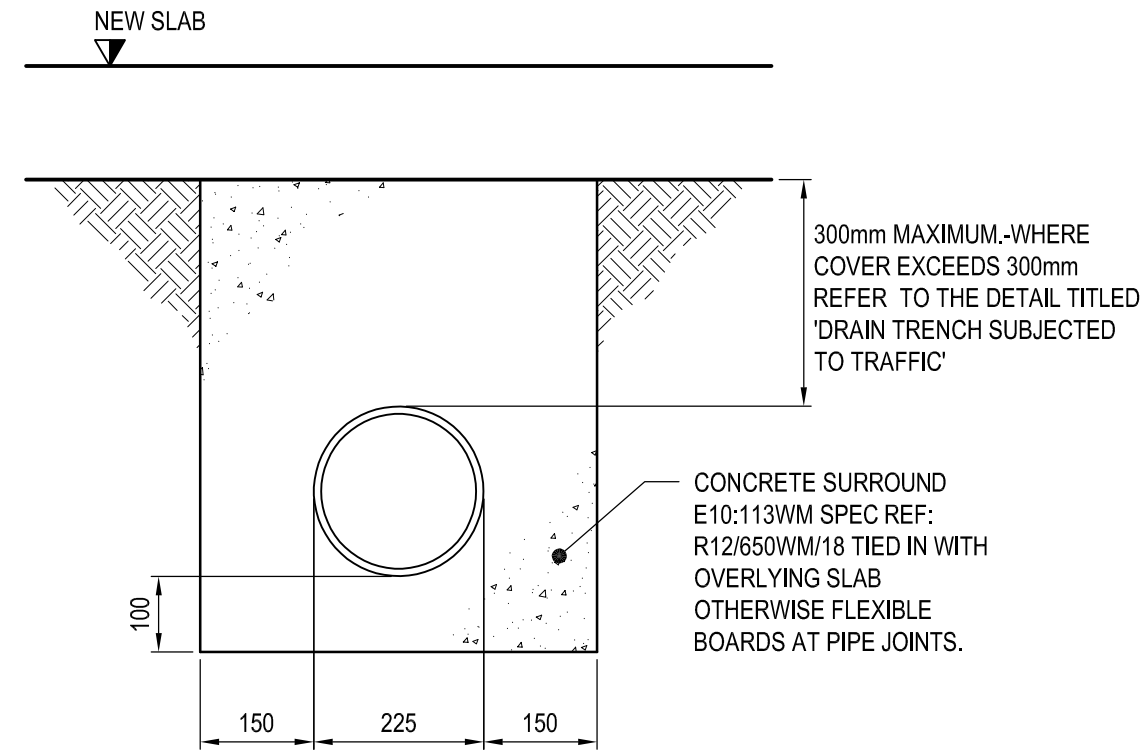
(BEDDING CLASS S)

[SCALE 1:10]



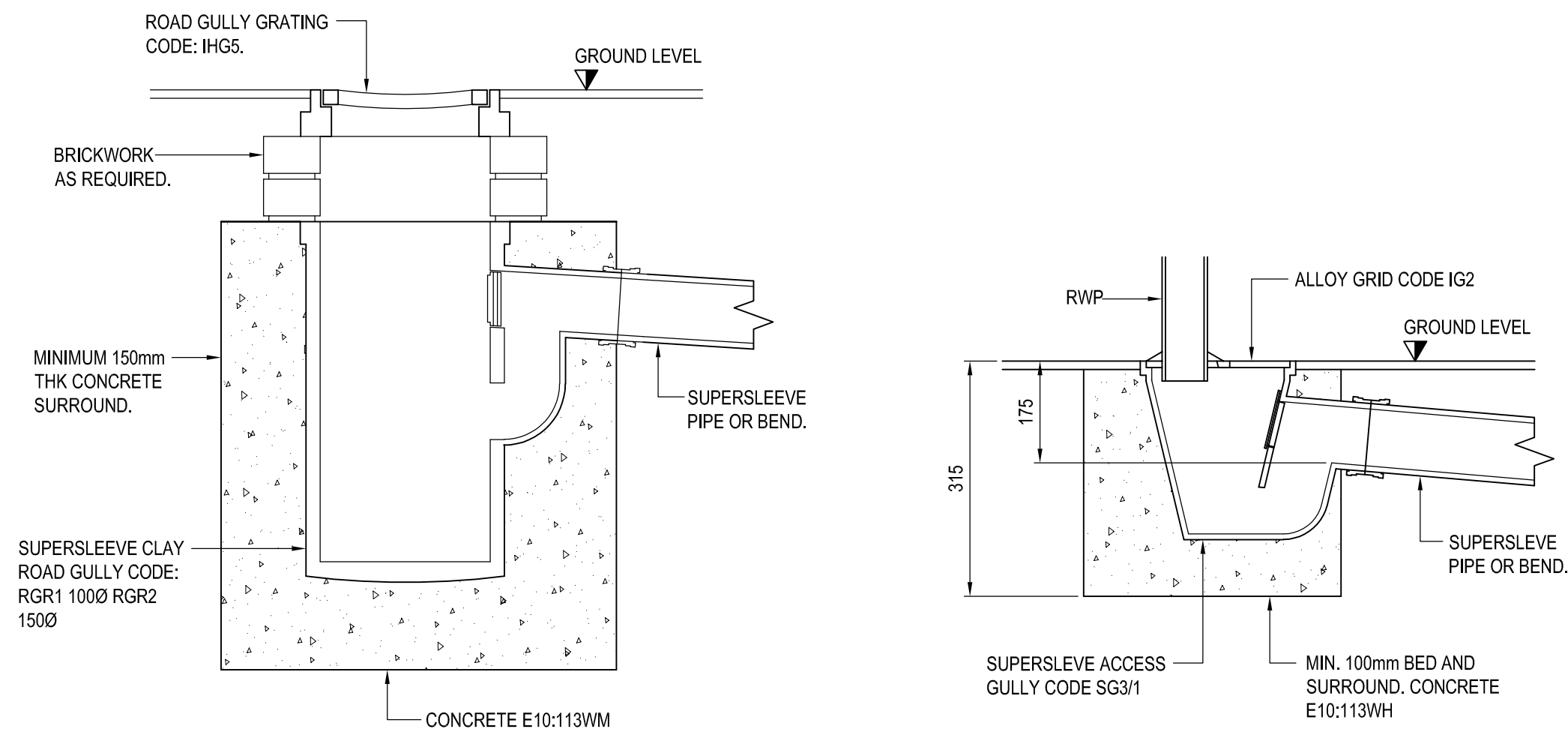
PAVING SLAB UNDER ROADS LESS THAN 1200mm COVER & NON-TRAFFICKED LESS THAN 900mm COVER.

[SCALE 1:10]



PIPES UNDER SLABS

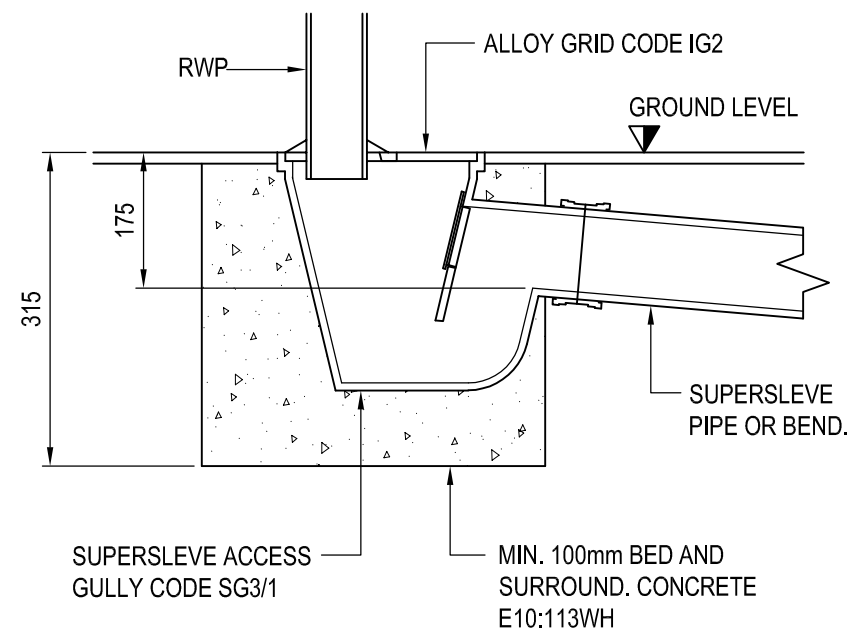
[SCALE 1:10]



ROAD GULLY

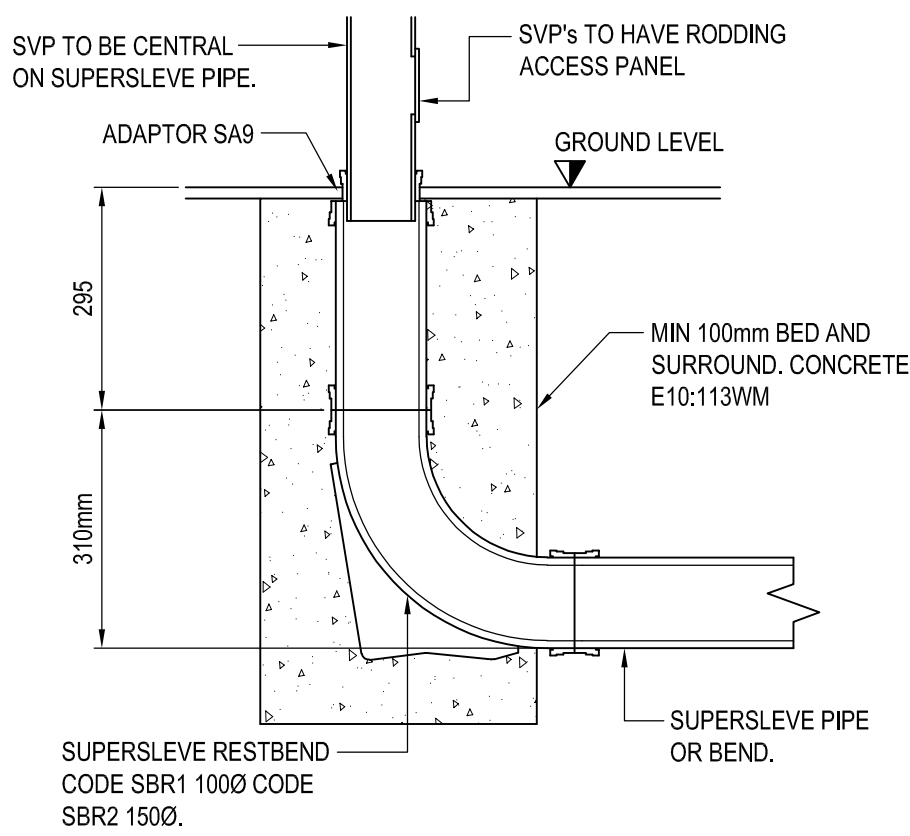
(300Ø x 600Dp)

[SCALE 1:10]



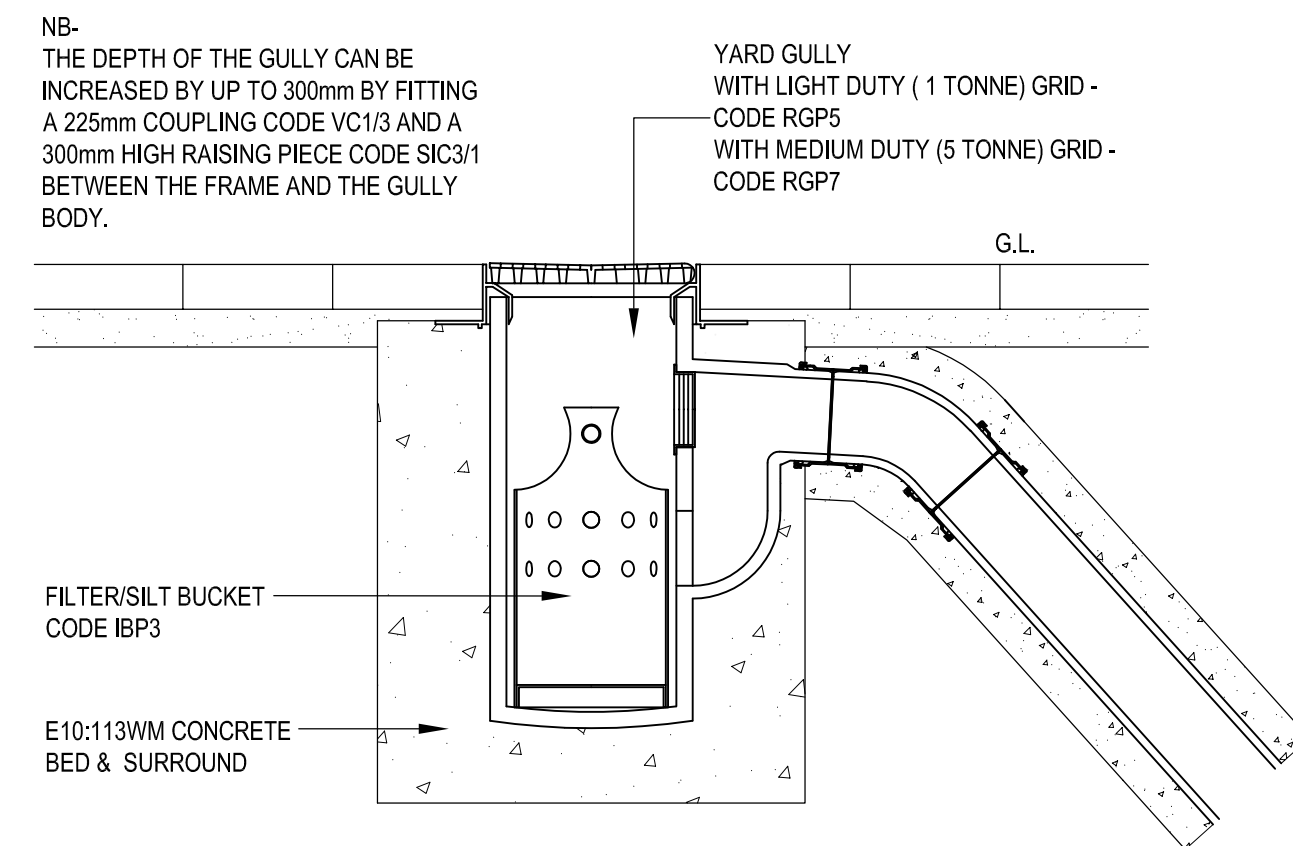
RWP DETAIL

[SCALE 1:10]



SOIL VENT PIPE

[SCALE 1:10]



YARD GULLY CONNECTION DETAIL

[SCALE 1:10]

GENERAL NOTES

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- NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS ALLOWED WITHOUT PRIOR PERMISSION IN WRITING.
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- THE CONTRACTOR SHALL INCORPORATE ALL THE REQUIREMENTS OF THE PRE-TENDER STAGE HEALTH & SAFETY PLAN.

RESIDUAL RISK REGISTER -

REFER TO WML CIVIL / STRUCTURAL DESIGN RISK REGISTER IN ADDITION TO THE HAZARDS / RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORKS INDICATED ON THIS DRAWING. NOTE THE FOLLOWING:-

CONSTRUCTION

C01	CONSTRUCTION ISSUE.	08/07/20	KPT	NB
P01	PRELIMINARY ISSUE.	08/04/20	KPT	NB
Rev.	Amendment	Date	By	Chkd

Project
**ALFRED MORRIS COURT
FELLPARK ROAD**

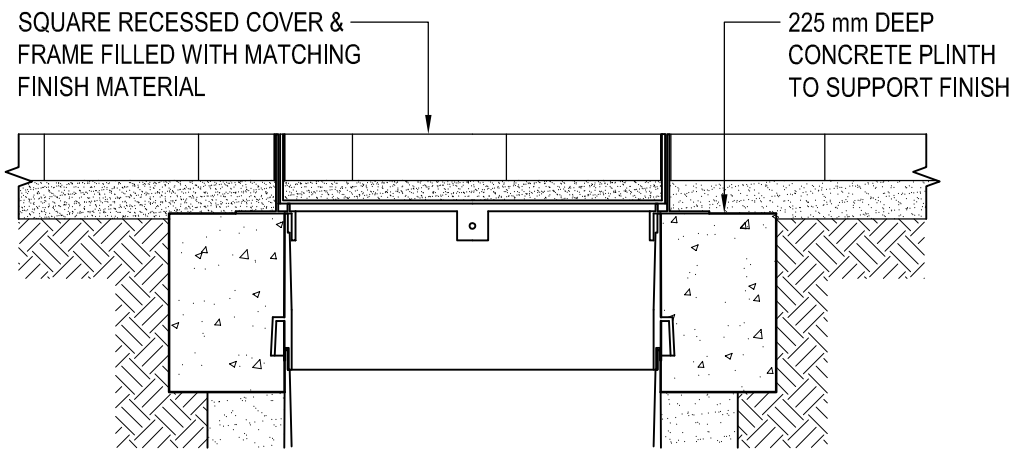
Client
BERNARD TAYLOR PARTNERSHIP

Title
**TYPICAL DRAINAGE DETAILS
SHEET 2 OF 3**

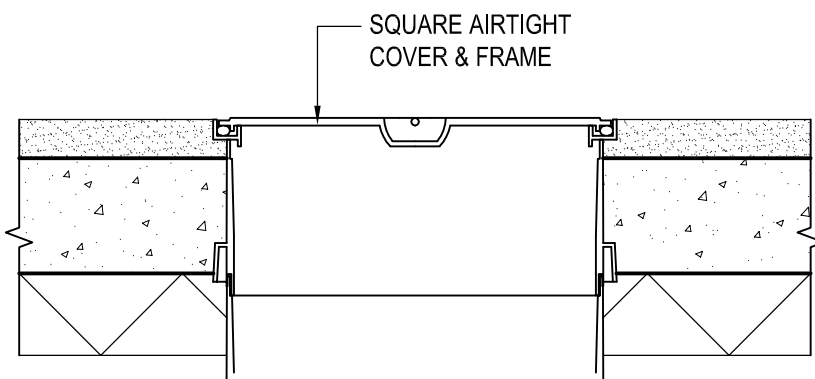
WML Job No. 8340	Drawn KPT	Checked NB	Date APRIL 2020	Scale N.T.S.
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WML CONSULTING
Civil, Structural & Geotechnical Engineers
No. 8 Oak Green
Earl Road
Stanley Green Business Park
Cheshire SK9 6QL
Tel 0161 482 0600
Fax 0161 486 9210
e-mail info@wmlconsulting.com
www.wmlconsulting.com

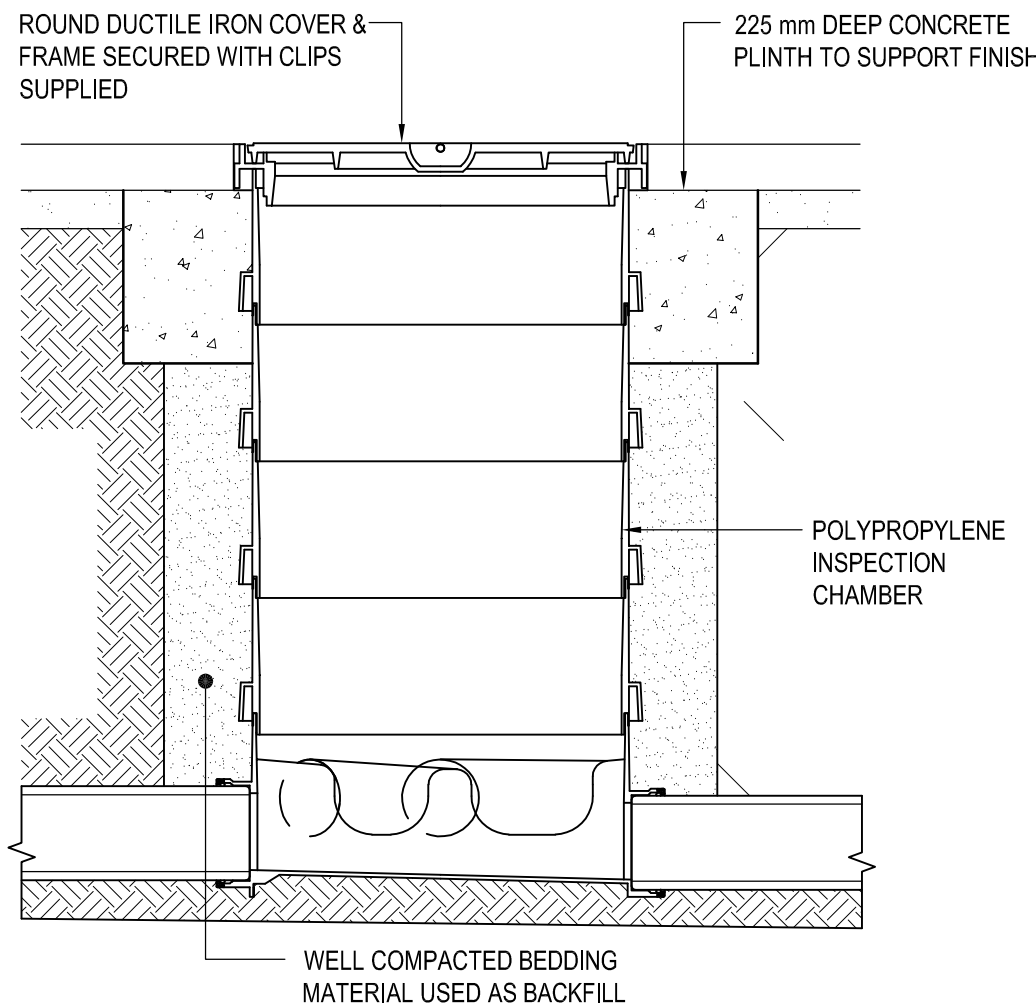
Drawing No.	Project	Originator	Volume	Level	Type	Role	Number	Rev
8340	WML	00	XX	DR	C	1005	C01	



SITED IN DRIVEWAYS / HARD LANDSCAPED
AREAS WITH RECESSED COVER

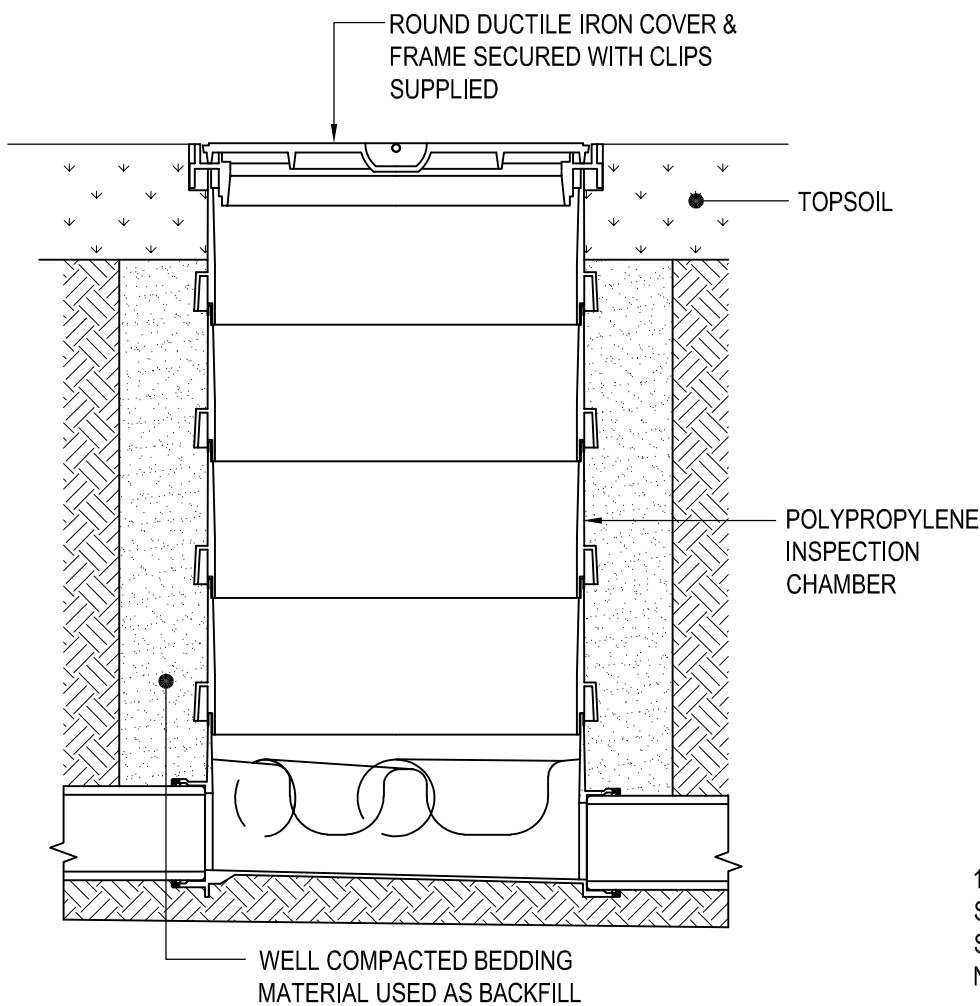


SITED IN CONCRETE FLOOR SLAB



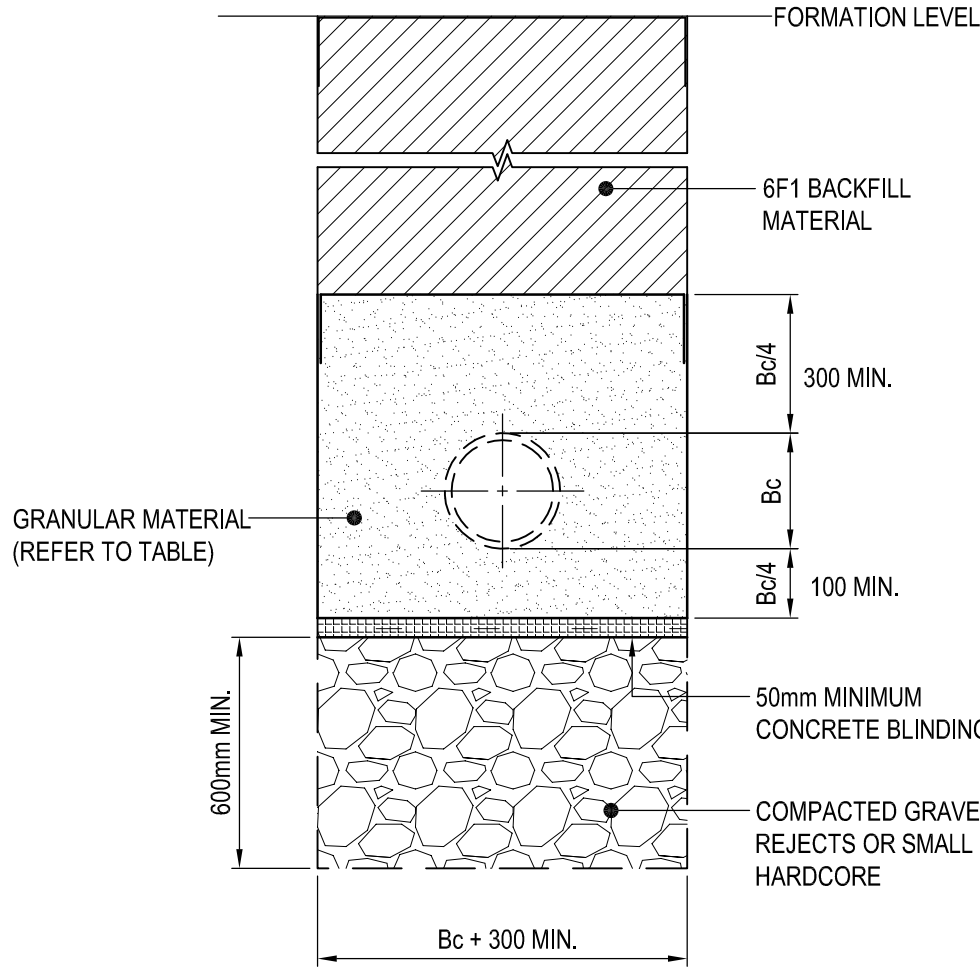
NB - UNIVERSAL PRODUCT - ADAPTOR TO PVC-U PIPE INCLUDED

SITED IN DRIVEWAYS / HARD LANDSCAPED AREAS
WITH STANDARD ROUND COVER



SITED IN SOFT LANDSCAPED AREAS WITH
STANDARD ROUND COVER

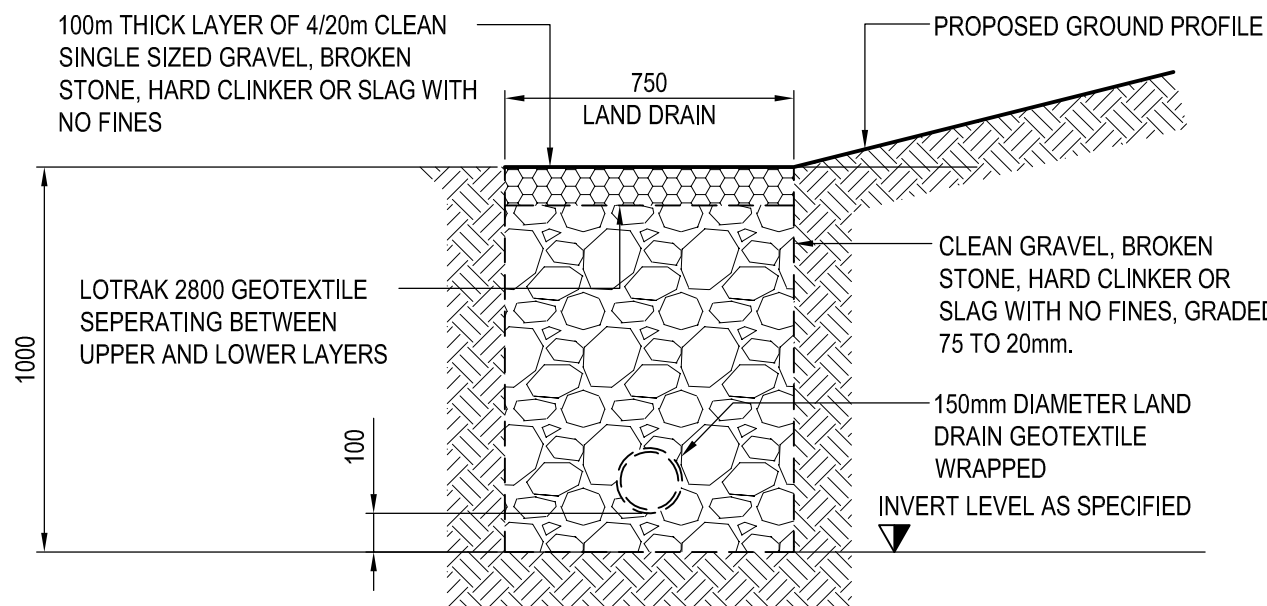
POLYPROPYLENE INSPECTION CHAMBER
INSTALLATION DETAIL (475Ø UPTO 1.2m DEEP)
(HEPWORTH PRODUCTS)
[SCALE 1:20]



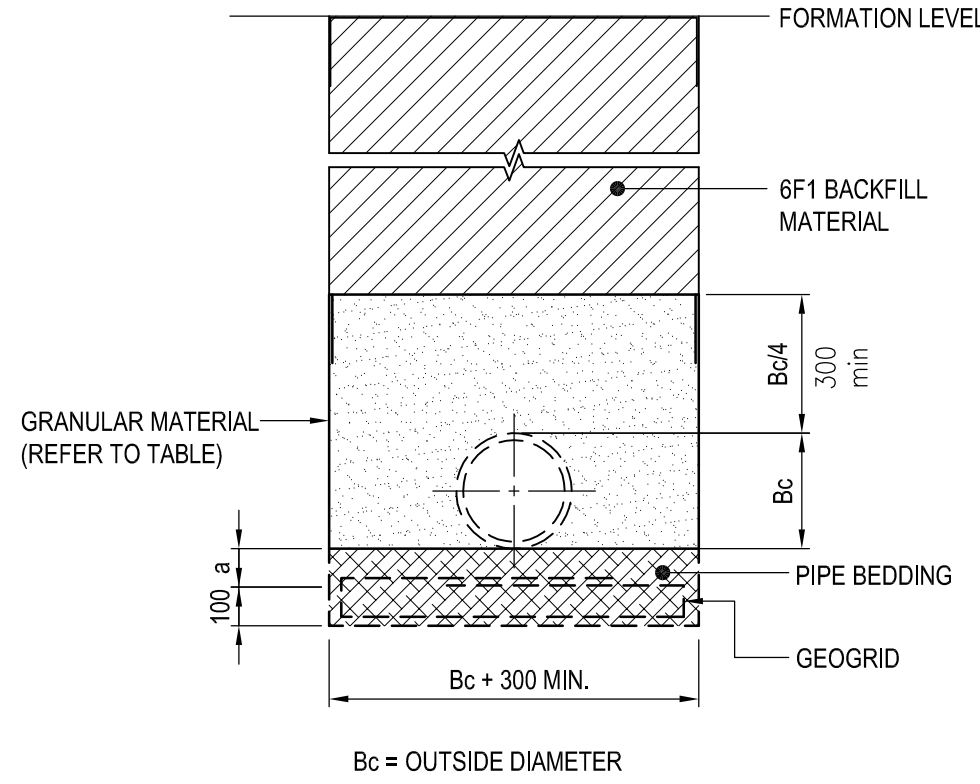
Y VALUE (BELOW PIPE)
HARD SPOTS/IRREGULAR TRENCH BOTTOM
Bc/4 (200mm MIN)
EVEN TRENCH BOTTOM Bc/6 (100mm MIN)

(EXCAVATION AND BACKFILL
MATERIAL TO BE WRAPPED
WITH GEOTEXTILE)

CLASS S BEDDING CONSTRUCTION
IN SOFT GROUND
[SCALE 1:20]



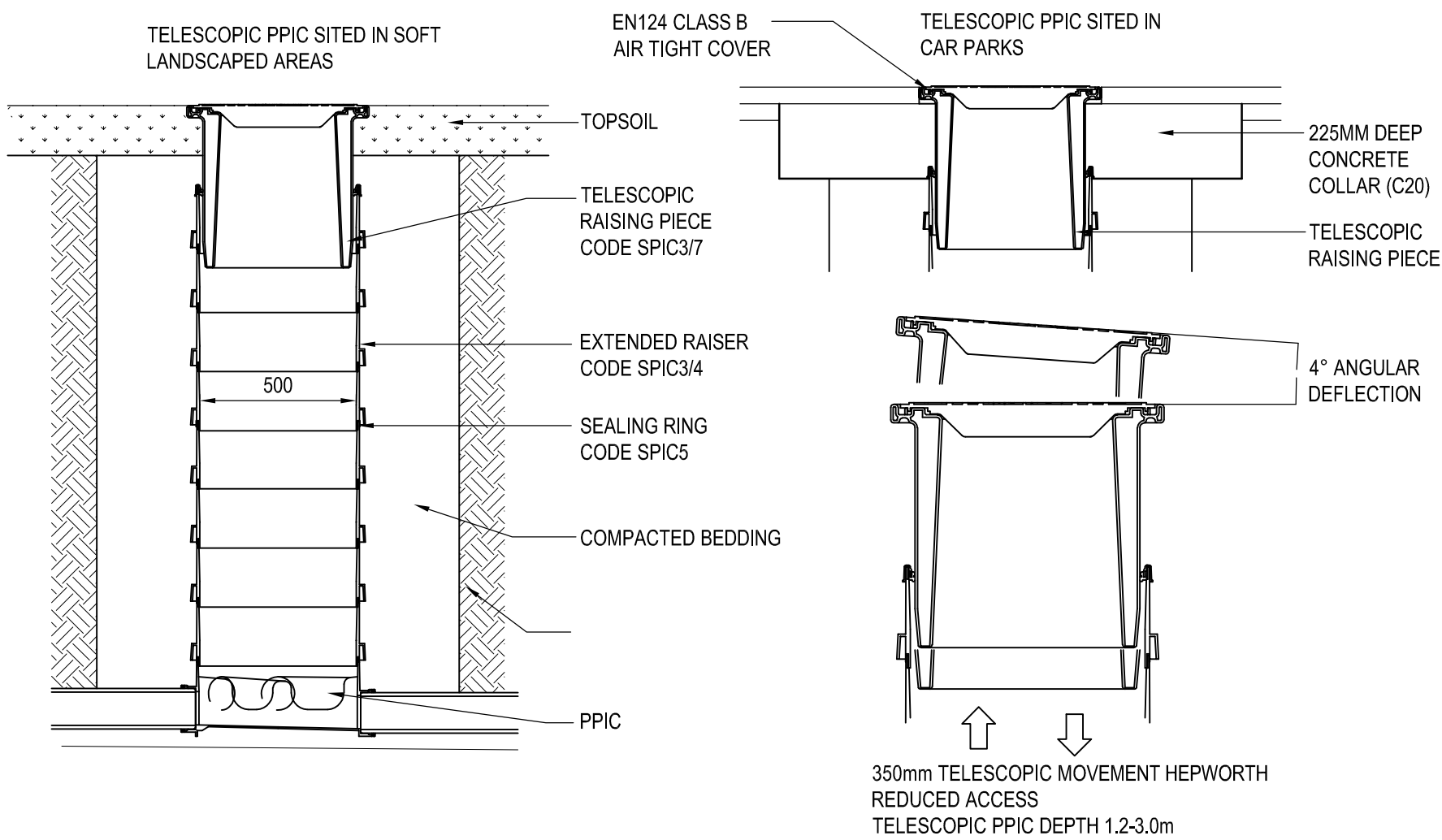
EMBANKMENT LAND DRAIN DETAIL
750mm x 1000mm DEEP
[SCALE 1:20]



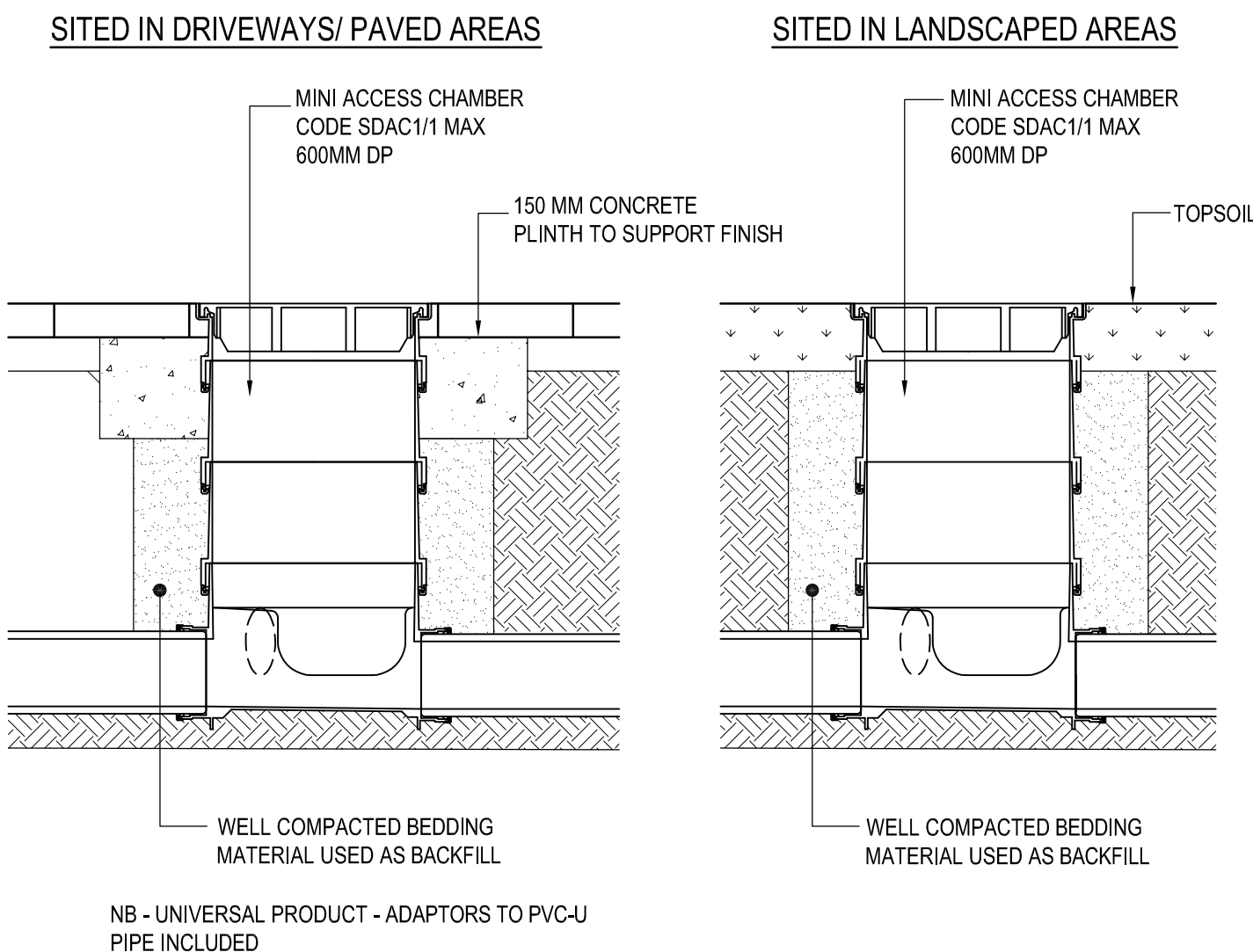
NOTE
DIMENSION 'A', THE DEPTH OF THE BEDDING
MATERIAL BELOW THE PIPE IS 150mm FOR
SLEEVE JOINTED PIPES AND 200mm FOR
SOCKETED PIPES.

EXCAVATION AND BACKFILL
MATERIAL TO BE WRAPPED
WITH GEOTEXTILE

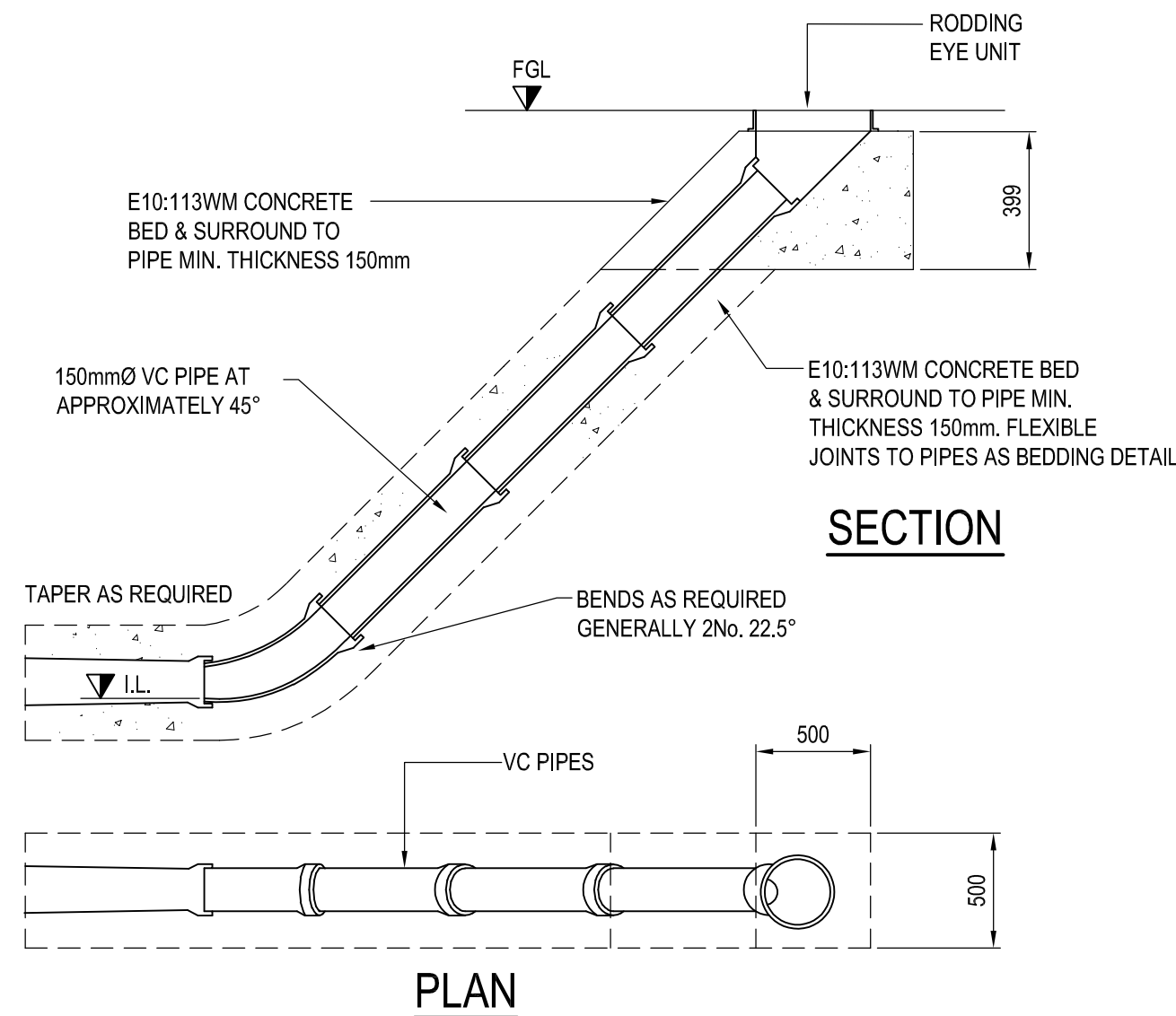
PIPELINE CONSTRUCTION IN WEAK
GROUND USING A GEOGRID
[SCALE 1:20]



HEPWORTH REDUCED ACCESS TELESCOPIC PPIC
(475Ø UPTO 3.0m DEEP)
(HEPWORTH PRODUCTS)
[SCALE 1:20]



MINI ACCESS CHAMBER INSTALLATION DETAIL
(300Ø MAX. DEPTH 600mm)
(HEPWORTH PRODUCTS)



RODDING EYE DETAIL (PLAN & SECTION)

GENERAL NOTES

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CONSTRUCTION

Rev.	Amendment	Date	By	Chkd
C01	CONSTRUCTION ISSUE.	08/07/20	KPT	NB
P01	PRELIMINARY ISSUE.	08/04/20	KPT	NB

Project	ALFRED MORRIS COURT FELLPARK ROAD
Client	BERNARD TAYLOR PARTNERSHIP
Title	TYPICAL DRAINAGE DETAILS SHEET 3 OF 3

WML Job No.	8340	Drawn	KPT	Checked	NB	Date	APRIL 2020	Scale	N.T.S.
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WML CONSULTING Civil, Structural & Geotechnical Engineers	No. 8 Oak Green Earl Road Stanley Green Business Park Cheshire SK9 6QL Tel 0161 482 0600 Fax 0161 486 9210 e-mail info@wmlconsulting.com www.wmlconsulting.com
---	---

Drawing No.							
Project	Originator	Volume	Level	Type	Role	Number	Rev
8340	- WML	- 00	- XX	- DR	- C	- 1006	C01

APPENDIX B

Surface water drainage calculations

WML Consulting Ltd				Page 1																																																																																																																																																																																																																			
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		8340 - ALFRED MORRIS COURT SURFACE WATER DRAINAGE DESIGN INFILTRATION TRENCH																																																																																																																																																																																																																					
Date FEB 2020 File 8340 - Soakaway Trench....		Designed by KPT Checked by RH																																																																																																																																																																																																																					
Innovyze		Source Control 2014.1.1																																																																																																																																																																																																																					
Summary of Results for 100 year Return Period (+40%) Half Drain Time : 629 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>29.707</td><td>0.707</td><td>0.9</td><td>32.7</td><td>O K</td></tr><tr><td>30 min Summer</td><td>29.936</td><td>0.936</td><td>1.0</td><td>43.2</td><td>O K</td></tr><tr><td>60 min Summer</td><td>30.172</td><td>1.172</td><td>1.1</td><td>54.1</td><td>O K</td></tr><tr><td>120 min Summer</td><td>30.397</td><td>1.397</td><td>1.1</td><td>64.5</td><td>O K</td></tr><tr><td>180 min Summer</td><td>30.506</td><td>1.506</td><td>1.2</td><td>69.6</td><td>O K</td></tr><tr><td>240 min Summer</td><td>30.563</td><td>1.563</td><td>1.2</td><td>72.2</td><td>O K</td></tr><tr><td>360 min Summer</td><td>30.601</td><td>1.601</td><td>1.2</td><td>74.0</td><td>O K</td></tr><tr><td>480 min Summer</td><td>30.601</td><td>1.601</td><td>1.2</td><td>74.0</td><td>O K</td></tr><tr><td>600 min Summer</td><td>30.592</td><td>1.592</td><td>1.2</td><td>73.5</td><td>O K</td></tr><tr><td>720 min Summer</td><td>30.578</td><td>1.578</td><td>1.2</td><td>72.9</td><td>O K</td></tr><tr><td>960 min Summer</td><td>30.541</td><td>1.541</td><td>1.2</td><td>71.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>30.455</td><td>1.455</td><td>1.2</td><td>67.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>30.335</td><td>1.335</td><td>1.1</td><td>61.7</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>30.226</td><td>1.226</td><td>1.1</td><td>56.6</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>30.032</td><td>1.032</td><td>1.0</td><td>47.7</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>29.865</td><td>0.865</td><td>0.9</td><td>40.0</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>29.723</td><td>0.723</td><td>0.9</td><td>33.4</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>29.601</td><td>0.601</td><td>0.8</td><td>27.8</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>29.497</td><td>0.497</td><td>0.8</td><td>22.9</td><td>O K</td></tr><tr><td>15 min Winter</td><td>29.793</td><td>0.793</td><td>0.9</td><td>36.6</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>118.728</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>79.453</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>50.812</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>31.453</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>23.449</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>18.923</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>13.867</td><td>0.0</td><td>360</td></tr><tr><td>480 min Summer</td><td>11.129</td><td>0.0</td><td>450</td></tr><tr><td>600 min Summer</td><td>9.376</td><td>0.0</td><td>506</td></tr><tr><td>720 min Summer</td><td>8.146</td><td>0.0</td><td>568</td></tr><tr><td>960 min Summer</td><td>6.520</td><td>0.0</td><td>694</td></tr><tr><td>1440 min Summer</td><td>4.755</td><td>0.0</td><td>968</td></tr><tr><td>2160 min Summer</td><td>3.461</td><td>0.0</td><td>1384</td></tr><tr><td>2880 min Summer</td><td>2.760</td><td>0.0</td><td>1792</td></tr><tr><td>4320 min Summer</td><td>2.002</td><td>0.0</td><td>2592</td></tr><tr><td>5760 min Summer</td><td>1.592</td><td>0.0</td><td>3352</td></tr><tr><td>7200 min Summer</td><td>1.332</td><td>0.0</td><td>4112</td></tr><tr><td>8640 min Summer</td><td>1.151</td><td>0.0</td><td>4848</td></tr><tr><td>10080 min Summer</td><td>1.017</td><td>0.0</td><td>5552</td></tr><tr><td>15 min Winter</td><td>118.728</td><td>0.0</td><td>19</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	29.707	0.707	0.9	32.7	O K	30 min Summer	29.936	0.936	1.0	43.2	O K	60 min Summer	30.172	1.172	1.1	54.1	O K	120 min Summer	30.397	1.397	1.1	64.5	O K	180 min Summer	30.506	1.506	1.2	69.6	O K	240 min Summer	30.563	1.563	1.2	72.2	O K	360 min Summer	30.601	1.601	1.2	74.0	O K	480 min Summer	30.601	1.601	1.2	74.0	O K	600 min Summer	30.592	1.592	1.2	73.5	O K	720 min Summer	30.578	1.578	1.2	72.9	O K	960 min Summer	30.541	1.541	1.2	71.2	O K	1440 min Summer	30.455	1.455	1.2	67.2	O K	2160 min Summer	30.335	1.335	1.1	61.7	O K	2880 min Summer	30.226	1.226	1.1	56.6	O K	4320 min Summer	30.032	1.032	1.0	47.7	O K	5760 min Summer	29.865	0.865	0.9	40.0	O K	7200 min Summer	29.723	0.723	0.9	33.4	O K	8640 min Summer	29.601	0.601	0.8	27.8	O K	10080 min Summer	29.497	0.497	0.8	22.9	O K	15 min Winter	29.793	0.793	0.9	36.6	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	118.728	0.0	19	30 min Summer	79.453	0.0	34	60 min Summer	50.812	0.0	64	120 min Summer	31.453	0.0	122	180 min Summer	23.449	0.0	182	240 min Summer	18.923	0.0	242	360 min Summer	13.867	0.0	360	480 min Summer	11.129	0.0	450	600 min Summer	9.376	0.0	506	720 min Summer	8.146	0.0	568	960 min Summer	6.520	0.0	694	1440 min Summer	4.755	0.0	968	2160 min Summer	3.461	0.0	1384	2880 min Summer	2.760	0.0	1792	4320 min Summer	2.002	0.0	2592	5760 min Summer	1.592	0.0	3352	7200 min Summer	1.332	0.0	4112	8640 min Summer	1.151	0.0	4848	10080 min Summer	1.017	0.0	5552	15 min Winter	118.728	0.0	19
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WML Consulting Ltd				Page 2	
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		8340 - ALFRED MORRIS COURT SURFACE WATER DRAINAGE DESIGN INFILTRATION TRENCH			
Date FEB 2020 File 8340 - Soakaway Trench....		Designed by KPT Checked by RH			
Innovyze		Source Control 2014.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	30.051	1.051	1.0	48.6	O K
60 min Winter	30.320	1.320	1.1	61.0	O K
120 min Winter	30.578	1.578	1.2	72.9	O K
180 min Winter	30.708	1.708	1.3	78.9	Flood Risk
240 min Winter	30.779	1.779	1.3	82.2	Flood Risk
360 min Winter	30.837	1.837	1.3	84.9	Flood Risk
480 min Winter	30.926	1.926	1.3	85.5	Flood Risk
600 min Winter	30.841	1.841	1.3	85.0	Flood Risk
720 min Winter	30.819	1.819	1.3	84.1	Flood Risk
960 min Winter	30.779	1.779	1.3	82.2	Flood Risk
1440 min Winter	30.665	1.665	1.2	76.9	O K
2160 min Winter	30.486	1.486	1.2	68.6	O K
2880 min Winter	30.325	1.325	1.1	61.2	O K
4320 min Winter	30.044	1.044	1.0	48.2	O K
5760 min Winter	29.813	0.813	0.9	37.6	O K
7200 min Winter	29.623	0.623	0.9	28.8	O K
8640 min Winter	29.466	0.466	0.8	21.5	O K
10080 min Winter	29.336	0.336	0.7	15.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	79.453	0.0	33		
60 min Winter	50.812	0.0	62		
120 min Winter	31.453	0.0	120		
180 min Winter	23.449	0.0	178		
240 min Winter	18.923	0.0	236		
360 min Winter	13.867	0.0	350		
480 min Winter	11.129	0.0	458		
600 min Winter	9.376	0.0	560		
720 min Winter	8.146	0.0	590		
960 min Winter	6.520	0.0	738		
1440 min Winter	4.755	0.0	1050		
2160 min Winter	3.461	0.0	1496		
2880 min Winter	2.760	0.0	1932		
4320 min Winter	2.002	0.0	2764		
5760 min Winter	1.592	0.0	3568		
7200 min Winter	1.332	0.0	4328		
8640 min Winter	1.151	0.0	5096		
10080 min Winter	1.017	0.0	5752		
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No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL	8340 - ALFRED MORRIS COURT SURFACE WATER DRAINAGE DESIGN INFILTRATION TRENCH	
Date FEB 2020 File 8340 - Soakaway Trench....	Designed by KPT Checked by RH	
Innovyze Source Control 2014.1.1		

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Shortest Storm (mins)	15
Ratio R	0.361	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.150

Time (mins)	Area
From:	To: (ha)
0	4 0.150

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No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL	8340 - ALFRED MORRIS COURT SURFACE WATER DRAINAGE DESIGN INFILTRATION TRENCH																					
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<u>Model Details</u> Storage is Online Cover Level (m) 31.000 <u>Infiltration Trench Structure</u> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.02880</td> <td>Trench Width (m)</td> <td>3.5</td> </tr> <tr> <td>Infiltration Coefficient Side (m/hr)</td> <td>0.02880</td> <td>Trench Length (m)</td> <td>44.0</td> </tr> <tr> <td>Safety Factor</td> <td>2.0</td> <td>Slope (1:X)</td> <td>0.0</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Cap Volume Depth (m)</td> <td>1.850</td> </tr> <tr> <td>Invert Level (m)</td> <td>29.000</td> <td>Cap Infiltration Depth (m)</td> <td>1.850</td> </tr> </table>			Infiltration Coefficient Base (m/hr)	0.02880	Trench Width (m)	3.5	Infiltration Coefficient Side (m/hr)	0.02880	Trench Length (m)	44.0	Safety Factor	2.0	Slope (1:X)	0.0	Porosity	0.30	Cap Volume Depth (m)	1.850	Invert Level (m)	29.000	Cap Infiltration Depth (m)	1.850
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Summer</td><td>30.625</td><td>0.075</td><td>4.8</td><td>27.0</td><td>O K</td></tr><tr><td>600 min Summer</td><td>30.617</td><td>0.067</td><td>4.8</td><td>24.1</td><td>O K</td></tr><tr><td>720 min Summer</td><td>30.610</td><td>0.060</td><td>4.8</td><td>21.5</td><td>O K</td></tr><tr><td>960 min Summer</td><td>30.600</td><td>0.050</td><td>4.8</td><td>17.9</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>30.590</td><td>0.040</td><td>3.8</td><td>14.3</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>30.581</td><td>0.031</td><td>3.0</td><td>11.2</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>30.576</td><td>0.026</td><td>2.5</td><td>9.2</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>30.569</td><td>0.019</td><td>1.8</td><td>6.9</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>30.566</td><td>0.016</td><td>1.5</td><td>5.6</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>30.563</td><td>0.013</td><td>1.3</td><td>4.7</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>30.561</td><td>0.011</td><td>1.1</td><td>4.0</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>30.560</td><td>0.010</td><td>1.0</td><td>3.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>30.609</td><td>0.059</td><td>4.8</td><td>21.4</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>118.498</td><td>0.0</td><td>17</td></tr><tr><td>30 min Summer</td><td>79.373</td><td>0.0</td><td>31</td></tr><tr><td>60 min Summer</td><td>50.812</td><td>0.0</td><td>54</td></tr><tr><td>120 min Summer</td><td>31.483</td><td>0.0</td><td>88</td></tr><tr><td>180 min Summer</td><td>23.483</td><td>0.0</td><td>122</td></tr><tr><td>240 min Summer</td><td>18.956</td><td>0.0</td><td>156</td></tr><tr><td>360 min Summer</td><td>13.897</td><td>0.0</td><td>222</td></tr><tr><td>480 min Summer</td><td>11.157</td><td>0.0</td><td>286</td></tr><tr><td>600 min Summer</td><td>9.402</td><td>0.0</td><td>348</td></tr><tr><td>720 min Summer</td><td>8.170</td><td>0.0</td><td>406</td></tr><tr><td>960 min Summer</td><td>6.541</td><td>0.0</td><td>520</td></tr><tr><td>1440 min Summer</td><td>4.773</td><td>0.0</td><td>764</td></tr><tr><td>2160 min Summer</td><td>3.476</td><td>0.0</td><td>1124</td></tr><tr><td>2880 min Summer</td><td>2.772</td><td>0.0</td><td>1472</td></tr><tr><td>4320 min Summer</td><td>2.011</td><td>0.0</td><td>2204</td></tr><tr><td>5760 min Summer</td><td>1.600</td><td>0.0</td><td>2936</td></tr><tr><td>7200 min Summer</td><td>1.339</td><td>0.0</td><td>3656</td></tr><tr><td>8640 min Summer</td><td>1.157</td><td>0.0</td><td>4408</td></tr><tr><td>10080 min Summer</td><td>1.023</td><td>0.0</td><td>5144</td></tr><tr><td>15 min Winter</td><td>118.498</td><td>0.0</td><td>17</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	30.601	0.051	4.8	18.4	O K	30 min Summer	30.619	0.069	4.8	24.9	O K	60 min Summer	30.633	0.083	4.8	30.0	O K	120 min Summer	30.642	0.092	4.8	33.3	O K	180 min Summer	30.644	0.094	4.8	33.7	O K	240 min Summer	30.642	0.092	4.8	33.0	O K	360 min Summer	30.634	0.084	4.8	30.1	O K	480 min Summer	30.625	0.075	4.8	27.0	O K	600 min Summer	30.617	0.067	4.8	24.1	O K	720 min Summer	30.610	0.060	4.8	21.5	O K	960 min Summer	30.600	0.050	4.8	17.9	O K	1440 min Summer	30.590	0.040	3.8	14.3	O K	2160 min Summer	30.581	0.031	3.0	11.2	O K	2880 min Summer	30.576	0.026	2.5	9.2	O K	4320 min Summer	30.569	0.019	1.8	6.9	O K	5760 min Summer	30.566	0.016	1.5	5.6	O K	7200 min Summer	30.563	0.013	1.3	4.7	O K	8640 min Summer	30.561	0.011	1.1	4.0	O K	10080 min Summer	30.560	0.010	1.0	3.6	O K	15 min Winter	30.609	0.059	4.8	21.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	118.498	0.0	17	30 min Summer	79.373	0.0	31	60 min Summer	50.812	0.0	54	120 min Summer	31.483	0.0	88	180 min Summer	23.483	0.0	122	240 min Summer	18.956	0.0	156	360 min Summer	13.897	0.0	222	480 min Summer	11.157	0.0	286	600 min Summer	9.402	0.0	348	720 min Summer	8.170	0.0	406	960 min Summer	6.541	0.0	520	1440 min Summer	4.773	0.0	764	2160 min Summer	3.476	0.0	1124	2880 min Summer	2.772	0.0	1472	4320 min Summer	2.011	0.0	2204	5760 min Summer	1.600	0.0	2936	7200 min Summer	1.339	0.0	3656	8640 min Summer	1.157	0.0	4408	10080 min Summer	1.023	0.0	5144	15 min Winter	118.498	0.0	17
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No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		8340 ALFRED MORRIS COURT			
Date 05/03/2019 File 8340 Porous Car Park.srcx		Designed by HB Checked by KPT			
Innovyze		Source Control 2014.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	30.631	0.081	4.8	29.1	O K
60 min Winter	30.647	0.097	4.8	35.1	O K
120 min Winter	30.655	0.105	4.8	38.0	O K
180 min Winter	30.655	0.105	4.8	37.7	O K
240 min Winter	30.650	0.100	4.8	36.0	O K
360 min Winter	30.636	0.086	4.8	31.0	O K
480 min Winter	30.622	0.072	4.8	26.1	O K
600 min Winter	30.610	0.060	4.8	21.8	O K
720 min Winter	30.601	0.051	4.8	18.5	O K
960 min Winter	30.593	0.043	4.1	15.5	O K
1440 min Winter	30.583	0.033	3.1	11.8	O K
2160 min Winter	30.574	0.024	2.3	8.8	O K
2880 min Winter	30.570	0.020	1.9	7.0	O K
4320 min Winter	30.564	0.014	1.4	5.1	O K
5760 min Winter	30.561	0.011	1.1	4.0	O K
7200 min Winter	30.560	0.010	0.9	3.4	O K
8640 min Winter	30.558	0.008	0.8	2.9	O K
10080 min Winter	30.557	0.007	0.7	2.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	79.373	0.0	31		
60 min Winter	50.812	0.0	58		
120 min Winter	31.483	0.0	94		
180 min Winter	23.483	0.0	134		
240 min Winter	18.956	0.0	170		
360 min Winter	13.897	0.0	240		
480 min Winter	11.157	0.0	304		
600 min Winter	9.402	0.0	362		
720 min Winter	8.170	0.0	412		
960 min Winter	6.541	0.0	530		
1440 min Winter	4.773	0.0	778		
2160 min Winter	3.476	0.0	1144		
2880 min Winter	2.772	0.0	1476		
4320 min Winter	2.011	0.0	2208		
5760 min Winter	1.600	0.0	2944		
7200 min Winter	1.339	0.0	3704		
8640 min Winter	1.157	0.0	4336		
10080 min Winter	1.023	0.0	5104		
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Return Period (years)	100	Cv (Summer)	0.750																																
Region	England and Wales	Cv (Winter)	0.840																																
M5-60 (mm)	18.000	Shortest Storm (mins)	15																																
Ratio R	0.359	Longest Storm (mins)	10080																																
Summer Storms	Yes	Climate Change %	+40																																
Time (mins)		Area																																	
From:	To:	(ha)																																	
0	4	0.120																																	
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WML Consulting Ltd		Page 4																								
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL	8340 ALFRED MORRIS COURT																									
Date 05/03/2019 File 8340 Porous Car Park.srcx	Designed by HB Checked by KPT																									
Innovyze Source Control 2014.1.1																										
<u>Model Details</u> Storage is Online Cover Level (m) 31.000 <u>Porous Car Park Structure</u> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.02880</td> <td>Width (m)</td> <td>40.0</td> </tr> <tr> <td>Membrane Percolation (mm/hr)</td> <td>1</td> <td>Length (m)</td> <td>30.0</td> </tr> <tr> <td>Max Percolation (l/s)</td> <td>0.3</td> <td>Slope (1:X)</td> <td>0.0</td> </tr> <tr> <td>Safety Factor</td> <td>2.0</td> <td>Depression Storage (mm)</td> <td>5</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Evaporation (mm/day)</td> <td>3</td> </tr> <tr> <td>Invert Level (m)</td> <td>30.550</td> <td>Cap Volume Depth (m)</td> <td>0.350</td> </tr> </table>			Infiltration Coefficient Base (m/hr)	0.02880	Width (m)	40.0	Membrane Percolation (mm/hr)	1	Length (m)	30.0	Max Percolation (l/s)	0.3	Slope (1:X)	0.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	30.550	Cap Volume Depth (m)	0.350
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Invert Level (m)	30.550	Cap Volume Depth (m)	0.350																							
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APPENDIX C

Photographic record of the installation







